



Primary Tillage

**RIPPER-ROLLER
Subsoilers
Model 632**

Serial Number A64460361 & Higher

Part No. 600779

Foreword

 This symbol identifies important safety messages. When you see it, read the message that follows and be alert to the possibility of personal injury.

Remember, safety instructions stated in this manual are for your protection. Read them carefully and follow them closely when working around or using this machine.

Read and study this manual completely before attempting to operate this implement. Take this manual to the field for handy reference when operating, adjusting, or servicing your machine.

When referenced, “Right-Hand” (RH) and “Left-Hand” (LH) sides of the machine are determined by standing behind the machine and facing in the direction of travel.



Pre-Operation Checklist

- | | |
|--|---|
| <input type="checkbox"/> Wheel bolts tightened (recheck after initial use) | <input type="checkbox"/> Safety and operating procedures reviewed |
| <input type="checkbox"/> Tire pressures checked | <input type="checkbox"/> Field adjustment information reviewed |
| <input type="checkbox"/> Hardware tightened | <input type="checkbox"/> Lubrication procedures reviewed |
| <input type="checkbox"/> Machine lubricated | <input type="checkbox"/> Warranty information reviewed |
| | <input type="checkbox"/> Hydraulic hoses properly routed/fittings tight |

Product Information

When ordering parts or when requesting further information or assistance, always give the following information:

- Machine name
- Serial number

All products manufactured by Unverferth Mfg. Co., Inc. are warranted to be free from material and workmanship defects for one full year from time of consumer delivery. Your local dealer will gladly assist you with any warranty questions.

Please fill out and retain this portion for your records. The serial number plate is located on the frame as shown below.

Purchase Date _____ Model _____ Serial No. _____

Dealer _____ City _____

Dealer Contact _____ Phone _____

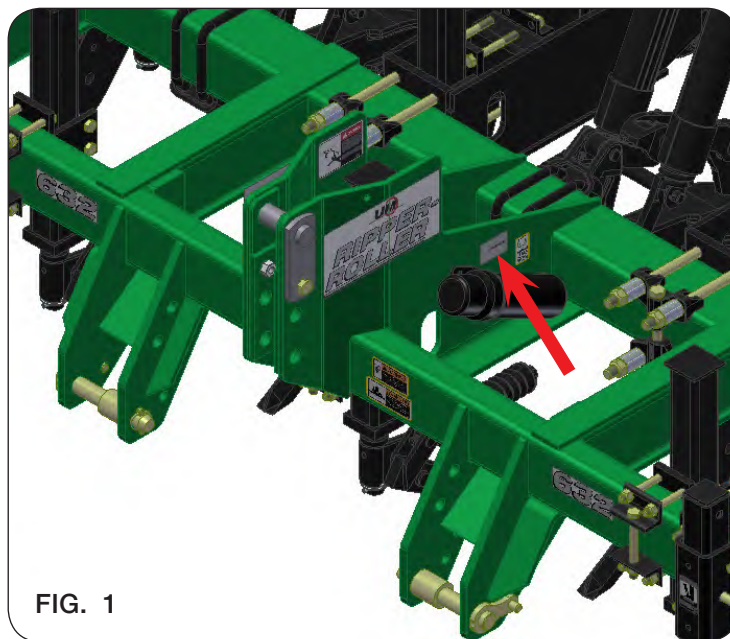


FIG. 1

IMPORTANT

The information, specifications, and illustrations in the manual are on the basis of information available at the time it was written. Due to continuing improvements in the design and manufacture of Unverferth products, all specifications and information contained herein are subject to change without notice.

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NOTE: Refer to 16” Rolling Finisher Attachment manual for additional Rolling Harrow Basket, Bladed Reel, and Cleated Drum information.

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NOTE: Refer to 16” Rolling Finisher Attachment manual for additional Rolling Harrow Basket, Bladed Reel, and Cleated Drum information.

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General Hazard Information

No accident-prevention program can be successful without the wholehearted cooperation of the person who is directly responsible for the operation of the equipment.

A large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power-driven equipment, whether it be transportation or processing, whether it be on the highway, in the field, or in the industrial plant, can be safer than the person who is at the controls. If accidents are to be prevented--and they can be prevented--it will be done by the operators who accept the full measure of their responsibility.

It is true that the designer, the manufacturer, and the safety engineer can help; and they will help, but their combined efforts can be wiped out by a single careless act of the operator.

It is said that, "the best kind of a safety device is a careful operator." We, at Unverferth Mfg. Co., Inc. ask that you be that kind of operator.



**REMEMBER:
THINK SAFETY
A CAREFUL OPERATOR IS THE
BEST INSURANCE AGAINST AN
ACCIDENT!**

SIGNAL WORDS



INDICATES AN EXTREMELY HAZARDOUS SITUATION OR ACTION THAT WILL RESULT IN SERIOUS INJURY OR DEATH.



INDICATES A HAZARDOUS SITUATION OR ACTION THAT COULD RESULT IN SERIOUS INJURY OR DEATH.



INDICATES AN UNSAFE SITUATION OR ACTION THAT MAY RESULT IN PERSONAL INJURY.



Is used for instruction on operating, adjusting, or servicing a machine.

Safety Decals

⚠ WARNING

- REPLACE LOST, DAMAGED, PAINTED, OR UNREADABLE DECALS IMMEDIATELY. IF PARTS THAT HAVE DECALS ARE REPLACED, ALSO MAKE SURE TO INSTALL NEW DECALS. THESE DECALS INFORM AND REMIND THE OPERATOR WITH OPERATIONAL INFORMATION AND SAFETY MESSAGES.



PART NO. 95445



PART NO. 99507



PART NO. 902221



PART NO. 97048



PART NO. 97337



PART NO. 97973



PART NO. 97972



PART NO. 97961



PART NO. 99850



PART NO. 900558

Following Safety Instructions

- Read and understand this operator's manual before operating.



- All machinery should be operated only by trained and authorized personnel.

- To prevent machine damage, use only attachments and service parts approved by the manufacturer.

- Always shut tractor engine off and remove key before servicing.



- Avoid personal attire such as loose fitting clothing, shoestrings, drawstrings, pants cuffs, long hair, etc., that may become entangled in moving parts.

- Do not allow anyone to ride on the implement. Make sure everyone is clear before operating machine or towing vehicle.



- When working around sweeps and points, be careful not to be cut by sharp edges.

- Never attempt to operate implement unless you are in driver's seat.

Before Servicing

- Avoid working under an implement; however, if it becomes absolutely unavoidable, make sure the implement is safely blocked.



- Ensure that all applicable safety decals are installed and legible.

- When working around the implement, be careful not to be cut by sharp edges.

- Explosive separation of a tire and rim can cause serious injury or death. Only properly trained personnel should attempt to service a tire and wheel assembly.

- Add sufficient ballast to tractor to maintain steering and braking control at all times. Do not exceed tractor's lift capacity or ballast capacity.

Before Operating

- Do not stand between towing vehicle and implement during hitching.

- Always make certain everyone and everything is clear of the machine before beginning operation.

- Verify that all safety shields are in place and properly secured.

- Ensure that all applicable safety decals are installed and legible.

- Add sufficient ballast to tractor to maintain steering and braking control at all times. Do not exceed tractor's lift capacity or ballast capacity.

- Inspect fields for buried utility lines (electric, natural gas, water, etc.). To find buried lines in the US or Canada contact 1-888-258-0808, in the US you may also contact 811.

During Operation

- Regulate speed to field conditions. Maintain complete control at all times.

- Never service or lubricate equipment when in operation.

- Keep away from overhead power lines. Electrical shock can cause serious injury or death.

- Use extreme care when operating close to ditches, fences, or on hillsides.

- Do not leave towing vehicle unattended with engine running.

Before Transporting

- Secure transport chains to towing vehicle before transporting. DO NOT transport without chains.

- Install transport locks before transporting.

- Check for proper function of all available transport lights. Make sure that all reflectors are clean and in place on the machine. Make sure the SMV emblem is visible to approaching traffic.

- This implement may not be equipped with brakes. Ensure that the towing vehicle has adequate weight and braking capacity to tow this unit.

During Transport

- Comply with all laws governing highway safety when moving machinery.

- Use transport lights as required by all laws to adequately warn operators of other vehicles.

- Use good judgment when transporting equipment on highways. Regulate speed to road conditions and maintain complete control.


- Maximum transport speed of this implement should never exceed 20 mph as indicated on the machine. Maximum transport speed of any combination of implements must not exceed the lowest specified speed of the implements in combination. Do not exceed 10 mph during off-highway travel.

- Slow down before making sharp turns to avoid tipping. Drive slowly over rough ground and side slopes.

- It is probable that this implement is taller, wider and longer than the towing vehicle. Become aware of and avoid all obstacles and hazards in the travel path of the equipment, such as power lines, ditches, etc.

Pressurized Oil

- Relieve the hydraulic system of all pressure before adjusting or servicing. See hydraulic power unit manual for procedure to relieve pressure.

- High-pressure fluids can penetrate the skin and cause serious injury or death. Use cardboard or wood to detect leaks in the hydraulic system. Seek medical treatment immediately if injured by high-pressure fluids. 

- Hydraulic system must be purged of air before operating to prevent serious injury or death.

- Do not bend or strike high-pressure lines. Do not install bent or damaged tubes or hoses.

- Repair all oil leaks. Leaks can cause fires, personal injury, and environmental damage.

- Route hoses and lines carefully to prevent premature failure due to kinking and rubbing against other parts. Make sure that all clamps, guards and shields are installed correctly.

- Check hydraulic hoses and tubes carefully. Replace components as necessary if any of the following conditions are found:
 - End fittings damaged, displaced, or leaking.
 - Outer covering chafed/cut or wire reinforcing exposed.
 - Outer covering ballooning locally.
 - Evidence of kinking or crushing of the flexible part of a hose.

Preparing for Emergencies

- Keep a first aid kit and properly rated fire extinguisher nearby.



- Keep emergency numbers for fire, rescue, and poison control personnel near the phone.



Wearing Protective Equipment

- Wear clothing and personal protective equipment appropriate for the job.



- Wear steel-toed shoes when operating.



- Wear hearing protection when exposed to loud noises.



- Do not wear additional hearing impairing devices such as radio headphones, etc.



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NOTE: Refer to 16” Rolling Finisher Attachment manual for additional Rolling Harrow Basket, Bladed Reel, and Cleated Drum information.

General Set Up Information

NOTE: For proper positioning, refer to “Overhead Layouts” in SET UP section.

WARNING

- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW THE SAFETY SECTION IN THIS MANUAL IF NECESSARY.**
 - **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**
 - **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 5,000 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**
 - **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**
 - **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
1. Frame must be set on level ground in the up-right position and with the jackstands in the parking position. Refer to instruction sheet #66120, procedure for unloading and setting the unit on level ground.

Wing Extensions for 15 Shank Folding Units

1. Secure a safe lifting device rated for 4,000 lbs. to the wing extensions while they are bolted together. Be sure to position the wing extension shipping pair in an area that is firm and level. Attach the entire assembly to the right-hand base wing. Secure with the capscrews and lock nuts provided.

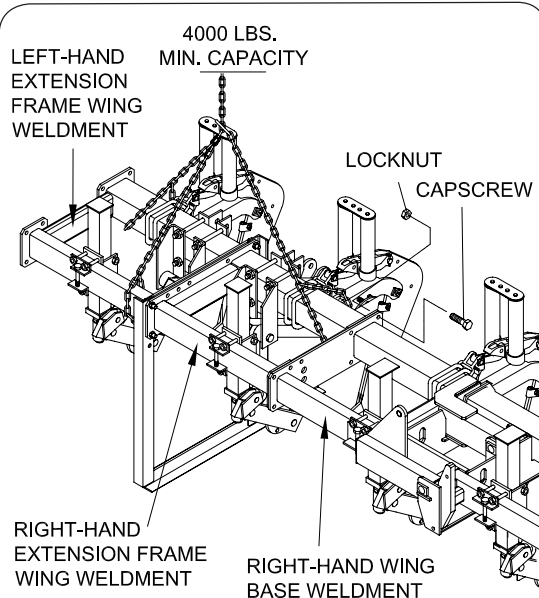


FIG. 2-1

Wing Extensions for 15 Shank Folding Units (continued)

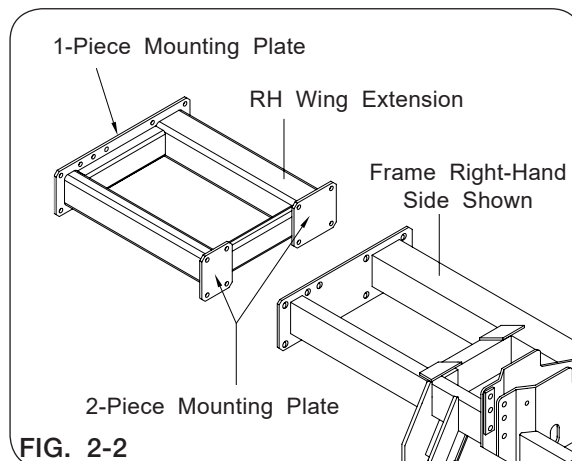
NOTE: Make sure the 2-piece mounting plate is bolted to the machine. The 1-piece mounting plate should be positioned away from the machine.

2. Reattach the lifting device to the left-hand wing.

CAUTION

- THE EXTENSION COULD BECOME UNSTABLE IF RESTING ON THE GROUND.

3. Attach the left-hand extension to the left-side using existing and provided capscrews and lock nuts.
4. Remove the remaining hardware that secures the left-hand extension to the stand and discard the hardware and shipping stand.

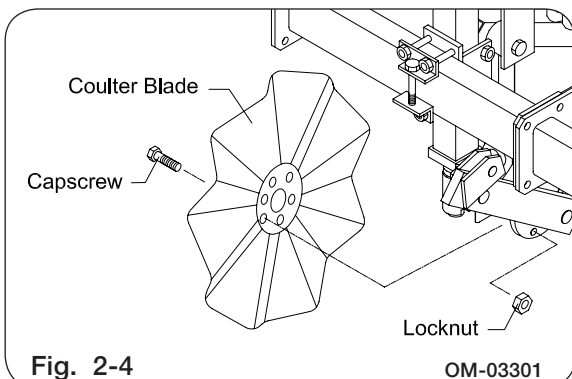


Combo® Coultter Blade

1. Install coultter blades to hub using 3/8"-16UNC x 1 1/4" capscrews (9390-056) and 3/8"-16UNC lock nuts (9928) (Fig. 2-4). Refer to "Torque Chart" in MAINTENANCE section.

CAUTION

- SHARP EDGES ON COULTTER BLADES CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND COULTTER BLADES.



Stabilizer Wheel Assembly

WARNING

- KEEP HANDS CLEAR OF PINCH POINT AREAS.,
- FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. AVOID WORKING UNDER AN IMPLEMENT; HOWEVER IF IT BECOMES ABSOLUTELY UNAVOIDABLE, MAKE SURE THE IMPLEMENT IS SAFELY BLOCKED.

7 & 9 SHANK MODELS ONLY

1. Refer to “Overhead Layouts” in this section for proper positioning. Adjust accordingly and re-tighten capscrews to “Torque Chart” in MAINTENANCE section.
2. Turnbuckles (62324) are factory preset, but check side-to-side to make sure unit will track properly.

11 & 13 SHANK RIGID MODELS

1. Use a minimum of 150 lb. safe lifting device to lift the stabilizer wheel.
2. Remove the shipping strap attaching the hub to the frame. Cut the shipping strap attaching the turnbuckle to the axle arm.

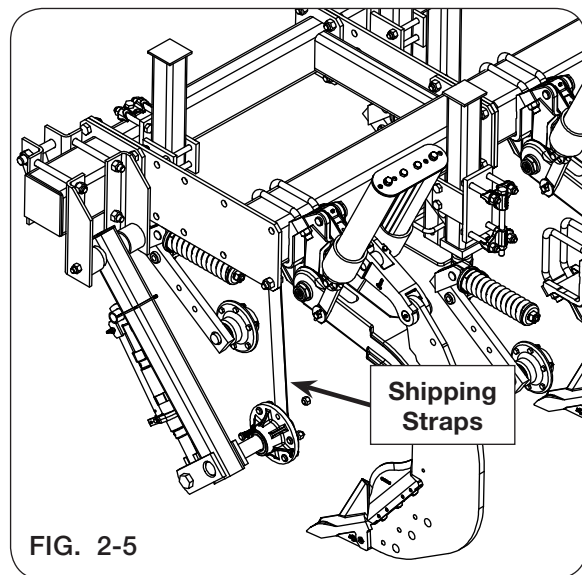
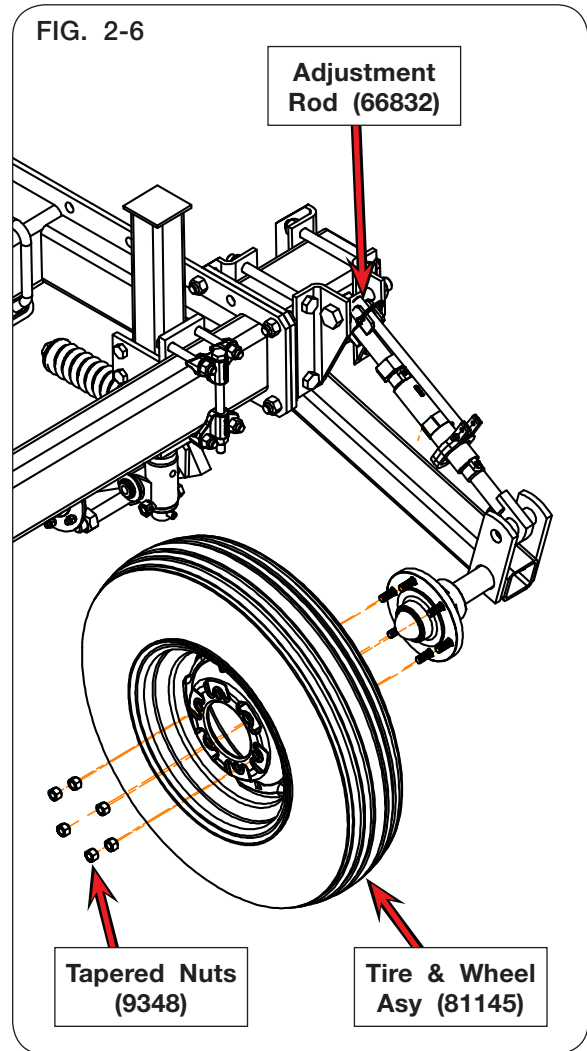


FIG. 2-5

Stabilizer Wheel Assembly (continued)

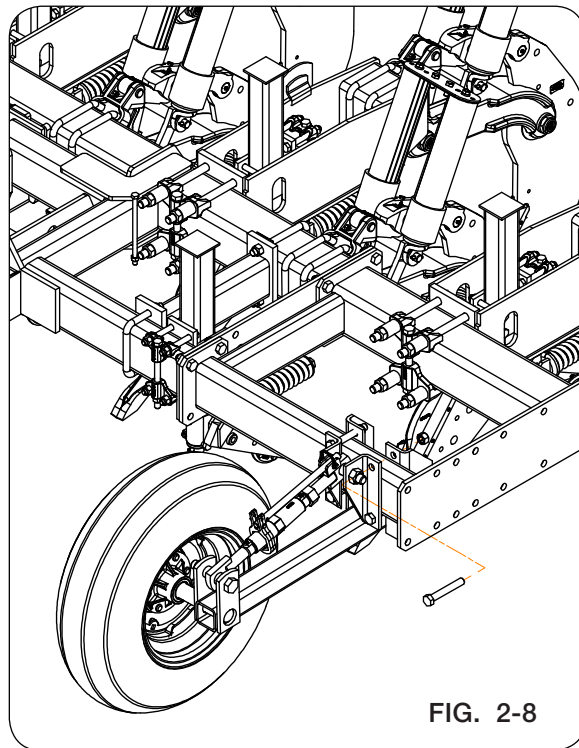
3. Rotate the stabilizer wheel assembly into the forward position. Place the turnbuckle adjustment rod (66832) between the clamp brackets (60891) and secure with 1"-8UNC x 5 1/2" capscrew (9390-194) and 1"-8UNC lock nut (9663) (Fig. 2-6).
4. Remove the 1/2"-20UNF tapered nuts (9348) from the hub assemblies and install the tire and wheel assemblies (81145) to the stabilizer wheel hubs. Secure using the 1/2"-20UNF tapered nuts (9348) (Fig. 2-6). Tighten hardware according to "Torque Chart" in MAINTENANCE section.
5. Turnbuckles (62324) are factory preset, but check side-to-side to make sure unit will track properly.



Stabilizer Wheel Assembly (continued)

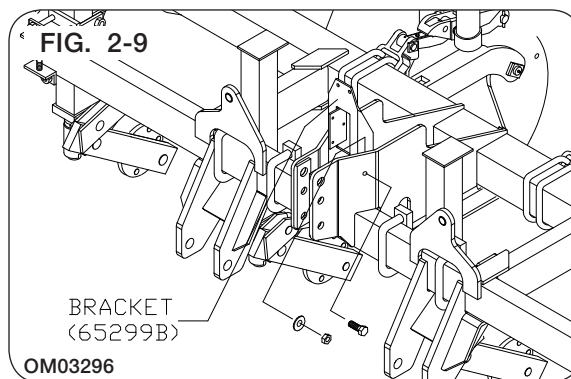
15 SHANK FOLDING MODELS

1. Remove the four 3/4"-10UNC x 8" capscrews on the stabilizer wheel assembly. Secure safe lifting device rated at 300 lbs. minimum to the stabilizer wheel assembly and attach it onto the wing extension. Refer to "Overhead Layouts" in this section. Tighten capscrews to torque chart in MAINTENANCE section.
2. Turnbuckles (62324) are factory preset, but check side-to-side to make sure unit will track properly.

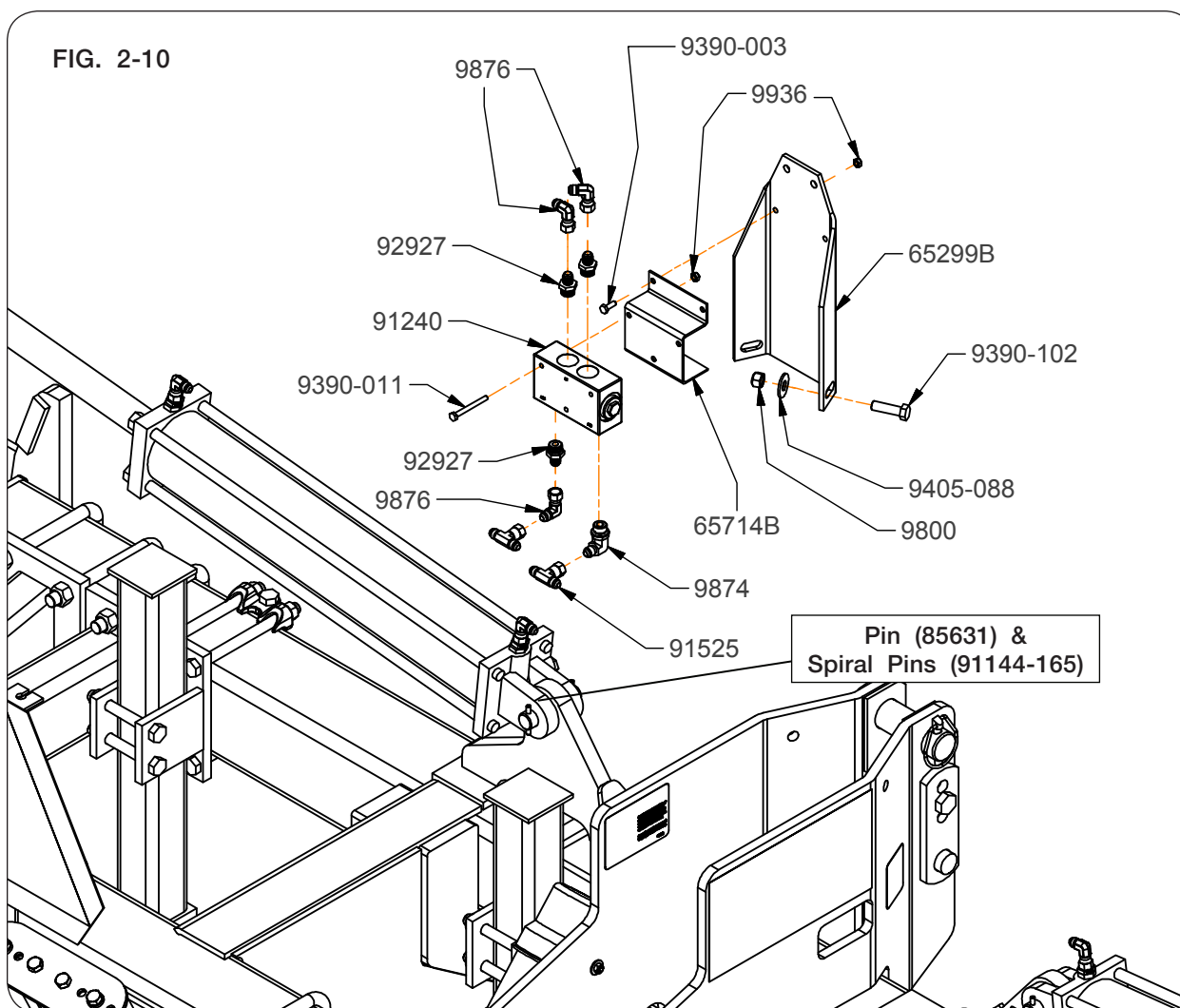


Hydraulic Assembly For Folding Models

1. Assemble the bracket to the center of the main frame using two 1/2"-13UNC x 1 3/4" capscrews, flat washers, and lock nuts (Fig. 2-9).



2. Secure wing lock valve (91240) to the bracket with two 1/4" x 2 1/2" capscrews and lock nuts (Fig. 2-10).



3. Attach only the base end of the hydraulic cylinder to the cylinder lug using (Fig. 2-10): Use a 1" dia. x 4" pin (85631) and two 1/4" dia. x 1 7/8" spiral pins (91144-165) on each side.

Hydraulic Assembly For Folding Models (continued)

4. Attach all the hydraulic fittings in the places shown (Fig. 2-11).

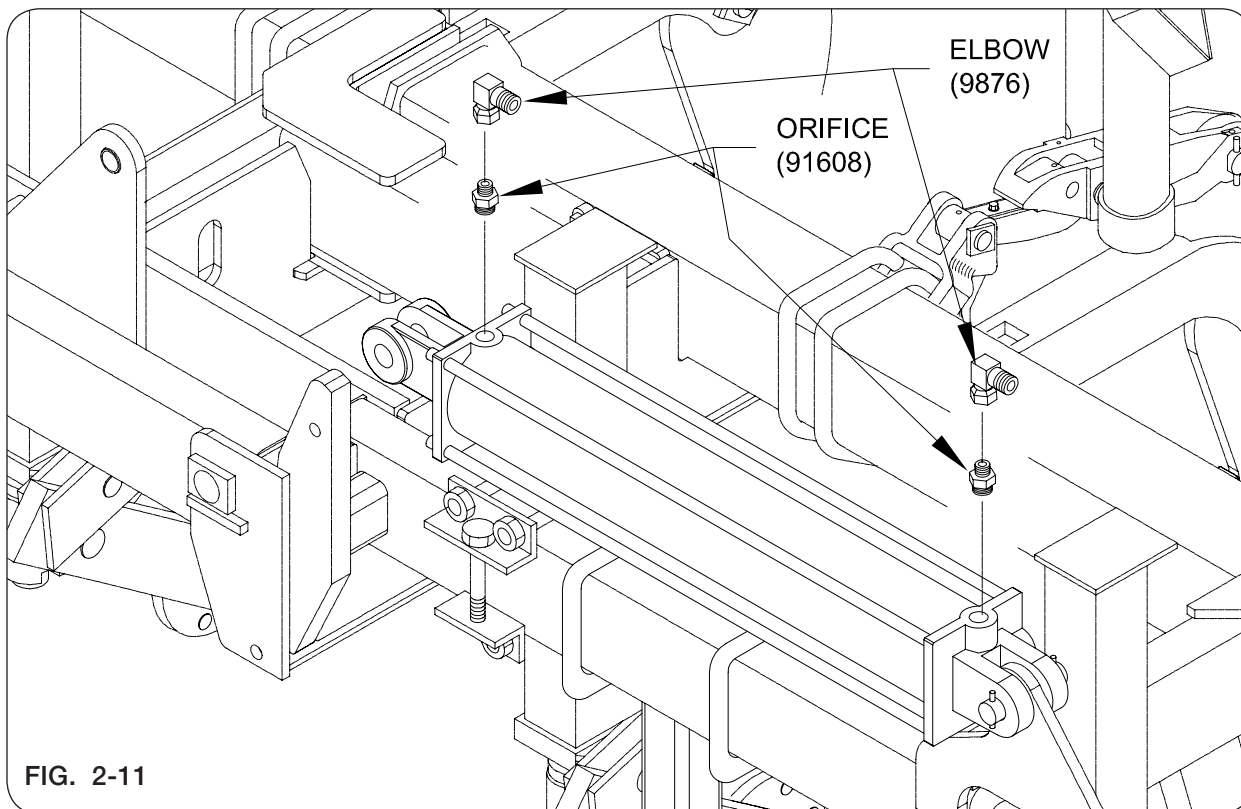


FIG. 2-11

IMPORTANT

- *Do not use teflon tape or thread sealant as all fittings have mechanical or o-ring seals. This prevents contamination from tape or thread sealants entering the tractor's hydraulic system.*

5. Connect the hydraulic hoses from the valve to the hydraulic cylinder and the hydraulic hoses which lead to the tractor. Refer to "Hydraulics" parts pages.

Hydraulic Assembly For Folding Models (continued)

Purging Hydraulic System

WARNING

- RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.

Purge air from system as follows:

- A. Disconnect the rod end of all cylinders in a circuit and block up cylinders so the rod can completely extend and retract without contacting any other component.
- B. Pressurize the system and maintain system at full pressure for at least 5 seconds after cylinder rods stop moving. Check that all cylinders have fully extended or retracted.
- C. Check oil reservoir in hydraulic power source and re-fill as needed.
- D. Pressurize system again to reverse the motion of step B. Maintain pressure on system for at least 5 seconds after cylinder rods stop moving. Check that cylinders have fully extended or retracted.
- E. Check for hydraulic leaks using cardboard or wood. Tighten connections according to directions in Torque Specifications in MAINTENANCE section.
- F. Repeat steps B, C, D, and E 3-4 times.
- G. De-pressurize hydraulic system and connect cylinder rods clevises to their mating lugs.

HYDRAULIC SYSTEM CHECKS ON ALL UNITS -- CHECK THE FOLLOWING:

ROUTING OF ALL HYDRAULIC HOSES: Hoses should not be kinked, twisted, or rubbing against sharp edges.

FITTINGS AND CONNECTIONS: Check for leaks. Refer to "Torque Chart" in MAINTENANCE section.

HOSES: Be sure hoses have room to "FLEX" (for folding) in hinge areas. Hoses must be secured with cable ties.

Optional Attachment — Plastic Shank Protector (78589)

⚠ WARNING

- TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.

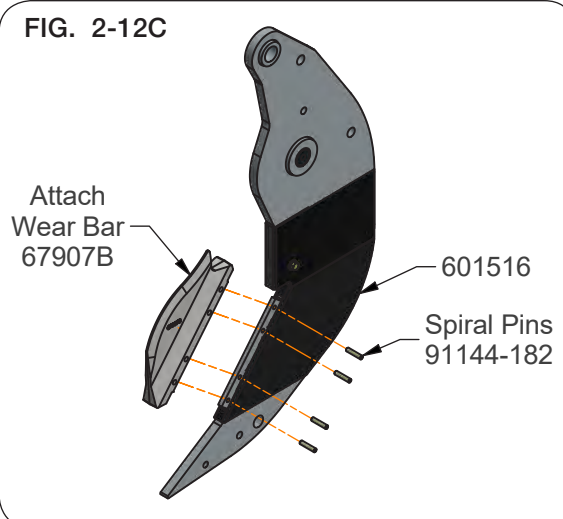
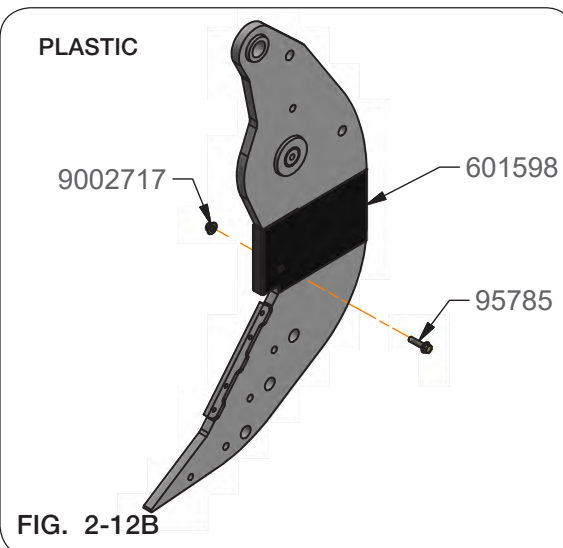
Plastic Shank Protector (78589)

To protect and extend the life of your shanks, in highly abrasive soils, shank protectors are available. Simply bolt to side of shank using hardware provided.

Attach the wear guard upper section (601598) to the shank using 3/8"-16UNC x 1" flange screw (95785) and 3/8"-16UNC flange nut (9002717) (Fig. 2).

