



UM **Seedbed Tillage**

ROLLING HARROW® 1645/1645D

Soil Conditioner

47' - 59' 5-Section Vertical-Fold Models

Serial # A60010100 & Higher

Part NUMBER 76402

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.



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 inside of the main frame near the hinge area (FIG. 1).

Purchase Date _____ Model _____ Serial Number _____

Dealer _____ City _____

Dealer Contact _____ Phone _____



FIG. 1

Base Shown

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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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

 **DANGER**

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

 **WARNING**

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

 **CAUTION**

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

IMPORTANT

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

Safety Decals



PART NUMBER 901891



PART NUMBER 97575



PART NUMBER 95136



PART NUMBER 97961



PART NUMBER 95445



PART NUMBER 95605



PART NUMBER 94094



PART NUMBER 98229



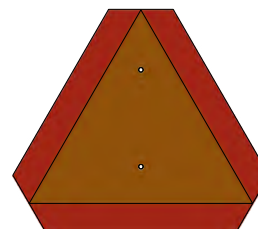
**PART NUMBER 9003127
Amber Reflector**



**PART NUMBER 9003125
Fluorescent Reflector**






**PART NUMBER 9003126
Red Reflector**




**PART NUMBER 98229
SMV Emblem**

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

Before Servicing or Operating

- 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.
- 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.
- 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.

During Operation

- Regulate speed to field conditions. Maintain complete control at all times.
- Never service or lubricate equipment when in operation.
- Keep away from overhead power lines. Electrical shock can cause serious injury or death.
- Use extreme care when operating close to ditches, fences, or on hillsides.
- Do not leave towing vehicle unattended with engine running.



Before Transporting

- Secure transport chains to towing vehicle before transporting. DO NOT transport without chains.
- Install transport locks before transporting.
- Check for proper function of all available transport lights. Make sure that all reflectors are clean and in place on machine. Make sure that the SMV emblem and SIS decal are visible to approaching traffic.
- This implement may not be equipped with brakes. Ensure that the towing vehicle has adequate weight and braking capacity to tow this unit.

During Transport

- Comply with all laws governing highway safety when moving machinery.
- Use transport lights as required by all laws to adequately warn operators of other vehicles.
- 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. Leaks of high-pressure fluids may not be visible. Use cardboard or wood to detect leaks in the hydraulic system. Seek medical treatment immediately if injured by high-pressure fluids.

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

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

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

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

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



Preparing for Emergencies

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



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



Wearing Protective Equipment

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



- Wear steel-toed shoes when operating.



- Wear hearing protection when exposed to loud noises.



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



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General Set Up Information

This section contains all of the instructions required for the complete assembly of the entire Rolling Harrow soil conditioner.

For your safety, and the safety of others, use proper tools and equipment and always use safe working procedures. Refer to these instructions before starting any work on your machine.

IMPORTANT

- *The procedures for assembling this unit were intended for two or more people.*

For ease of assembly, install all hardware loosely until assembly is complete and then tighten according to “Torque Chart” unless otherwise specified.

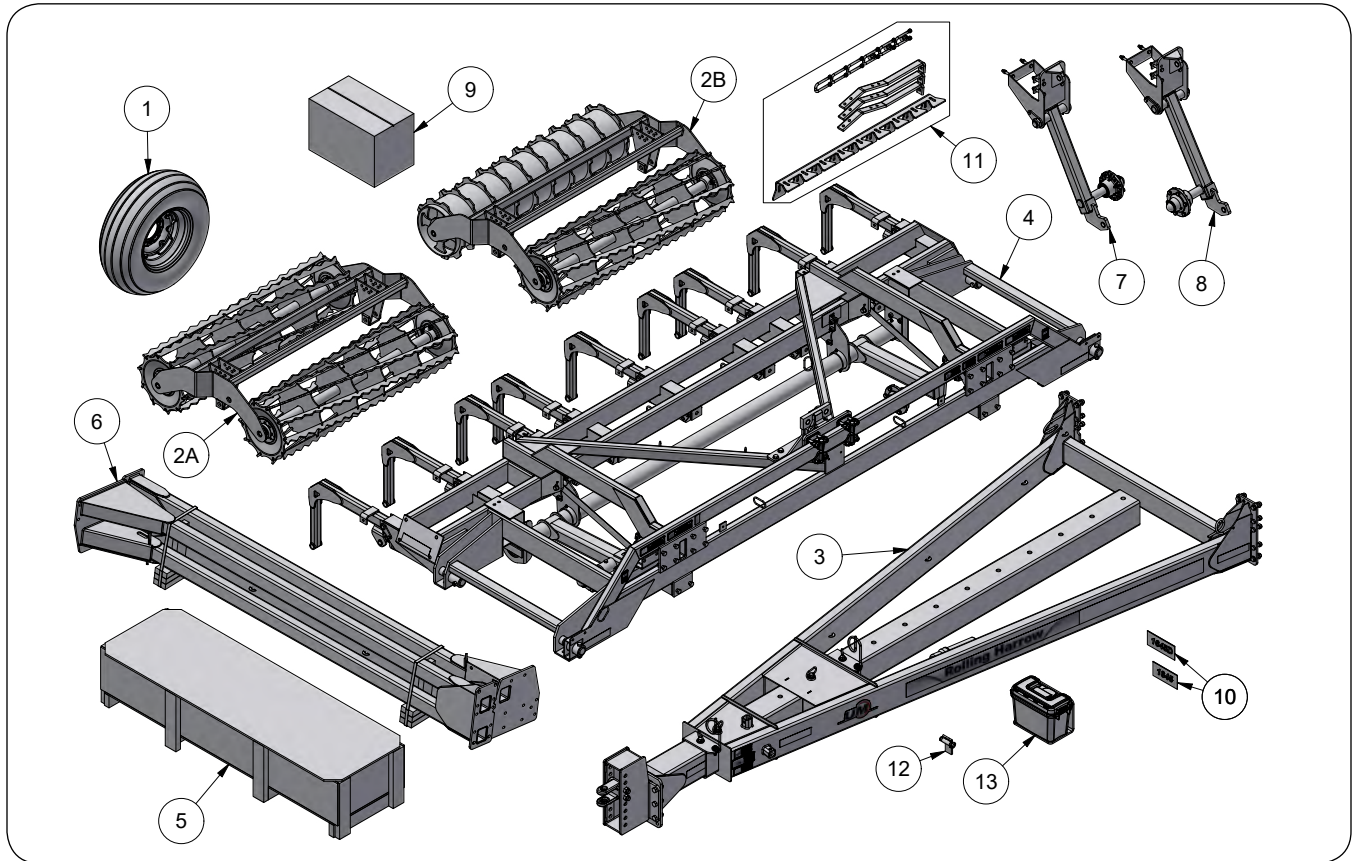
⚠ WARNING

- **READ AND UNDERSTAND SAFETY RULES BEFORE OPERATING OR SERVICING THIS MACHINE. REVIEW "SAFETY" SECTION IN YOUR ROLLING HARROW MANUAL, IF NECESSARY.**
- **TIPPING OR MOVEMENT OF THE MACHINE CAN CAUSE SERIOUS INJURY OR DEATH. BE SURE THE MACHINE IS SECURELY BLOCKED.**
- **MOVING PARTS CAN CRUSH AND CUT. KEEP AWAY FROM MOVING PARTS.**
- **KEEP HANDS CLEAR OF PINCH POINTS.**
- **TO PREVENT MACHINE FROM TIPPING BACKWARDS, UNIT MUST BE HOOKED TO TRACTOR.**
- **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 3,000 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 THE IMPLEMENT.**

Vertical-Fold Rolling Harrow 1645/1645D — Set Up

Rolling Harrow - 15' Base Shipping Bundles

Depending on the model you ordered, you should have received the following bundles:

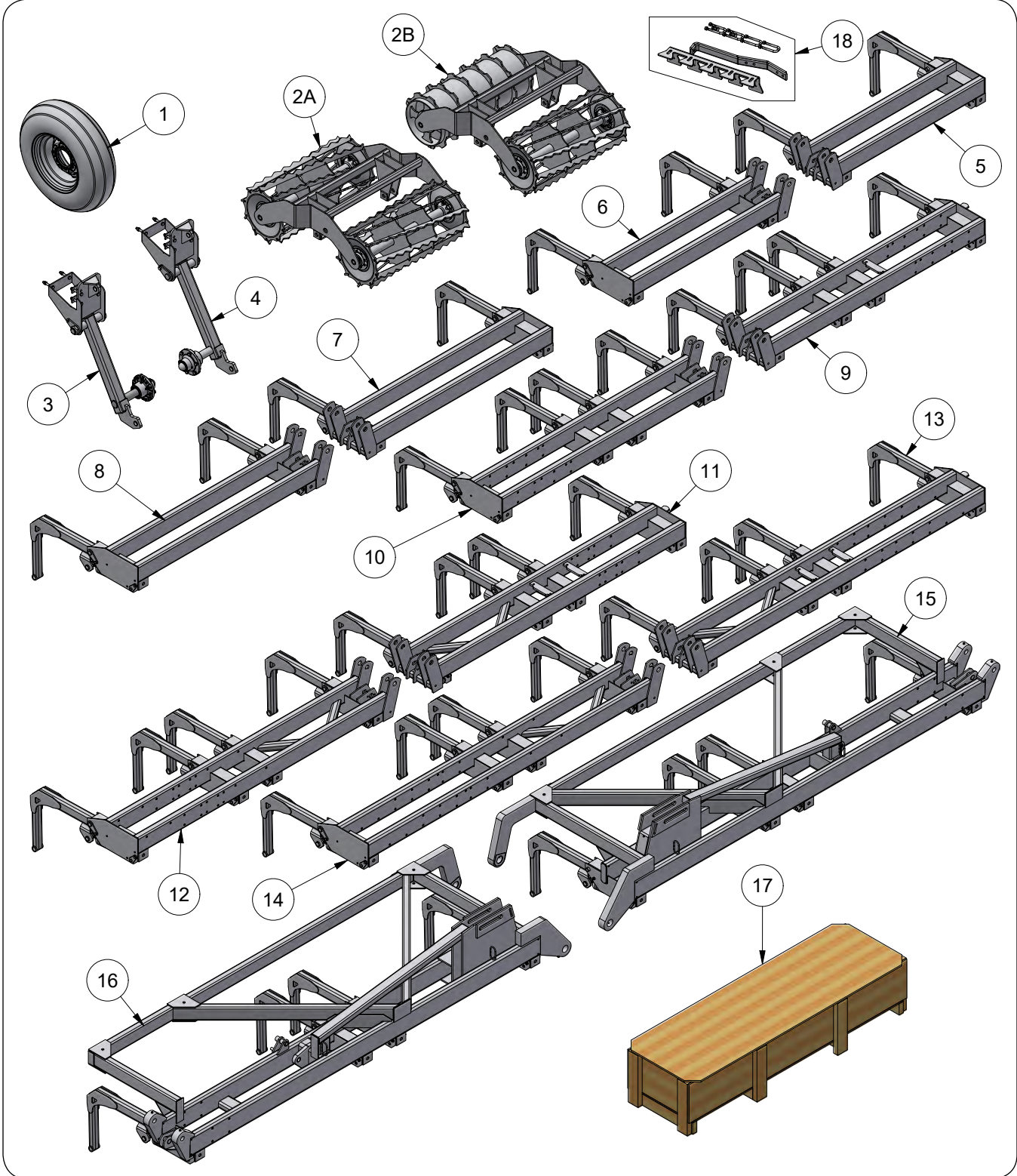


ITEM	PART NUMBER		DESCRIPTION	QTY
	MODEL 1645	MODEL 1645D		
1	17679	17679	Mounted Tire & Wheel W815-6-08 TL11LB15 12Ply (Off White)	6
	17679SM	17679SM	Mounted Tire & Wheel W815-6-08 TL11LB15 12Ply (Silver Mist)	
2A	77085B	-	Basket & Frame 5' Assembly	3
2B	-	77089B	Drum Roller Basket & Frame 5' Assembly	
3	78572G	78572G	Hitch A-Frame 15' Assembly (Green)	1
	78572R	78572R	Hitch A-Frame 15' Assembly (Red)	
4	700308G	700308G	Main Frame Assembly (Green)	1
	700308R	700308R	Main Frame Assembly (Red)	
5	76532B	76532B	Base Parts Box	1
6	78579G	78579G	Hitch Support Bundle (Green)	1
	78579R	78579R	Hitch Support Bundle (Red)	
7	76403B	76403B	Gauge Wheel LH Assembly	1
8	76396B	76396B	Gauge Wheel RH Assembly	1
9	88278B	88278B	Lights/Transport Marking Package	1
10	9501494	9501495	Decal, Model 1645/1645D	2
11	-	76002B	Drum Scraper Kit 5'	3
12	-	77042B	Pin-Up Bushing	6
	-	91523	Clevis Pin	6
	-	9093	Klik Pin	6
13	-	77401B	Toolbox/Storage Box	1

NOTE: Refer to PARTS section for complete parts breakdown.

Vertical-Fold Rolling Harrow 1645/1645D — Set Up

Rolling Harrow - 15' Base 16'-20' Wing Shipping Bundles



Vertical-Fold Rolling Harrow 1645/1645D — Set Up

Rolling Harrow - 15' Base 16'-20' Wing Shipping Bundles

ITEM	PART NUMBER		DESCRIPTION	WING SIZE - QTY.				
	MODEL 1645	MODEL 1645D		16'	17'	18'	19'	20'
1	60911	60911	Mounted Tire & Wheel W815-6-08 (Off White)	-	-	2	2	2
	60911SM	60911SM	Mounted Tire & Wheel W815-6-08 (Silver Mist)	-	-	2	2	2
2A	77083B	-	Basket & Frame 3' Asy	-	-	2	-	-
	77084B	-	Basket & Frame 4' Asy	-	-	2	4	2
	77085B	-	Basket & Frame 5' Asy	4	2	2	2	4
	77086B	-	Basket & Frame 6' Asy	2	4	2	2	2
2B	-	77087B	Drum Roller Basket & Frame 3' Assembly	-	-	2	-	-
	-	77088B	Drum Roller Basket & Frame 4' Assembly	-	-	2	4	2
	-	77089B	Drum Roller Basket & Frame 5' Assembly	4	2	2	2	4
	-	77090B	Drum Roller Basket & Frame 6' Assembly	2	4	2	2	2
3	76403B	76403B	Gauge Wheel LH Asy	-	-	1	1	1
4	76396B	76396B	Gauge Wheel RH Asy	-	-	1	1	1
5	700291G	700291G	Wing 5' LH Asy =Green=	1	-	-	-	-
	700291R	700291R	Wing 5' LH Asy =Red=					
6	700292G	700292G	Wing 5' RH Asy =Green=	1	-	-	-	-
	700292R	700292R	Wing 5' RH Asy =Red=					
7	700293G	700293G	Wing 6' LH Asy =Green=	-	1	-	-	-
	700293R	700293R	Wing 6' LH Asy =Red=					
8	700294G	700294G	Wing 6' RH Asy =Green=	-	1	-	-	-
	700294R	700294R	Wing 6' RH Asy =Red=					
9	700295G	700295G	Wing 7' LH Asy =Green=	-	-	1	-	-
	700295R	700295R	Wing 7' LH Asy =Red=					
10	700296G	700296G	Wing 7' RH Asy =Green=	-	-	1	-	-
	700296R	700296R	Wing 7' RH Asy =Red=					
11	700297G	700297G	Wing 8' LH Asy =Green=	-	-	-	1	-
	700297R	700297R	Wing 8' LH Asy =Red=					
12	700298G	700298G	Wing 8' RH Asy =Green=	-	-	-	1	-
	700298R	700298R	Wing 8' RH Asy =Red=					
13	700299G	700299G	Wing 9' LH Asy =Green=	-	-	-	-	1
	700299R	700299R	Wing 9' LH Asy =Red=					
14	700300G	700300G	Wing 9' RH Asy =Green=	-	-	-	-	1
	700300R	700300R	Wing 9' RH Asy =Red=					
15	700301G	700301G	Wing 11' LH Asy =Green=	1	1	1	1	1
	700301R	700301R	Wing 11' LH Asy =Red=					
16	700302G	700302G	Wing 11' RH Asy =Green=	1	1	1	1	1
	700302R	700302R	Wing 11' RH Asy =Red=					
17	76537B	76537B	Parts Box 47'-49' Wings	1	1	-	-	-
	76538B	76538B	Parts Box 51'-59' Wings	-	-	1	1	1
18	-	76005B	Drum Scraper Kit 3'	-	-	2	-	-
	-	76003B	Drum Scraper Kit 4'	-	-	2	4	2
	-	76002B	Drum Scraper Kit 5'	4	2	2	2	4
	-	75995B	Drum Scraper Kit 6'	2	4	2	2	2

NOTE: Refer to PARTS section for complete parts breakdown.

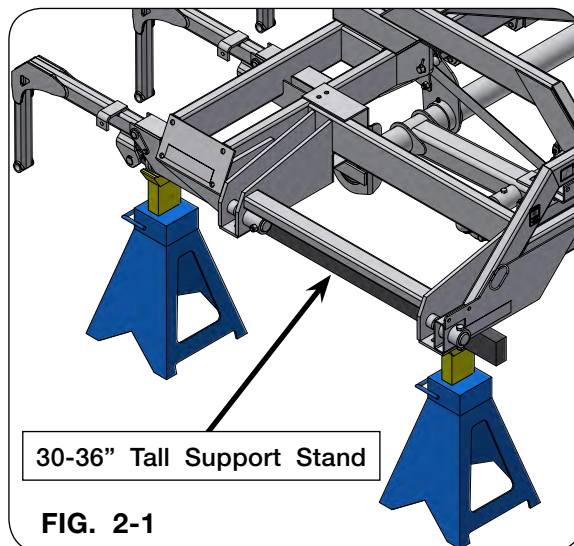
Vertical-Fold Rolling Harrow 1645/1645D — Set Up

Optional Shipping Bundles & Accessories

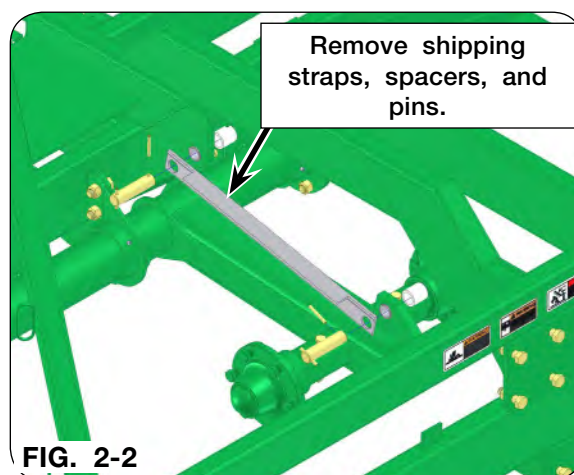
PART NUMBER	DESCRIPTION	NOTES
91240	Check Valve	
76529G / 76529R	Hydraulically Adjustable Offset Tongue	
78582G / 78582R	Gooseneck Hitch	

Main Frame/Tire & Wheel

- Using safe lifting device rated at a minimum of 2,500 lbs., lift main frame assembly (700308G or 700308R) onto stands rated at 1,250 lbs. each, approximately 30-36" tall, and will span the width of the frame as shown in FIG. 2-1.



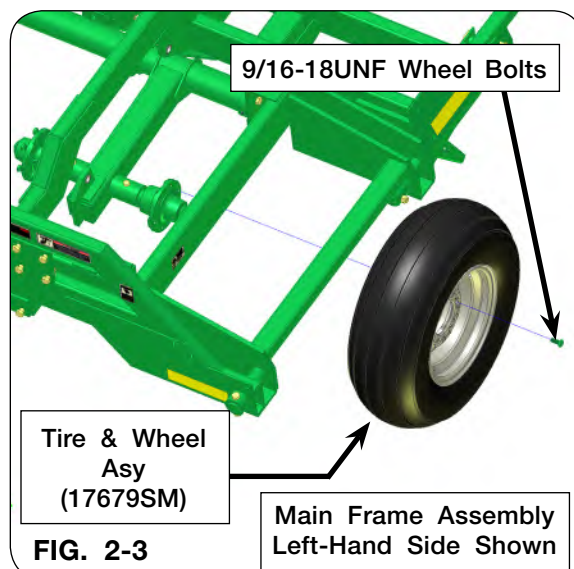
- Using safe lifting device rated at a minimum of 300 lbs., raise the axle weldment/rockshaft until shipping straps, spacers, and pins can be removed from the main frame assembly and axle weldment/rockshaft (FIG. 2-2).



- Install the outside mounted tire and wheel assemblies (17679SM) to the main frame assembly with the valve stem facing outward from the hub (FIG. 2-3). Torque wheel bolts according to "Wheel Torque Chart" in MAINTENANCE Section.

CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. WHEEL NUTS/BOLTS MUST BE CHECKED REGULARLY. SEE TORQUE PAGE IN THE "MAINTENANCE" SECTION FOR PROPER WHEEL NUT/BOLT SPECIFICATIONS. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.



Main Frame/Tire & Wheel (continued)

4. Open the base parts box/crate (76532B) and locate the two 3 1/2" x 12" hydraulic cylinders (9501755) and parts bag (88590), which includes the four 1" Dia. x 4" pins (85631) and eight 1/4" Dia. x 1 7/8" spiral pins (91144-165). Check that retracted cylinder length is 24 1/4" (FIG. 2-4). Adjust both cylinders to this dimension as necessary.

