Seedbed Tillage

Raptor™ Strip-Tillage Tool with TerrainPro Row Units

3-Point Models: 2030MT & 2015MT

Beginning with Serial Number A62580100

Part No. 603225

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) side of the machine are determined by standing behind the machine and facing in the direction of travel.

Pre-Operation Checklist

- ☐ Wheel bolts tightened (recheck after initial use)
- ☐ Tire pressures checked
- ☐ Hardware tightened
- ☐ Machine lubricated
- ☐ Safety and operating procedures reviewed
- ☐ Field adjustment information reviewed
- ☐ Warranty information reviewed
- ☐ 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.

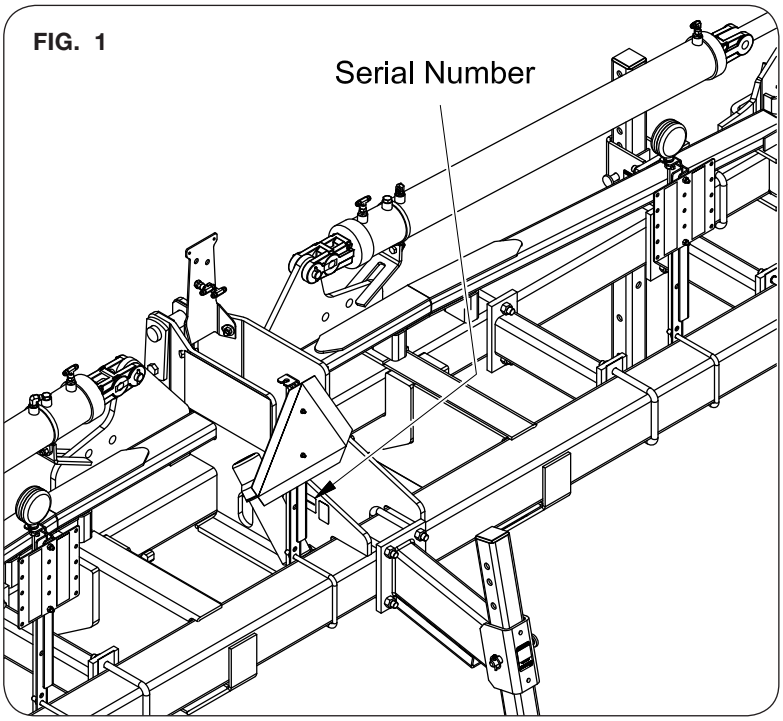
Please fill out and retain this portion for your records. The serial number plate is located on the frame as shown below.

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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Please refer to the Rear Hitch manual for additional information.

Notes

SECTION I
Safety

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. 9829
SMV Emblem

PART NO. 9003125 - Fluorescent Strip

PART NO. 9003126 - Reflector RED

PART NO. 9003127 - Reflector AMBER

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 the engine running.

Before Transporting

- 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 machine. Make sure that the SMV emblem and SIS decal are visible to approaching traffic.

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 judgement 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:
    - o End fittings damaged, displaced, or leaking.
    - o Outer covering chafed/cut or wire reinforcing exposed.
    - o Outer covering ballooning locally.
    - o 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.

Notes

SECTION II
Set Up

Stabilizer Wheel Assembly

⚠ WARNING

- **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 100 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**

8 Shank 36”/38” Spacing & 12 Shank 30”/36”/38” Spacing

1. Using a safe lifting device rated at a minimum of 100 lbs., remove the shipping strap retaining the stabilizer wheels.

NOTE: refer to overhead layouts to verify position.

2. Rotate stabilizer wheel assembly forward into working position.
3. Attach the turnbuckles to the mounting brackets with the 1”-8UNC hardware provided.
4. Tighten capscrews to torque value listed in the torque chart in MAINTENANCE section.
5. Attach the tire and wheel assembly. Secure with 1/2”-20UNF tapered nuts.
6. Tighten wheel hardware to torque value listed in MAINTENANCE section.

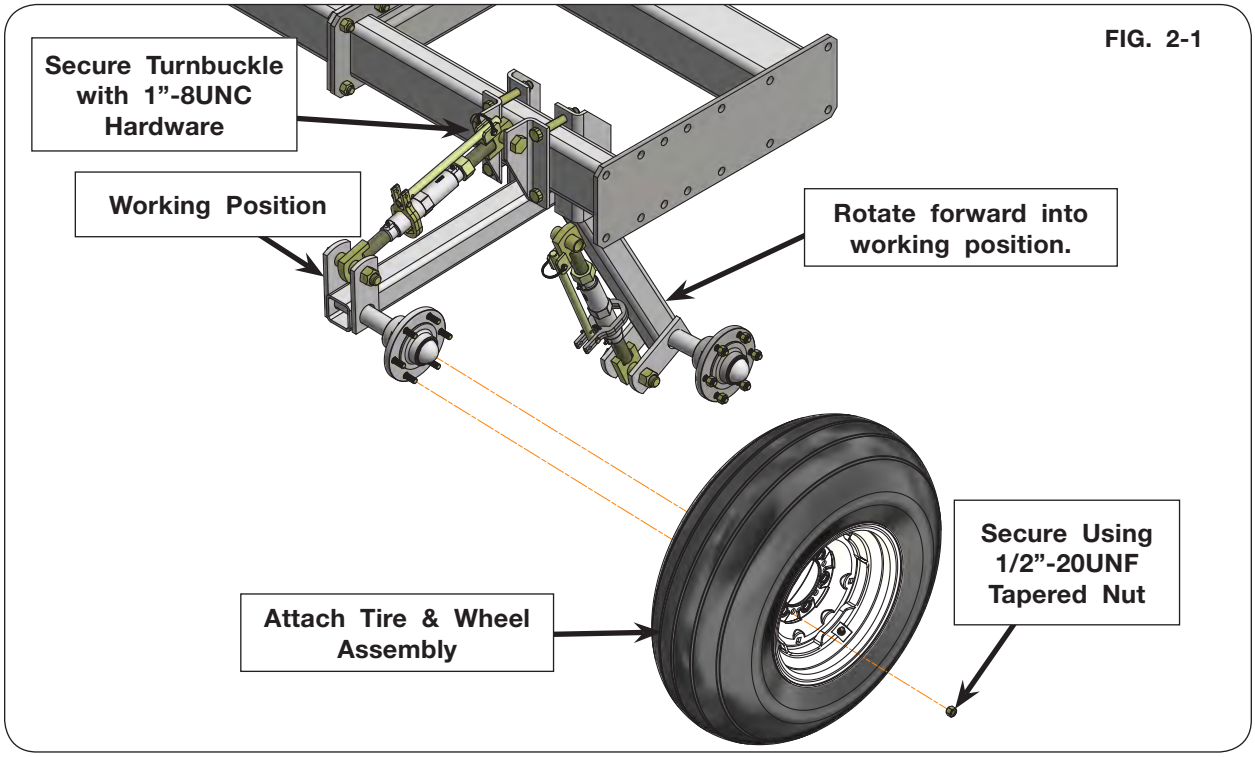


FIG. 2-1

Hydraulic Set Up

⚠ WARNING

- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**

12 Shank 30" Spacing

1. Shims are provided for adjusting/leveling wing height in the field. The cylinder rod end must also be adjusted. Refer to OPERATION section for "Adjusting/Leveling" procedures.

   Determine shim requirements as follows:

Wing Tip Distance Below Level	Approximate Shim Thickness Required
1/2"	1/16"
1"	1/8"
1 1/2"	1/16" & 1/8"
2"	1/4"
2 1/2"	1/16" & 1/4"

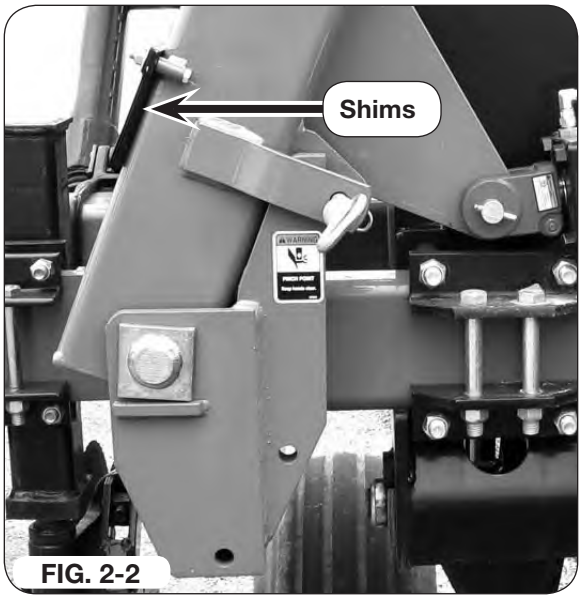


FIG. 2-2

8 Shank 30", 36" & 38" Spacing
12 Shank 36" & 38" Spacing

1. Attach stop block (68337B) and add shims as needed to the front and rear wing hinge section of the main frame with 5/8"-11UNC x 2" carriage bolts (9388-135) and 5/8"-11UNC lock nuts (9801) to adjust/level the wing height (FIG. 2-3).

⚠ CAUTION

- **SHIM KIT MUST NOT BE USED WITH FLEX VALVE OPTION.**

NOTE: Up to three shims may be used on each position to level the frame and wings. More shims will raise the wing. Fewer shims will lower the wing.

2. Repeat step 1 for opposite side.

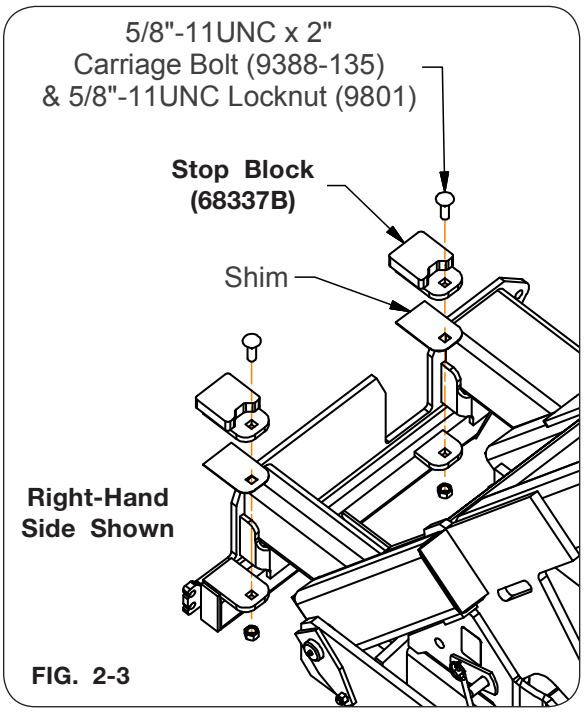


FIG. 2-3

Purging Hydraulic System

⚠ WARNING

- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR 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.**

IMPORTANT

- *Flex frame configuration, wings will go below center when BOTH pistons are fully extended on each cylinder. IF Machine is not raised into transport OR system is not properly operated (hydraulic valve shifts to pressure reducing mode), damage could occur.*

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.

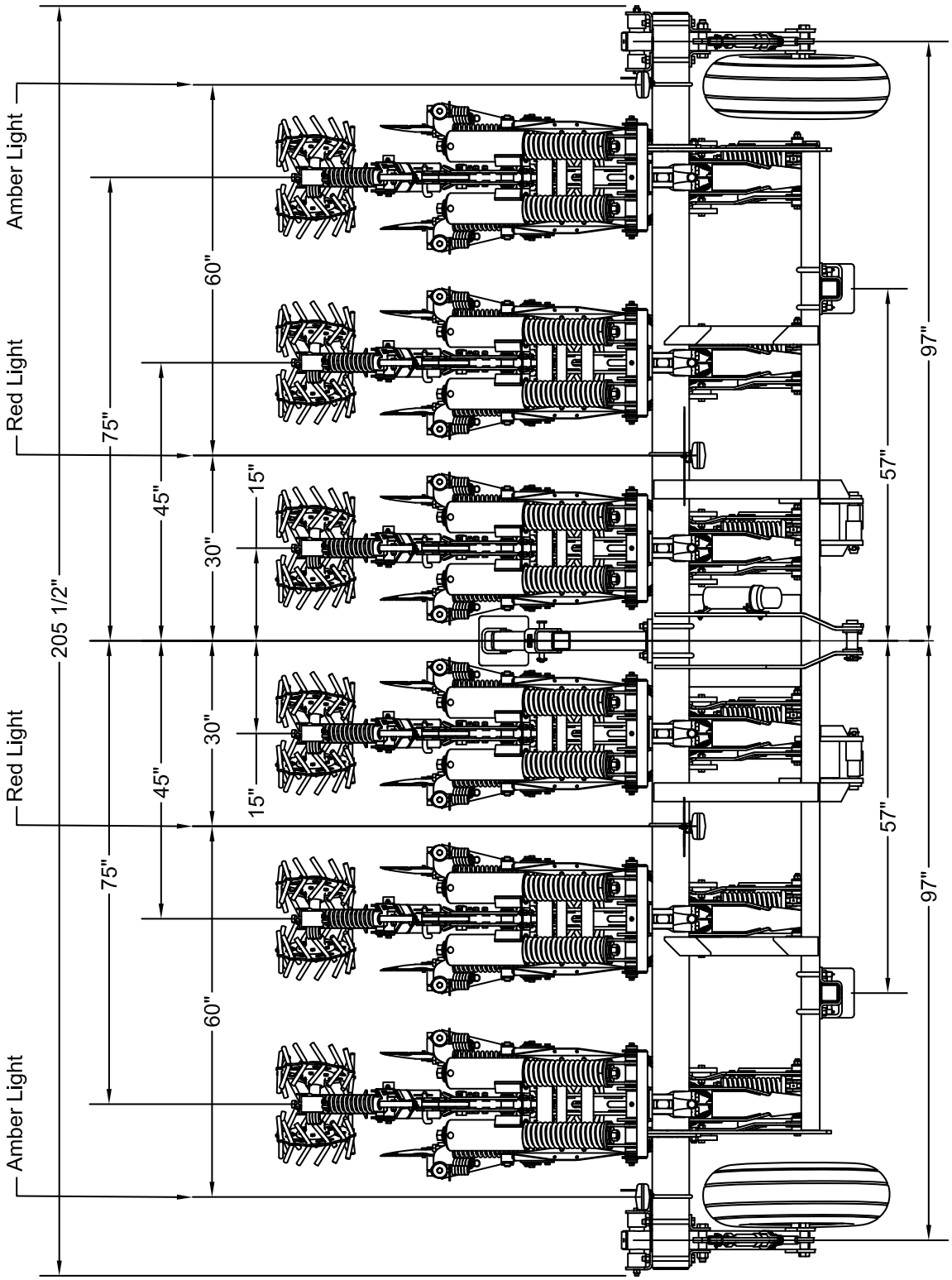
HYDRAULIC SYSTEM CHECKS ON ALL UNITS -- CHECK THE FOLLOWING:
ROUTING OF ALL HYDRAULIC HOSES: Hoses should not be kinked, twisted, or rubbing against sharp edges.

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.

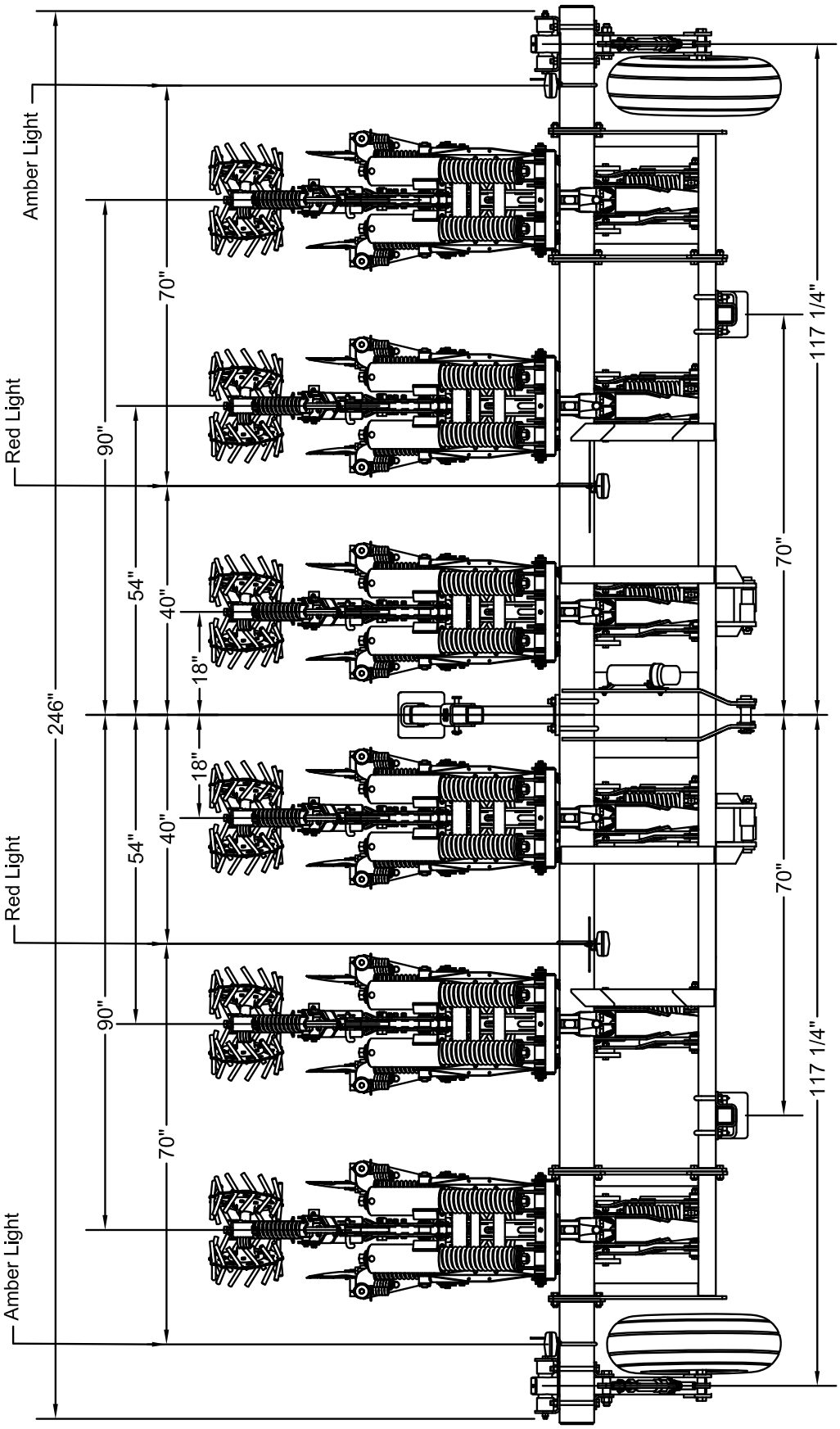
Overhead Layouts — Rigid Units — 6 Shank 30" Spacing

Auto Reset with Crow Foot Conditioner Wheel Assembly



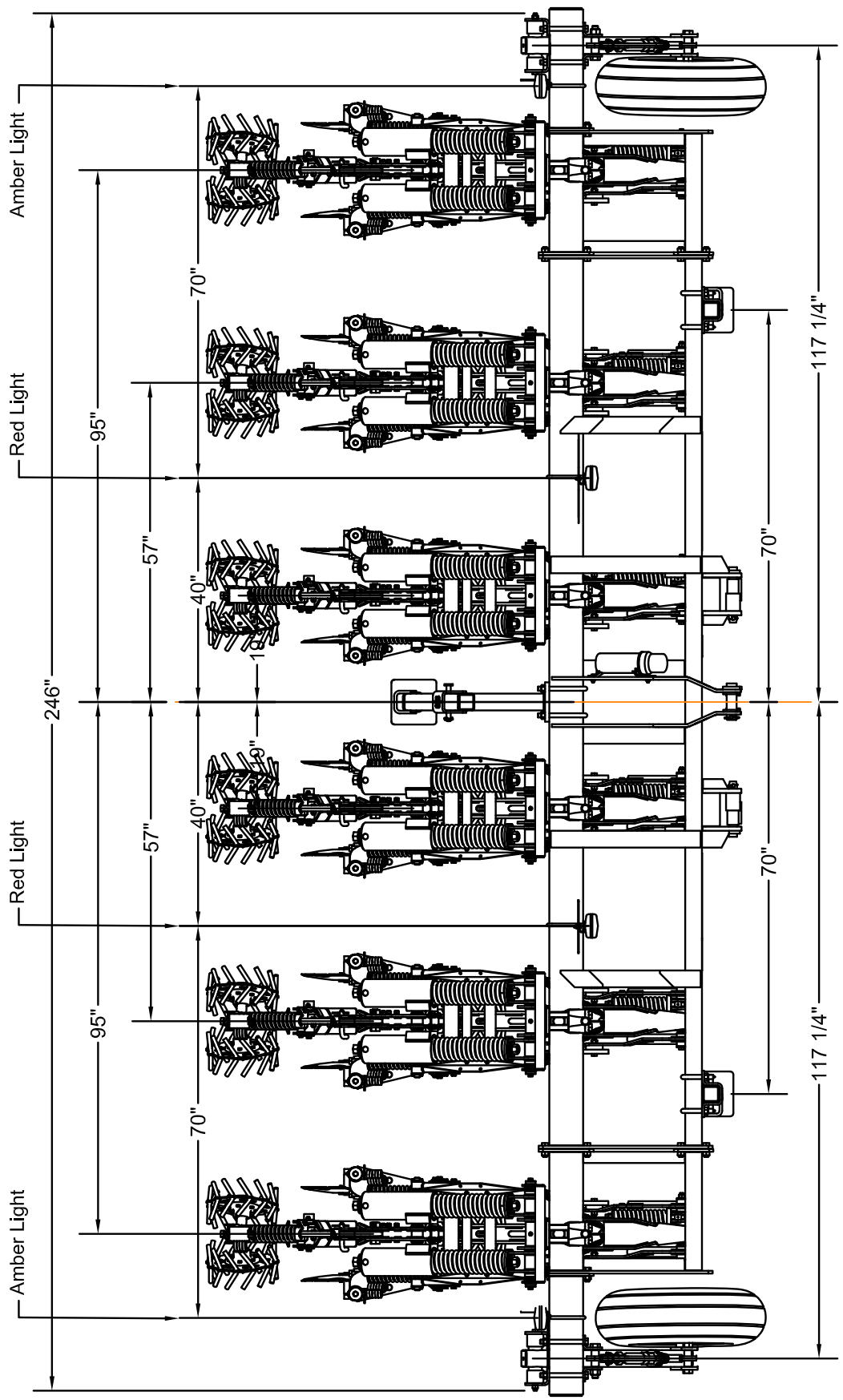
Overhead Layouts — Rigid Units — 6 Shank 36” Spacing

Auto Reset



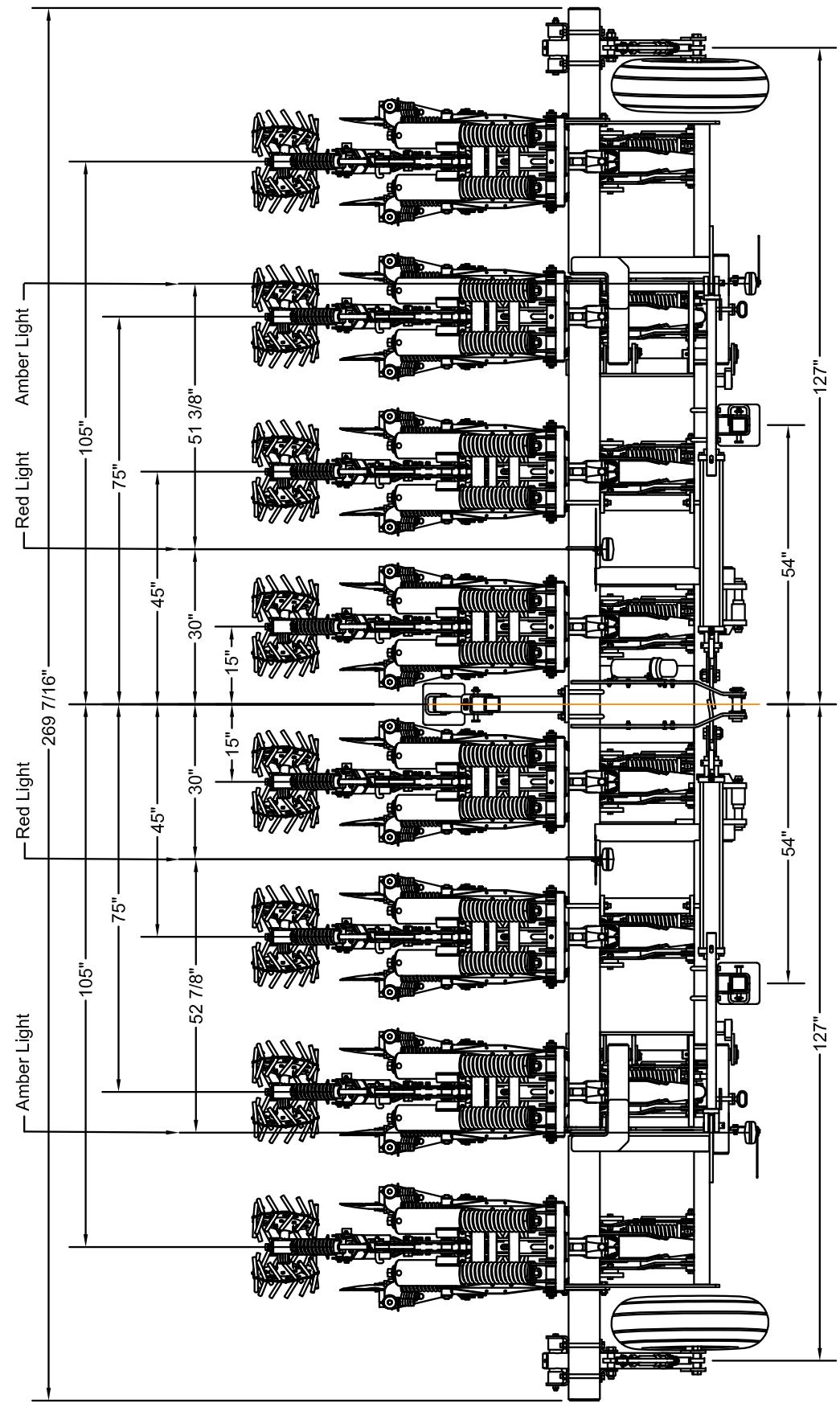
Overhead Layouts — Rigid Units — 6 Shank 38” Spacing

Auto Reset with Crow Foot Gauge Wheel



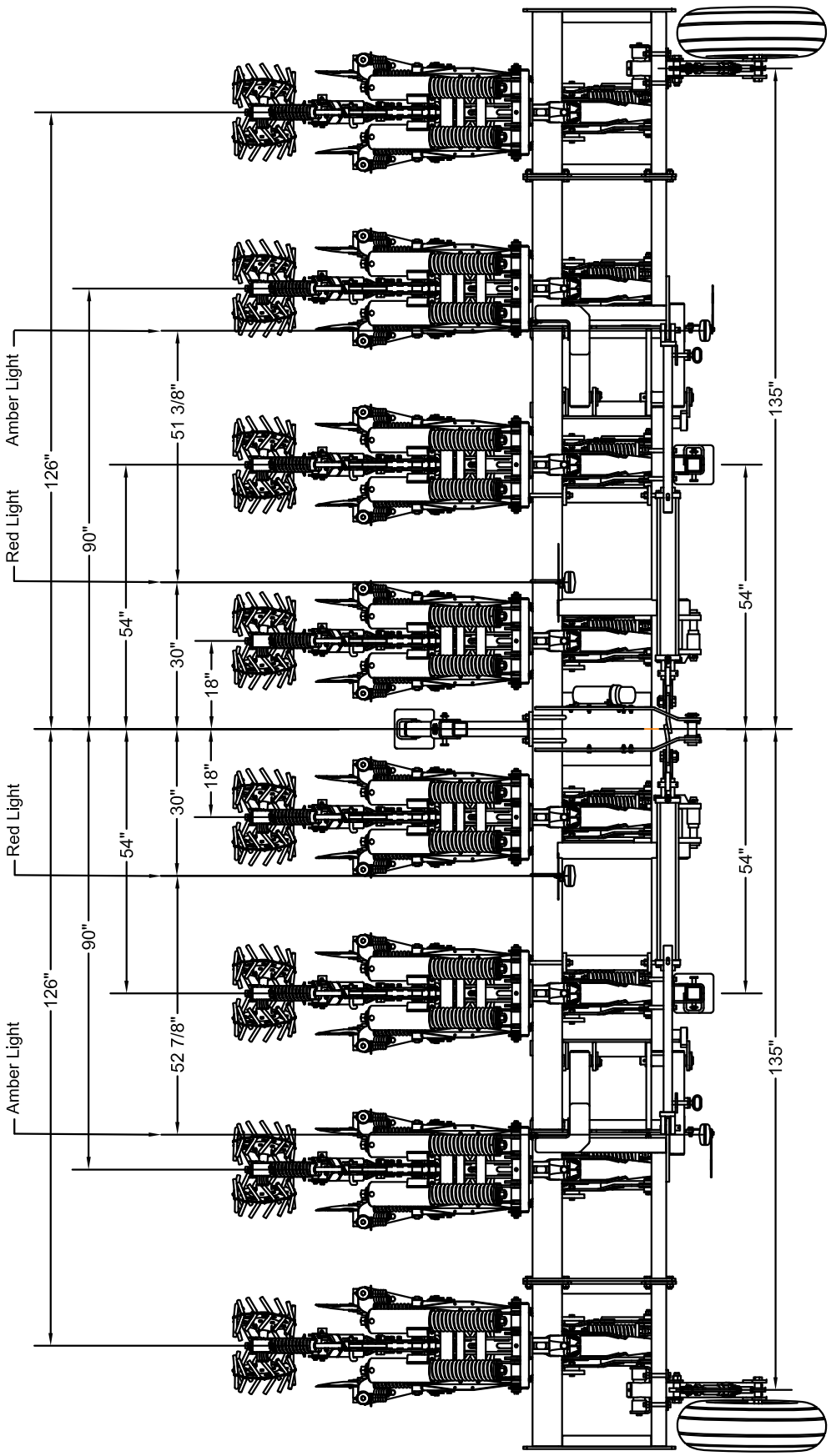
Overhead Layouts — Folding Units — 8 Shank 30” Spacing

Auto Reset with Crow Foot Gauge Wheel



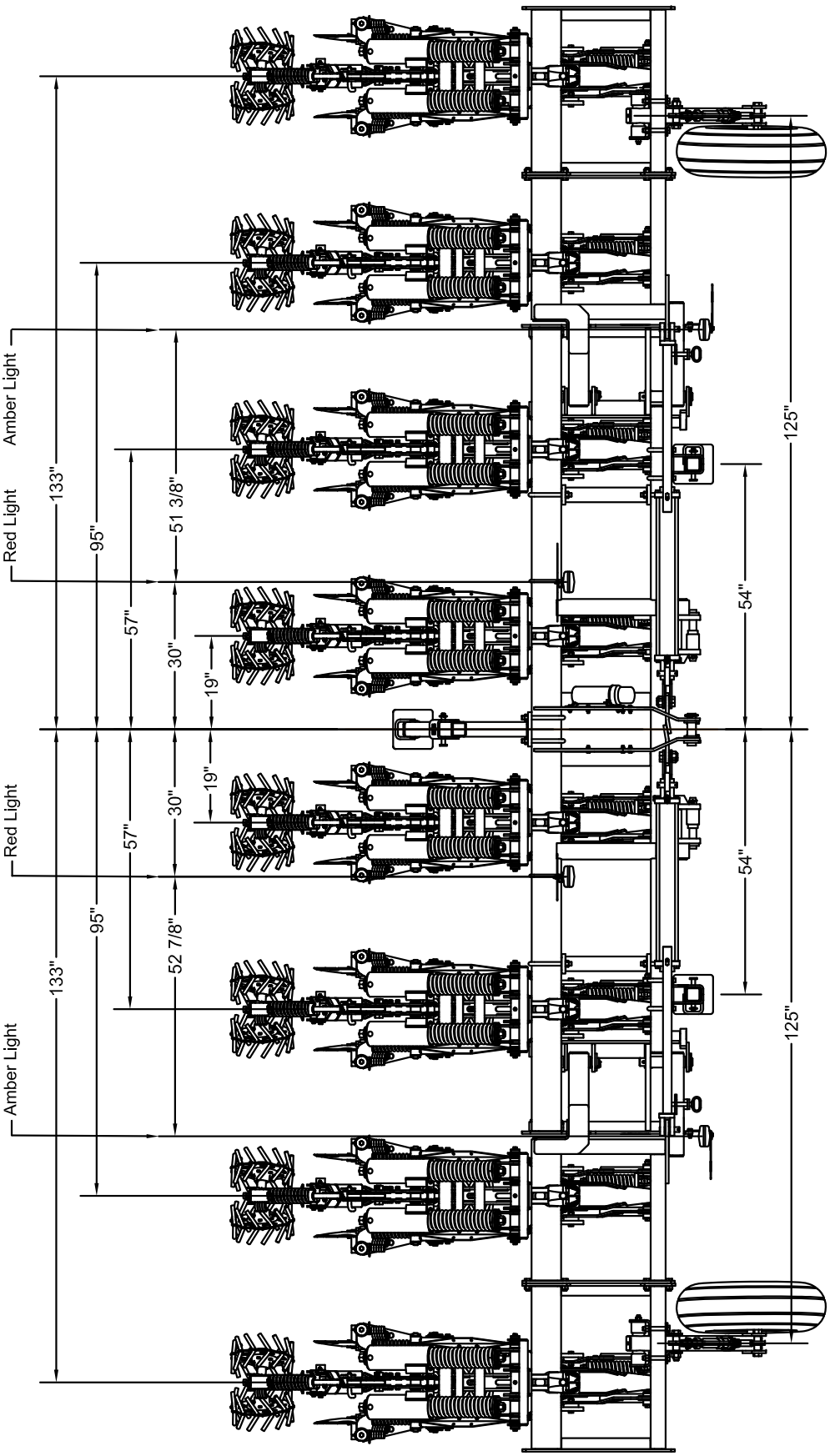
Overhead Layouts — Folding Units — 8 Shank 36” Spacing

Auto Reset with Crow Foot Gauge Wheel



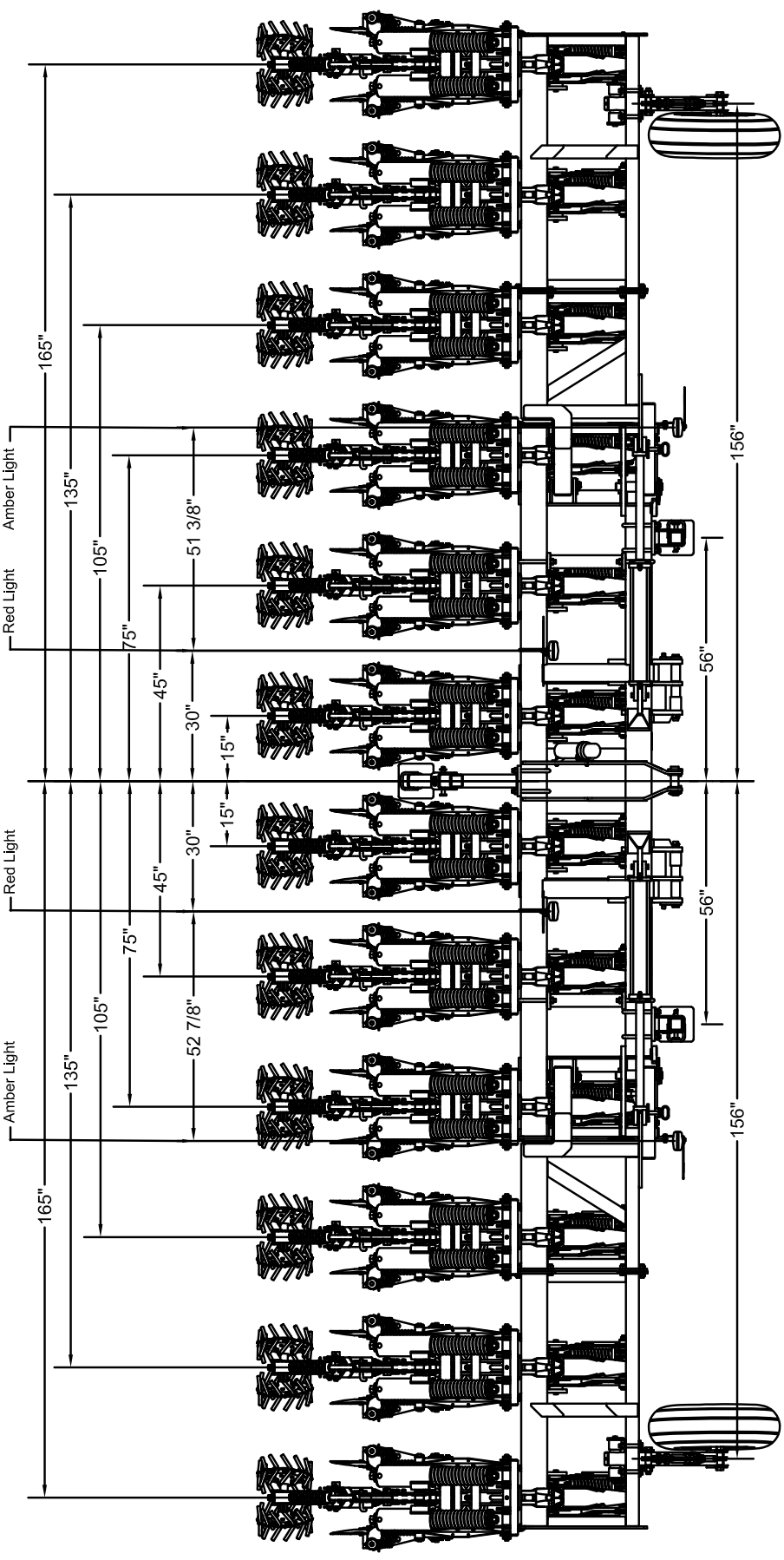
Overhead Layouts — Folding Units — 8 Shank 38” Spacing