Align the wear guard lower section (601516) with the bottom side of the wear guard upper section (601598) and secure into position with the wear bar (67907B) (Fig. 2).

NOTE: Wear bar (67907B) with notched ends is required with the plastic wear guards. Any wear bar without notched ends will not work with the plastic wear guards.



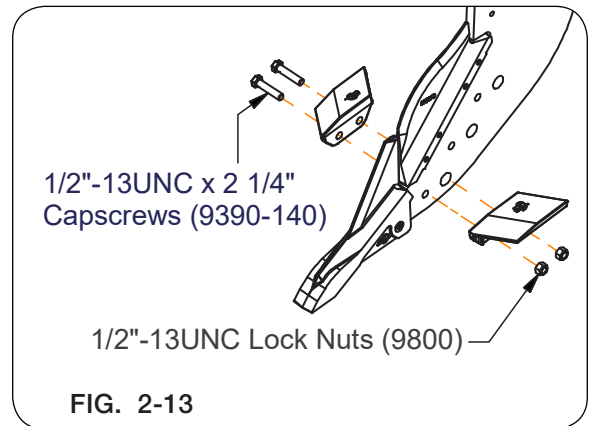
Optional Attachment — Shatter Wings (67691B & 67692B)

For initial installation, position shatter wings in bottom hole pattern with the rear capscrew positioned on the bottom of the large hole in the shank. This will provide minimal soil disturbance.

Secure the shatter wings to the shank with the beveled edge facing upward. Retain into position using two 1/2"-13UNC x 2 1/4" capscrews and 1/2"-13UNC lock nuts (Fig. 2-13).

For increased soil disturbance, adjust the angle of the wings by loosening the bolts and pivoting back of wing upward to desired angle (see adjustments).

If installing shatter wings on shanks with shank protectors installed, the 2 1/4" capscrews need to be replaced with the 2 3/4" capscrews (furnished with the kit) (Fig. 2-13).



Optional Attachment — Roller Attachments

CLEATED DRUM ROLLER ATTACHMENTS

- 7 Shank Rigid-Bundle For 18" Spacing 69631B
- 7 Shank Rigid-Bundle For 24" Spacing 69632B
- 9 Shank Rigid-Bundle For 18" Spacing 69633B
- 9 Shank Rigid-Bundle For 24" Spacing 69620B
- 11 Shank Rigid-Bundle For 18" Spacing 69635B
- 11 Shank Folding-Bundle For 24" Spacing 69636B
- 13 Shank Rigid-Bundle For 18" Spacing 69637B
- 13 Shank Folding-Bundle For 24" Spacing 69638B
- 15 Shank Folding-Bundle For 18" Spacing 69639B

All bundles include: storage stands, hardware and parts box, roller assemblies, and mounting arms.

Refer to Roller Attachment manual for additional models and information.

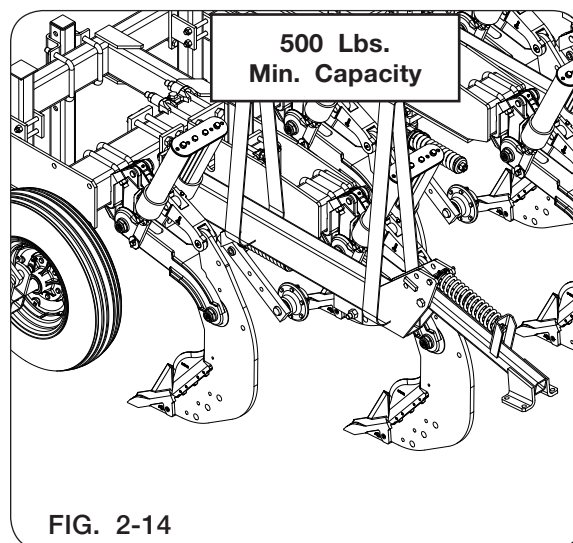
WARNING

- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.
- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 500 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.



Refer to overhead layouts for location of ROLLER ATTACHMENTS.

1. Attach a 500 lb. min. safe lifting device to a mounting arm assembly (86450B) (Fig. 2-14).



Optional Attachment — Roller Attachments (continued)

2. Rotate mounting arm assembly (86450B) into position and secure to frame using the following:

- A. Offset bracket (68378B), plate (601635B), 7/8"-9UNC x 8 1/2" capscrews (9390-455), 7/8"-9UNC x 2 1/4" capscrews (9390-165), and 7/8"-9UNC lock nuts (98420).
- B. 7/8"-9UNC U-bolts (97582) and 7/8"-9UNC lock nuts (98420).

Assemble the outer most mounting arm assemblies first and attach the jackstands, brackets, and hardware (Fig. 2-15) to avoid the machine from tipping over. Attach decal (97973) to jackstand bracket (Fig. 2-15). Refer to "Overhead Layouts" for proper positioning.

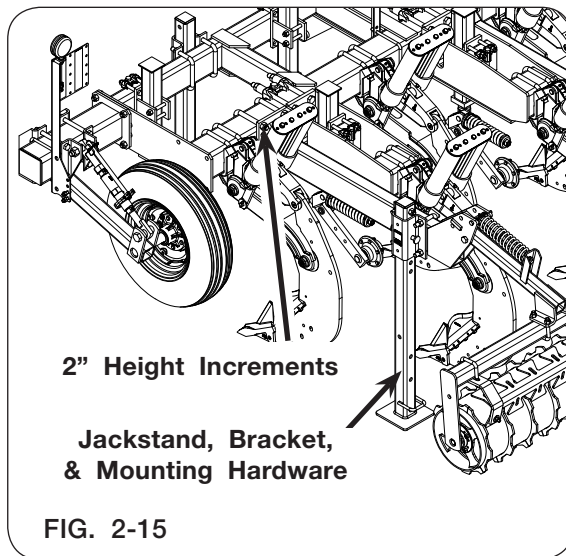


FIG. 2-15

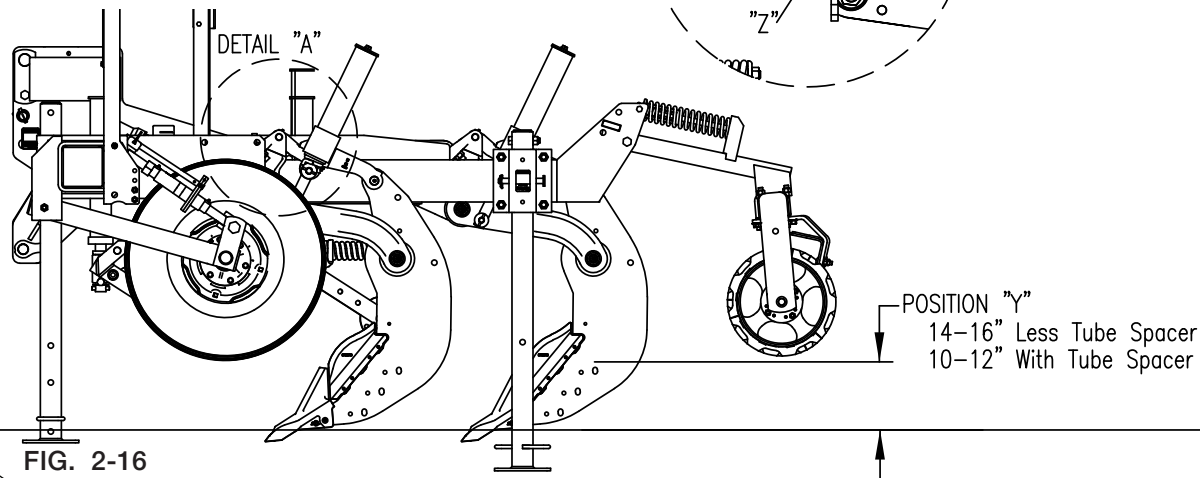
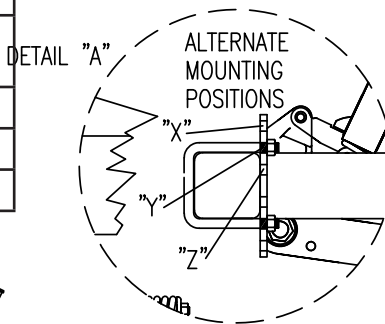
NOTE: On the folding machines, the jack stand must go on the outermost mounting arm on the base of the machine.

NOTE: Mounting arm assembly (86450B) mounting plate has 2" increments for height adjustment (Fig. 2-16).

3. Repeat steps 1 and 2 until all the mounting arm assemblies (86450B) have been attached to the frame with the same mounting height.

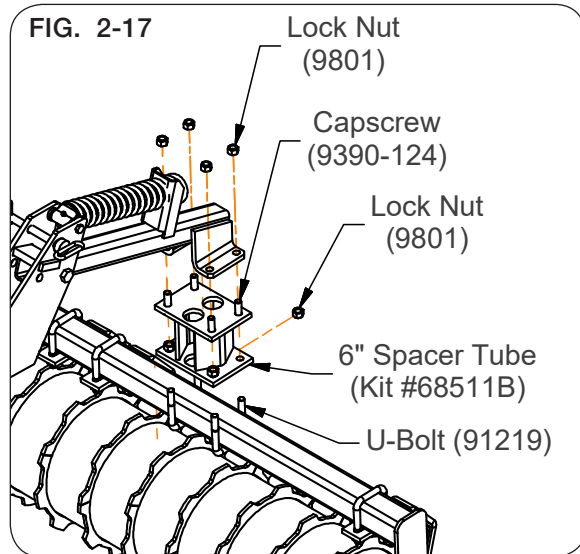
Mounting arm assembly (86450B) recommended position for working depth.

Arm Mounting Position	Working Depth Range	
	Less Tube Spacer (68511B)	With Tube Spacer (68511B)
X	12-14"	8-10"
Y	14-16"	10-12"
Z	16-18"	12-14"

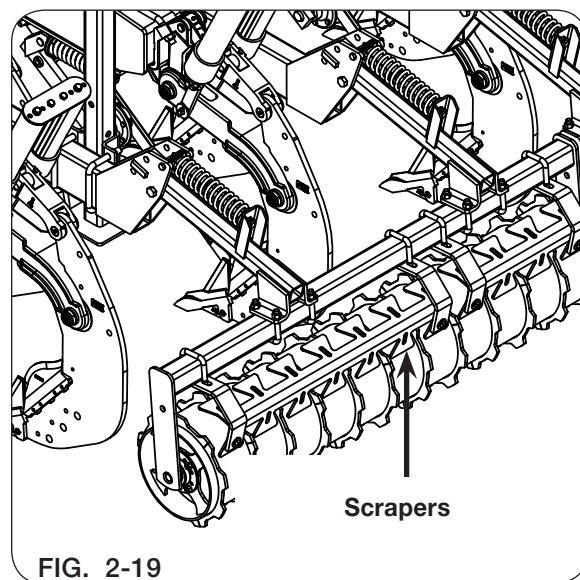


Optional Attachment — Roller Attachments (continued)

4. When operating shanks less than 12" deep, it may be necessary to install spacers 68511B to position the roller 6" lower. If applicable, assemble the 6" down spacers (Fig. 2-17).

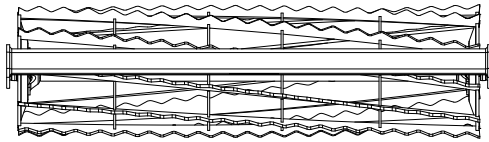


5. Remove the 5/8"-11UNC lock nuts (9801) and 5/8"-11UNC U-bolts (91219) from parts box (66019).
6. **CLEATED DRUM ROLLER**
With the hardware in step 5, attach cleated drum roller weldments to the mounting arm assemblies (86450B) with the scrapers pointing towards the rear of the unit (Fig. 2-19).
7. Refer to Torque Chart in the Maintenance section for proper tightening of hardware.

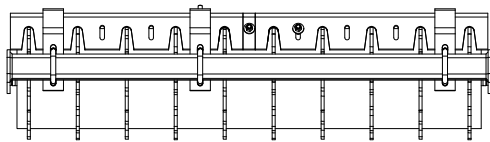


Overhead Layouts

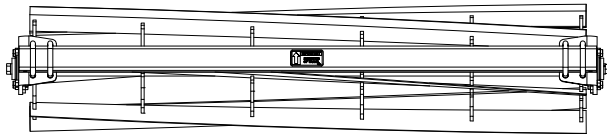
Basket Assembly



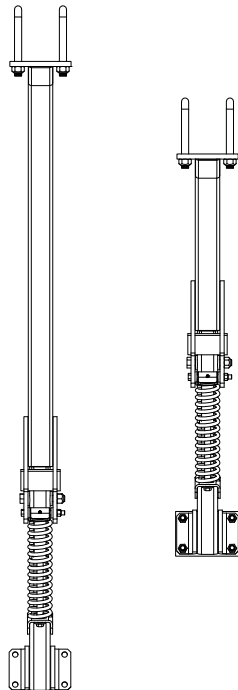
Drum Assembly



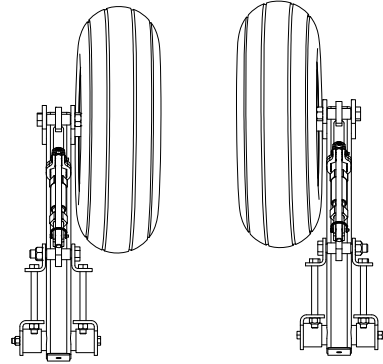
Roller Assembly



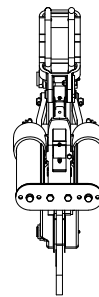
Mounting Arm Assemblies



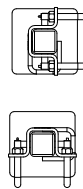
Stabilizer Wheels



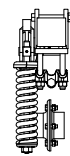
Shank



Storage Stands



Combo Coupler

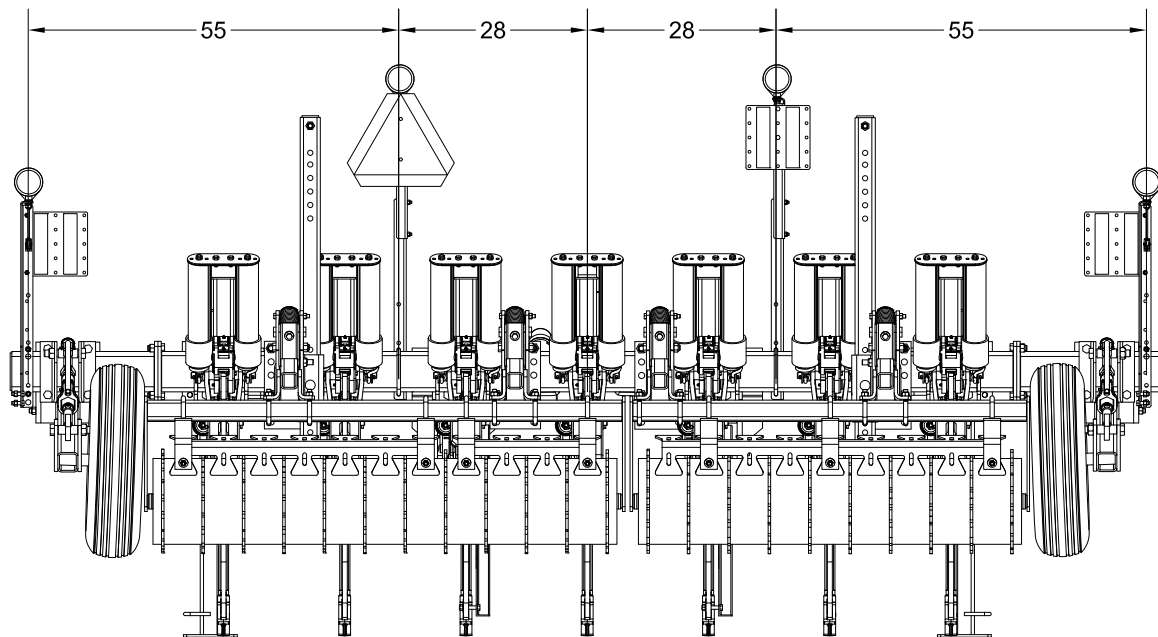
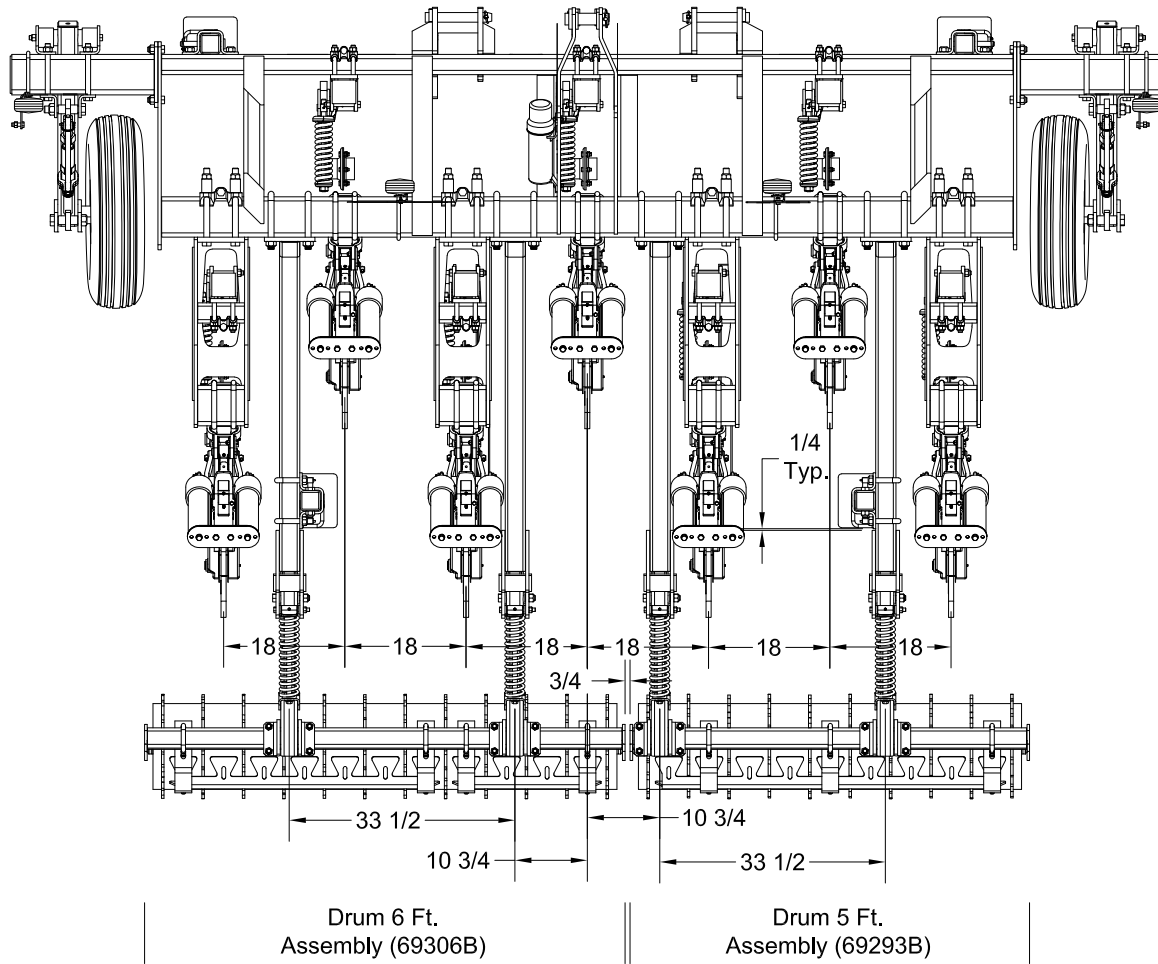


Extension Stub



Overhead Layouts — Rigid Units — 7 Shank 18" Spacing

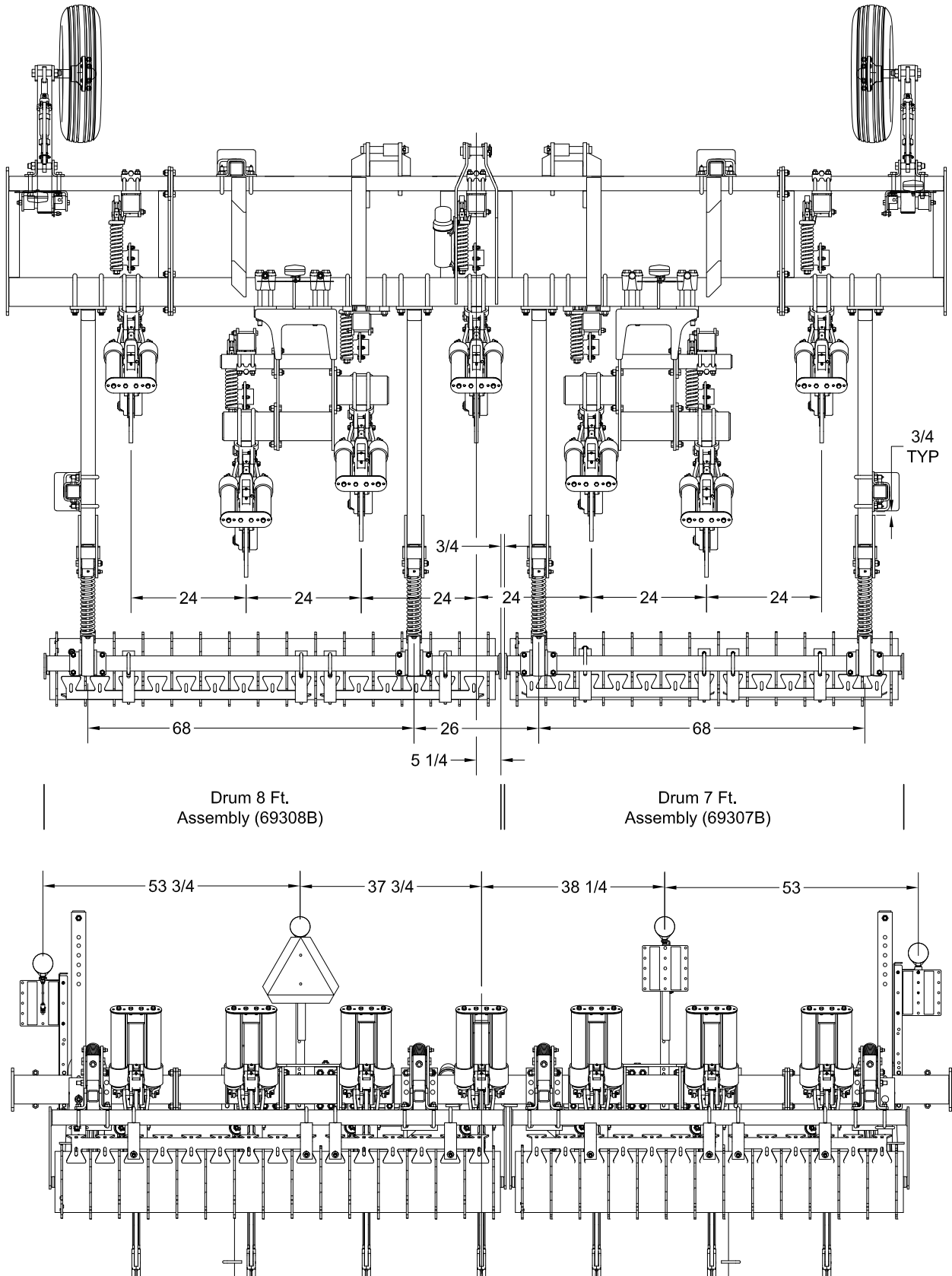
Cleated Drum Roller Attachment Bundle #69631B



RIPPER-ROLLER — Set Up

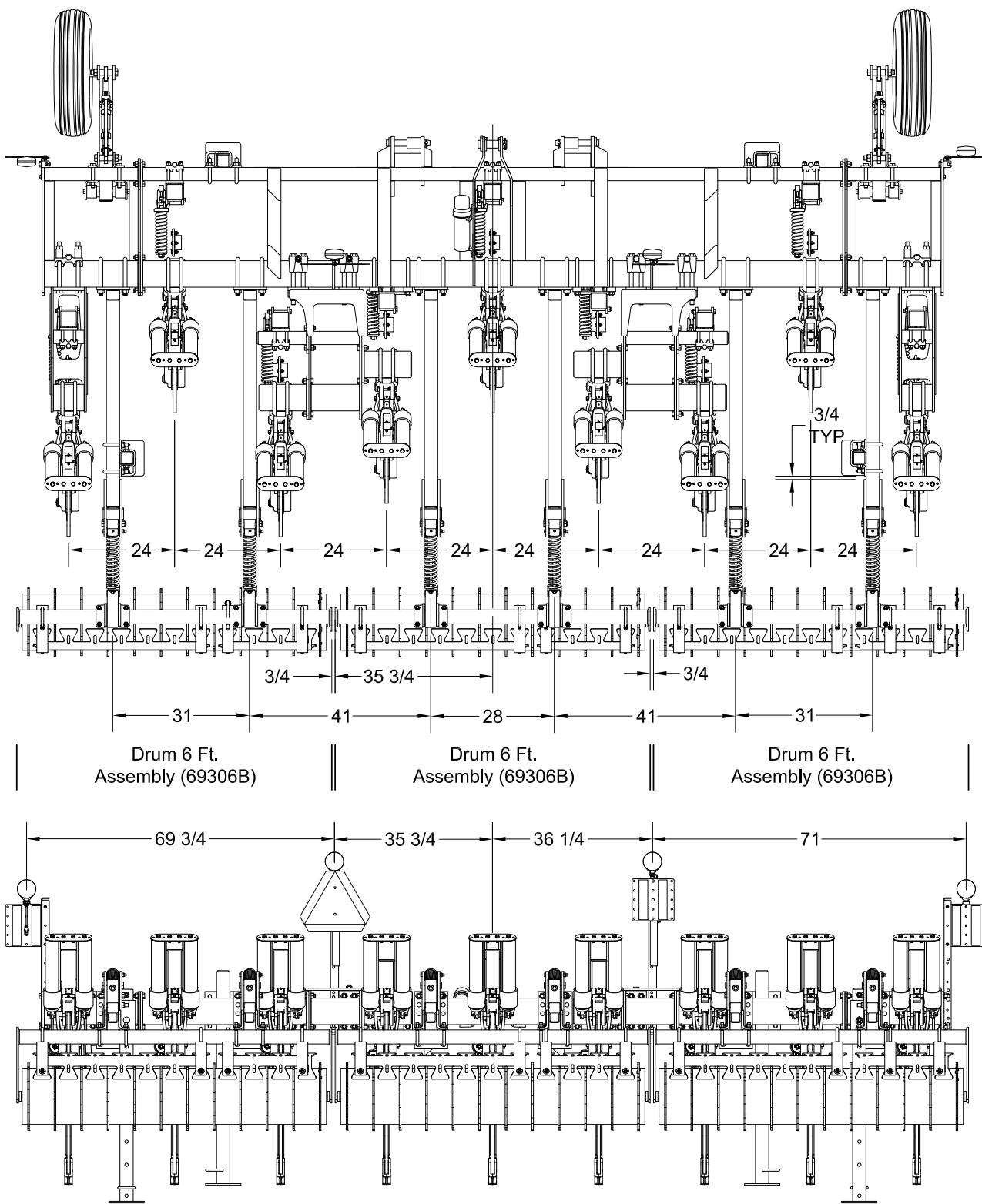
Overhead Layouts — Rigid Units — 7 Shank 24" Spacing

Cleated Drum Roller Attachment Bundle #69632B



Overhead Layouts — Rigid Units — 9 Shank 24" Spacing

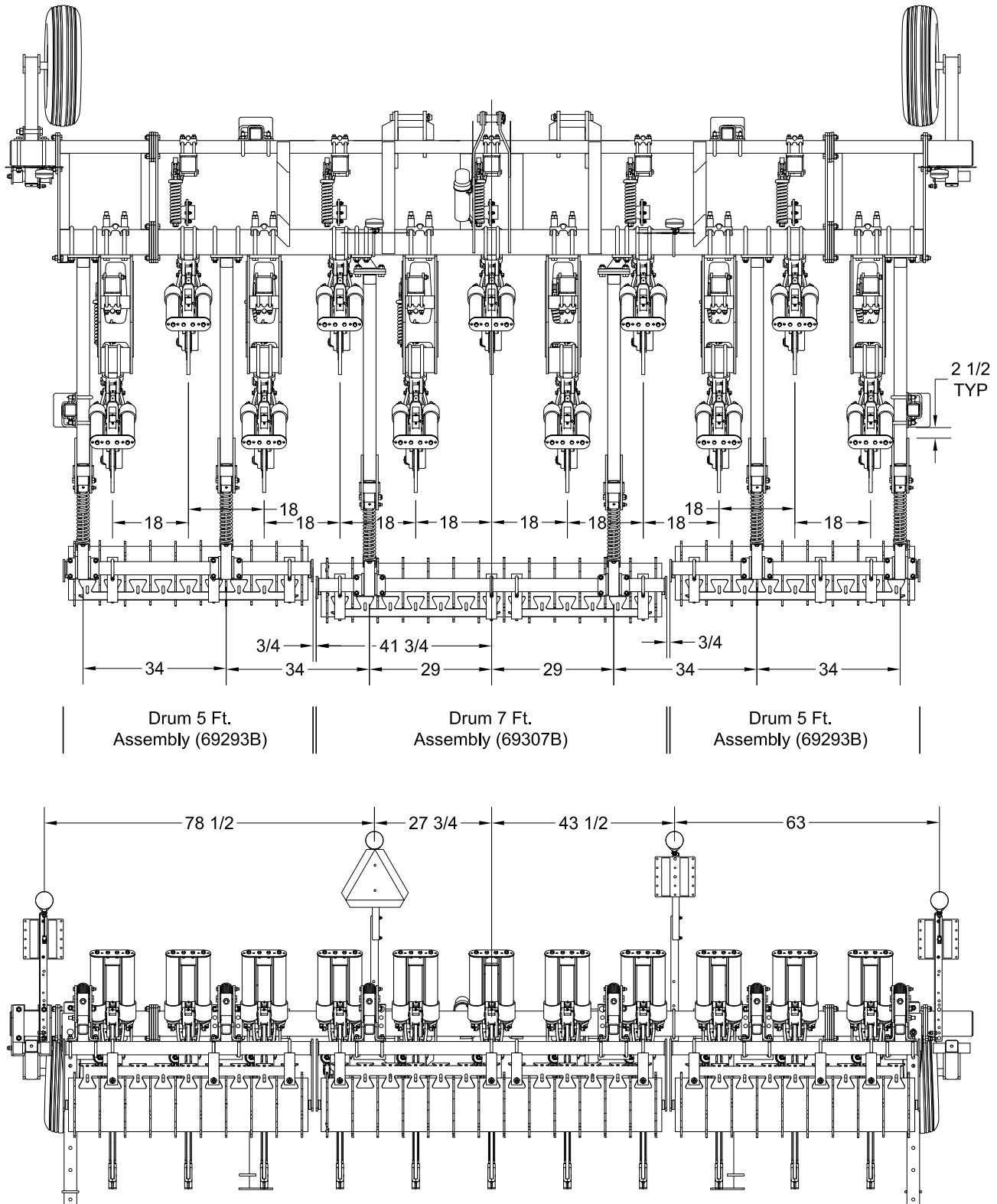
Cleated Drum Roller Attachment Bundle #69620B