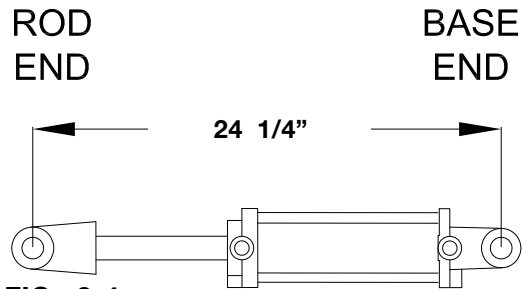


FIG. 2-4

5. Install 3 1/2" x 12" lift cylinders (9501755) onto main frame assembly with the ports facing out. Secure base end of cylinders to the main frame assembly using the 1" dia. x 4" pins (85631) and 1/4" dia. x 1 7/8" spiral pins (91144-165). Before installing the rod end cylinder pin, see "Purging a Hydraulic System" on page 2-34 in this section.

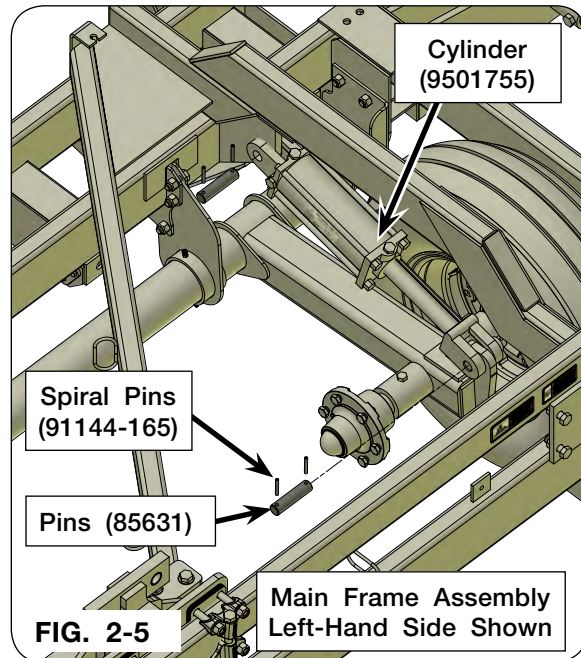
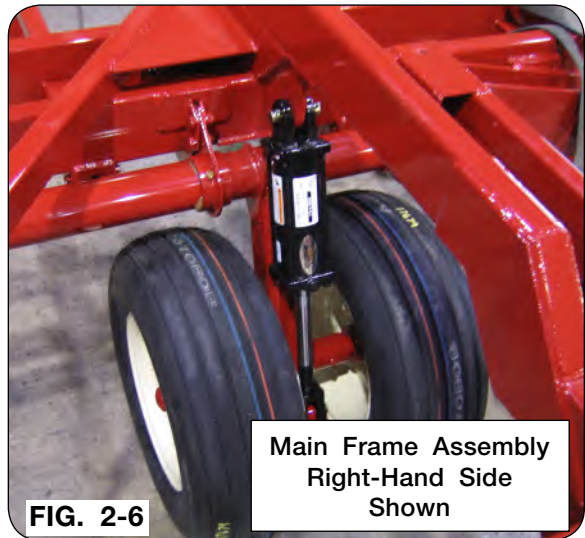


FIG. 2-5

Main Frame/Tire & Wheel (continued)

6. Install the inside mounted tire and wheel assemblies (17679SM) to the main frame assembly as shown in FIG. 2-6. Torque 9/16"-18UNF wheel bolts (9231) according to "Wheel Torque Chart" in MAINTENANCE Section.



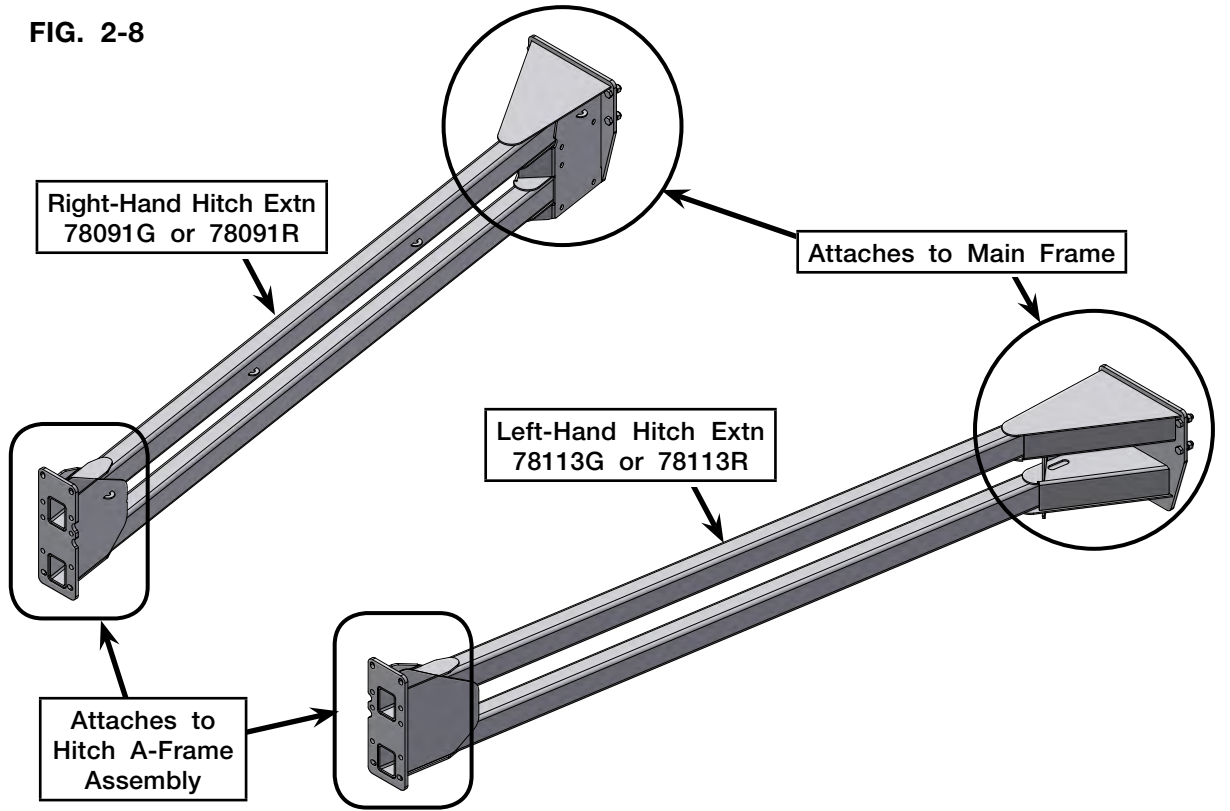
⚠ CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. WHEEL NUTS/BOLTS MUST BE CHECKED REGULARLY. SEE TORQUE PAGE IN THE "MAINTENANCE" SECTION FOR PROPER WHEEL NUT/BOLT SPECIFICATIONS. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.
-
7. With safe lifting devices rated at minimum of 2,500 lbs. still attached to the main frame assembly, remove the 30-36" tall stands from under the frame and lower the frame to rest on the basket mounting arms and additional stands rated at 1,500 lbs. minimum to support the front of the main frame.

Hitch

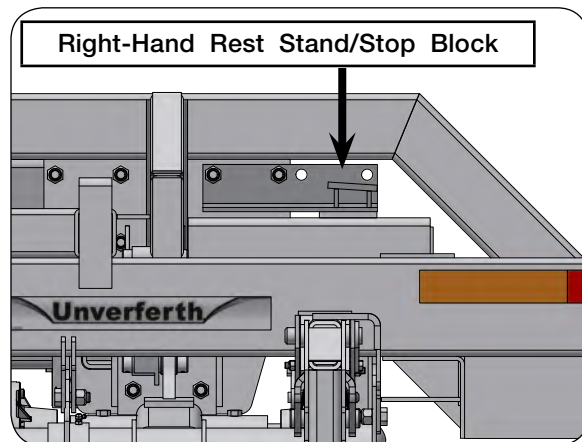
1. Remove the shipping straps from the hitch extension bundle (78579G or 78579R). Separate the parts and note how they are to be assembled as shown in (FIG. 2-8).

FIG. 2-8



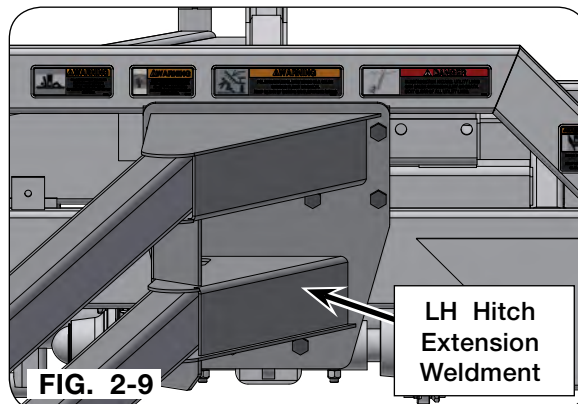
IMPORTANT

- Ensure wing rest stands/stop blocks are installed when assembling hitch extensions.

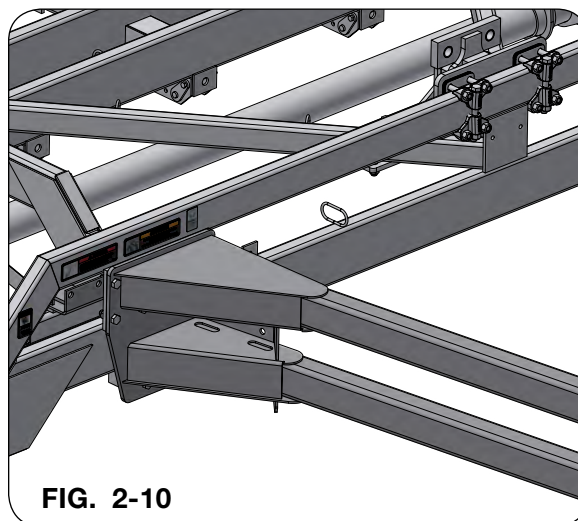


Hitch (continued)

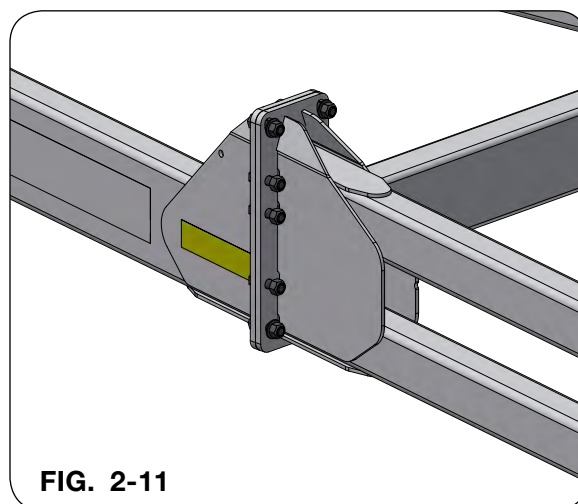
2. Remove and save the hardware from the rear of the hitch A-frame assembly and main frame assembly hitch mounting area.
3. Using a safe lifting device rated at a minimum of 400 lbs., lift and loosely attach the left-hand hitch extension (78113G or 78113R) to the main frame using the hardware previously removed (FIG. 2-9).



4. Using a safe lifting device rated at a minimum of 400 lbs., lift and loosely attach the right-hand hitch extension (78091G or 78091R) to the main frame using the hardware previously removed (FIG. 2-10).

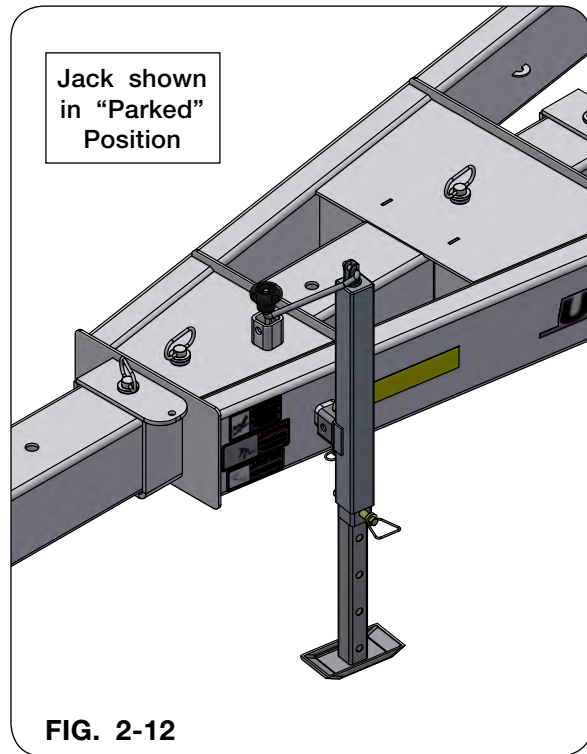


5. Using a safe lifting device rated at a minimum of 1,000 lbs., lift the hitch A-frame assembly and attach it to the hitch extensions using the hardware previously removed (FIG. 2-11).
6. Torque all hitch hardware as specified in "Torque Chart" located in the MAINTENANCE section.



Jack

1. Locate in the base parts box/crate (76532B) the jack (901061) and parts bag (88590), which includes the bent pin with hairpin (84979) needed to secure the jack into position.
2. With the safe lifting devices still attached to the hitch A-frame assembly, attach the jack (901061), with the bent pin with hairpin (84979) as shown in FIG. 2-12.
3. Extend jack until it supports the weight of the hitch. Remove the safe lifting device from hitch A-frame.

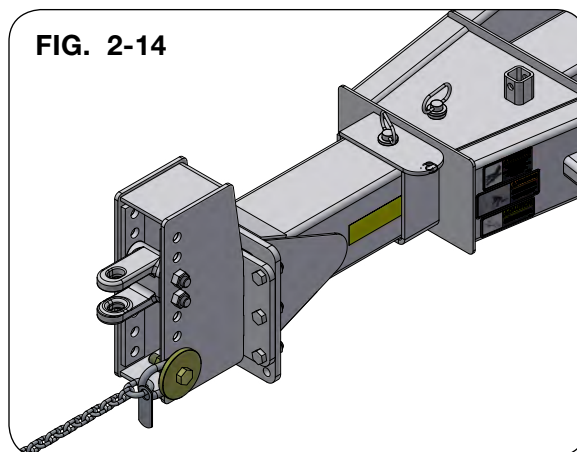
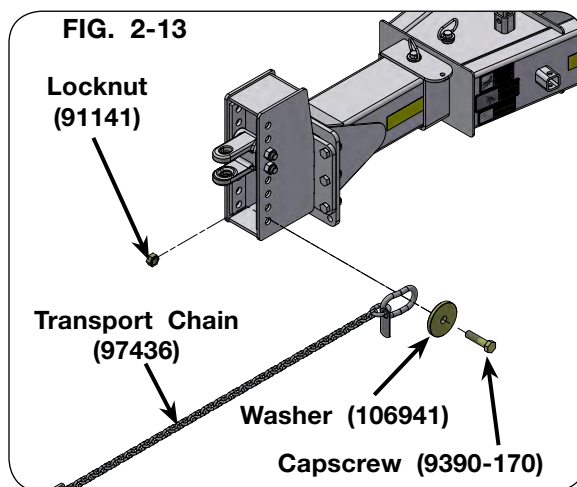


Transport Chain

CAUTION

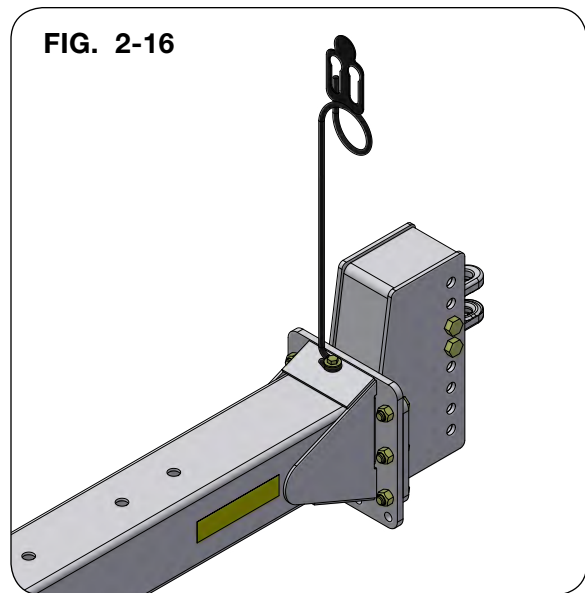
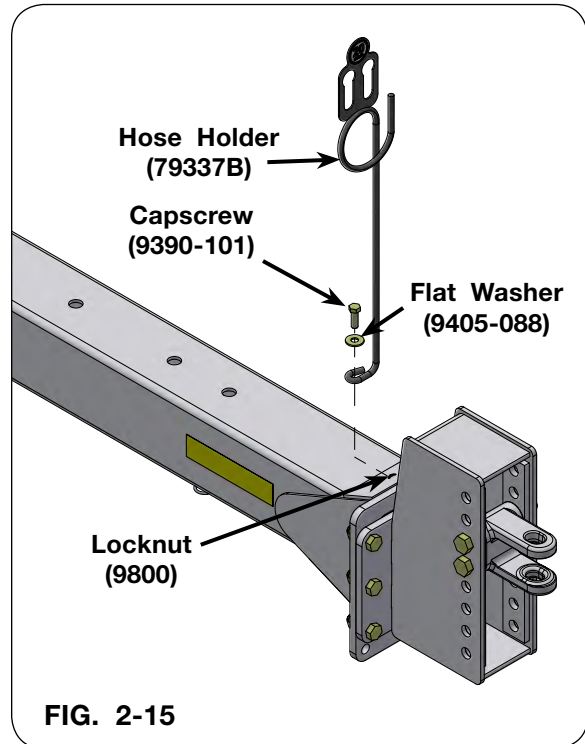
- ALWAYS USE TRANSPORT CHAIN WHEN TRANSPORTING IMPLEMENTS. FAILURE TO USE CHAINS COULD CAUSE PERSONAL INJURY OR DAMAGE IF IMPLEMENTS BECOME DISENGAGED.

1. Locate in the base parts box/crate (76532B) the transport chain (97436) and the parts bag (88591), which includes the washer (106941), 7/8-9UNC locknut (91141) and 7/8"-9UNC x 3 1/2" capscrew (9390-170) needed to secure the transport chain into position.
2. Attach the transport chain (97436) with a rating of 16,100 lbs. to the front, left-hand side of the tongue/hitch using large washer (106941), 7/8"-9UNC x 3 1/2" capscrew (9390-170), and 7/8"-9UNC locknut (91141) as shown in FIG. 2-13 and FIG. 2-14.



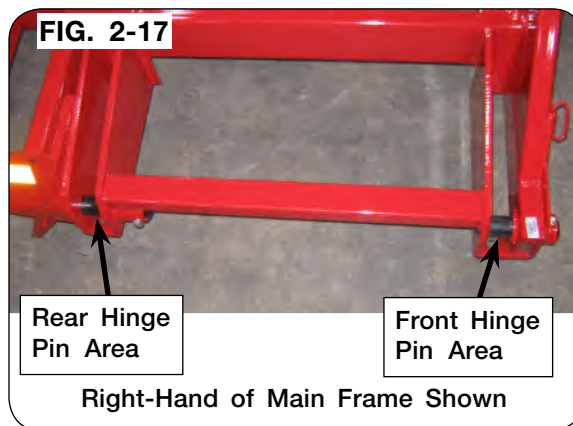
Hose Holders

1. Locate in the base parts box/crate (76532B) the hose holder (79337B) and parts bag (88591), which includes the 1/2"-13UNC x 1 1/2" capscrew (9390-101), 1/2" flat washer (9405-088), and 1/2"-13UNC locknut (9800) needed to secure the hose holder into position.
2. Attach the hose holder (79337B) to the hitch assembly using 1/2"-13UNC x 1 1/2" capscrew (9390-101), 1/2" flat washer (9405-088), and 1/2"-13UNC locknut (9800) as shown in FIG. 2-15 and FIG. 2-16.

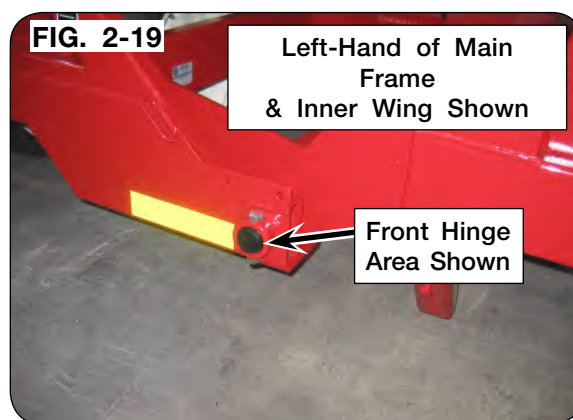
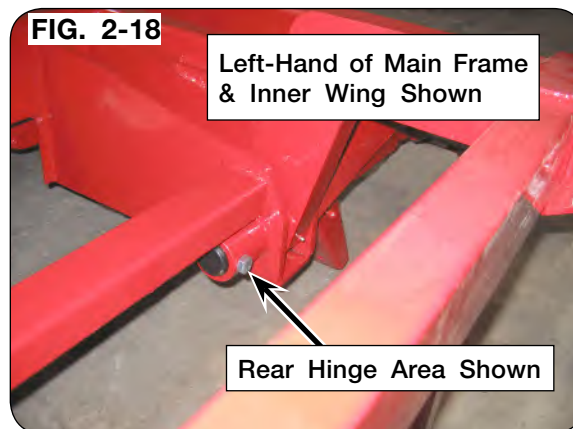


Inner Wings

1. Remove the capscrews and nuts from the hinge pins. Remove the front and rear hinge pins from the right-hand and left-hand sides of the main frame (FIG. 2-17).