Auto Reset with Crow Foot Gauge Wheel



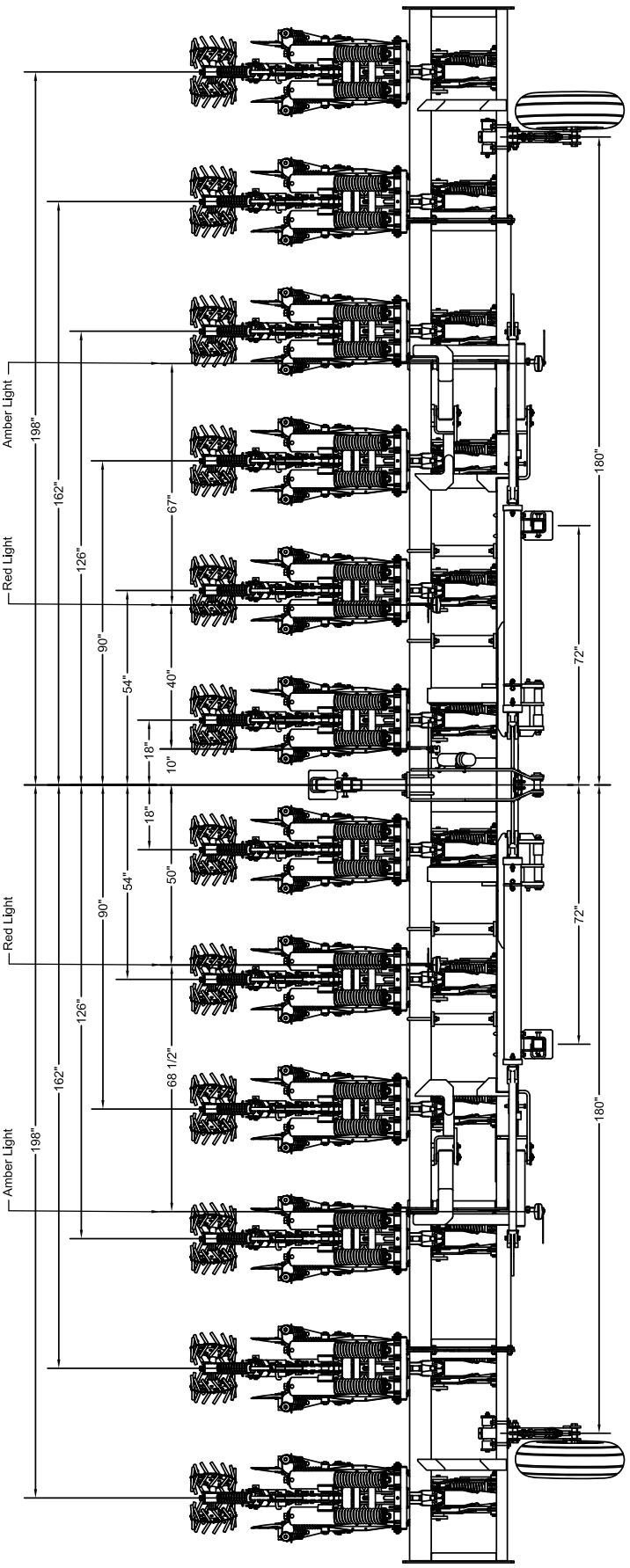
Overhead Layouts — Folding Units — 12 Shank 30” Spacing

Auto Reset with Crow Foot Conditioner Wheel Assembly



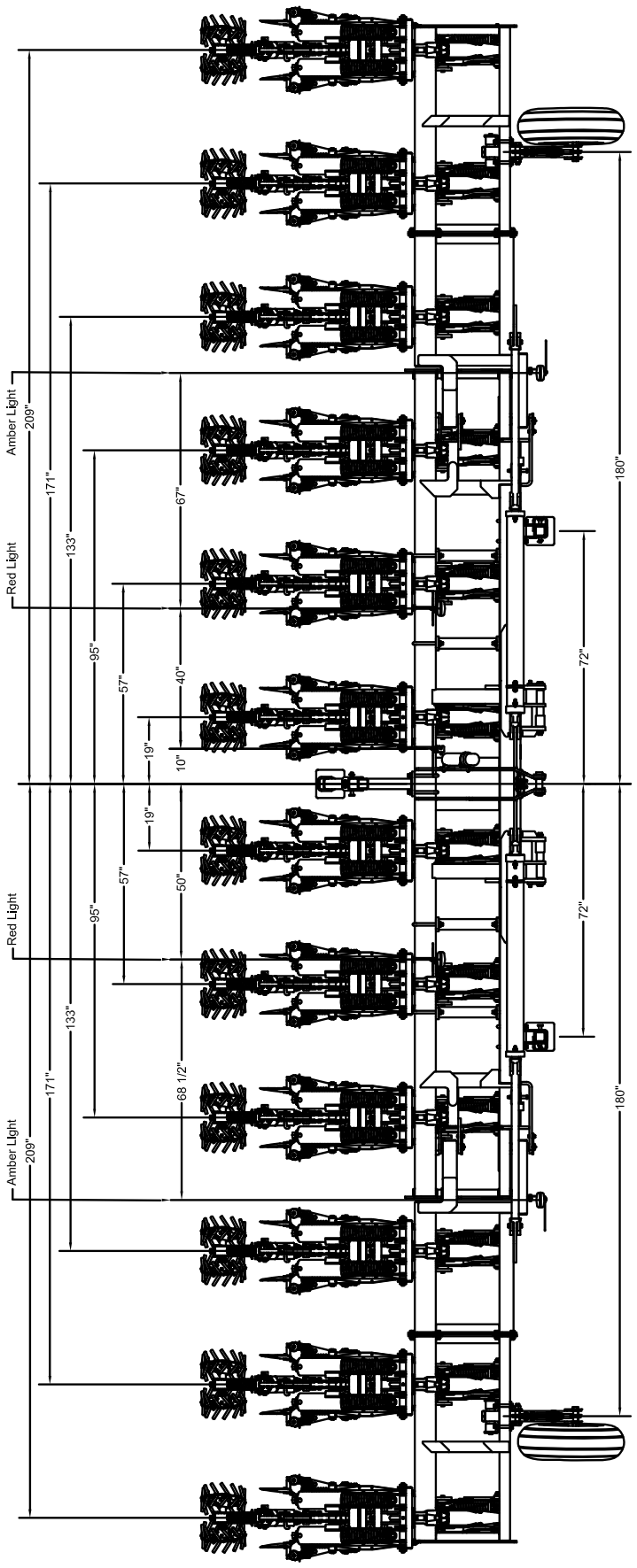
Overhead Layouts — Folding Units — 12 Shank 36” Spacing

Auto Reset with Crow Foot Conditioner Wheel Assembly



Overhead Layouts — Folding Units — 12 Shank 38” Spacing

Auto Reset with Crow Foot Conditioner Wheel Assembly



Notes

SECTION III
Operation

General Operation Information

WARNING

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

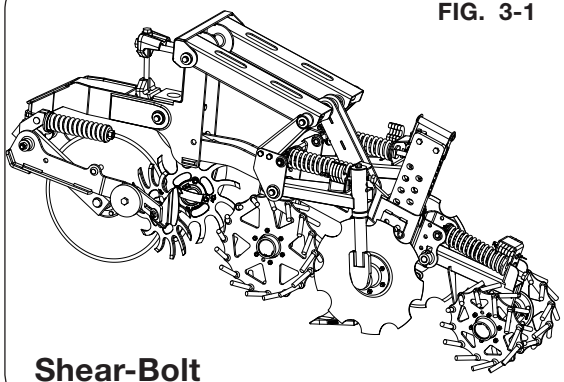
Read this operation section thoroughly. Acquaint yourself with the adjustments required to obtain efficient and trouble-free operations.

The 3-POINT RAPTOR deep-tillage tool can be equipped with a variety of finishing attachments for optimum field performance.

The 3-POINT RAPTOR tool is available with two parallel arm options:

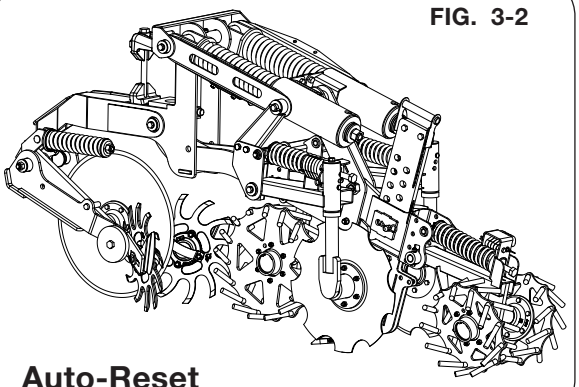
- The Model 2015MT comes with the shear-bolt parallel arms (FIG. 3-1) and should be used in areas with few rocks or obstructions.
- The Model 2030MT is equipped with the auto-reset parallel arms (FIG. 3-2) and is intended for use with moderate levels of rocks and obstructions.

FIG. 3-1



Shear-Bolt

FIG. 3-2



Auto-Reset

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.

Attaching 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. For these applications, customers are recommended to order an optional caddy.*

Mast And Hitch

The 3-POINT RAPTOR implement 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 6 Shank	Folding 8 Shank	Folding 12 Shank
CAT3 - 3PT	X	X	X
CAT3 - QC	X	X	X
CAT3 - N QC	X	X	X
CAT4 - N	X	X	
CAT4 - N QC	X	X	X
CAT4			X
CAT4 - 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.

Pins And Retaining Rings

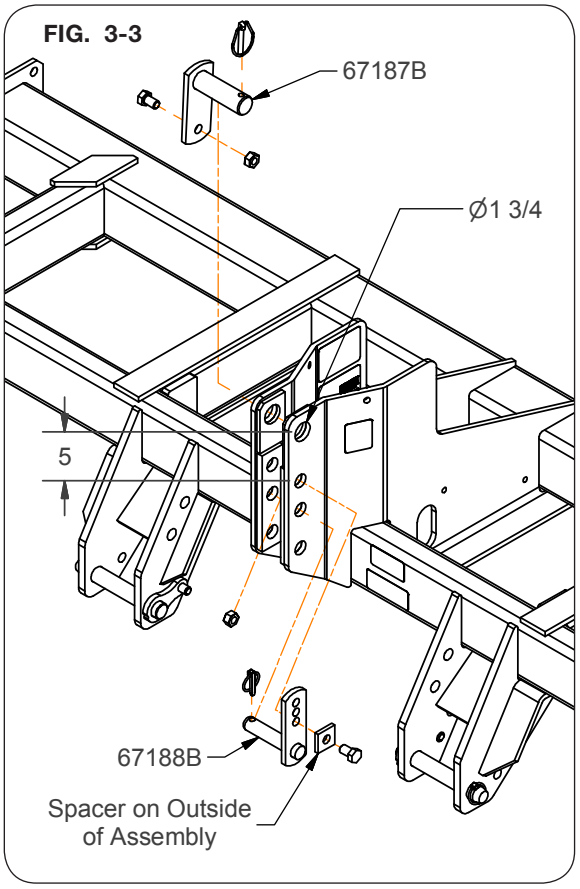
Before operating, check that all pins and retaining rings are in place and in good condition. Replace any worn, damaged, or missing pins, and retaining rings.

Attaching To Tractor (continued)

Center Pins For Quick Attach Couplers

The spacer should be placed on the outside when used on all current style folding units with a 1 3/4" top hole on the main frame. Pin assembly (67187B) is used for CAT4 hitches and in the 1 3/4" top hole. Pin assembly (67188B) is used for CAT3 hitches and in the upper 1 1/4" hole. See FIG. 3-3.

FIG. 3-3



Attaching To Tractor (continued)

Tractor Without Quick Attach Coupler

WARNING

- **DO NOT STAND BETWEEN TRACTOR AND IMPLEMENT DURING HITCHING.**

IMPORTANT

- *Before attaching tractor to implement, 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. 3-5).

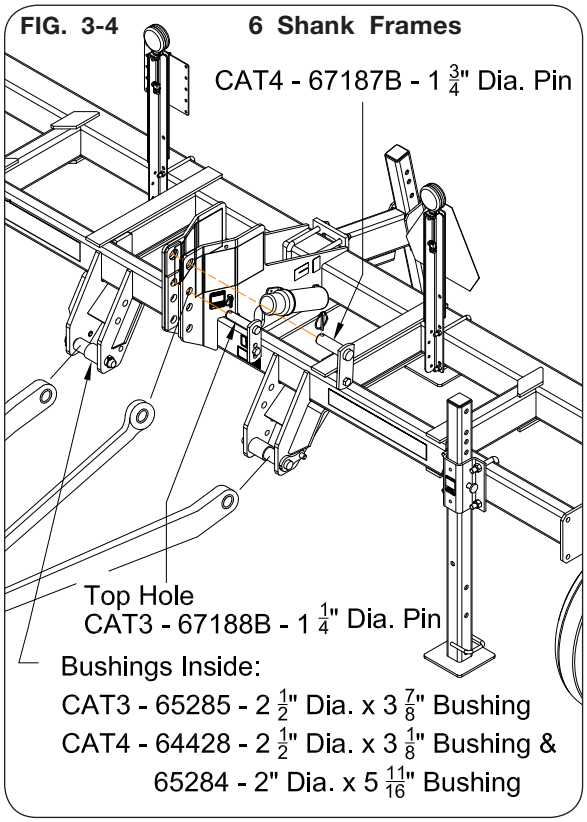
Set parking brake, shut-off the engine and remove key from ignition before dismounting from tractor.

CAT-III, CAT-III-N, CAT-IV, CAT-IV-N:

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. See FIG. 3-4, FIG. 3-5, and FIG. 3-6. Adjust tractor's sway blocks as required. See tractor operator's manual.

FIG. 3-4 6 Shank Frames



Attaching To Tractor (continued)

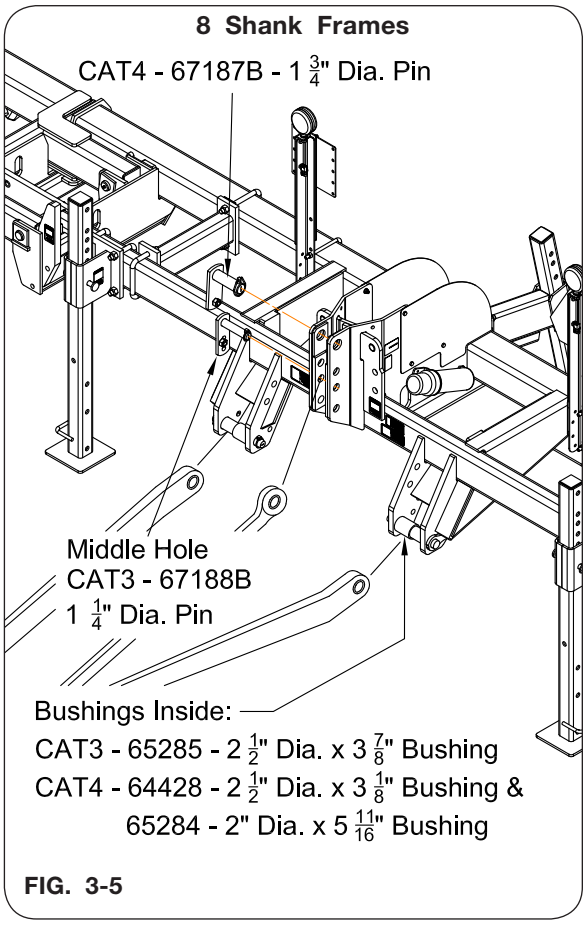


FIG. 3-5

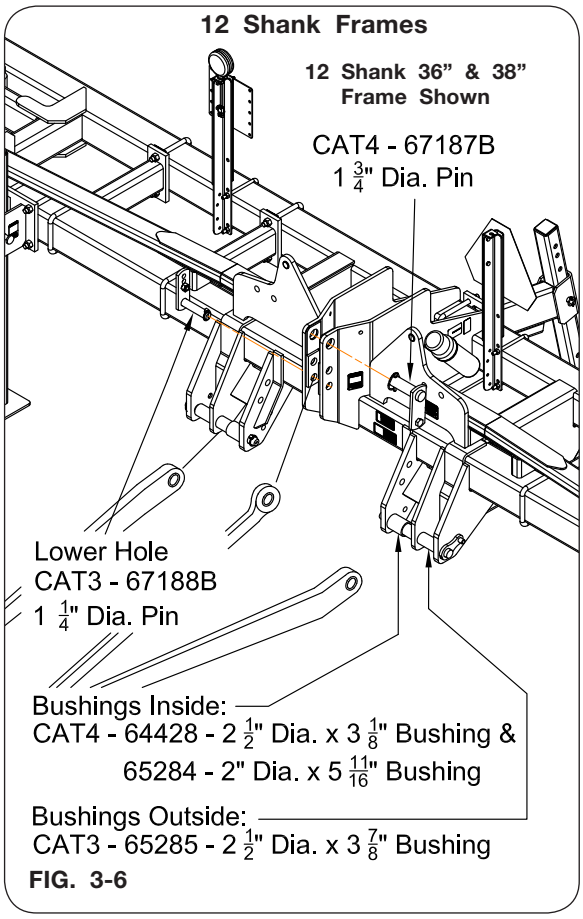


FIG. 3-6

Attaching To Tractor (continued)

Tractor With Quick Attach Coupler

WARNING

- **DO NOT STAND BETWEEN TRACTOR AND IMPLEMENT DURING HITCHING.**

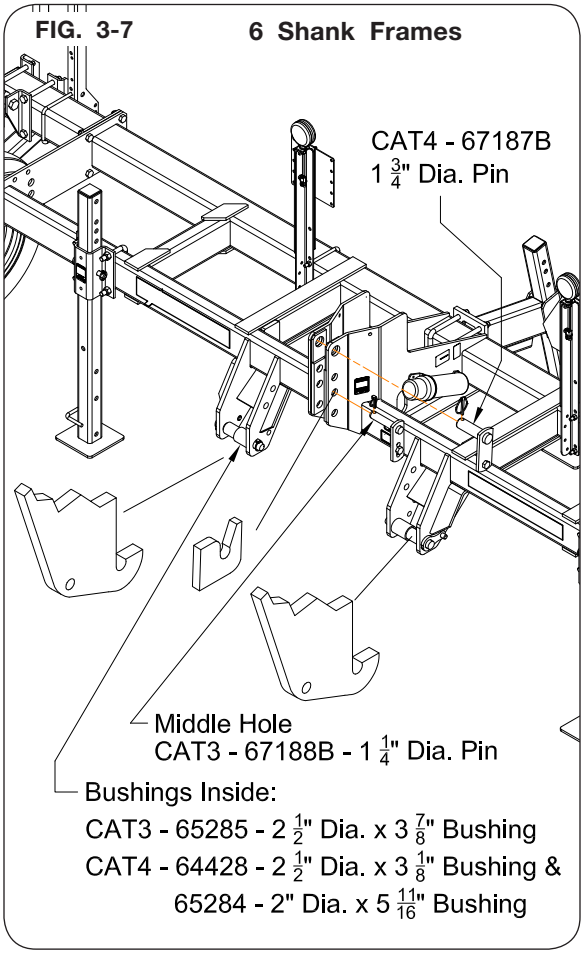
IMPORTANT

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

1. Position bushings as shown in FIG 3-7, FIG. 3-8, or FIG. 3-9.
2. Lower the coupler to allow jaws to pass under mast and hitch pins.
3. Back the tractor to front of the implement until the jaws are under their respective hitch pins.
4. Lift quick coupler so jaws are firmly seated.
5. Set parking brake, shut-off engine and remove key from ignition before dismounting from tractor.

6) Lock the jaw latches into place (see tractor operator's manual).

FIG. 3-7 6 Shank Frames



Attaching To Tractor (continued)

FIG. 3-8 8 Shank Frames

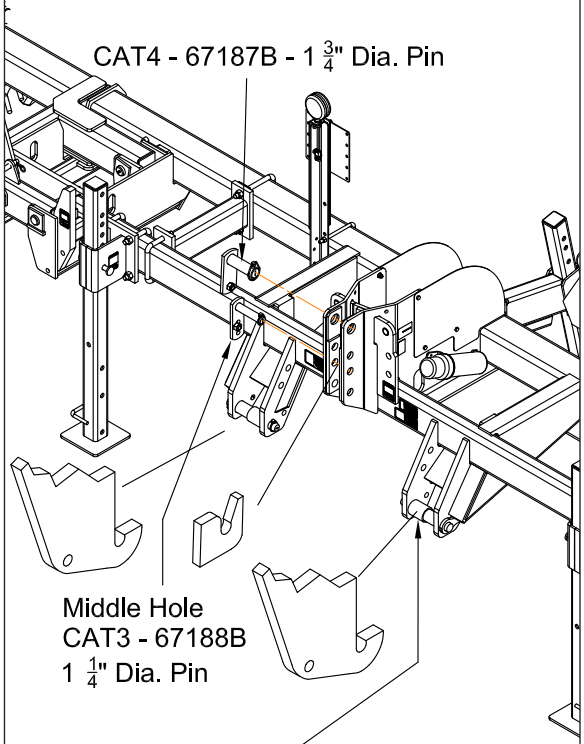
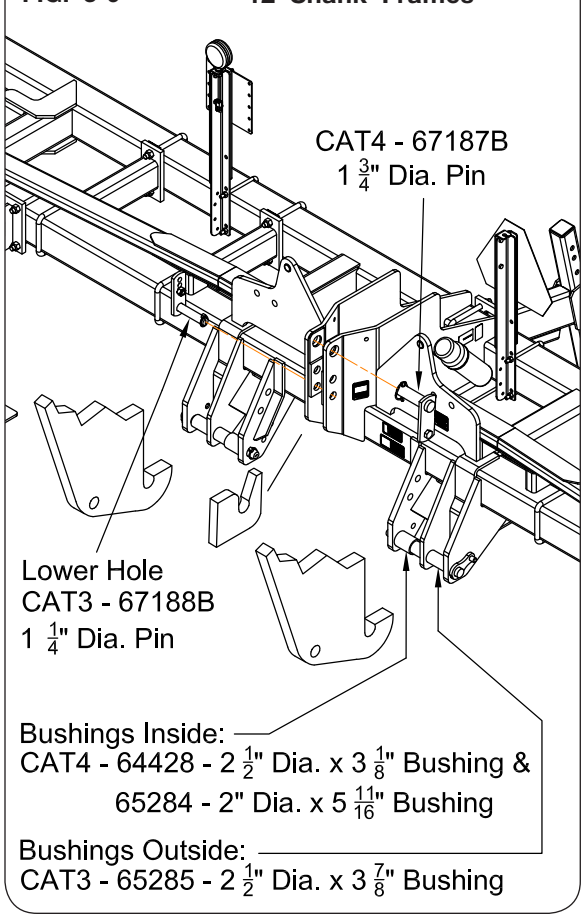


FIG. 3-9 12 Shank Frames



Attaching To Tractor (continued)

Electrical Hook-Up

NOTE: Unverferth Manufacturing has designed the transport lighting and marking kit to meet United States federal law 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.

Connect the main harness to the tractor.

Hydraulic Hook-Up

⚠ WARNING

- **ALWAYS RELIEVE HYDRAULIC SYSTEM PRESSURE BEFORE DISCONNECTING HOSES FROM TRACTOR OR SERVICING HYDRAULIC SYSTEM. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.**
- **HYDRAULIC CYLINDERS MUST BE PURGED BEFORE HYDRAULIC SYSTEMS MAY BE USED. FAILURE TO DO THIS COULD RESULT IN SERIOUS INJURY.**

NOTE: Refer to SETUP section for purging process.

Folding Wings

⚠ WARNING

- **MOVING WINGS CAN CAUSE SERIOUS INJURY OR DEATH. KEEP AWAY FROM FOLDING AND UNFOLDING WINGS.**

On shear-bolt machines (Model MT3015) replace any shear-bolts that have sheared on any of the shanks located on the wings before folding wings.

Raise unit to transport position. Fold wings so that the hydraulic cylinders are fully retracted.

Remove lock pins from storage (Hole "A") and insert into wing lock-up (Hole "B"), FIG. 3-10 and 3-11. Secure with klik pin.

IMPORTANT

- *Failure to remove lock pins before unfolding wings could result in damage to machine.*

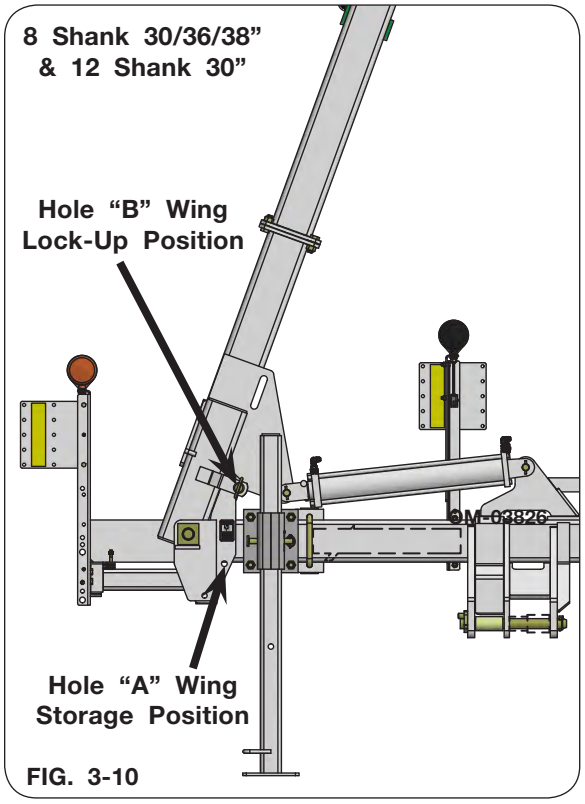


FIG. 3-10

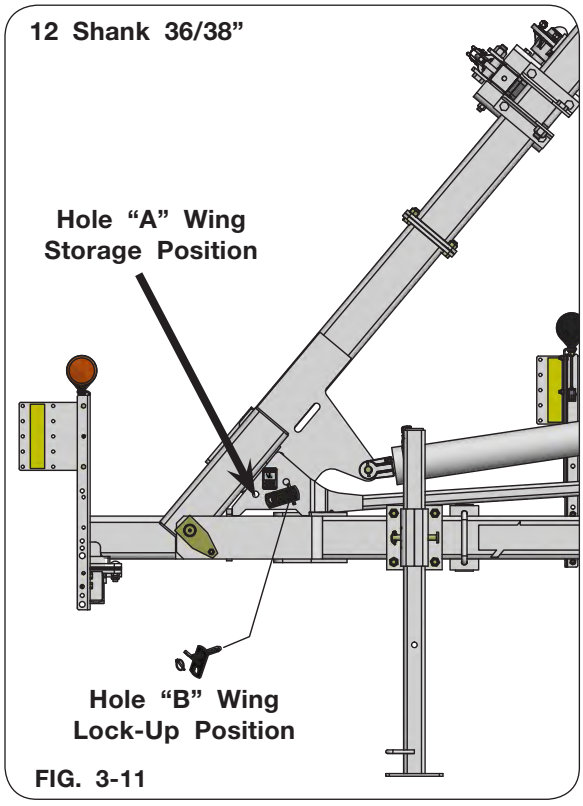


FIG. 3-11

Transporting

DANGER

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

WARNING

- **INADVERTENT LOWERING OF THE 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.**

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

Select a firm, level surface for parking the machine. Lower all support stands to the same height. Lower unit with tractor's 3-point hitch until stands and shank points contact the ground.

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.

1. Disconnect hydraulic hoses and electrical harnesses (if applicable).
2. Release latches or remove pins.
3. Lower 3-point and drive away slowly.

WARNING

- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN 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.**

Leveling Frame

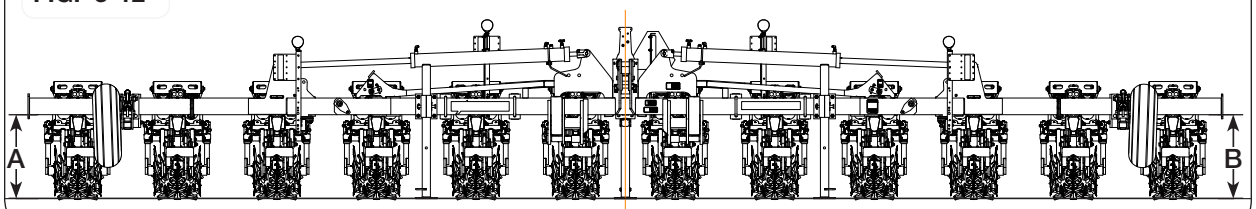
For best results, when leveling the implement, position the tractor with implement on a level floor. Check tractor tire pressure and inflate equally from side-to-side. See your tractor operator's manual for correct tire inflation pressure.

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. 3-12. 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.

FIG. 3-12

Side-to-Side Leveling



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, extend or retract the tractor top link until frame is parallel (or level) to the ground. Frame will be level when dimension "C" is the same as dimension "D". (FIG. 3-13)
Before adjusting 3-point links see your tractor operator's manual for correct adjustment procedures and safety requirements.

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.

Front-to-Rear Leveling

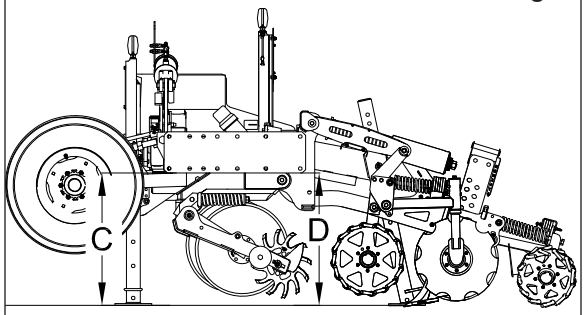


FIG. 3-13

Leveling Wings (8-30",36",38" & 12-30",36",38")

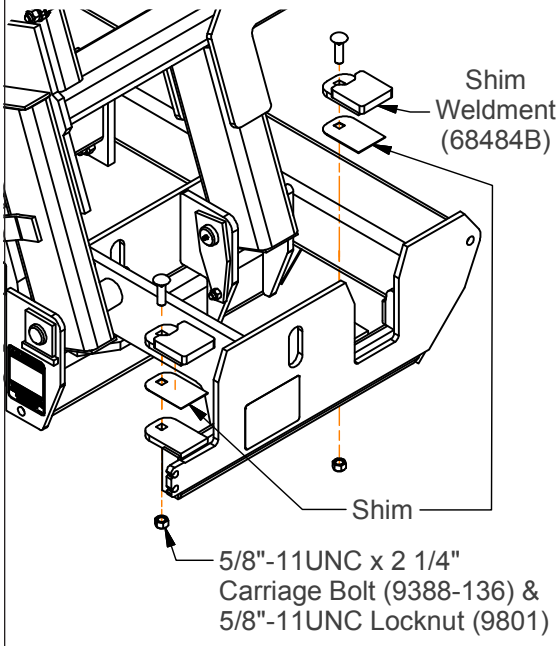
Adjustment Procedures

Check for levelness of machine in the field. The wing tips should be operating at the same working depth as the center section of the machine. If the wing tips are running deeper than the center section, shims may be needed. Shims are provided for adjusting/leveling wing height in the field. The cylinder rod end must also be adjusted.

NOTE: There are 3 shims for each corner, select the appropriate sizes as follows:

Wing Tip Distance Below Level	Approximate Shim Thickness Required
1/2"	1/16"
1"	1/8"
1 1/2"	1/16" & 1/8"
2"	1/4"
2 1/2"	1/16" & 1/4"

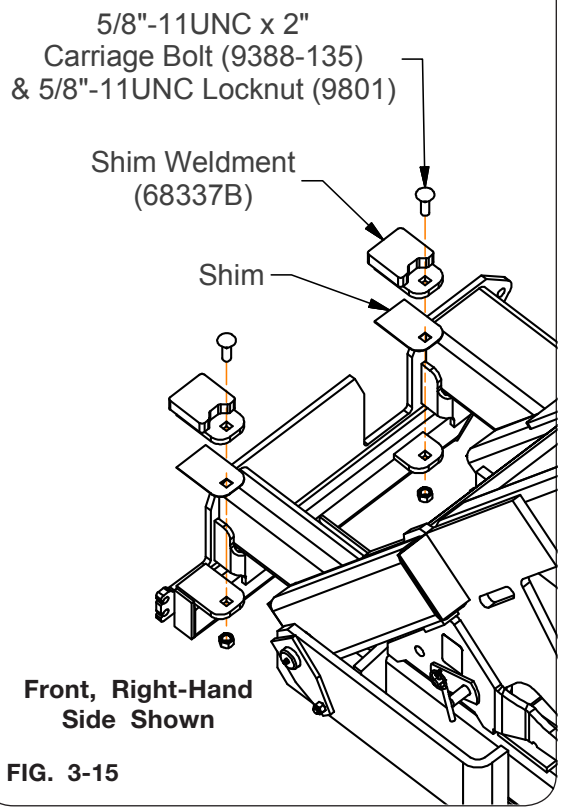
Hydraulic — Standard Folding 8 Shank 30", 36", & 38" Spacing; Folding 12 Shank 30" Spacing



Front, Left-Hand Side Shown

FIG. 3-14

Hydraulic — Standard Folding 12 Shank 36" & 38" Spacing



Front, Right-Hand Side Shown

FIG. 3-15

Leveling Wings (continued)

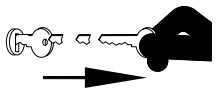
Adjusting Cylinder Clevis End

⚠ WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

Adjust the cylinder clevis end when installing the shims as follows:

1. Lower machine completely to the ground with the wings in the transport position and block securely. Set parking brake on tractor, release any pressure in hydraulic system, shut tractor engine off, and remove the ignition key.



2. Lock wing in transport position with the transport lock pin as shown in FIG. 3-16.

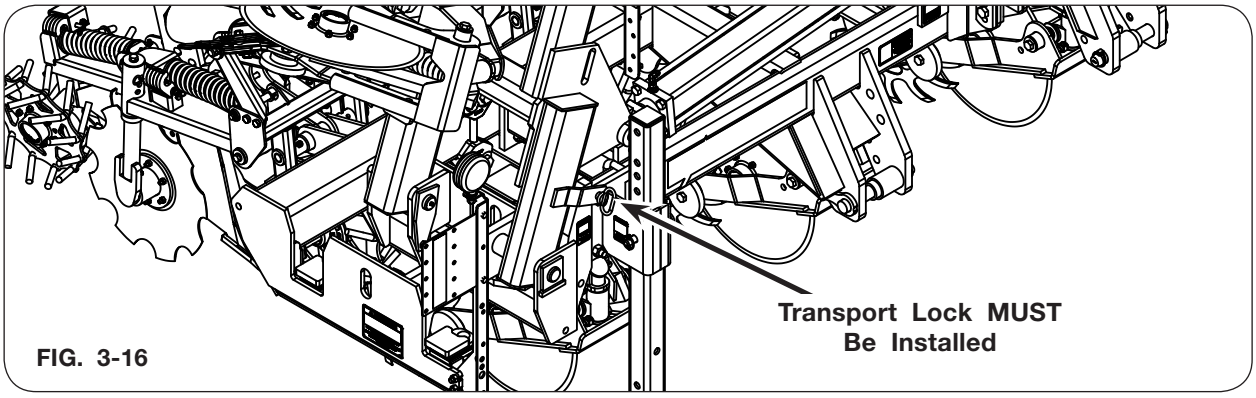


FIG. 3-16

3. Relieve the cylinder pressure and remove the clevis pin (FIG. 3-17).

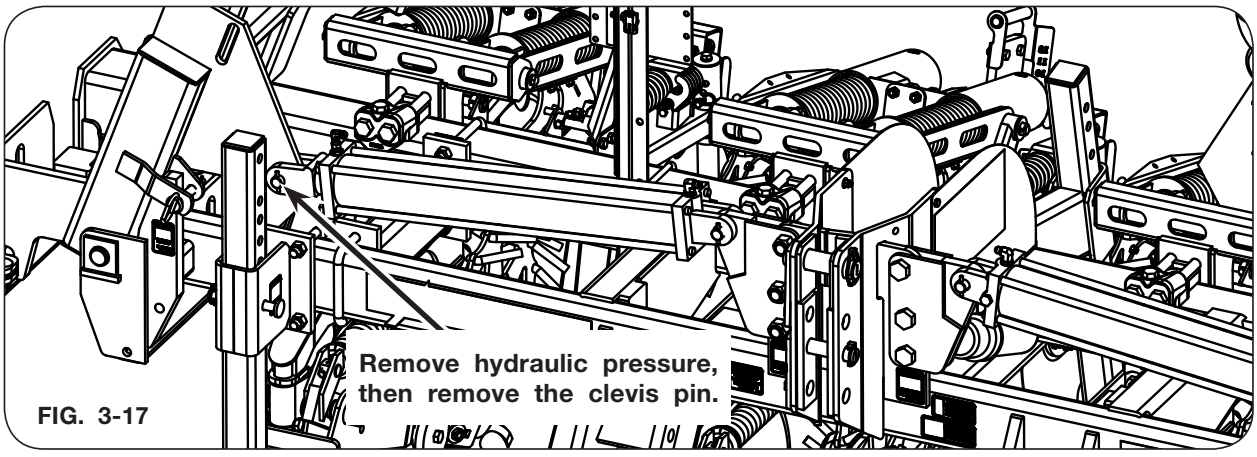


FIG. 3-17

4. Swing cylinder up and block.

5. Adjust the clevis accordingly:
   FOR 8-30",36",38" & 12-30" — 4x30 Cylinder Retracted Length - 41 1/4
   FOR 12-36",38" — 4x48 Cylinder Retracted Length - 59 11/16
   Wing Tip Sag Up To 1" - adjust clevis 1/16" in from nominal
   Wing Tip Sag More Than 1" - adjust clevis 1/8" in from nominal

Unfolding Wings

To unfold the wings remove the transport lock pins from the storage location (Hole "A") to the wing lock-up position (Hole "B"), FIG. 3-18 or FIG. 3-19. Secure with klik pin.

⚠ WARNING

- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RAISING, OR LOWERING.**

IMPORTANT

- *Failure to remove transport lock pins before unfolding wings could result in damage to machine.*

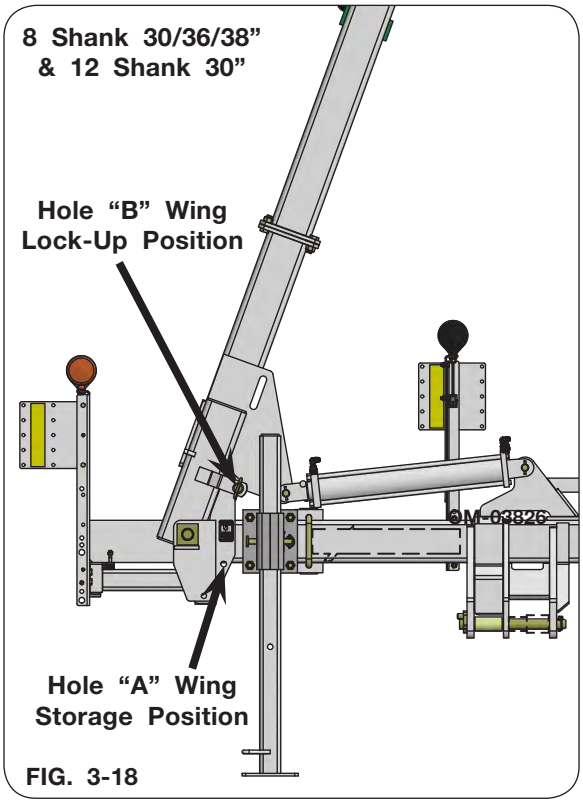


FIG. 3-18

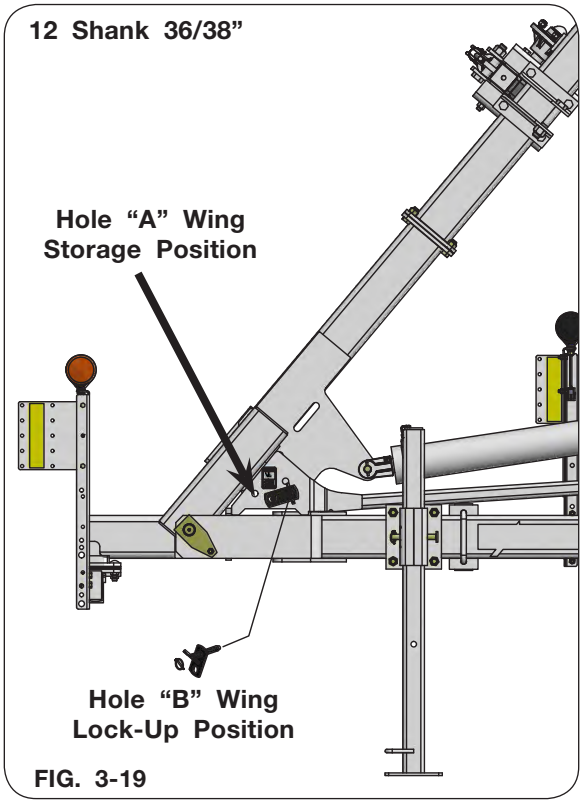


FIG. 3-19

Raise unit to transport position. Unfold wings so that the hydraulic cylinders are fully extended.