RIPPER-ROLLER — Set Up

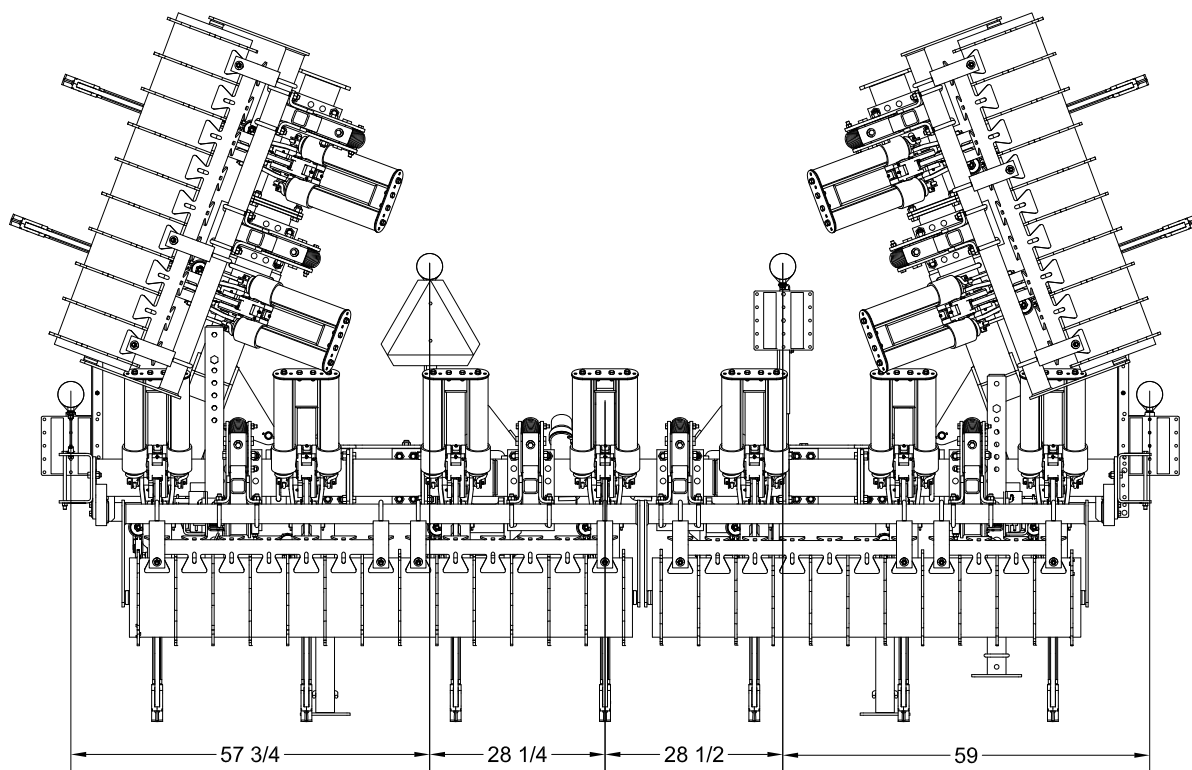
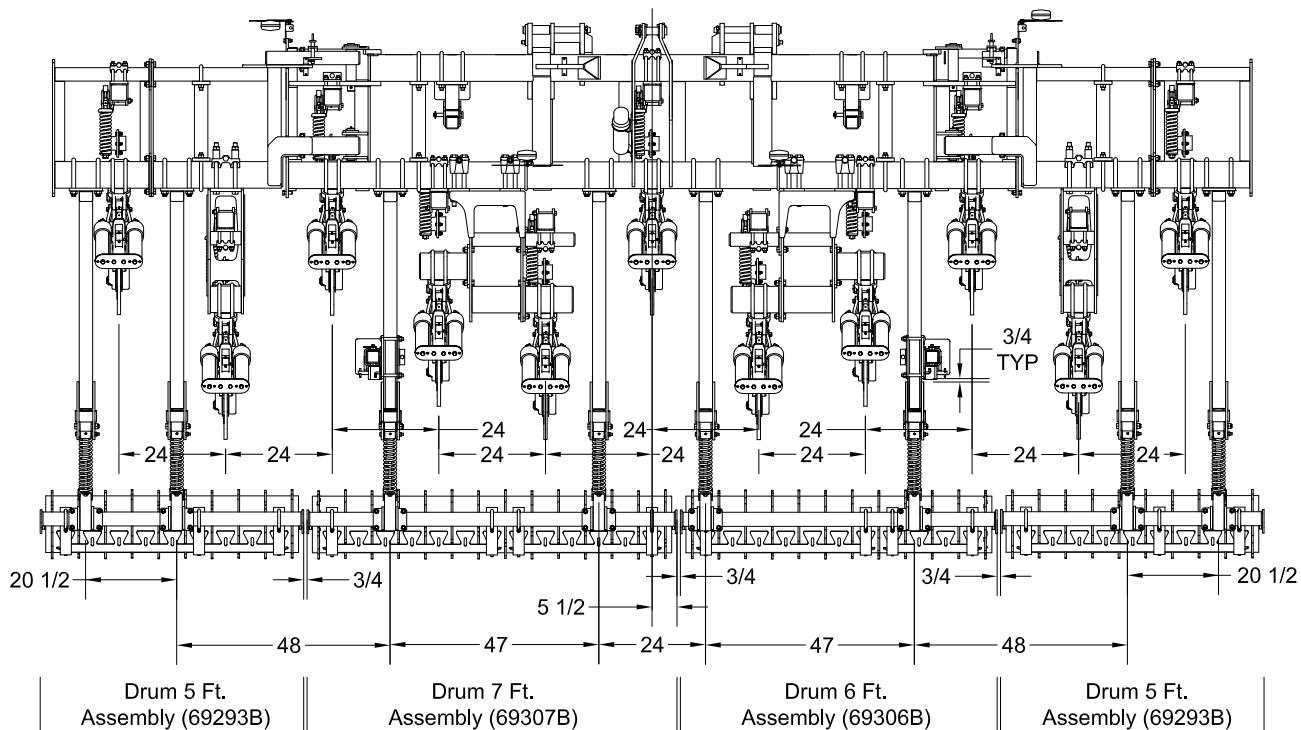
Overhead Layouts — Rigid Units — 11 Shank 18" Spacing

Cleated Drum Roller Attachment Bundle #69635B



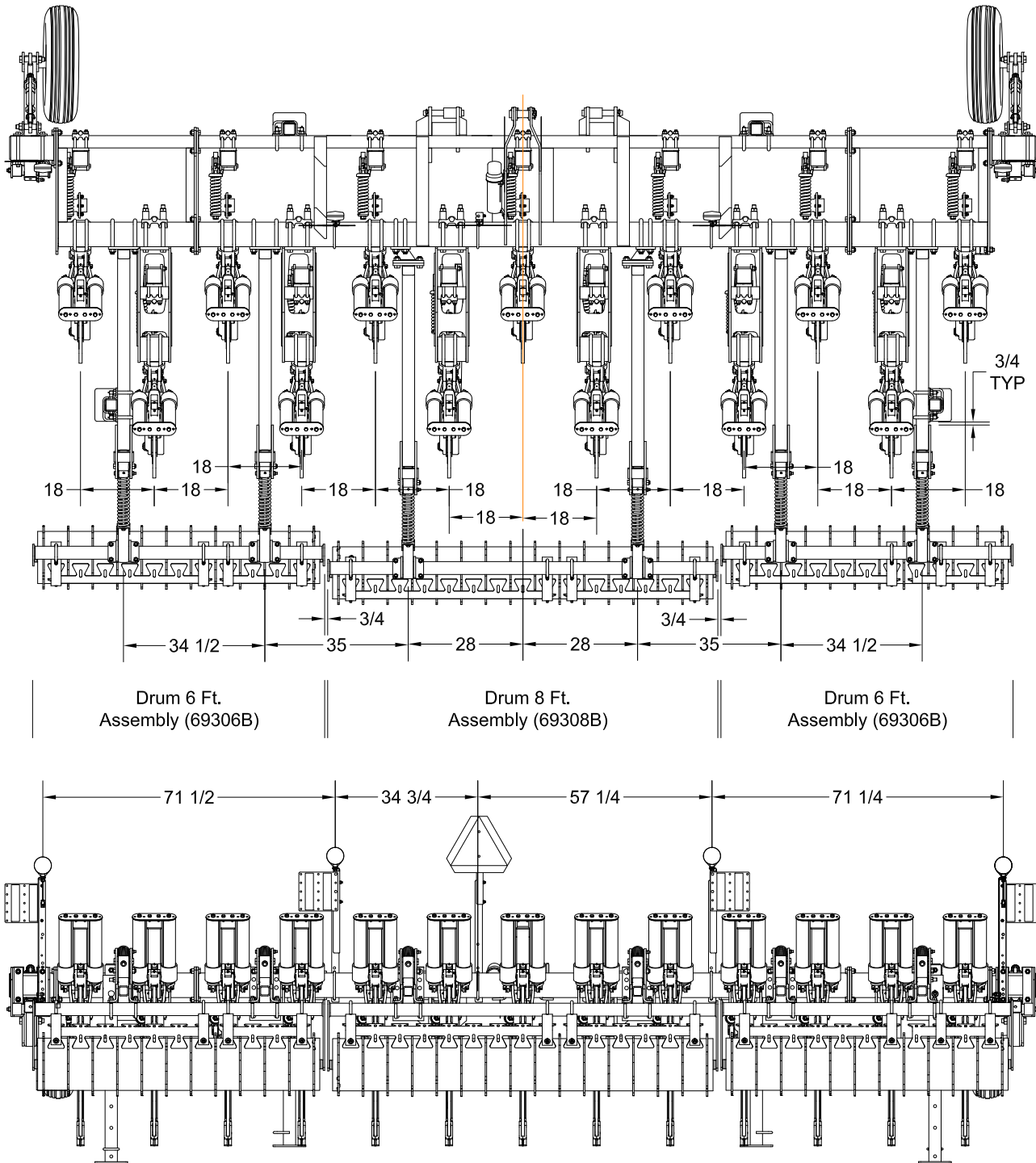
Overhead Layouts — Folding Units — 11 Shank 24" Spacing

Cleated Drum Roller Attachment Bundle #69636B



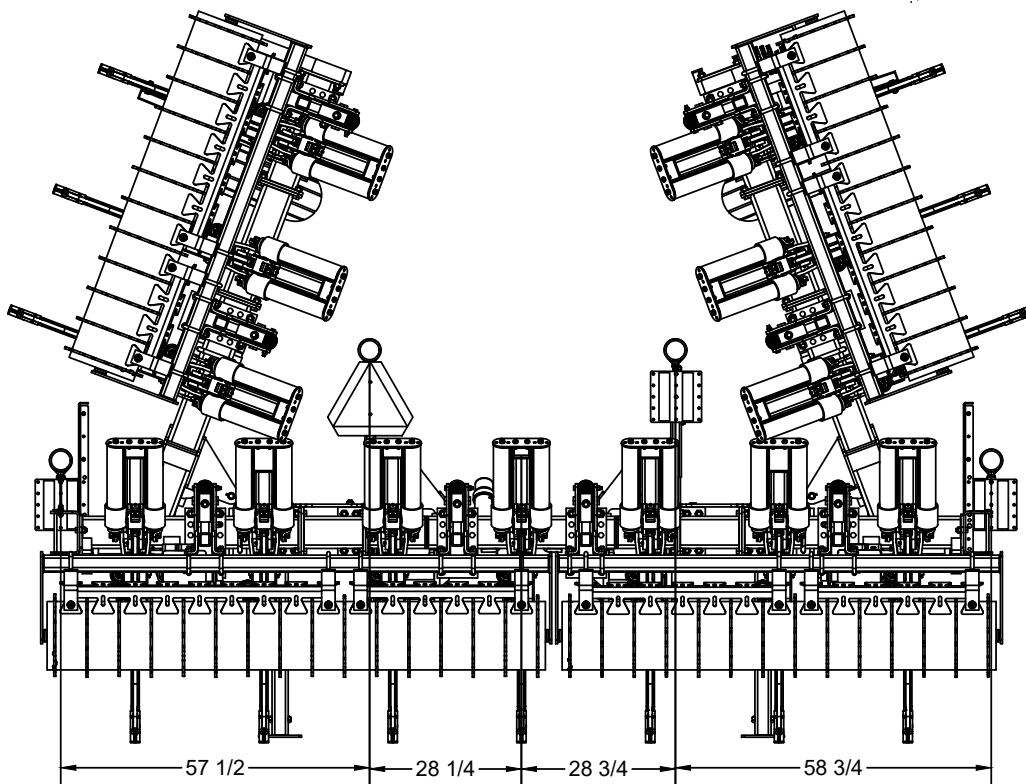
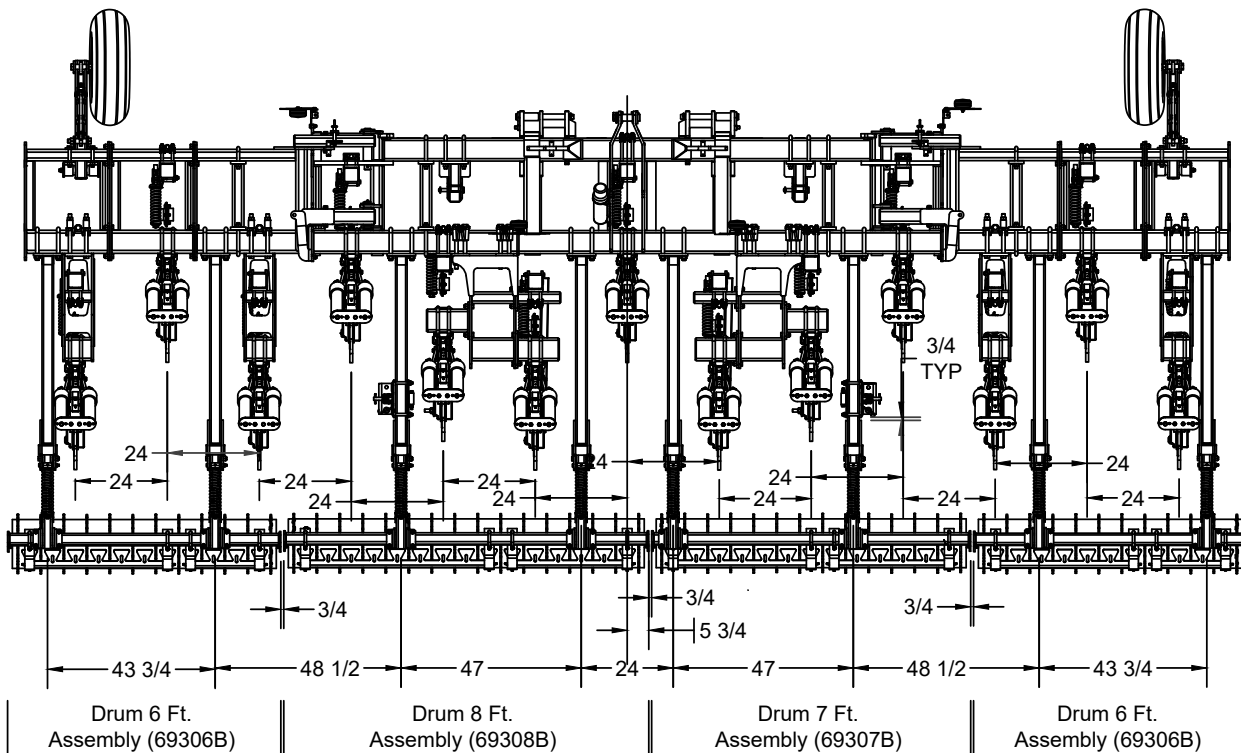
Overhead Layouts — Rigid Units — 13 Shank 18" Spacing

Cleated Drum Roller Attachment Bundle #69637B



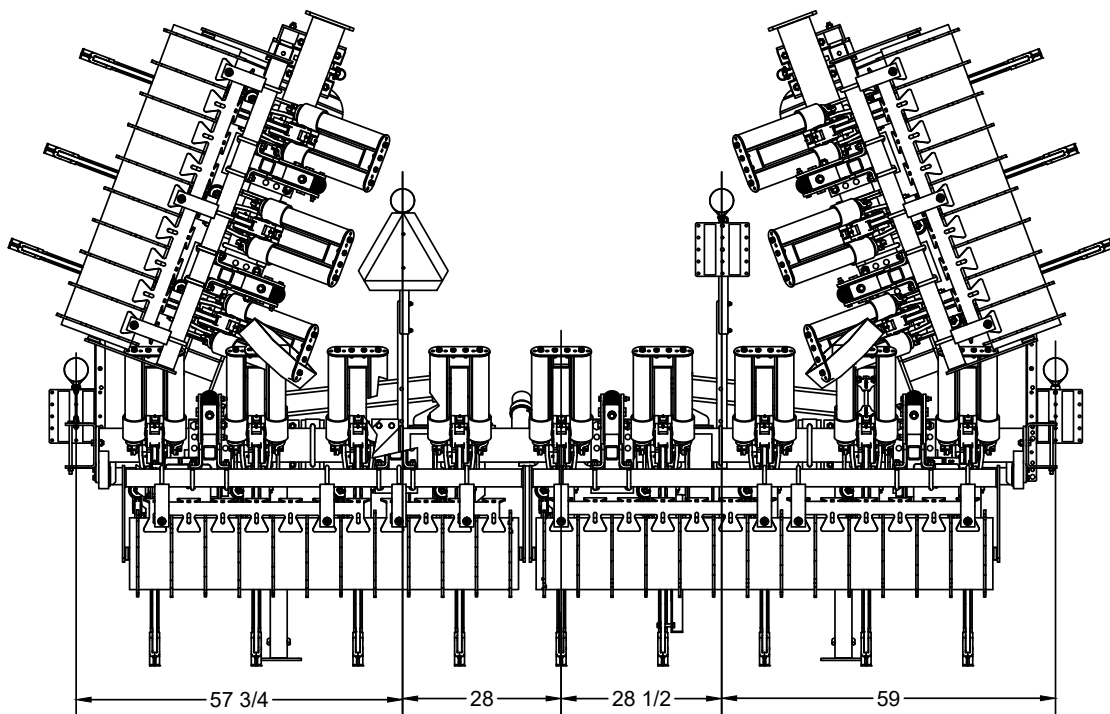
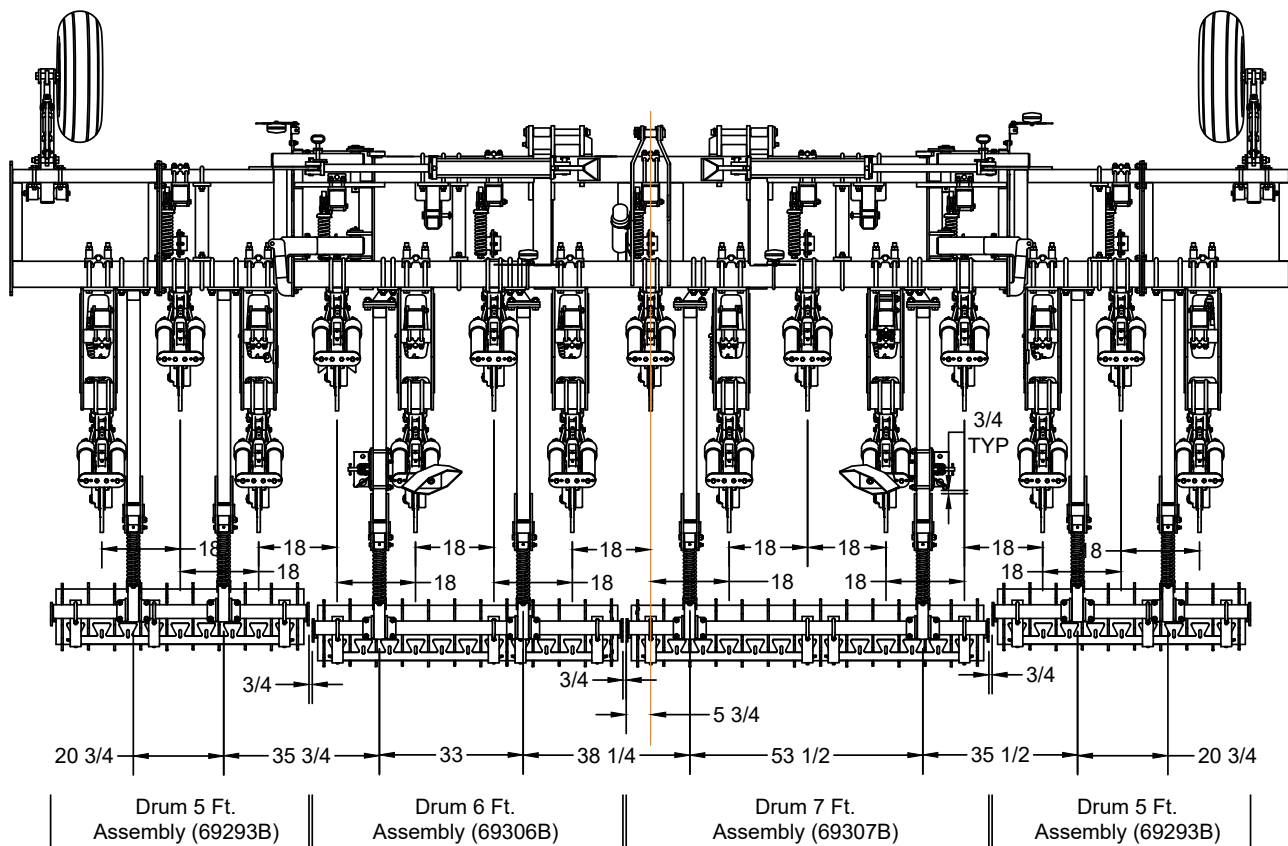
Overhead Layouts — Folding Units — 13 Shank 24" Spacing

Cleated Drum Roller Attachment Bundle #69638B



Overhead Layouts — Folding Units — 15 Shank 18" Spacing

Cleated Drum Roller Attachment Bundle #69639B



Light and Panel Reflector Assembly

NOTE: Unverferth Manufacturing has designed the transport lighting and marking kit to meet all laws and ASABE standards at the time of manufacture. Machine modifications, including additional features or changes to the intended configurations, may require updates to the lighting and marking as well.

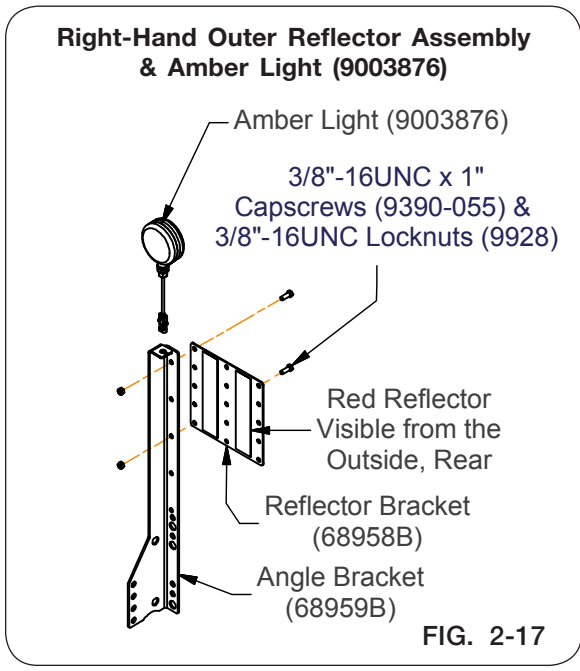
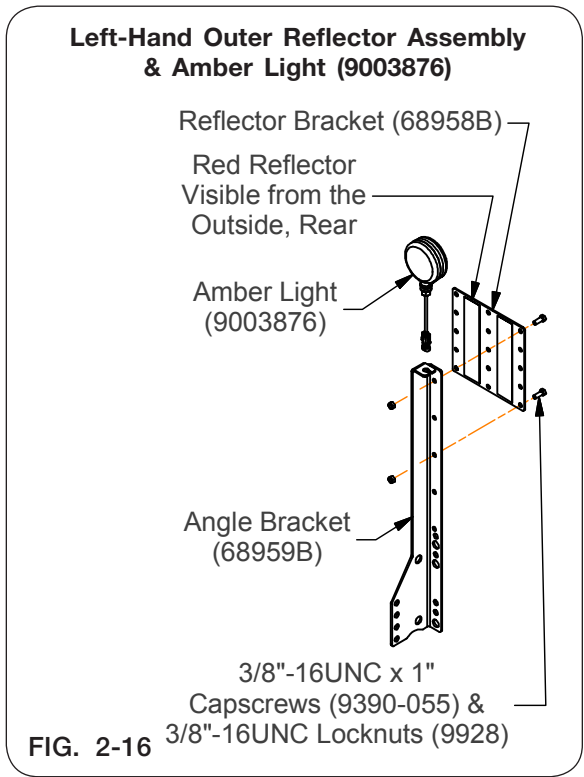
Compliance with all lighting and marking laws is the responsibility of the operator at the time of travel.

See federal regulation 49 CFR 562; available at www.govinfo.gov for US federal law requirements.

See your Unverferth dealer for additional brackets, reflectors, or lights to meet your requirements.

Outer Reflector Assemblies For Rigid Units

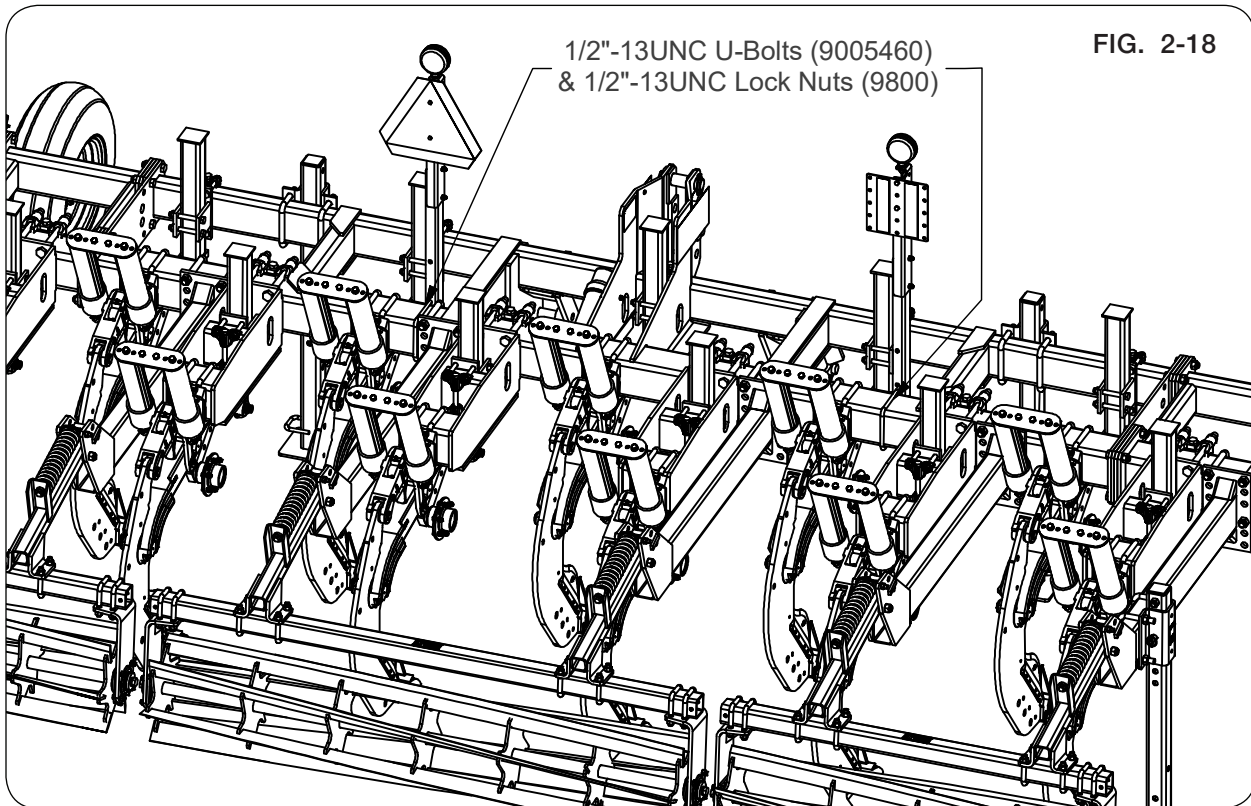
1. Position the reflector brackets (68958B) on the left-hand outer reflector assembly and right-hand outer reflector assembly at the top of the angle bracket with the red reflector farthest from the angle bracket as shown in FIG. 2-16 and FIG. 2-17 with 3/8"-16UNC x 1" capscrews (9390-055) and 3/8"-16UNC lock nuts (9928). Secure the amber lights (9003876) to the top of the reflector assemblies.



Light and Panel Reflector Assembly (continued)

Attaching Outer Reflector Assemblies For Rigid Units

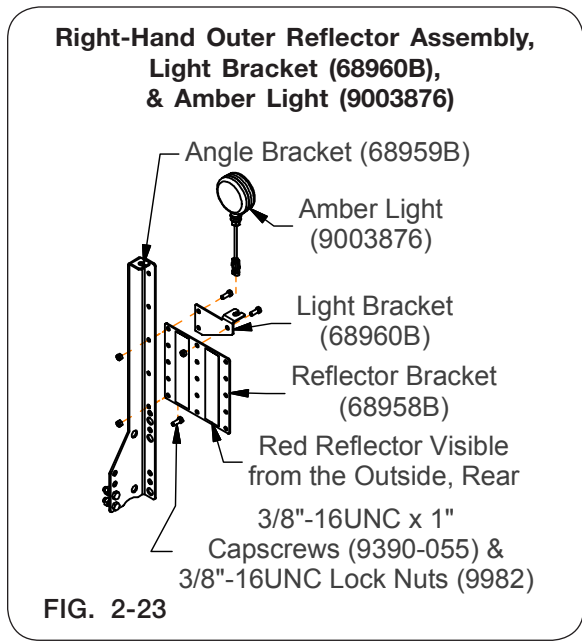
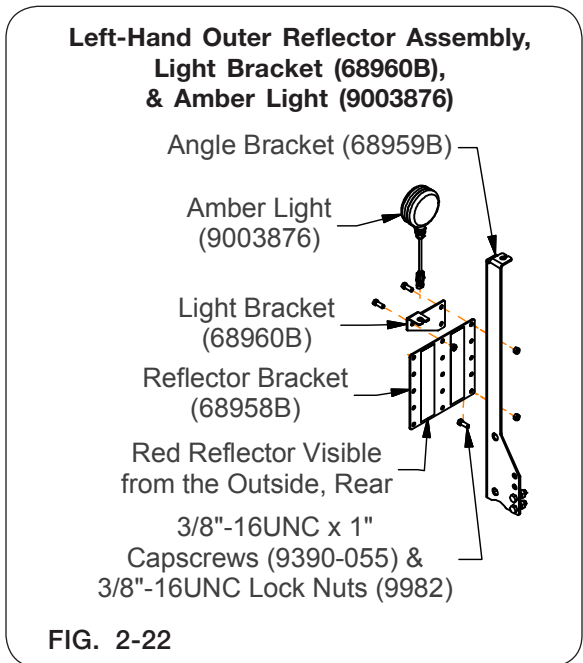
1. Attach the angle bracket (68959B) with the reflector bracket (68958B) to the rear of the main frame with 1/2"-13UNC U-bolt (9005460) and 1/2"-13UNC lock nuts (9800) (FIG. 2-18). Refer to "OVERHEAD LAYOUTS" for proper positioning.



Light and Panel Reflector Assembly (continued)

Outer Reflector Assemblies For Folding Units

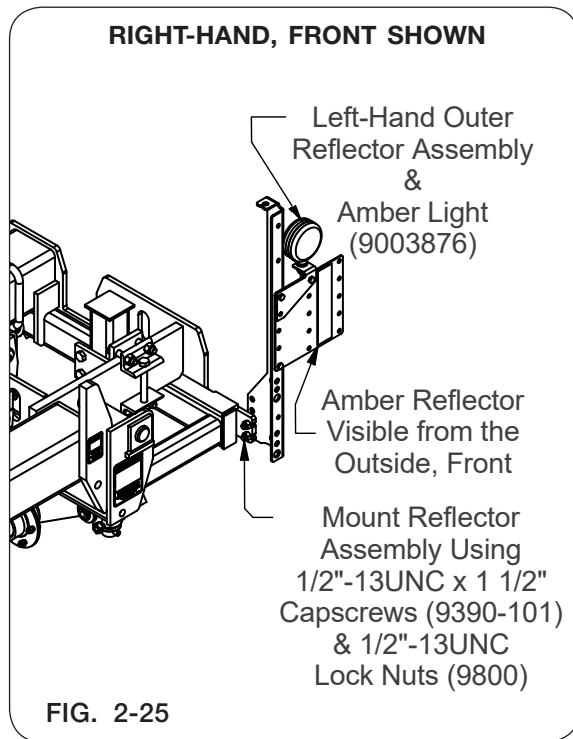
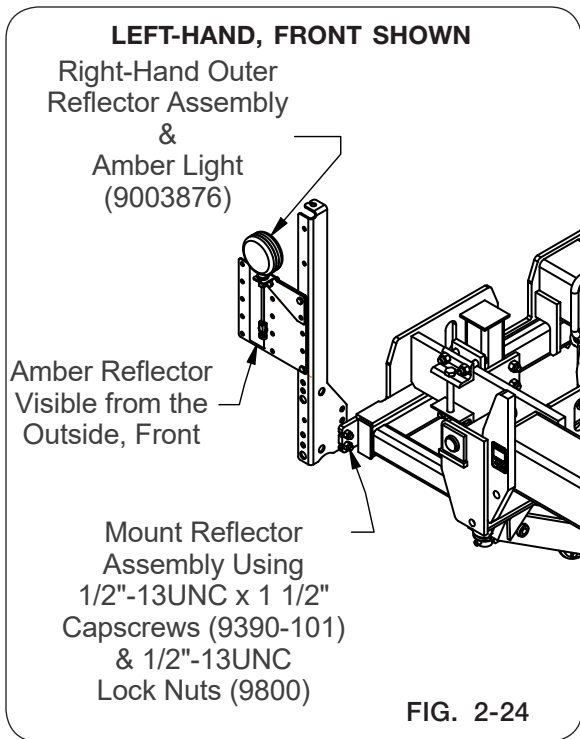
1. Position the reflector brackets (68958B) and assemble the light bracket (68960B) on the left-hand outer reflector assembly and right-hand outer reflector assembly at the middle of the angle bracket with the red reflector farthest from the angle bracket as shown in FIG. 2-22 and FIG. 2-23 with 3/8"-16UNC x 1" capscrews (9390-055) and 3/8"-16UNC lock nuts (9928). Secure the amber lights (9003876) to the light bracket.



Light and Panel Reflector Assembly (continued)

Attaching Outer Reflector Assemblies For Folding Units

1. Use 1/2"-13UNC x 1 1/2" capscrews (9390-101) and 1/2"-13UNC lock nuts (9800) to secure the outer reflector assemblies to the tabs located on the main frame with the red reflectors positioned farthest away from angle bracket. See FIG. 2-24 through FIG. 2-25 for reference and "OVERHEAD LAYOUTS" for proper positioning.