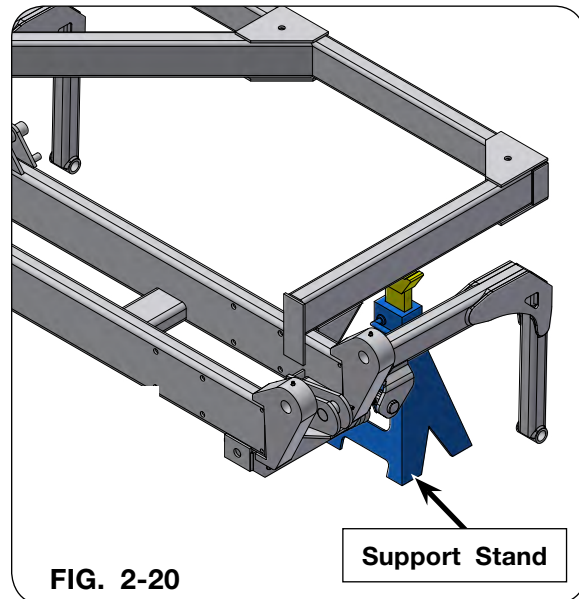


2. Using a safe lifting device rated at a minimum of 1,000 lbs., lift and align the left-hand wing assembly with the main frame assembly. Using the hardware previously removed from the wing hinge area, insert the rear hinge pin before the front hinge pin as shown in FIG. 2-18 and FIG. 2-19.



Inner Wings (continued)

3. Place the end of the left-hand inner wing on a support stand rated at 500 lbs. minimum before removing safe lifting device (FIG. 2-20).



4. Using a safe lifting device rated at a minimum of 1,000 lbs., lift and align the right-hand wing assembly with the main frame assembly. Using the hardware previously removed from the wing hinge area, insert the rear hinge pin before the front hinge pin as shown in FIG. 2-18 and FIG. 2-19.
5. Place the end of the right-hand inner wing on a support stand rated at 500 lbs. minimum before removing safe lifting device (FIG. 2-20).
6. Torque hardware according to Torque Chart located in the MAINTENANCE section.

Outer Wings

IMPORTANT

- *Using the improper linkage and/or wing fold cylinders will damage your machine.*

1. Remove and discard the rubber plugs (901869) from the outer wing frames. (FIG. 2-21)

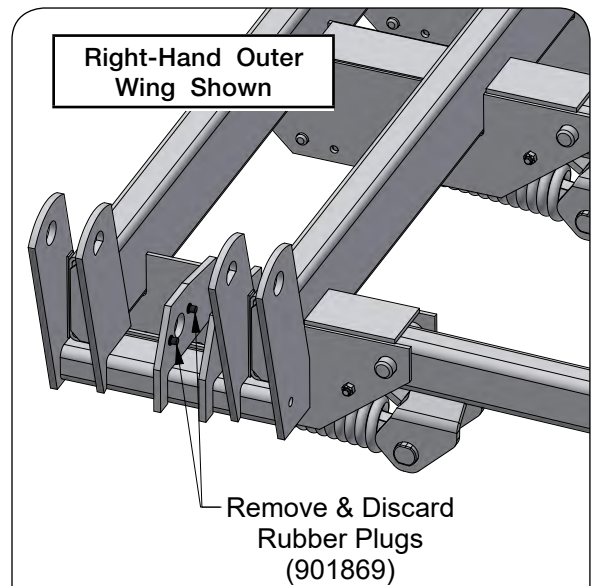
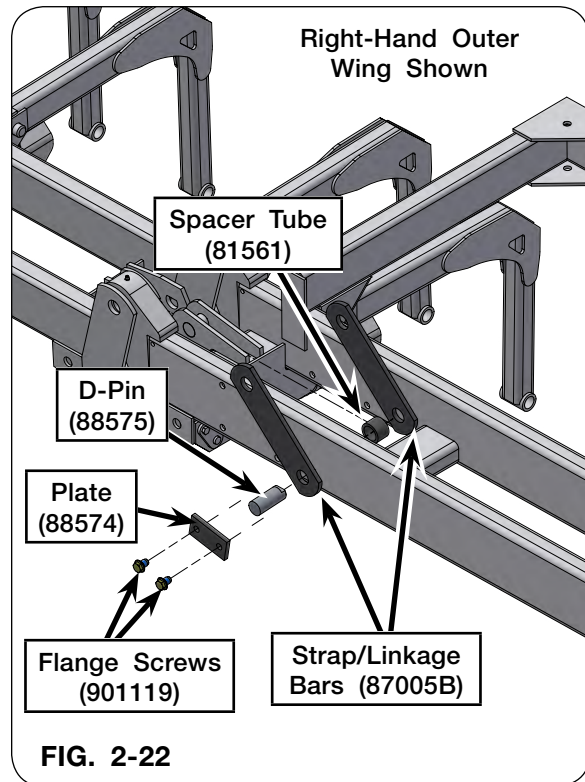


FIG. 2-21

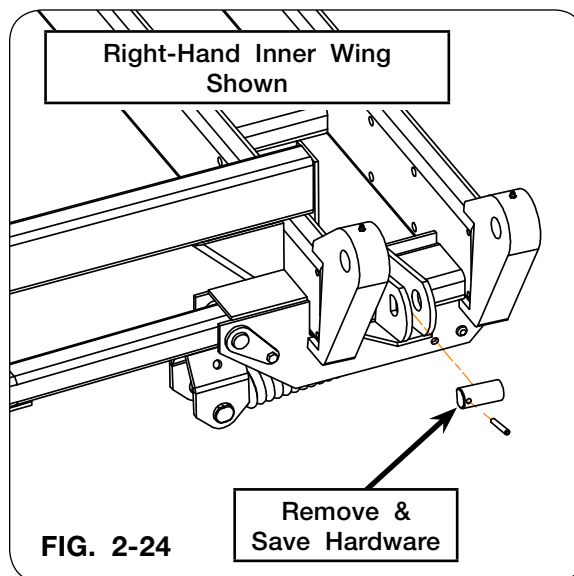
Outer Wings (continued)

2. Locate in the base parts box/crate (76532B) the strap/linkage bars (87005B) and hardware bag (88576), which includes the two spacer tubes (81561), two D-pins (88575), two plates (88574), and four flange screws (901119).
3. Position the spacer tube (81561) between the two strap/linkage bars (87005B). Secure with D-pin (88575), plate (88574) and two 1/2"-13UNC x 3/4" flange screws (901119) (FIG. 2-22 and FIG. 2-23). Tighten flange screws. Repeat process to left-hand outer wing.

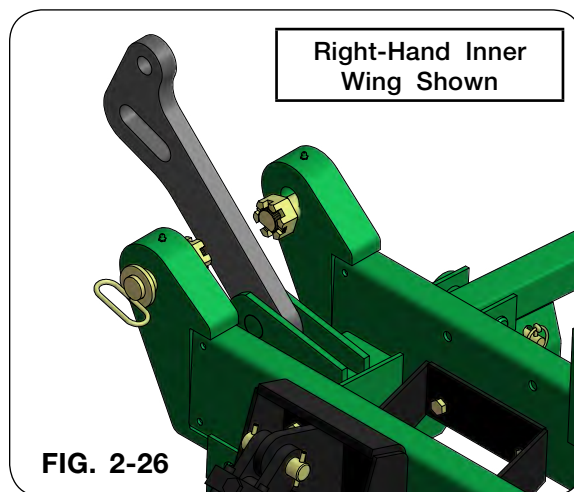
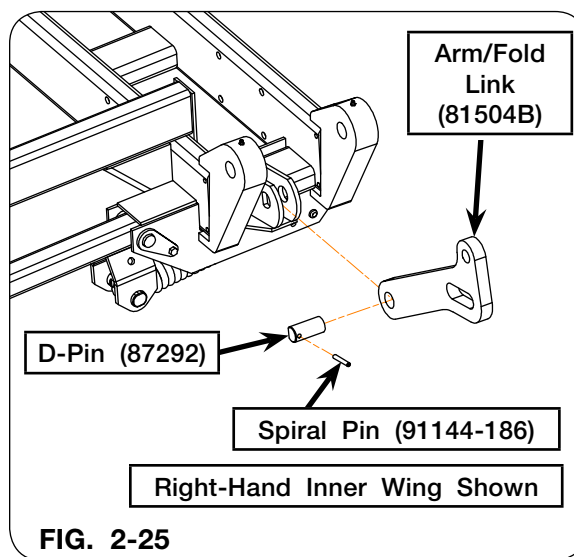


Outer Wings (continued)

4. Remove and save the D-pin (87292) and spiral pin (91144-186) from the hinge area of both inner wings FIG. 2-24.



5. Attach the arm/fold link (81504B) to the right-hand inner wing assembly with the D-pin (87292), two 1 1/4" flat washers (9405-128) and two 5/16" Dia. x 2" spiral pins (91144-186) as shown in FIG. 2-25 and FIG. 2-26. Repeat process to left-hand inner wing.

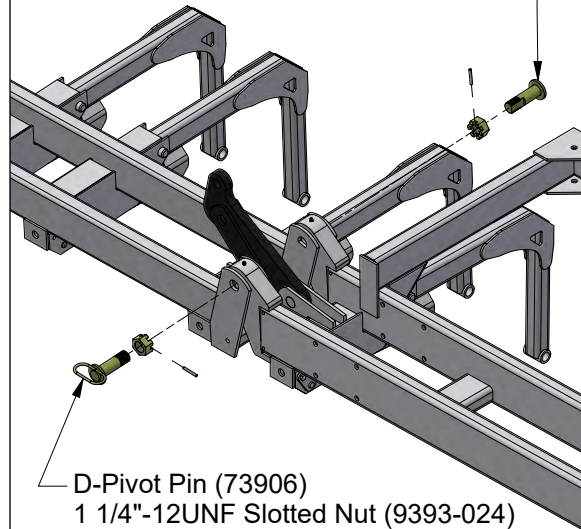


Outer Wings (continued)

6. Find 1/4" dia. x 1 7/8" spiral pin (91144-165), 1 1/4"-12 UNF slotted nut (9393-024) and D-pivot pins (83146 & 73906) in wing parts box.
7. Secure the outer wings to the inner wings with the previously removed D-pivot pins (83146), 1 1/4"-12 UNF slotted nuts (9393-024) and 1/4" dia. x 1 7/8" spiral pins (91144-165). (FIG. 2-27).

FIG. 2-27

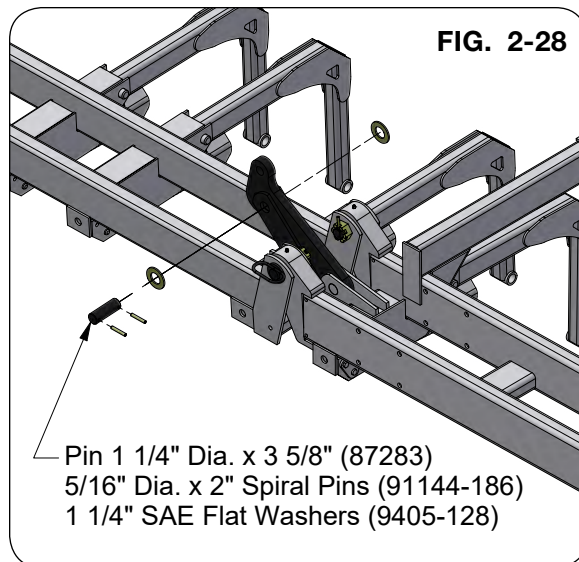
D-Pivot Pin (83146)
1 1/4"-12UNF Slotted Nut (9393-024)
1/4" Dia. x 1 7/8" Spiral Pin (91144-165)



D-Pivot Pin (73906)
1 1/4"-12UNF Slotted Nut (9393-024)
1/4" Dia. x 1 7/8" Spiral Pin (91144-165)

Outer Wings (continued)

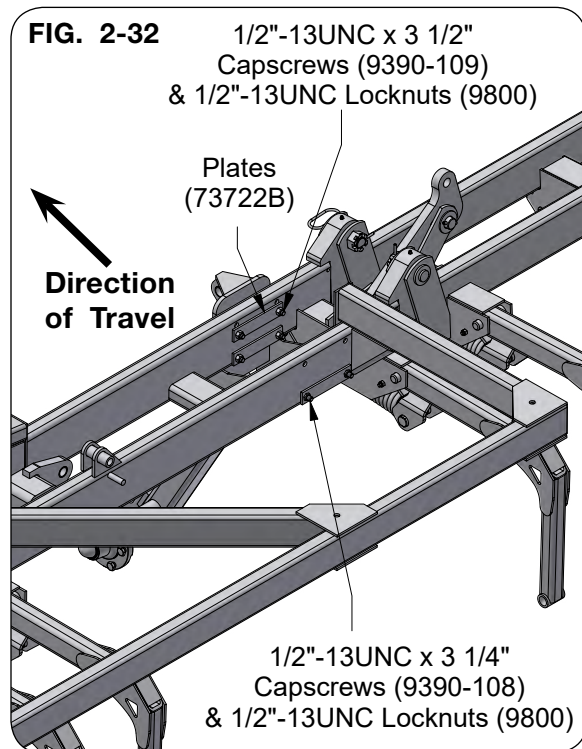
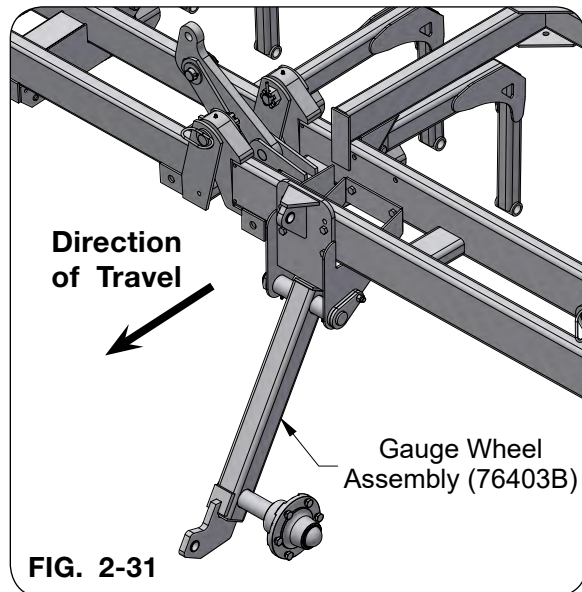
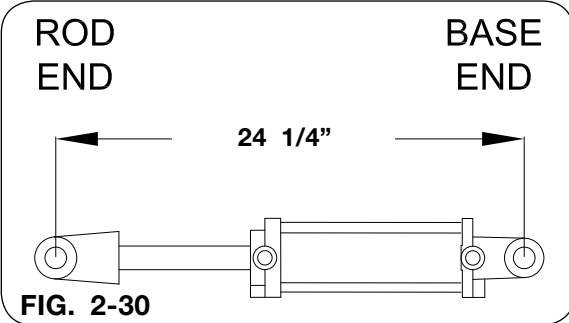
8. Locate in the base parts box/crate (76532B) the parts bag (88590), and remove the four 1 1/4" flat washers (9405-128), two 1 1/4" Dia. x 3 5/8" pins (87283), and four 5/16" Dia. x 2" spiral pins (91144-186).
9. Place the right-hand outer wing strap/linkage bars (87005B) around the right-hand inner wing arm/fold link (81504B). Secure the links together with two 1 1/4" flat washers (9405-128), 1 1/4" Dia. x 3 5/8" pin (87283), and two 5/16" Dia. x 2" spiral pins (91144-186) as shown in FIG. 2-28 and FIG. 2-29. Repeat process to left-hand wings.



Inner Wing Tire & Wheel

NOTE: These instructions are for standard wing wheels only.

1. Locate the wing wheel assemblies (76403B and 76396B), and wheel and tire assemblies (17679SM) in the base shipping bundle. Locate in the base parts box/crate (76532B) the two 3 1/4" x 12" hydraulic cylinders (9501723), and parts bag (88590), which includes the four 1" Dia. x 4" pins (85631) and eight 1/4" Dia. x 1 7/8" spiral pins (91144-165). Check that the retracted cylinder length is 24 1/4" (FIG. 2-30). Adjust both cylinders to this dimension, as necessary.
2. Remove and save the hardware and straps from the wing wheel assemblies. Attach the wing wheel (76403B) to the right-hand mid-wing using the previously removed hardware. The straps are to be placed against the back side of the front wing tube. See FIG. 2-31 & FIG. 2-32.



Inner Wing Tire & Wheel (continued)

3. With the ports facing out, secure base end of the 3 1/4" x 12" cylinders (9501723) to the wing assemblies and the rod end of cylinders to the wing wheel end using 1" Dia. x 4" pins (85631) and 1/4" Dia. x 1 7/8" spiral pins (91144-165) as shown in FIG. 2-33. Before installing the rod end cylinder pin, see "Purging a Hydraulic System", in this section.

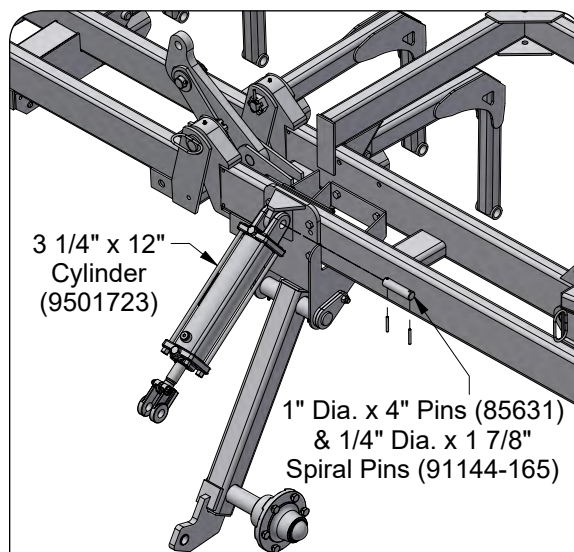


FIG. 2-33

Inner Wing Tire & Wheel (continued)

CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. WHEEL NUTS/BOLTS MUST BE CHECKED REGULARLY. SEE TORQUE PAGE IN THE MAINTENANCE SECTION FOR THE PROPER WHEEL NUT/BOLT SPECIFICATIONS. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.

4. Mount the tire and wheel assemblies (17679SM) to the wing wheel assemblies with the valve stem facing outward from the hub and the 9/16"-18UNF wheel bolts (9231) located on the hub (FIG. 2-34). Torque wheel nuts according to "Wheel Torque Chart" in MAINTENANCE Section.
5. Repeat for the left-hand inner wing wheel assembly (76396B).

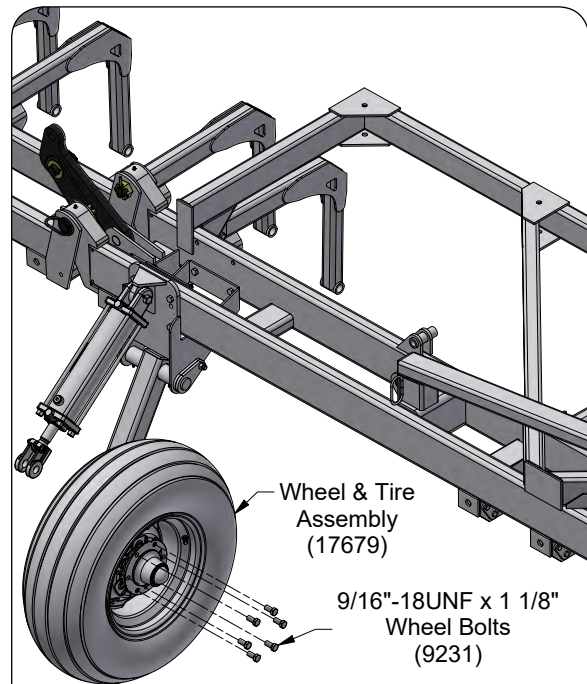


FIG. 2-34

Outer Wing Tire & Wheel

NOTE: 47' & 49' machines do not have outer wing wheels.

NOTE: These instructions are for standard wing wheels only.

1. Locate the wing wheel assemblies (76403B and 76396B), and wheel and tire assemblies (60911) in the wing shipping bundle. Locate in the wing parts box/crate (76538B 51' - 59' machines) the two 3" x 12" hydraulic cylinders (9501736), two backing straps (73722B), and parts bag (88594 51' - 59' machines), which includes the four 1" Dia. x 4" pins (85631) and eight 1/4" Dia. x 1 7/8" spiral pins (91144-165). Check that the retracted cylinder length is 24 1/4" (FIG. 2-30). Adjust both cylinders to this dimension as necessary.
2. Remove and save the hardware and straps from the wing wheel assemblies. Attach the right-hand wing wheel (76396B) to the right-hand outer wing using the previously removed hardware. The straps are to be placed against the back side of the wing tubes at all mounting locations (FIG. 2-36).