Flex Hydraulic (Optional) — Field Operation

Your Raptor implement may feature dual function cylinders that are designed with 2 separate chambers in the one cylinder body. The longer cylinder folds the wings between transport and working positions. In field operation, tractor hydraulics allow the longer cylinder rods to adjust in or out as the wings follow field contours. Flex option allows wings to flex 5 degrees below center und 15 degrees above center. Wing down-pressure can be added with the flex valve kit.

The flex frame option requires 2 sets of tractor SCV outlets:

SCV#1 (short end of cylinder) should be attached to valve ports AUX A and B
SCV#2 (long end of cylinder) should be attached to valve ports TRAC A and B
Hydraulic flow should be between 6-10 gpm.

Tractor SCV#1 ("Aux A and B" Ports on Valve)

Adjust wing level when turning on the ends of the field.

This outlet is typically engaged at the same time as the tractor 3-point to allow the Raptor wings to tilt up while the machine is raised. This outlet also tilts down the wings when the machine is lowered by the tractor 3-point hitch.

Tractor SCV#2 ("Trac A and B" Ports on Valve)

Long end of the cylinder folds and unfolds the wings from transport position to field working position. In working position, tractor hydraulics must be operated in float, or in continuous flow so the 48" cylinder rod can piston in/out when wings raise/lower with field contours.

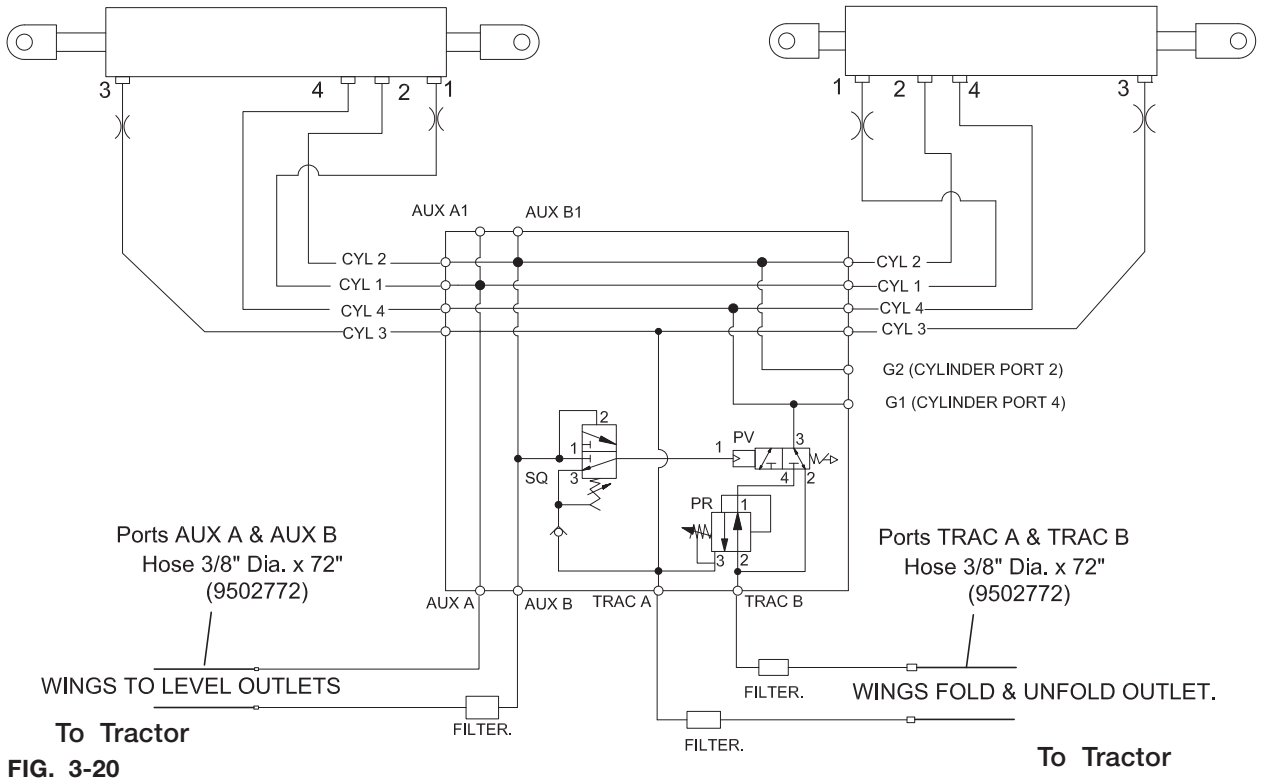


FIG. 3-20

Flex Hydraulic (Optional) — Field Operation (continued)

Folding The Wings

Raise 3-point until unit is completely raised. Activate SCV#1 to pull wings up level (short end of cylinders). Activate SCV#2 to fold the wings (long end of cylinders).

NOTE: If SCV#1 is not done before activating SCV#2, unit may not fold.

Unfolding The Wings

While unfolding the unit, the 3-point must be placed in the raised position.

Raise 3-point unit. Activate SCV#2 to unfold the wings (long end of cylinders). These will need to be extended completely before SCV#1 (short end of cylinders) can be used.

Lowering Subsoiler Into The Ground

Before lowering unit to the ground, it is recommended to have SCV#2 in float or detent depending on how the unit is run.

Float position during field operation allows the wings to follow soil contours.
Continuous flow applies controlled down pressure to the wings to float up or down in the field.

While lowering the tractor 3-point to the desired working depth, simultaneously activate tractor SCV#1 to tilt down the wings until the short end of the cylinder is completely extended. Shut off the remote, but do not place it in float position. SCV#1 (long end of cylinders) must maintain pressure. (Timer can be set to 4-5 seconds) SCV#2 should be in float or continuous flow. (Timer can be set to continuous.)

⚠ CAUTION

- **TO PREVENT MACHINE DAMAGE, PLACE TRACTOR SCV #2 IN DETENT POSITION, SET TRACTOR FLOW TO 6-10 GPM CONTINUOUS WHILE THE RAPTOR IS IN WORKING POSITION.**

Pressure Gauges

Two pressure gauges monitor wing hydraulic down pressures during field operation:

CYLINDER PORT 2 Gauge:

(A) System pressure when implement is lowered to field position.
(B) Reduced pressure when implement is raised, turning on field ends.

CYLINDER PORT 4 Gauge.

(A) System pressure when unfolding the wings to field working position.
(B) Controlled system pressure with implement in working position. This gauge maintains 175 to 200 PSI Pressure. The number of shanks, shank attachments, working depth, and soil type, can affect hydraulic system pressure displayed.
(C) Minimal system pressure as wings are folded into transport.

Flex Hydraulic (Optional) — Field Operation (continued)

Raising Subsoiler On Field Ends

Raise tractor 3-point on the end, and simultaneously activate SCV#1 to retract the short end of the cylinders to tilt wings to approximate level with main frame. (Timer may need to be adjusted from 4-5 seconds to match tractor 3-point speed.) Extend short cylinders when lowering machine back down to working position.

Primary Operating Procedure

⚠ CAUTION

- **HYDRAULIC VALVE MUST RUN IN FLOAT OR DETENT TO PREVENT POTENTIAL CYLINDER DAMAGE.**

Normally the tractor hydraulics for SCV#2 are set to float position during field operations to allow the wings to follow soil contours.

Alternate Operating Procedure

In difficult soil conditions where wing down pressure is required. Place tractor hydraulics at 8 GPM in constant flow to apply controlled down pressure to the wings. Relief valve cartridges inside the valve block assembly allow the wings to float up or down in the field.

When raising/turning on field ends, simply retract the short cylinder chamber (SCV#1) to raise the wings to level.

Valve Down Pressure Adjustment

Refer to MAINTENANCE section “Adjusting Wing Down Pressure In The Field”.

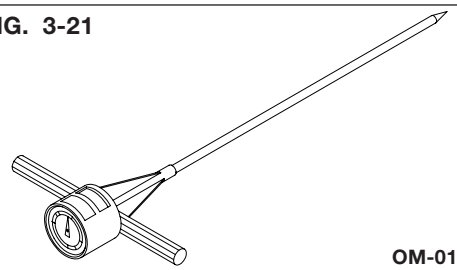
Preparing Implement

Depth of Penetration

Before adjusting the depth of your coulter 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. 3-21). For more information on this device, refer to your local Unverferth dealer or contact us, at Unverferth Mfg. Co., Inc.

FIG. 3-21



OM-01124

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. 3-22). To ensure proper depth, rest shank tips on a level surface.

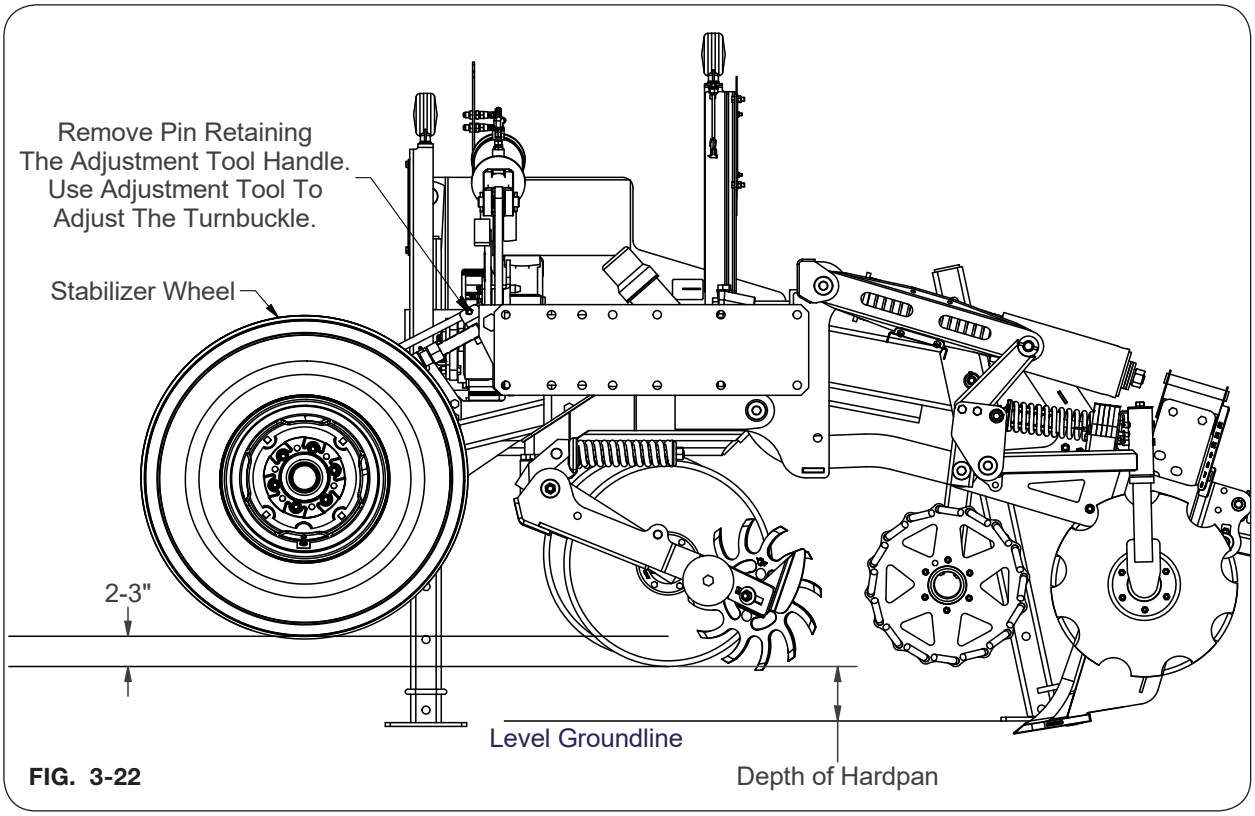


FIG. 3-22

Preparing Implement (continued)

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.*

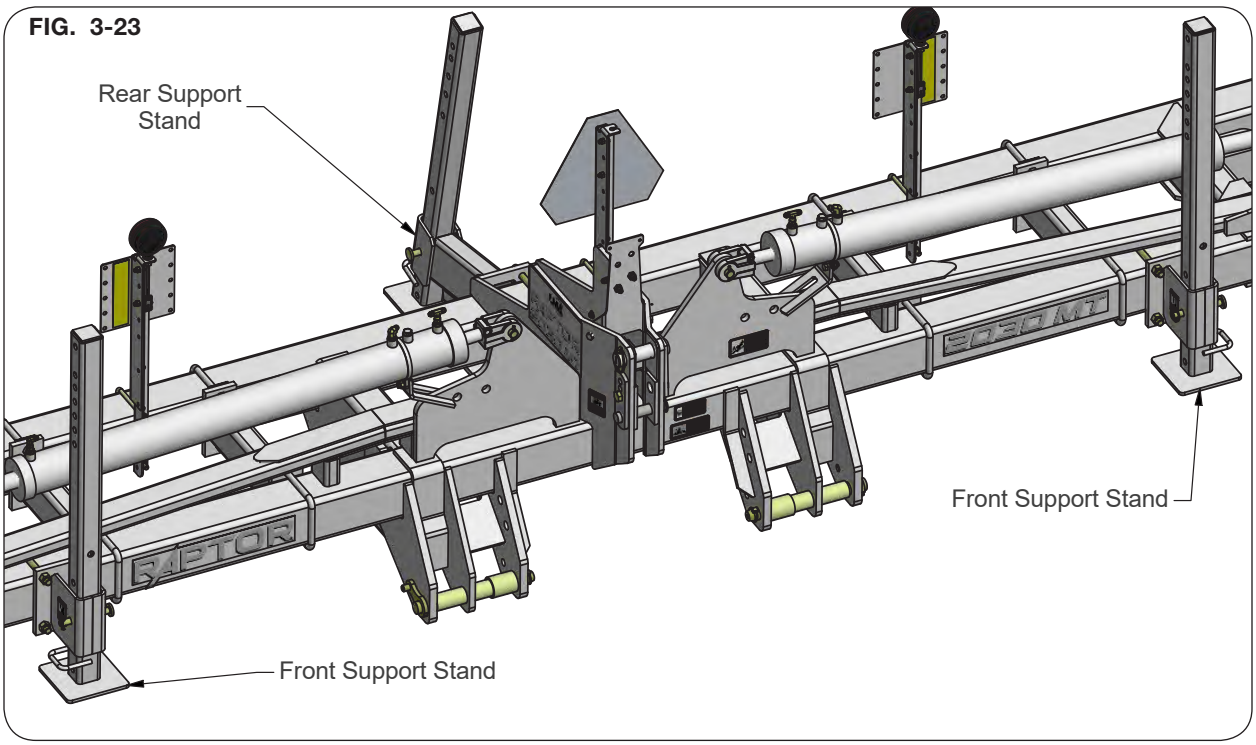
Support Stands

⚠ WARNING

- **FALLING OR LOWERING EQUIPMENT CAN CAUSE SERIOUS INJURY OR DEATH. KEEP EVERYONE AWAY FROM EQUIPMENT WHEN SUSPENDED, RAISING, OR LOWERING.**

Before field operation can begin, support stands must be raised and locked into position. Raise unit into transport position. Lift support stands by removing pins, raising the support stands and reinstalling the pins and keepers (FIG. 3-23).

FIG. 3-23



TerrainPro Row Unit

Horizontal Adjustment (All Models)

⚠ CAUTION

- **ENSURE ROW UNITS HAVE BEEN GREASED PRIOR TO INITIAL USE SEE LUBRICATION IN MAINTENANCE.**

When positioning row units from side-to-side, loosen hardware so that the row units can be moved.

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

Secure with top clamp (67072B), spacer block weldment (601919B), bottom clamp (67073B), 3/4”-10UNC x 13” vertical capscrew (9503094), 3/4”-10UNC lock nut (9802), 7/8”-9UNC x 10” horizontal capscrews (9390-459), spacers (602987), and 7/8”-9UNC lock nuts (98420).

Loosely tighten 3/4”-10UNC x 13” vertical capscrew (9503094) and 3/4”-10UNC lock nut (9802) until cast clamps and spacer block weldment seat on top and bottom of the tube.

Loosely tighten the 7/8”-9UNC x 10” horizontal capscrews (9390-459), spacers (602987), and 7/8”-9UNC lock nuts (98420).

Torque hardware to torque value listed in the torque chart in MAINTENANCE section.

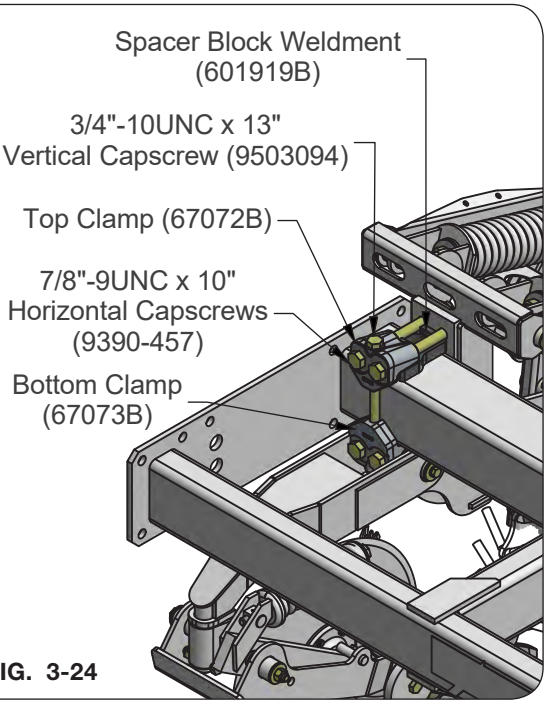


FIG. 3-24

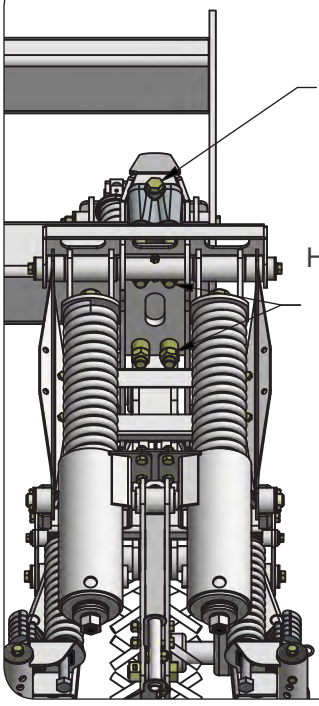


FIG. 3-25

TerrainPro Row Unit (continued)

Shear-Bolt Replacement

The shear-bolt should shear only when the shank encounters an obstacle.

⚠ WARNING

- **BE SURE THAT THE IMPLEMENT IS SECURELY BLOCKED TO PREVENT FALLING. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**

IMPORTANT

- *On the wing fold units, be sure to replace the shear-bolt on the shanks on the wing before folding the wings. Damage to the equipment could occur.*

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

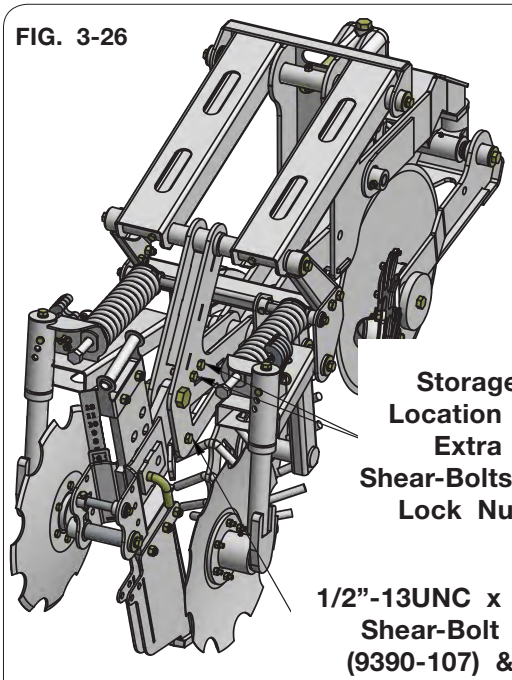
2. Remove any remaining portions of the shear-bolt from the assembly. Inspect shear-bolt holes. Severely distorted holes will result in shorter shear-bolt life and should be repaired or replaced.

3. Remove a new shear-bolt from the storage location.

4. Align the hole in the shank mount bracket to the hole in the shank trip bracket.

5. Insert the new shear-bolt. Tighten nut on the shear-bolt until snug. Do not torque to specification. Tightening the shear-bolt will prevent proper trip function."

FIG. 3-26



TerrainPro Row Unit (continued)

Lead Coulter

Your heavy-duty lead coulter is designed to chop residue and to start an initial cut for the shank. If the toolbar depth is changed to allow more lead coulter penetration, the row units do not need adjusting. They are on floating parallel links. The row unit is designed to operate the toolbar so the gauge wheel brings the row unit up 4” from hanging height. This allows 7” of upward and 4” of downward travel in the free floating parallel links. If the toolbar is lowered, the amount of upward and downward travel varies with it. The systems can affect each other, but operate independently.

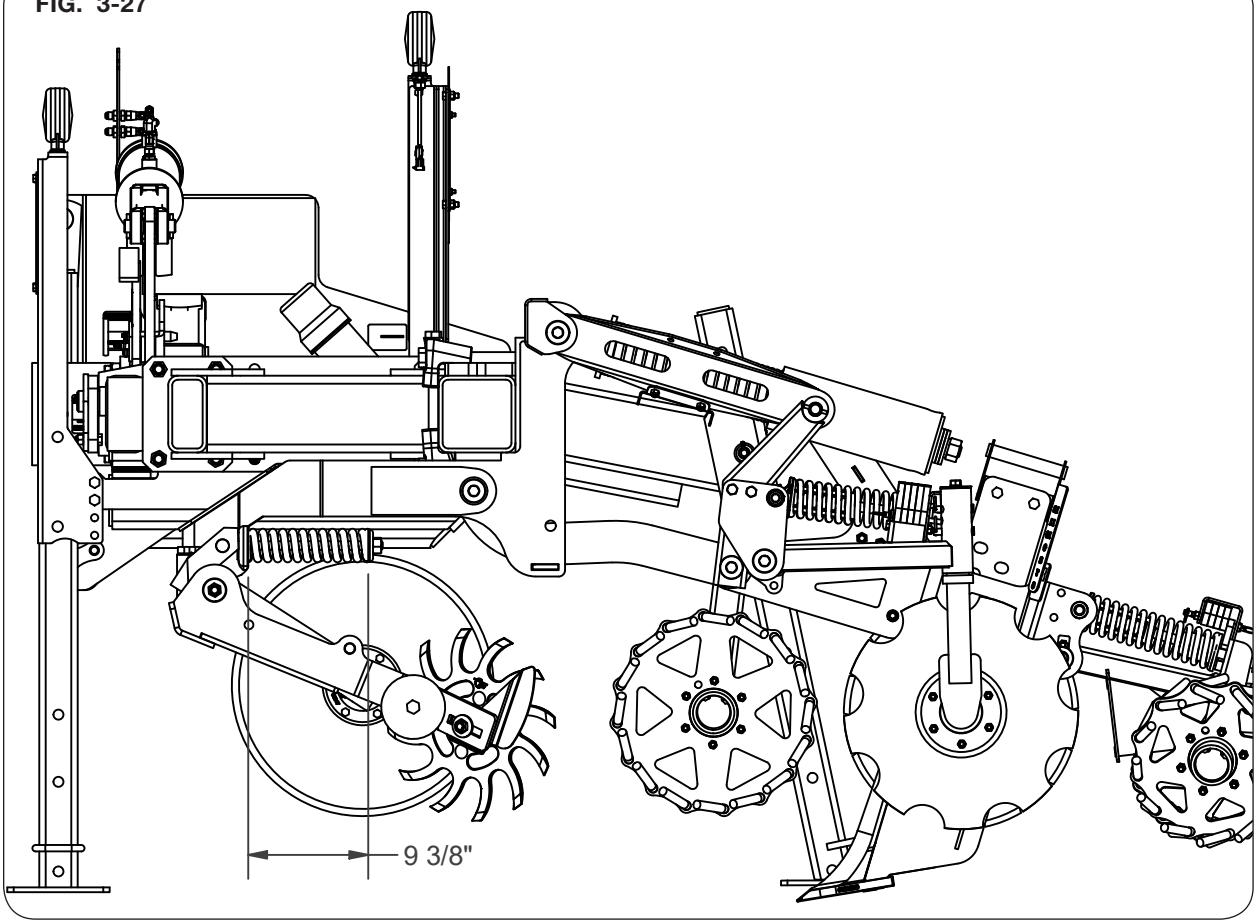
⚠ WARNING

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

The coulter springs are preset at the factory at 9 3/8” compression. 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.

FIG. 3-27



TerrainPro Row Unit (continued)

Row Cleaners

15" diameter row cleaners follow ground contours independently from the lead coulter and clear residue from the strip.

The curved finger design prevents trash from wrapping and width adjustment allows the operator to adapt the row cleaner to varying conditions.

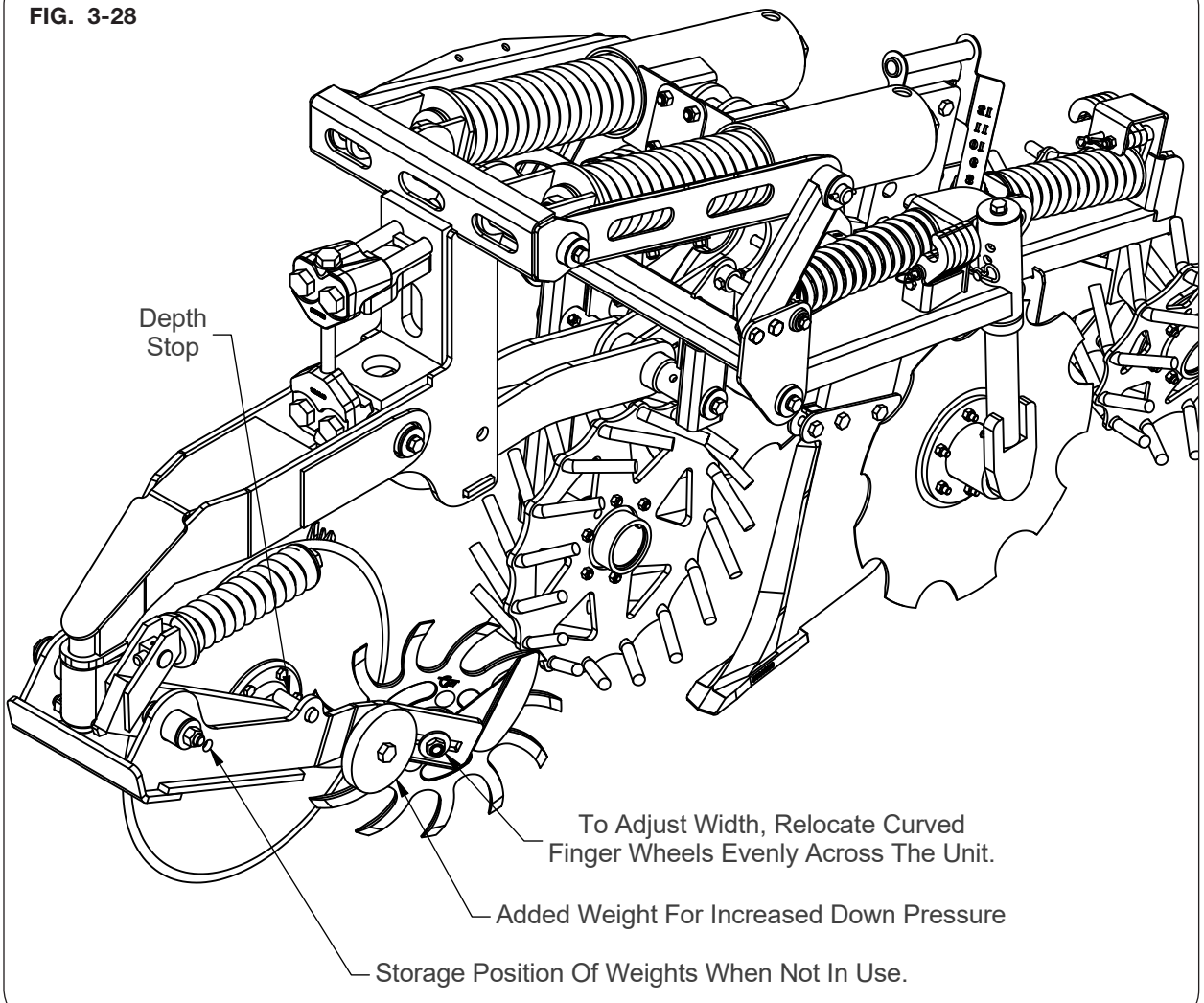
⚠ WARNING

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

The finger wheels may be slid further away from the coulter to increase the strip width.

Add-on weights allow the operator to increase the down pressure to remove more trash. The weights can be moved from the storage position to the coulter arm as desired (FIG. 3-28). If additional weight is desired, see your Unverferth dealer.

FIG. 3-28



TerrainPro Row Unit (continued)

Depth Control Wheels

⚠ WARNING

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

These wheels allow the row unit to free float 7” upward and 4” downward to follow uneven terrain which ensures that each shank runs at the same depth for consistent tillage and fertilizer placement.

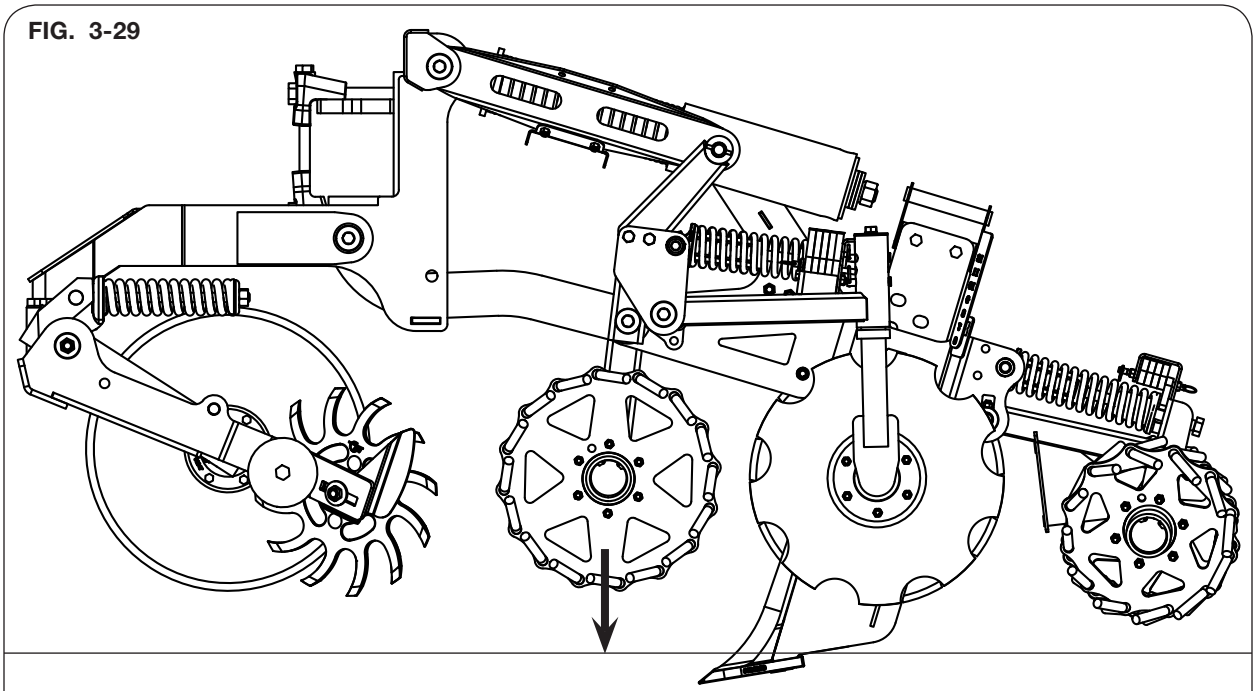
The depth wheel has no adjustment. Depth adjustments are made at the shank.

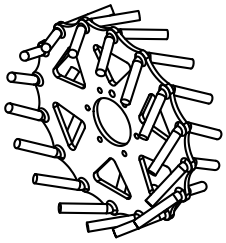
Standard crowfoot depth control wheel is designed to prevent mud, rocks and other debris from building up, allowing the operator to run in varying conditions.

Optional crowfoot/rock guard depth control wheel has reinforcing rings which adds strength in very rocky soils.

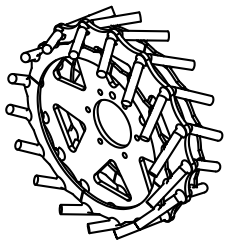
Optional rubber depth control wheel with scraper is available for extremely rocky and tacky soil conditions.

FIG. 3-29

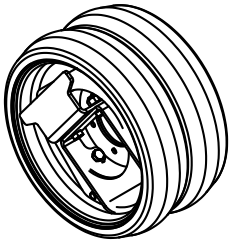




Crowfoot Depth Control Wheel



Crowfoot/Rock Guard Depth Control Wheel



Rubber Depth Control Wheel

TerrainPro Row Unit (continued)

Strip-Till Shank

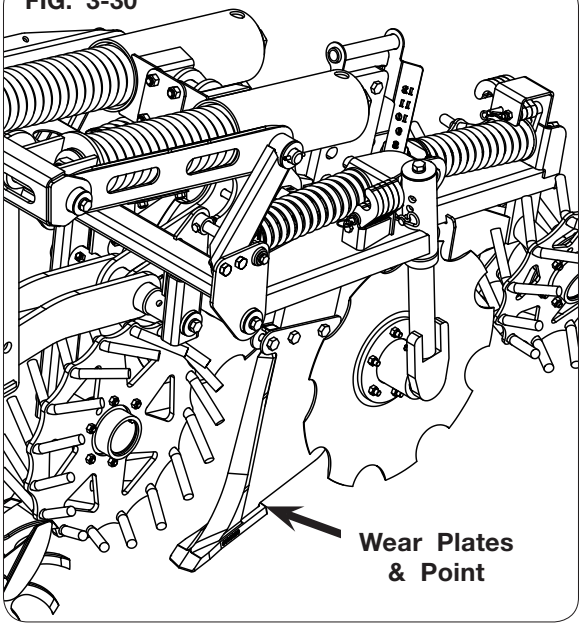
WARNING

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

The shank features tool-free height adjustment from 6” to 12” deep to alleviate compaction. Convenient depth gauge on each row allows the operator to quickly and easily adjust each shank to the same depth.

- Available with spring-cushioned auto-reset trip mechanism with 2,000 lbs. of point load pressure or shear-bolt protected shank with 5,000 lbs. of shear pressure.
- Replaceable 2 1/4” cast point and 1 1/2” wide integrated wear plates provides long-term, trouble-free use.
- Replaceable shank wear plates are standard to protect the shank from abrasive soil.

FIG. 3-30



TerrainPro Row Unit (continued)

Closing Coulters

Closing coulters with 18” notched and concave blades keep the soil in the path of the trailing basket for enhanced soil conditioning.

Each coulter floats independently from the other to keep constant ground contact through uneven ground.

⚠ WARNING

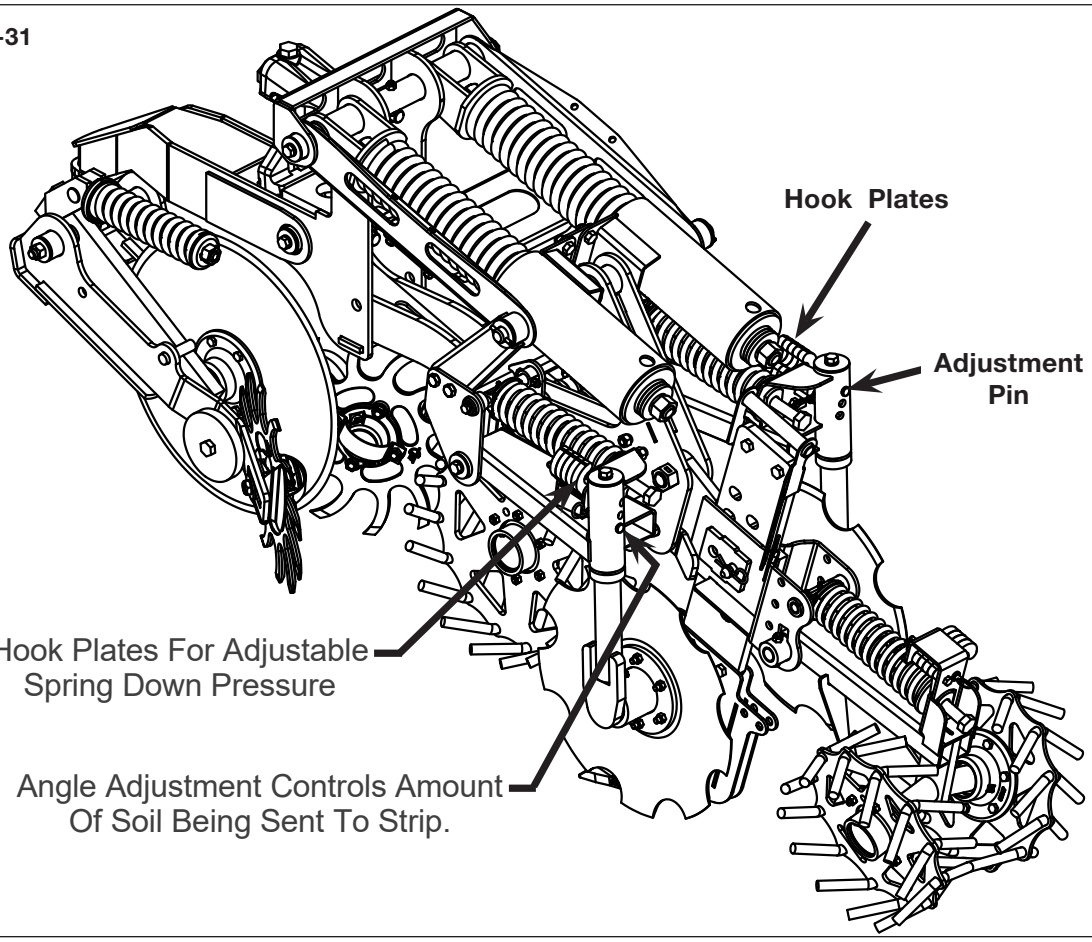
- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**

Tool-Free angle adjustment allows the operator to easily change the width of the strip and height of the berm. Raise the machine to transport height and use the adjustment pins to rotate the closing coulters. (FIG. 3-31)

Tool-Free spring down pressure determines the amount of soil in the strip. With the machine at transport height, add additional hook plates to increase the down pressure on each coulter. (FIG. 3-31)

NOTE: The more the coulters are angled the taller and narrower the strips made will be.

FIG. 3-31



TerrainPro Row Unit (continued)

Conditioners

⚠ WARNING

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

Crowfoot conditioning baskets break up clods, condition the strip and feature an angle to pinch the shank opening closed while shedding residue.

Optional 15” conventional Rolling Harrow baskets are used for increased tillage. The Rolling Harrow baskets can be reversed for more passive tillage if conditions warrant.

Optional 15” rubber press wheels are used to increase firming. These wheels have a scraper bar to prevent soil buildup. Adjust the scraper bar to maintain adequate clearance between tires and bar.