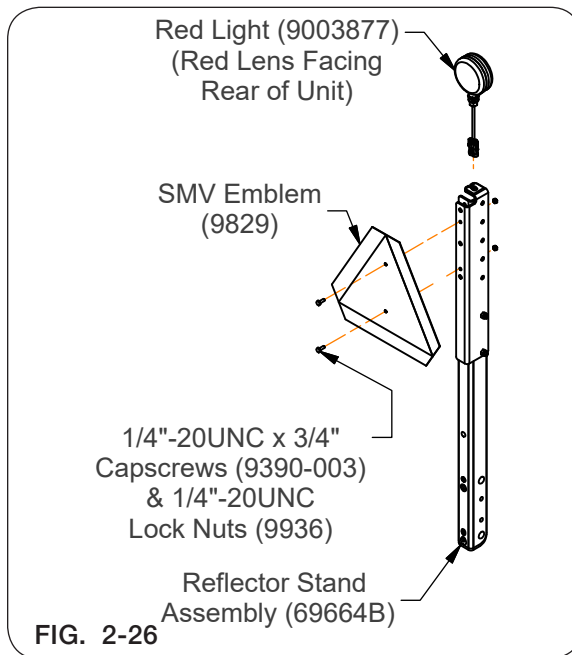
Light and Panel Reflector Assembly (continued)

Center Reflector Assemblies & SMV Emblem

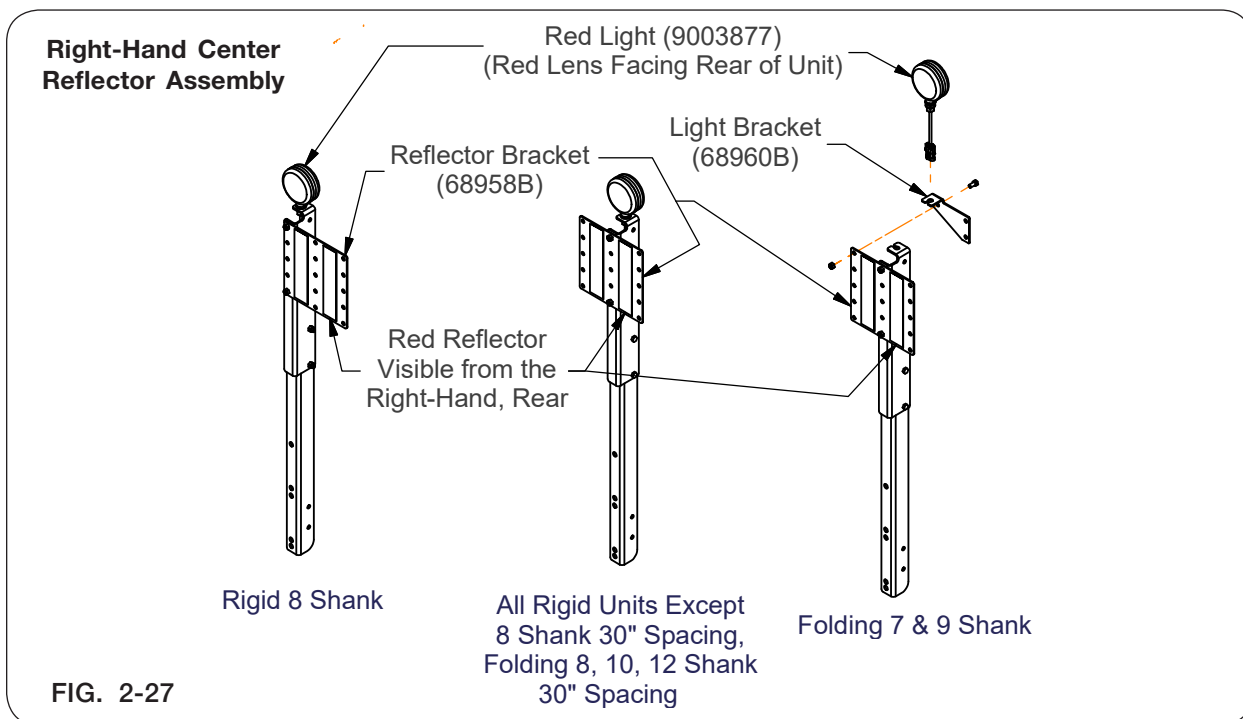
ALL Rigid, 6 & 8 Shank Folding & 12 Shank 30" Spacing Folding Units

1. Secure the SMV Emblem (9829) to the left-hand, center stand assembly (69664B) with 1/4"-20UNC x 3/4" capscrews (9390-003) and 1/4"-20UNC lock nuts (9936) as shown in FIG. 2-26.
2. Attach red light (9003877) to the top of the stand assembly (69664B) with the red lens facing the same direction as the SMV.

NOTE: SMV emblem (9829) and red light (9003877) **MUST** be visible from the rear of the unit.



3. Right-hand center reflector assembly is a reflector bracket (68958B) assembled to the stand assembly (69664B). Light bracket (68960B) may be required to secure the red light (9003877) to the assembly. Assemble reflector bracket and red light as shown in FIG. 2-27.



NOTE: The RED reflector **MUST** be visible from the right-hand, rear side of the unit when installed. Brackets are height adjustable.

Light and Panel Reflector Assembly (continued)

4. Attach the SMV assembly to the left-hand side of the frame with a 1/2"-13UNC U-bolt (9005460) and 1/2"-13UNC lock nuts (9800) (FIG. 2-28). Refer to the OVERHEAD LAYOUTS for proper placement.

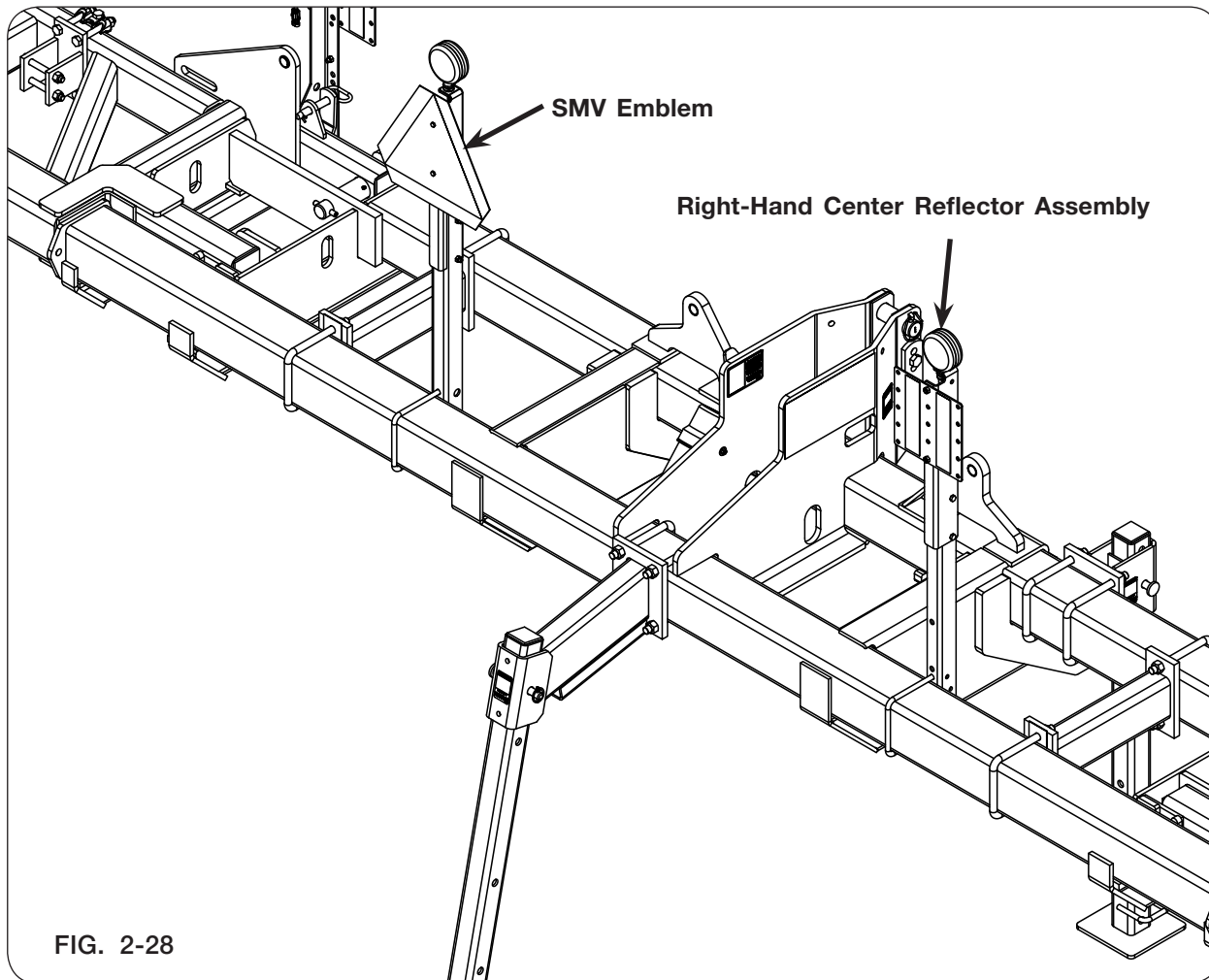


FIG. 2-28

5. Attach the right-hand center reflector assembly to the right-hand side of the frame with a 1/2"-13UNC U-bolt (9005460) and 1/2"-13UNC lock nuts (9800) (FIG. 2-28). Refer to the OVERHEAD LAYOUTS for proper placement.

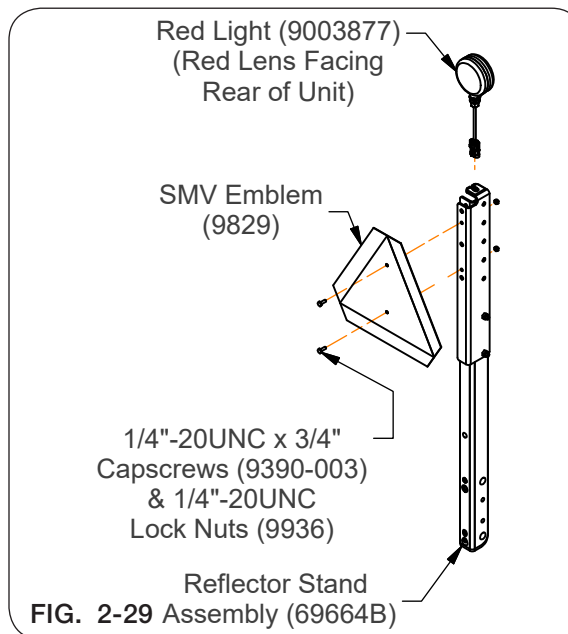
Light and Panel Reflector Assembly (continued)

Center Reflector Assemblies & SMV Emblem

Folding 12 Shank 36/38/40" Spacing, 16 Shank 30" Spacing Units

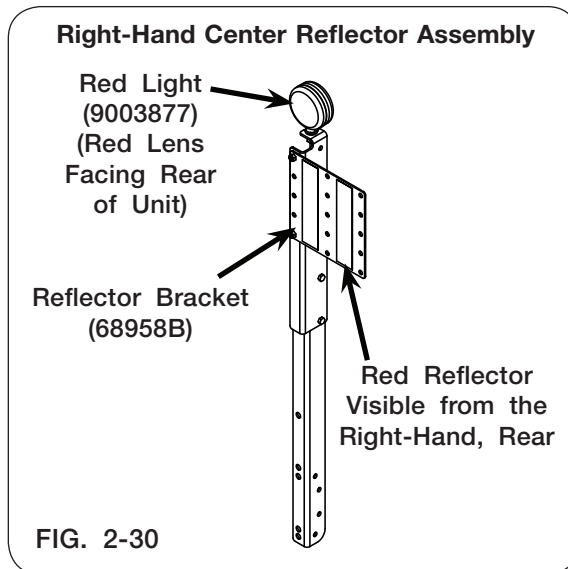
1. Secure the SMV Emblem (9829) to the stand assembly (69664B) with 1/4"-20UNC x 3/4" capscrews (9390-003) and 1/4"-20UNC lock nuts (9936) as shown in FIG. 2-29.
2. Attach red light (9003877) to the top of the stand assembly (69664B) with the red lens facing the same direction as the SMV.

NOTE: SMV emblem (9829) and red light (9003877) **MUST** be visible from the rear of the unit.



3. Right-hand center reflector assembly is a reflector bracket (68958B) assembled to the stand assembly (69664B). Assemble reflector bracket and red light as shown in FIG. 2-30.

NOTE: The RED reflector **MUST** be visible from the right-hand, rear side of the unit when installed. Brackets are height adjustable.



Light and Panel Reflector Assembly (continued)

4. Left-hand center reflector assembly is a reflector bracket (68958B) assembled to the stand assembly (69664B). Assemble reflector bracket and red light as shown in FIG. 2-31.

NOTE: The RED reflector MUST be visible from the right-hand, rear side of the unit when installed.

Left-Hand Center Reflector Assembly

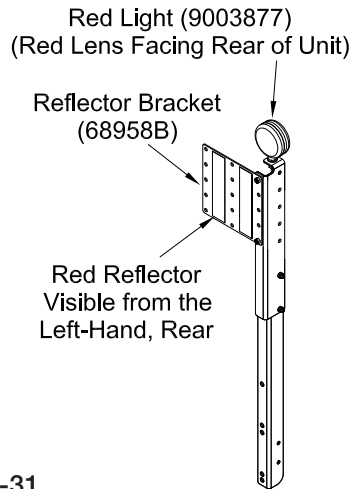


FIG. 2-31

5. Attach the left-hand center reflector assembly to the left-hand side of the frame with a 1/2"-13UNC U-bolt (9005460) and 1/2"-13UNC lock nuts (9800) (FIG. 2-32). Refer to the OVERHEAD LAYOUTS for proper placement.

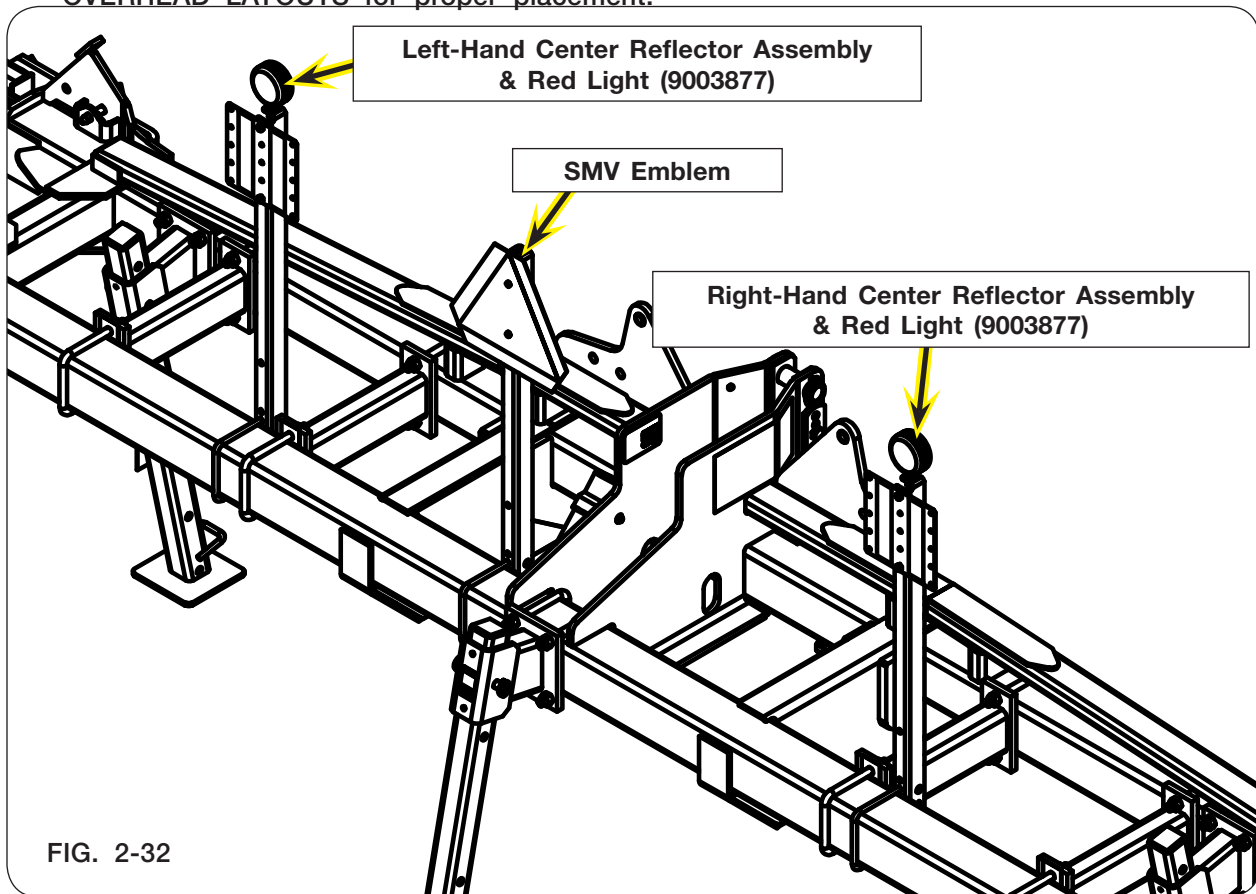


FIG. 2-32

SECTION III

Operation

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General Operation Information

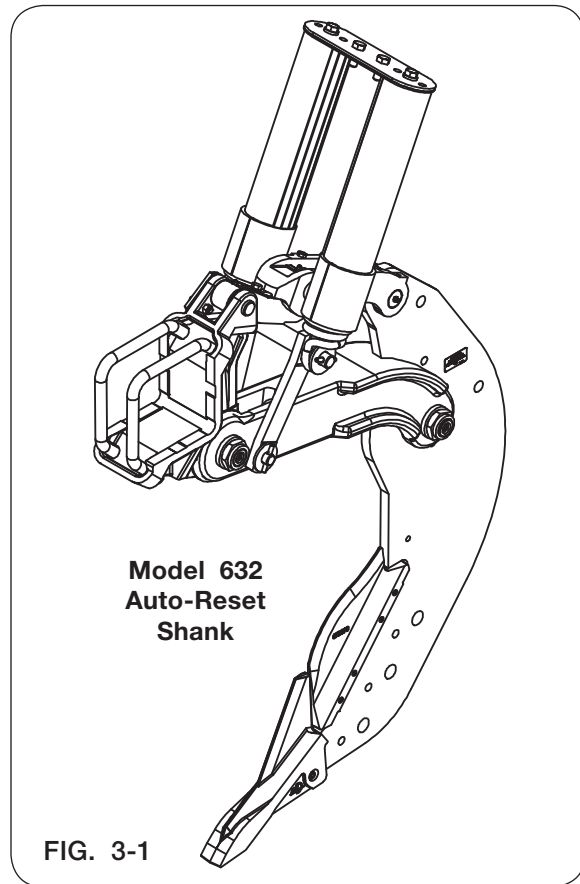
WARNING

- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW “SAFETY” SECTION IN THIS MANUAL IF NECESSARY.**

Read this operation section thoroughly. Acquaint yourself with the adjustments required to obtain efficient and trouble-free operations.

The RIPPER-ROLLER is a heavy-duty deep-tillage tool capable of shattering hardpan up to 18” deep. It can be equipped with a variety of coulters, shanks, and finishing attachments for optimum field performance.

The Model 632 is equipped with the auto-reset shank (Fig. 3-1) and is intended for use with moderate levels of rocks and obstructions.



Preparing Tractor

Before operating implement refer to tractor operator's manual for information concerning safe methods of operation, hydraulics, hitch adjustment, tire inflation, wheel adjustments, and tractor weights.

Check tractor brakes and warning lights. Make sure they are in proper working order.

Check tractor hydraulic oil reservoir and add oil if needed.

WARNING

- **TRANSPORTING THE IMPLEMENT SIGNIFICANTLY CHANGES THE WEIGHT AND BALANCE OF YOUR TRACTOR. MAKE SURE THE TRACTOR IS PROPERLY BALLASTED.**

Front-End Weights

Use front-end weights as needed to provide effective steering control and front-end stability. See your tractor operator's manual for recommendations on ballasting procedures.

WARNING

- **DO NOT EXCEED THE TRACTOR'S LIFT CAPACITY OR BALLAST RECOMMENDATIONS.**

Note: Warranty consideration will only be given on items manufactured by Unverferth Mfg. Co., Inc.

Horsepower Requirements

The power requirement for this unit is 20-40 hp. per shank, depending on the depth of penetration and ground conditions. Select a tractor with sufficient power to operate this machine.

Sway Blocks

Sway blocks should be used and adjusted to limit movement in operating position. Your implement should be permitted to sway very little while operating and should be held rigid while transporting. See your tractor operator's manual.

Wheel Spacing

Set tractor wheels so they are equally spaced from center of tractor. If using the tool to penetrate in fields of row crops, set tractor wheels so they are centered between the rows.

See your tractor operator's manual for correct tire inflation pressure.

Drawbar Position

Place the drawbar in the short, center position to provide maximum clearance between drawbar and tool.

Attaching Implement To Tractor

IMPORTANT

- *Operating a 3-point implement with an articulated four-wheel drive or track tractor requires the operator to drive straight to prevent damage to the implement. Sudden turns or steering corrections when the implement is in the ground can exert extreme forces through the implement's frame and/or shank components. Improper operation can void the implement's warranty.*

Mast And Hitch

The RIPPER-ROLLER should be used on a tractor with the appropriate hitch connection (see table below).

NOTE: N QC refers to Narrow Quick Attach Coupler. QC refers to Quick Attach Coupler.

Hitch Type	Machine Type	
	Rigid	Folding
CAT 3 - 3PT	X	X
CAT 3 - QC	X	X
CAT 3 - N QC	X	X
CAT 4 - N QC		X
CAT 4		X
CAT 4 - QC		X

Bolts And Nuts

Before operating, check all hardware for tightness. Re-check all bolts for tightness after the unit has been operated for several hours. See the Maintenance section for proper torque values.

Pins And Retaining Rings

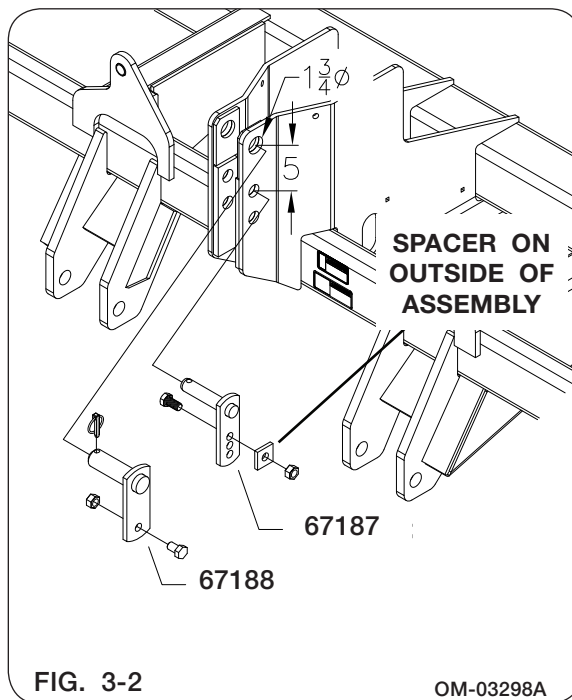
Before operating, check that all pins and retaining rings are in place and in good condition. Replace any worn, damaged, or missing pins, and retaining rings.

Attaching Implement To Tractor (continued)

Pin Assembly (Rigid Frames)

Pin assembly (67187B) is used for replacement only on 1 1/4" diameter holes and contains a spacer which can be placed on the inside or outside depending on style of unit. Pin assembly (67188B) is used for replacement only on 1 3/4" diameter holes.

The spacer should be placed on the outside when used on all folding units with a 1 3/4" top hole on the main frame. Pin assembly (66278B) is to be used in the 1 3/4" top hole (Fig. 3-2).



Attaching Implement To Tractor (continued)

Tractor Without Quick Attach Coupler

WARNING

- **CRUSHING CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT STAND BETWEEN TOWING VEHICLE AND IMPLEMENT WHEN HITCHING. ALWAYS ENGAGE THE PARKING BRAKE AND STOP THE ENGINE BEFORE INSERTING HITCH PINS OR SECURING LATCHES.**

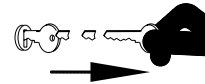
IMPORTANT

- *Before attaching tractor to RIPPER-ROLLER, check mast pins for any wear or damage. Replace any worn or damaged pins.*

Attach the unit to the tractor as specified in the tractor's operator's manual. Use the appropriate size hitch pins and lock in place.

Back the tractor up to the front of the implement and position the draft links in front of, and in line with, the lower hitch pins (Fig. 1-6).

Set parking brake, shut-off the engine and remove key from ignition before dismounting from tractor.

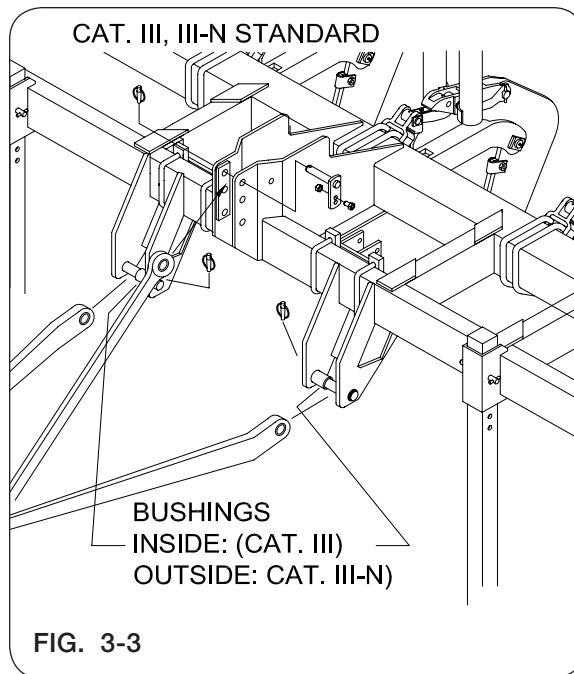


Attaching Implement To Tractor (continued)

CAT-III, CAT-III-N (RIGID FRAMES ONLY):

Connect the draft links to the front of the machine. Install pins and secure with klik-pins.

Position hitch bushings to match the tractor's lower link spacing (Fig. 3-3). Adjust tractor's sway blocks as required. See tractor operator's manual.



Tractor With Quick Attach Coupler (Folding Frames)

WARNING

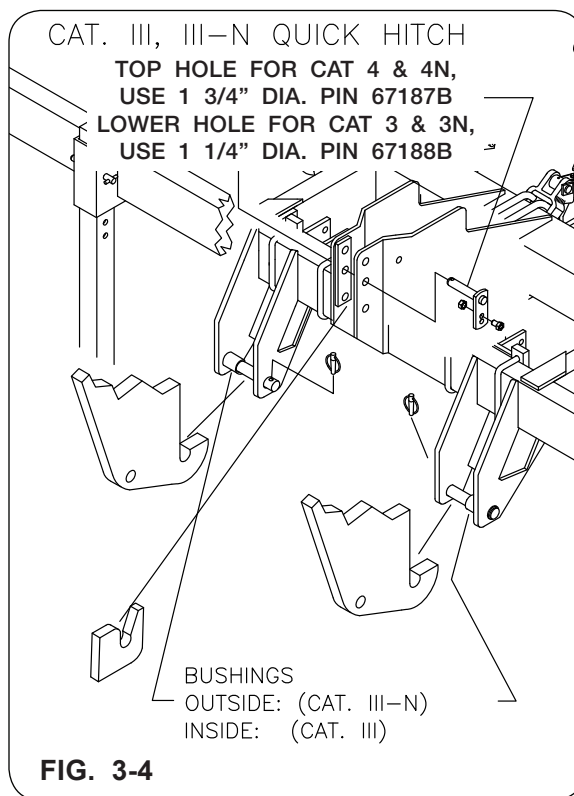
- **CRUSHING CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT STAND BETWEEN TOWING VEHICLE AND IMPLEMENT WHEN HITCHING. ALWAYS ENGAGE THE PARKING BRAKE AND STOP THE ENGINE BEFORE INSERTING HITCH PINS OR SECURING LATCHES.**

Lower the coupler to allow jaws to pass under mast and hitch pins.

Back the tractor to front of the implement until the jaws are under their respective hitch pins.

Set parking brake, shut-off engine and remove key from ignition before dismounting from tractor.

Position the implement's hitch bushing to match the tractor quick attach coupler and raise the coupler to firmly seat jaws. Lock the jaw latches into place (Fig. 3-4).



Transporting

DANGER

- **ELECTROCUTION WILL CAUSE SERIOUS INJURY OR DEATH. THE RIPPER-ROLLER IS NOT INSULATED. KEEP AWAY FROM ALL ELECTRICAL LINES AND DEVICES. ELECTROCUTION CAN OCCUR WITHOUT DIRECT CONTACT.**

WARNING

- **INADVERTENT LOWERING OF WINGS CAN CAUSE SERIOUS INJURY OR DEATH. INSTALL WING TRANSPORT LOCKS BEFORE TRANSPORTING.**
- **USE TRANSPORT LIGHTS AS REQUIRED BY ALL LAWS TO ADEQUATELY WARN OPERATORS OF OTHER VEHICLES.**
- **ALWAYS TRAVEL AT A SPEED WHICH PERMITS COMPLETE CONTROL OF TRACTOR AND IMPLEMENT.**

NOTE: Unverferth Manufacturing has designed the transport lighting and marking kit to meet all laws and ASABE standards at the time of manufacture. Machine modifications, including additional features or changes to the intended configurations, may require updates to the lighting and marking as well.

Compliance with all lighting and marking laws is the responsibility of the operator at the time of travel.

See federal regulation 49 CFR 562; available at www.govinfo.gov for US federal law requirements.

See your Unverferth dealer for additional brackets, reflectors, or lights to meet your requirements.

Do not operate near electrical lines. Know height and width of implement.

For safe transporting of this implement, the transport speed should never exceed 10 m.p.h. in the field or over rough terrain. Reduce transport speed to maintain full control of the implement and tractor at all times. Do not exceed 20 m.p.h. when transporting the implement on the highway.

Comply with all laws governing highway safety and regulation when moving machinery on public roads.

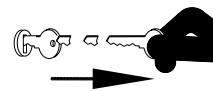
Be sure SMV Emblem, lights and reflectors are in place and clearly visible to approaching traffic.

Unhitching from Tractor

WARNING

- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RAISING OR LOWERING.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**

Set parking brake and remove key from ignition before dismounting from tractor.



Install wing lock pins on winged machines. Depressurize the hydraulic system according to tractor operator's manual.

WITH QUICK ATTACH COUPLER

1. Disconnect hoses (if applicable), release latches, lower 3-point and drive away slowly.

LESS QUICK ATTACH COUPLER

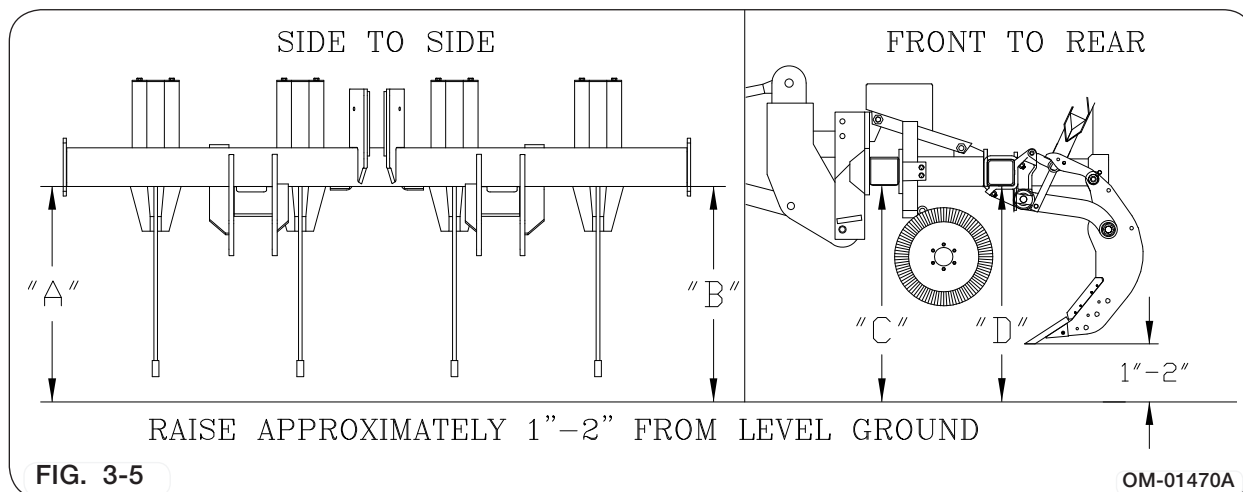
2. Disconnect hoses (if applicable), remove pins, lower 3-point and drive away slowly.

Leveling Frame

For best results, when leveling the implement, position the tractor with implement on a level floor. Check tractor tire pressure and inflate equally from side-to-side. See your tractor operator's manual for correct tire inflation pressure.

Side-to-Side Leveling

With the implement attached to tractor, raise the unit 1 to 2 inches off the floor. Shut-off engine and lock brakes on tractor. Measure to the bottom edge of the rear frame tube on each side of the machine. Frame will be level when dimension "A" is the same as dimension "B" (Fig. 3-5). Level frame from side to side by adjusting the lift links on tractor 3-point hitch.



Before adjusting 3-point links see your tractor operator's manual for correct adjustment procedures and safety requirements.

Front-to-Rear Leveling

Before setting the coulter and stabilizer wheels it is necessary to level the frame from the front to the rear.

For initial adjustment keep the machine raised off the ground 1 to 2 inches (being sure bottom of shanks clear floor). Measure to the bottom of the front frame tube and the rear frame tube.

If frame is not level from front to rear with ground line, extend or retract the tractor top link until frame is parallel (or level) to the ground line. Frame will be level when dimension "C" is the same as dimension "D".