FIG. 2-35

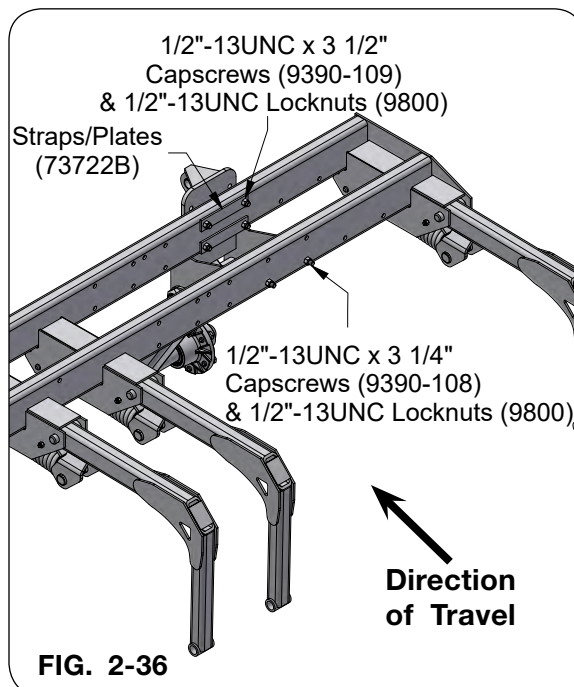
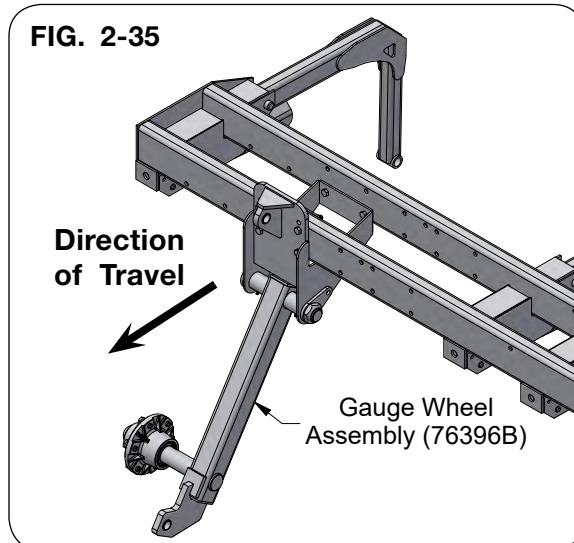


FIG. 2-36

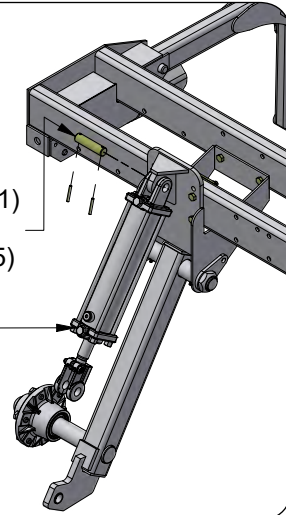
Outer Wing Tire & Wheel (continued)

3. With the ports facing out, secure the base end of the 3" x 12" cylinders (9501736) to the wing assemblies and the rod end of the cylinders to the wing wheel end using 1" Dia. x 4" pins (85631) and 1/4" Dia. x 1 7/8" spiral pins (91144-165) as shown in FIG. 2-37. Before installing the rod end cylinder pin, see Purging a Hydraulic System on page 2-34 in this section.

FIG. 2-37

1" Dia. x 4" Pins (85631)
& 1/4" Dia. x 1 7/8"
Spiral Pins (91144-165)

3" x 12" Cylinder
(9501736)

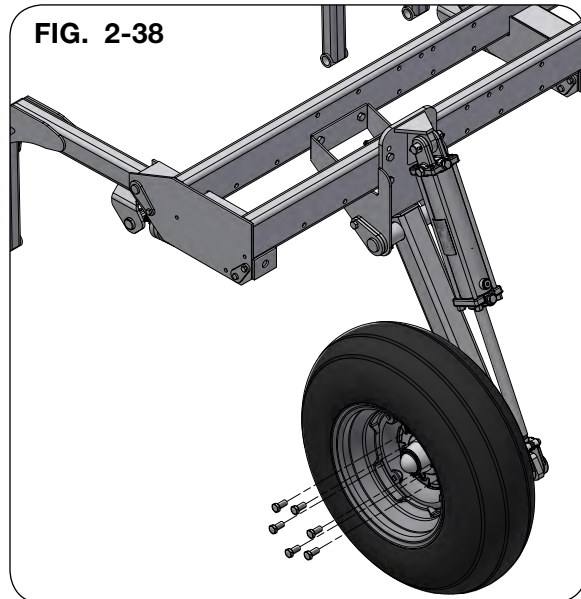


CAUTION

- IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. WHEEL NUTS/BOLTS MUST BE CHECKED REGULARLY. SEE TORQUE PAGE IN THE MAINTENANCE SECTION FOR THE PROPER WHEEL NUT/BOLT SPECIFICATIONS. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.

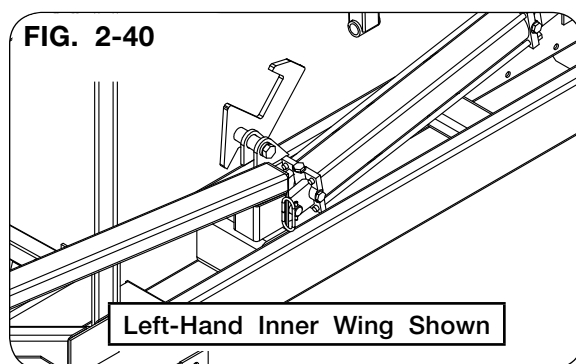
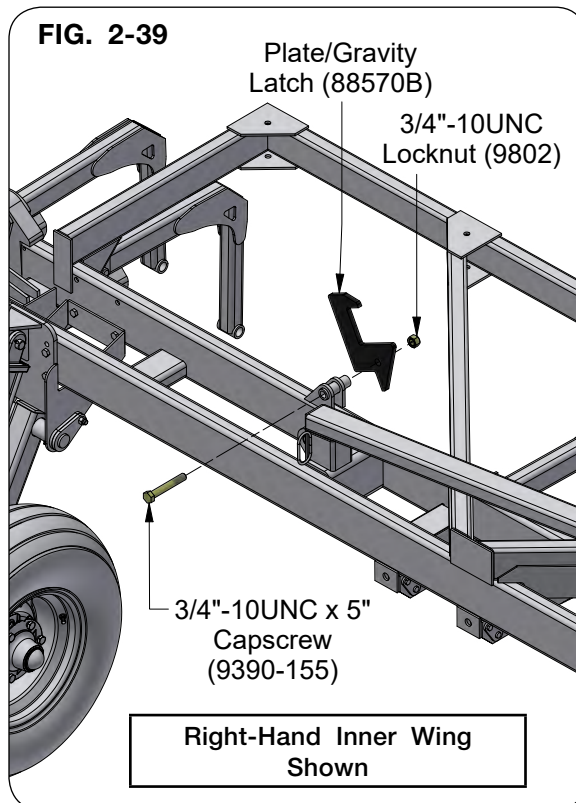
4. Mount the tire and wheel assemblies (60911) to the wing wheel assemblies with the 9/16"-18UNF wheel bolts located on the hub (FIG. 2-38). Torque wheel nuts according to the Wheel Torque Chart in the Maintenance section.
5. Repeat for the left-hand outer wing wheel assembly.

FIG. 2-38



Gravity Latches/Wing Stands

1. Locate in the base parts box/crate (76532B) the two plates/gravity latches (88570B) and parts bag (88591), which includes the two 3/4"-10UNC x 5" capscrews (9390-155) and two 3/4"-10UNC locknuts (9802) needed to secure the plates/gravity latches into position.
2. Mount the plates/gravity latches to the inner wings as shown in FIG. 2-39 & FIG. 2-40 using a 3/4"-10UNC x 5" capscrew (9390-155) and 3/4"-10UNC locknut (9802).

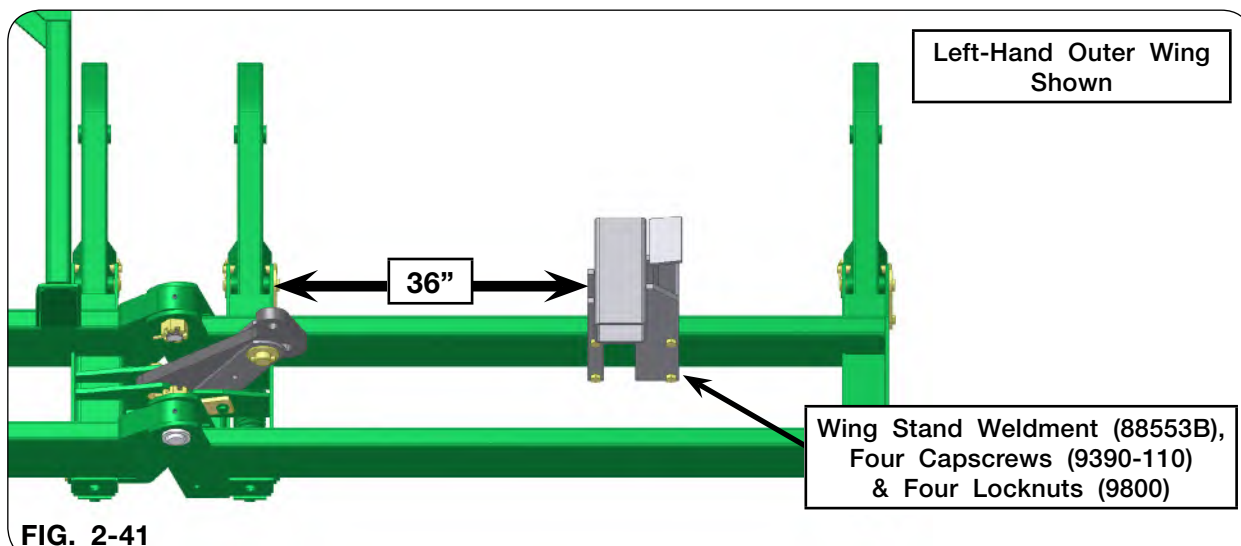


Gravity Latches/Wing Stands (continued)

3. Locate in the base parts box/crate (76532B) the two wing stand weldments (88553B) and parts bag (88591), which includes the eight 1/2"-13UNC locknuts (9800).

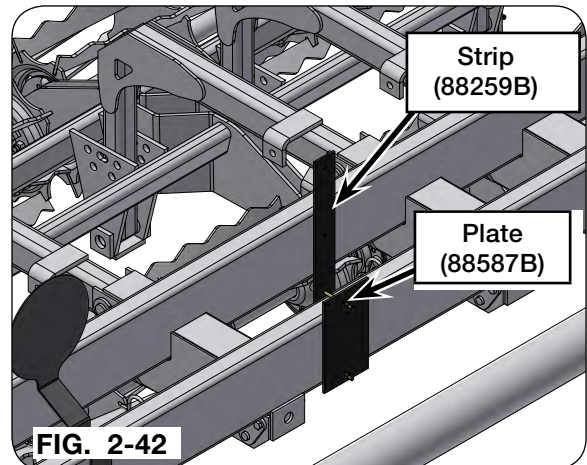
Locate in the wing parts box/crate (76537B) for 47-49' models; (76538B) for 51-59' models) the parts bag, which includes the eight 1/2"-13UNC x 3 3/4" capscrews (9390-110).

4. Measure 36" from both sides of the basket arm bracket and mark the mounting position of wing stand weldments (88553B) on the outer wings (FIG. 2-41). Secure the wing stand weldments (88553B) to the outer wings with four 1/2"-13UNC x 4 1/2" capscrews (9390-112) and four 1/2"-13UNC locknuts (9800) per side.

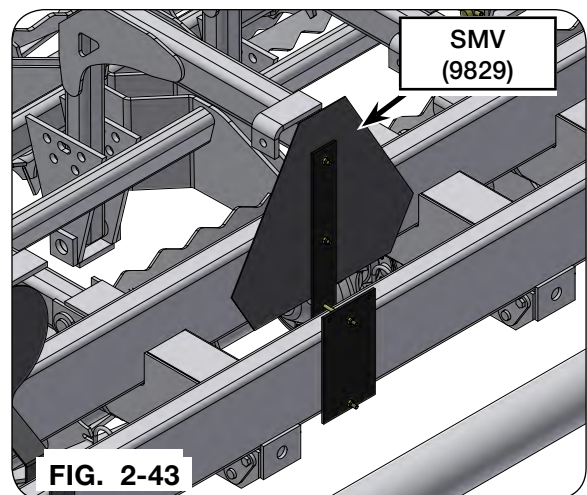


SMV Emblem

1. Locate in base parts box/crate (76532B) one strip (88259B), plate (88587B), SMV (9829), and parts bag (88591), which includes two 1/4"-20UNC x 3/4" capscrews (9390-003), two 1/4"-20UNC x 2 3/4" capscrews (9390-012), and four 1/4"-20UNC locknuts (9936).
2. Secure the strip (88259B) and plate (88587B) to the main frame assembly as shown FIG. 2-42 using two 1/4"-20UNC x 2 3/4" cap-screws (9390-012) and 1/4"-20UNC locknuts (9936).



3. Attach SMV (9829) to the strip (88259B) with two 1/4"-20UNC x 3/4" capscrews (9390-003) and 1/4"-20UNC locknuts (9936) as shown in FIG. 2-43.



Hydraulic Assembly

1. Install hydraulic components to the machine using the hydraulic overhead layouts.

IMPORTANT

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

NOTE: Refer to the PARTS section for fitting type, hose size, and length required.

Hydraulic Assembly

Purging A 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. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. 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.

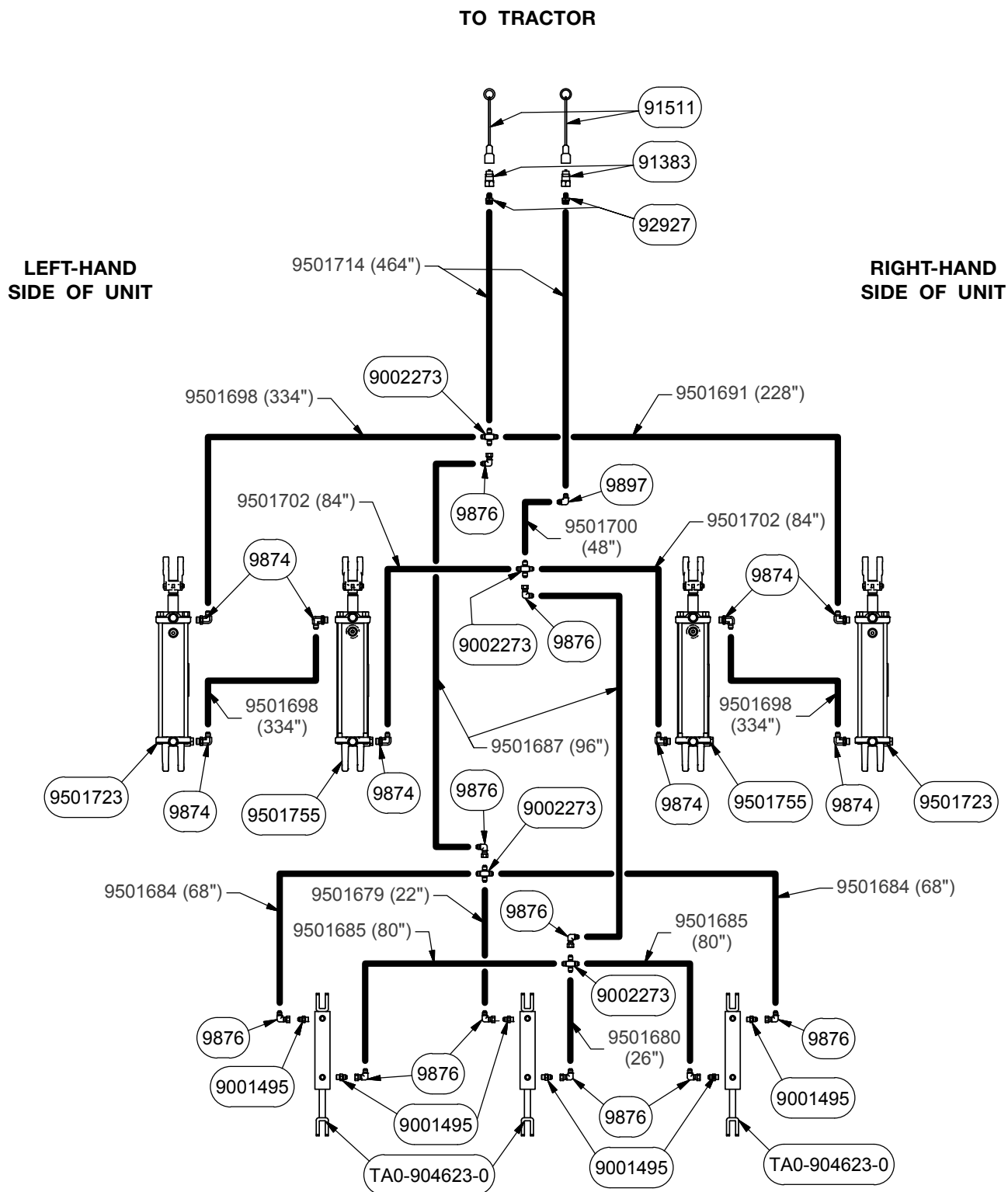
2. Install the velcro hydraulic hose wrap (75884).
3. With the wings unfolded and all hydraulic hoses assembled install hose wrap (75884) to each hinge area. Wrap all hoses passing through the hose retaining ring and center wrap on the ring. Use cable ties (94037) to fasten the hose wrap on the ends and 3"-4" on each side of the ring.
4. Purge air from system as follows:
 - A. Clear all personnel and objects from the area, including where the machine will have full range of motion during the hydraulic movement. Remove transport locks from the machine.
 - B. Pressurize the system and maintain the system at full pressure for at least 5 seconds after the cylinder rods stop moving, or hydraulic motors have completed the required movement. Check that all movements are fully completed.
 - C. Check oil reservoir in the hydraulic power source and refill as needed.
 - D. Pressurize the system again to reverse the motion of step B. Maintain pressure on the system for at least 5 seconds after the cylinder rods stop moving, or hydraulic motors have completed the required movement. Check that all movements are fully completed.
 - E. Check for hydraulic oil leaks using cardboard or wood. Tighten connections according to directions in the Torque Specifications in the MAINTENANCE section.
 - F. Repeat steps in B, C, D, and E 10-12 times.

IMPORTANT

- *Do not fold the wings without the wing support stands attached.*
5. Raise unit and fully fold wings. Check clearances for hoses, etc. Check that wing fold linkage is not under tension when wings are fully folded. Adjust cylinder clevises if necessary to cylinders do not load linkage when wings are fully folded. See operations section for folding procedures.