Adjust the conditioner down pressure by lifting the machine to transport height, and adding or removing hook plates. More hook plates increase conditioning action.

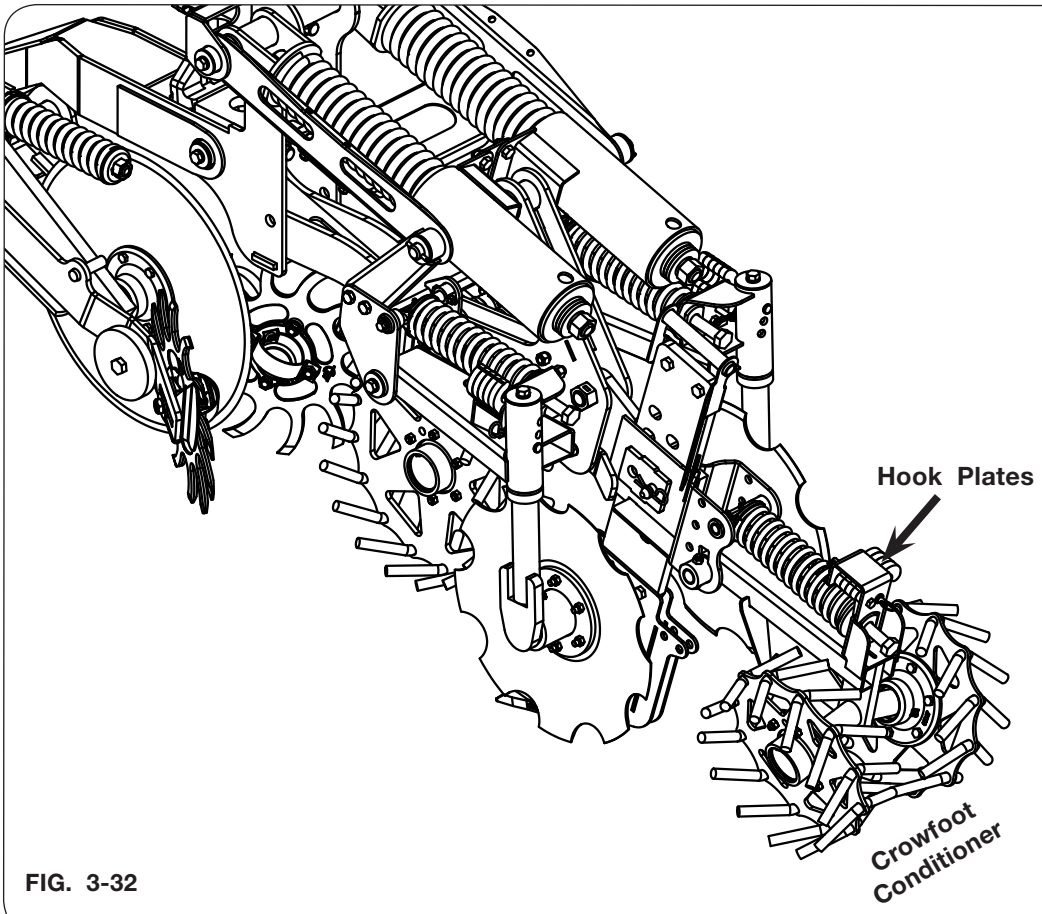


FIG. 3-32

TerrainPro Row Unit (continued)

Optional Conditioner 6” Extension Kit

⚠ WARNING

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

In rocky conditions an optional 6” extension kit (602507B) can be added to the conditioner.

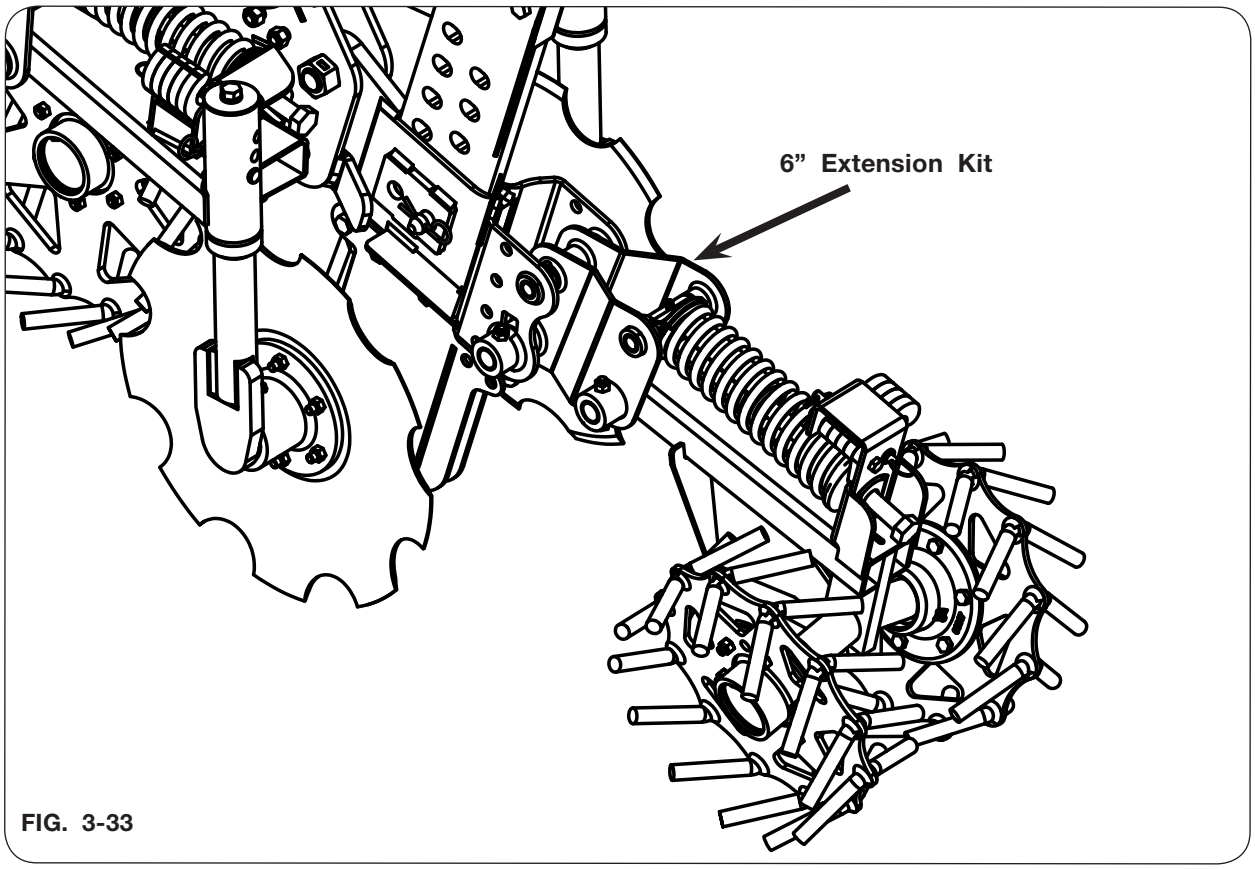


FIG. 3-33

SECTION IV
Maintenance

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.*

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

⚠ WARNING

- **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 support stands 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: For wheel torque requirements, refer to **Wheels and Tires**.

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

U-BOLTS - GRADE 7

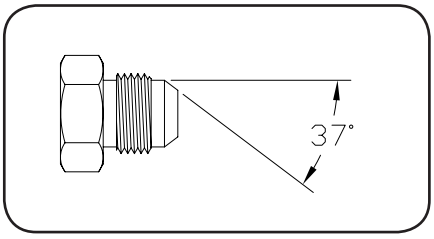
Torque 3/4”-10UNC U-Bolts to 240 Ft.-Lbs.
Torque 3/4”-10UNC Shank Mount Capscrews to 375-400 Ft.-Lbs.
Torque 3/4”-10UNC Shank Mount V-bolts to 240 Ft.-Lbs.

Torque 1 1/2” Dia. Pull Arm Pins to 225-275 ft.-lbs.

Hydraulic Fittings – Torque and Installation

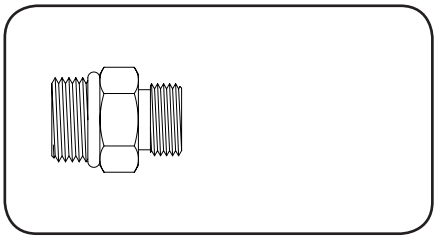
SAE FLARE CONNECTION (J. I. C.)

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

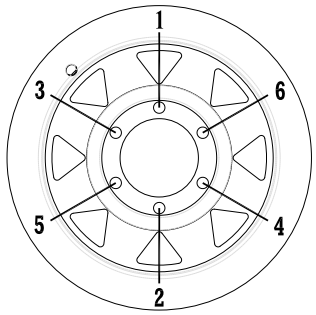
Wheel Nut Torque

⚠ 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 TORQUE BEFORE USE, AFTER ONE HOUR OF USE, AND EACH HOUR UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THERE-AFTER. 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 first 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.



6 Bolt
Diagram 1

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 after unit is loaded.** 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
9.5 x 15 - 6 Ply	max. 32 PSI
12.5 x 15 - 10 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
or
Goodyear
www.titan-intl.com
Phone 800-USA-BEAR
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

To keep your implement in top operating condition and to assure its proper performance and reliability for a long period of time, periodic inspection and lubrication is a must.

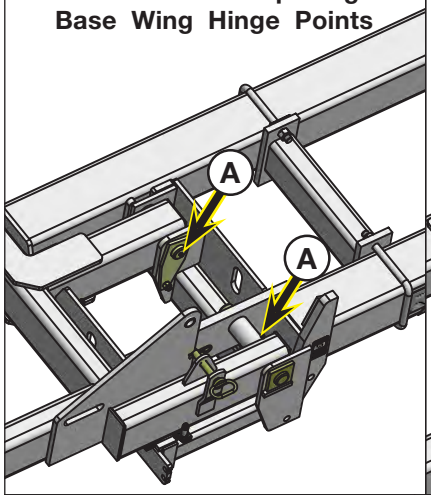
Use EP-2 lubricant at the locations described in the chart. All exposed cylinder rods should be coated with grease before seasonal storage to prevent rusting. After seasonal storage, check wing latch for freedom of movement.

The lubrication locations and recommended schedule are as follows:

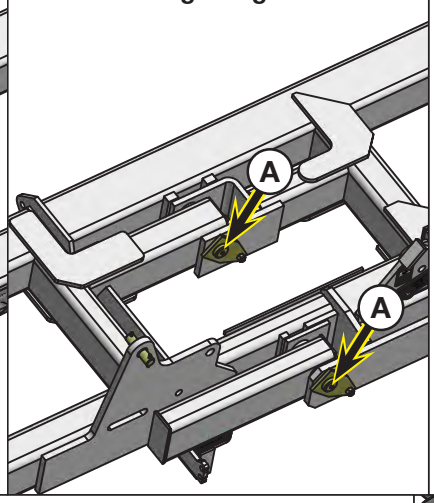
ITEM	DESCRIPTION	POINT	QTY	HOURS
A	Base Wing Hinge Points	4	2 Shots	Weekly
B	Stabilizer Wheel Hubs	1	1 Shot	Weekly
C	Lead Coulter Swivel Arms	1	1 Shot	Weekly
D	Lead Coulter Hubs & Depth Control Hubs	1	2 Shots	Weekly
E	Row Cleaner Hubs	1	2 Shots	Weekly
F	Closing Coulter Hubs	1	2 Shots	Weekly
G	Closing Coulter & Conditioner Springs	3	2 Shots	Weekly
H	Conditioner Hubs/Bearings	1	2 Shots	Weekly

Lubrication Points (continued)

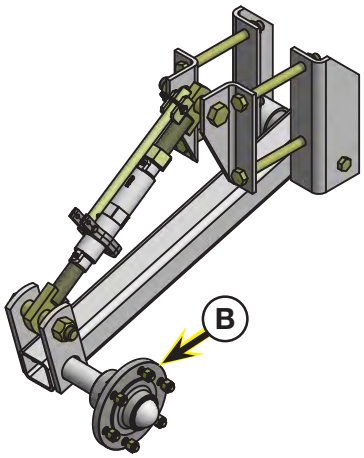
8 Shank 30/36/38" Spacing & 12 Shank 30" Spacing Base Wing Hinge Points



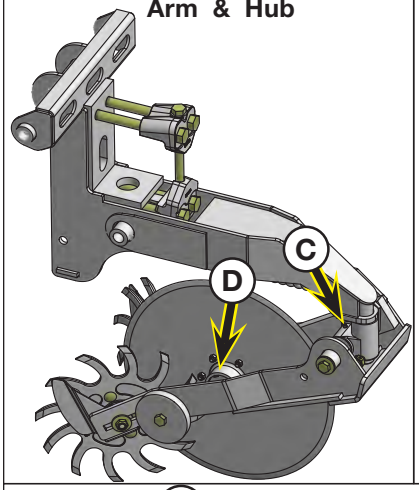
12 Shank 36/38" Spacing Base Wing Hinge Points



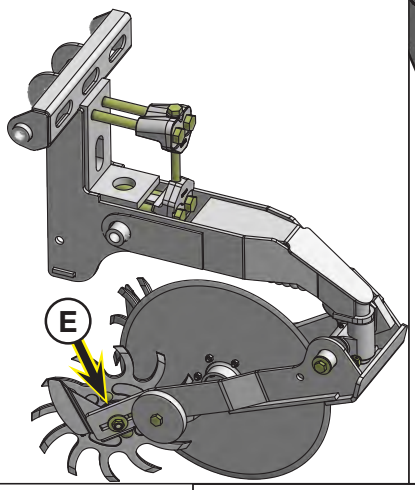
Stabilizer Wheel Hub

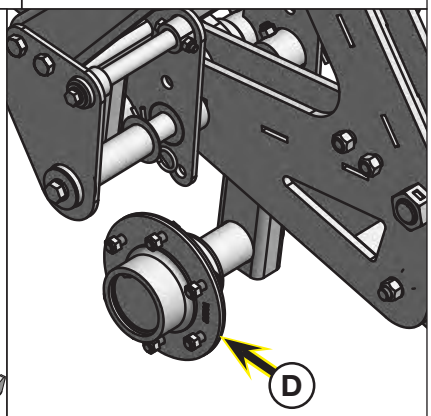


Lead Coulter Swivel Arm & Hub

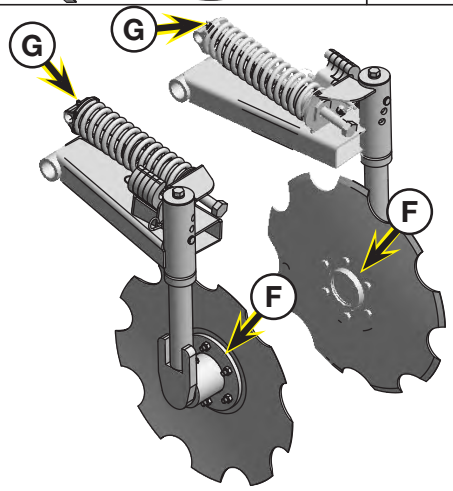


Row Cleaner Hubs



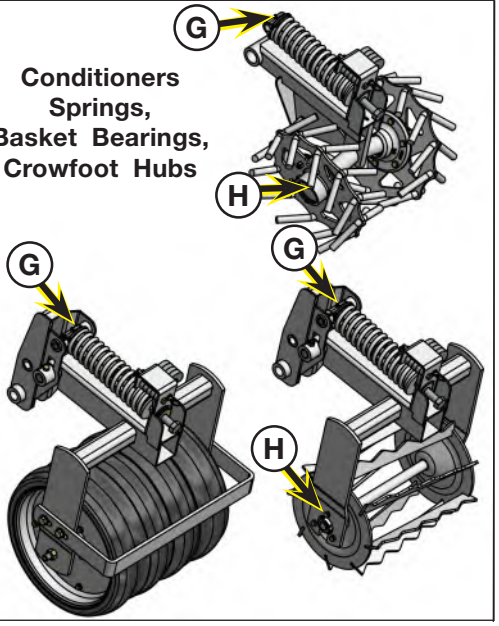


Depth Control Hub



Closing Coulters Springs & Hubs

Conditioners Springs, Basket Bearings, Crowfoot Hubs



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	
Poor field conditions	Wait until the field is dry enough to till properly without excessive slippage
Machine not level	Level Machine
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 tire pressure
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 Raptor 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 Raptor slightly to reset, then lower and resume operation
Excessive Soil Disturbance	
Main frame not level, running downhill	Level main frame
Dry soil conditions	Wait for additional rain
Running implement too fast	Slower speeds create less disturbances
Too much sealing	Decrease closing down pressure, decrease coulter angle or move coulters apart
Not enough sealing	Increase closing down pressure, increase coulter angle or move coulters closer

TerrainPro Row Unit

WARNING

- **BE SURE THAT THE IMPLEMENT IS SECURELY BLOCKED TO PREVENT FALLING. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**
- **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.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING 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 100 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

The shank has replaceable wear plates and point which, after a period of time, will need to be replaced (FIG. 4-1). To replace these components on your machine, refer to the following guidelines:

Point & Wear Plates Replacement

1. With the implement 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 the machine to the ground so that the stands support the entire implement and all points are off the ground. Shut off the tractor engine, set the parking brake, and remove the ignition key.
2. If applicable, remove and save the fertilizer option 1/2”-13UNC x 1 3/4” capscrew (9390-102) and 1/2”-13UNC lock nut (9800). (FIG. 4-1)
3. Loosen the center wear plates 1/2”-13UNC x 1 3/4” capscrews (9390-102) and 1/2”-13UNC lock nuts (9800). (FIG. 4-1)
4. Remove and save the point 1/2”-13UNC x 1 3/4” capscrew (9390-102) and 1/2”-13UNC lock nut (9800). (FIG. 4-1)
5. Remove the point (602025B). (FIG. 4-1)

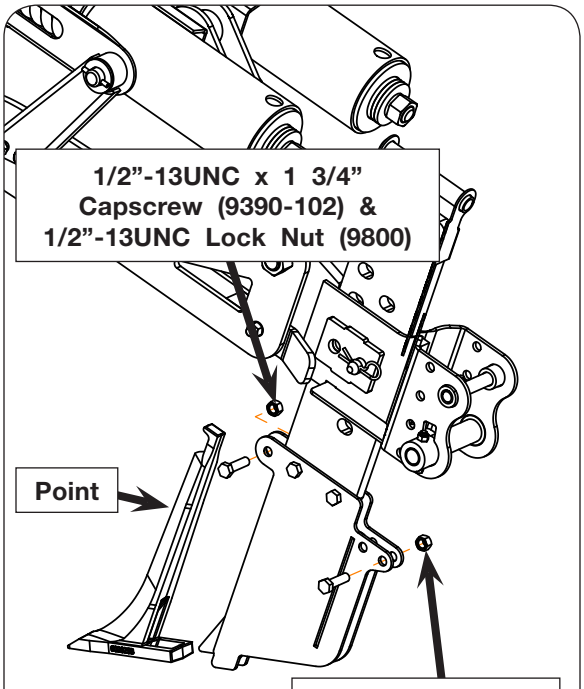


FIG. 4-1

TerrainPro Row Unit (continued)

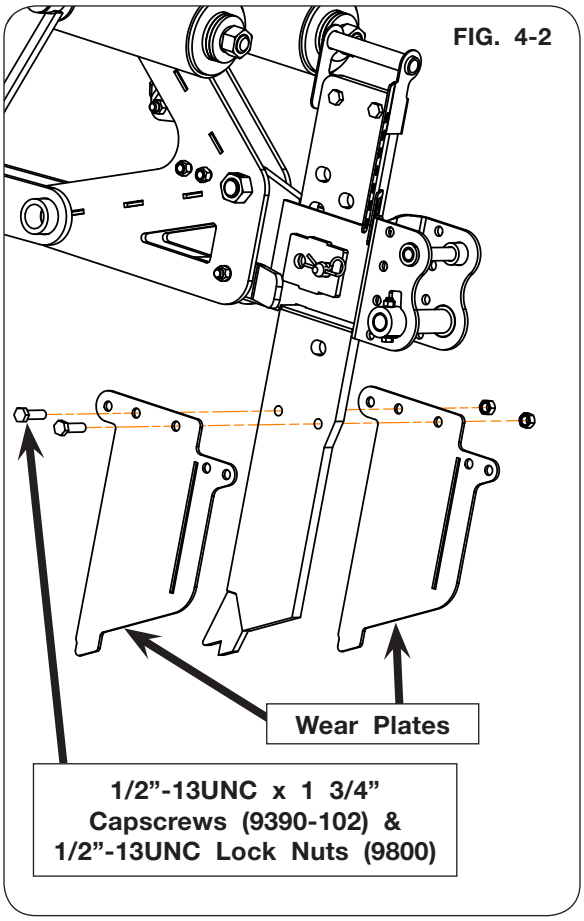
6. If replacing wear plates, continue with step 7 otherwise skip to step 9.

7. Remove the center wear plate 1/2”-13UNC x 1 3/4” capscrews (9390-102) and 1/2”-13UNC lock nuts (9800). (FIG. 4-2)

8. Replace wear plates (601999B) and loosely secure with previously removed 1/2”-13UNC x 1 3/4” capscrews (9390-102) and 1/2”-13UNC lock nuts (9800). (FIG. 4-2)

9. Install new point (602025B) and secure with previously removed 1/2”-13UNC x 1 3/4” capscrew (9390-102) and 1/2”-13UNC lock nut (9800) (FIG. 4-2). DO NOT TORQUE HARDWARE.

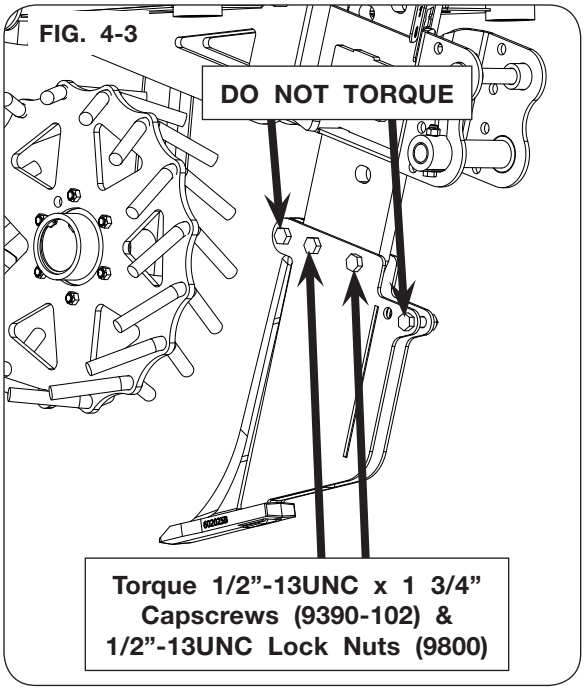
FIG. 4-2



10. If applicable, install the fertilizer option and secure with 1/2”-13UNC x 1 3/4” capscrew (9390-102) and 1/2”-13UNC lock nut (9800) (FIG. 4-3). DO NOT TORQUE HARDWARE.

11. Torque the center wear plates 1/2”-13UNC x 1 3/4” capscrews (9390-102) and 1/2”-13UNC lock nuts (9800) to 62-68 Ft.-Lbs. (FIG. 4-3)

FIG. 4-3



TerrainPro Row Unit (continued)

Shear-Bolt Replacement

The shear-bolt should shear only when the shank encounters an obstacle.

WARNING

- **BE SURE THAT THE IMPLEMENT IS SECURELY BLOCKED TO PREVENT FALLING. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**

IMPORTANT

- *On the wing fold units, be sure to replace the shear-bolt on the shanks on the wing before folding the wings. Damage to the equipment could occur.*

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

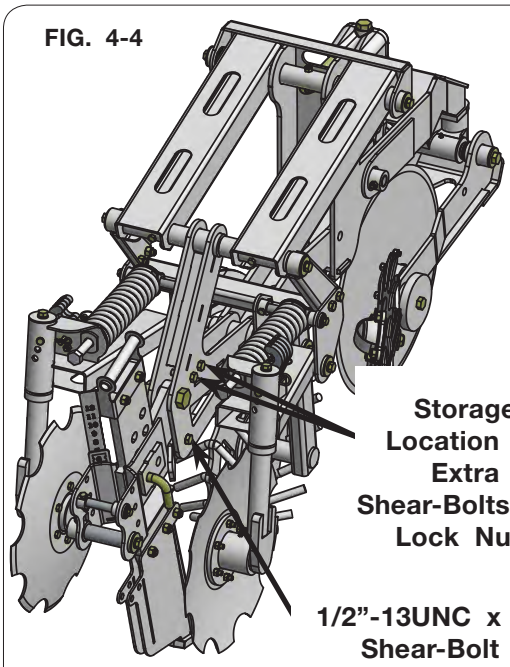
2. Remove any remaining portions of the shear-bolt from the assembly. Inspect shear-bolt holes. Severely distorted holes will result in shorter shear-bolt life and should be repaired or replaced.

3. Remove a new shear-bolt from the storage location.

4. Align the hole in the shank mount bracket to the hole in the shank trip bracket.

5. Insert the new shear-bolt. Tighten nut on the shear-bolt until snug. Do not torque to specification. Tightening the shear-bolt will prevent proper trip function."

FIG. 4-4



TerrainPro Row Unit (continued)

Lead Coulter Spring Replacement

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

⚠ WARNING

- **BE SURE THAT THE IMPLEMENT IS SECURELY BLOCKED TO PREVENT FALLING. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**
- **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 coulter arm (FIG. 4-5).
2. Slowly unscrew the spring bolt which will relieve spring pressure (FIG. 4-5).
3. Once the bolt is removed, replace with new spring and re-insert bolt.

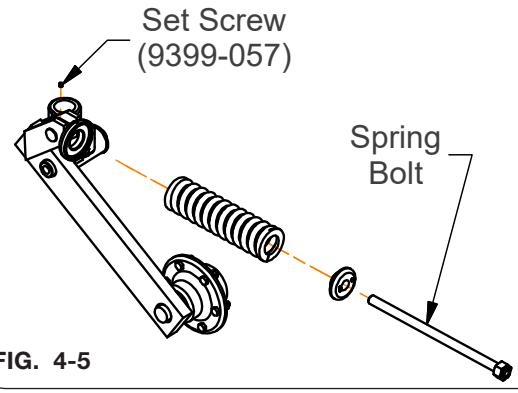


FIG. 4-5

4. Tighten bolt until the spring is compressed to 9 3/8" (FIG. 4-6).

The coulter 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.

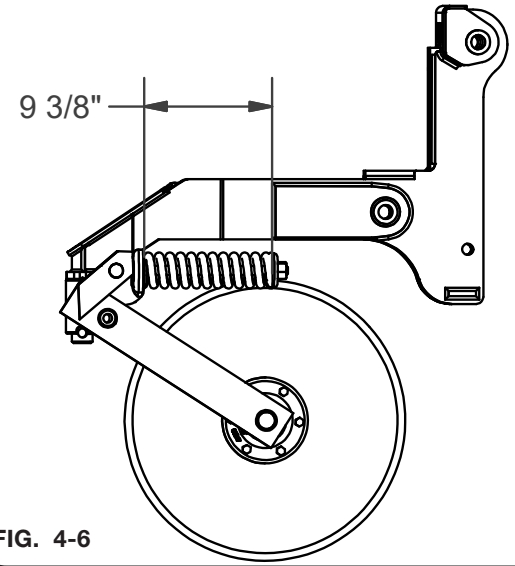


FIG. 4-6

Adjusting Wing Down Pressure For Units with Flex Hydraulic Option Only

⚠ WARNING

- **RELIEVE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE TRACTOR 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.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

Due to many field factors, it may be necessary to adjust wing down pressure.

The adjustment Allen screw is located on top of pressure cartridge in valve PR port, can increase or decrease pressure as needed (FIG. 4-7). Set tractor SCV #2 to continuous flow.

IF WINGS DO NOT MAINTAIN SHANK DEPTH-INCREASE HYDRAULIC OPERATING PRESSURE. (tighten screw 1/4 turn clockwise).

IF CENTER SECTION RAISES OUT OF THE GROUND, OR WINGS DO NOT FLOAT IN FIELD, DECREASE HYDRAULIC OPERATING PRESSURE. (loosen screw 1/4 turn counter-clockwise).

Pressure setting can be increased (screw turned in) or decreased (screw turned out) at a rate of 125 PSI –PER QUARTER TURN. Only adjust the screw 1/4 turn each time. Check machine in field performance after each adjustment/repeat if necessary.

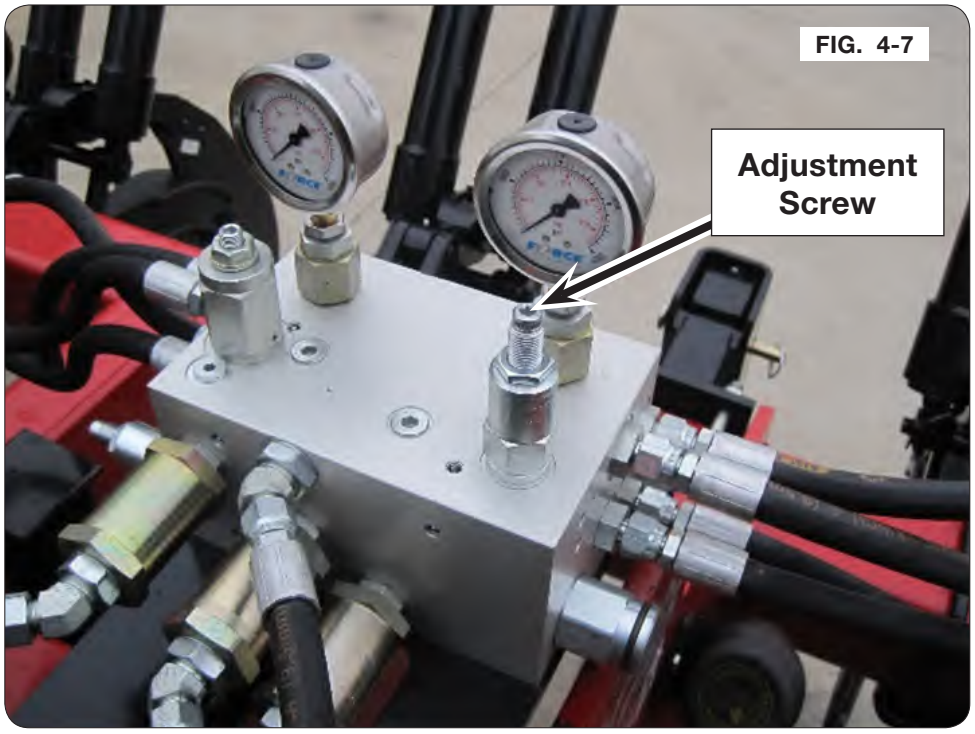


FIG. 4-7

Hub Adjustment and Replacement For Lead Coulters and Closing Coulters

Park the unit on a firm, level surface. Block the wheels on the machine to keep it from moving. Set the vehicle parking brake, lower parking stands, shut-off the engine, and remove the ignition key.

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

⚠ WARNING

- **BE SURE THAT THE IMPLEMENT IS SECURELY BLOCKED TO PREVENT FALLING. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

⚠ 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. Remove the blade.
2. Attach a C-clamp and apply pressure to both sides of the coulter hub (FIG. 4-8).

FIG. 4-8

Hub Adjustment and Replacement For Lead Coulters and Closing Coulters (continued)

3. Remove the retaining ring and hub cap. Refer to FIG. 4-9 and 4-10.

FIG. 4-9

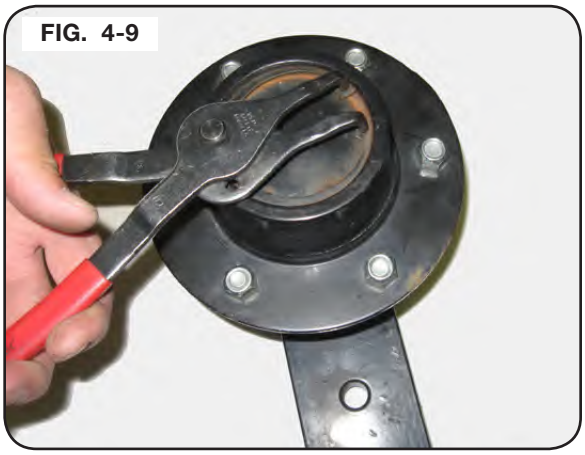


FIG. 4-10

Hub Adjustment and Replacement For Lead Coulters and Closing Coulters (continued)

4. Remove the retainer securing the slotted nut.

IMPORTANT

- *Removal of the C-ring is best accomplished by using two screwdrivers or similar tools and prying on the outside ends to spread the ring. If the 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 the hub and bearing failure.*

5. Unscrew the nut and carefully remove the hub from the spindle.
6. 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-rings and seals if dismantling the hub. Failure to do so could result in premature failure of the hub and its components.*

7. Replace any damaged parts before reassembling the components. Be sure to remove any debris or dirt and repack the bearings with an SAE approved hub grease.
8. Slide the O-ring onto the spindle first. Assemble the seal and bearings into the hub and position onto the spindle.
9. After reassembling the hub, position the slotted nut back onto the spindle and torque to 40-45 ft.-lbs. Align the slotted nut with the next closest cotter pin hole.
10. Install the C-ring or roll pin and O-ring (902158) (FIG. 4-12 on the following page).

IMPORTANT

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

11. Reinstall the hub cap and blade. Use a C-clamp to compress dust cap and then seat retaining ring.

FIG. 4-11

Hub Adjustment and Replacement For Lead Coulters and Closing Coulters (continued)

NOTE: Be sure to re-pack bearings with an SAE approved grease and keep it and its components free of dust and debris.

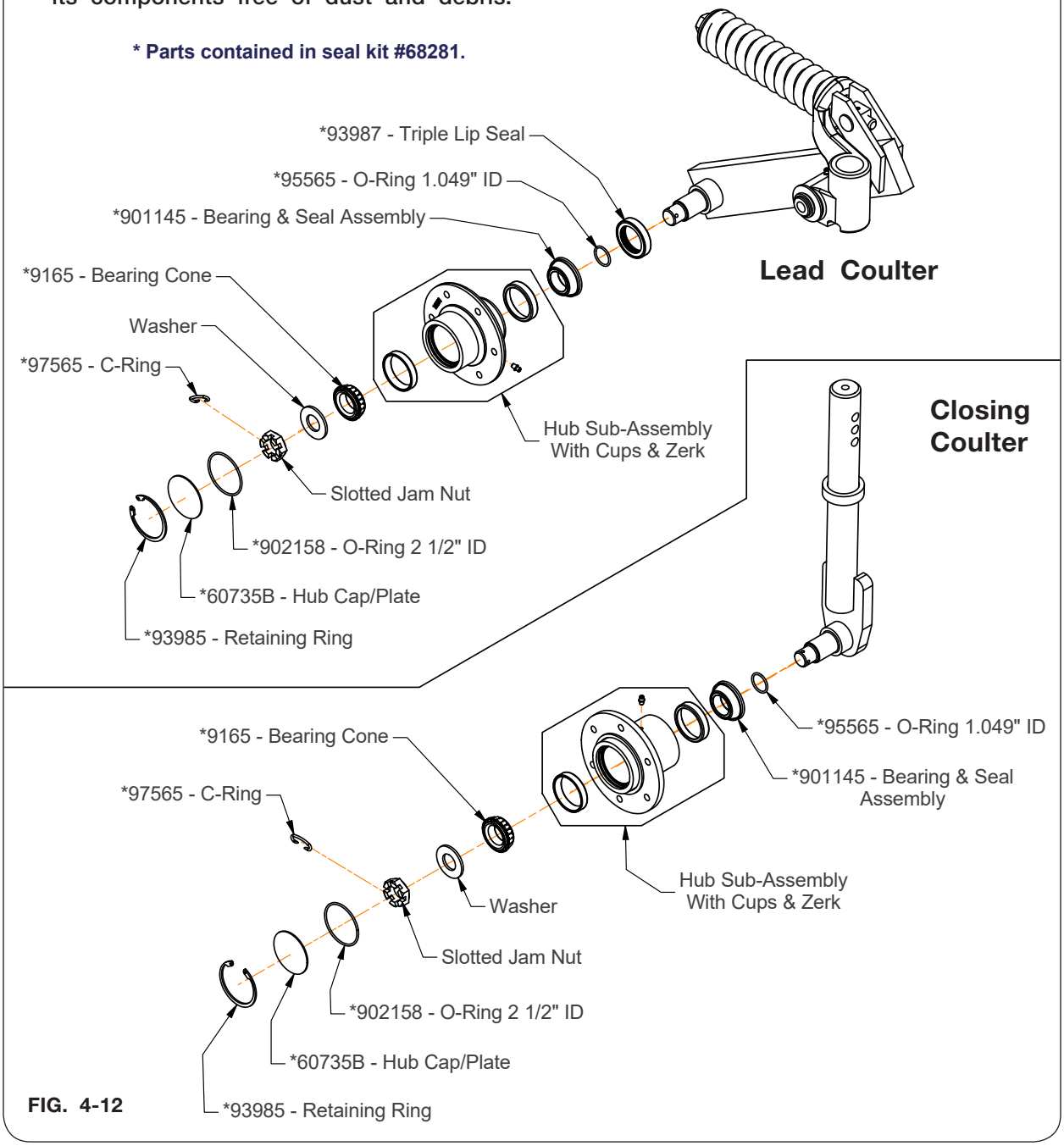


FIG. 4-12

Replacing Bearings In Conditioner Rolling Harrow Baskets

WARNING

- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

1. Lower support stand and 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 basket to support weight of basket.
3. Remove the three 5/1”6-18UNC carriage bolts which hold the bearing to the frame.
4. Use a crowbar or similiar to pry the end of the basket out of the basket frame slot.
5. Loosen the set screw in the lock collar. Loosen lock collar by turning with punch in direction of basket travel.
6. Remove the bearing.
7. File off any burrs left on the shaft. Finish with a strip of emery cloth. Make sure bearing will slide on the shaft.
8. Slide a new bearing (87175) on the shaft with the lock collar on the outside (FIG. 4-13).
9. Pry the end of the basket into the slot of the frame (FIG. 4-13).
10. Assemble the new 5/16”-18 capscrews through the holes in the frame and into the bearing housing (FIG. 4-13). Tighten screws according to Torque Chart, in this section.

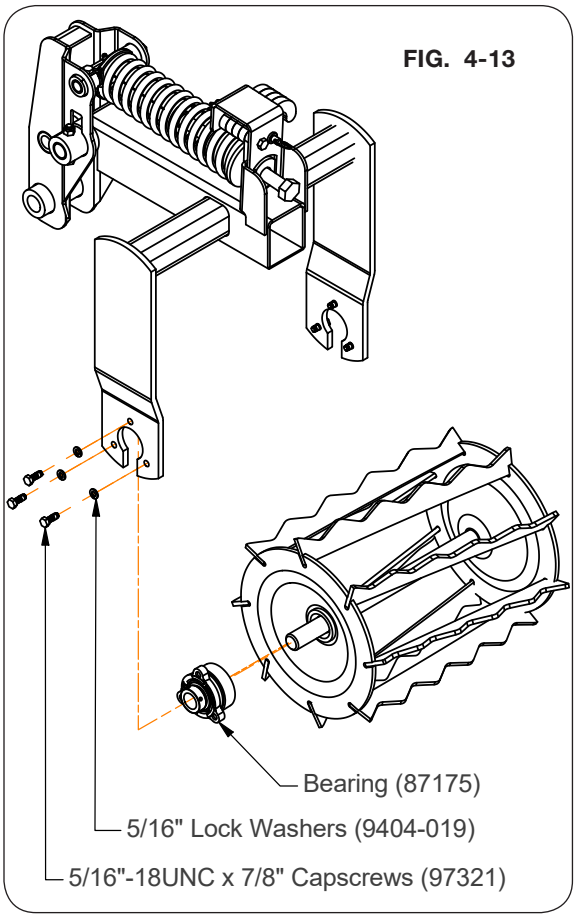
IMPORTANT

- *Tighten screws in bearing before tightening setscrew in lock collar.*

11. Tighten lock collar on shaft in direction of rotation.

Use UNVERFERTH bearing repair kit (87181) with triple lip seals for maximum life.