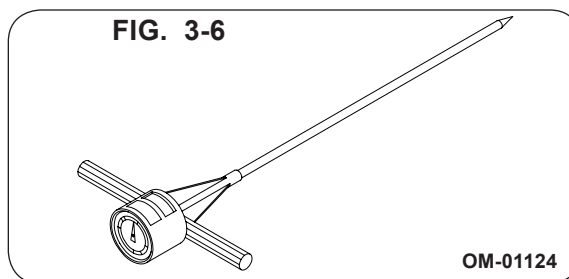
Further front to back adjustment will be required once machine is operated in the field. When properly leveled, all shanks will enter the ground to a uniform depth.

Preparing the Implement

Depth of Penetration

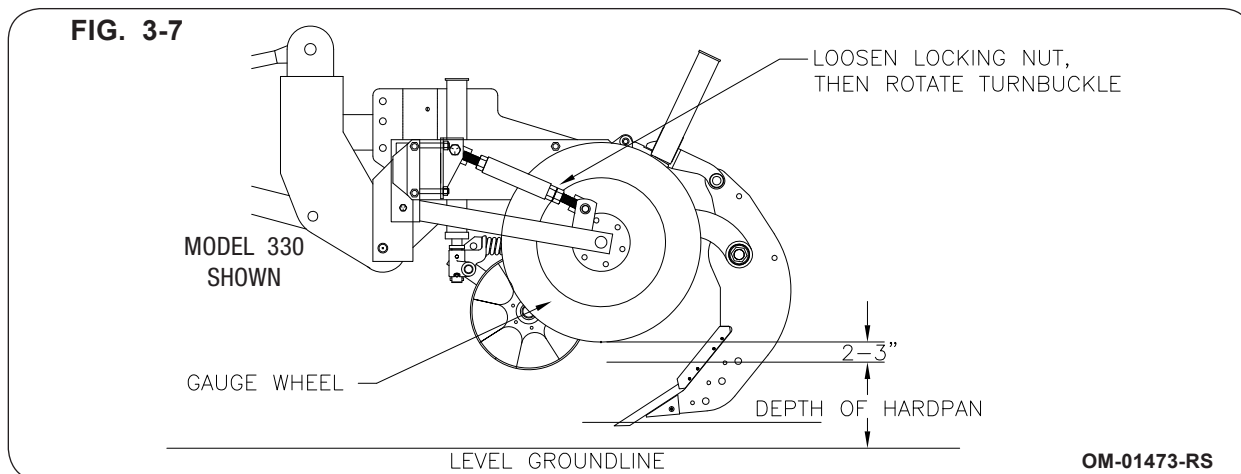
Before adjusting the depth of your coulters and shank, first test your soil for the depth of the hardpan. For optimum performance from your implement, the penetration of the shank should be 2-3 inches below the hardpan. The hardpan is the area in your soil which acts as a barrier preventing the roots of your crops from benefiting from the water and nutrients below this area.

To determine the precise location of the hardpan, a “penetrometer” should be used (Fig. 3-6). For more information on this device, refer to your local Unverferth dealer or contact us, at Unverferth Mfg. Co., Inc.



An alternate method of locating the hardpan is to dig a hole to a depth of 24” or greater. Using a knife, slice the side wall of the hole vertically downward. You will be able to feel an increase in resistance upon entering the hardpan from the top. Repeat the knife slice from the bottom of the hole upward to determine the bottom of the hardpan.

Once the depth of the hardpan is determined, adjust the stabilizer wheels so that the shank will penetrate at least 2-3 inches below this barrier. To adjust the stabilizer wheel, loosen the locking nut and rotate turnbuckle to the proper position (Fig. 3-7). To ensure proper depth, rest shank tips on a level surface.



Raise stabilizer wheel so that it is approximately 2-3 inches more than the determined depth of the hardpan, and retighten locking nut.

IMPORTANT

- It is recommended that the stabilizer wheels are 1/2” to 1” off the ground during operation. This transfers more draft and weight onto the tractor rear tires for maximum traction.

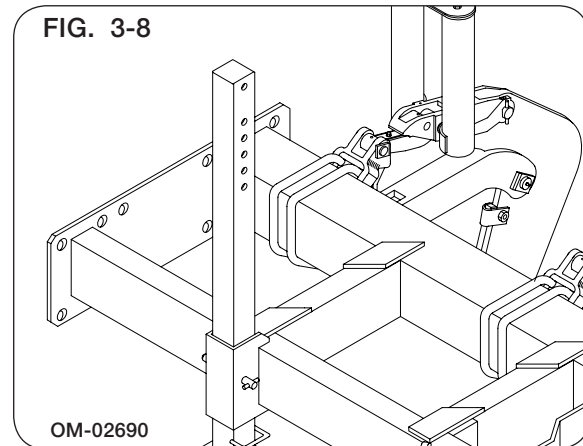
Support Stand

WARNING

- **RISING OR FALLING TONGUE CAN CAUSE SERIOUS INJURY OR DEATH. USE JACK TO SUPPORT THE IMPLEMENT BEFORE REMOVING THE HITCH PIN.**



Before field operation can begin, support stands must be raised and locked into position. Raise unit into transport position and raise support stand by removing pin, raising the support stand and reinstalling the pin into the bottom hole (Fig. 3-8).



Shanks

Your shanks can be adjusted horizontally for proper alignment.

Horizontal Adjustment (All Models)

CAUTION

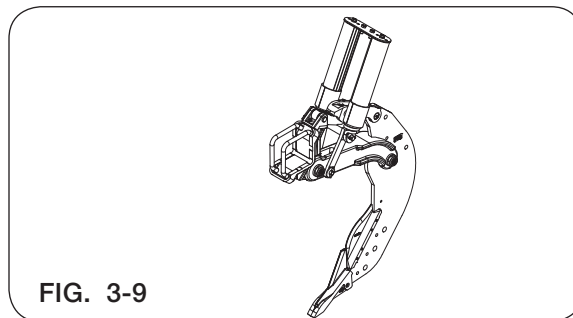
- ENSURE SHANKS HAVE BEEN GREASED PRIOR TO INITIAL USE.

When positioning shanks from side-to-side, loosen hardware so that shank can be moved. When repositioned, be sure to securely tighten hardware.

NOTE: For proper positioning, refer to layouts in SETUP section.

NOTE: Be sure to align coulters and shank. Failure to do so, may result in plugging and excessive surface ground disturbance.

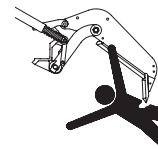
NOTE: For Model 632 torque 3/4" shank mounting V-bolts to 240 ft. lbs. Do not over or under tighten.



Re-Setting a Tripped Shank

DANGER

- SUDDEN MOVEMENT OF A TRIPPED SHANK WILL CAUSE SERIOUS INJURY OR DEATH. STAY AWAY FROM A TRIPPED SHANK.



If an auto-reset (Model 632) shank does not reset after striking a rock or buried obstruction, avoid contact with shank components, proceed to step 1 below. The shank springs store a tremendous amount of energy; keep all persons away from a tripped shank.

Follow this procedure to reset a tripped shank:

1. Lower the unit into the ground and drive forward until the point of the tripped shank contacts the soil surface.
2. Torque front and rear pivot bolts to 350 ft-lbs. Loosen 1/2 turn. Keep all persons away from the shank, drive forward and raise the machine. The shank should automatically reset.
3. If the shank does not reset, re-insert the machine into the ground, as in Step 1. Loosen the pivot bolts another 1/4 turn. Clear all bystanders, drive forward and raise the machine. The shank should automatically reset. If it does not, repeat this procedure until it does.
4. After shank has reset, inspect trip mechanism and pull arm for wear or damage that would cause the malfunction. Replace components as needed. Re-torque pivot bolts to 350 ft-lbs. then loosen front pivot bolt 1/4 turn. Check shank for side play and retighten as required to minimize lateral movement.

Shanks (continued)

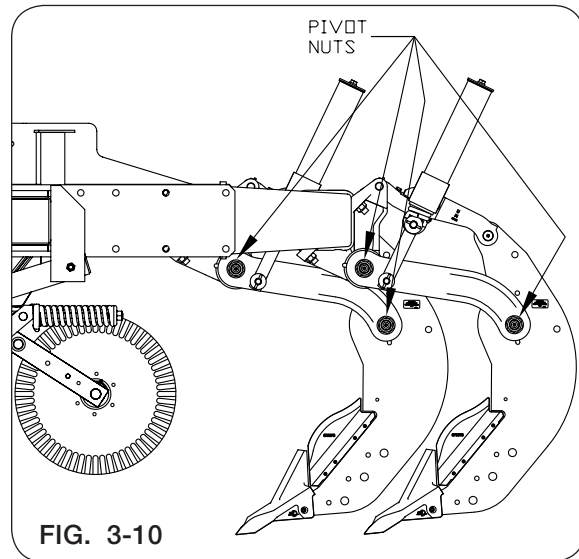
Lower Pull Arm

(AFTER INITIAL BREAK-IN PERIOD)

After an initial break-in period (approximately 20 acres per shank) it may be necessary to retighten the pivot nuts (Fig. 3-10) to eliminate side to side movement of shank.

Proceed as follows:

1. With machine sitting firmly on the ground, tighten both (front & back) pivot nuts to 350 ft. lbs.
2. Loosen front pivot nut 1/4 turn.
3. Check for side play in shank (by prying on back of shank laterally to check for side to side movement). When properly adjusted, shank should have little side to side movement.



Coulters

Combo® Coulters

Your heavy-duty Combo coulters are designed to cut residue and to start an initial cut for the shank. The Combo coulters can be adjusted vertically for depth.

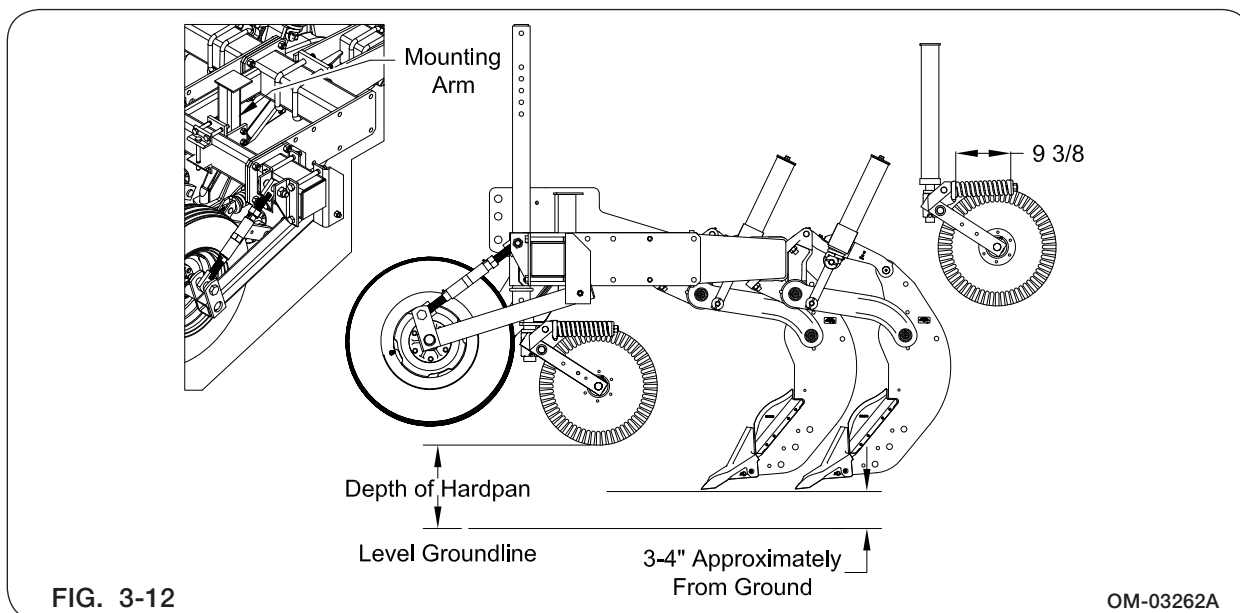
Vertical Position

To adjust the vertical positioning refer to the following steps:

⚠ WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**

1. Position implement on a level surface with the shank tips resting approximately 3-4 inches from the ground.
2. Loosen hardware on mounting arm so that Combo coulters can be easily positioned.
3. Position Combo coulters so that the bottom of the blade is the same distance from the ground as the depth of the hardpan (Fig. 3-12). This will allow the combo coulters to run at a depth of 5" to 7".



4. After positioning, retighten hardware and be sure depths of all Combo coulters are the same.

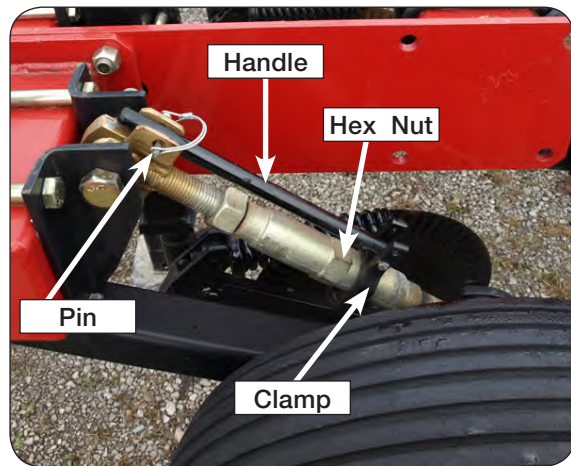
NOTE: Recommended Combo coulters depth is between 3-6". If rocks are present in fields, shallower depths should be used.

The coulters springs are preset at the factory at 9 3/8". This measurement is the total amount of exposed spring.

NOTE: Adjusting the spring below 9 3/8" could cause premature part failure and void any warranty considerations.

Stabilizer Wheel Adjustment

1. Remove the pin holding the adjustment handle in place.
2. Lift the handle and install the pin into the other hole of the wrench body to lock the handle in place to use as a wrench. Slide the wrench body over the hex nut.
3. Turn the handle like a wrench to adjust the nut. Adjust so that the wheel has slight contact with the ground to stabilize the unit in varying soil conditions. The Ripper Roller weight should be carried on the tractor 3-point for maximum traction. Measure turnbuckle length and set all gauge wheels to the same dimension.
4. Slide the clamp back down off of the hex nut and replace the handle and pin.



Optional Attachments

Roller Attachments

Height Adjustment & Working Depth

To adjust the height, lower the RIPPER-ROLLER to the ground, remove the following which attaches to the rectangular tube to the arm.

- A. 7/8"-9UNC x 2 1/4" capscrews (9390-165) and 7/8"-9UNC lock nuts (98420)
- B. 7/8"-9UNC U-bolts (97582) and 7/8"-9UNC lock nuts (98420)

Reassemble at the desired height.

Position "Y" in Fig. 3-13 is the standard assembly position. Additional adjustment is provided (Position "X" & "Z") to allow the roller working height to be raised in the field. These positions allow more working depth, yet still maintaining the normal working action from the rolling finisher.

Typically, the Rolling Finisher should run in 3"-4" of worked soil behind the shanks. Use the alternate mounting positions to adjust finisher height to best match shank working depth.

Mounting arm assembly (86450B) recommended position for working depth.

Arm Mounting Position	Working Depth Range	
	Less Tube Spacer (68511B)	With Tube Spacer (68511B)
X	12-14"	8-10"
Y	14-16"	10-12"
Z	16-18"	12-14"

BLADED REEL ROLLER ATTACHMENTS
 7 Shank-Bundle 66000B; 9 Shank-Bundle 66002B;
 11 Shank-Bundle 66004B; 13 Shank-Bundle 66006B;
 15 Shank-Folding 66965B

CLEATED DRUM ROLLER ATTACHMENTS
 7 Shank-Bundle 69631B; 9 Shank-Bundle 69633B;
 11 Shank-Bundle 69635B; 13 Shank-Bundle 69637B;
 15 Shank-Folding 69639B

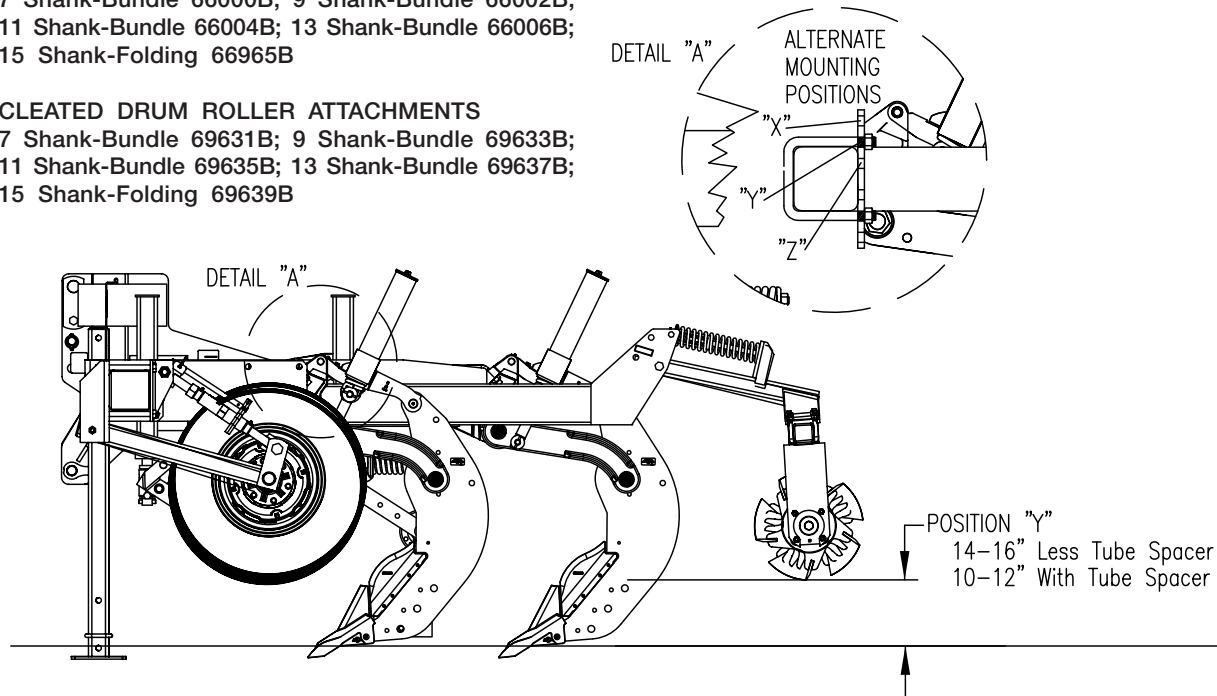


FIG. 3-13

Bladed Reel/Helical Roller Shown

Optional Attachments (continued)

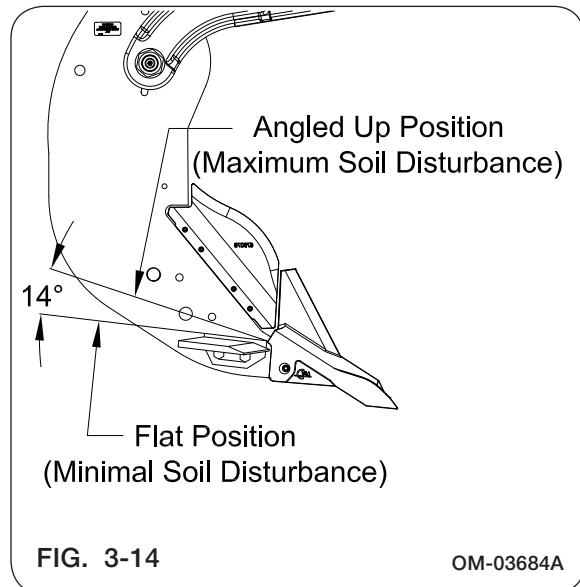
Shatter Wings (67691B or 67692B)

This option can be set to operate in either of the 2 locations provided.

For Minimum Disturbance Of Top Soil
Position shatter wings in the lower location with wings set in the flat position.

For Maximum Disturbance Of Top Soil
Position shatter wings in the upper location with wings set in maximum up position.

For Increased Soil Disturbance
Adjust the angle of the wings by loosening the 1/2-13 x 2 1/4" Lg. capscrews and pivoting wings to desired angle. Retighten capscrews to torque chart in MAINTENANCE section.



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Daily Service

Beginning of Day

NOTE: Before initial use, ensure all lubrication points have been greased.

Check all U-bolts and bolts for tightness. This is especially important during the first days of operation. See “Torque Chart” in this section.

IMPORTANT

- *Inspect mast pins for any wear or damage. Replace any worn or damaged pins.*

Perform any daily lubrication outlined in “Lubrication” in this section.

Check stabilizer tire air pressure and inflate to correct pressure, if necessary.

IMPORTANT

- *To assure level penetration of shanks, both tires must be inflated to the same pressure.*

TIRE	INFLATION
7.60 x 15 - 8 Ply	max. 52 PSI
9.5L15 - 8 Ply	max. 44 PSI

Tighten deep till pivot bolts after the initial 50 acres to remove side play (Point A Fig 4-1).

Tighten until side-to-side play in shank is eliminated. Do not over-tighten. Over-tightening will prevent shank from freely resetting after tripping.

Before adjusting see OPERATION section for procedures.

NOTE: Re-check torque of pivot nuts on shank assembly daily during the first week of operation due to initial wear in casting. After first week, check annually.

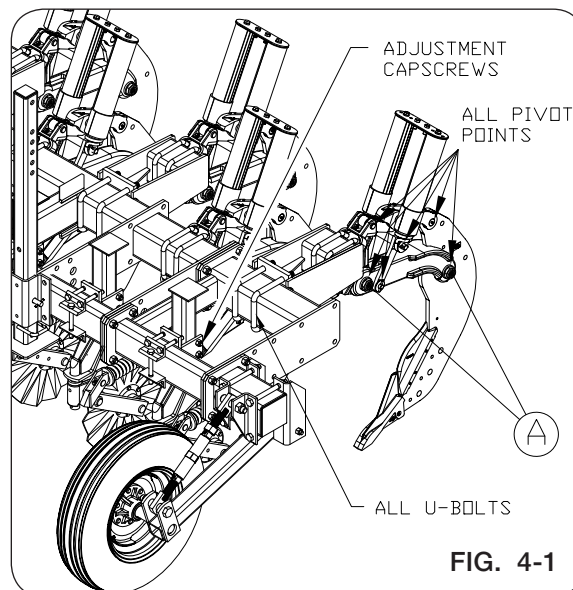


FIG. 4-1

End of Day

Clean off dirt and residue which may have accumulated on implement during operation.

Check implement for damage which could have occurred during operation, and repair.

Annual Service

Beginning of Season



- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW "SAFETY" SECTION IN THIS MANUAL IF NECESSARY.**

Check all bolts, U-bolts, and wheel bolts for tightness. Refer to “Torque Chart” in this section.

Lubricate implement (see “Lubrication” in this section).

Check air pressure in tires and inflate to correct pressure if necessary (see “Daily Service” in this section).

End of Season

Your implement is an important investment. Spend a little time to protect it from destructive rust and corrosion. You will be repaid in longer service life and better performance.

Perform the following before placing the implement in storage:

1. Remove dirt and residue which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate implement (see “Lubrication” in this section).
4. Coat all earth moving surfaces with grease or suitable rust preventatives.
5. Inspect for damaged parts. Replace before next season.
6. Store implement inside, away from livestock.
7. Use blocking to keep implement tires and points up off bare ground.
8. Replace all worn, torn or faded decals and reflectors.

Complete Torque Chart - Capscrews - Grade 5

NOTE: Grade 5 capscrews can be identified by three radial dashes on head.

NOTE: Tighten U-bolts to have the same number of threads exposed on each end.

SIZE	FOOT POUNDS	NEWTON METERS	SIZE	FOOT POUNDS	NEWTON METERS
1/4-20	8-10	11-13	3/4-10	200-220	270-300
1/4-28	9-11	12-15	3/4-16	210-230	285-310
5/16-18	15-17	20-23	7/8-9	330-350	425-475
5/16-24	17-19	23-26	7/8-14	360-380	460-515
3/8-16	25-28	34-38	1-8	500-525	675-710
3/8-24	28-31	38-42	1-14	540-560	730-760
7/16-14	40-45	54-61	1 1/8-7	600-635	815-860
7/16-20	45-50	61-68	1 1/8-12	665-700	920-950
1/2-13	62-68	84-92	1 1/4-7	850-895	1150-1215
1/2-20	68-75	92-102	1 1/4-12	940-990	1275-1340
9/16-12	90-98	22-133	1 3/8-6	1125-1175	1525-1590
9/16-18	100-110	134-148	1 3/8-12	1280-1335	1735-1810
5/8-11	120-135	162-183	1 1/2-6	1500-1560	2035-2115
5/8-18	124-137	168-186	1 1/2-12	1685-1755	2285-2380

U-BOLTS - GRADE 7

Torque 3/4"-10 U-Bolts to 240 Ft.-Lbs.

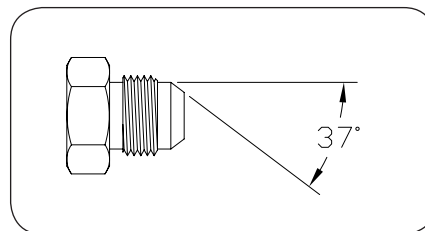
Torque 3/4"-10 Shank Mount V-bolts to 240 Ft.-Lbs.

Torque 7/8"-10 Shank Mount U-Bolts to 240 Ft.-Lbs.

Hydraulic Fittings - Torque and Installation

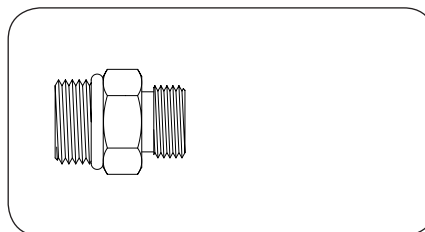
SAE FLARE CONNECTION (J.I.C.)

1. Tighten nut with finger until it bottoms the seat.
2. Using a wrench, rotate nut to tighten. Turn nut 1/3 turn to apply proper torque.



SAE STRAIGHT THREAD O-RING SEAL

1. Insure jam nut and washer are backed up to the back side of smooth portion of elbow adapter.
2. Lubricate o-ring -- VERY IMPORTANT!
3. Thread into port until washer bottoms onto spot face.
4. Position elbows by backing up adapter.
5. Tighten jam nut.



Wheels and Tires

Wheel Nut Torque

⚠ CAUTION

- **IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. TORQUE WHEEL NUTS/BOLTS TO VALUES IN TABLE. CHECK THE TORQUE BEFORE INITIAL USE, AFTER ONE HOUR OF USE AND EACH HOUR UNTIL THE WHEEL NUTS/BOLTS MAINTAIN THEIR TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THEREAFTER. AFTER EACH WHEEL REMOVAL, START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.**

Failure to check torque before use may damage wheel nut/bolt seats. Once seats are damaged, it will become impossible to keep nuts/bolts tight. Tighten nuts/bolts to applicable torque value shown in table. Start all nuts/bolts by hand to prevent cross threading. Torque nuts/bolts in the recommended sequence as shown in Diagram 1.

WHEEL HARDWARE	
SIZE	FOOT-POUNDS
1/2-20 (UNF)	75 Ft.-Lbs.

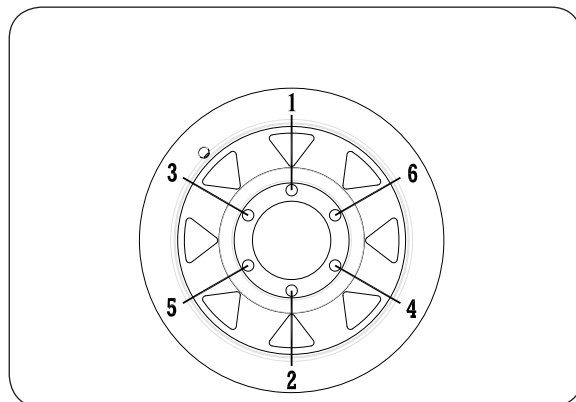


Diagram 1 - 6 bolt

Tire Pressure

The following is to be used as a general guide for tire inflation and figures can vary depending on specific brand of tire used. **It is important that tires are inspected when the unit is in use.** Start with minimum pressure indicated. The tire should stand up with no side-wall buckling or distress as tire rolls. Record the pressure needed to support the full load and maintain this pressure to achieve proper tire life. **Do not exceed maximum recommended tire pressure.**

TIRE	INFLATION
7.60 x 15 - 8 Ply	max. 52 PSI
9.5L15 - 8 Ply	max. 44 PSI

(All tire pressures in psi)

Wheels and Tires

Tire Warranty

For questions regarding new tire warranty, please contact your local original equipment tire dealer. Used tires carry no warranty. Following are phone numbers and Websites for your convenience:

Firestone www.firestoneag.com
Phone 800-847-3364

Titan www.titan-intl.com
or Phone 800-USA-BEAR
Goodyear Fax 515-265-9301

Carlisle www.carlisletire.com
Phone 800-260-7959
Fax 800-352-0075

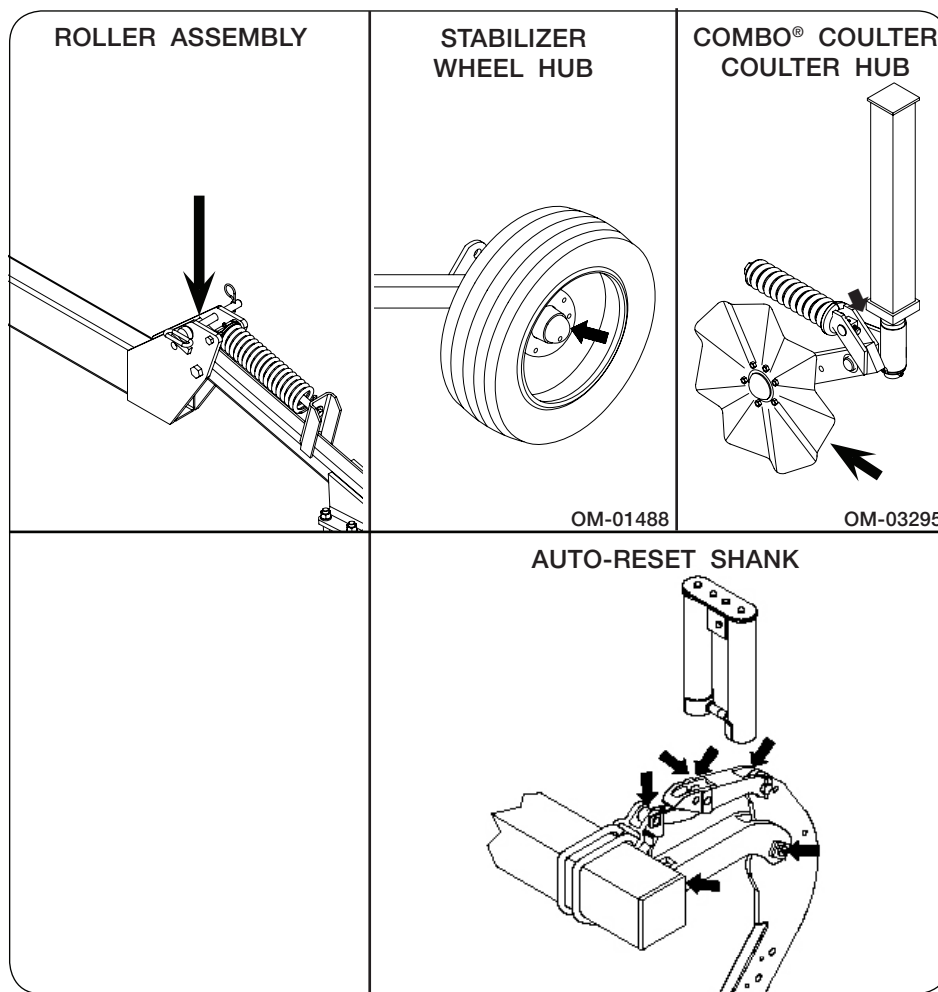
Greenball www.greenball.com
Phone nearest location:
California 800-937-5204
Georgia 800-283-4569
Florida 800-935-0200
Indiana 800-426-4068
Tennessee 800-946-9412
Ohio 800-840-7295
Pennsylvania 800-869-6787

Lubrication Points

LOCATION	SEASON		HOURS
	BEGINNING	END	
AUTO-RESET SHANK - 6 lube fittings - grease gun	✓	✓	8*
ROLLER ASSEMBLY - 1 lube fitting - grease gun	✓		8
STABILIZER WHEEL HUB - repack bearings	✓		
COMBO® COULTER ARM - 1 lube fitting - grease gun	✓	✓	8
COULTER HUB - 1 lube fitting - repack bearings	✓		50

Be sure to lubricate the indicated points of the RIPPER-ROLLER subsoiler as outlined.

* This figure can vary depending on the frequency of shanks tripping. The figure shown is based on normal conditions.