Hydraulic Assembly (continued)

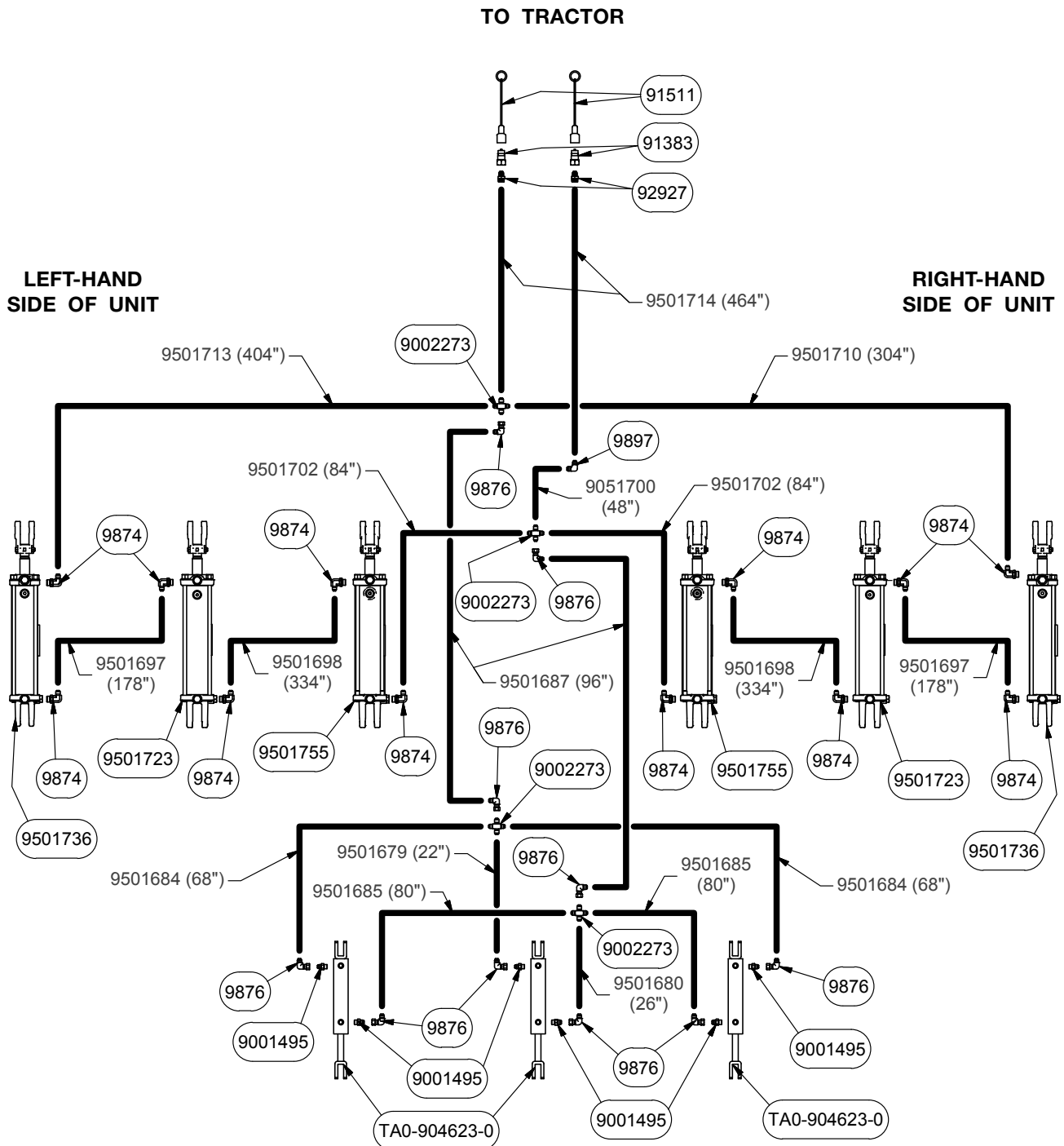
ROLLING HARROW 47-49' MODELS ONLY - RAISE & LOWER UNIT



Vertical-Fold Rolling Harrow 1645/1645D — Set Up

Hydraulic Assembly (continued)

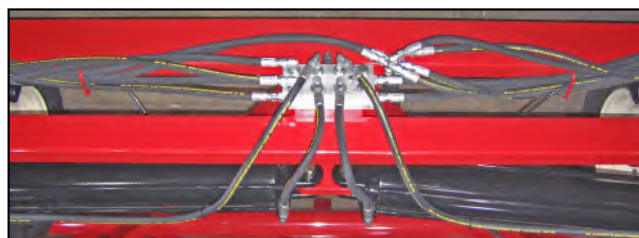
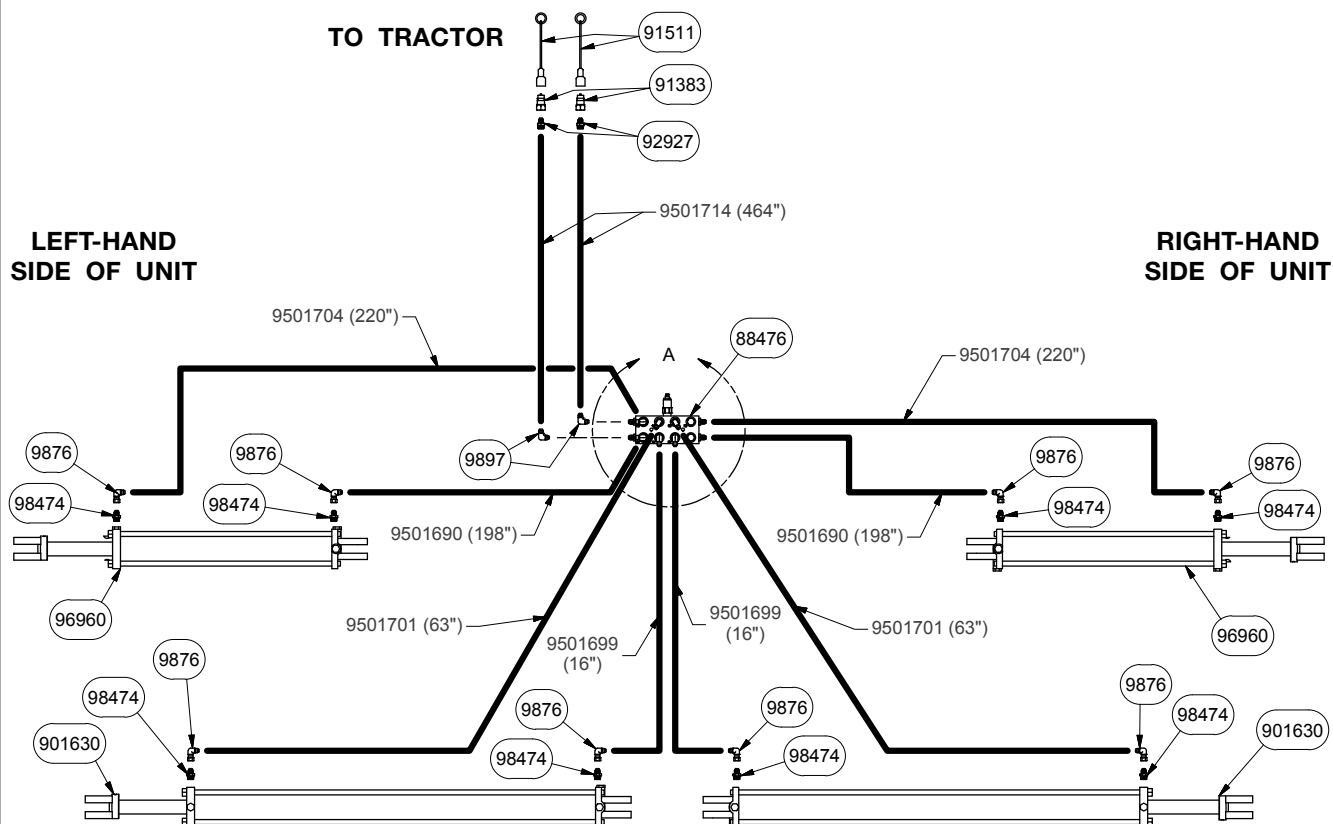
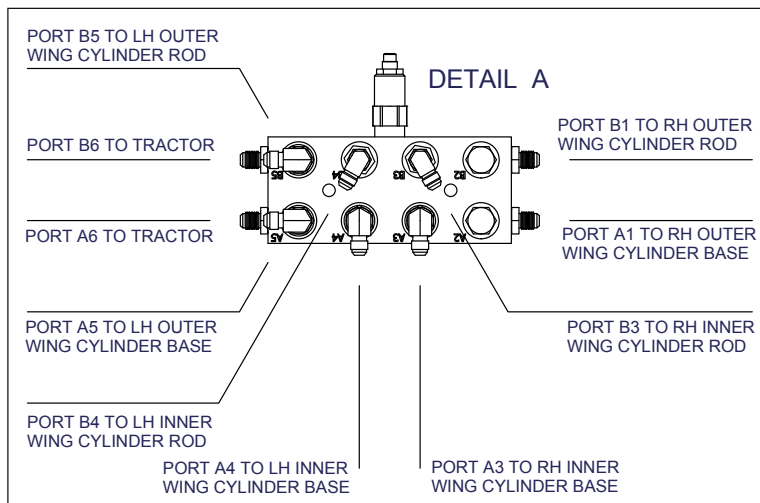
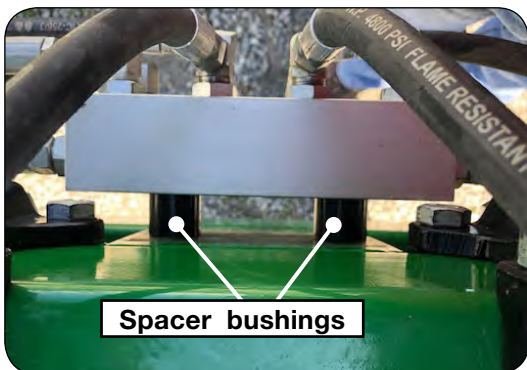
ROLLING HARROW 51-59' MODELS ONLY - RAISE & LOWER UNIT



Hydraulic Assembly (continued)

ROLLING HARROW 47-59' MODELS ONLY - WING FOLD

NOTE: Attach the valve block to the frame with 3/8" bolts through the block and 1 1/8" spacers. Secure with the 3/8" locknuts and torque to 25-28 ft.-lbs.



Drum Scraper Assembly

⚠ WARNING

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

1. Locate scrapers, bar mounts and hardware bags.

NOTE: When tightening the u-bolts for the scrapers, leave the same amount of threads exposed. Over tightening the nuts could result in excessive flex of the scraper arm which may affect the adjustment.

2. Install arm (75564B) to scraper using 1/2"-13UNC x 1 1/2" carriage bolts (9388-104) passing bolt through arm first. (FIG. 2-54)

NOTE: 3' baskets require 2 bar mounts.
 4' baskets require 2 bar mounts.
 5' Baskets require 3 bar mounts.
 6' baskets require 4 bar mounts.

3. Install 1/2" flat washers (9405-088) and 1/2"-13UNC locknuts (9800) on scraper. (FIG. 2-54)

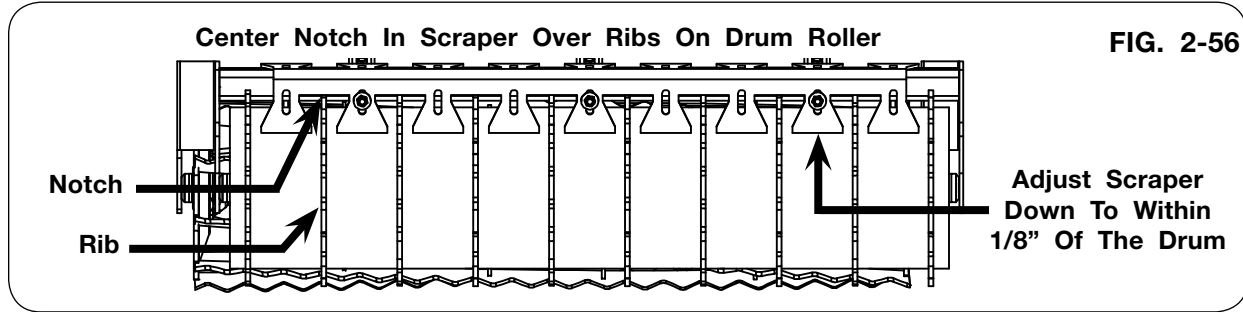
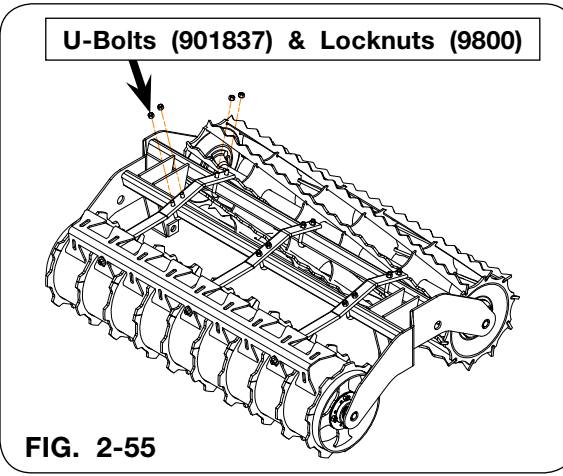
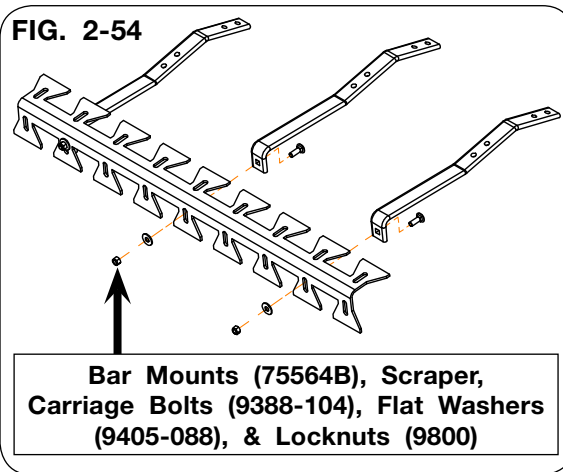
4. Slide arm all the way to the bottom of the scraper slot.

5. Lay bar mounts/scraper assembly on top of basket frame near working position. (FIG. 2-55)

6. Install U-bolts (901837) from bottom of basket frame through arm. (FIG. 2-55)

7. Center notch in scraper over ribs on drums and secure scraper assembly with four 1/2"-13UNC locknuts per bar mount. (FIG. 2-56)

8. Adjust scraper down to within 1/8" of the drum by loosening the locknuts on the carriage bolts, re-position scraper and secure with locknuts. (Some conditions may require the scraper to touch the drum to effectively scrape. Keep contact pressure to a minimum to prevent excessive wear to the scraper or drum.) Torque locknuts, refer to Torque Chart in MAINTENANCE section.

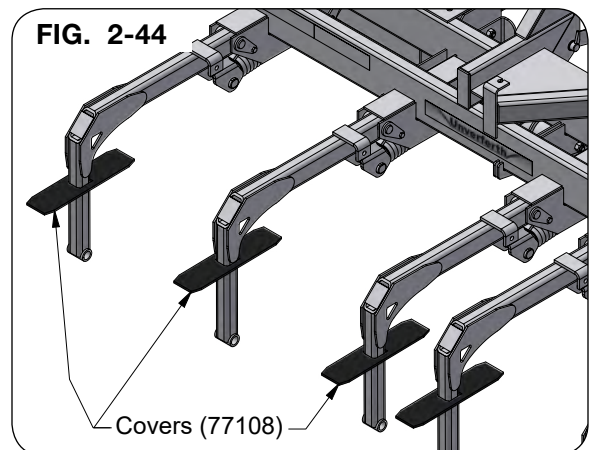


Drum/Basket & Frame Assembly

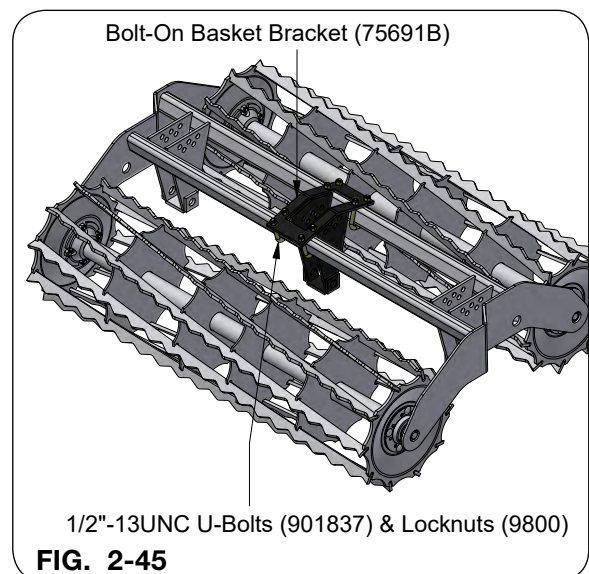
WARNING

- KEEP HANDS CLEAR OF PINCH POINT AREAS.
- EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING THE IMPLEMENT.
- FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 750 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.

1. Connect the Rolling Harrow implement to a tractor. Raise the machine, but keep the wings unfolded. Install the transport locks on the main frame axle cylinders. Block the wings to remain level with the main frame. Lower the machine onto the transport locks and blocking. Relieve the hydraulic oil pressure, see the power unit operator's manual for the proper procedure. Block the wheels on the machine to keep it from moving. Set the vehicle parking brake, shut off the engine and remove the ignition key.
2. Locate in the base parts box/crate (76532B) and wing parts box/crate (76537B 47'-49' machines, 76538B 51'-59' machines) the rubber basket/arm pivot covers (77108). There is a rubber cover for each basket mounting arm on the machine. Install rubber covers over basket mounting arms. See FIG. 2-44.



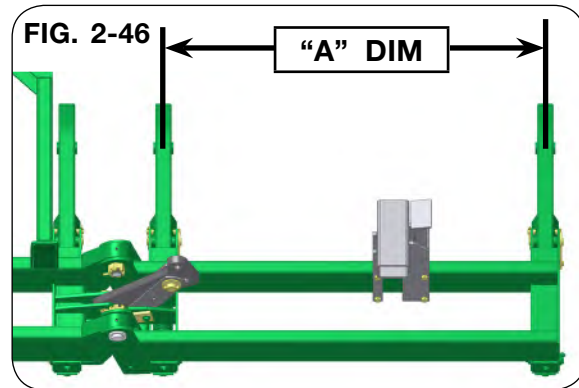
3. Locate in the base parts box/crate (76532B) the three bolt-on basket brackets (75691B) and three parts bags (88596), which includes the following parts per bag: one pin (9500423), four U-bolts (901837), two spiral pin (91144-186) and eight locknuts (9800).
4. Mount the bolt-on brackets loosely to the three main frame basket and frame 5' assemblies with four 1/2"-13UNC U-bolts (901837) and eight 1/2"-13UNC locknuts (9800) (FIG. 2-45).



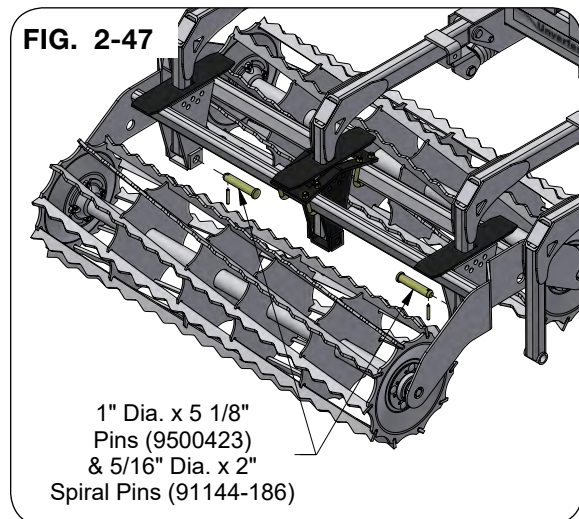
Drum/Basket & Frame Assembly (continued)

5. Locate in the base parts box and wing parts box the 1" dia. x 5 1/8" basket mounting pins (9500423) and 5/16" dia. x 2" spiral pins (91144-186).
6. Using a safe lifting device rated at a minimum of 600 lbs., lift basket assembly into position on the mounting arms. Identify baskets and mating wings using Table 3-2 and FIG. 2-46. Position the aggressive basket forward unless instructed otherwise.

"A" DIM. (FIG. 2-46)	BASKET WIDTH	FRAME WIDTH
22"	3'	35"
34"	4'	47"
46"	5'	59"
58"	6'	71"

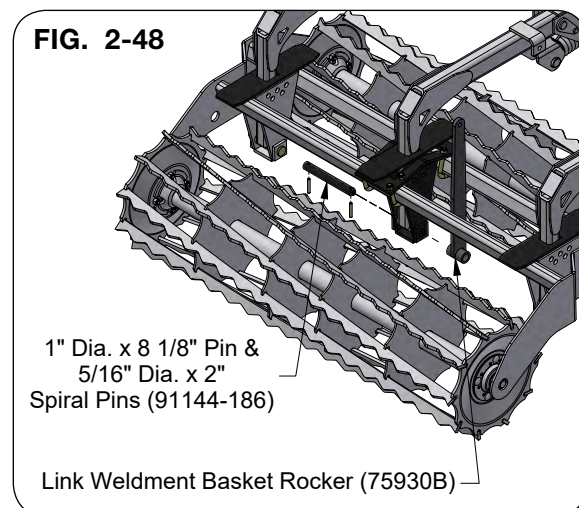


7. Secure the basket to the basket mounting arms with 1" Dia. x 5 1/8" pins (9500423) and 5/16" Dia. x 2" spiral pins (91144-186). (FIG. 2-47)



8. Secure the bolt-on basket bracket (75691B) to the basket mounting arms with 1" Dia. x 8 1/8" pins, 5/16" Dia. x 2" spiral pins (91144-186) and link weldment basket rockers (75930B). See FIG. 2-48,

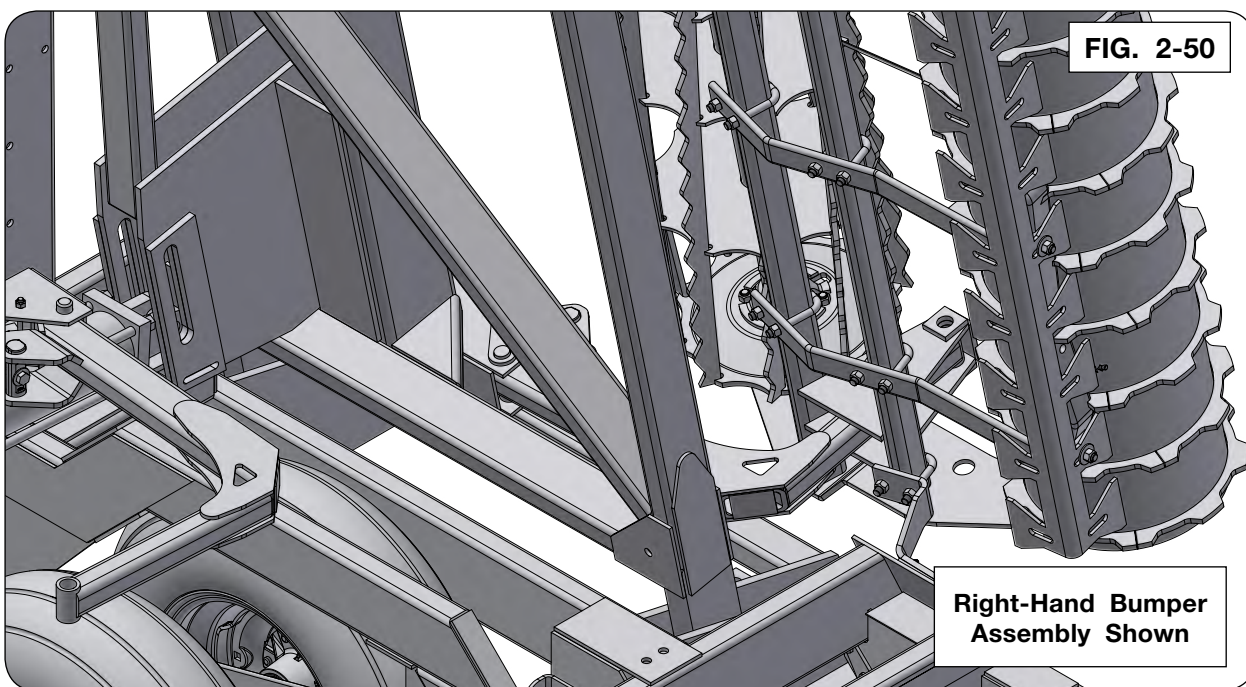
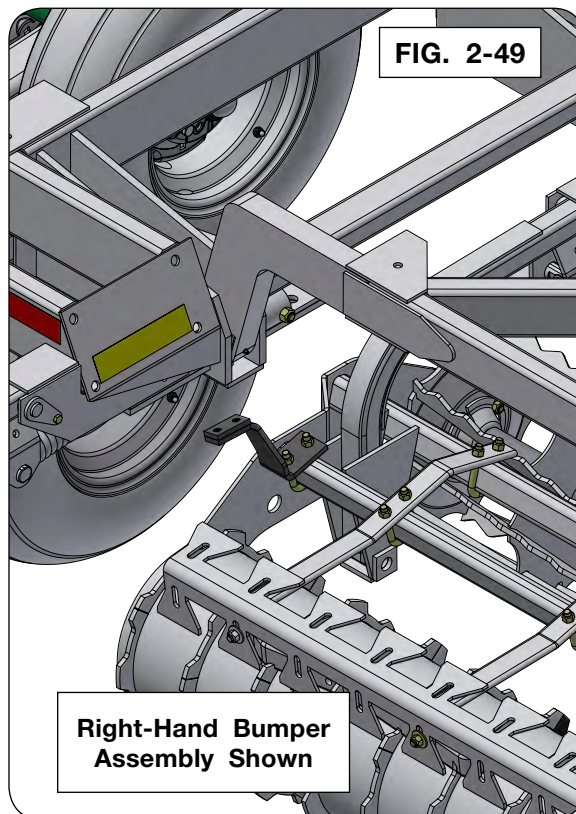
9. Repeat for each basket assembly.