FIG. 4-13



Row Cleaner Wheel Hub Adjustment

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 MACHINE IS SECURELY BLOCKED.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**

⚠ 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 row cleaner wheel hub and bearing for looseness or wobble. Rotate and laterally push and pull on the row cleaner wheel. 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 hub cap (9501381) with a 3/16" adjustable spanner wrench. Torque nut (9397-016) to 20 ft.-lbs. and back off 1/4 of a turn. Apply a light coating of thread sealant to the O.D. of the hub cap and tighten onto the hub.

3. After tightening, retest the hub for wobble by repeating Step #1. If wobble still exists, continue with the following steps.

a. Remove the strap, hub cap, jam nut, and washer from the spindle.

IMPORTANT

- *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.*

b. Remove the bearing cones, hub with tooth wheel, O-ring and seals 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 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.

Row Cleaner Wheel Hub Adjustment (continued)

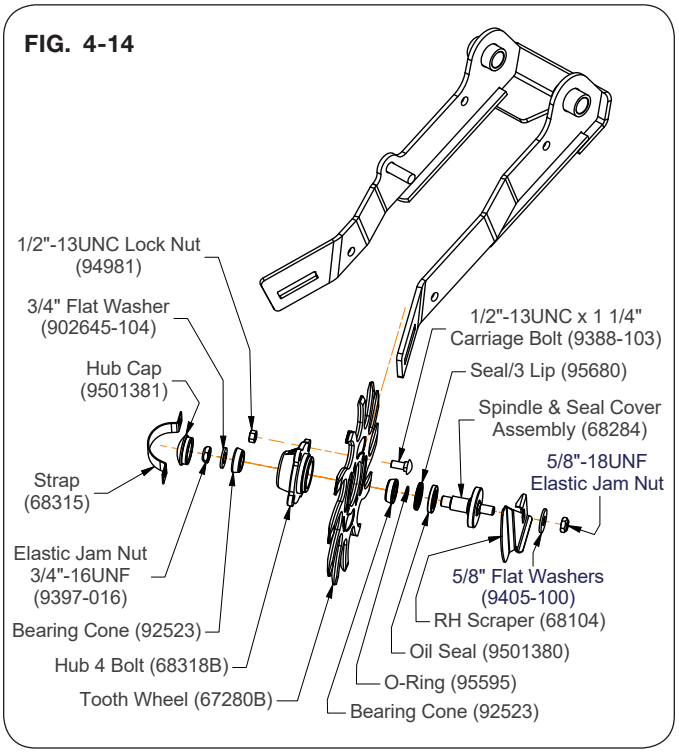
e. Assemble seal and bearings into hub and position onto spindle.

f. Apply grease to the I.D. of the seal (95680). While rotating the hub, place the hub on the spindle and seal cover (68284) making sure not to damage the seal. Assemble the washer and nut. Torque the jam nut (9397-016) to 20 ft.-lbs. and back off 1/4 of a turn. Apply a light coating of thread sealant to the O.D. of the hub cap and tighten onto the hub.

IMPORTANT

- *Rotate coulter hub when torquing jam nut. Doing this will prevent flats from forming on bearings.*

FIG. 4-14



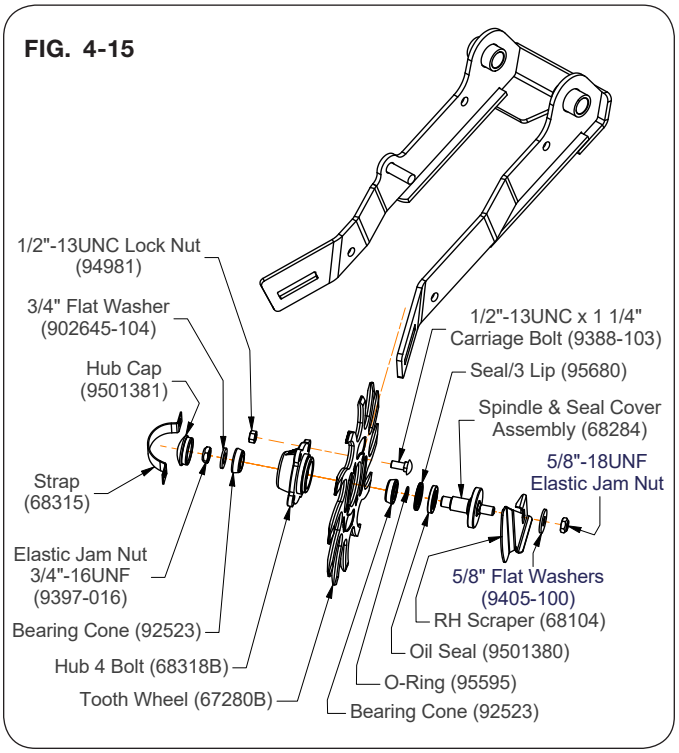
Row Cleaner Wheel Replacement

1. To replace a worn tooth wheel (67280B), remove and save the 5/8”-18UNF elastic jam nut (9397-015), 5/8” flat washer (9405-100), scraper and the hub/spindle assembly from the mounting arm. (FIG. 4-15)

2. Remove the four locknuts (94981) and carriage bolts (9388-103). Replace and reinstall tooth wheel (67280B) and hardware.

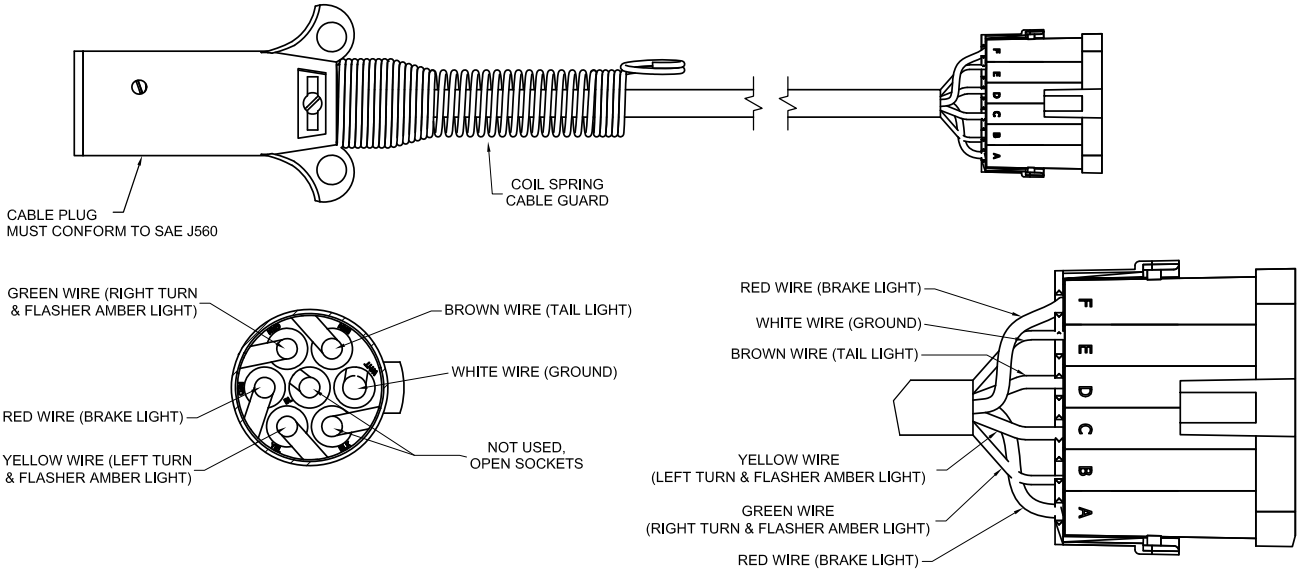
3. Reinstall the hub/spindle assembly onto the mounting plate and secure with scraper, 5/8” flat washer (9405-100), and 5/8”-18UNF elastic jam nut (9397-015). (FIG. 4-15)

FIG. 4-15

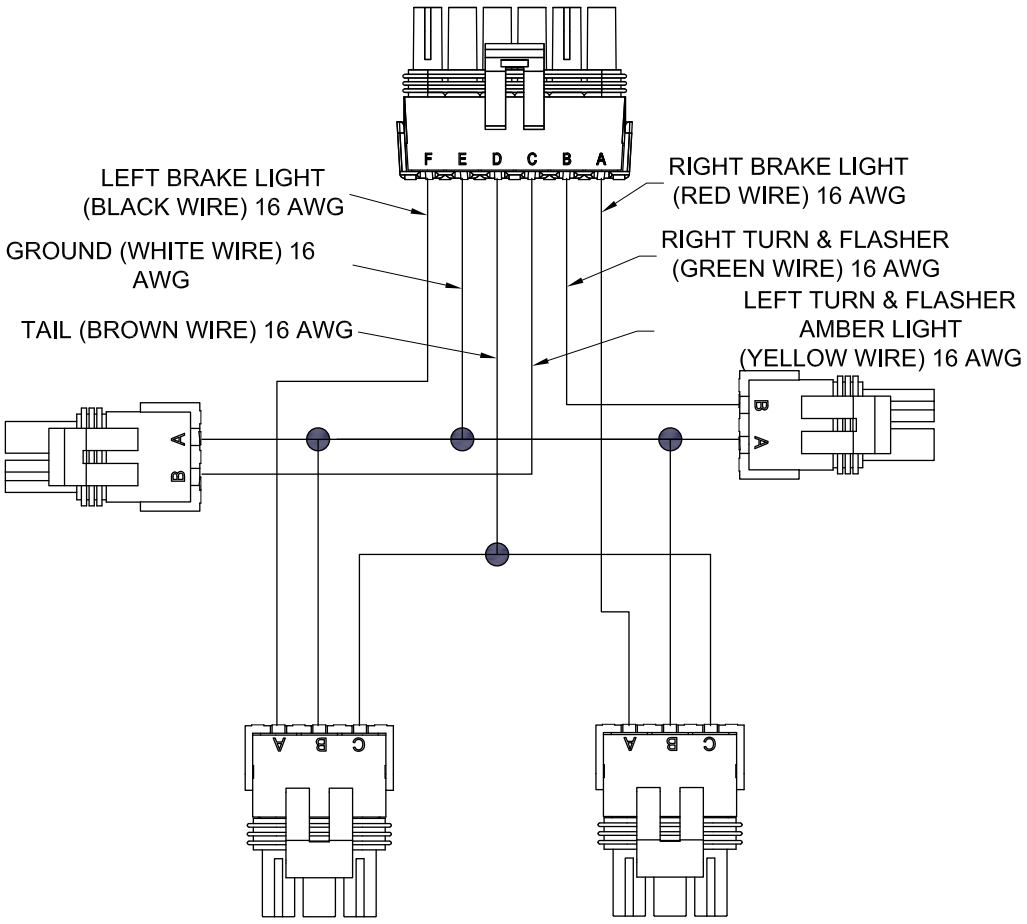


Schematics - Electrical

Electrical Harness - Main 114” (86466)

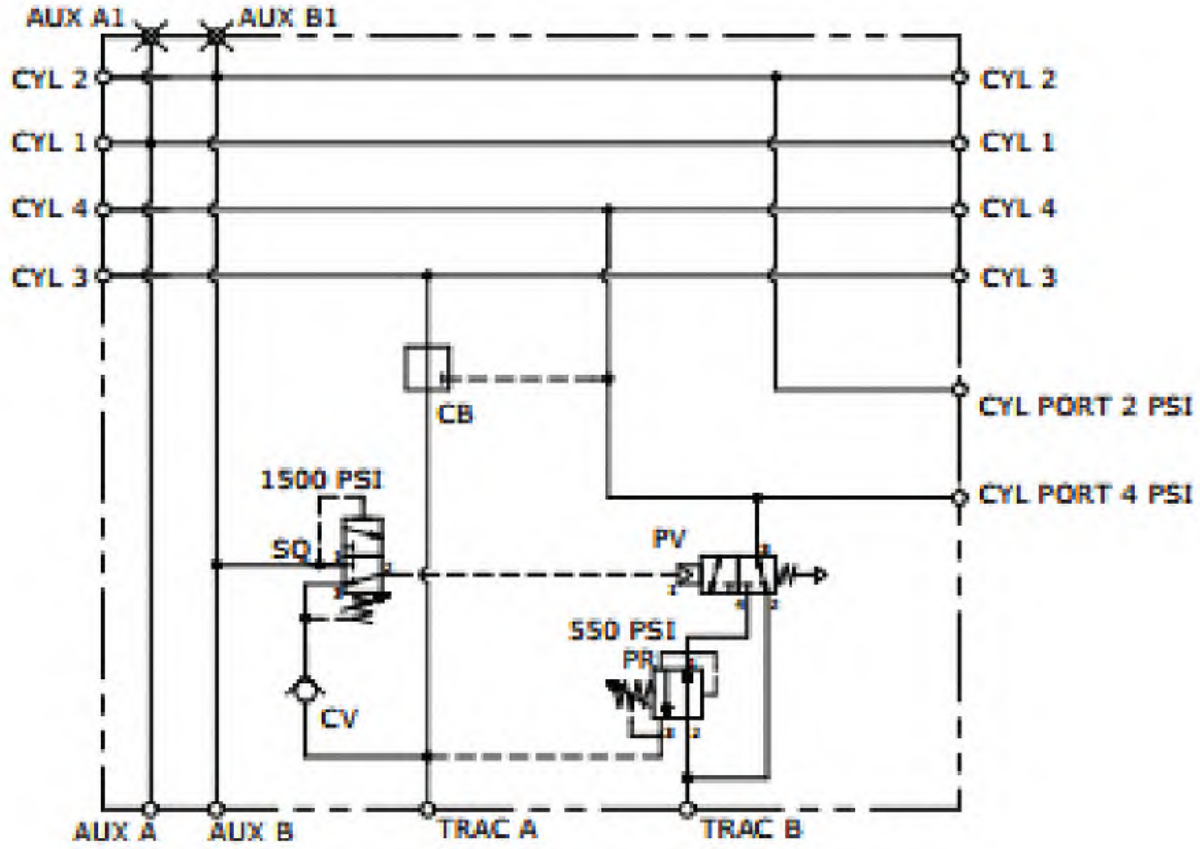


Electrical Harness - Rear 422” (69407)



Schematics - Hydraulic

Valve Block Assembly (9503620)



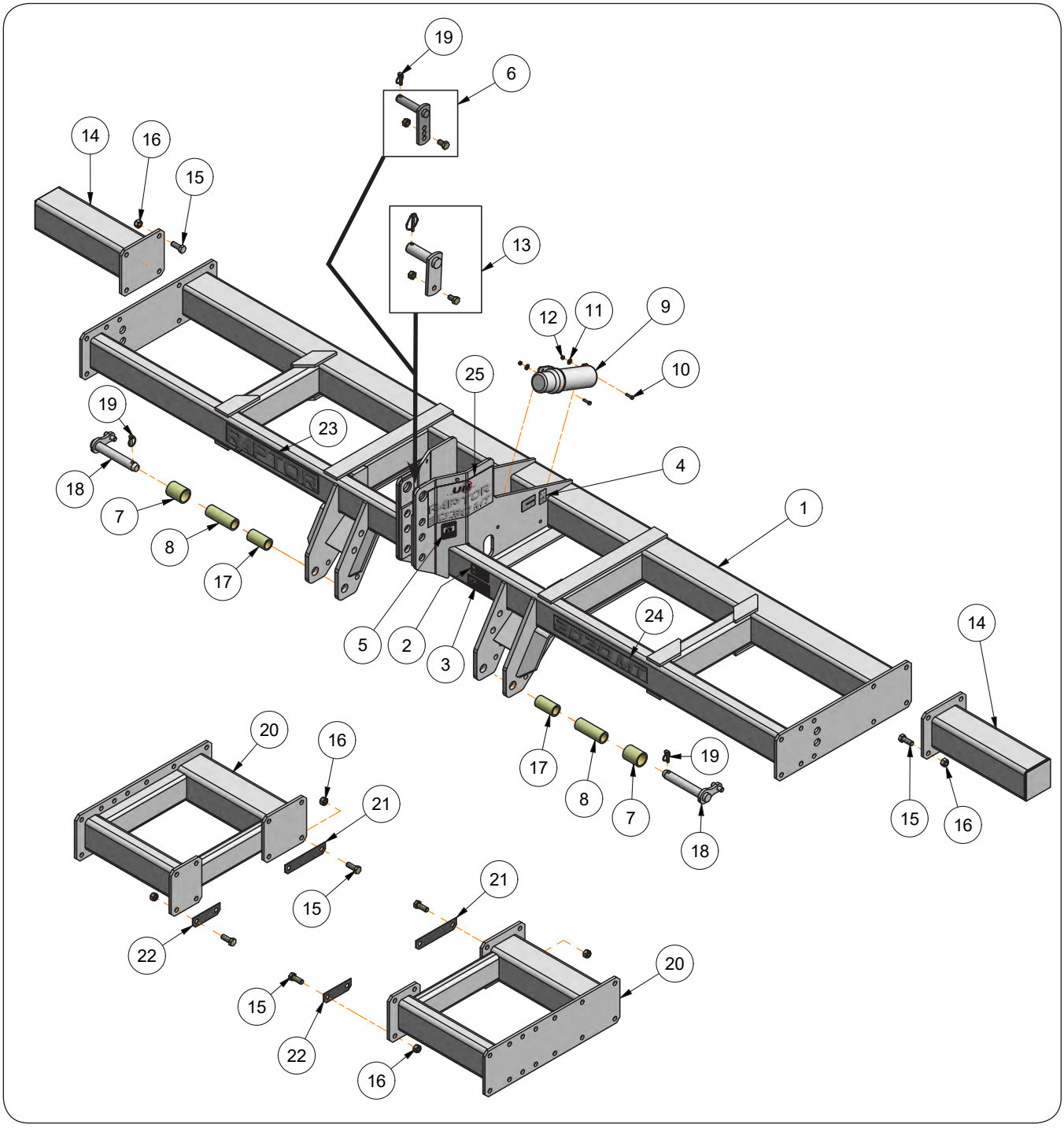
Notes

SECTION V
Parts

Please refer to the Rear Hitch manual for additional information.

Rigid Main Frame — 6 Shank

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



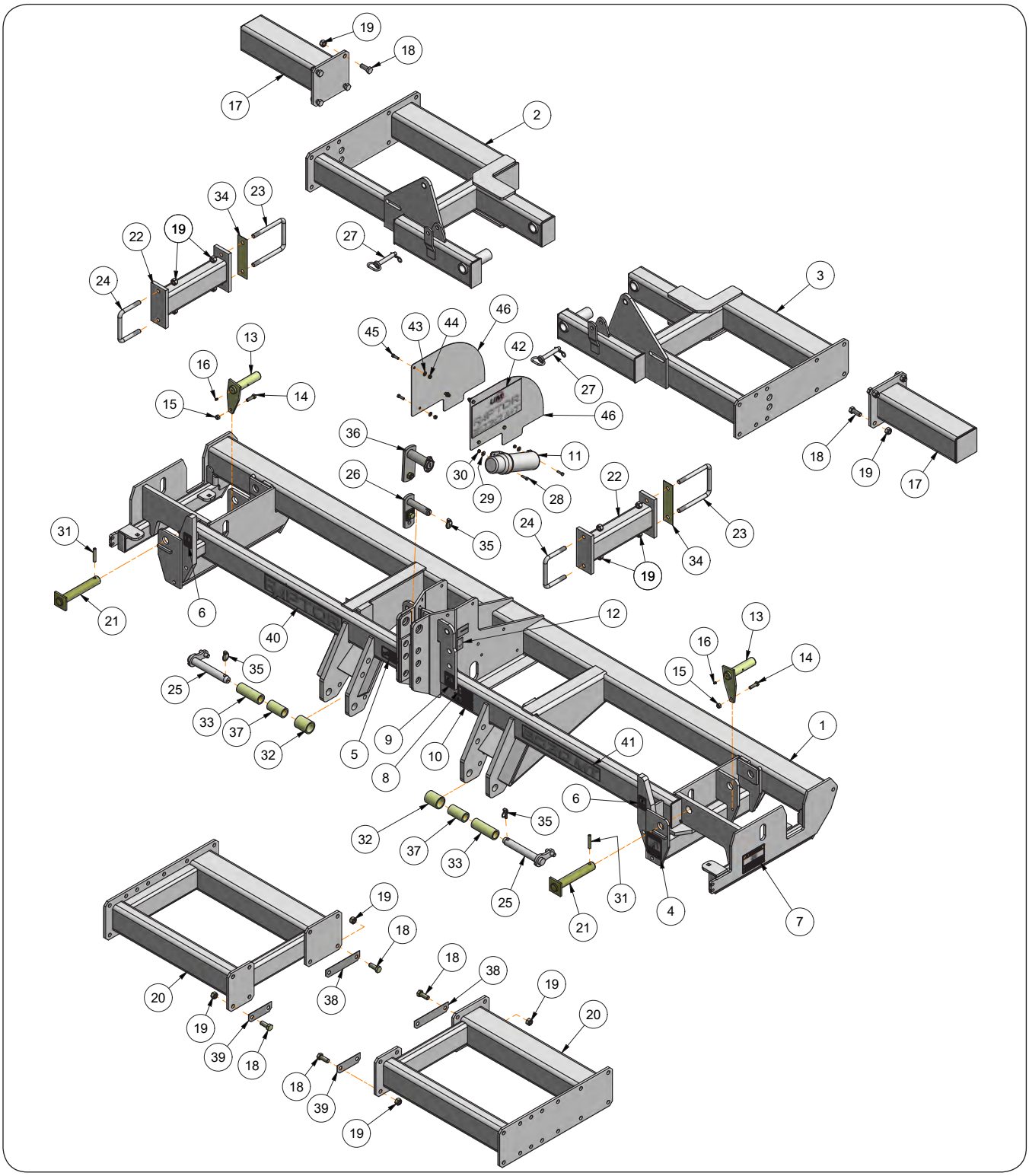
Rigid Main Frame — 6 Shank

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

ITEM	PART NO.	DESCRIPTION	6 SHANK		
			30"	36"	38"
1	67437G	Main Frame (w/Decals & Mast Pins) =Green=	1	1	1
	67437R	Main Frame (w/Decals & Mast Pins) =Red=			
2	97961	Decal, WARNING (Read & Understand)	1	1	1
3	99507	Decal, WARNING (Falling Equipment)	1	1	1
4	91605	Decal, FEMA	1	1	1
5	97972	Decal, WARNING (Crush Hazard)	2	2	2
6	67188B	Mast Pin Assembly 1 1/4" Dia.	1	1	1
7	64428	Bushing, 2 1/2" Dia. x 3 1/8"/Lower Spacer CAT IV	2	2	2
8	65284	Bushing, 2" Dia. x 5 11/16"/Lower Spacer CAT IV	2	2	2
9	900552	Manual Holder	1	1	1
10	9390-031	Capscrew, 5/16"-18UNC x 1 1/4"	2	2	2
11	9405-070	Flat Washer, 5/16" USS	2	2	2
12	9397-008	Elastic Jam Nut, 5/16"-18UNC	2	2	2
13	67187B	Pin Sub Assembly/Mast Pin Asy 1 3/4" Dia.	1	1	1
14	65623G	Extension Tube 22" Weldment =Green=	2	2	2
	65623R	Extension Tube 22" Weldment =Red=			
15	9390-145	Capscrew, 3/4"-10UNC x 2" (Grade 5)	-	16	16
16	9802	Locknut, 3/4"-10UNC	-	16	16
17	65285	Bushing, 2" Dia. x 3 7/8"/Lower Spacer CAT III	2	2	2
18	69695	Pin Weldment/Anti-Rotational Pin	2	2	2
19	9951	Klik-Pin 7/16" Dia. x 1 3/4"	3	3	3
20	64032G	Extension Frame 19" Weldment =Green=	-	2	2
	64032R	Extension Frame 19" Weldment =Red=			
21	67868	Shim 2" x 9 1/4"	-	2	2
22	67869	Shim 2" x 6 1/4"	-	2	2
23	9503753	Decal, RAPTOR	1	1	1
24	9503755	Decal, MODEL 2030MT	1	1	1
	9503754	Decal, MODEL 2015MT			
25	9503752	Decal, MODEL RAPTOR 2030MT	2	2	2
	9503751	Decal, MODEL RAPTOR 2015MT			

Folding Main Frame — 8 Shank

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



ITEM	PART NO.	DESCRIPTION	ITEM	NOTES
1	69222G	Main Frame, Flex w/Decals =Green=	1	
	69222R	Main Frame, Flex w/Decals =Red=		
2	68404G	Wing Base 45" (Right-Hand) =Green=	1	
	68404R	Wing Base 45" (Right-Hand) =Red=		

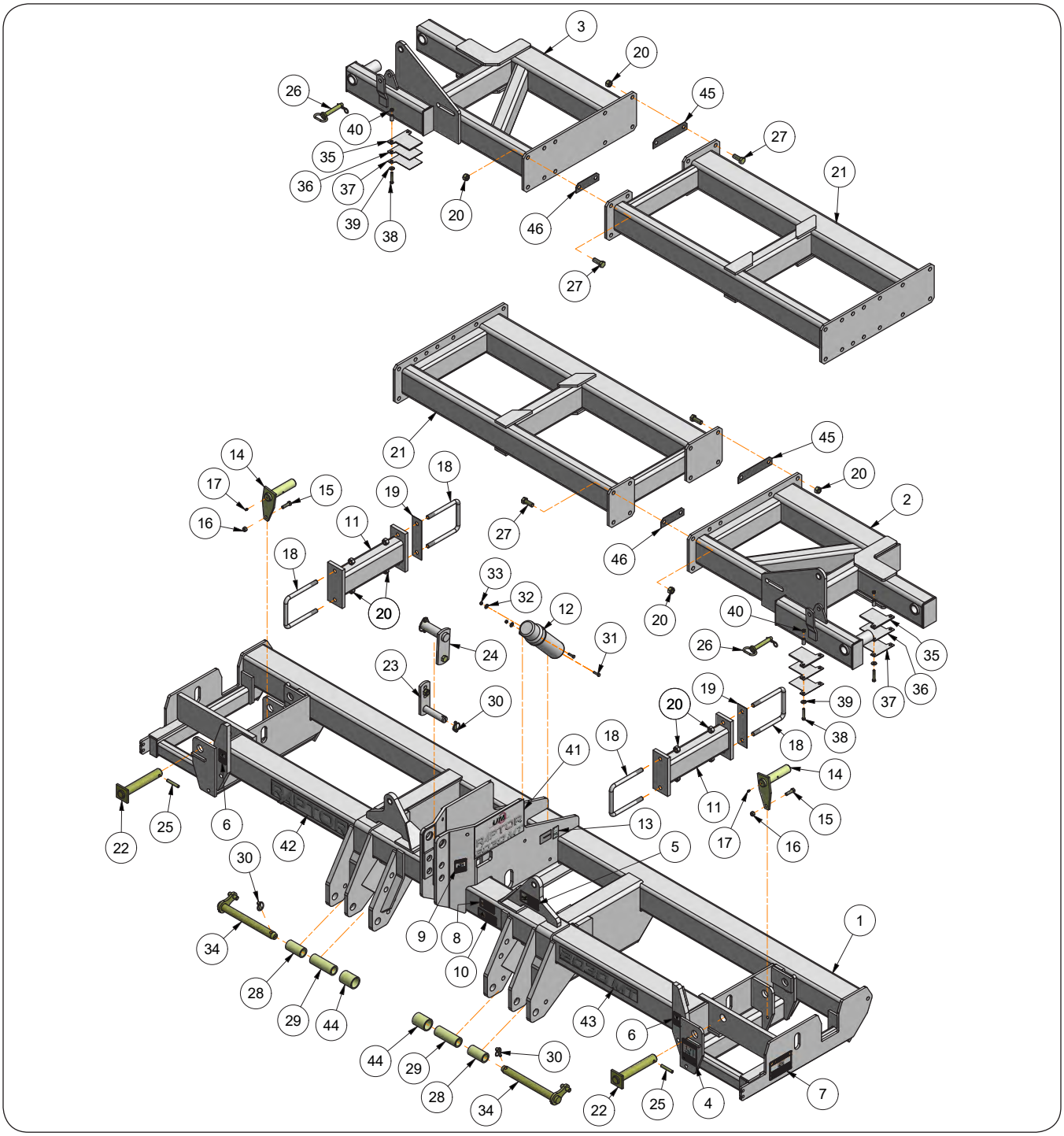
Folding Main Frame — 8 Shank

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

ITEM	PART NO.	DESCRIPTION	ITEM	
3	68405G	Wing Base 45" (Left-Hand) =Green=	1	
	68405R	Wing Base 45" (Left-Hand) =Red=		
4	902221	Decal, DANGER "Electrocution Hazard"	1	
5	95445	Decal, WARNING! "Do not use hands..."	1	
6	97048	Decal, WARNING! "Pinch Points..."	2	
7	97337	Decal, WARNING! "Never Stand..."	2	
8	97961	Decal, WARNING! "Read & Understand..."	1	
9	97972	Decal, WARNING! "Crushing Hazard..."	2	
10	99507	Decal, WARNING! "Falling Equipment..."	1	
11	900552	Manual Holder	1	
12	91605	Decal, FEMA	1	
13	63223	Pin Weldment 1 5/8" Dia. x 7 1/4"	2	
14	9390-102	Capscrew 1/2"-13UNC x 1 3/4"	2	Grade 5
15	9800	Locknut 1/2"-13UNC	2	
16	91160	Grease Zerk	2	
17	65623G	Extension Tube 22" Weldment =Green=	2	For 8 Shank 30"
	65623R	Extension Tube 22" Weldment =Red=		
18	9390-145	Capscrew 3/4"-10UNC x 2"	24	Grade 5
19	9802	Locknut 3/4"-10UNC	32	
20	63345G	Extension Frame 31" =Green=	2	For 8 Shank 36, 38"
	63345R	Extension Frame 31" =Red=		
21	63220	Pin Weldment 1 5/8" Dia. x 10 3/4"	2	
22	61303G	Support Tube 18" =Green=	2	
	61303R	Support Tube 18" =Red=		
23	94090	U-Bolt 3/4"-10UNC x 8"	2	
24	94012	U-Bolt 3/4"-10UNC x 5"	2	
25	68108	Pin Weldment 1 7/16" Dia. x 10 3/8"	2	
26	67188B	Mast Pin Assembly 1 1/4" Dia. x 7 1/2	1	
27	97035	Hitch Pin Asy w/Hair Pin 3/4" Dia. x 4 1/4"	2	
28	9390-031	Capscrew 5/16"-18UNC x 1 1/4"	2	Grade 5
29	9405-070	Flat Washer 5/16"	2	
30	9397-008	Elastic Nut 5/16"-18UNC	2	
31	91144-239	Spiral Pin 1/2" Dia. x 3"	2	
32	64428	Bushing 2 1/2" OD x 3 1/8"	2	
33	65284	Bushing 2" OD x 5 11/16" (Lower CAT IV)	2	
34	62643	Shim	2	
35	9951	Lynch/Klik Pin 7/16 x 1 3/4"	3	
36	67187B	Mast Pin 1 3/4" Dia. w/Lynch Pin	1	
	9501028	Lynch Pin	1	
37	65285	Lower Bushing 2" OD x 3 7/8"	2	
38	67868	Shim 2" x 9 1/4"	2	For 8 Shank 36, 38"
39	67869	Shim 2" x 6 1/4"	2	For 8 Shank 36, 38"
40	9503753	Decal, RAPTOR	1	
41	9503755	Decal, MODEL 2030MT	1	
	9503754	Decal, MODEL 2015MT		
42	9503752	Decal, MODEL RAPTOR 2030MT	2	
	9503751	Decal, MODEL RAPTOR 2015MT		
43	9405-074	Flat Washer, 3/8" SAE	6	
44	9928	Lock Nut/TOP, 3/8"-16UNC	16	
45	9390-056	Capscrew, 3/8"-16UNC x 1 1/4" G5	6	
46	68926G	Decal Panel =Green=	2	
	68926R	Decal Panel =Red=		

Folding Main Frame — 12 Shank 30” Spacing

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



ITEM	PART NO.	DESCRIPTION	QTY.	NOTES
1	67432G	Main Frame w/Decals =Green=	1	
	67432R	Main Frame w/Decals =Red=		
2	67427G	Wing Base (Right-Hand) =Green=	1	
	67427R	Wing Base (Right-Hand) =Red=		
3	67428G	Wing Base (Left-Hand) =Green=	1	
	67428R	Wing Base (Left-Hand) =Red=		

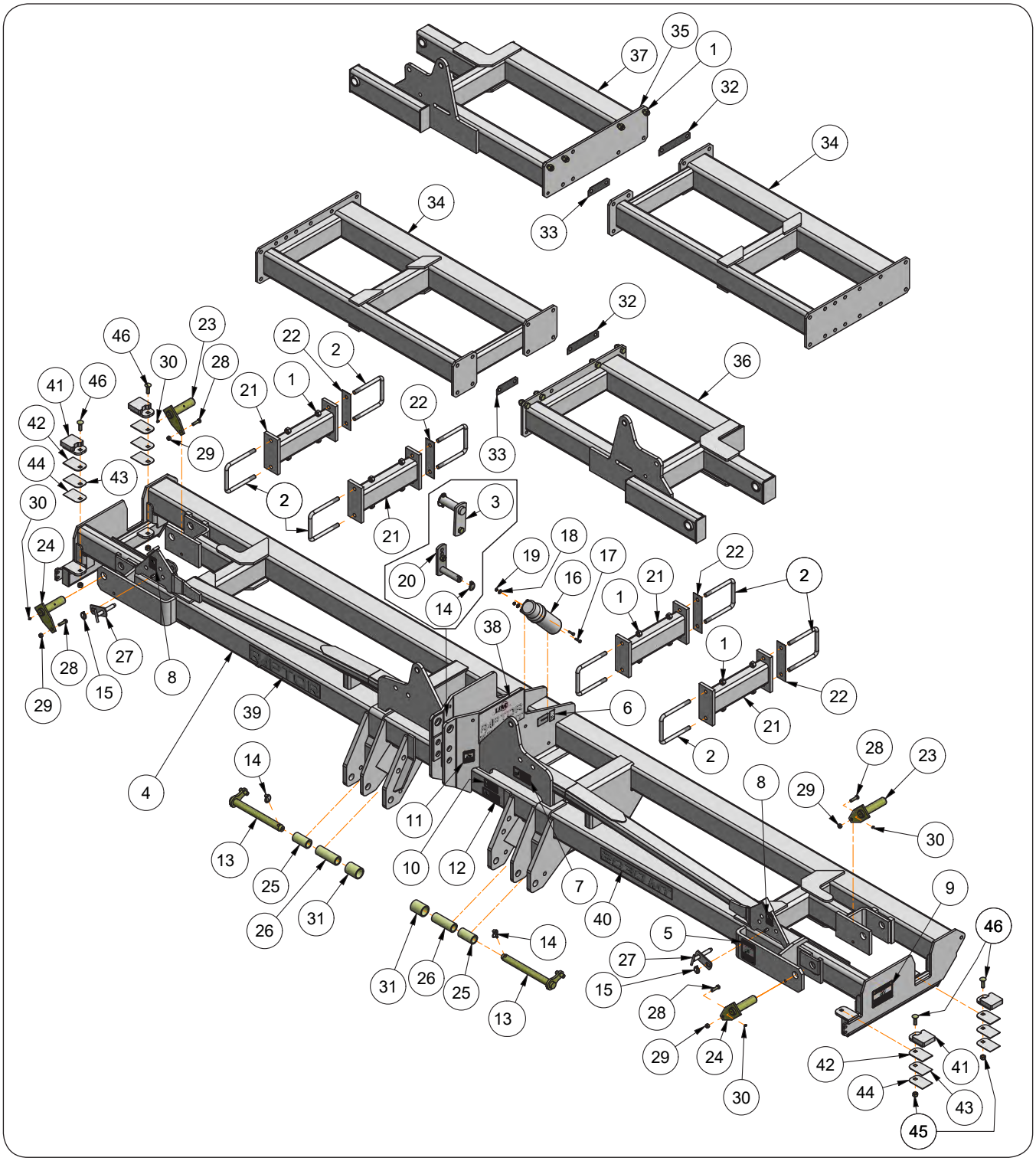
Folding Main Frame — 12 Shank 30” Spacing

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

ITEM	PART NO.	DESCRIPTION	QTY.	NOTES
4	902221	Decal, DANGER	1	
5	95445	Decal, WARNING! Do not use hands...	1	
6	97048	Decal, WARNING! Pinch Points...	1	
7	97337	Decal, WARNING! Never Stand...	2	
8	97961	Decal, WARNING! Read & Understand...	1	
9	97972	Decal, WARNING! Crushing Hazard...	1	
10	99507	Decal, WARNING! Falling Equipment...	1	
11	61303G	Support Tube 18” =Green=	2	
	61303R	Support Tube 18” =Red=		
12	900552	Manual Holder	1	
13	91605	Decal, FEMA	1	
14	63223	Pin Weldment 1 5/8” Dia. x 7 1/4”	2	
15	9390-102	Capscrew (Grade 5) 1/2-13UNC x 1 3/4”	2	
16	9800	Locknut 1/2-13UNC	2	
17	91160	Grease Zerk	2	
18	94090	U-Bolt 3/4-10UNC x 8”	4	
19	62643	Shim	2	
20	9802	Locknut 3/4-10UNC	24	
21	63245G	Extension Frame 57” =Green= For 12 Shank	2	
	63245R	Extension Frame 57” =Red= For 12 Shank		
22	63220	Pin Weldment 1 5/8” Dia. x 10 3/4	2	
23	67188B	Mast Pin Assembly 1 1/4” Dia. x 7 1/2	1	
24	67187B	Mast Pin 1 3/4” Dia.	1	
25	91144-239	Spiral Pin 1/2 x 3” Lg.	2	
26	97035	Hitch Pin Asy w/Hair Pin 3/4” Dia. x 4 1/4”	2	
27	9390-145	Capscrew (Grade 5) 3/4-10UNC x 2”	16	
28	65285	Lower Bushing 2” Dia. x 3 7/8 (CAT IV)	2	
29	65284	Bushing 2 x 5 11/16” (Lower CAT IV)	2	
30	9951	Lynch/Klik Pin 7/16” Dia. x 1 3/4”	3	
31	9390-031	Capscrew (Grade 5) 5/16-18UNC x 1 1/4”	2	
32	9405-070	Flat Washer 5/16	2	
33	9397-008	Elastic Nut 5/16-18UNC	2	
34	69657	Pin 1 7/16” Dia. x 15 7/16”	2	
35	65896B	Shim .25” Thick	2	
36	65897B	Shim .140” Thick	2	
37	65898B	Shim 14 Ga. Thick	2	
38	9390-060	Capscrew 3/8-16UNC x 2 1/4	4	
39	9405-076	Flat Washer 3/8” USS	4	
40	9928	Locknut 3/8”	4	
41	9503752	Decal, MODEL RAPTOR 2030MT	2	
	9503751	Decal, MODEL RAPTOR 2015MT		
42	9503753	Decal, RAPTOR	1	
43	9503755	Decal, MODEL 2030MT	1	
	9503754	Decal, MODEL 2015MT		
44	64428	Bushing 2 1/2” OD x 3 1/8”	2	
45	67868	Shim 2” x 9 1/4”	2	
46	67869	Shim 2” x 6 1/4”	2	