Troubleshooting

PROBABLE CAUSE

CORRECTION

Poor Penetration

Frame is not level

See the OPERATION section "Leveling Frame" for instructions

Ground is too hard for hitch control setting

Adjust the hitch control position. See the OPERATION section "Load and Depth control"

Worn or dull tool points

Replace with new tool points

Plugging

Coulters are not spaced correctly

See "Overhead Layouts" for correct spacing of shanks in SETUP section

Poor field conditions

Wait until the field is dry enough to till properly without excessive slippage

Machine not level

Level Machine

Coulters are not penetrating deep enough

Lower the coulters

Coulter blades not cutting residue

Wait until the field is dry enough to allow blades to cut through residue

Implement Running Crooked In Field

Shanks are not spaced correctly

See "Overhead Layouts" for correct spacing of the shanks

Stabilizer wheels are not adjusted equally from side-to-side

Check the side-to-side adjustment and correct

Tractor tires are not properly spaced or equally inflated

Find the cause and correct. See OPERATION section "Wheel Spacing"

Tractor 3-point lift linkage is not adjusted for level operation

Re-level RIPPER-ROLLER frame. See OPERATION section "Leveling Frame"

Tractor 3-point lift linkage lateral float pin are not set properly

Check the position of the lateral float pins. See OPERATION section "Left Link Lateral Float"

Troubleshooting (continued)

PROBABLE CAUSE	CORRECTION
Shanks Not Resetting Into Ground After Tripping	
Ground conditions hard or the unit is being operated very deep	While moving, raise RIPPER-ROLLER slightly to reset, then lower and resume operation
Pivot nuts on front and rear of pull arm are overtightened	Refer to OPERATION section for adjustment procedure
Shank Leading Off Row Center	
Main pivots not properly tightened	Tighten until side-to-side play in shank is eliminated. Take care not to over-tighten, not allowing shank to freely reset after tripping.
Excessive Soil Disturbance	
Main frame not level, running downhill	Level main frame, run up to 5° uphill
Coulters are not properly aligned with shanks	Re-align/position coulter to run centered with shank
Coulters are not cutting deep enough	Lower coulter to cut deeper Install larger diameter blades
Shanks are operating at shallow depths	Operate at depth to get under hardpan. This may require larger tractor or smaller tool.
Dry soil conditions	Wait for additional rain
Running implement too fast	Slower speeds create less disturbances
Specific soils may create more surface disturbance with flat point	Install raised-center points for less surface disturbance
Too much sealing	Decrease down pressure, decrease coulter angle, raise coulter, or move coulter apart
Not enough sealing	Increase down pressure, increase coulter angle, increase coulter depth, or move coulter closer
Coulter not moving	Decrease coulter angle, decrease spring pressure, decrease coulter depth, or move coulter apart

Shank Tip Replacement

WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**
- **CHANGE ONLY ONE SHANK AT A TIME. IF PRESSURE IS RELIEVED ON ALL SHANKS, THE UNIT COULD TIP OVER BACKWARDS.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

The auto-reset shank has a replaceable wear bar, shovel point and tip which, after a period of time, will need to be replaced. To replace these components on your machine, refer to the following guidelines:

Wear Bar Replacement

1. With RIPPER-ROLLER attached to a tractor, find a firm level surface and unfold the wings if applicable. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire RIPPER-ROLLER and all points are off ground. Shut off tractor engine, set parking brake, and remove the ignition key.
2. Remove spiral pins which secure the wear bar to the shank.
3. Replace with new wear bar and secure with new spiral pins.

NOTE: The wear bars are reversible and should be rotated or replaced often for maximum life of shank.

Shovel Replacement

1. Use pin punch to remove spiral pin which secures shovel.
2. Replace worn shovel with new shovel) and reinstall new spiral pin. (Be sure to install new spiral pin (91144-234) to securely hold shovel in place.)

IMPORTANT

- *Periodically check the lower half of the shank for wear - excessive shank wear will occur if point and wear bar are not replaced (or reversed).*

Shank Tip Replacement

65117 Prior to Serial #A665700166

602402 Beginning with Serial #A665700166

1. With RIPPER-ROLLER attached to a tractor, find a firm level surface and unfold the wings if applicable. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire RIPPER-ROLLER and all points are off ground. Shut off tractor engine, set parking brake, and remove the ignition key.

Shank Tip Replacement (continued)

- Attach a safe lifting device rated for 100 lbs. to the shank weldment 63981B for the Auto-Reset shank or shank weldment. Move the shank weldment to the proper work area and proceed with the following instructions to replace the shank tip. If working with the Auto-Reset shank, follow the instructions as listed in the toggle replacement to remove tension from the springs and remove toggle link from the shank weldment. Remove 1 1/2" pull pin from the pull arm and shank weldment, and remove the shank weldment. Move the shank weldment to the proper work area and proceed with the following instructions to replace the shank tip.

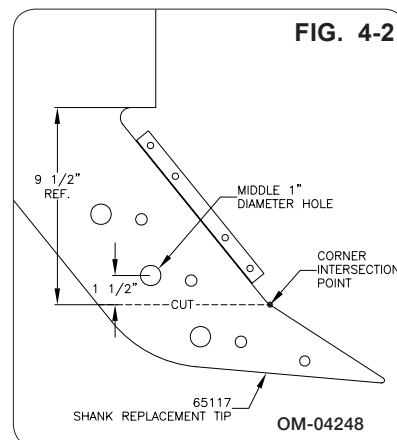
- If attachments are on the back of the shanks, remove them before proceeding. See the Attachment section of this operator's manual.

- Use appropriate personal protection gear before beginning with any welding procedure. Qualified personnel, familiar with welding techniques and procedures, must perform all welding.



- Remove point from worn shank. Using a torch, cut bottom of shank off level at front corner intersection point at 1 1/2" below middle 1" diameter hole. Remove any slag or roughness from cut area. Replacement tip (65117 or 602402) can also be used as a template.

- For best results use low hydrogen electrodes such as E7018 welding rod and preheat the area on the shank where the tip is to be welded onto. The recommended pre-heat range is 100 to 200 degrees F and preheat can best be accomplished by use of a torch or by welding using a double pass procedure. If a torch is not available you can preheat the area by first welding a smaller weld (approximately 3/16" size) and immediately following with a full weld (before shank cools). The first pass serves as your preheat pass for the final weld.



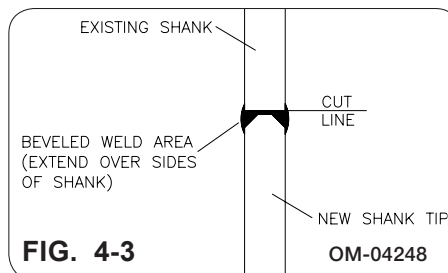
- Before welding, determine position of weld-on tip as shown in Fig. 4-2. Check fit to shank before welding into position. Clamp and tack weld new shank tip into position.

NOTE: Shank steel may be difficult to weld due to its high strength and hardenability. The base steel around the weld rapidly heats and cools during welding, resulting in a heat affected zone (HAZ) with high hardness. Any hydrogen in the weld metal may diffuse into HAZ and may cause hydrogen embrittlement, resulting in delayed underbead or toe cracks outside of the weld. To minimize heat affected zone cracking:

- Use low hydrogen electrodes with an -H4 or -H2 designation.
- Preheat to 100-200°F to slow the cooling rate. Note that excessive preheat may anneal the base material.
- Slow cool. More time at elevated temperatures allows the dissolved hydrogen to escape.
- Peen the weld beads to minimize residual weld stresses.
- Use the lowest strength filler metal meeting design requirements. If making fillet welds, the weld can be oversized to give the specified strength.
- Minimize weld restraint.

Shank Tip Replacement (continued)

6. Weld adapter to shanks using procedures as mentioned, being sure to weld at all fillet areas provided on adapter (Fig. 2-3). Be sure the welds are full penetration and wrap around the ends of adapter. To insure full penetration, welds must be oversize extending above all weld areas (Fig. 4-3).



7. Using a safe lifting device rated for at least 100 lbs., reassemble the shank weldment and torque the hardware as called out in the appropriate shank Maintenance section.

Shank Spring

If the attachments are on the back of the shanks, remove them before proceeding. See the Attachment section of this operator's manual.

WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**

- **CHANGE ONLY ONE SHANK AT A TIME. IF PRESSURE IS RELIEVED ON ALL SHANKS, THE UNIT COULD TIP OVER BACKWARDS.**

- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

1. With RIPPER-ROLLER attached to a tractor, find a firm level surface and unfold the wings if applicable. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire RIPPER-ROLLER and all points are off ground. Shut off tractor engine, set parking brake, and remove the ignition key.

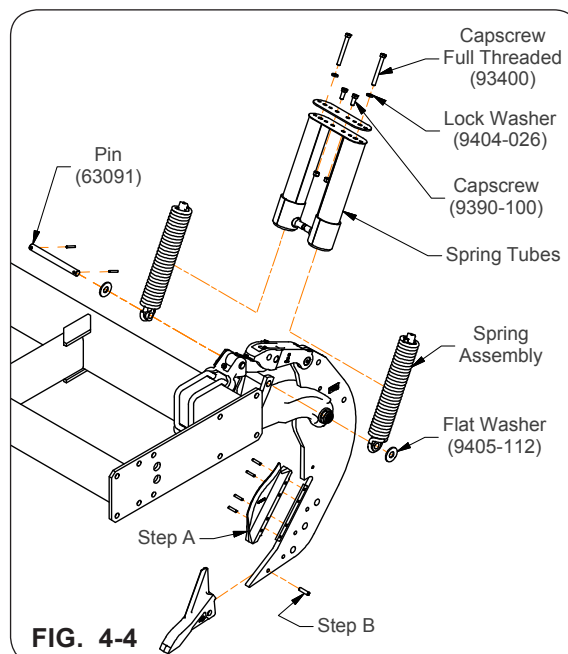
WARNING

- **STORED ENERGY HAZARD. WHEN SPRING PRESSURE IS RELEASED, THE SPRING TUBES CAN PIVOT CAUSING SERIOUS INJURY. ALLOW SPRING CANS TO ROTATE BACKWARDS AND REST INTO POSITION.**

2. Remove all tension from springs by removing capscrews.

IMPORTANT

- *To prevent binding and possible damage, remove spring pressure equally and evenly from side-to-side.*



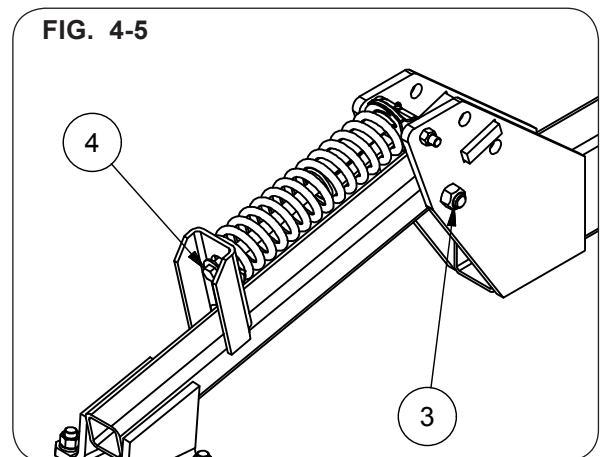
Shank Tip Replacement (continued)

3. Remove capscrew holding top plate. Remove top plate and set aside.
4. Remove pin holding lower end of spring into position (use caution, springs may fall to the ground). Observe the position and location of parts along with the direction the spring guide tubes are positioned inside the springs before removing pin.
5. Remove springs, noting the washer position.
6. Install washers to the new spring assemblies into the spring tubes and fasten the spring tube brace removed in step 4. Install pin holding lower end of spring. Be sure to install all components in the same position and direction as removed in step 5.
7. Finally, when adding tension to the spring, tighten capscrew so that the top of the spring is secure against the top of the spring tube.

Roller Arm Spring

If the spring assembly needs to be serviced or replaced, proceed as follows:

1. Park the unit on a firm, level surface. Lower the machine to the ground. Set the vehicle parking brake, shut off the engine, and remove the ignition key.
2. Using a safe lifting device and support rated at a minimum of 5,000 lbs., remove the roller section from the mounting arms.
3. Using a safe lifting device rated for 100 lbs., remove the spring arm from the base arm by removing the mounting bolts.
4. Place the arm on the side and remove the spring retaining bolt.
5. Replace the components and reassemble all components.



Auto-Reset Shank Toggle Replacement

The Auto-Reset shank consists of 3 important components: Spring Mechanism Toggle Components, Shank Weldments, and Lower Pull-Arm. If service is required to any of these components, proceed as follows:

If attachments are on back of the shanks, remove them before proceeding. See Attachment Section of this operator manual.

⚠ WARNING

- **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 300 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**
- **STORED ENERGY HAZARD. WHEN SPRING PRESSURE IS RELEASED, THE SPRING TUBES CAN PIVOT CAUSING SERIOUS INJURY. ALLOW SPRING CANS TO ROTATE BACKWARDS AND REST INTO POSITION.**

With Ripper Roller attached to a tractor, find a firm level surface and unfold the wings if applicable. Lower the unit's jack stands until they are 1-2 inches below the points, and lower machine to the ground so that the stands support the entire unit and all points are off ground. Shut off tractor engine, set parking brake, and remove the ignition key.

IMPORTANT

- *After disassembly of all shank components, clean and inspect all parts for damage or wear. Replace any damaged or worn parts before reassembly. Refer to "Auto-Reset Shank" in Parts Section.*

SPRING MECHANISM COMPONENTS:

3. Remove all tension from springs by removing capscrews.

IMPORTANT

- *To prevent binding and possible damage, remove spring pressure equally and evenly from side to side.*
4. Remove capscrew holding top plate. Remove top plate and set aside.
 5. Remove pin holding lower end of spring (use caution, springs may fall to the ground). Observe the position and location of parts along with the direction the spring guide tubes are positioned inside the springs before removing pin (Fig. 4-6).

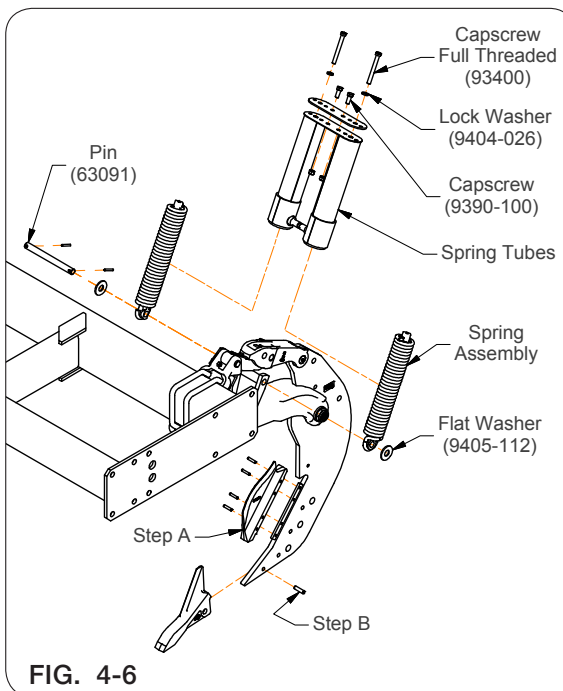


FIG. 4-6

Auto-Reset Shank Toggle Replacement (continued)

6. Remove springs, note washer position (Fig. 4-6).
7. Remove spring tubes from toggles by spreading tubes.

If no other service is required, reassemble as follows:

Reverse procedures for reassembly. Tighten springs equally and evenly to prevent damage. Capscrew should draw the spring completely to the top of the canister.

TOGGLE COMPONENTS:

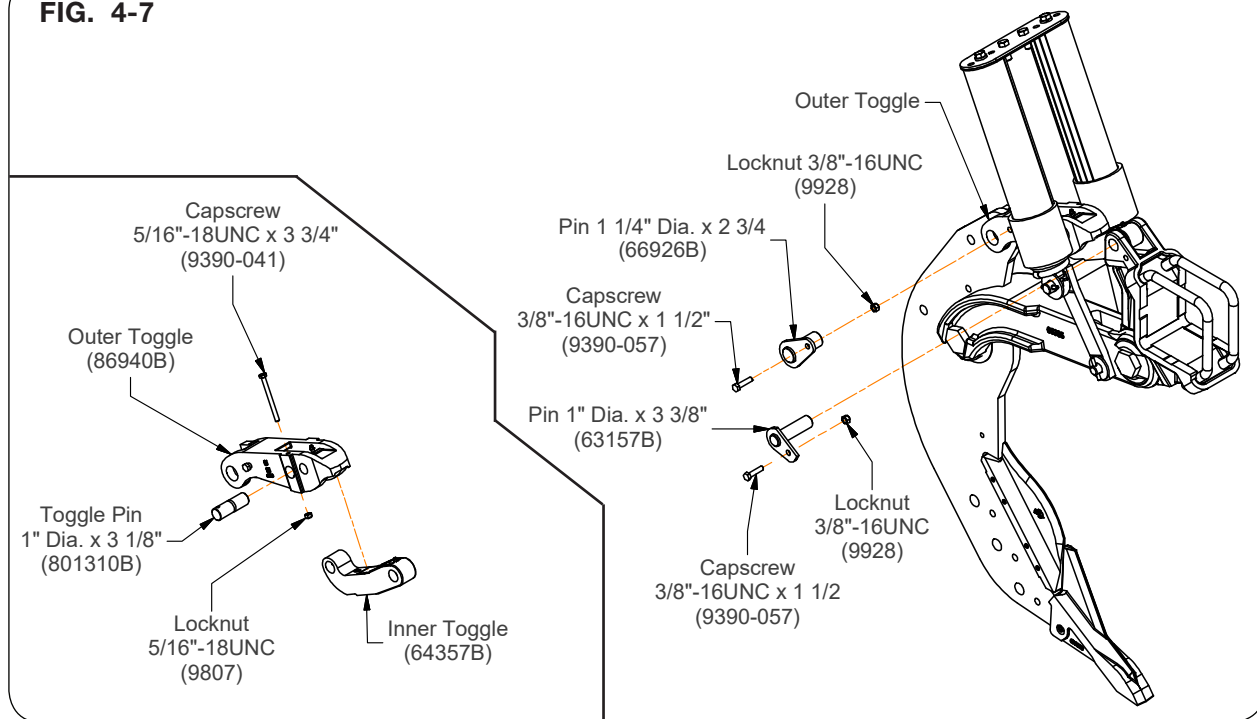
If service is required to toggle components, refer to steps 1 - 7 under Spring Mechanism Components for disassembly of spring components.

⚠ WARNING

- **CRUSH HAZARD - BE SURE SHANK IS SUPPORTED BEFORE REMOVING TOGGLE ASSEMBLY. REMOVE ALL SHANK ATTACHMENTS BEFORE PROCEEDING.**

8. Remove pin (66926B) from the outer toggle. Remove pin (63157B) from the inner toggle. Then remove the toggle assembly.
9. Remove toggle assembly components and replace components as required. If no other service is required, reverse procedures for reassembly.

FIG. 4-7



Auto-Reset Shank Toggle Replacement (continued)

SHANK WELDMENT:

If replacement of shank weldment is required, refer to steps 1 - 7 under Spring Mechanism Components and steps 8 & 9 under Toggle Components for removal.

⚠ WARNING

- **CRUSH HAZARD - BE SURE SHANK IS SUPPORTED BEFORE REMOVING TOGGLE ASSEMBLY. REMOVE ALL SHANK ATTACHMENTS BEFORE PROCEEDING.**

10. Attach a 300 lb. hoist to shank and remove rear pin. Remove rear pin and shank and replace as required.

If no other service is required, reverse procedure for reassembly.

LOWER PULL-ARM:

If replacement of lower pull-arm is required, refer to steps 1 - 7 under Spring Mechanism Components and steps 8 & 9 under Toggle Components and step 10 under Shank Weldment for removal.

NOTE: Before inserting the front pull arm pin, check the clearance between the pull arm and mounting bracket. Install the shims as required (63098/66843) to fill the gap. Install equally from side-to-side, if possible.

11. Remove Lower Pull-Arm by removing front pin.

12. Reverse procedure for reassembly.

IMPORTANT

- *Torque 1 1/4"-12UNF lock nuts used with the pivot pin on the pull arms to maximum 250-300 ft.-lbs.*

Combo® Coulters Spring Replacement

The following guidelines are for replacing the spring on the coulters.

⚠ WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**

- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

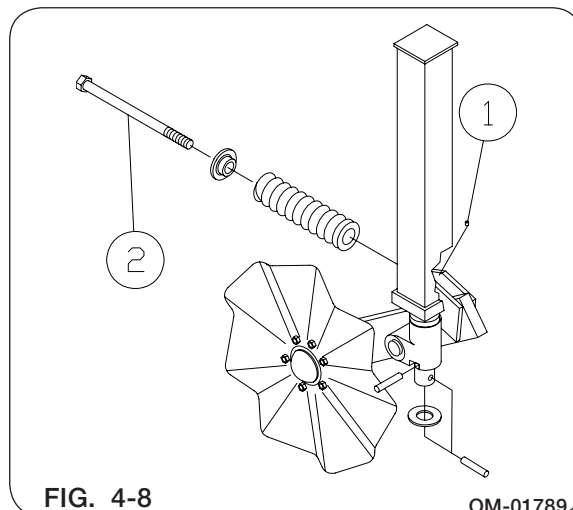
⚠ CAUTION

- **SHARP EDGES ON COULTER BLADES CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND COULTER BLADES.**

IMPORTANT

- *The spring should only be adjusted when repairs are being made. The springs have been preset before leaving the factory.*

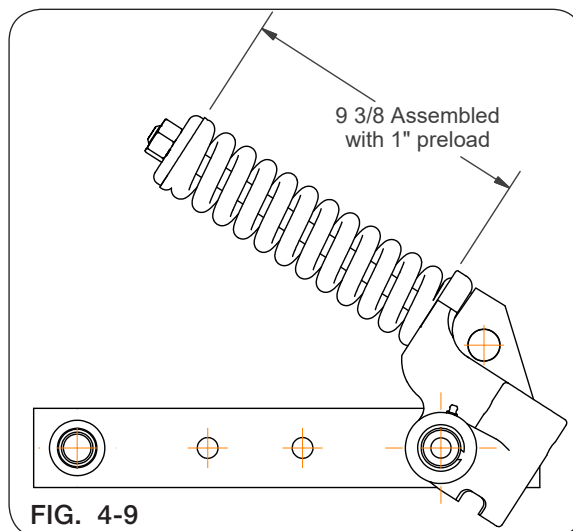
1. Loosen the set screw retaining the spring bolt on the coulters arm (Fig. 4-8).
2. Slowly unscrew the spring bolt which will relieve spring pressure (Fig. 4-8).
3. Once the bolt is removed, replace with new spring and re-insert bolt.



4. Tighten bolt until a deflection of 1" is obtained on spring (Fig. 4-9). The coulters springs are preset at the factory to 9 3/8". This measurement is the total amount of exposed spring.

NOTE: Adjusting the spring below 9 3/8" could cause premature part failure and void any warranty considerations.

5. Tighten set screw to secure bolt.



Hub Adjustment and Replacement For Combo Coulters and Rear Coulters

The following instructions are for adjusting and lubricating the hub and replacing the “O”-ring and seal.

After the first 100 acres, the hubs should be checked for tightness and wear.

WARNING

- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**

CAUTION

- **SHARP EDGES ON COULTER BLADES CAN CAUSE INJURY. BE CAREFUL WHEN WORKING AROUND COULTER BLADES.**

IMPORTANT

- *Do not allow dirt and debris to contaminate the hub and its internal components. Neglecting to do so could result in failure of the hub and its components due to excessive wear.*
1. Check the coultter hub and bearing for looseness or wobble by gripping the ends of the blade. Rotate and laterally push and pull on the coultter blade. A tight hub will have no wobble and will rotate smoothly with a slight resistance.
 2. If there is wobble in the hub, the hub must be tightened to the spindle. To do this, remove retaining ring and the hub cap. Remove the nut retainer and tighten the slotted nut. The nut should be torqued to 40-45 foot-pounds. Increase the tightness to reinsert the c-ring (Fig. 2-9).
 3. After tightening, retest the hub for wobble by repeating Step #1. If wobble still exists, continue with the following guidelines.

IMPORTANT

- *When tightening slotted nut onto spindle, rotate hub back and forth so that flats do not form on bearings.*
4. Turn the blade and feel for any roughness in the rotation. Also, check the base of the hub to see if the seal is intact and in position. If either problem exists, the hub must be dismantled, cleaned, inspected for damage, and repacked with grease. Refer to the following guidelines for this procedure (Fig. 2-9).
 - A. Remove the blade and hub cap. Remove the C-ring securing the slotted nut.

IMPORTANT

- *Removal of C-ring is best accomplished by using two screwdrivers or similar tools and prying on the outside ends to spread ring. If ring is damaged discard and replace.*
- *When removing the hub and its components, be sure to keep them free of debris and dirt. Failure to do so will result in contamination of hub and bearing failure.*

**Hub Adjustment and Replacement
For Combo Coulters and Rear Coulters (continued)**

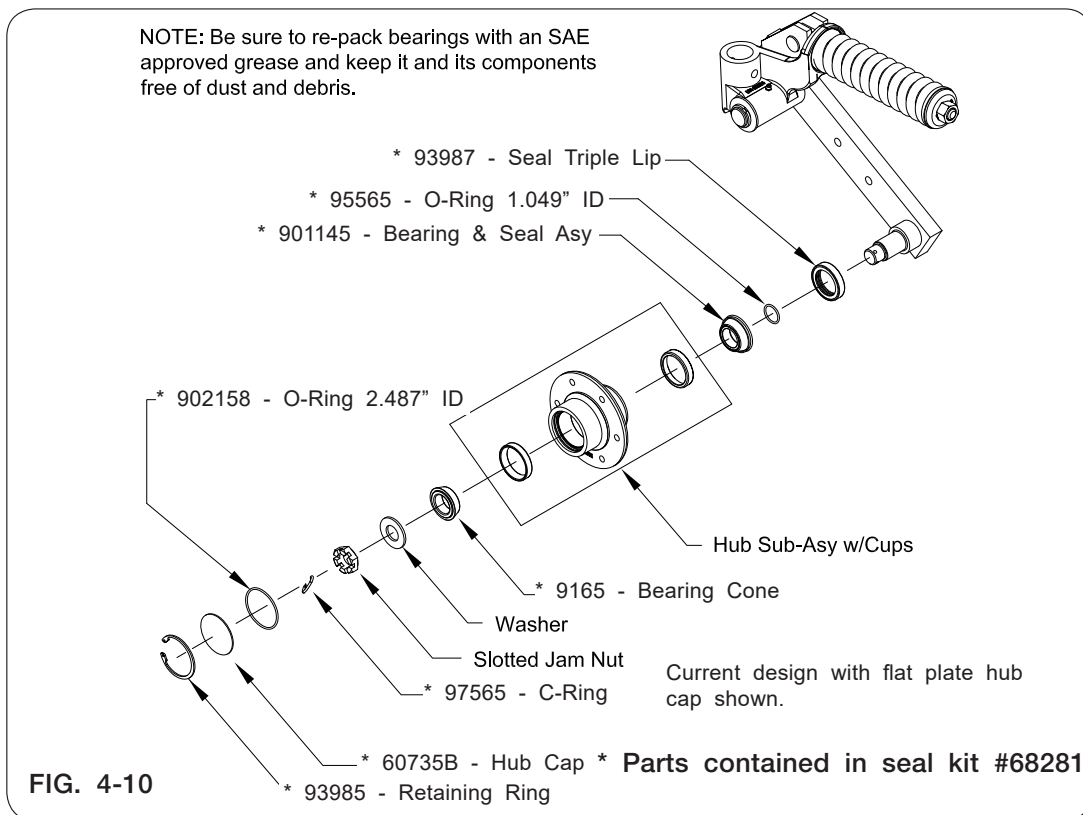
- B. Unscrew the nut and carefully remove the hub from the spindle.
- C. Remove the components, clean, and inspect for any damage or wear. If even the slightest imperfection exists, replace the component(s). Once the hub is dismantled, always replace the bearing and seal assembly, O-ring, and triple lip seal.

IMPORTANT

- Always replace the O-ring and seal if dismantling the hub. Failure to do so could result in premature failure of hub and its components.
- D. Replace any damaged parts before reassembling the components. Be sure to remove any debris or dirt and repack bearings with an SAE approved hub grease.
- E. Assemble O-ring onto spindle first. Assemble seal and bearings into hub and position onto spindle.
- F. After reassembling the hub, position the slotted nut back onto the spindle and torque to 40-45 foot-pounds. Slightly tighten the nut to align slot (in nut) with the closest cotter pin hole and install C-ring and O-ring (902158) (Fig. 4-10).

IMPORTANT

- Rotate coultter hub when torquing slotted nut. Doing this will prevent flats from forming on bearings.
- Assembly of C-ring is best accomplished by the use of a hog ring type pliers or similar tool. After installation be sure C-ring will lay flat against the spindle retaining nut to allow for proper installation of hub cap.
- G. Reinstall the hub cap and blade.

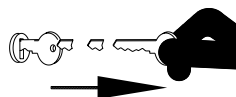


Replacing Bearings In Bladed Reel Roller

WARNING

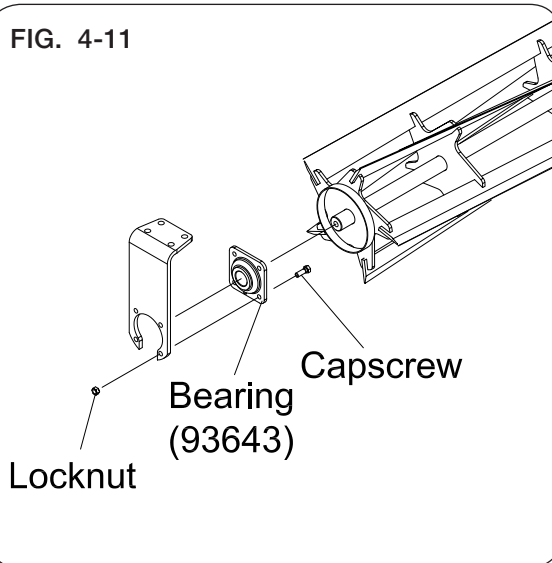
- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.

1. Lower implement unit to the ground and securely block to prevent tipping, or moving. Shut off tractor, set parking brake, and remove ignition key.



2. Install block under each basket to support weight of basket.
3. Remove the four 1/2"-13UNC capscrews (9390-101) and 1/2"-13UNC lock nuts (94981) which hold the bearing on.
4. Use a crowbar to pry the end of the basket out of the basket frame slot.
5. Remove the bearing. If the bearing is still tight on the shaft, use a bearing puller to remove the bearing.
6. File off any burrs left on the shaft. Finish with a strip of emery cloth. Make sure bearing will slide on the shaft.
7. Slide a new bearing (93643) on the shaft (Fig. 4-11). Install the bearing with the lube fitting facing the outside and down when installing the bearing into the standard
8. Pry the end of the basket into the slot of the frame (Fig 4-11).
9. Assemble the new 1/2"-13UNC capscrews through the holes in the frame and into the bearing housing (Fig. 4-11).

FIG. 4-11



IMPORTANT

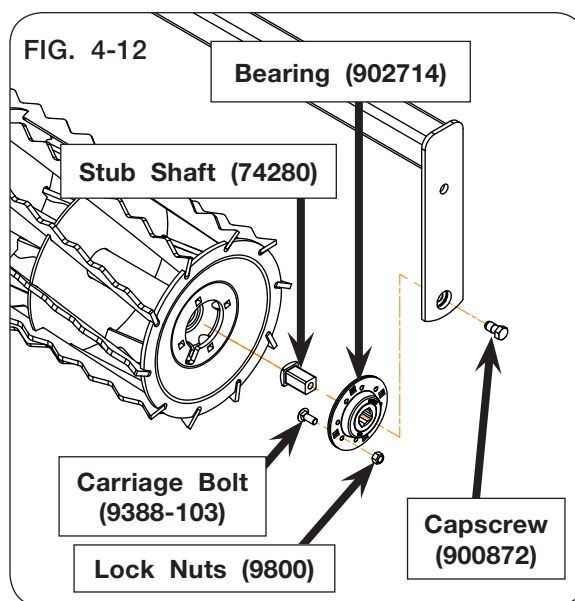
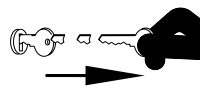
- Tighten screws according to Torque Chart, in this section.

Replacing Bearings In Cleated Drum & Rolling Basket Rollers

⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**

1. Lower implement to the ground and securely block to prevent tipping, or moving. Shut off tractor, set parking brake, and remove ignition key.
2. Install block under each drum/basket to support weight of the drum/basket.
3. Remove the 5/8"-11UNC x 1 1/4" capscrew (900872) from the stub shaft (74280) on the worn bearing. Place pry bar between the head of the stub shaft and the basket/drum weldment to prevent the head of the stub shaft from turning.
4. Push the stub shaft into the basket/drum weldment so the shaft disengages the basket/drum frame side plate.
5. Repeat steps 3 & 4 for the capscrew and stub shaft on the other end of the basket/drum and roll the basket/drum away from the frame.
6. Remove the 1/2"-13UNC x 1 1/4" carriage bolts from the bearing and basket/drum. Remove bearing from the basket/drum and remove stub shaft from bearing.



7. Discard worn bearing and used mounting hardware. Examine inner race of replacement bearing. If the inner race protrudes beyond the housing more on one side than the other, install the bearing in the basket/drum such that this side is facing the frame side plate. Insert the stub shaft into the bearing and mount the bearing to the basket/drum with the new carriage bolts. Torque locknuts on carriage bolts to 70-75 ft.-lbs.
8. Push the basket/drum back into the frame. Align the hole in the stub shaft with the hole in the frame side plate. Thread the new 5/8"-11UNC x 1 1/4" capscrew into the stub shaft until the epoxy begins to engage.
9. Use a pry bar to force the head of the stub shaft against the inner race of the bearing. This may flex the side plate of the frame away from the basket/drum; this is acceptable. While maintaining pressure on the head of the stub shaft, use the 5/8"-11UNC x 1 1/4" capscrew to rotate the stub shaft until the end of it engages in the square recess of the frame side plate. Often there will be an audible click when the shaft engages and the side plate moves toward the basket/drum. Use the pry bar to prevent the stub shaft from turning and torque the 5/8"-11UNC x 1 1/4" capscrew to 150-160 ft.-lbs.