Drum/Basket & Frame Assembly (continued)

Bumper Assembly

1. Attach the left-hand and right-hand bumper assemblies to the inner wing basket frame assembly as shown in FIG. 2-49 & FIG. 2-50.



Optional Pilot Check Valve (PART NUMBER 91240)

This option is for use when teeing the Rolling Harrow hydraulics to the primary tillage tools having rephasing hydraulic cylinders. This option prevents the ROLLING HARROW from drifting down from the transport position.

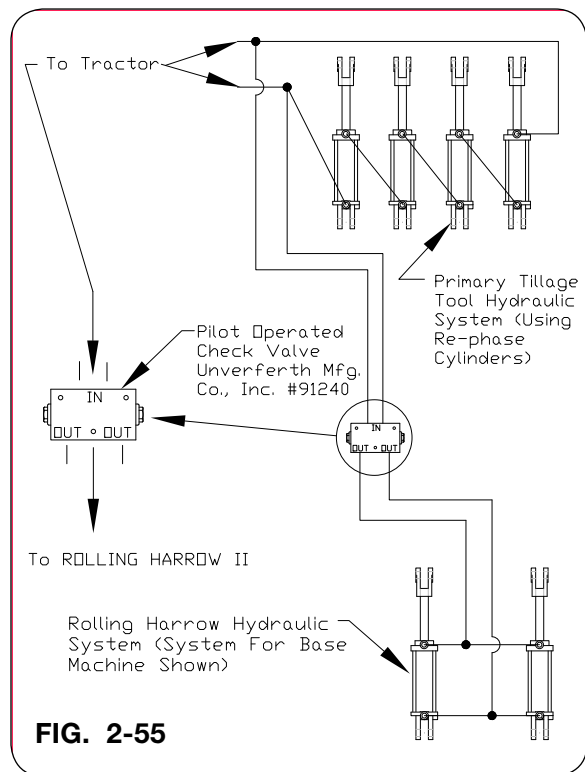
⚠ WARNING

- **HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.**
- **HIGH-PRESSURE FLUIDS CAN PENETRATE THE SKIN AND CAUSE SERIOUS INJURY OR DEATH. LEAKS OF HIGH-PRESSURE FLUIDS MAY NOT BE VISIBLE. USE CARDBOARD OR WOOD TO DETECT LEAKS IN THE HYDRAULIC SYSTEM. SEEK MEDICAL TREATMENT IMMEDIATELY IF INJURED BY HIGH-PRESSURE FLUIDS.**
- **RELIEVE HYDRAULIC PRESSURE BEFORE SERVICING HYDRAULIC SYSTEM. SEE TRACTOR OPERATOR'S MANUALS FOR PROPER PROCEDURE.**

Depressurize the hydraulic systems of the primary tillage tool and the ROLLING HARROW implement before beginning valve installation.

Install the pilot operated check valve onto the rear of the primary tillage tool. Connections from the rephase system must be installed into the ports of the valve that are closest together. Connections to the ROLLING HARROW system go into the other two ports.

Purge hydraulic system before use. Refer to primary tillage tool manual to purge that system. Refer to Purging A Hydraulic System in this section.



Transport Marking & Light Kit (88278B)

Before installing this kit, lower machine completely to the ground and block securely. Set parking brake on tractor, release any pressure in hydraulic system, and shut tractor engine off.

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.

WARNING

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

Some frames may not have holes pre-drilled to receive light brackets. Customer must drill these holes per dimensions in these instructions.

NOTE: On some machines safety decals may be covered by light brackets. Contact your Unverferth dealer to order a new decal, and replace it on the machine in a visible location near the old decal in order to comply with ASABE standards.

Front, rear, left, and right are determined from the tractor operator's seat, facing forward.

Lights

1. Secure red lamp (9003877) and guard (73338B) to bracket, with red lens facing to the rear, using 1/2"-13UNC nut provided with lamp. Be careful not to overtighten and damage light. Repeat procedure on opposite side of machine.



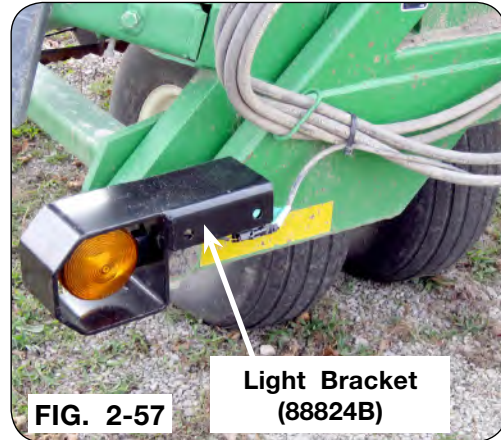
Transport Marking & Light Kit (88278B) (continued)

NOTE: Make certain the lights are clearly visible and no hoses or other components obstruct the view of the any lights from the rear of the machine and the amber lights from the front of the machine.

2. Secure light brackets (88824B) to the front, left-hand and right-hand side of the machine using 1/2"-13UNC x 1 1/4" capscrews (9390-100), and 1/2"-13UNC locknuts (9800) as shown in FIG. 2-57.

NOTE: Amber lens must always be to the outside of implement.

3. Secure double-sided amber lamp (9003876) to the light bracket (88042B) using 1/2"-13UNC nut provided, be sure not to over-tighten (FIG. 2-57). Repeat procedure on opposite side of machine.



Transport Markings

NOTE: Reflectors are as important as light locations in order to comply with ASABE standards. These reflectors measure 2" x 9". Other reflectors will NOT comply with ASABE standards.

1. Inspect your Rolling Harrow implement for 2" x 9" amber (9003127), red (9003126), and fluorescent orange (9003125) transport markings.

Be sure reflectors are in locations shown in parts section of this manual.

These reflectors are required to comply with ASABE standards. If you do not meet the ASABE standard, contact your UNVERFERTH dealer to order reflectors needed.

Transport Marking & Light Kit (88278B) (continued)

Wiring Harness

When installing the harnesses, do not cut or break the wire coverings. Tie harnesses away from moving parts, such as cylinders and folding links. The wiring harnesses consist of four pieces, the main harness, the cross harness, and two extension harnesses.

The main harness has a 7-pin (round) plug conforming to SAE standards that connects to tractor or other towing vehicle. If your tractor or other towing vehicle does not have the mating socket connector, contact a respective dealer.

1. Route the main harness (22792) along the hitch frame. Allow sufficient slack at the hitch/tractor end for the machine to turn (approximately 4 ft.).
2. Attach the wiring extension (86467) to the main harness (22792).

The cross harness (22790) connects to the 6 pin connector of the main harness, both red taillights, and the extension harnesses.

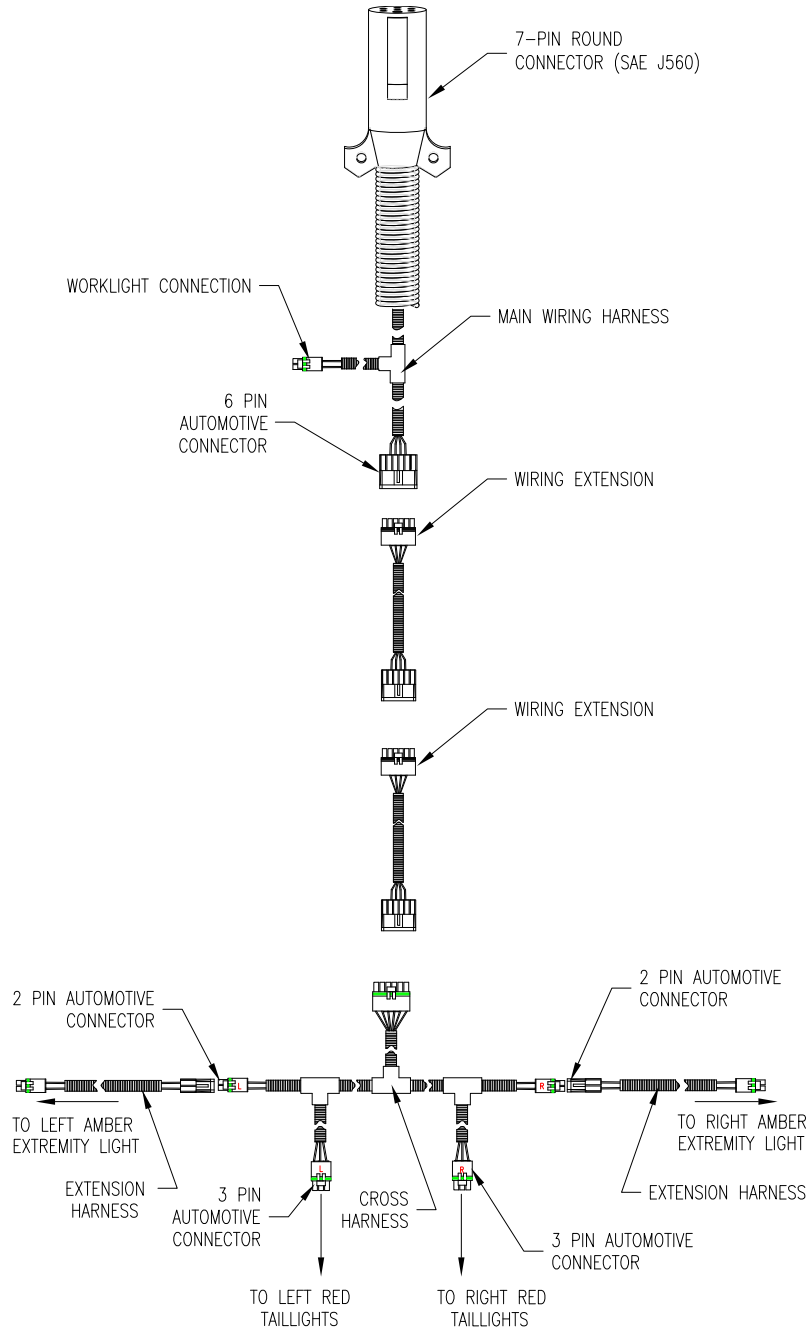
3. Route the legs labeled “R” to the right side of machine, and the legs labeled “L” to the left side.
4. Connect the three pin connectors on the cross harness to the 3 pin connectors on the red taillights.
5. Coil up any excess and secure harness to frame with cable ties.

The extension harnesses (86700) connect the two pin connector of the cross harness to the two pin connectors on the amber extremity lights.

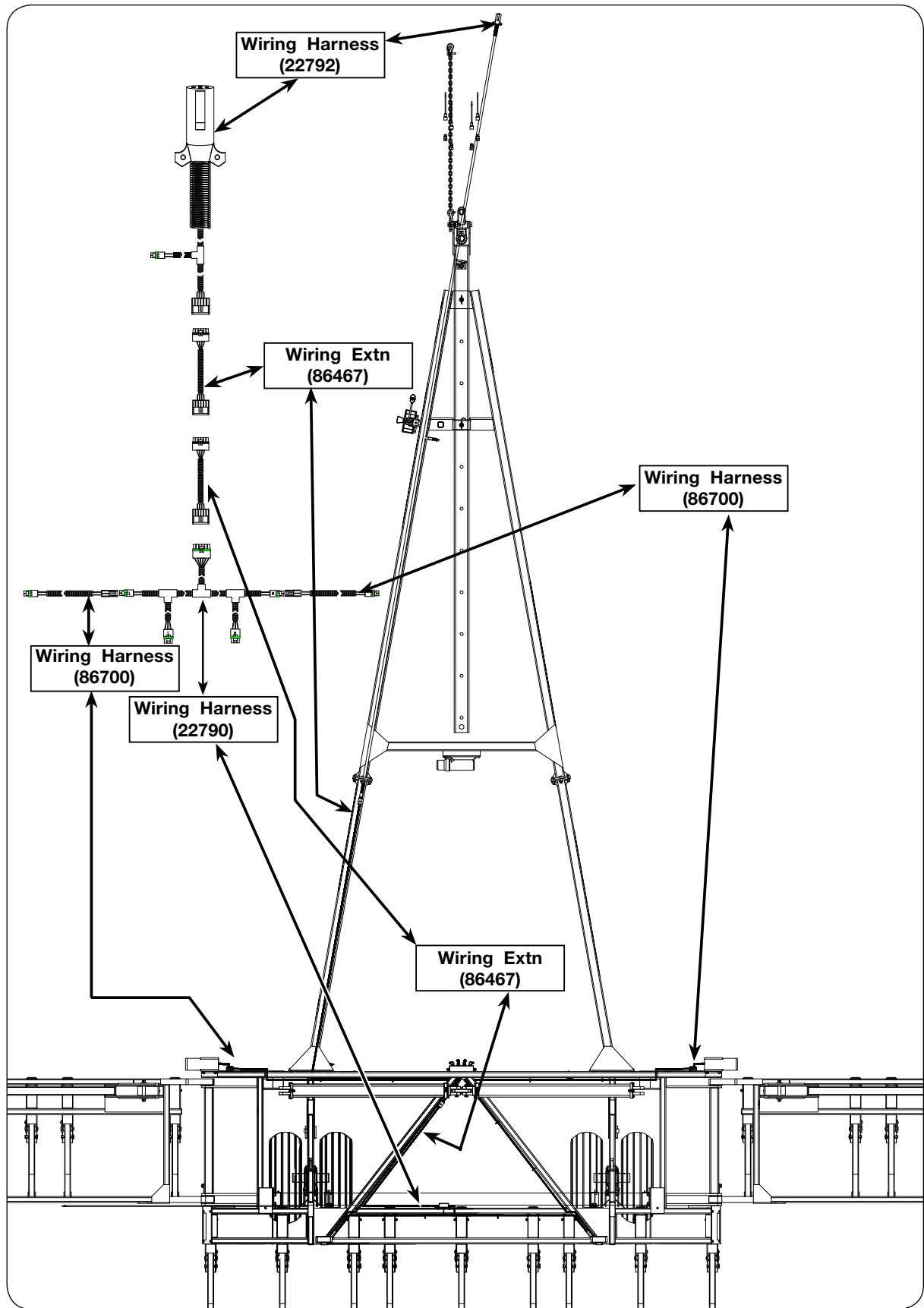
6. Route extension harnesses along the main frame and connect it to the amber extremity lights.
7. Tie the extension harnesses to the extremity light mounting bracket through the extra hole in the light bracket.
8. Coil up any excess and tie the remainder to the main frame with cable ties. Be sure to avoid contact with the fold cylinders, fold linkage, or any other moving parts.

Transport Marking & Light Kit (88278B) (continued)

Wiring Harness (continue)



Wiring Harness Layout



Notes

SECTION III

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General Operation Information

WARNING

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

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

Preparing Tractor

Follow these recommendations if the Rolling Harrow implement will be connected directly to a 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.

Be sure tractor drawbar has sufficient capacity to operate the Rolling Harrow implement.

Adjust the tractor drawbar vertically so the top side of the bar is approximately 17 inches from the ground, and lock on centerline of tractor.

Secure the tractor 3-Point linkage so that it does not swing into the tractor tires or onto the hoses.

Preparing Primary Tillage Tool

Follow these recommendations if the Rolling Harrow implement will be connected to another tillage tool.

Refer to the units “Operator’s Manual” for specifications, setup, maintenance, and operating procedures of this unit.

Confirm that the rear hitch of the primary tillage tool has sufficient capacity to operate the Rolling Harrow.

Be sure the rear hitch is securely attached to the primary tillage tool frame. Check hitch every day of use for loose, broken, or worn components.

Rear Hitch Height On Primary Tillage Tool

For maximum performance and adjustability of your ROLLING HARROW soil conditioner, it is recommended the rear hitch height of the primary tillage tool (FIG. 3-1) be approximately 16 to 24 inches (20” nominal) from the ground line when in the field.

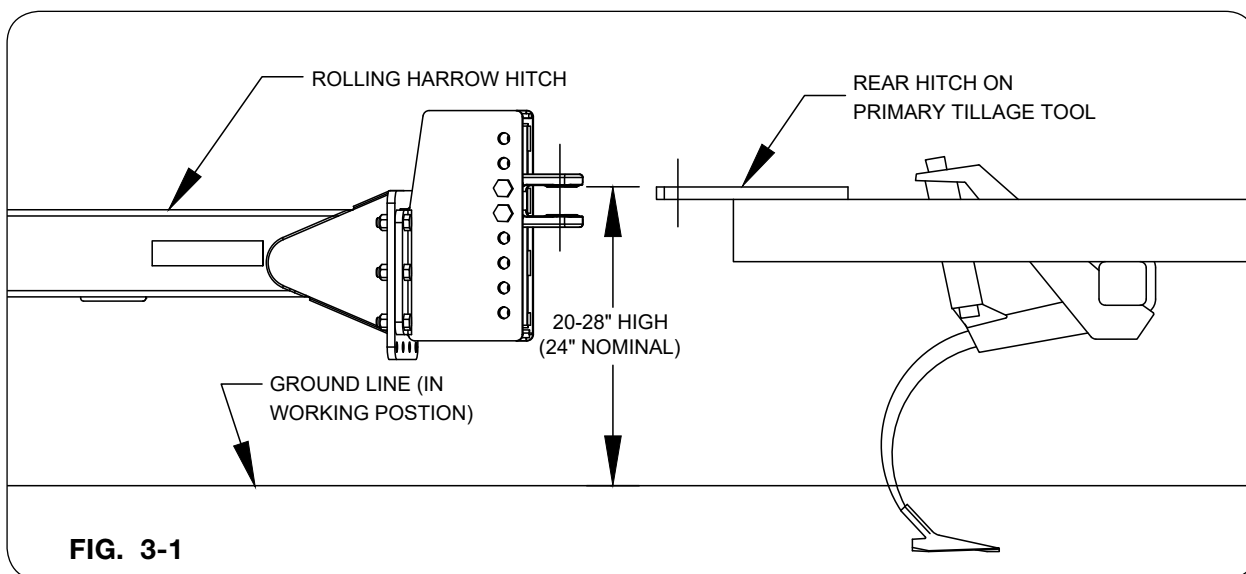


FIG. 3-1

Preparing Rolling Harrow

Perform the service checks as outlined below. Repair or replace any damaged or worn parts before operating.

Tires and Wheels

Check tire pressure, see “MAINTENANCE” section for recommended air pressure. Be sure tire pressure is equal in all tires.



CAUTION

- **IMPROPERLY TORQUED WHEEL NUTS/BOLTS CAN CAUSE A LOSS OF IMPLEMENT CONTROL AND MACHINE DAMAGE. WHEEL NUTS/BOLTS MUST BE CHECKED REGULARLY. SEE TORQUE PAGE IN THE "MAINTENANCE" SECTION FOR PROPER WHEEL NUT/BOLT SPECIFICATIONS. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.**

For questions regarding new tire warranty, please contact your local original equipment tire dealer. Used tires carry no warranty. Tire manufacturers' phone numbers and web sites are listed in the “MAINTENANCE” Section of this manual for your convenience.