Folding Main Frame — 12 Shank (36/38” Spacing)

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



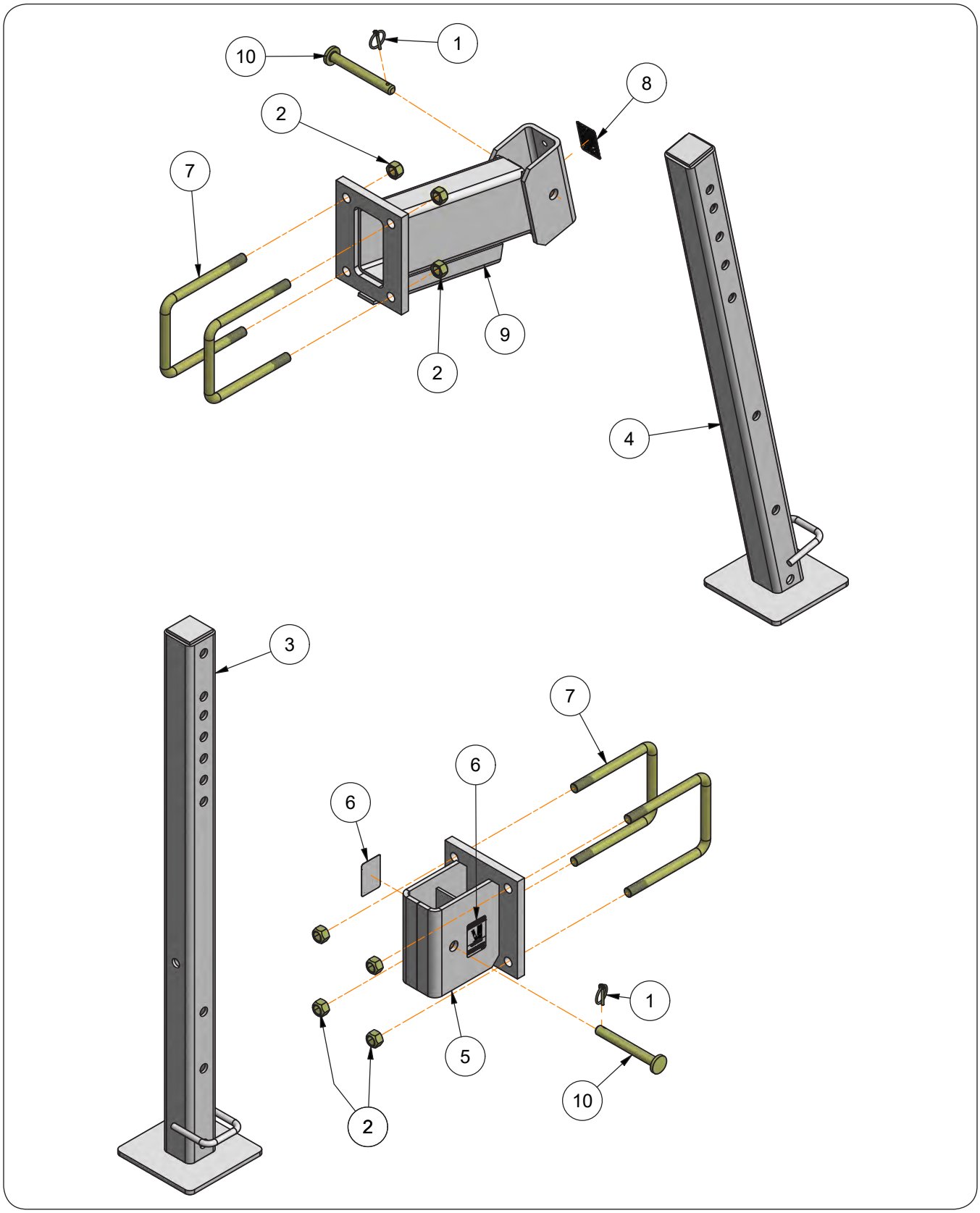
Folding Main Frame — 12 Shank (36/38" Spacing)

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	9802	Lock Nut/Top, 3/4"-10UNC	32	
2	94090	U-Bolt, 3/4"-10UNC x 8"	4	
3	67187B	Mast Pin, 1 3/4" Dia. w/Lynch Pin	1	
4	68532G	Main Frame, Flex w/Decals =Green=	1	
	68532R	Main Frame, Flex w/Decals =Red=		
5	902221	Decal, DANGER! "Electrocution Hazard..."	2	
6	91605	Decal, FEMA	1	
7	95445	Decal, WARNING! "Do not use hands..."	2	
8	97048	Decal, WARNING! "Pinch Points..."	2	
9	97337	Decal, WARNING! "Never Stand..."	2	
10	97961	Decal, WARNING! "Read & Understand..."	1	
11	97972	Decal, WARNING! "Crushing Hazard..."	2	
12	99507	Decal, WARNING! "Falling Equipment..."	1	
13	69657	Pin, 1 7/16" Dia. x 15 1/8"	2	
14	9951	Lynch/Klik Pin, 7/16" Dia. x 1 3/4"	3	
15	9093	Klik Pin, 3/16" Dia.	2	
16	900552	Manual Holder	1	
17	9390-031	Capscrew, 5/16"-18UNC x 1 1/4" G5	2	
18	9405-070	Flat Washer, 5/16"	2	
19	9397-008	Elastic Nut, 5/16"-18UNC	2	
20	67188B	Mast Pin Assembly, 1 1/4" Dia. x 7 1/2"	1	
21	61303G	Support Tube 18" =Green=	4	
	61303R	Support Tube 18" =Red=		
22	62643	Shim, 2 1/2" x 9 5/16"	2	
23	64277	Pin Lock Weldment (Rear)	2	
24	64279	Pin Lock Weldment (Front)	2	
25	65285	Bushing, 2" OD x 3 7/8"	2	
26	65284	Bushing, 2" OD x 5 11/16" (Lower CAT IV)	2	
27	64424B	Lock Up Pin Weldment	2	
28	9390-102	Capscrew, 1/2"-13UNC x 1 3/4" G5	4	
29	9800	Lock Nut/Top, 1/2"-13UNC	4	
30	91160	Grease Zerk	4	
31	64428	Bushing, 2 1/2" OD x 3 1/8"	2	
32	67868	Shim, 2" x 9 1/4"	4	
33	67869	Shim, 2" x 6 1/4"	4	
34	63245G	Extension Frame 57" =Green=	2	
	63245R	Extension Frame 57" =Red=		
35	9390-145	Capscrew, 3/4"-10UNC x 2" G5	16	
36	68389G	Wing Base (Right-Hand) =Green=	1	
	68389R	Wing Base (Right-Hand) =Red=		
37	68390G	Wing Base (Left-Hand) =Green=	1	
	68390R	Wing Base (Left-Hand) =Red=		
38	9503752	Decal, MODEL RAPTOR 2030MT	2	
	9503751	Decal, MODEL RAPTOR 2015MT		
39	9503753	Decal, RAPTOR	1	
40	9503755	Decal, MODEL 2030MT	1	
	9503754	Decal, MODEL 2015MT		
41	68337B	Shim Weldment	4	
42	68817B	Shim, 7 GA. x 3" x 4 1/2"	4	
43	68816B	Shim, 12 GA. x 3" x 4 1/2"	4	
44	68815B	Shim, 14 GA. x 3" x 4 1/2"	4	
45	9801	Lock Nut/Top, 5/8"-11UNC	4	
46	9388-135	Carriage Bolt 5/8"-11UNC x 2" G5	4	

Storage Stand

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



Storage Stand

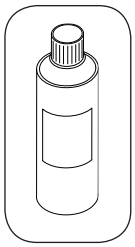
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	9093	Klik-Pin	3	
2	9802	Locknut, 3/4"-10UNC	4	
3	63529	Straight Storage Stand (for Rigid Units)	2	
4	63571	Angled Storage Stand (Auto-Reset Folding Units & Shear-Bolt Rigid & Folding)	1	
5	77341B	Mounting Bracket	2	Includes Item 6
6	97973	Decal, WARNING	2	
7	94090	U-Bolt, 3/4"-10UNC x 8"	6	
	94012	U-Bolt, 3/4"-10UNC x 5"		
8	97973	Decal, WARNING	1	
9	601996B	Storage Stand Mounting Bracket Weldment	1	
10	9500153	Pin	3	

Touch-Up Paint

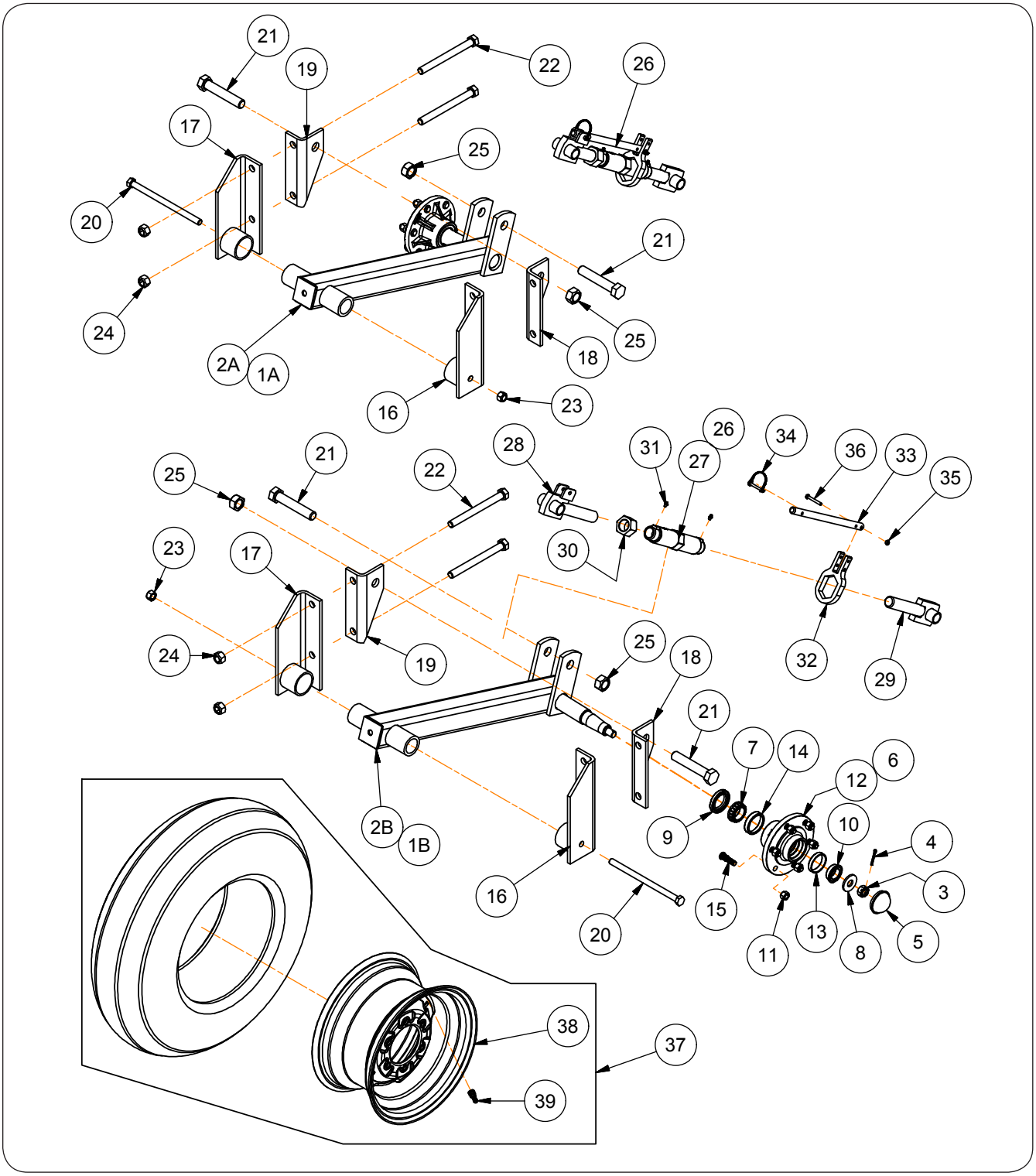
Please visit www.unverferth.com/parts/ for the most current parts listing.

PAINT	SPRAY
Black	97013
Green	97015
Red	97301
Primer, Gray	9500082



Stabilizer Wheel

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



PART NO.	DESCRIPTION	NOTES
66299B	Stabilizer Wheel Bundle (Pair) w/Tire & Wheel (Tire 12.5LB15)	Includes Items 1 through 39
67490B	Stabilizer Wheel Bundle (Pair) w/Tire & Wheel (Tire 9.5LB15)	

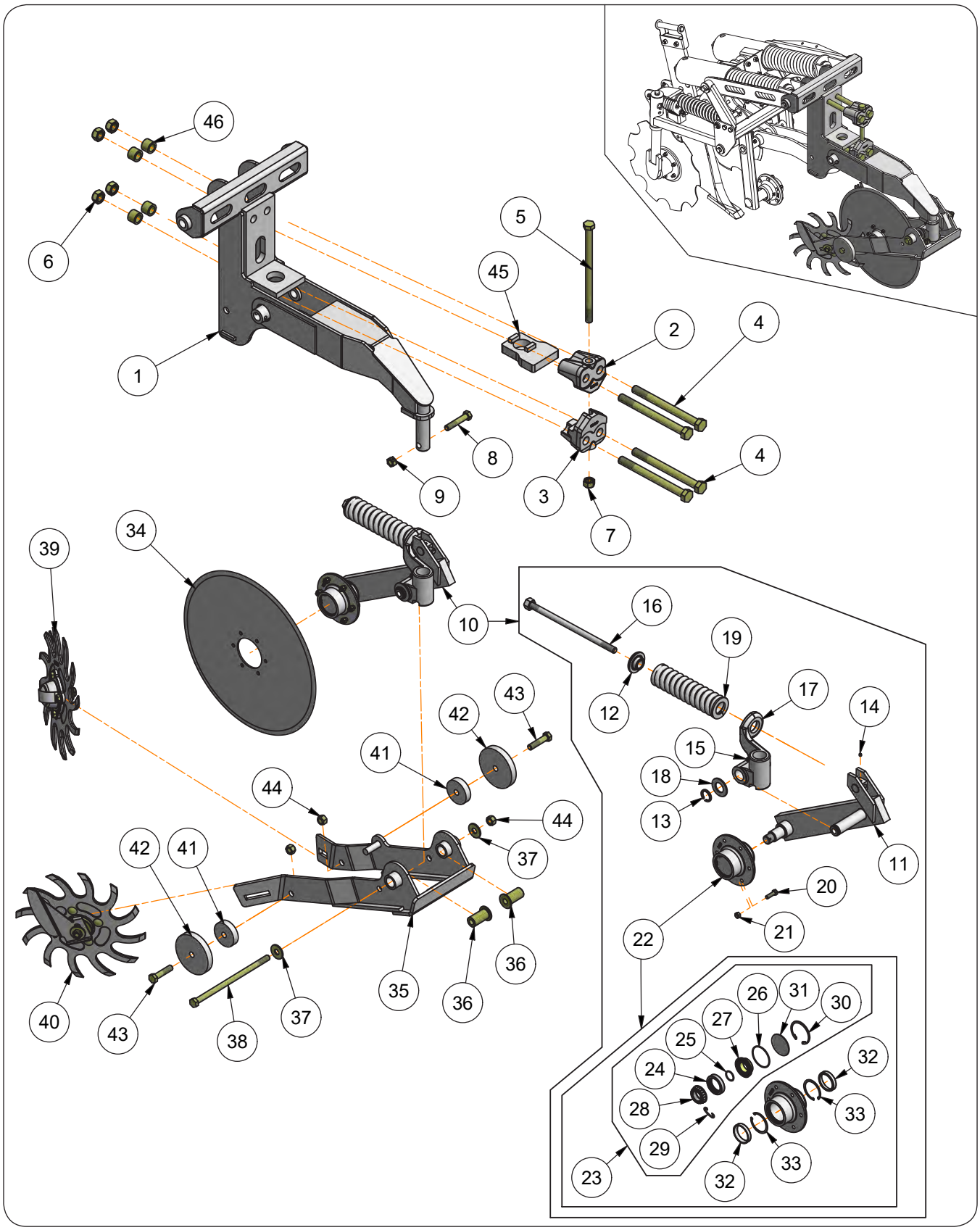
Stabilizer Wheel

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	9768B	Hub Cap	2
6	NA	Hub Assembly (Includes Items 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	NA	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	Hex Capscrew 5/8-11UNC x 10 1/2	2
21	9390-194	Hex Capscrew 1"-8UNC x 5 1/2	4
22	9390-161	Hex Capscrew 3/4-10UNC x 8 (For Rear Bar Mounting)	8
	9390-155	Hex Capscrew 3/4-10UNC x 5 (For Front Bar Mounting)	
23	9801	Locknut 5/8-11UNC	2
24	9802	Locknut 3/4-10UNC	82
25	9663	Locknut 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	Locknut 1/4-20UNC	2
36	9390-009	Capscrew 1/4-20UNC x 2	2
37	11895SM	Tire & Wheel Assembly (Tire 12.5LB15)	2
38	W1015-6-98RGSM	10 x 15 Wheel	2
37	60911SM	Tire & Wheel Assembly (Tire 9.5LB15)	2
38	W815-6-08SM	8 x 15 Wheel	2
39	9002500	Valve Stem With Cap	2

TerrainPro Row Unit — Lead Coulter & Row Cleaner Components

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



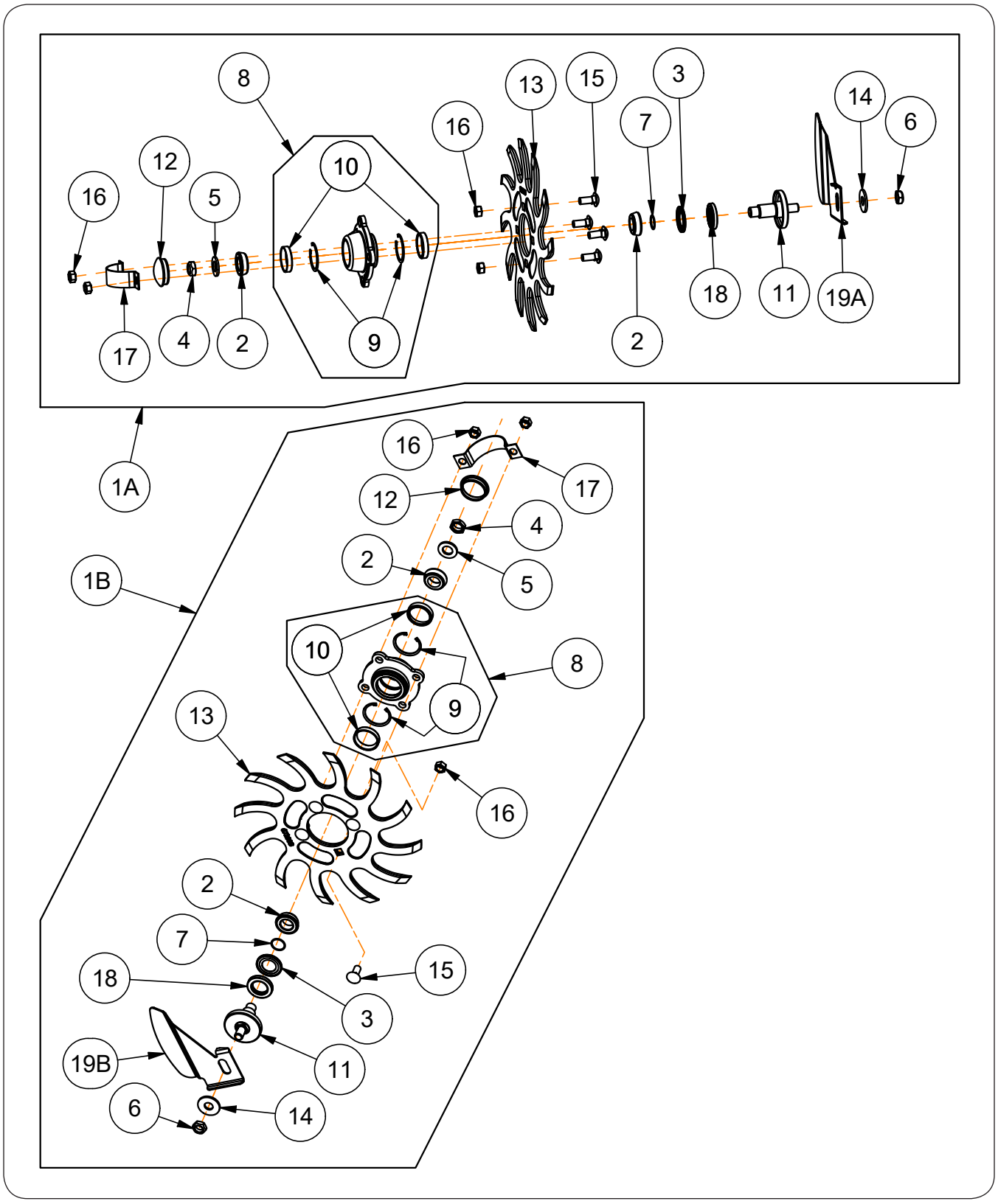
TerrainPro Row Unit — Lead Coulter & Row Cleaner Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	603043B	Row Unit Base Weldment =Black=	1	
2	67072B	Clamp, Top =Black=	1	
3	67073B	Clamp, Bottom =Black=	1	
4	9390-457	Capscrew, 7/8"-9UNC x 10" G5	4	
5	9503094	Capscrew, 3/4"-10UNC x 13" G5	1	
6	98420	Lock Nut/Top, 7/8"-9UNC	4	
7	9802	Lock Nut/Top, 3/4"-10UNC	1	
8	9390-129	Capscrew, 5/8"-11UNC x 3 1/4" G5	1	
9	95905	Lock Nut/Center, 5/8"-11UNC	1	
10	68114B	Coulter Combo LH Assembly =Black=	1	
11	68112B	Coulter Arm LH Weldment =Black=	1	Includes Items 11-33
12	82828B	Spring Washer =Black=	1	
13	94144	Retaining Ring, 1 1/4" Dia. Shaft	1	
14	9399-057	Set Screw, 1/4"-20UNC x 1/4 Cup Point/Hex Socket	1	
15	91160	Grease Zerk	1	
16	83371B	Spring Rod Weldment 3/4" Dia. =Black=	1	
17	82823B	Swivel LH Bracket =Black=	1	
18	92528	Bushing, 2 1/4" OD x 1 1/4" ID	1	
19	94756	Compression Spring, 2 5/8" Dia. x 10 5/8"	1	
20	9390-056	Capscrew, 3/8"-16UNC x 1 1/4" G5	6	
21	9928	Lock Nut/Top, 3/8"-16UNC	6	
22	64533	Hub 6 Bolt Assembly	1	Includes Items 23-33
23	68281	Bearing & Seal Kit	1	Includes Items 24-31
24	93987	Seal, Triple Lip For 1 3/4" Dia. Spindle	1	
25	95565	O-Ring, 1.049" ID	1	
26	902158	O-Ring, 2 1/2" ID	1	
27	901145	Bearing & Seal Assembly	1	
28	9165	Bearing Cone, 1.250" Bore (LM67048)	1	
29	97565	C-Ring, 11 Ga. x 1 3/4"	1	
30	93985	Retaining Ring, 2 9/16" Dia.	1	
31	60735B	Hub Cap/Plate, 2.656" Dia. =Black=	1	
32	9345	Bearing Cup, 2.328" Dia. (LM67010)	2	
33	94796	Retaining Ring, 2 1/2" Dia.	2	
34	99986	Coulter Blade, 20 7/16" Dia. Smooth	1	
35	601742B	Frame Weldment, Row Cleaner LH =Black=	1	
36	67984	Bushing/Bar, 1 3/4" Dia. x 2 7/16"	2	
37	9405-100	Flat Washer, 5/8" USS	2	
38	9390-447	Capscrew, 5/8"-11UNC x 12" G5	1	
39	68317B	Hub/Spindle LH Assembly w/Row Cleaner Wheel & Scraper	1	See Row Cleaner Wheel
40	68323B	Hub/Spindle RH Assembly w/Row Cleaner Wheel & Scraper	1	See Row Cleaner Wheel
41	601912	Plate, 3/4" x 3" OD	2	
42	601915	Plate, 3/4" x 5" OD	2	
43	9390-127	Capscrew, 5/8"-11UNC x 2 3/4" G5	2	
44	9801	Lock Nut/Top, 5/8"-11UNC	3	
45	601919B	Spacer Block Weldment	1	
46	602987	Spacer	4	

TerrainPro Row Unit — Row Cleaner Wheel Components

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



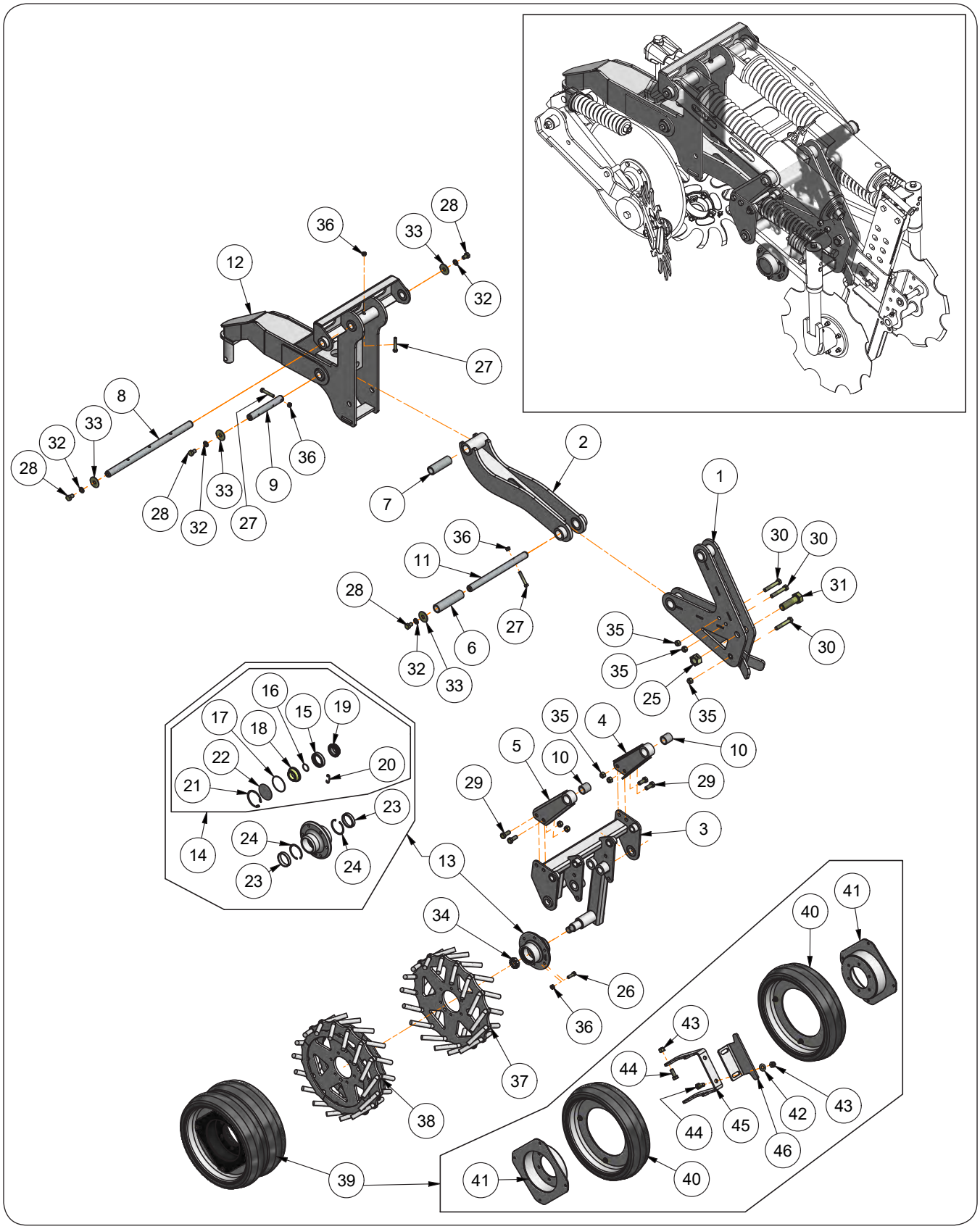
TerrainPro Row Unit — Row Cleaner Wheel Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1A	68317B	Hub/Spindle Asy Left-Hand w/Row Cleaner Wheel & Scraper	1	Includes Items 27-43 & 44A
1B	68323B	Hub/Spindle Asy Right-Hand w/Row Cleaner Wheel & Scraper	1	Includes Items 27-43 & 44B
2	92523	Bearing Cone 1" Dia. Bore (L44643)	2	
3	95680	Seal/3 Lip	1	
4	9397-016	Elastic Jam Nut 3/4-16UNF	1	
5	902645-104	Flat Washer 3/4" SAE	1	Grade 8
6	9397-015	Elastic Jam Nut 5/8-18UNF	1	
7	95595	O-Ring	1	
8	68318B	Coulter Hub 4-Bolt w/Bearing Cups	1	Includes Items 34 & 35
9	95233	Retaining Ring 2" Bore	2	
10	92522	Bearing Cup (L44610)	2	
11	68284	Spindle & Seal Cover Assembly	1	
12	9501381	Hub Cap	1	
13	67280B	Row Cleaner Wheel (12 Tooth Open Profile)	1	
14	9405-100	Flat Washer 5/8" USS	4	
15	9388-103	Carriage Bolt 1/2-13UNC x 1 1/4	4	Grade 5
16	94981	Locknut 1/2-13UNC	1	
17	68315	Strap	1	
18	9501380	Oil Seal	1	
19A	68103	Scraper Left-Hand	1	
19B	68104	Scraper Right-Hand	1	

TerrainPro Row Unit — Depth Control Wheel Components

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



TerrainPro Row Unit — Depth Control Wheel Components

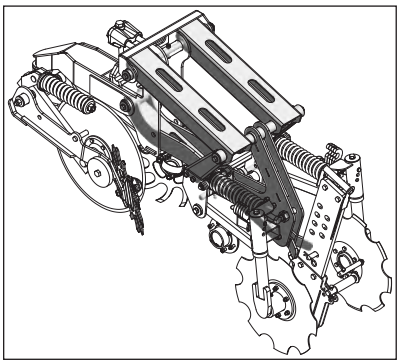
Please visit www.unverferth.com/parts/ for the most current parts listing.

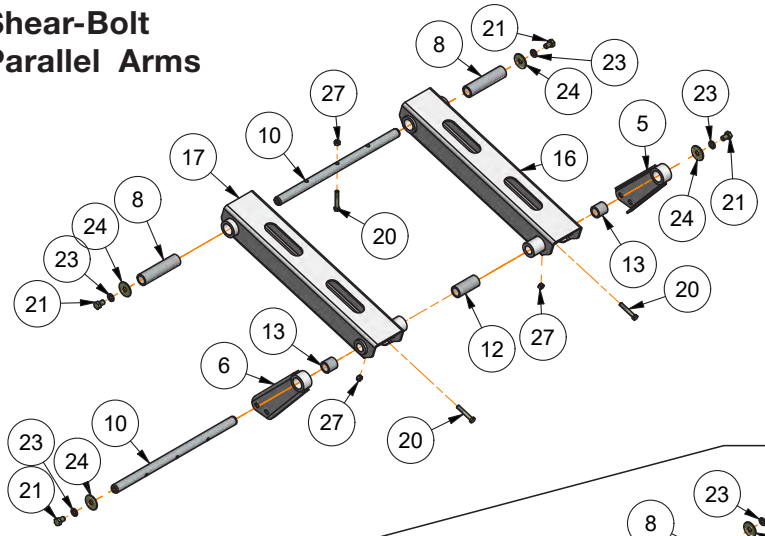
ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	601733B	Shank Trip Bracket =Black=	1	
2	601751B	Pull Arm Weldment =Black=	1	
3	601785B	Depth Control Wheel Mount Weldment =Black=	1	
4	601804B	Parallel Link RH Arm Weldment =Black=	1	
5	601806B	Parallel Link LH Arm Weldment =Black=	1	
6	601924	Bushing, 1.343" OD x 1.031" ID x 5 7/16"	3	
7	601925	Bushing, 1.343" OD x 1.031" ID x 4"	4	
8	601932	Pin, 1" Dia. x 18 11/16"	1	
9	601933	Pin, 1" Dia. x 7 1/4"	3	
10	601936	Bushing, 1.343" OD x 1.031" ID x 1 5/16"	2	
11	601937	Pin, 1" Dia. x 12 3/4"	1	
12	603043B	Row Unit Base Weldment =Black=	1	
13	64533	Hub 6 Bolt Assembly	1	Includes Items 14-24
14	68281	Bearing & Seal Kit	1	Includes Items 15-22
15	93987	Seal, Triple Lip For 1 3/4" Dia. Spindle	1	
16	95565	O-Ring, 1.049" ID	1	
17	902158	O-Ring, 2 1/2" ID	1	
18	901145	Bearing & Seal Assembly	1	
19	9165	Bearing Cone, 1.250" Bore (LM67048)	1	
20	97565	C-Ring, 11 Ga. x 1 3/4"	1	
21	93985	Retaining Ring, 2 9/16" Dia.	1	
22	60735B	Hub Cap/Plate, 2.656" Dia. =Black=	1	
23	9345	Bearing Cup, 2.328" Dia. (LM67010)	2	
24	94796	Retaining Ring, 2 1/2" Dia.	2	
25	92199	Lock Nut/Center, 1"-8UNC	1	
26	9390-056	Capscrew, 3/8"-16UNC x 1 1/4" G5	18	
27	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	6	
28	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	7	
29	9390-100	Capscrew, 1/2"-13UNC x 1 1/4" G5	4	
30	9390-107	Capscrew, 1/2"-13UNC x 3" G5	3	
31	9390-188	Capscrew, 1"-8UNC x 3 1/4" G5	1	
32	9404-025	Lock Washer, 1/2"	9	
33	9405-090	Flat Washer, 1/2"	7	
34	94795	Slotted Jam Nut, 1"-14UNS	1	
35	9800	Lock Nut/Top, 1/2"-13UNC	16	
36	9928	Lock Nut/Top, 3/8"-16UNC	30	
37	601876B	Crowfoot Gauge Wheel Weldment	1	
38	602716B	Crowfoot Gauge Wheel Weldment - Rock Guard Option	1	
39	602792B	Rubber Gauge Tire & Wheel Kit with Scraper	1	Includes Items 40-46
40	602790B	Gauge Tire & Wheel Assembly	2	
41	601055B	Wheel Rim Weldment	2	
42	9405-086	Flat Washer, 1/2" SAE	2	
43	9800	Lock Nut/Top, 1/2"-13UNC	6	
44	9390-100	Capscrew, 1/2"-13UNC x 1 1/4" G5	6	
45	602693B	Scraper Bracket	1	
46	602692B	Scraper	1	

TerrainPro Row Unit — Parallel Arm Components

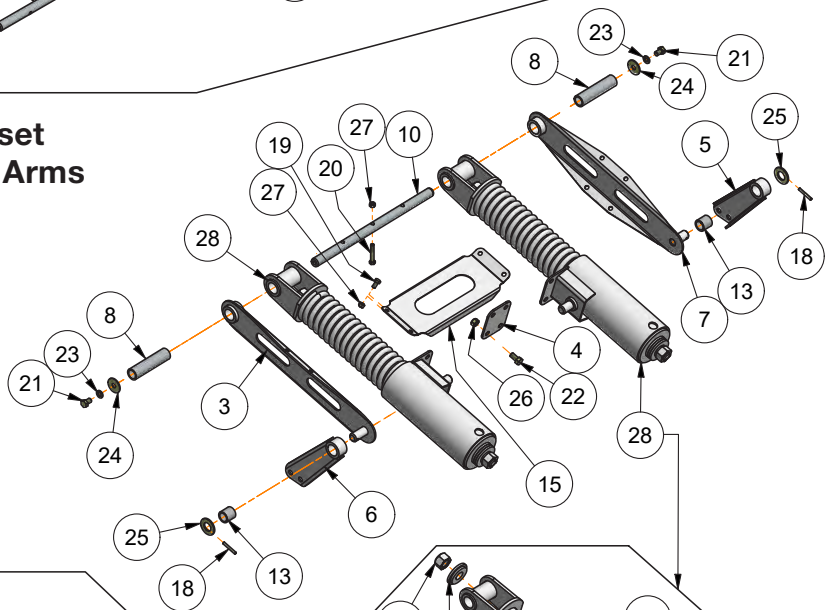
Please visit www.unverferth.com/parts/ for the most current parts listing.