IMPORTANT

- *The stub shaft MUST fully engage the square recess in the frame side plate to prevent machine damage. Make certain the stub shaft is fully engaged before tightening the 5/8"-11UNC x 1 1/4" capscrew.*

Notes

SECTION V

Parts

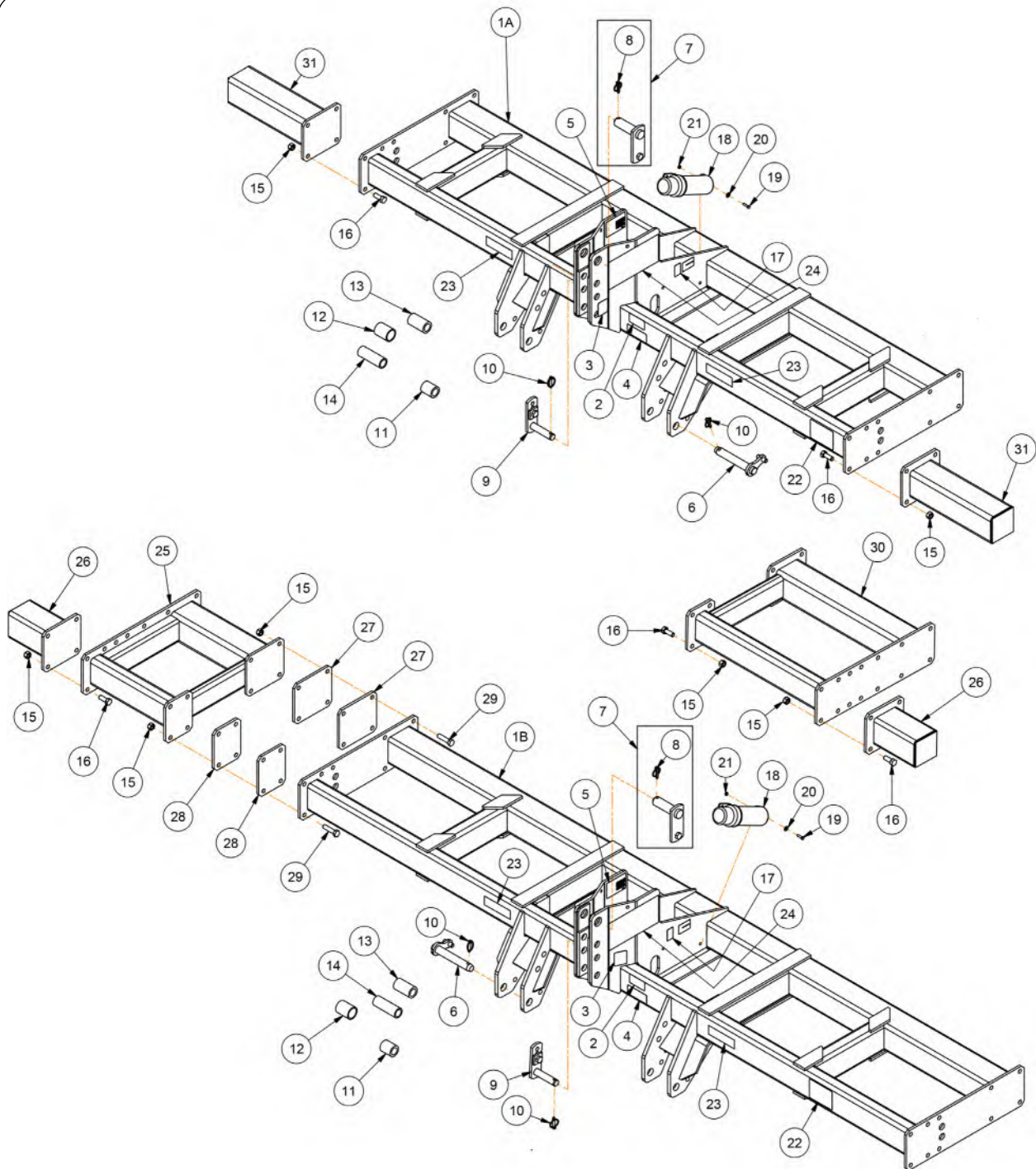
Rigid Main Frame	5-2
Folding Main Frame.....	5-4
Stabilizer Wheel	5-8
Auto-Reset Shank	5-10
Shank Extension Assembly & Deflector Components.....	5-13
Combo® Coulter	5-14
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Mounting Arm and Storage Stand Components.....	5-20
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Cleated Drum Components	5-22
Lighting Kits.....	5-24

NOTE: Refer to 16” Rolling Finisher Attachment manual for additional Rolling Harrow Basket, Bladed Reel, and Cleated Drum information.

RIPPER-ROLLER — Parts

Rigid Main Frame

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

Rigid Main Frame

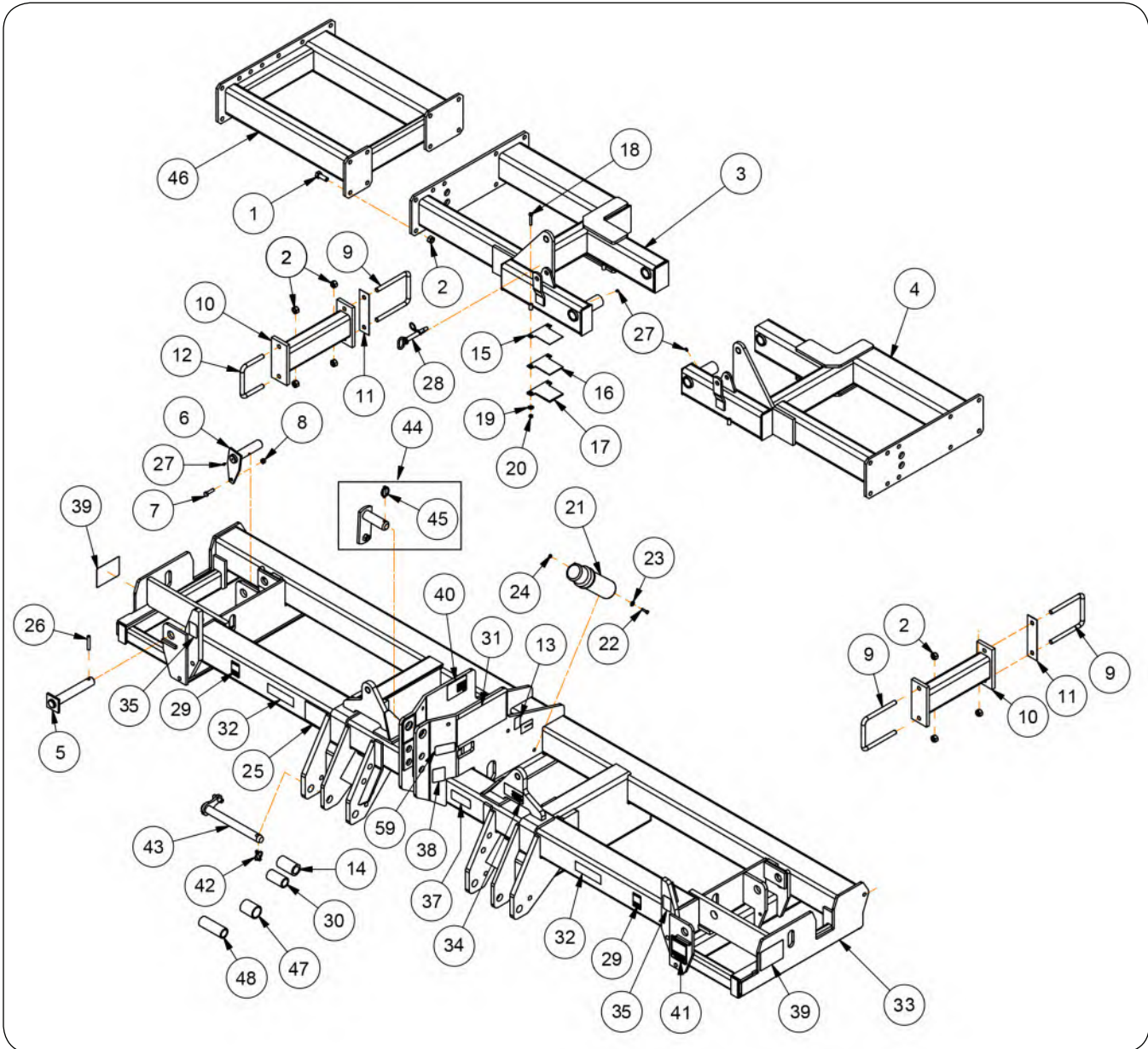
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	7 SHANK	9 SHANK	11 SHANK	13 SHANK
1A	67430G	Main Frame (w/Decals) =Green=	1	-	-	-
	67430R	Main Frame (w/Decals) =Red=				
1B	67437G	Main Frame (w/Decals) =Green=	-	1	1	1
	67437R	Main Frame (w/Decals) =Red=				
2	97961	Decal, WARNING (Read & Understand)	1	1	1	1
3	97972	Decal, WARNING (Crush Hazard)	2	2	2	2
4	99507	Decal, WARNING (Falling Equipment)	1	1	1	1
5	99850	Decal, DANGER (Tripped Shanks)	2	2	2	2
6	69695	Pin Weldment/Anti-Rotational Pin	2	2	2	2
7	67187B	Pin Sub Assembly/Mast Pin Asy 1 3/4" Dia.	1	1	1	1
8	9501028	Lynch-Pin 13/32" Dia. x 3 11/32"	1	1	1	1
9	67188B	Mast Pin Asy 1 1/4" Dia.	1	1	1	1
10	95031	Klik-Pin 7/16" Dia. x 2"	3	3	3	3
11	61315	Spacer Tube	2	2	2	2
12	64428	Bushing 2 1/2" Dia. x 3 1/8" Lower Spacer CAT IV	2	2	2	2
13	65285	Bushing 2" Dia. x 3 7/8" Lower Spacer CAT III	2	2	2	2
14	65284	Bushing 2" Dia. x 5 11/16" Lower Spacer CAT IV	2	2	2	2
15	9802	Lock Nut 3/4"-10UNC	8	8	24	24
16	9390-145	Capscrew 3/4"-10UNC x 2" (Grade 5)	8	8	8	24
17	91605	Decal, FEMA	1	1	1	1
18	900552	Manual Holder	1	1	1	1
19	9390-031	Capscrew 5/16"-18UNC x 1 1/4"	2	2	2	2
20	9405-070	Flat Washer 5/16" USS	2	2	2	2
21	9397-008	Elastic Jam Nut 5/16"-18UNC	2	2	2	2
22	900558	Decal, WARNING (Insufficient Ballast)	1	1	1	1
23	9500597	Decal, MODEL 632	2	2	2	2
24	9500596	Decal, RIPPER-ROLLER	2	2	2	2
25	63186G	Extension Frame 19" Weldment =Green=	-	-	2	-
	63186R	Extension Frame 19" Weldment =Red=				
26	62567G	Extension Tube 11' Weldment =Green=	-	-	2	2
	62567R	Extension Tube 11' Weldment =Red=				
27	62552B	Plate (9 x 9 3/4)	-	-	4	-
28	62553B	Plate (7 x 9)	-	-	4	-
29	9390-149	Capscrew 3/4"-10UNC x 3"	-	-	16	-
30	63184G	Extension Frame 31" Weldment =Green=	-	-	-	2
	63184R	Extension Frame 31" Weldment =Red=				
31	65623G	Extension Tube 22" Weldment =Green=	2	2	-	-
	65623R	Extension Tube 22" Weldment =Red=				
	97301	12 oz. Crimson Red Spray Touch-Up Paint	-	-	-	-
	97015	12 oz. Implement Green Spray Touch-Up Paint	-	-	-	-

RIPPER-ROLLER — Parts

Folding Main Frame

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

Folding Main Frame

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	15 SHANK	NOTES
1	9390-145	Capscrew 3/4"-10UNC x 2"	16	Grade 5
2	9802	Lock Nut 3/4"-10UNC	32	
3	63227G	Wing Base 45" (Right-Hand) =Green=	1	
	63227R	Wing Base 45" (Right-Hand) =Red=		
4	63228G	Wing Base 45" (Left-Hand) =Green=	1	
	63228R	Wing Base 45" (Left-Hand) =Red=		
5	63220	Pin Weldment 1 5/8" Dia. x 10 3/4"	2	
6	63223	Pin Weldment 1 5/8" Dia. x 7 1/4"	2	
7	9390-102	Capscrew 1/2"-13UNC x 1 3/4"	2	Grade 5
8	9800	Lock Nut 1/2"-13UNC	6	
9	94090	U-Bolt 3/4"-10UNC x 8"	6	
10	61303G	Support Tube 18" Weldment =Green=	4	
	61303R	Support Tube 18" Weldment =Red=		
11	62643	Shim	4	
12	94090	U-Bolt 3/4"-10UNC x 8"	2	
13	91605	Decal, FEMA	1	
14	65285	Bushing 2" OD x 1.5" ID x 3 7/8"	2	
15	65898B	Shim 14Ga.	2	
16	65897B	Shim .140"	2	
17	65896B	Shim 1/4"	2	
18	9390-060	Capscrew 3/8"-16UNC x 2 1/4"	4	Grade 5
19	9405-076	Flat Washer 3/8" USS	4	
20	9928	Lock Nut 3/8"-16UNC	4	
21	900552	Manual Holder	1	
22	9390-031	Capscrew 5/16"-18UNC x 1 1/4"	2	Grade 5
23	9405-070	Flat Washer 5/16" USS	2	
24	9397-008	Elastic Jam Nut 5/16"-18UNC	2	
25	900558	Decal, WARNING (Insufficient Ballast)	1	
26	91144-239	Spiral Pin 1/2" Dia. x 3"	2	
27	91160	Grease Zerk	4	
28	97199	Hitch Pin Asy 3/4" Dia. with Hair Pin	2	
29	97973	Decal, WARNING "Crush Hazard..."	2	
30	65285	Bushing 2" OD x 1.5" ID x 3 7/8"	2	
31	9500596	Decal, RIPPER-ROLLER	2	
32	9500597	Decal, MODEL 632	2	

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RIPPER-ROLLER — Parts

Folding Main Frame (continued)

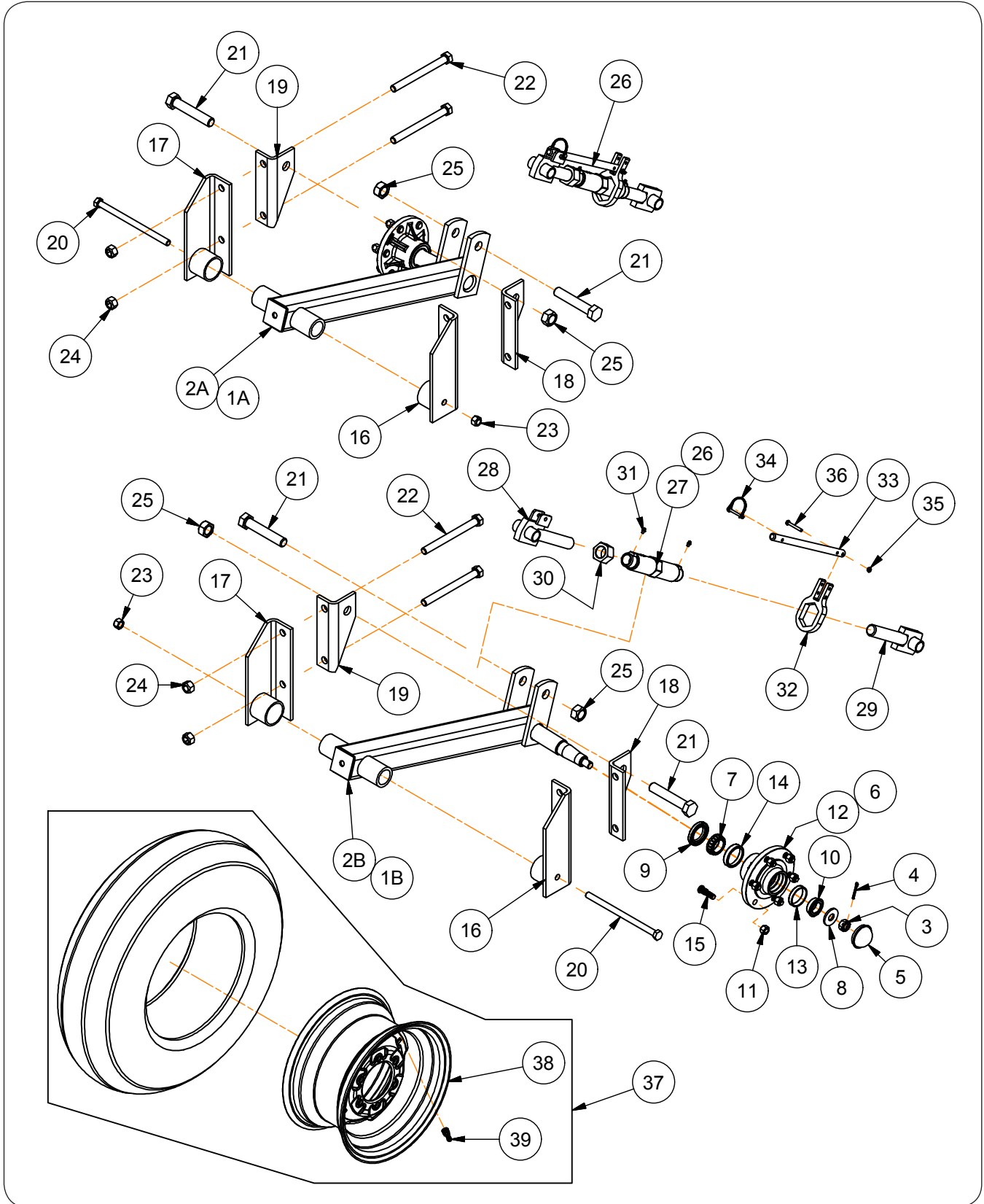
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	15 SHANK	NOTES
33	67432G	Main Frame (w/Decals) =Green=	1	
	67432R	Main Frame (w/Decals) =Red=		
34	95445	Decal, WARNING (High-Pressure)	1	
35	97048	Decal, WARNING (Pinch Point)	2	
36	97961	Decal, WARNING (Read & Understand)	1	
37	99507	Decal, WARNING (Falling Equipment)	1	
38	97972	Decal, WARNING (Crush Hazard)	2	
39	97337	Decal, WARNING (Folding/Unfolding)	2	
40	99850	Decal, DANGER (Tripped Shanks)	2	
41	902221	Decal, DANGER (Electrocution)	1	
42	95031	Klik-Pin 7/16" Dia. x 2"	2	
43	69657	Pin Weldment/Anti-Rotational Pin	2	
44	67187B	Pin Sub Assembly/Mast Pin Asy 1 3/4" Dia.	1	Includes Item 45
45	9501028	Lynch-Pin 13/32" Dia. x 3 11/32"	1	
46	63184G	Extension Frame 31" Weldment =Green=	2	
	63184R	Extension Frame 31" Weldment =Red=		
47	64428	Bushing 2 1/2" Dia. x 3 1/8" Lower Spacer CAT IV	2	
48	65284	Bushing 2" Dia. x 5 11/16" Lower Spacer CAT IV	2	
	97301	12 oz. Crimson Red Spray Touch-Up Paint	-	
	97015	12 oz. Implement Green Spray Touch-Up Paint	-	

Notes

Stabilizer Wheel

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

Stabilizer Wheel

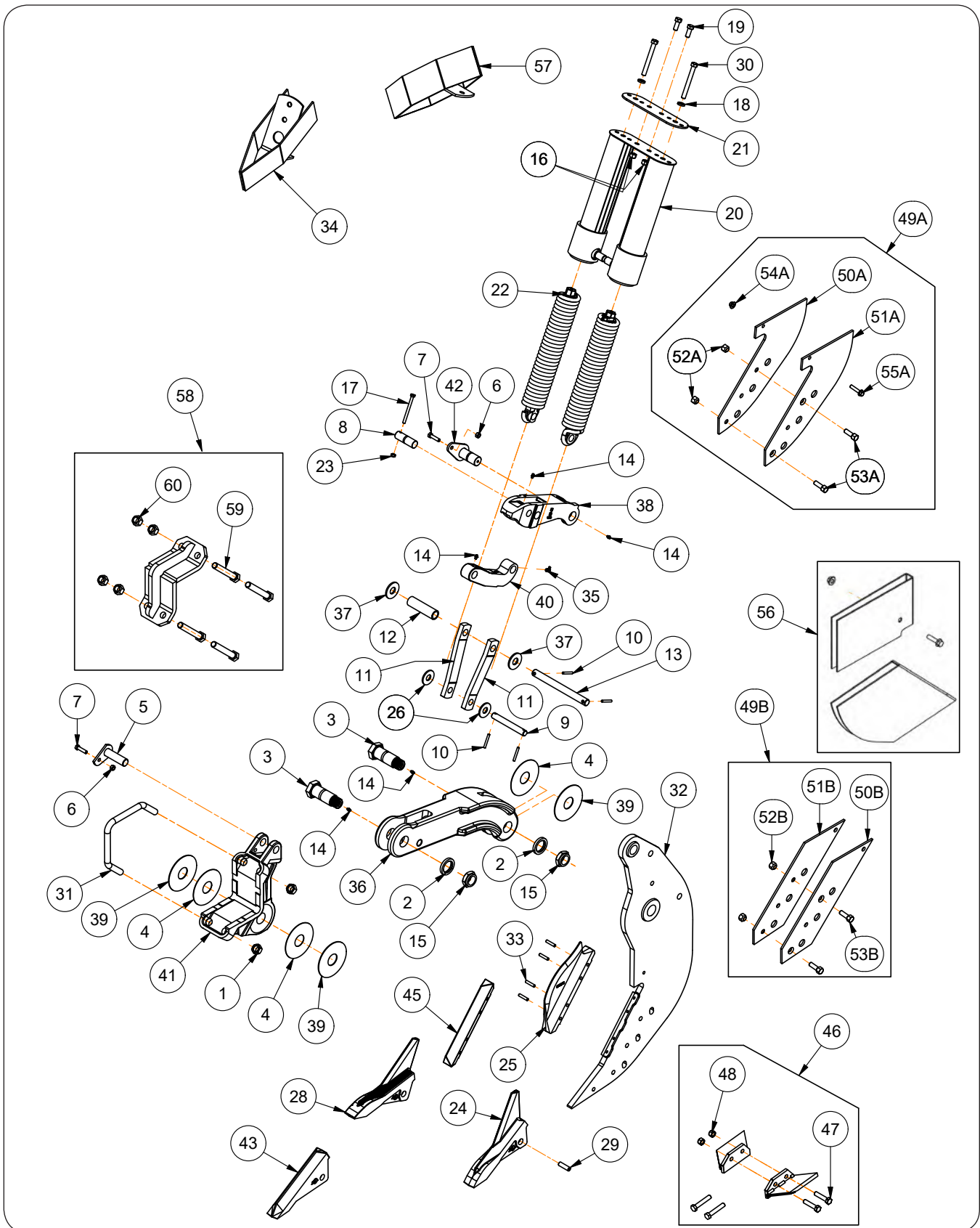
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY
1A	67311B	Stabilizer Wheel Right-Hand Assembly less Wheel & Tire	1
1B	67312B	Stabilizer Wheel Left-Hand Assembly less Wheel & Tire	1
2A	63624	Arm Hub Assembly Right-Hand (Includes Items 3 through 15)	1
2B	63623	Arm Hub Assembly Left-Hand (Includes Items 3 through 15)	1
3	9393-016	Slotted Nut 3/4"-16UNF	2
4	9391-035	Cotter Pin 5/32" Dia. x 1 1/2"	2
5	9162	Hub Cap	2
6	9768B	Hub Assembly (Includes Items 5 & 7 through 15)	2
7	9166	Inner Cone	2
8	9234	Washer	2
9	9168	Seal	2
10	9165	Outer Cone	2
11	9348	Tapered Nut 1/2"-20UNF	12
12	9158B	Hub Subassembly (Includes Items 13-15)	2
13	9345	Outer Cup	2
14	9346	Inner Cup	2
15	9347	Drive-In Stud 1/2"-20UNF x 1 7/8"	12
16	60909	Pivot Bracket Right-Hand	2
17	60910	Pivot Bracket Left-Hand	2
18	60890	Plate Right-Hand	2
19	60891	Plate Left-Hand	2
20	9390-444	Capscrew 5/8"-11UNC x 10 1/2"	2
21	9390-194	Capscrew 1"-8UNC x 5 1/2"	4
22	9390-161	Capscrew 3/4"-10UNC x 8" (For Rear Bar Mounting)	8
	9390-155	Capscrew 3/4"-10UNC x 5" (For Front Bar Mounting)	
23	9801	Lock Nut 5/8"-11UNC	2
24	9802	Lock Nut 3/4"-10UNC	8
25	9663	Lock Nut 1"-8UNC	4
26	66833	Turnbuckle Assembly (Includes Items 27-36)	2
27	62324	Turnbuckle	2
28	66832	Adjusting Rod Weldment Right-Hand	2
29	60907	Adjusting Rod Weldment Left-Hand	2
30	9394-024	Hex Nut 1 1/4-7UNC	2
31	91160	Grease Zerk	4
32	67957	Wrench Body	2
33	66830	Rod Handle	2
34	9000936	Lynch Pin	2
35	9936	Lock Nut 1/4"-20UNC	2
36	9390-009	Capscrew 1/4"-20UNC x 2"	2
37	60911	Tire & Wheel Assembly (Tire 9.5LB15)	2
38	W815-6-08	8 x 15 Wheel	2
37	81145	Tire & Wheel Assembly (Tire 7.6B15)	2
38	W615-6	6 x 15 Wheel	2
39	9002500	Valve Stem With Cap	2

RIPPER-ROLLER — Parts

Auto-Reset Shank

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

Auto-Reset Shank

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	67748B	Angled Shank Assy Complete	-	Includes Items 1 through 42
1	97025	Lock Nut 3/4"-10UNC	4	
2	85791	Beveled Flat Washer	2	
3	86749B	Pull Pin 1 1/2" Dia.	2	
4	63098B	Washer 5" O.D. (Hardened)	2	
5	63157B	Front Pivot Pin	1	
6	9928	Lock Nut 3/8"-16UNC	2	
7	9390-057	Capscrew 3/8"-16UNC x 1 1/2"	2	
8	801310B	Middle Toggle Pin	1	
9	63144B	Bottom Spring Pin 3/4"	1	
10	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	2	
11	63145B	Spring Strap	2	
12	63313PL	Roller	1	
13	63091B	Top Spring Pin 7/8" Dia. x 9 9/16"	1	
14	91160	Zerk (1/4-28)	5	
15	96976-048	Thin Collar Lock Nut 1 1/4"-12UNC	2	
16	9800	Lock Nut 1/2"-13UNC	2	
17	9390-041	Capscrew 5/16"-18UNC x 3 3/4" G5	1	
18	9404-026	Lock Washer 1/2"	2	
19	9390-100	Capscrew 1/2"-13UNC x 1 1/4"	2	
20	801302B	Spring Canister Weldment	1	
21	801318B	Spring Tube Brace	1	
22	67896B	Extension Spring Assembly	2	
23	9807	Lock Nut/Top 5/16"-18UNC	1	
24	67385B	Shovel/Point (Raised Center)	1	
25	67907B	Shark Fin Wear Bar	1	
26	9405-105	Flat Washer 3/4" Dia.	2	
27	602402	Shank Tip Weld-On Replacement Package (NOT SHOWN)	-	Beginning With Serial #A665700166 & Up
	65117			Prior to Serial #A665700166
28	67951B	Point Raised Center, Full Hard Surface Weld	1	
29	91144-234	Spiral Pin 1/2" Dia. x 1 3/4"	1	
30	93400	Capscrew 1/2"-13UNC x 4 1/2"	2	
31	94135B	V-Bolt 3/4"-10UNC	2	
32	69845B	Angled Shank	1	
33	91144-182	Spiral Pin 5/16" Dia. x 1 1/2"	4	
34	64594B	Spring Can Bracket Weldment	1	
35	93415	90° Zerk 1/4-28	1	

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RIPPER-ROLLER — Parts

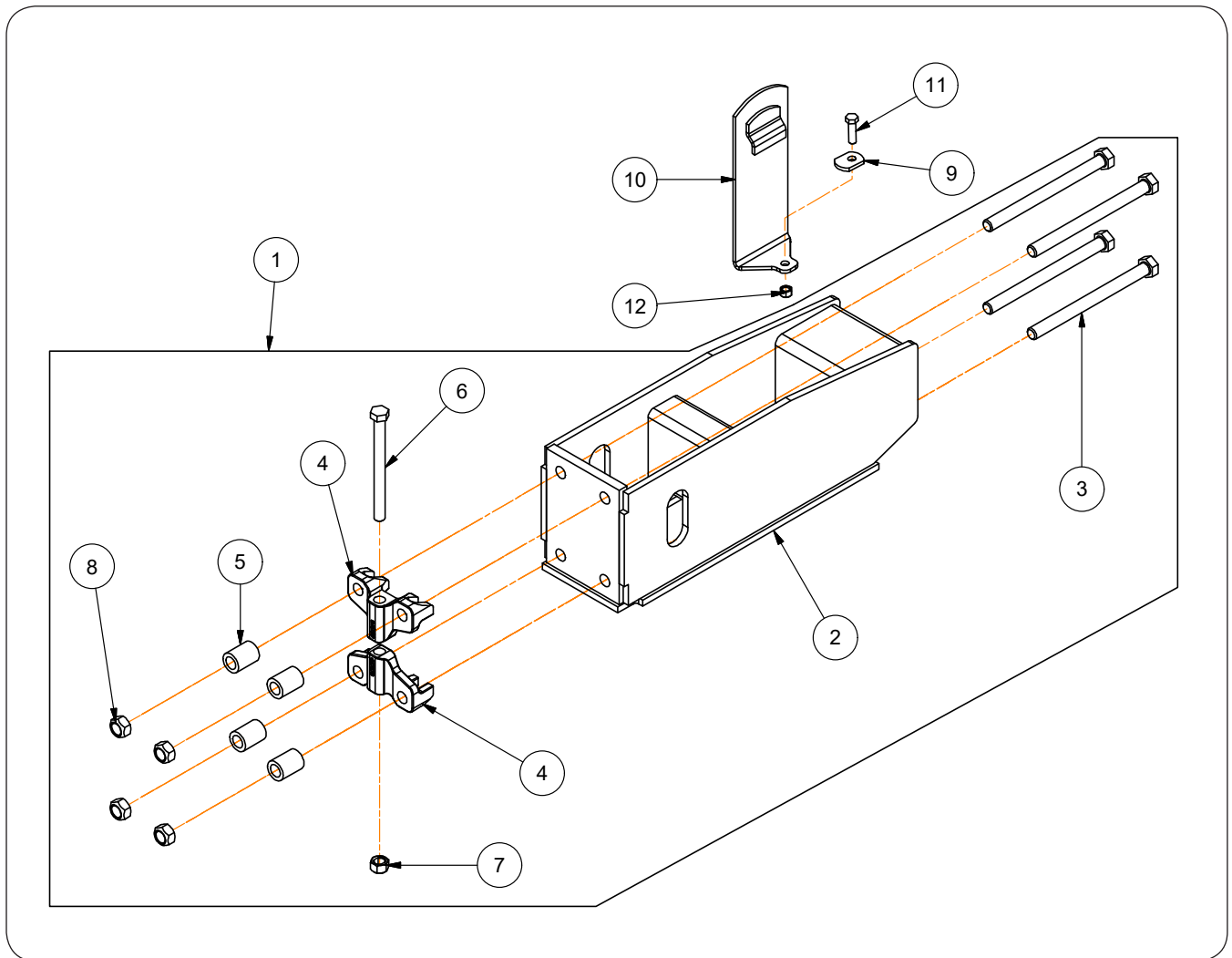
Auto-Reset Shank (continued)

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
36	68393B	Pull Arm Kit	1	
37	9405-112	Flat Washer 7/8" Dia.	2	
38	64784B	Outer Toggle Replacement	37	
39	66834B	Shim Washer 5" OD x 1 5/8" ID	3	
40	64357B	Inner Toggle	1	
41	83291B	Shank Mount	1	
42	66926B	Pin Weldment 1 1/4" Dia. x 2 3/4"	1	
43	67021B	Point	1	
44	67669	Decal	1	
45	65947B	Wear Bar	1	
46	63168	Shatter Wing Bundle 7"	1	Shown
	67692B	Shatter Wing Bundle 9"		
47	9390-104	Capscrew 1/2"-13UNC x 2 1/4"	2	
	9390-106	Capscrew 1/2"-13UNC x 2 3/4"		
48	9800	Lock Nut 1/2"-13UNC	2	
49A	601515B	Wear Guard Assembly Heavy-Duty	1	Beginning With Serial #A665700166 & Up Includes Items 50A - 55A
49B	64077	Wear Guard Assembly Without Fertilizer		Prior to Serial #A665700166 Includes Items 50B-53B
50A	601514B	Plate, Right-Hand	1	
50B	64047B	Plate, Right-Hand		
51A	600615B	Plate, Left-Hand	1	
51B	64048B	Plate, Left-Hand		
52A	9348	Beveled Nut 1/2"-20UNF	2	
52B				
53A	9500736	Bolt 1/2"-20UNF x 1 3/8"	2	Grade 5
53B				
54A	9002717	Flange Nut, 3/8"-16UNC	1	
55A	9503319	Flange Screw, 3/8"-16UNC x 1 3/4" G5	1	
56	78589	Shank Protector Kit	1	
	601598	Upper Shank Protector	-	
	601516	Lower Shank Protector	-	
57	63525	Bracket for Auto-Reset Shank	1	8 Shank 36"Spg,12 Shank 38"Spacing
58	602508B	Clamp Cap Kit	1	Includes Items 58 & 59
59	9390-155	Capscrew 3/4"-10UNC x 5"	4	
60	9802	Lock Nut 3/4"-10UNC	4	