Pins

Before going to the field, check that all pins are in place and are in good condition. Replace any worn, damaged, or missing pins.

Check that locking hardware for pins are in place and tight.

Leveler Bar Mounting Arms

Frame assemblies are shipped with mounting arms for leveler bars down. If the machine will be operated without leveler bars, the arms should be folded up for best performance. See “Leveler Bar Lock-Up” in this section for fold procedures.

Hydraulics

Check routing of all hydraulic hoses. Hoses should not be kinked, twisted, or rubbing against sharp edges. Hoses should be secure with tie straps.

Check hoses and fittings for hydraulic leaks. Tighten or replace as required.

Lubrication

Lubricate unit as outlined in MAINTENANCE section.

Attaching Rolling Harrow To Primary Tillage Tool or Tractor

Before attaching the ROLLING HARROW implement to your primary tillage tool or tractor, adjust the extended length of the hitch tube to allow adequate turning clearance between the two machines when turning on the ends.

To lengthen or shorten any tongue on a Standard A-Frame:

1. Unfold the machine and block the wheels from moving forward or backward.
2. Remove the two vertical hitch pins that retain the tongue to the A-Frame.
3. Drive the machine forward to extend or backward to shorten until the desired holes align between the tongue and A-Frame.
4. Reinstall both hitch pins between the tongue and A-Frame. Do not operate with less than two hitch pins installed between the tongue and A-Frame.

Attaching Rolling Harrow To Primary Tillage Tool or Tractor

Hydraulic Hook-Up

The unit's hydraulic system may be connected to a 2-way control valve on the back of a tractor or to an existing circuit on the primary tillage tool.

⚠ WARNING

- RELIEVE THE HYDRAULIC SYSTEM OF ALL PRESSURE BEFORE ADJUSTING OR SERVICING. SEE THE HYDRAULIC POWER UNIT OPERATOR'S MANUAL FOR PROPER PROCEDURES.
- HYDRAULIC SYSTEM MUST BE PURGED OF AIR BEFORE OPERATING TO PREVENT SERIOUS INJURY OR DEATH.

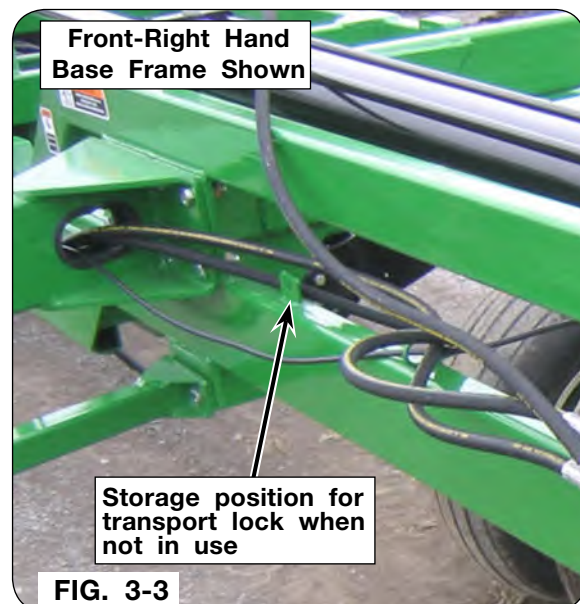
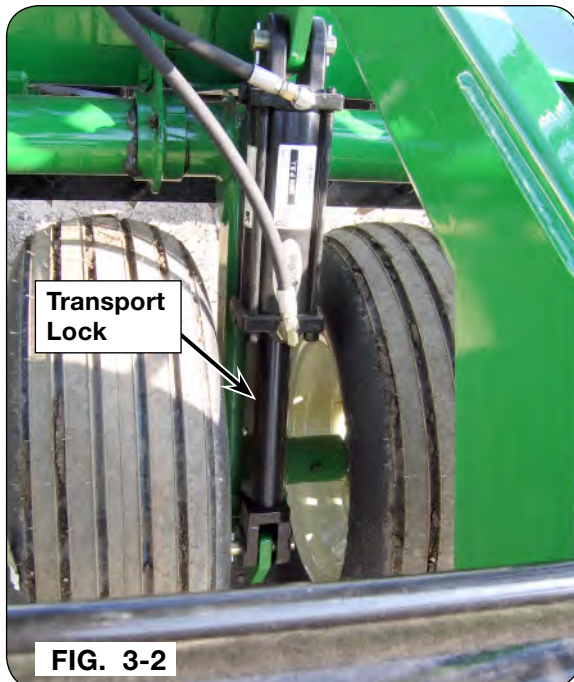
NOTE: Refer to SETUP section for purging process.

NOTE: Refer to MAINTENANCE section when checking hydraulic circuit operation.

HYDRAULIC HOOK-UP INTO A CIRCUIT USING REPHASE CYLINDERS:

If the unit's hydraulic system is connected to an existing hydraulic circuit using rephase cylinders on the primary tillage tool, Unverferth Manufacturing recommends installing the optional #91240 pilot check valve between the two hydraulic systems. This valve prevents the unit's lift system from bypassing oil through the rephase system and leaking down from the transport position. See your Unverferth dealer to order this valve. See SETUP section for hydraulic hook-up.

Raise unit into transport position and install cylinder transport locks (FIG. 3-2).



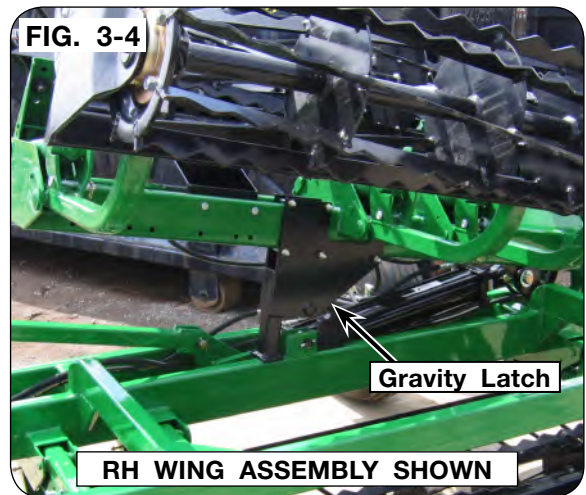
Unfolding The Wings



- **ELECTROCUTION WILL CAUSE SERIOUS INJURY OR DEATH. ELECTROCUTION CAN OCCUR WITHOUT DIRECT CONTACT. KEEP AWAY FROM ALL UTILITY LINES AND DEVICES.**

1. Keep machine raised.
2. Fully unfold the inner wings. if the outer wings are still locked by gravity latches, reverse the oil flow through the hydraulic system. Gravity latches should release. Stop before the wings start to fold.
3. Finish unfolding the outer wings.

NOTE: Gravity latch should automatically engage when wings fold-up.



Transport Chain

CAUTION

- ALWAYS USE TRANSPORT CHAIN WHEN TRANSPORTING IMPLEMENTS. FAILURE TO USE CHAIN COULD CAUSE PERSONAL INJURY OR DAMAGE IF IMPLEMENTS BECOME DISENGAGED.

FIG. 3-5 shown with hook-up between tractor and Rolling Harrow implement. Always use intermediate support when connecting the implement directly to a tractor. DO NOT use the intermediate support as the chain attaching point. FIG. 3-6 shows how the transport chain must be installed between primary tillage tool and ROLLING HARROW.

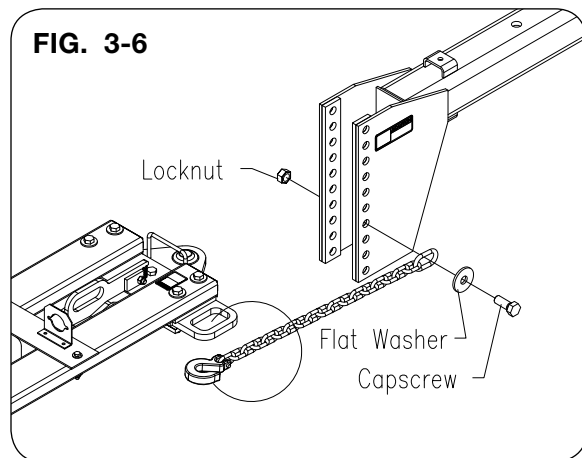
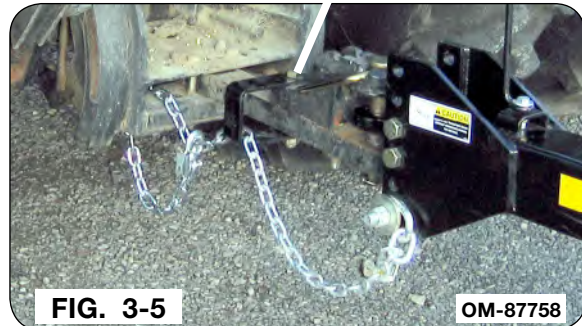
The transport chain should have a minimum rating equal to the gross weight of implement and all attachments. Use only ASABE approved chains. Allow no more slack in chain than necessary to permit turning.

CAUTION

- REPLACE TRANSPORT CHAIN IF ANY LINK OR END FITTING IS BROKEN, STRETCHED, OR DAMAGED. DO NOT WELD TRANSPORT CHAIN.

IMPORTANT

- FIG. 3-6 is a typical rear hitch representation. Actual rear hitch may vary.



Transporting

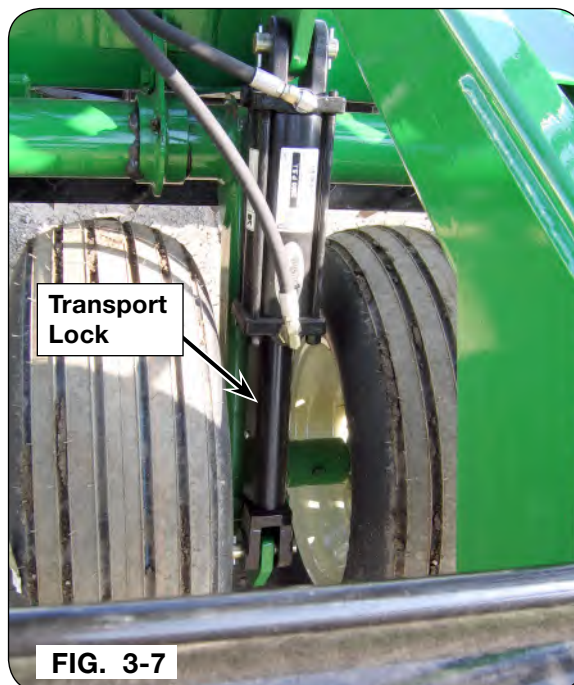
WARNING

- THE ROLLING HARROW IMPLEMENT WILL INCREASE THE OVERALL LENGTH OF THE PRIMARY TILLAGE TOOL. USE EXTREME CAUTION WHEN TURNING TO AVOID BYSTANDERS, OBSTACLES, ETC. REDUCE GROUND SPEEDS TO AVOID DAMAGE TO ROLLING HARROW OR PRIMARY TILLAGE TOOL.

Before unit is transported, be sure the jackstand is in the “Transport Position” see “Jack Assembly” in SETUP section.

CAUTION

- INSTALL HYDRAULIC CYLINDER TRANSPORT LOCKS BEFORE TRANSPORTING (FIG. 3-7).



Comply with all state and local laws governing highway safety and regulations when moving machinery on public roads.

Be sure SMV Emblem is in place and clearly visible on the rear of the implement. See SMV Emblem in SETUP section.

CAUTION

- USE APPROVED ACCESSORY LIGHTS AND REFLECTORS WHEN TRANSPORTING AT NIGHT, DURING PERIODS OF POOR VISIBILITY AND AS REQUIRED BY LAW.

Check with local authorities to insure lights and reflectors comply with local standards.

Transporting (continued)

For safe transporting of these implements, 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.

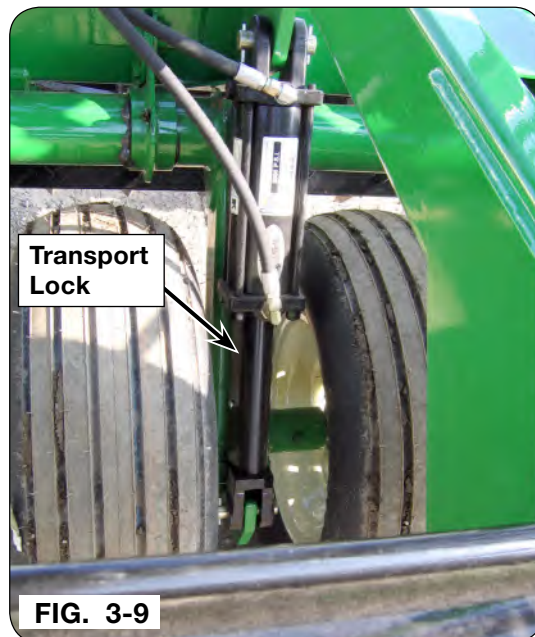
Retroreflective and fluorescent tapes are provided with this implement. Red reflective tape should be in place on the back and outermost extremity of the rear frame tube on each side. Orange fluorescent should be next to red. Amber reflectors are on side of hitch tube and hitch frame. Be sure these reflectors are in place and clearly visible.

This product may be equipped with brake light functionality which will activate the high intensity mode of the red tail lights when braking. The "RED" terminal of your tractor's electrical socket may or may not energize when the brakes are applied. Check your tractor's owner's manual. If your tractor does not energize the "RED" terminal when the brakes are applied, contact your dealer.

Unhitching

WARNING

- RISING OR FALLING TONGUE CAN CAUSE SERIOUS INJURY OR DEATH. USE JACK TO SUPPORT IMPLEMENT BEFORE REMOVING HITCH PIN.
- IF UNIT IS TO BE UNHOOKED IN THE TRANSPORT POSITION, INSTALL HYDRAULIC CYLINDER TRANSPORT LOCKS (FIG. 3-9) AND LOWER JACKSTAND TO GROUND BEFORE UNHOOKING UNIT.



Refer to FIG. 3-10 for positioning of jackstand into “Parked Position”.

CAUTION

- KEEP HANDS AND FEET AWAY FROM JACKSTAND WHEN LOWERING.

When parking the ROLLING HARROW implement onto the jack stand, lower jack down into position and turn handle to transfer the weight of the unit to the jack.

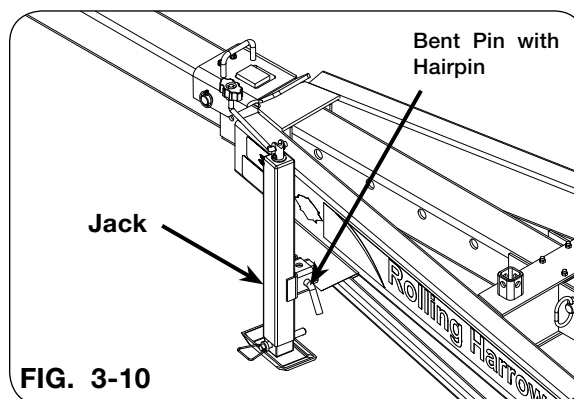
Remove hitch pin.

WARNING

- ALWAYS RELIEVE HYDRAULIC SYSTEM PRESSURE BEFORE DISCONNECTING HOSES FROM TRACTOR OR SERVICING HYDRAULIC SYSTEM. SEE TRACTOR OPERATOR'S MANUAL FOR PROPER PROCEDURES.

Disconnect the hydraulic hoses. Install dust covers over the hose plugs and outlets.

Before unhitching the primary tillage tool, refer to the unit's operator's manual for unhitching procedures.



Field Adjustments

Rolling Harrow Basket

The Rolling Harrow basket is designed to provide an excellent seedbed when used with your primary tillage tool.

For maximum field performance, the Rolling Harrow implement should be run with the transport wheels in the “Raised” position. This allows maximum transfer of weight to the baskets, thus providing for better leveling and ground working action by allowing the unit to closely follow the ground contour.

Basket Pitch Adjustment

Standard on 1645D Models; Optional on 1645 Models

In some conditions, it may be desirable to limit the float of the basket frame. Only limit the float sufficiently to improve performance. Excessive float limitation may damage the machine.

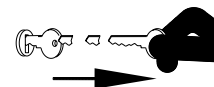
WARNING

- **WHEN WORKING AROUND THE MACHINE, BE SURE IT IS SECURELY BLOCKED; FAILURE TO DO SO COULD RESULT IN TIPPING OR MOVEMENT OF MACHINE, CAUSING SEVERE BODILY HARM.**
- **EYE PROTECTION AND OTHER APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN WHILE SERVICING IMPLEMENT.**
- **KEEP HANDS CLEAR OF PINCH POINT AREAS.**
- **FALLING OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT WORK UNDER THE MACHINE AT ANY TIME WHILE BEING HOISTED. BE SURE ALL LIFTING DEVICES AND SUPPORTS ARE RATED FOR THE LOADS BEING HOISTED. THESE ASSEMBLY INSTRUCTIONS WILL REQUIRE SAFE LIFTING DEVICES UP TO 100 LBS. SPECIFIC LOAD RATINGS FOR INDIVIDUAL LOADS WILL BE GIVEN AT THE APPROPRIATE TIME IN THE INSTRUCTIONS.**

1. Park the unit on a firm, level surface. Unfold the wings into the field working position. Set the vehicle parking brake.
2. Raise the machine off the ground and insert the transport cylinder locks (73130B) with clevis pin (9828) and hairpin cotter (9514). Lower and rest the machine on the transport cylinder stops. Block the wheels on the machine to keep it from moving.



3. Shut off the engine and remove the ignition key.



Basket Pitch Adjustment (continued)

Standard on 1645D Models; Optional on 1645 Models

4. Install pin and spacer in the second hole from the rear with the plate facing the mounting arm. Reposition into alternate holes as necessary for field conditions.

NOTE: Place the pins and spacers in the storage box when not in use.

IMPORTANT

- Only install the pin and spacer on the rear side of the basket arm. Installation of the pins on the front side of the arm could result in damage to the basket, frame, or other components

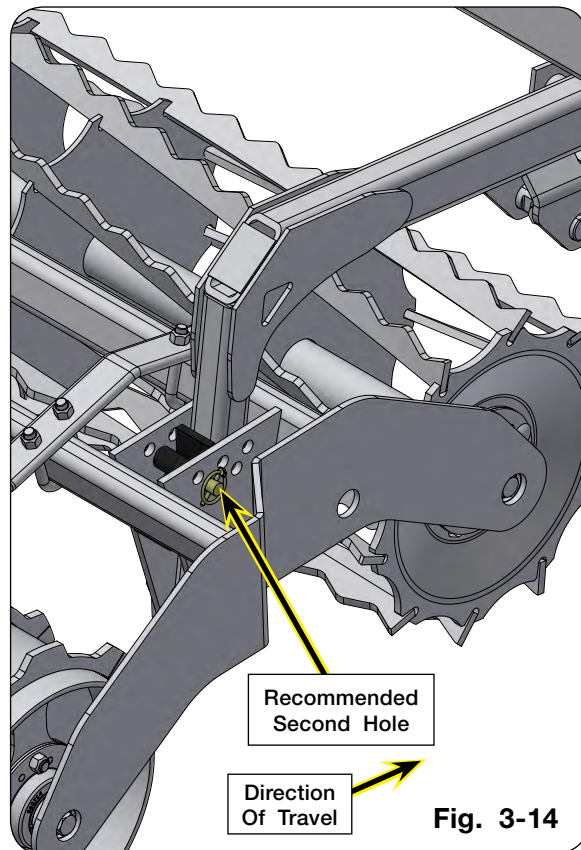


Fig. 3-14

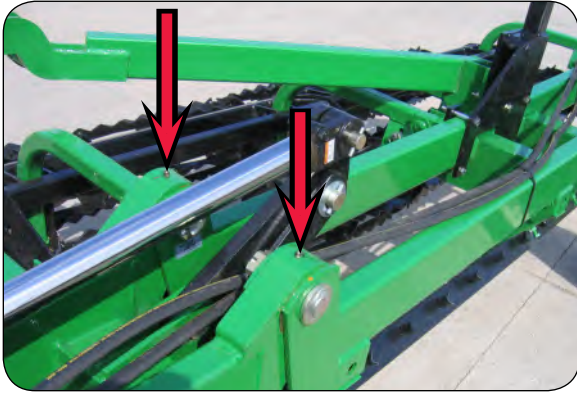
SECTION IV

Maintenance

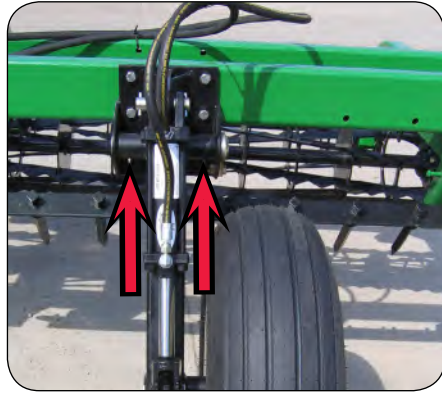
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Lubrication