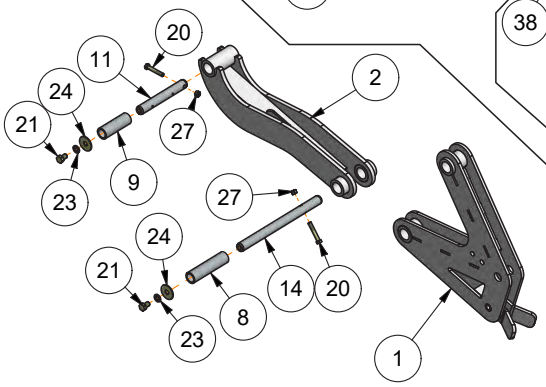
Shear-Bolt Parallel Arms

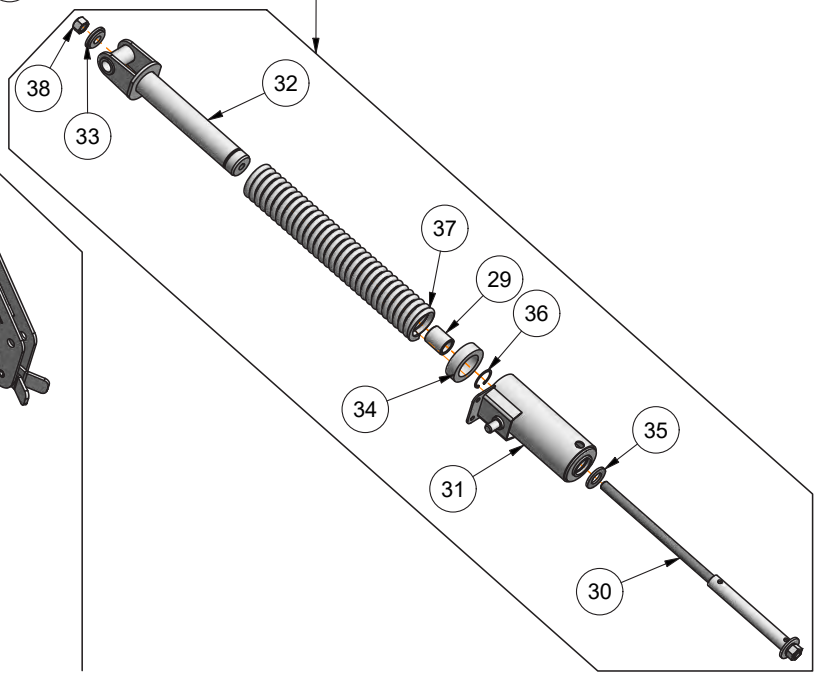




Auto-Reset Parallel Arms







Shear-Bolt & Auto-Reset Lower Parallel Arm

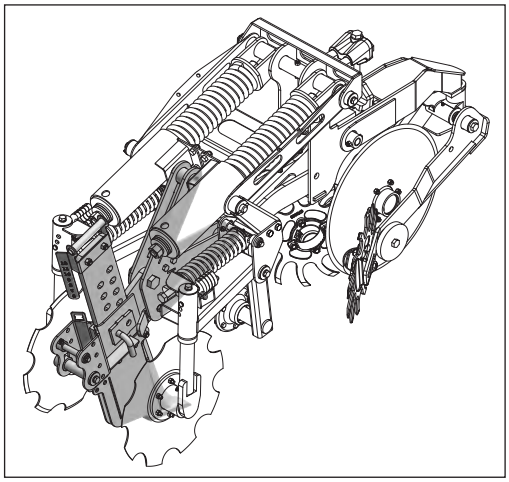
TerrainPro Row Unit — Parallel Arm Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	601733B	Shank Trip Bracket =Black=	1	
2	601751B	Pull Arm Weldment =Black=	1	
3	601770B	Upper Parallel Link LH Weldment =Black=	1	Used on Auto-Reset Shank
4	601777B	Plate 3 9/16" x 4 1/2"	1	
5	601804B	Parallel Link RH Arm Weldment =Black=	1	
6	601806B	Parallel Link LH Arm Weldment =Black=	1	
7	601914B	Upper Parallel Link RH Weldment =Black=	1	Used on Auto-Reset Shank
8	601924	Bushing, 1.343" OD x 1.031" ID x 5 7/16"	3	
9	601925	Bushing, 1.343" OD x 1.031" ID x 4"	4	
10	601932	Pin, 1" Dia. x 18 11/16"	2	
11	601933	Pin, 1" Dia. x 7 1/4"	3	
12	601935	Bushing, 1.343" OD x 1.031" ID x 3 1/16"	1	
13	601936	Bushing, 1.343" OD x 1.031" ID x 1 5/16"	2	
14	601937	Pin, 1" Dia. x 12 3/4"	1	
15	602501B	Formed Plate =Black=	1	
16	602631B		1	
17	602632B		1	
18	91144-165	Spiral Pin, 1/4" Dia. x 1 7/8"	2	
19	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	7	
20	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	8	
21	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	9	
22	9390-099	Capscrew, 1/2"-13UNC x 1" G5	6	
23	9404-025	Lock Washer, 1/2"	11	
24	9405-090	Flat Washer, 1/2"	9	
26	9405-116	Flat Washer, 1" SAE	2	
26	9800	Lock Nut/Top, 1/2"-13UNC	16	
27	9928	Lock Nut/Top, 3/8"-16UNC	30	
28	601707B	Spring Assembly =Black=	2	Used on Auto-Reset Shank Includes Items 29-38
29	600767	Bushing Guide, 2.125” OD x 1.533” ID x 2.5”	1	
30	N/A	Spring Rod Weldment	1	
31	N/A	Spring Retainer Weldment	1	
32	N/A	Spring Guide Weldment	1	
33	N/A	Step Washer	1	
34	602715	Tube, 4 1/2” OD x 3” ID x 1 1/4”	1	
35	69741PL	Washer/Plate, 2 3/4” OD x 1.515” ID	1	
36	9006206	Retaining Ring, 2.49” Dia.	1	
37	N/A	Compression Spring	1	
38	9663	Lock Nut/Top, 1”-8UNC	1	

TerrainPro Row Unit — Shank Components

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



Spare Shear Capscrews

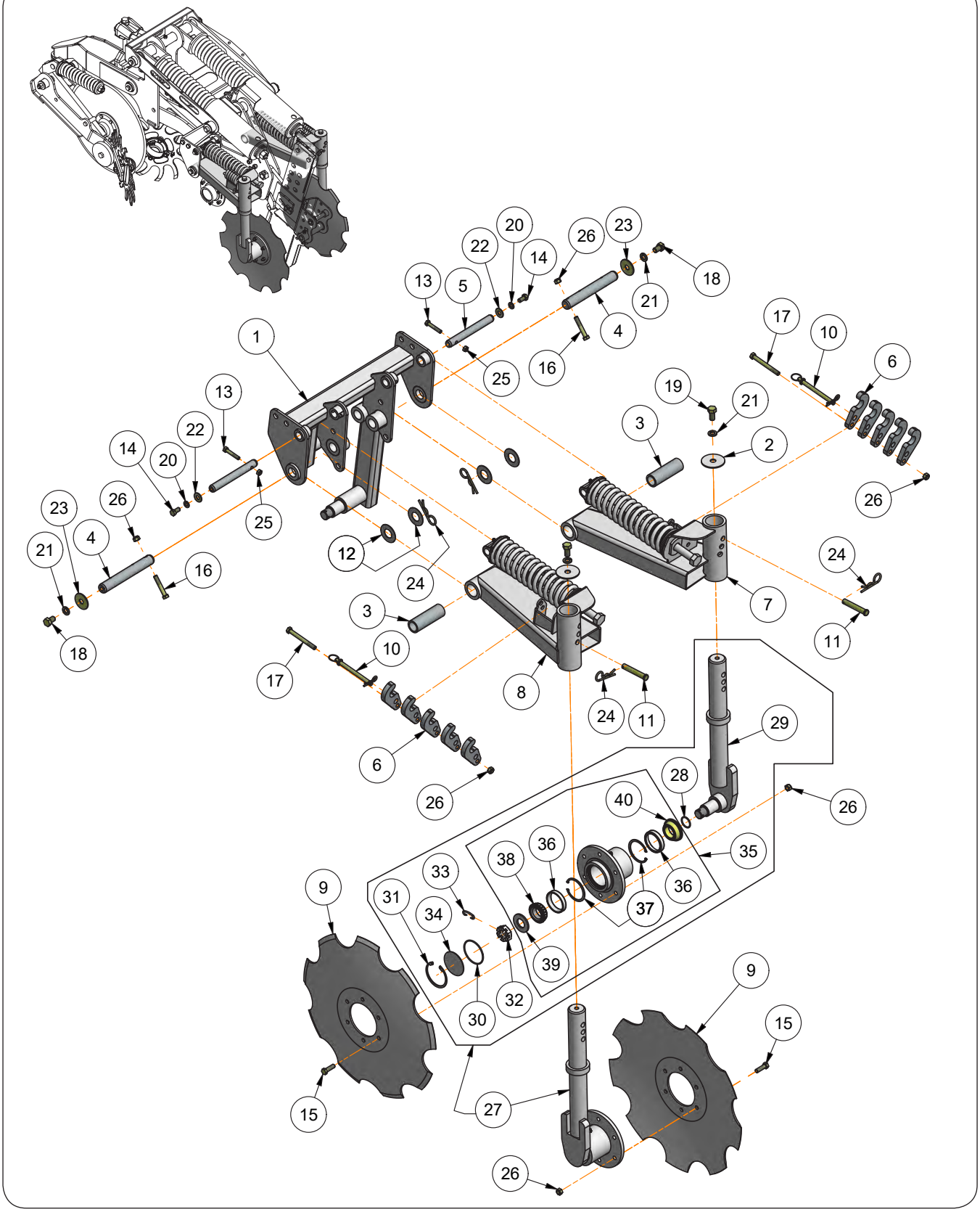
TerrainPro Row Unit — Shank Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	600323	Bent Pin, 3/4" Dia. x 7 1/8"	1	
2	600977B	Shank Adjustment Handle Weldment =Black=	1	
3	601733B	Shank Trip Bracket =Black=	1	
4	601925	Bushing, 1.343" OD x 1.031" ID x 4"	4	
5	601943	Pin, 3/4" Dia. x 4 15/16"	1	
6	601944	Pin, 1" Dia. x 6 1/16"	1	
7	601990B	Shank Weldment =Black=	1	
8	601999B	Wear Plate	2	
9	602025B	Point	1	
10	602158B	Shank Mount Bracket Weldment =Black=	1	
11	92199	Lock Nut/Center, 1"-8UNC	1	
12	9390-033	Capscrew, 5/16"-18UNC x 1 3/4" G5	3	
13	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	7	
14	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	6	
15	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	7	
16	9390-101	Capscrew, 1/2"-13UNC x 1 1/2" G5	2	
17	9390-102	Capscrew, 1/2"-13UNC x 1 3/4" G5	3	
18	9390-107	Capscrew, 1/2"-13UNC x 3" G5	3	Shear-Bolts
19	9390-188	Capscrew, 1"-8UNC x 3 1/4" G5	1	
20	9404-021	Lock Washer, 3/8"	3	
21	9404-025	Lock Washer, 1/2"	9	
22	9405-076	Flat Washer, 3/8" USS	3	
23	9405-090	Flat Washer, 1/2"	7	
24	95959	Hairpin Cotter, 5/32" Dia. x 2 15/16"	5	
25	9800	Lock Nut/Top, 1/2"-13UNC	16	
26	9807	Lock Nut/Top, 5/16"-18UNC	3	
27	9928	Lock Nut/Top, 3/8"-16UNC	30	

TerrainPro Row Unit — Closing Coulter Components

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



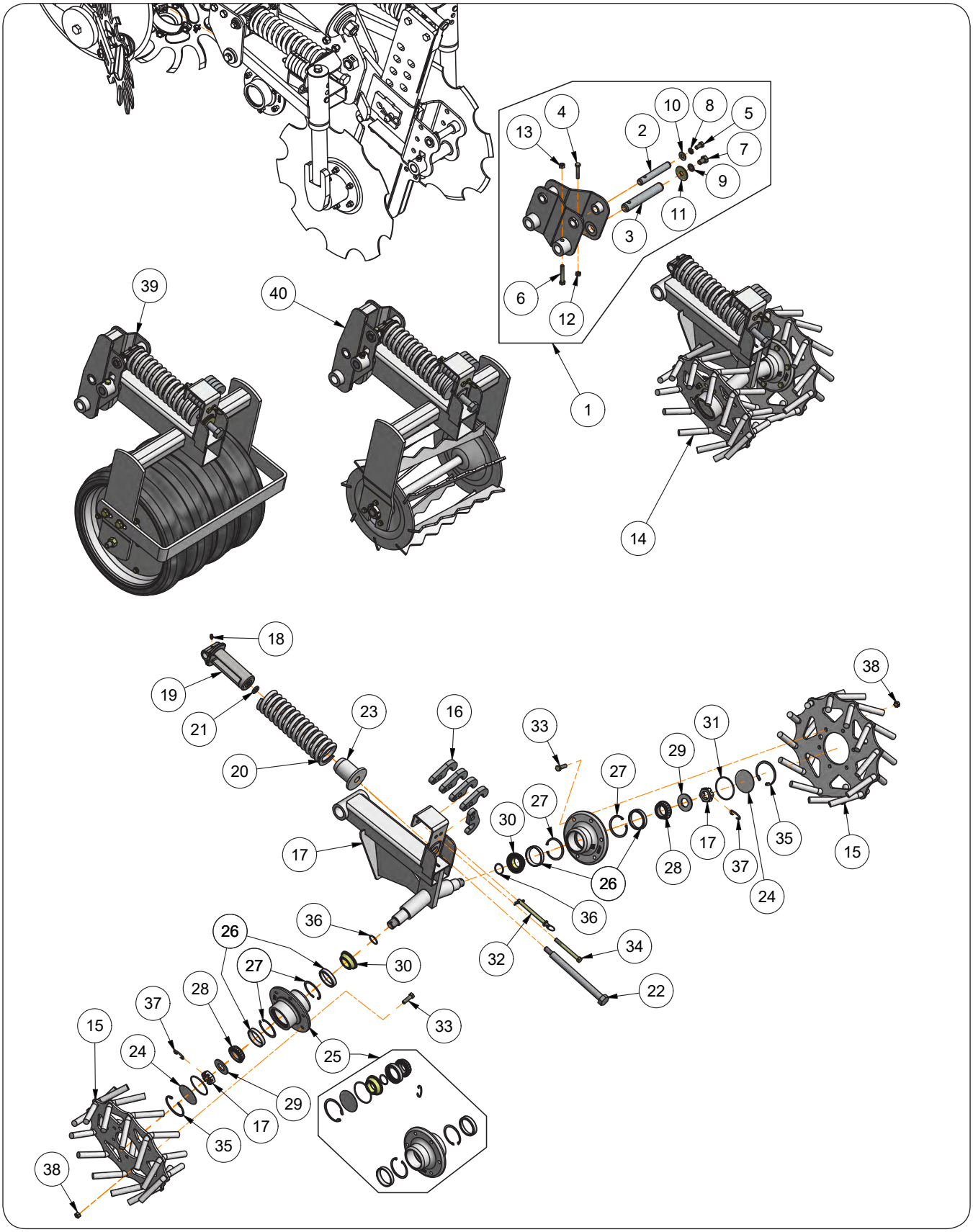
TerrainPro Row Unit — Closing Coulter Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	601785B	Depth Control Wheel Mount Weldment =Black=	1	
2	601853	Washer, 2 3/8" Dia.	2	
3	601925	Bushing, 1.343" OD x 1.031" ID x 4"	4	
4	601933	Pin, 1" Dia. x 7 1/4"	3	
5	601939	Pin, 3/4" Dia. x 6 7/16"	2	
6	602409	Hook/Plate	10	
7	602712B	Sealer Mount RH Sub-Assembly =Black=	1	
8	602713B	Sealer Mount LH Sub-Assembly =Black=	1	
9	900586	Concave/Notched Coulter Blade 18" Dia.	2	
10	91168	Hitch Pin, 3/8" Dia. x 4 3/8" w/Hairpin	2	
11	91362	Clevis Pin, 1/2" Dia. x 3"	2	
12	91541	Machinery Bushing/Washer, 2" OD x 1" ID	4	
13	9390-033	Capscrew, 5/16"-18UNC x 1 3/4" G5	3	
14	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	7	
15	9390-056	Capscrew, 3/8"-16UNC x 1 1/4" G5	18	
16	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	6	
17	9390-065	Capscrew, 3/8"-16UNC x 3 1/2" G5	2	
18	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	7	
19	9390-099	Capscrew, 1/2"-13UNC x 1" G5	6	
20	9404-021	Lock Washer, 3/8"	3	
21	9404-025	Lock Washer, 1/2"	9	
22	9405-076	Flat Washer, 3/8" USS	3	
23	9405-090	Flat Washer, 1/2"	7	
24	95959	Hairpin Cotter, .1562" Dia. x 3"	5	
25	9807	Lock Nut/Top, 5/16"-18UNC	3	
26	9928	Lock Nut/Top, 3/8"-16UNC	30	
27	603180B	Post & Hub Assembly =Black=	2	Includes Items 28-39
28	95565	O-Ring, 1.049" ID	1	
29	603142B	Spindle Post Weldment =Black=	1	
30	902158	O-Ring, 2 1/2" ID	1	
31	93985	Retaining Ring, 2 9/16" Dia.	1	
32	94795	Slotted Jam Nut, 1"-14UNS	1	
33	97565	C-Ring, 11 Ga. x 1 3/4"	1	
34	60735B	Hub Cap/Plate, 2.656" Dia. =Black=	1	
35	602153B	Hub 6-Bolt Assembly Complete	1	Includes Items 36-40
36	9345	Bearing Cup, 2.328" Dia. (LM67010)	2	
37	94796	Retaining Ring, 2 1/2" Dia.	2	
38	9165	Bearing Cone, 1.250" Bore (LM67048)	1	
39	94800	Machinery Bushing, 2" OD x 1.01" ID	1	
40	901145	Bearing & Seal Assembly	1	

TerrainPro Row Unit — Conditioners & Extension Components

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



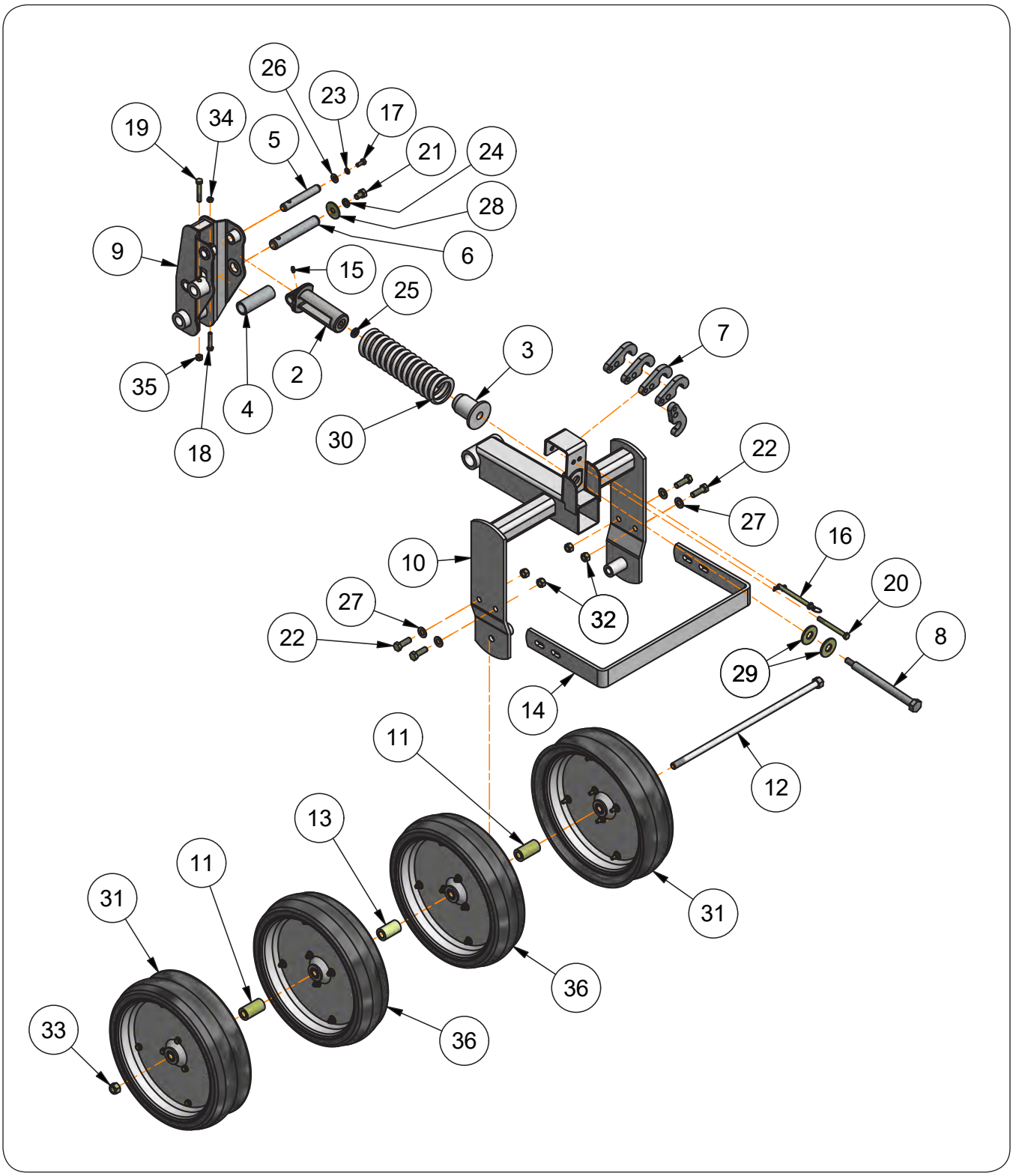
TerrainPro Row Unit — Conditioners & Extension Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	602507B	Basket Extension Bracket Assembly =Black=	1	Includes Items 2-13
2	601943	Pin, 3/4" Dia. x 4 15/16"	1	
3	601944	Pin, 1" Dia. x 6 1/16"	1	
4	9390-033	Capscrew, 5/16"-18UNC x 1 3/4" G5	1	
5	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	1	
6	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	1	
7	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	1	
8	9404-021	Lock Washer, 3/8"	1	
9	9404-025	Lock Washer, 1/2"	1	
10	9405-076	Flat Washer, 3/8" USS	1	
11	9405-090	Flat Washer, 1/2"	1	
12	9807	Lock Nut/Top, 5/16"-18UNC	1	
13	9928	Lock Nut/Top, 3/8"-16UNC	1	
14	602704B	Crowfoot Conditioner Wheel Assembly =Black=	1	Includes Items 15-38
15	601874B	Crowfoot Conditioner Wheel =Black=	2	
16	602409	Hook/Plate	5	
17	602708B	Conditioner Mount Assembly =Black=	1	
18	91160	Grease Zerk	1	
19	601817B	Spring Insert =Black=	1	
20	9503079	Compression Spring, 3" Dia. x 10.31"	1	
21	9404-026	Lock Washer, 1/2" Extra Duty	1	
22	602566	Shoulder Bolt, 1/2"-13UNC x 8 3/16"	1	
23	601836	Guide/Bar 3" Dia. x 3"	1	
24	60735B	Hub Cap/Plate, 2.656" Dia. =Black=	2	
25	64533	Hub 6 Bolt Assembly	2	Includes Items 24, 26-31, 35-37
26	9345	Bearing Cup, 2.328" Dia. (LM67010)	2	
27	94796	Retaining Ring, 2 1/2" Dia.	2	
28	9165	Bearing Cone, 1.250" Bore (LM67048)	1	
29	94800	Machinery Bushing, 2" OD x 1.01" ID x .126"	1	
30	901145	Bearing & Seal Assembly	1	
31	902158	O-Ring, 2 1/2" ID	2	
32	91168	Hitch Pin, 3/8" Dia. x 4 3/8" w/Hairpin	1	
33	9390-056	Capscrew, 3/8"-16UNC x 1 1/4" G5	12	
34	9390-066	Capscrew, 3/8"-16UNC x 3 3/4" G5	1	
35	93985	Retaining Ring, 2 9/16" Dia.	2	
36	95565	O-Ring, 1.049" ID	2	
37	97565	C-Ring, 11 Ga. x 1 3/4"	2	
38	9928	Lock Nut/Top, 3/8"-16UNC	13	
39	602775B	Strip Till 16" Press Wheel Assembly Conditioner	1	Refer to Press Wheel Conditioner
40	602776B	Strip Till 15" Basket Assembly Conditioner	1	Refer to Basket Conditioner

TerrainPro Row Unit — Press Wheel Conditioner Option

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



TerrainPro Row Unit — Press Wheel Conditioner Option

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	602775B	Strip Till 16" Press Wheel Assembly Conditioner	1	Includes Items 2-36
2	601817B	Spring Insert =Black=	1	
3	601836	Guide/Bar 3" Dia. x 3"	1	
4	601925	Bushing/Tube, 1.343" OD x 1.031" ID x 4"	1	
5	601943	Pin, 3/4" Dia. x 4 15/16"	1	
6	601944	Pin, 1" Dia. x 6 1/16"	1	
7	602409	Hook/Plate	5	
8	602566	Shoulder Bolt, 1/2"-13UNC x 8 3/16"	1	
9	602764B	Height Extension 6" Bracket Weldment =Black=	1	
10	602785B	Press Wheel 16" Frame Weldment =Black=	1	
11	64598	Tube, 1 1/4" OD x .688" ID x 2.375"	2	
12	65248	Tie Rod Weldment, 5/8" Dia. x 20 5/8"	1	
13	65251	Tube, 1 1/4" OD x .688" ID x 2.125"	1	
14	65263B	Scraper Bar =Black=	1	
15	91160	Grease Zerk	1	
16	91168	Hitch Pin, 3/8" Dia. x 4 3/8" w/Hairpin	1	
17	9390-028	Capscrew, 5/16"-18UNC x 3/4" G5	1	
18	9390-033	Capscrew, 5/16"-18UNC x 1 3/4" G5	1	
19	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	1	
20	9390-066	Capscrew, 3/8"-16UNC x 3 3/4" G5	1	
21	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	1	
22	9390-101	Capscrew, 1/2"-13UNC x 1 1/2" G5	4	
23	9404-019	Lock Washer, 5/16"	1	
24	9404-025	Lock Washer, 1/2"	1	
25	9404-026	Lock Washer, 1/2" Extra Duty	1	
26	9405-070	Flat Washer, 5/16" USS	1	
27	9405-086	Flat Washer, 1/2" SAE	4	
28	9405-090	Flat Washer, 1/2"	1	
29	9405-106	Flat Washer, 3/4" USS	2	
30	9503079B	Compression Spring, 3" Dia. x 10.31"	1	
31	97520	Press Wheel Assembly, Offset (4 1/2" x 16")	2	
32	9800	Lock Nut/Top, 1/2"-13UNC	4	
33	9801	Lock Nut/Top, 5/8"-11UNC	1	
34	9807	Lock Nut/Top, 5/16"-18UNC	1	
35	9928	Lock Nut/Top, 3/8"-16UNC	2	
36	99712	Press Wheel Assembly, Smooth (4"x16")	2	

TerrainPro Row Unit — Basket Conditioner Option

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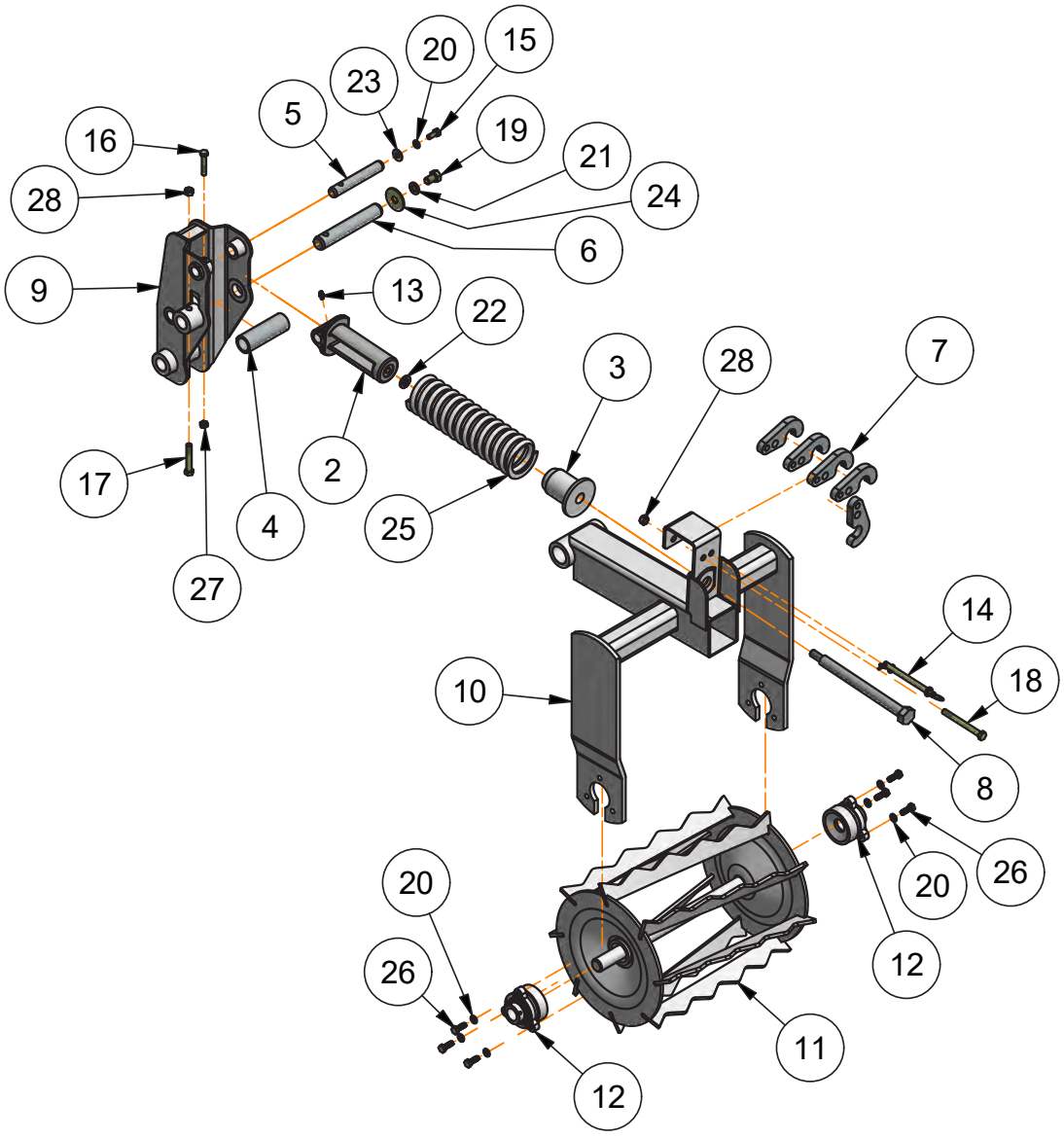


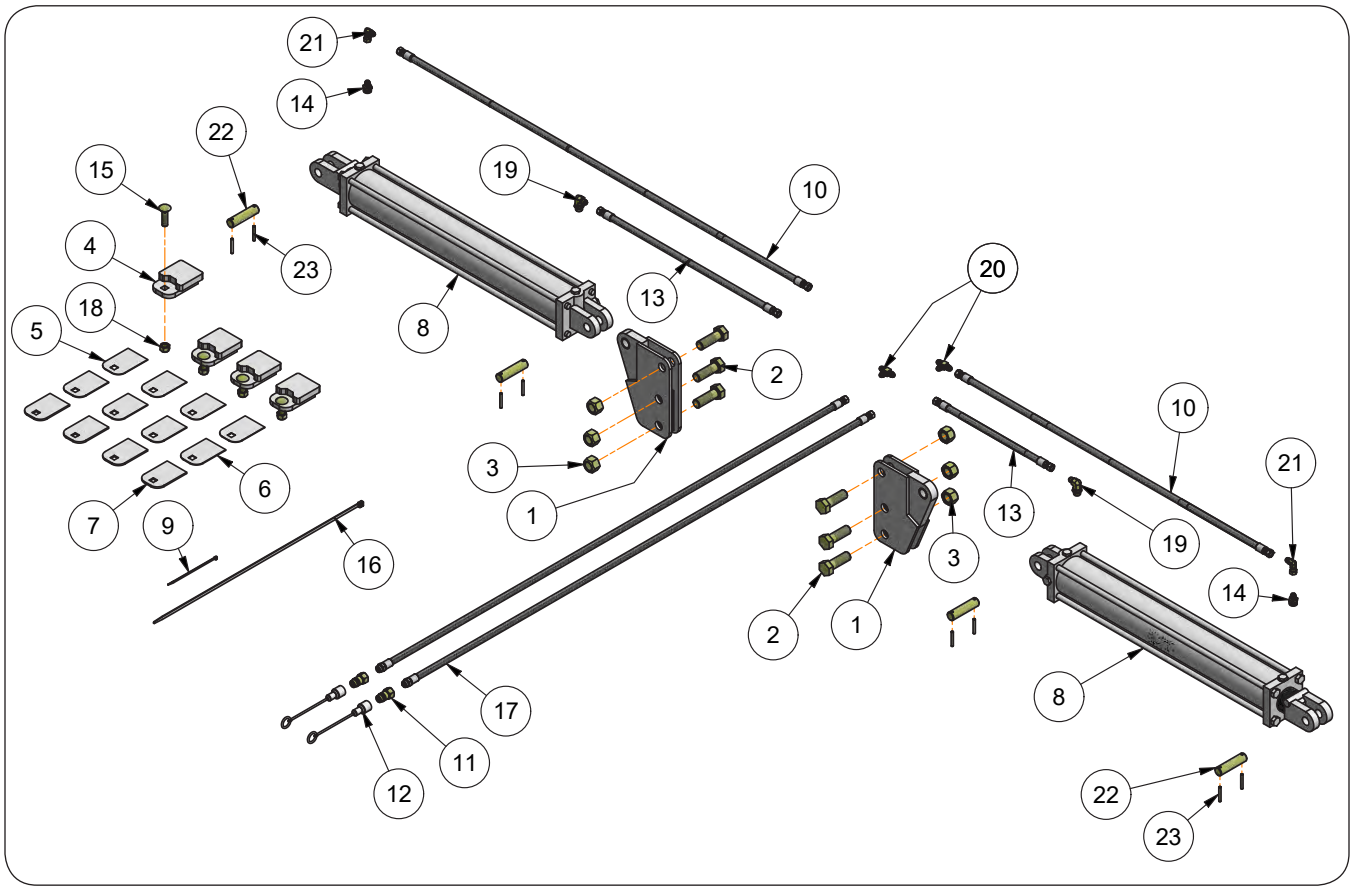
TerrainPro Row Unit — Basket Conditioner Option

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	602776B	Strip Till 15" Basket Assembly Conditioner	1	Includes Items 2-28
2	601817B	Spring Insert =Black=	1	
3	601836	Guide/Bar 3" Dia. x 3"	1	
4	601925	Bushing/Tube, 1.343" OD x 1.031" ID x 4"	1	
5	601943	Pin, 3/4" Dia. x 4 15/16"	1	
6	601944	Pin, 1" Dia. x 6 1/16"	1	
7	602409	Hook/Plate	5	
8	602566	Shoulder Bolt, 1/2"-13UNC x 8 3/16"	1	
9	602764B	Height Extension 6" Bracket Weldment =Black=	1	
10	602789B	Basket 15" Frame Weldment =Black=	1	
11	62800	Basket 15" Aggressive Weldment =Black=	1	
12	87175	Flange Bearing Assembly 3-Bolt	2	
13	91160	Grease Zerk	1	
14	91168	Hitch Pin, 3/8" Dia. x 4 3/8" w/Hairpin	1	
15	9390-028	Capscrew, 5/16"-18UNC x 3/4" G5	1	
16	9390-033	Capscrew, 5/16"-18UNC x 1 3/4" G5	1	
17	9390-060	Capscrew, 3/8"-16UNC x 2 1/4" G5	1	
18	9390-066	Capscrew, 3/8"-16UNC x 3 3/4" G5	1	
19	9390-097	Capscrew, 1/2"-13UNC x 3/4" G5	1	
20	9404-019	Lock Washer, 5/16"	7	
21	9404-025	Lock Washer, 1/2"	1	
22	9404-026	Lock Washer, 1/2" Extra Duty	1	
23	9405-070	Flat Washer, 5/16" USS	1	
24	9405-090	Flat Washer, 1/2"	1	
25	9503079B	Compression Spring, 3" Dia. x 10.31"	1	
26	97321	Capscrew, 5/16"-18UNC x 7/8" G5	6	
27	9807	Lock Nut/Top, 5/16"-18UNC	1	
28	9928	Lock Nut/Top, 3/8"-16UNC	2	

Standard Folding Hydraulic Components — 8 Shank

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



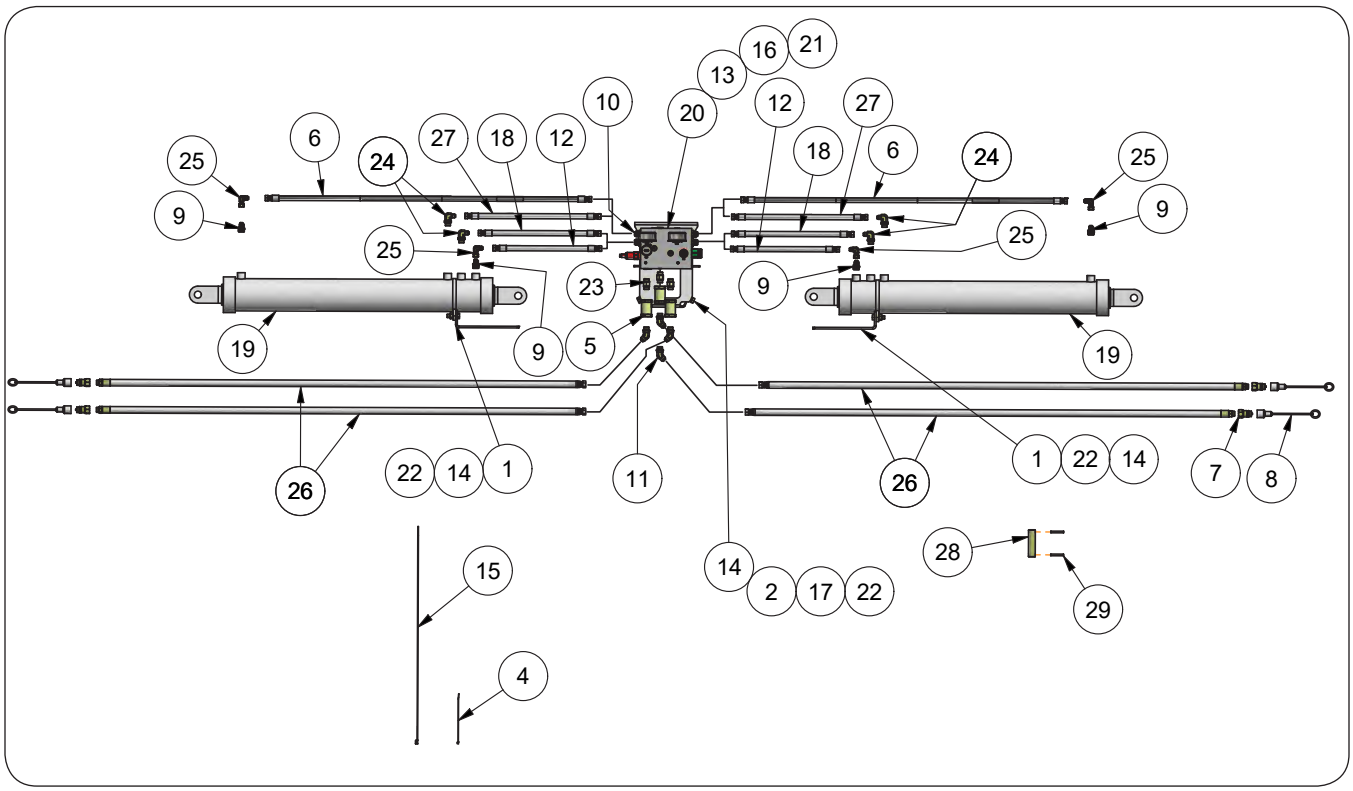
Standard Folding Hydraulic Components — 8 Shank

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	69055B	Hydraulic Rigid Wing Fold Package	-	Includes Items 1-21
1	68410B	Cylinder Mount Assembly	2	Includes Items 2 & 3
2	9390-187	Capscrew 1"-8UNC x 3" GR5	3	
3	9663	Top/Locknut 1"-8UNC	3	
4	68484B	Shim Weldment =Black=	4	
5	68815B	Shim 14Ga. x 3 x 4 1/2	4	
6	68816B	Shim 12Ga. x 3 x 4 1/2	4	
7	68817B	Shim 7Ga. x 3 x 4 1/2	4	
8	69056B	Cylinder Assembly (4 x 30) includes Cylinder Stop & Set Screw	2	
	73759B	Cylinder Stop	-	
	9399-057	Set Screw 1/4"-20UNC x 1/4" Cup Point	-	
9	9000106	Cable Tie 7 1/2"	4	
10	9002976	Hose 3/8" x 57 (9/16-18 JIC Female Swivel x 9/16-18 JIC Female Swivel)	2	
11	91383	Male Tip Coupling 3/4-16	2	
12	91511	Dust Cap/ISO Coupler	2	
13	91589	Hose 3/8" x 28" (9/16-18 JIC Female Swivel x 9/16-18 JIC Female Swivel)	2	
14	91608	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male (w/.060 Restrictor)	2	
15	9388-136	Carriage Bolt 5/8"-11UNC x 2 1/4" GR5	4	
16	94038	Cable Tie 32"	4	
17	96975	Hose 3/8" x 72" (9/16-18 JIC Female Swivel x 3/4-16 O-Ring Male)	2	
18	9801	Top Locknut 5/8"-11UNC	4	
19	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	2	
20	9875	Tee 9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male	2	
21	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female Swivel Nut	2	
22	85631	Pin 1" Dia. x 4"	4	
23	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	8	