Shank Extension Assembly & Deflector Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

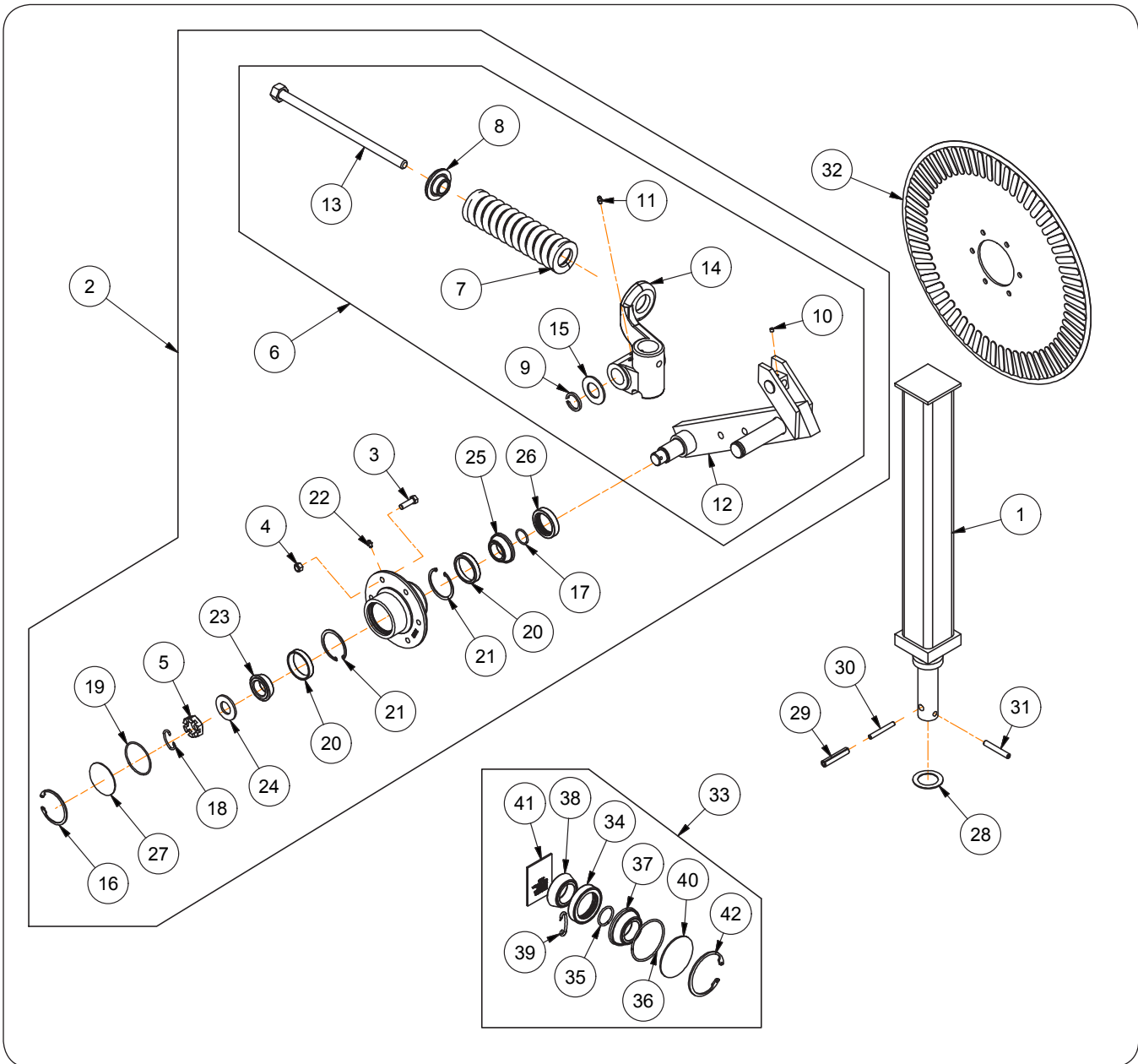


ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	67278B	Shank Extension 28" Assembly	-	Includes Items 1 through 7
2	67277B	Shank Extension Weldment	1	
3	9390-459	Capscrew 7/8"-9UNC x 11"	4	Grade 5
4	66737B	Extension Clamp	2	
5	66837	Spacer Tube	4	
6	9390-448	Capscrew 3/4"-10UNC x 8 1/2"	1	Grade 5
7	9802	Lock Nut 3/4"-10UNC	1	
8	98420	Lock Nut 7/8"-9UNC	4	
9	67291B	Clamp Plate	2	
10	67296B	Deflector Weldment	2	For Folding Units Only
11	9390-102	Capscrew 1/2"-13UNC x 1 3/4"	2	Grade 5
12	9800	Lock Nut 1/2"-13UNC	2	

RIPPER-ROLLER — Parts

Combo® Coulter

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

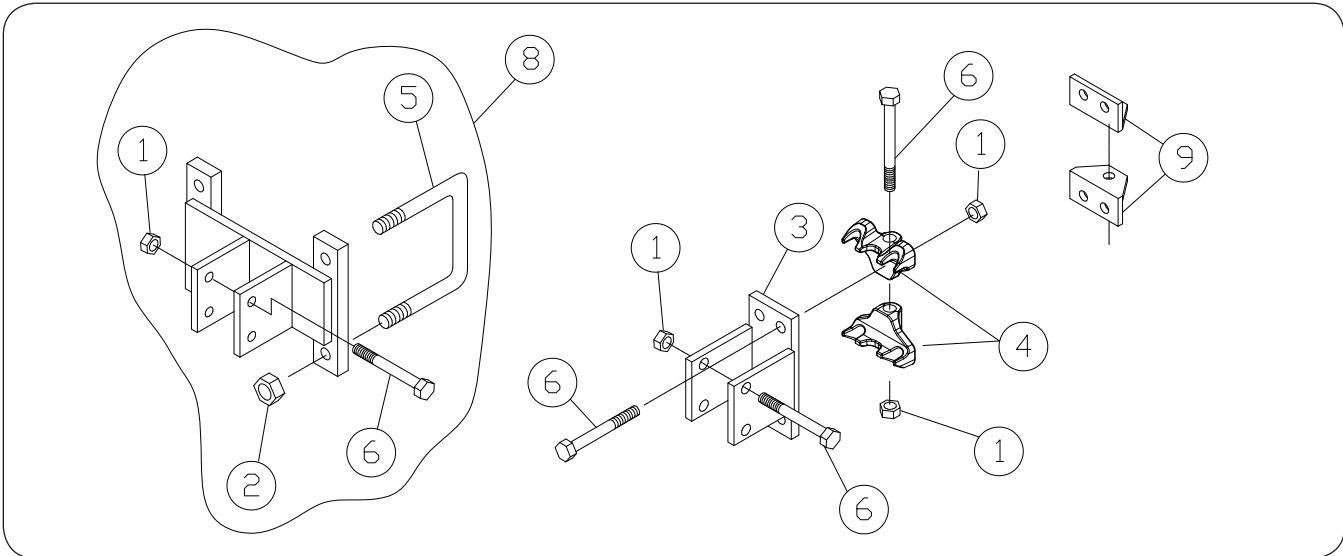
Combo® Coulter

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	68730B	Straight Post (Auto-Reset Shanks)	1	
2	65854B	Combo Coulter LH Sub Asy (Includes 3-27)	1	
3	9390-056	Capscrew 3/8"-16UNC x 1 1/4"	6	
4	9928	Lock Nut 3/8"-16UNC	6	
5	94795	Slotted Jam Nut 1"-14UNS	1	
6	65853B	Coulter Arm LH Assembly	1	
7	94756B	Compression Spring	1	
8	82826B	Spring Washer	1	
9	94144	Retaining Ring 1 1/4"	1	
10	9399-057	Set Screw 1/4"-20UNC x 1/4"	1	
11	91160	Zerk	1	
12	65852B	Coulter Arm LH Weldment	1	
13	83371B	Spring Rod Weldment	1	
14	82823B	Coulter Swivel LH Bracket	1	
15	92528B	Bushing (2 1/4" OD x 1.25" ID)	1	
16	93985	Retaining Ring	1	
17	95565	O-Ring 1.049 ID	1	
18	97565	C-Ring/Nut Retainer	1	
19	902158	O-Ring 2.487 ID	1	
20	9345	Bearing Cup	2	
21	94796	Retaining Ring 2 1/2"	2	
22	91160	Zerk	1	
23	9165	Bearing Cone	1	
24	94800	Washer (2" OD x 1.01" ID)	1	
25	901145	Bearing & Seal Assembly	1	
26	93987	Triple Lip Seal	1	
27	60735B	Hub Cap	1	
28	96581	Machinery Washer	1	
29	9392-210	Roll Pin 1/2" Dia. x 2 1/2"	1	
30	91144-188	Spiral Pin 5/16" Dia. x 2 1/2" Lg.	1	
31	91144-209	Spiral Pin 3/8" Dia. x 2 1/2"	1	
32	93934	Coulter Blade (Rippled) 20" Dia.	1	
33	68281	Seal Kit	1	
34	93987	Triple Lip Seal	1	
35	95565	O-Ring 1.049 ID	1	
36	902158	O-Ring 2.487 ID	1	
37	901145	Bearing & Seal Assembly	1	
38	9165	Bearing Cone	1	
39	97565	C-Ring/Nut Retainer	1	
40	60735B	Hub Cap	1	
41	66684	Instruction Sheet	1	
42	93985	Retaining Ring	1	
	63043	Complete Coulter Assembly (Straight Post) (Includes Items 1,2,26,27,28,29,30)		

Coulter Clamps

Please visit www.unverferth.com/parts/ for the most current parts listing.



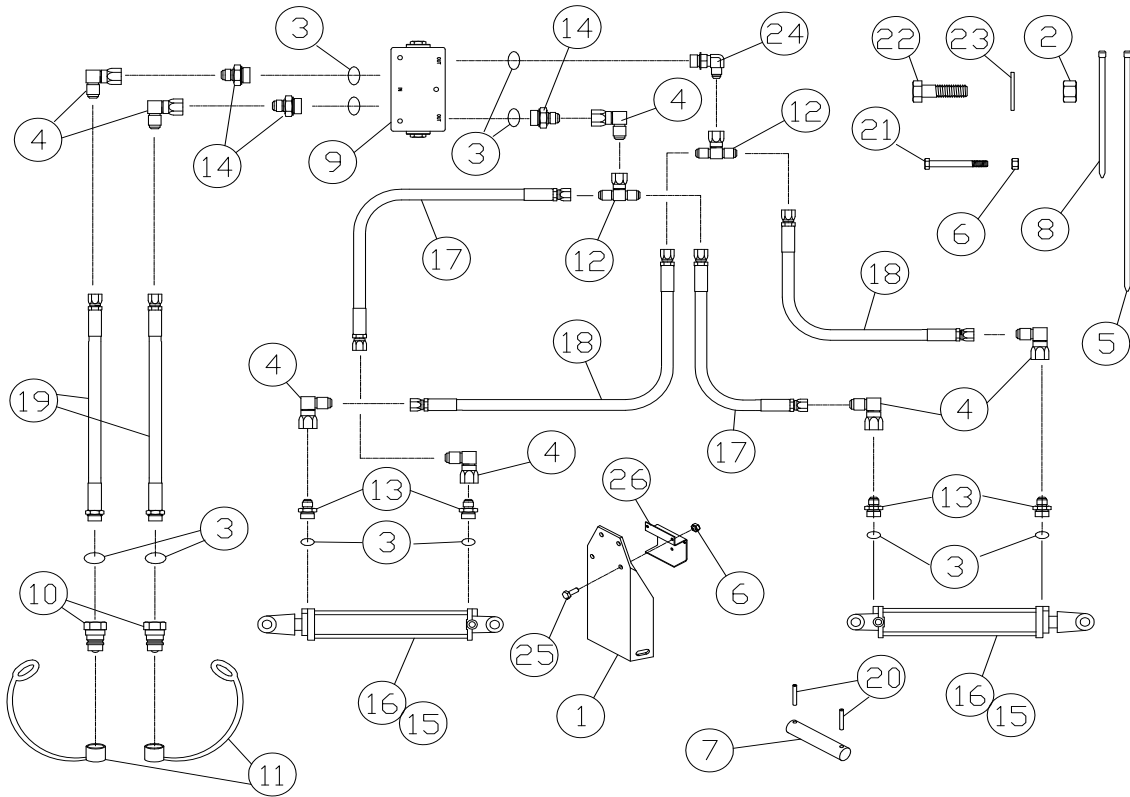
ITEM	PART NO.	DESCRIPTION	RIGID UNITS				FOLDING UNITS
			7 SHANK	9 SHANK	11 SHANK	13 SHANK	15 SHANK
1	9801	Lock Nut 5/8"-11UNC	53	60	81	94	101
2	9802	Lock Nut 3/4"-10UNC	8	8	8	8	-
3	60245	Flush Clamp 6" Weldment	7	9	11	13	15
4	67922B	Extension Clamp	12	16	20	24	28
5	94012	U-Bolt 3/4"-10UNC	4	4	4	4	-
6	9390-134	Capscrew 5/8"-11UNC x 5"	46	58	70	81	86
7	9390-136	Capscrew 5/8"-11UNC x 6"	7	9	11	13	15
8	63063	Offset Bracket Bundle (Includes Items 1,2,5,6,7)	2	2	2	2	-
9	62543	Angle/Clamp Bracket	2	2	2	2	2

Notes

Please visit www.unverferth.com/parts/ for the most current parts listing.

Hydraulic Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



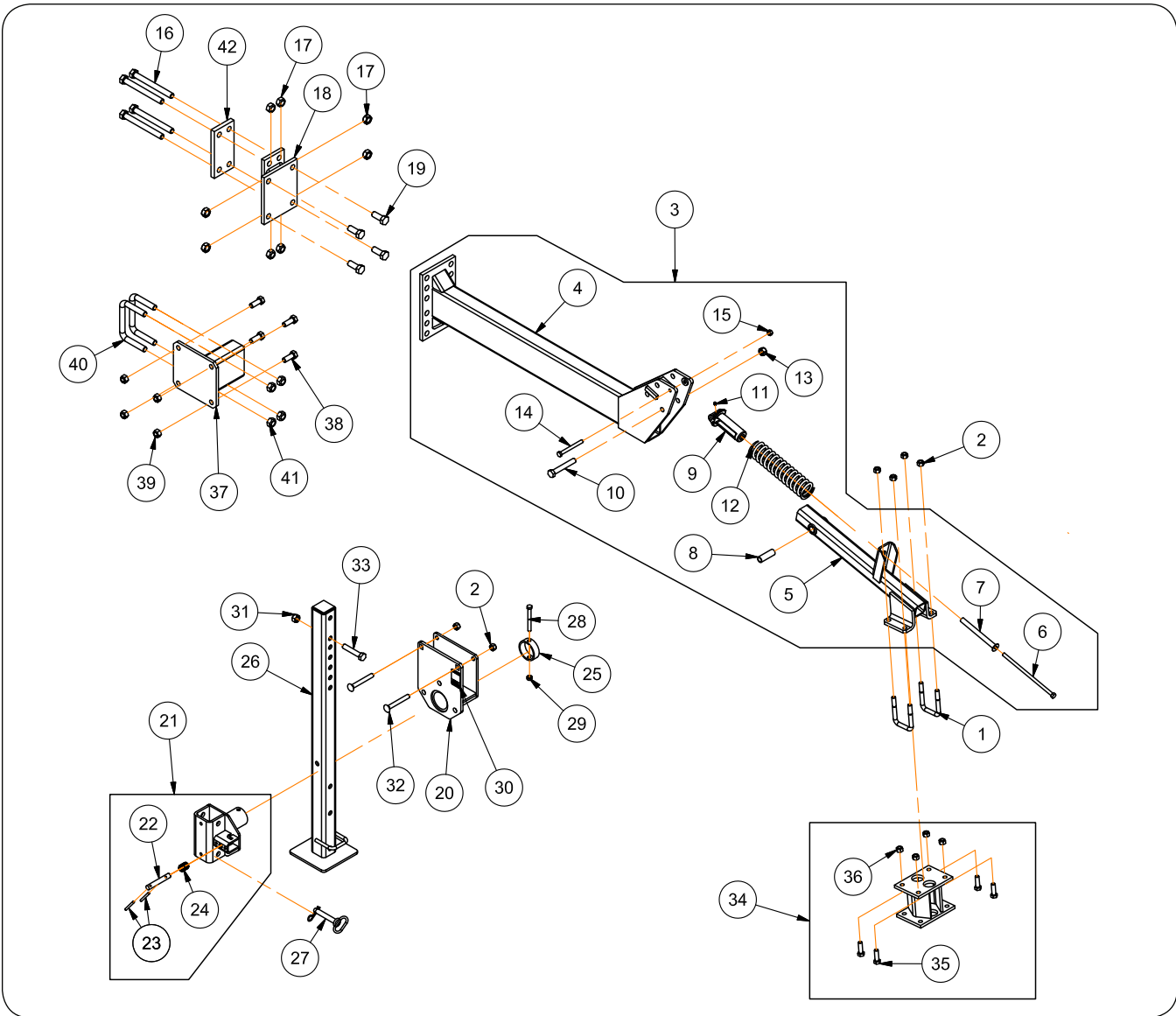
Hydraulic Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

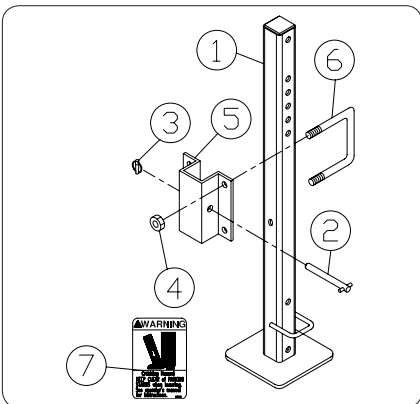
ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	65299B	Mounting Bracket	1	
2	9800	Lock Nut 1/2"-13UNC	2	
3	9840	"O"-Ring	A/R	
4	9876	90° Swivel Elbow	7	
5	94038	Cable Tie 32"	A/R	
6	9936	Lock Nut 1/4"-20UNC	5	
7	85631	Pin 1" Dia. x 4"	4	
8	9000106	Cable Tie 7 1/2"	A/R	
9	91240	Lock Valve	1	
10	91383	Quick Disconnect	2	
11	91511	Dust Cap	2	
12	91525	Tee	2	
13	91608	Orifice Connector	4	
14	92927	Adapter	3	
15	95407	Seal Kit for 4 x 24 Cylinder	-	
16	95419	Hydraulic Cylinder 4 x 24	2	
17	95800	Hydraulic Hose 3/8 x 32"	2	
18	95873	Hydraulic Hose 3/8 x 63"	2	
19	96975	Hydraulic Hose 3/8 x 72"	2	
20	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	8	
21	9390-011	Capscrew 1/4"-20UNC x 2 1/2"	3	
22	9390-102	Capscrew 1/2"-13UNC x 1 3/4"	2	
23	9405-088	Flat Washer 1/2"	2	
24	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Adj. Male	1	
25	9390-003	Capscrew 1/4"-20UNC x 3/4"	2	
26	65714B	Valve Mounting Bracket	1	

Mounting Arm and Storage Stand Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



Main Frame Storage Stand



ITEM	PART NO.	DESCRIPTION	QTY
1	63529	Storage Stand	2
2	9500153	Clevis Pin 3/4"D x 6 3/8"	2
3	9093	Klik-Pin	2
4	9802	Lock Nut 3/4"-10UNC	8
5	60850	Mounting Bracket	2
6	94012	U-Bolt 3/4"-10UNC x 5"	4
7	97973	Decal, WARNING "Crush Hazard"	2

RIPPER-ROLLER — Parts

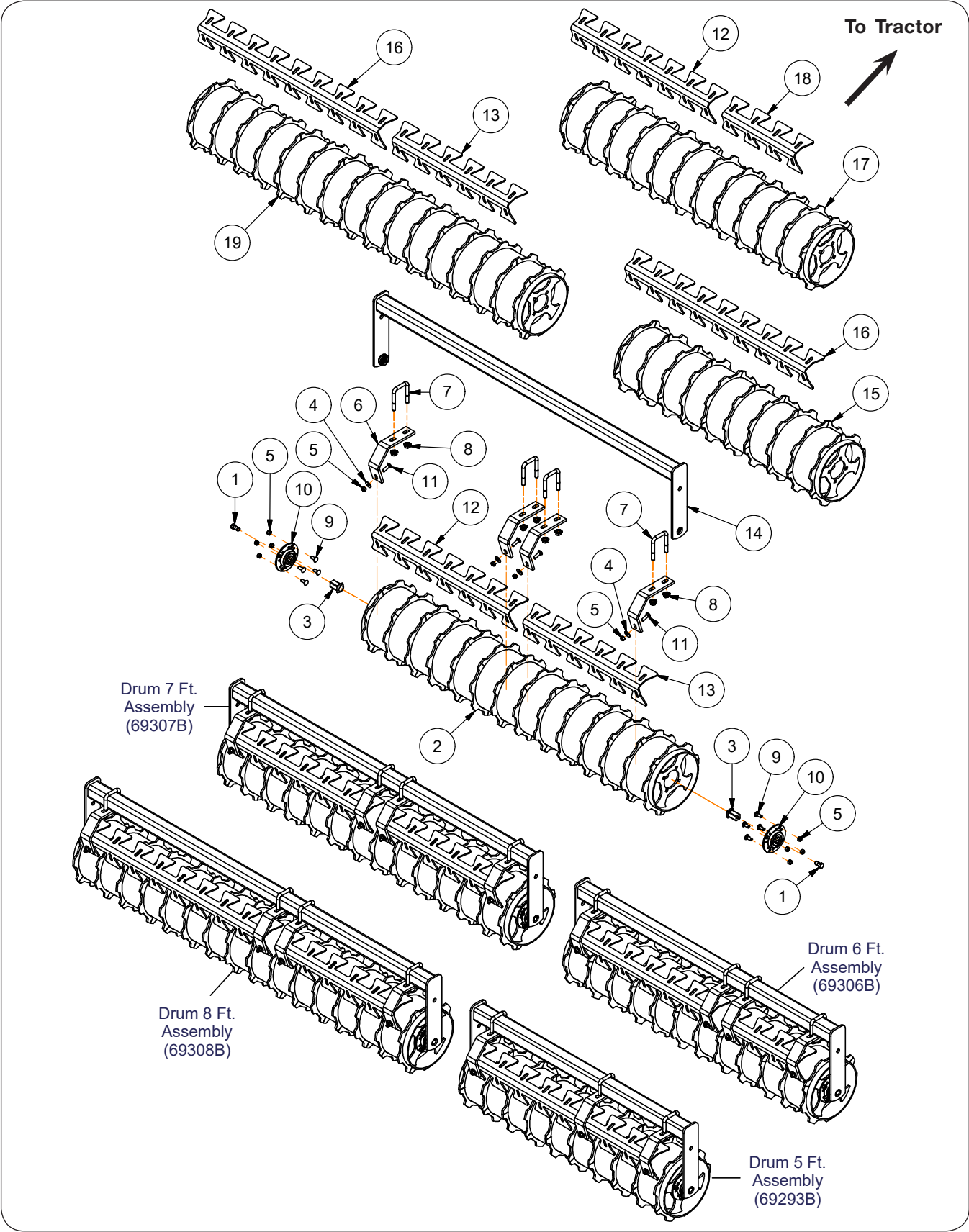
Mounting Arm and Storage Stand Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	NOTES
1	91219	U-Bolt 5/8"-11UNC	
2	9801	Locknut 5/8"-11UNC	
3	86450B	Mounting Arm Asy w/Spring	Includes Items 4 through 15
4	86355B	Mounting Arm Weldment	
5	806588B	Pivot Arm Assembly	
6	9002128	Capscrew 1/2"-13UNC x 11"	
7	806627B	Guide Bushing Weldment	
8	806590	Inner Pivot Bushing	
9	804006B	Spring Insert	
10	9390-155	Capscrew 3/4"-10UNC x 5"	
11	91160	Zerk	
12	9003228B	Compression Spring	
13	9802	Locknut 3/4"-10UNC	
14	9390-113	Capscrew 1/2"-13UNC x 5" G5	
15	9800	Locknut 1/2-13UNC	
16	9390-455	U-Bolt 7/8"-9UNC x 7 3/4"	
17	98420	Locknut 7/8"-9UNC	
18	601666B	Offset Bracket Assembly	Includes Items 17 & 19
19	9390-165	Capscrew 7/8"-9UNC x 2 1/4" G5	
20	69552B	Pivot Stand Mounting Bracket	
21	69553B	Pivot Stand Weldment	Includes Items 22-24
22	63674	Pin, 3/4" Dia. x 5"	
23	91144-190	Spiral Pin 5/16" Dia. x 3"	
24	97125B	Compression Spring 1.10" Dia. x 2 1/2"	
25	69543B	Tube 3 1/2" OD x 1 1/8"	
26	63529	Storage Stand	
27	97035	Hitch Pin 3/4" Dia. x 4 1/4" w/Hairpin Cotter	
28	9390-112	Capscrew 1/2"-13UNC x 4 1/2"	
29	9800	Locknut 1/2"-13UNC	
30	97973	Decal, WARNING "Crush Hazard"	
31	9802	Locknut 3/4"-10UNC	
32	9388-145	Carriage Bolt 5/8"-11UNC x 5" G5	
33	9390-153	Capscrew 3/4"-10UNC x 4" G5	
34	68511B	Tube 6" Spacer Weldment (Option)	Includes Items 35 & 36
35	9390-124	Capscrew 5/8"-11UNC x 2" G5	
36	9801	Locknut 5/8"-11UNC	
37	86357B	Extension Stub Weldment	
38	9390-145	Capscrew 3/4"-10UNC x 2" G5	
39	9802	Locknut 3/4"-10UNC	
40	97583	U-Bolt 7/8"-9UNC x 4 3/4"	
41	98420	Locknut 7/8"-9UNC	
42	601635B	Plate 4 1/2" x 9 1/2"	

Cleated Drum Components

Please visit www.unverferth.com/parts/ for the most current parts listing.



RIPPER-ROLLER — Parts

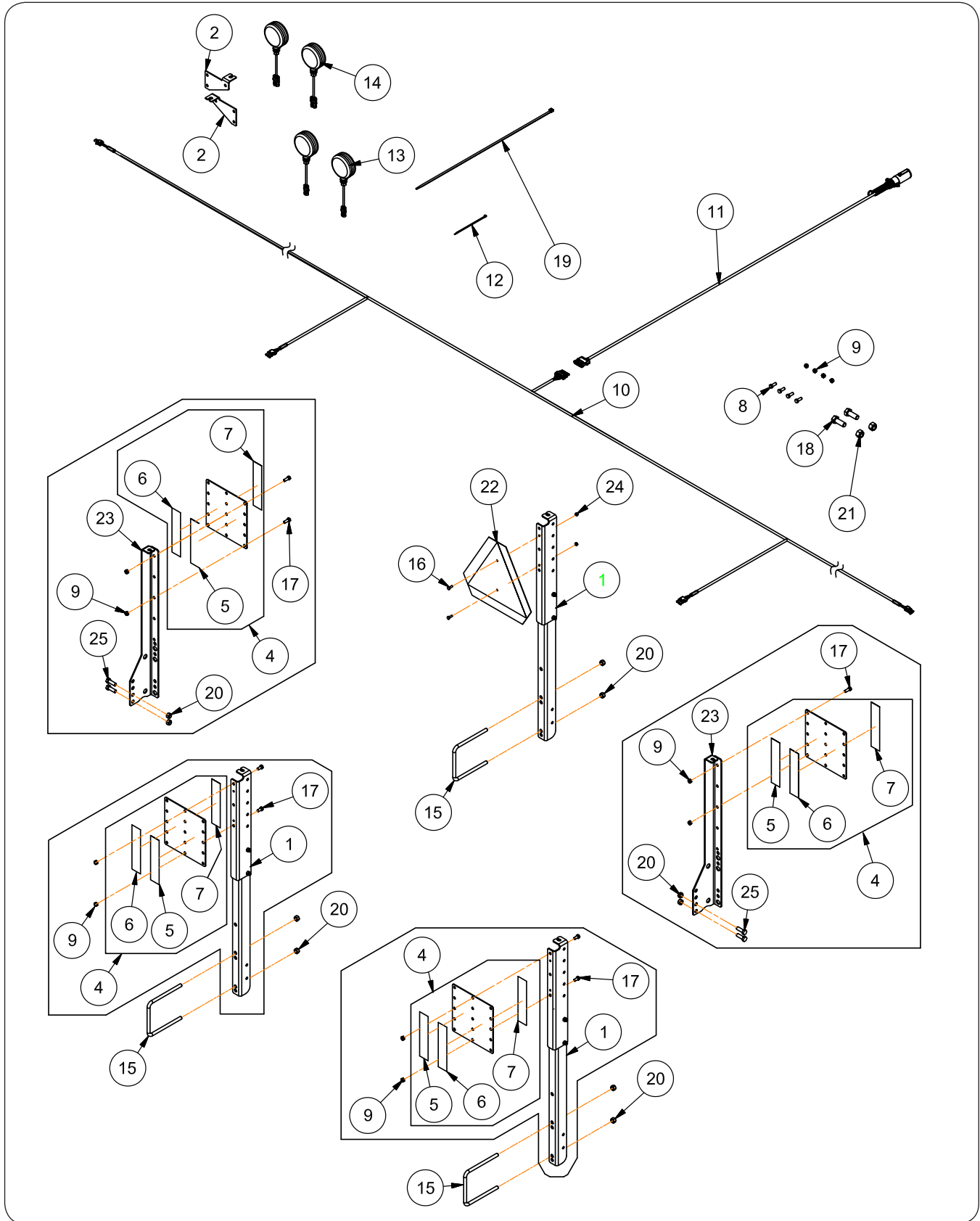
Cleated Drum Components

Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY			
			DRUM 5 FT. ASSEMBLY (69293B)	DRUM 6 FT. ASSEMBLY (69306B)	DRUM 7 FT. ASSEMBLY (69307B)	DRUM 8 FT. ASSEMBLY (69308B)
1	900872	Capscrew 5/8"-11UNC x 1 1/4" G5 Full Threaded	2	2	2	2
2	76994B	Drum Roller 7 Ft. Weldment	-	-	1	-
3	74280	Bearing Bolt 1.125" Sq. x 2 1/16"	2	2	2	2
4	9405-088	Flat Washer 1/2" USS	4	4	4	4
5	9800	Lock Nut/Top 1/2"-13UNC	12	12	12	12
6	69529B	Scraper Bar Mount	4	4	4	4
7	91219	U-Bolt 5/8"-11UNC x 4 1/2"	4	4	4	4
8	9502324	Flange Nut 5/8"-11UNC	8	8	8	8
9	9388-103	Carriage Bolt 1/2"-13UNC x 1 1/4"	8	8	8	8
10	902714	Flange Bearing 1 1/8" Sq. Bore	2	2	2	2
11	9388-105	Carriage Bolt 1/2"-13UNC x 1 3/4"	2	2	2	2
12	76969B	Drum Scraper 4 Ft.	-	1	1	-
13	77004B	Drum Scraper 7 Ft.	-	-	1	1
14	69284B	Frame 5 Ft. Roller Weldment	1	-	-	-
	69283B	Frame 6 Ft. Roller Weldment	-	1	-	-
	69271B	Frame 7 Ft. Roller Weldment (SHOWN)	-	-	1	-
	69270B	Frame 8 Ft. Roller Weldment	-	-	-	1
15	75528B	Drum Roller 5 Ft. Weldment	1	-	-	-
16	76970B	Drum Scraper 5 Ft.	1	-	-	1
17	75527B	Drum Roller 6 Ft. Weldment	-	1	-	-
18	76971B	Drum Scraper 6 Ft.	-	1	-	-
19	76995B	Drum Roller 8 Ft. Weldment	-	-	-	1

Lighting Kits

Please visit www.unverferth.com/parts/ for the most current parts listing.



Lighting Kits

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ITEM	PART NO.	DESCRIPTION	FOLDING UNITS	RIGID UNITS
1	69664B	Reflector Stand Assembly	3	2
2	68960B	Light Bracket	2	3
3	69664B	Reflector Stand Assembly	3	2
4	68958B	Reflector Bracket	4	3
5	9003125	Decal, Fluorescent Orange	1	1
6	9003126	Red Reflector	1	1
7	9003127	Amber Reflector	1	1
8	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	4	2
9	9928	Lock Nut, 3/8"-16UNC	12	10
10	69407	Wiring Harness	1	1
11	86466	Main Wiring Harness	1	1
12	9000106	Cable Tie 7 1/2"	8	8
13	9003876	Amber Round Light	2	2
14	9003877	Red Round Light	2	2
15	9005460	U-Bolt	3	4
16	9390-003	Capscrew, 1/4"-20UNC x 3/4" G5	2	2
17	9390-055	Capscrew, 3/8"-16UNC x 1" G5	8	8
18	9390-145	Capscrew, 3/4"-10UNC x 2" G5	4	4
19	94038	Cable Tie 32"	12	12
20	9800	Lock Nut, 1/2"-13UNC	10	12
21	9802	Lock Nut, 3/4"-10UNC	4	4
22	9829	SMV Emblem	1	1
23	68959B	Plate	2	2
24	9936	Lock Nut, 1/4"-20UNC	2	2
25	9390-101	Capscrew, 1/2"-13UNC x 1 1/2" G5	4	4



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