Flex Folding Hydraulic (Option) — 8 Shank

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



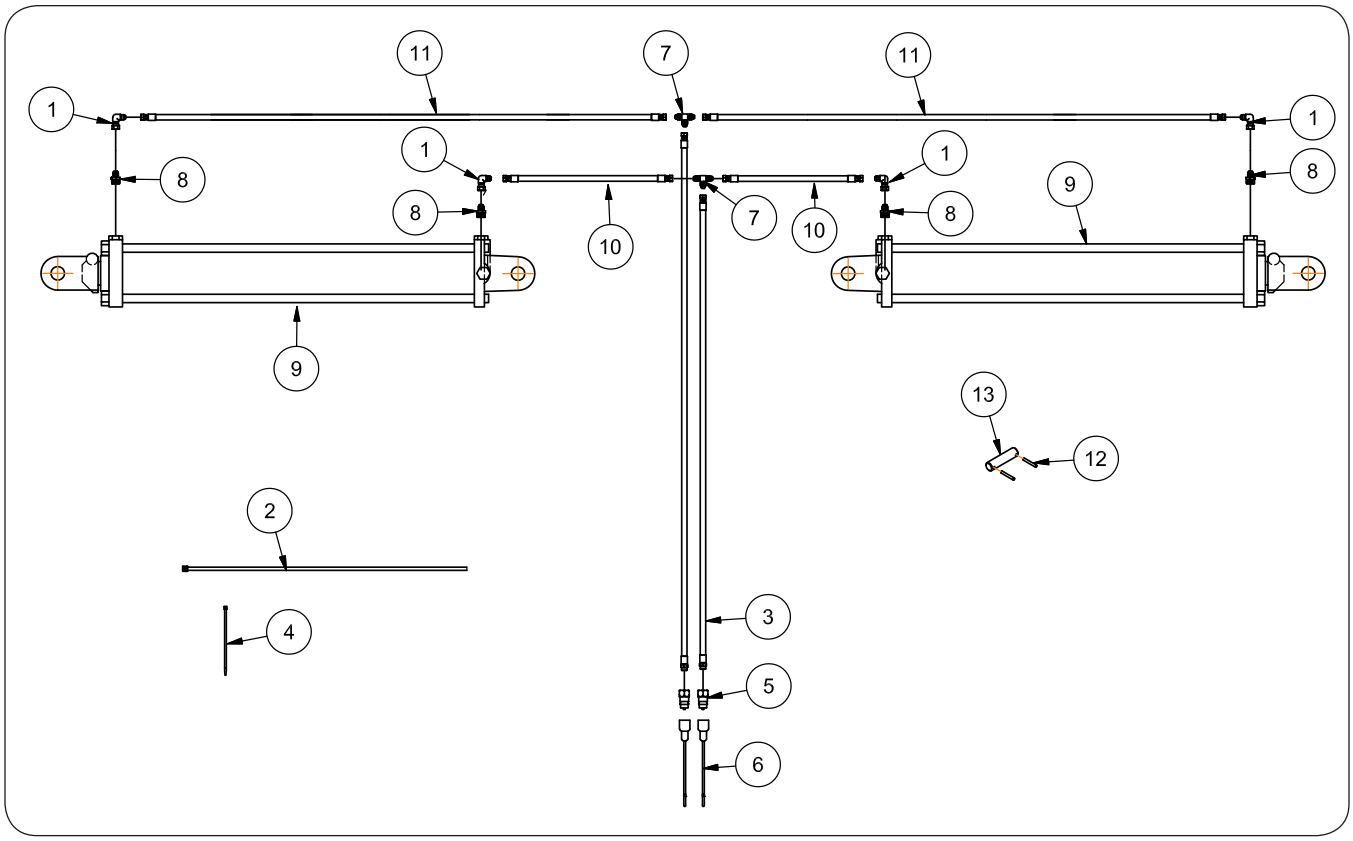
Flex Folding Hydraulic (Option) — 8 Shank

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

ITEM	PART NO.	DESCRIPTION	QTY
	68669B	Hydraulic Flex Wing Fold Package	-
1	68506B	Cylinder Anti-Rotational Plate	2
2	68553B	Valve Mount Plate	1
3	68693B	Support Bracket	1
4	9000106	Cable Tie 7 1/2"	6
5	9005403	120 Micron Hydraulic Filter	3
6	91195	Hydraulic Hose 3/8" Dia. x 48	2
7	91383	Male Tip Coupling	4
8	91511	Dust Cap	4
9	91608	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male w/ .060 Restrictor	4
10	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male	8
11	93586	45° Elbow 3/4-16 JIC Male x 3/4-16 O-Ring Male	4
12	93620	Hose 3/8" Dia. x 16	2
13	9390-055	Capscrew 3/8"-16UNC x 1" Gr5	4
14	9390-101	Capscrew 1/2"-13UNC x 1 1/2" Gr5	6
15	94038	Cable Tie 32"	4
16	9404-021	Lock Washer 3/8"	4
17	9405-088	Flat Washer 1/2" USS	2
18	94987	Hydraulic Hose 3/8" Dia. x 18	2
19	9501547	Hydraulic Cylinder 4 x 30 (Twin)	2
20	9503620	Valve Assembly	1
21	9501659	Hydraulic Reducer	2
22	9800	Top Locknut 1/2"-13UNC	6
23	98508	Adapter/Union	3
24	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	4
25	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female Swivel Nut	4
26	98852	Hydraulic Hose 1/2" Dia. x 72	4
27	9978	Hydraulic Hose 3/8" Dia. x 20	2
28	85631	Pin 1" Dia. x 4"	4
29	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	8

Folding Hydraulic Components — 12 Shank 30” Spacing

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



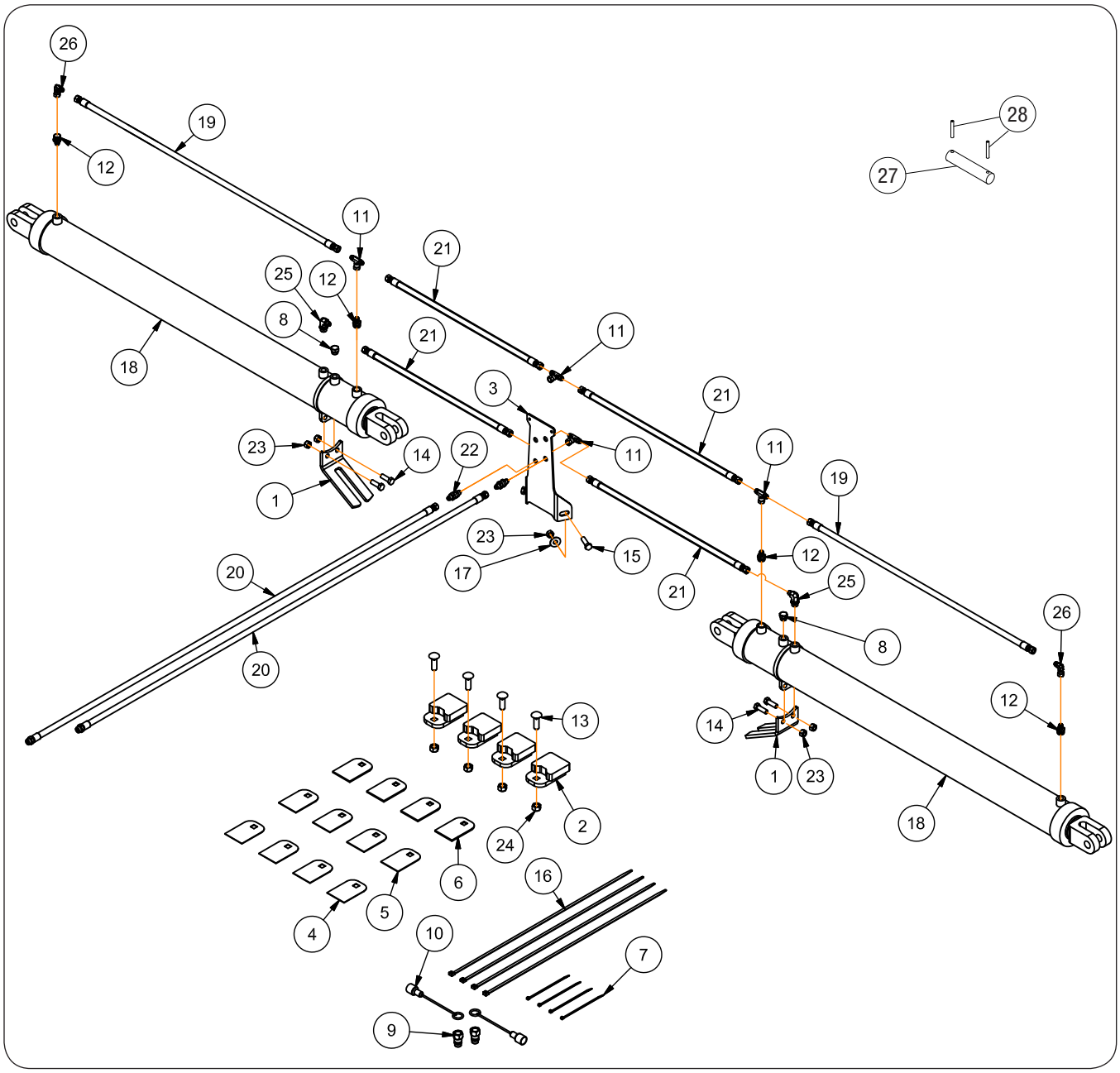
Folding Hydraulic Components — 12 Shank 30” Spacing

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

ITEM	PART NO.	DESCRIPTION	QTY.
1	9876	90° Swivel Elbow (9/16-18 JIC Male x 9/16-18 JIC Female)	4
2	94038	Cable Tie 32” Long	2
3	9502772	Hydraulic Hose 3/8 x 72” Long	2
4	9000106	Cable Tie 6” Long	2
5	91383	Quick Disconnect (3/4-16 O-Ring Female)	2
6	91511	Dust Cap	2
7	9875	Tee (9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male)	2
8	91608	Orifice Connector (9/16-18 JIC Male x 3/4-16 O-Ring Male w/Restrictor)	4
9	95419	Hydraulic Cylinder 4 x 24	2
	95407	Seal Kit for 4 x 24 Cylinder	-
	65815	Replacement Clevis End	-
10	9502776	Hydraulic Hose 3/8 x 32” Long	2
11	9501701	Hydraulic Hose 3/8 x 63” Long	2
12	91144-165	Spiral Pin 1/4” Dia. x 1 7/8” Long	8
13	85631	Pin 1” Dia. x 4” Long	4

Folding Hydraulic Components — 12 Shank 36 & 38" Spacing

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



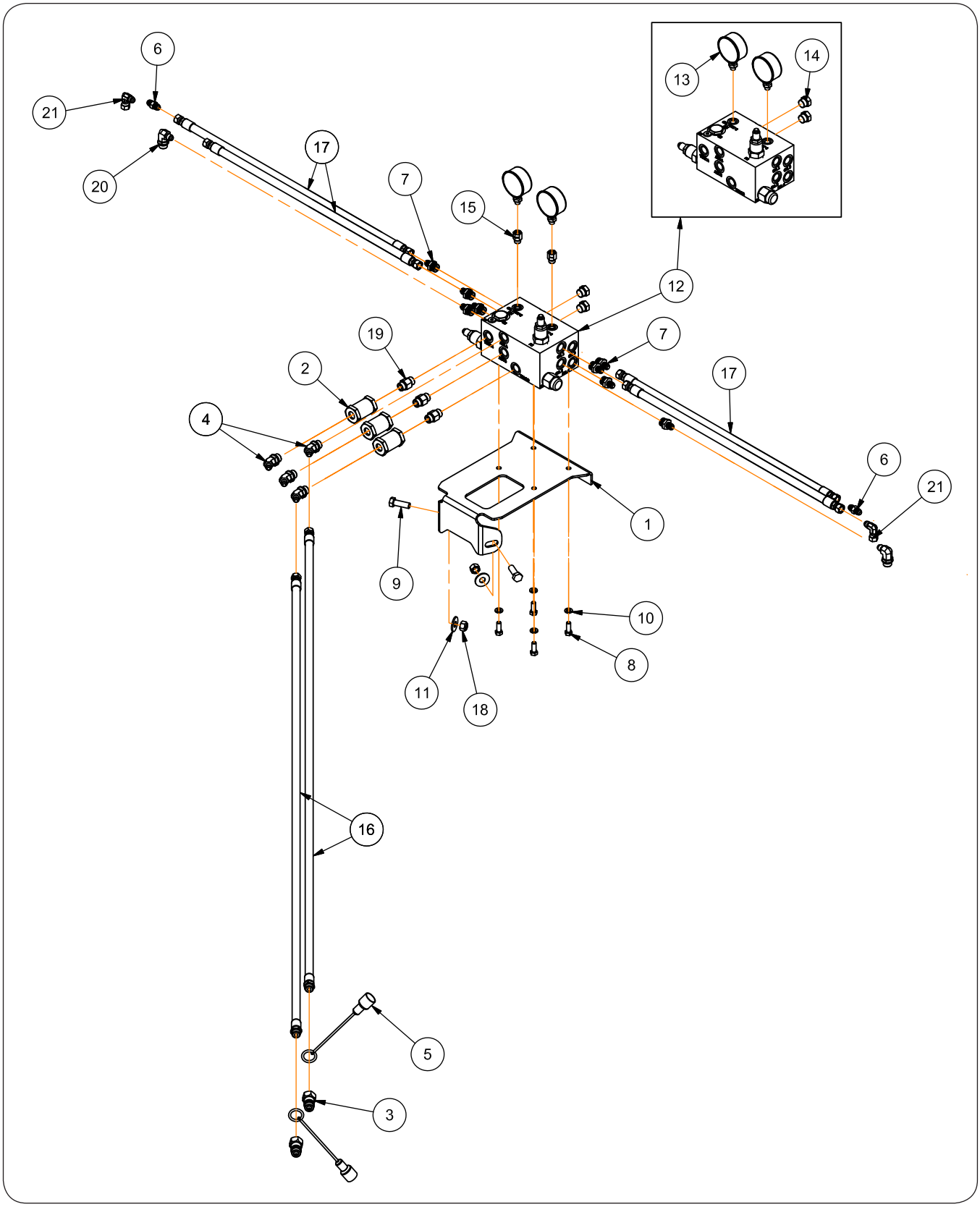
Folding Hydraulic Components — 12 Shank 36 & 38" Spacing

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

ITEM	PART NO.	DESCRIPTION	QTY
1	68276B	Cylinder Anti-Rotational Plate	2
2	68337B	Stop Block =BLACK=	4
3	68521B	Mounting Plate =BLACK=	1
4	68815B	Shim 14 GA.	4
5	68816B	Shim 12 GA.	4
6	68817B	Shim 7 GA.	4
7	9000106	Cable Tie 6" Long	AR
8	9003825	Breather Plug	2
9	91383	Quick Disconnect	2
10	91511	Dust Cap	2
11	91525	Tee	4
12	91608	Orifice Connector	4
13	9388-135	Carriage Bolt 5/8"-11UNC x 2" Gr5	4
14	9390-101	Capscrew 1/2"-13UNC x 1 1/2" Gr5	4
15	9390-102	Capscrew 1/2"-13UNC x 1 3/4" Long	2
16	94038	Cable Tie 32" Long	AR
17	9405-088	Flat Washer 1/2"	2
18	9501464	Hydraulic Cylinder 4 x 48 (Twin)	2
19	9501677	Hydraulic Hose 3/8" x 54"	2
20	9502772	Hydraulic Hose 3/8" x 72"	2
21	9502793	Hydraulic Hose 3/8" x 28"	4
22	95192	Bulkhead Union 9/16-18 JIC Male x 9/16-18 JIC Male (Threaded with Nut)	2
23	9800	Locknut 1/2"-13UNC	6
24	9801	Locknut/Top 5/8"-11UNC	4
25	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Adj. Male	2
26	9876	90° Swivel Elbow	2
27	85631	Pin 1" Dia. x 4"	4
28	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	8

Flex Folding Hydraulic (Option) — 12 Shank 36 & 38" Spacing

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



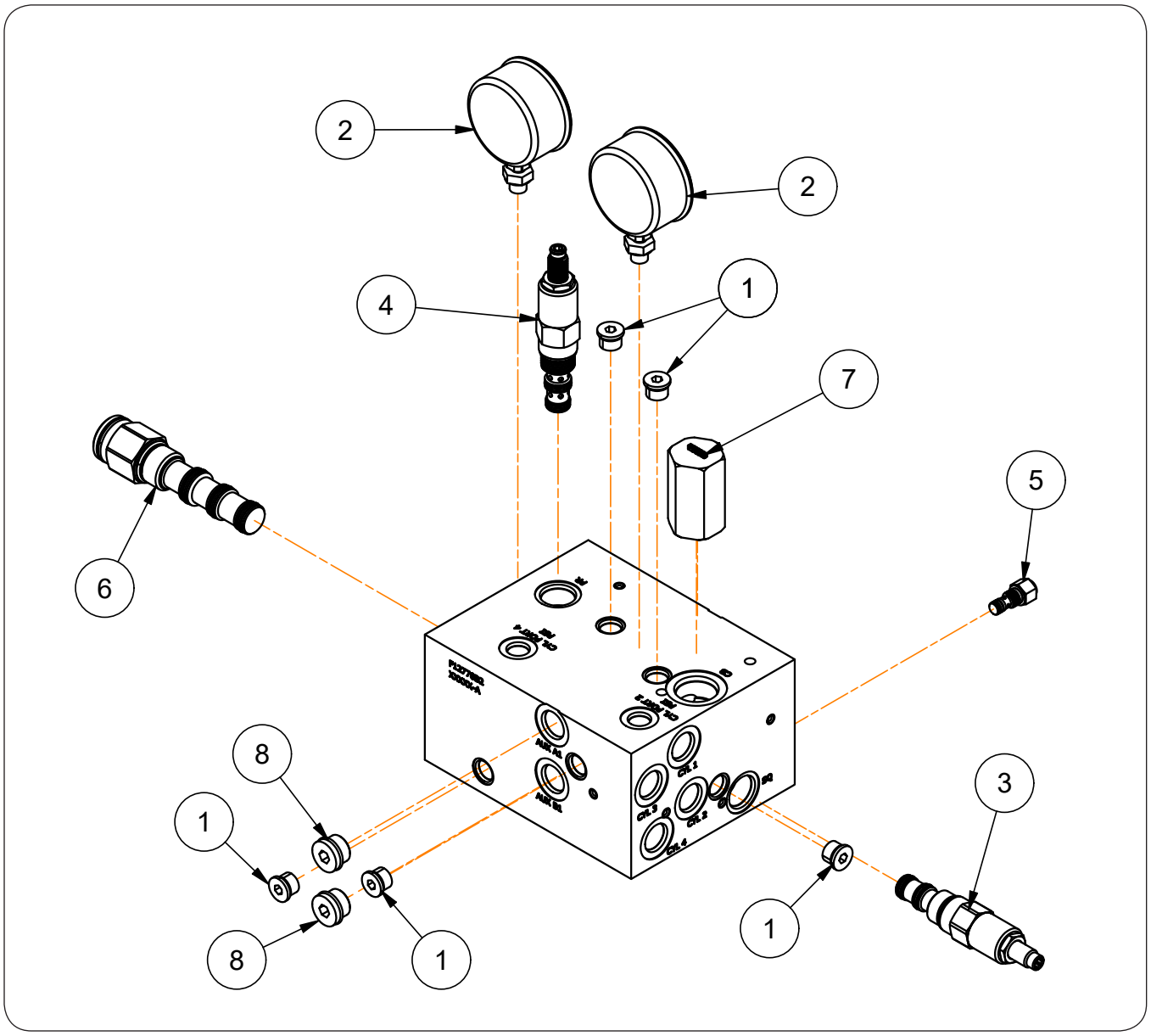
Flex Folding Hydraulic (Option) — 12 Shank 36 & 38" Spacing

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
1	68553B	Valve Mount Plate	1	
2	9005403	120 Micron Hydraulic Filter	3	
3	91383	Male Tip Coupling	2	
4	91508	45° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	4	
5	91511	Dust Cap	2	
6	92295	Adpater 9/16-18 JIC Male x 9/16-18 JIC Male	2	
7	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male	8	
8	9390-055	Capscrew 3/8"-16UNC x 1" Gr5	4	
9	9390-101	Capscrew 1/2"-13UNC x 1 1/2" Gr5	2	
10	9404-021	Lock Washer 3/8"	4	
11	9405-088	Flat Washer 1/2" USS	2	
12	9503620	Valve Assembly	1	
13	9500489	Pressure Gauge	2	
14	98048	Plug	2	
15	9501659	Hydraulic Reducer	2	
16	9502772	Hydraulic Hose 3/8" Dia. x 72"	2	
17	9502793	Hydraulic Hose 3/8" Dia. x 28"	4	
18	9800	Top Locknut 1/2"-13UNC	2	
19	98508	Adapter/Union 3/4"-16 O-Ring Male x 3/4"-16 O-Ring Male	3	
20	9874	90° Elbow 9/16"-18 JIC Male x 3/4"-16 O-Ring Male	2	
21	9876	90° Elbow 9/16"-18 JIC Male x 9/16"-18 JIC Female	2	

Valve Block Assembly Components

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



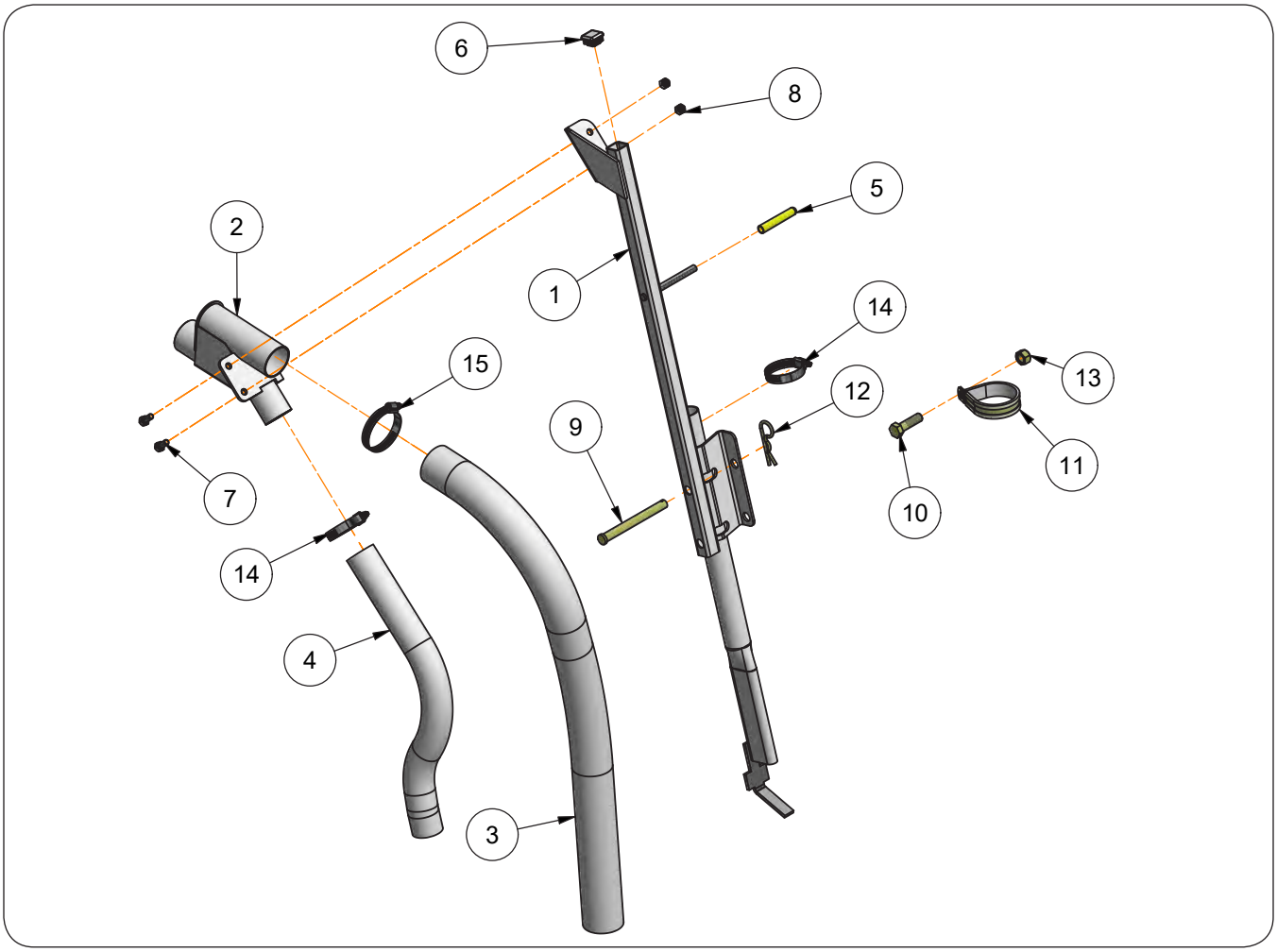
Valve Block Assembly Components

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

ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	9503620	Valve Block Assembly	-	
1	9003423	Plug, 9/16-18 O-Ring Male w/Hollow Hex Socket	5	
2	9500489		2	
3	9503654	Cartridge Valve - Sequence	1	
	9503660	Seal Kit for Cartridge Valve	-	
4	9503655	Cartridge Valve - Pressure Reduced Relief	1	
	9500116	Seal Kit for Cartridge Valve	-	
5	9503656	Cartridge Valve - Check Poppet	1	
	9503663	Seal Kit for Cartridge Valve	-	
6	9503661	Cartridge Valve - Piloted 3-Way Spool	1	
	9503662	Seal Kit for Cartridge Valve	-	
7	9503672	Cavity Plug	1	
8	98048	Plug, 3/4-16 O-Ring Male	2	

Dry Fertilizer Kit Option

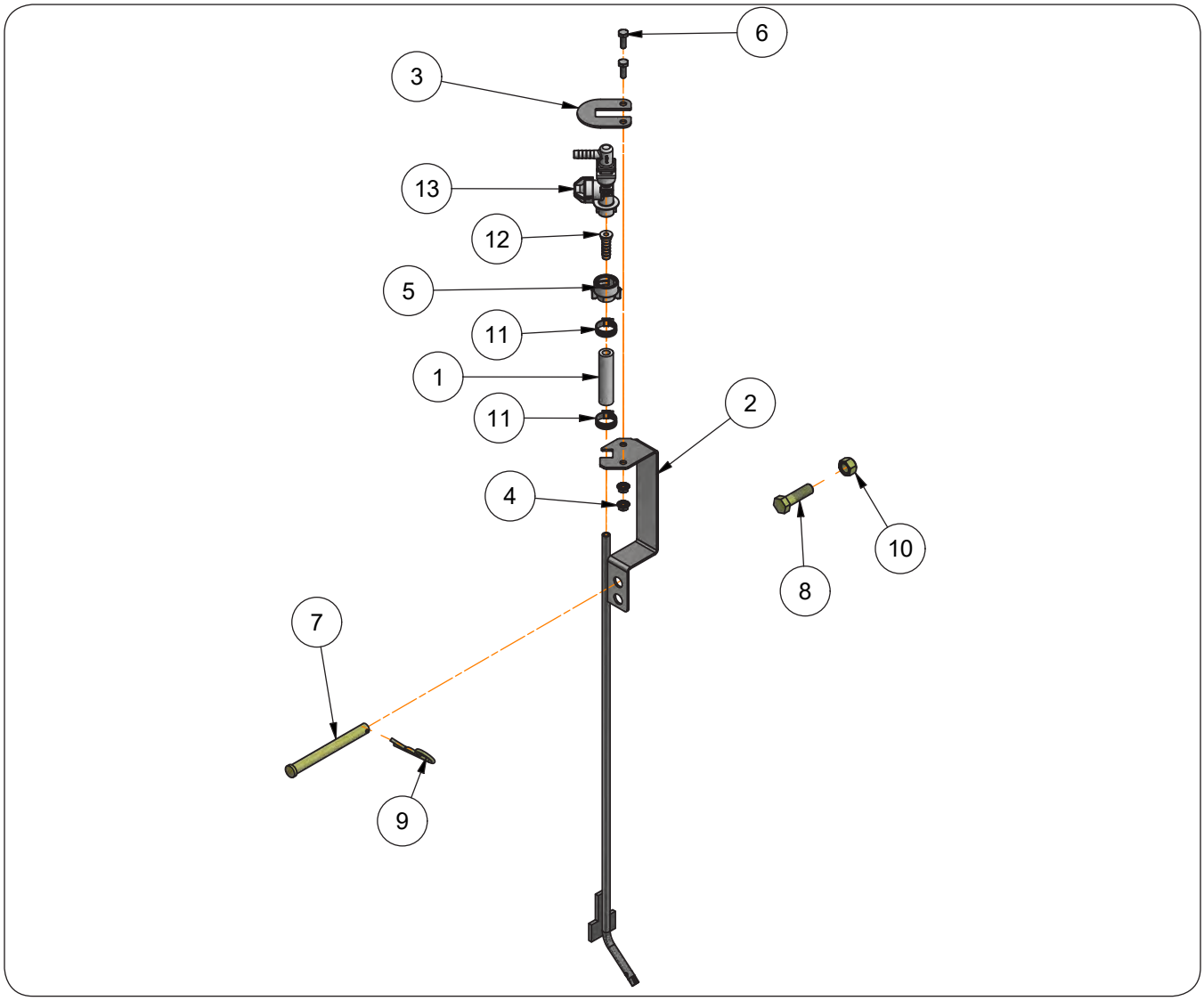
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	45711	Dry Fertilizer Kit Option		Includes Items 1-15
1	45595	Dry Fertilizer Tube Weldment	1	
2	45600	Air Diffuser Weldment	1	
3	45610	Air Seeder Hose, 2" ID x 2.32" OD x 34"	1	
4	45632	Suction Hose, 1 1/2" ID x 1 13/16" OD x 18 7/8"	1	
5	9003869	Grip, 3/8" x 2 3/4"	1	
6	9004071	Plug, 1" SQ	1	
7	900900-028	Capscrew, 5/16"-18UNC x 3/4" (Stainless Steel)	2	
8	900905-010	Elastic Stop Nut, 5/16"-18UNC	2	
9	91183	Clevis Pin, 1/2" Dia. x 5"	1	
10	9390-102	Capscrew, 1/2"-13UNC x 1 3/4" G5	1	
11	9503901	Metal Cable Clamp, 2 1/2" Dia. x 3/4" Wide	1	
12	95959	Hairpin Cotter, .1562" Dia. x 3"	1	
13	9800	Lock Nut/Top, 1/2"-13UNC	1	
14	TA800920	Hose Clamp, SC-32 (SS)	2	
15	TA800922	Worm Drive Hose Clamp (SS)	1	

Liquid Fertilizer Kit Option

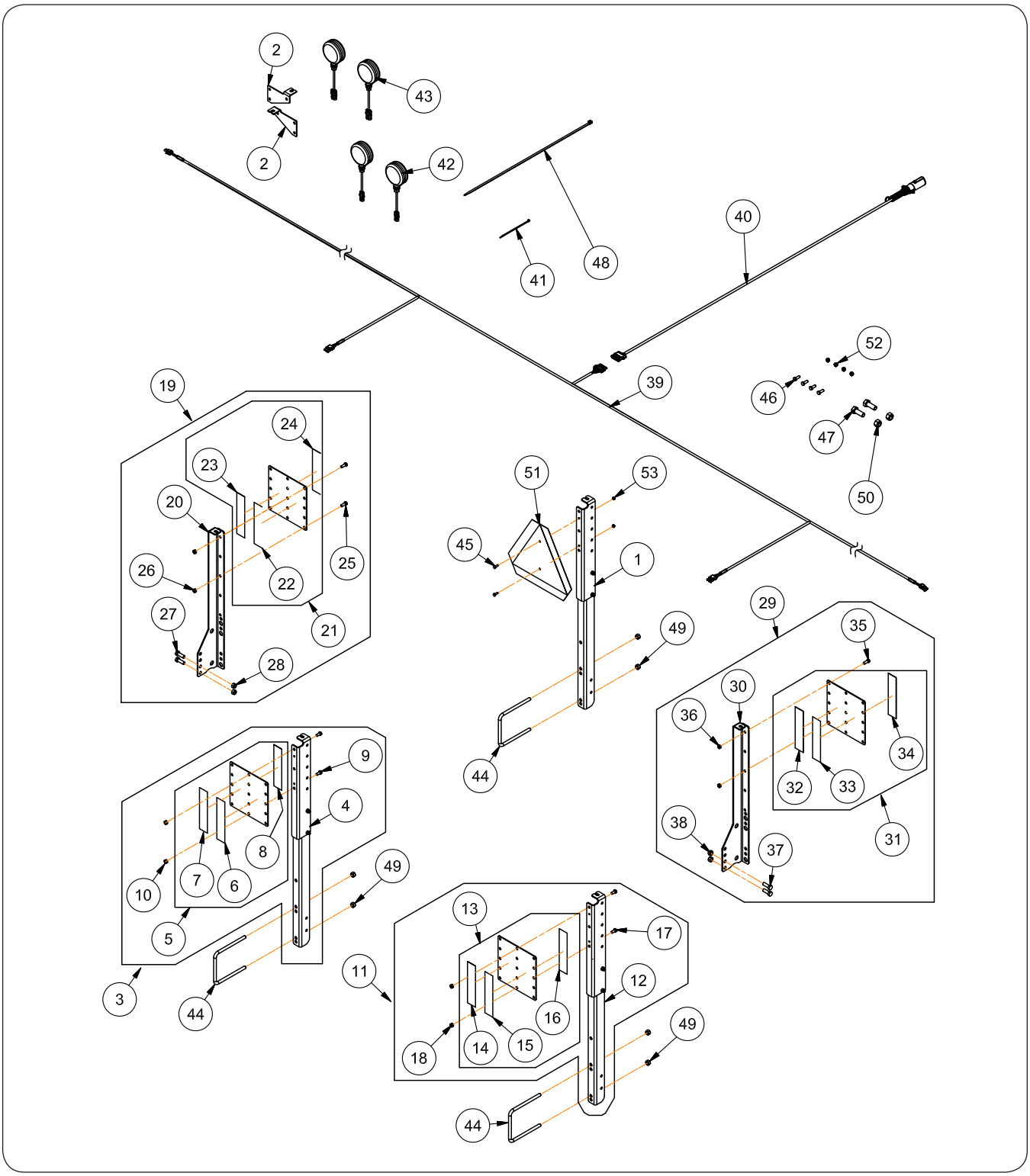
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NO.	DESCRIPTION	QTY	NOTES
	45710	Liquid Fertilizer Kit Option		Includes Items 1-13
1	45654	Hose EPDM, 3/8" Dia. x 2 7/8", 200 PSI	1	
2	603137	Liquid Fertilizer Tube Weldment	1	
3	603146	Plate, 12 GA x 2 1/4" x 2 19/32"	1	
4	9004720	Flange Nut, 1/4"-20UNC (SS)	2	
5	9007736	Quick Nozzle Cap Assembly	1	
6	900900-003	Capscrew, 1/4"-20UNC x 3/4" (SS)	2	
7	91183	Clevis Pin, 1/2" Dia. x 5"	1	
8	9390-102	Capscrew, 1/2"-13UNC x 1 3/4" G5	1	
9	95959	Hairpin Cotter, .1562" Dia. x 3"	1	
10	9800	Lock Nut/Top, 1/2"-13UNC	1	
11	TA800902	Hose Clamp, M-6 (SS)	2	
12	TA865665	Shank-Hose, 19/32" OD x 1/4" ID x 1 3/8"	1	
13	TA880149	Elbow, Nozzle/Single, QJ 3/8"	1	

Reflector & Lighting Components

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



ITEM	PART NO.	DESCRIPTION	12W Shank 68963B	6/8/12N Shank 69054B
1	69664B	Formed Angle	1	2
2	68960B	Light Bracket	2	2

Reflector & Lighting Components

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

ITEM	PART NO.	DESCRIPTION	12W Shank 68963B	6/8/12N Shank 69054B
3	N/A	Left-Hand Center Reflector Assembly	1	-
4	69664B	Formed Angle	1	-
5	68958B	Reflector Bracket	1	-
6	9003125	Decal, Fluorescent Orange	1	-
7	9003126	Red Reflector	1	-
8	9003127	Amber Reflector	1	-
9	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	2	-
10	9928	Lock Nut, 3/8"-16UNC	2	-
11	N/A	Right-Hand Center Reflector Assembly	1	1
12	69664B	Formed Angle	1	1
13	68958B	Reflector Bracket	1	1
14	9003125	Decal, Fluorescent Orange	1	1
15	9003126	Red Reflector	1	1
16	9003127	Amber Reflector	1	1
17	9390-053	Capscrew, 3/8"-16UNC x 3/4" G5	2	2
18	9928	Lock Nut, 3/8"-16UNC	2	2
19	N/A	Left-Hand Outer Reflector Assembly	1	1
20	68959B	Formed Angle	1	1
21	68958B	Reflector Bracket	1	1
22	9003125	Decal, Fluorescent Orange	1	1
23	9003126	Red Reflector	1	1
24	9003127	Amber Reflector	1	1
25	9390-055	Capscrew, 3/8"-16UNC x 1" G5	2	2
26	9928	Lock Nut, 3/8"-16UNC	2	2
27	9390-101	Capscrew, 1/2"-13UNC x 1-1/2" G5	2	2
28	9800	Lock Nut, 1/2"-13UNC	2	2
29	N/A	Right-Hand Outer Reflector Assembly	1	1
30	68959B	Formed Angle	1	1
31	68958B	Reflector Bracket	1	1
32	9003125	Decal, Fluorescent Orange	1	1
33	9003126	Red Reflector	1	1
34	9003127	Amber Reflector	1	1
35	9390-055	Capscrew, 3/8"-16UNC x 1" G5	2	2
36	9928	Lock Nut, 3/8"-16UNC	2	2
37	9390-101	Capscrew, 1/2"-13UNC x 1-1/2" G5	2	2
38	9800	Lock Nut, 1/2"-13UNC	2	2
39	69407	Wiring Harness	1	1
40	86466	Main Wiring Harness	1	1
41	9000106	Cable Tie 7 1/2"	8	8
42	9003876	Amber Round Light	2	2
43	9003877	Red Round Light	2	2
44	9005460	U-Bolt	3	4
45	9390-003	Capscrew, 1/4"-20UNC x 3/4" G5	2	2
46	9390-055	Capscrew, 3/8"-16UNC x 1" G5	4	4
47	9390-145	Capscrew, 3/4"-10UNC x 2" G5	4	4
48	94038	Cable Tie 32"	12	12
49	9800	Lock Nut, 1/2"-13UNC	6	8
50	9802	Lock Nut, 3/4"-10UNC	4	4
51	9829	SMV Emblem	1	1
52	9928	Lock Nut, 3/8"-16UNC	4	4
53	9936	Lock Nut, 1/4"-20UNC	2	2

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