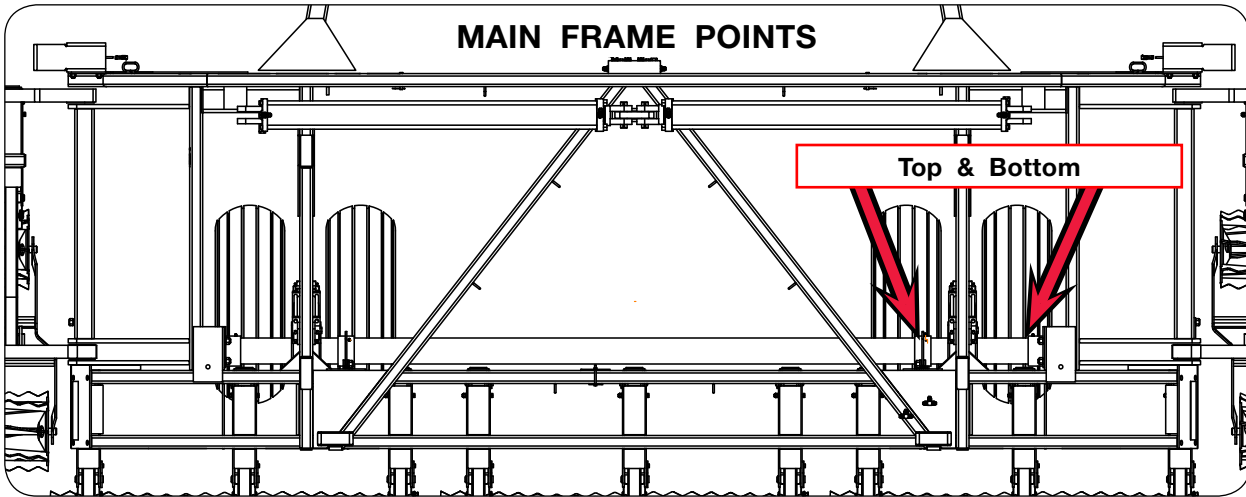
INNER WING TO OUTER WING POINTS



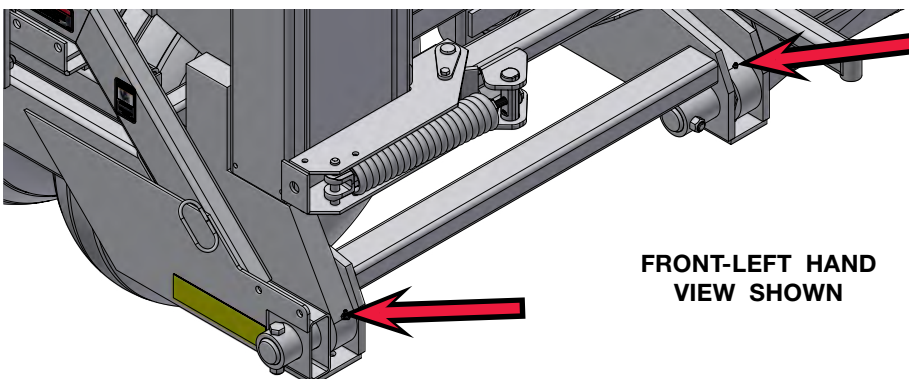
WING TRANSPORT WHEEL POINTS



MAIN FRAME POINTS



MAIN FRAME TO INNER WING POINTS



**FRONT-LEFT HAND
VIEW SHOWN**

Hydraulic System

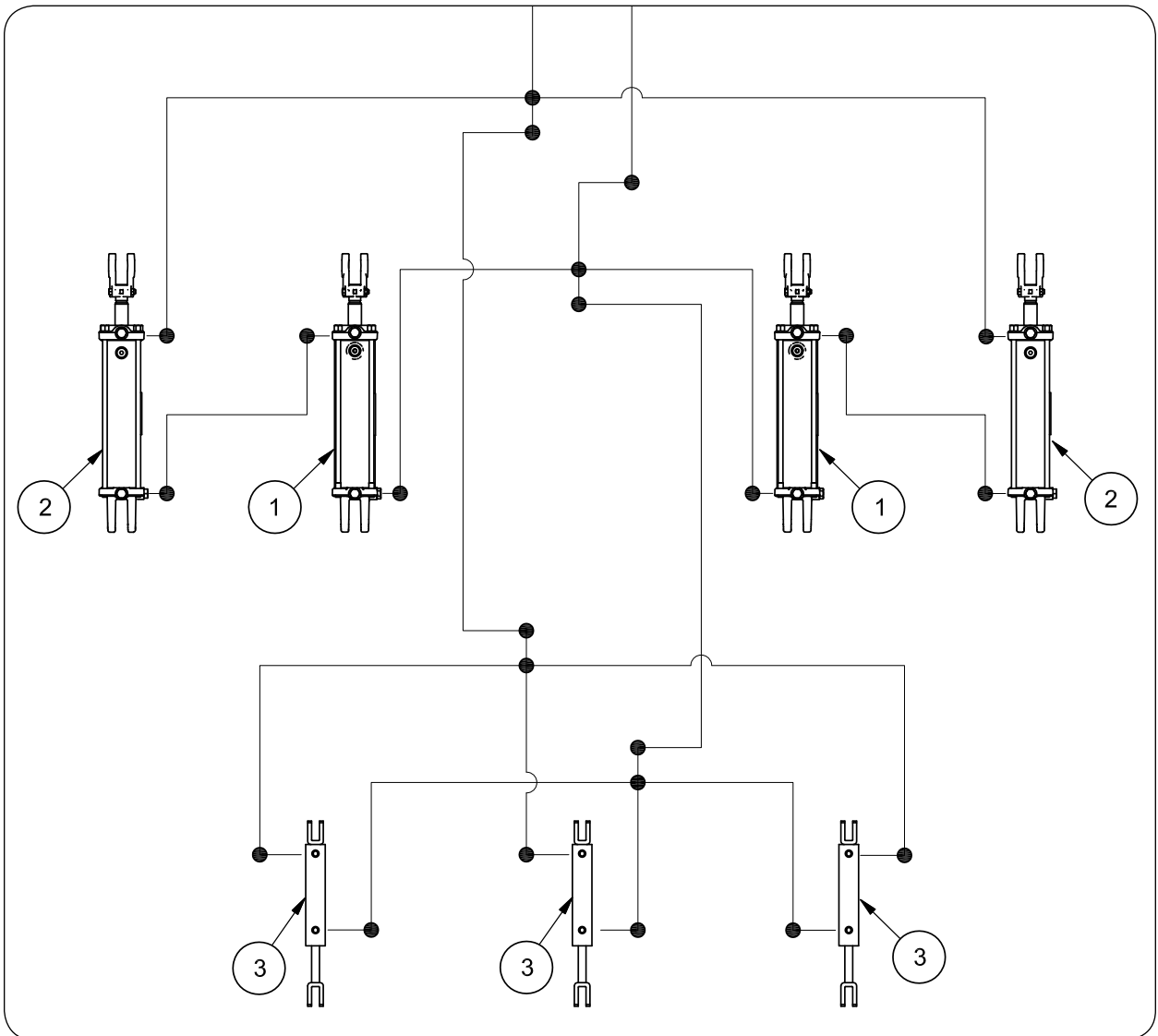
NOTE: For plumbing diagram and hydraulic components, refer to “Hydraulic Layout”.

OPERATION

All cylinders are double action cylinders. Standard set-up is a dual hydraulic system that allows raising and lowering to be completely independent of the wings folding and unfolding.

All hoses, cylinders, and fittings are rated for a minimum of 3000PSI. Any replacement components must be rated for 3000PSI minimum.

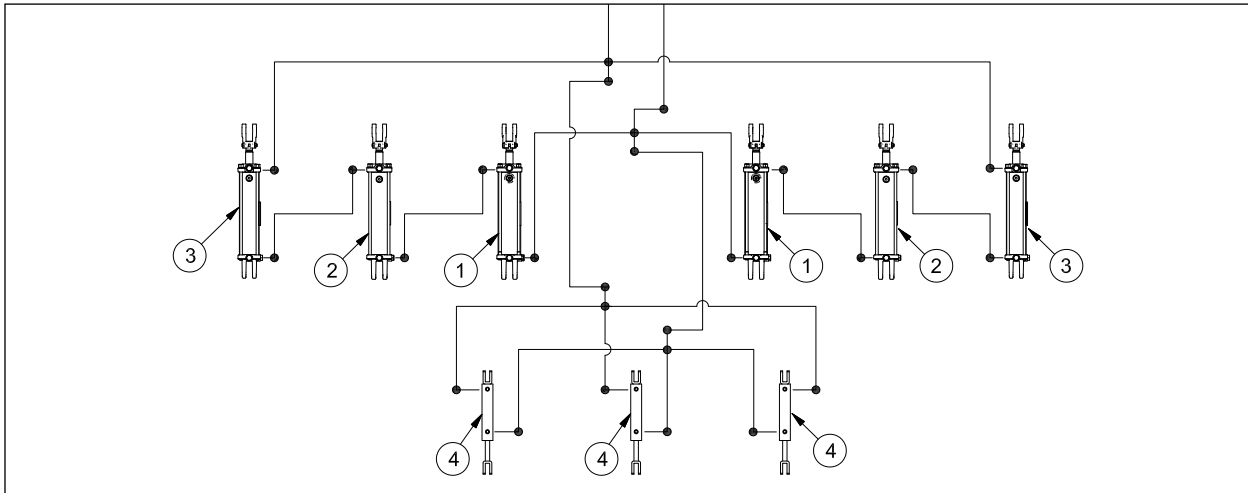
Raise & Lower Hydraulic System For 47-49’ Models



ITEM	DESCRIPTION	QTY	NOTES
1	Base Wheel Cylinder	2	Cylinder 3 1/2 x 12
2	Wing Wheel Cylinder	2	Cylinder 3 1/4 x 12
3	Rocker Cylinder	3	Cylinder 1 1/2 x 6

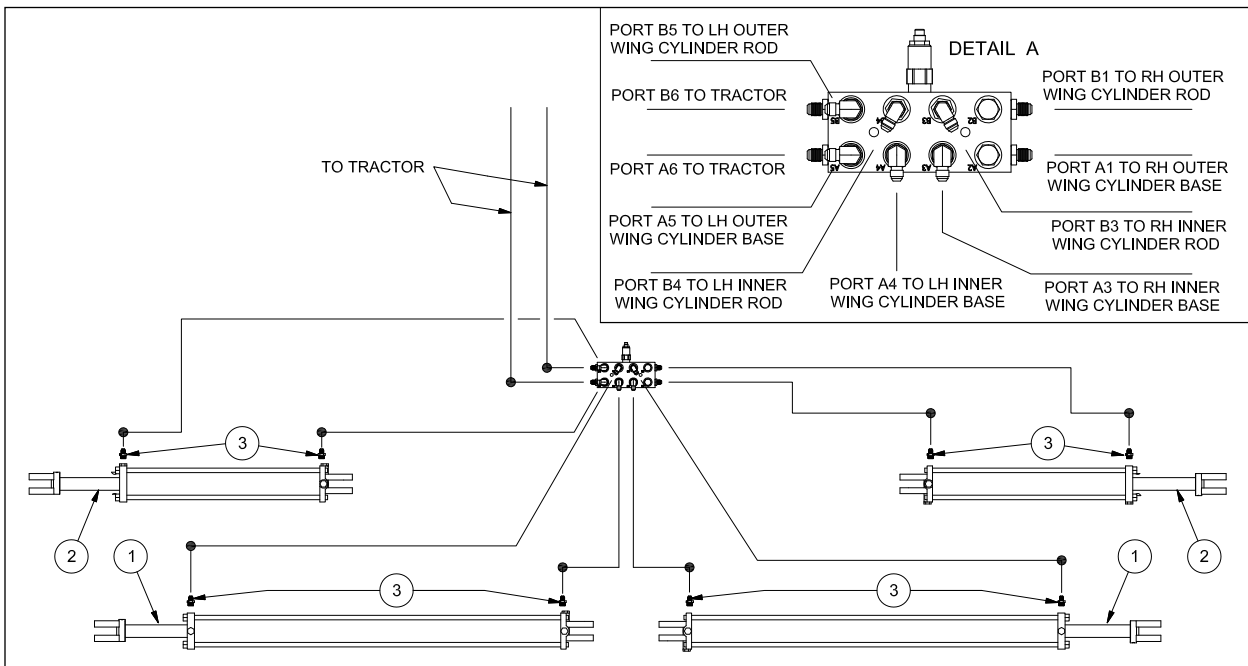
Hydraulic System (continued)

Raise & Lower Hydraulic System For 51-59' Models



ITEM	DESCRIPTION	QTY	NOTES
1	Base Wheel Cylinder	2	Cylinder 3 1/2 x 12
2	Inner Wing Wheel Cylinder	2	Cylinder 3 1/4 x 12
3	Outer Wing Wheel Cylinder	2	Cylinder 3 x 12
4	Rocker Cylinder	3	Cylinder 1 1/2 x 6

Wing Hydraulic System - All Models



ITEM	DESCRIPTION	QTY	NOTES
1	Base Wing Cylinder	2	Cylinder with 48" Stroke
2	Outer Wing Cylinder	2	Cylinder with 24" Stroke
3	Orifices/Adapters	8	with 0.075 Restrictor
4	Block/Valve	1	Block & Valve Assembly

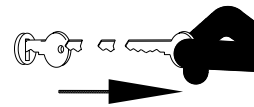
Replacing Rolling Harrow Basket/Drum Bearings

WARNING

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

1. Unverferth Manufacturing bearing replacement kit (74006) is available for the baskets and drums.

2. Park unit on a firm level surface. Unfold wings, lower the implement to the ground, set the tractor parking brake, depressurize the hydraulic system, shut off the engine, and remove the ignition key.



3. Remove pin (9500423) from the basket/drum assembly with the worn bearing. Using the tractor hydraulic system, raise the unit to transport height. Install transport stops on lift cylinders. Set tractor parking brake, depressurize the hydraulic system, shut off the engine and remove the ignition key.

4. Roll the basket/drum assembly from under the machine.

5. Using a safe lifting device rated at a minimum of 600 lbs., support the underside of the frame next to the basket/drum being removed before loosening hardware.

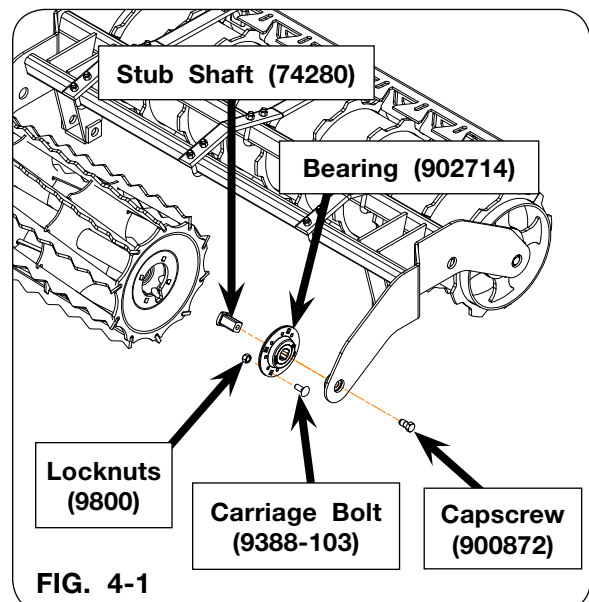
6. Remove the 5/8"-11UNC x 1 1/4" capscrew (900872) from the stub shaft (74280) on the worn bearing. Place pry bar between the head of the stub shaft and the basket/drum weldment to prevent the head of the stub shaft from turning.

7. Push the stub shaft into the basket/drum weldment so the shaft disengages the basket/drum frame side plate.

8. Repeat steps 5 & 6 for the capscrew and stub shaft on the other end of the basket/drum and roll the basket/drum away from the frame.

9. Remove the 1/2"-13UNC x 1 1/4" carriage bolts from the bearing and basket/drum. Remove bearing from the basket/drum and remove stub shaft from bearing.

10. Inspect the square recess for the stub shaft in the frame side plate. Remove dirt and debris from this area and make certain edges are not worn or rounded. Repair or replace frame as needed.



Replacing Rolling Harrow Basket/Drum Bearings (continued)

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

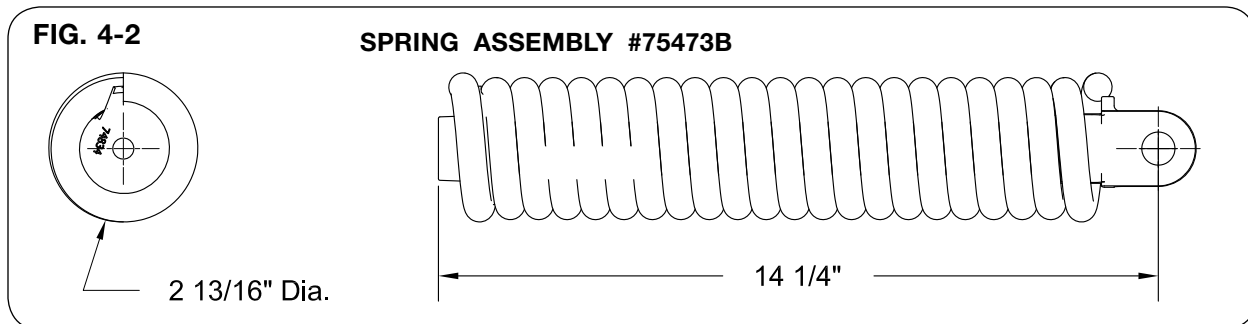
IMPORTANT

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

13. Reinstall basket/drum assembly on machine with pins (9500423).

Replacing Spring Assemblies

If it is necessary to replace basket springs, be sure to replace with the comparable spring assembly. See Fig. 4-2.



Hub Maintenance

1. Use grease to lubricate the seal lip.
2. Place the hub onto the spindle. Rotate the hub while installing the hub so that the seal does not fold under as the lip goes on the seal face of the spindle.
3. Be sure the outer bearing cone slides on the spindle and into the bearing cup.
4. Assemble the washer and nut onto the spindle and tighten the nut to 20-25 ft.-lbs. while rotating the hub to seat bearings. Do not move the hub after this step is complete.
5. Back off the nut until it becomes loose.
6. Finger tighten the nut by hand without moving the hub.
7. Tighten the nut to align to the next slot with the hole in the spindle and install the cotter pin. Do not bend the cotter pin.
8. Check for looseness in the hub. There should not be any wiggle. If it does, remove the cotter pin, tighten the nut one more slot, insert the cotter pin and repeat step 8.
9. Check for drag while rotating the hub. The hub should rotate with slight resistance. If it drags excessively, repeat the procedure starting at step 4.
10. Bend the legs of the cotter pin.
11. Install the hub cap.

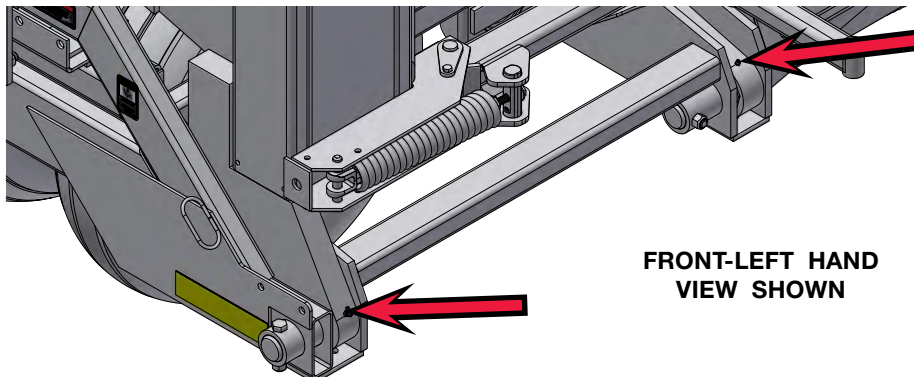
Storage

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.

Do the following before placing the implement in storage:

1. Remove dirt and trash which could cause rusting.
2. Repaint any chipped or scraped areas.
3. Lubricate wing pivots (FIG. 4-3).

FIG. 4-3 **MAIN FRAME TO INNER WING POINTS**



4. Coat all earth moving surfaces with grease or suitable rust preventative.
5. Inspect for damage or worn parts, replace before next season.
6. Store implement inside, away from livestock.
7. Block up implement to keep tires and ground tools off ground.
8. Replace all worn, torn or faded decals and reflectors.

To save storage space, the telescopic tongue may be pushed into the A-frame. The tongue will need to be lengthened to the proper working length when the machine is used again.

IMPORTANT

- *Store implement only with the wings and base in working position to avoid damaging the base frame baskets springs.*


Troubleshooting — Hydraulics Not Functioning Properly

PROBABLE CAUSE	CORRECTION
Incorrect hose hook-up to tractor control levers	Refer to Tractor Operator's Manual for valve and control lever arrangement
Insufficient tractor hydraulic pressure	A. Check hydraulic reservoir oil level B. Refer to tractor "Operator's Manual" or hydraulic system recommendations
Hydraulic components leaking oil	Find cause and correct, see MAINTENANCE section hydraulic systems
Hydraulic hoses kinked or twisted	Find cause and correct
Malfunction of hydraulic cylinders A. Cylinder leakage B. Orifice in wing-fold cylinders plugged	A. Repair or replace cylinders. See PARTS section for cylinder or seal kit part numbers B. Remove contamination from system (flush system, change oil and filter)
Unit "Bleeding Down" when hooked into primary tillage tools hydraulic system (with rephase cylinders)	Install pilot operated check valve, refer to OPERATIONS section
Wings do not fold in sync.	A. Some discrepancy in wing fold is normal. B. For large discrepancy - check hose and valve routing.

Complete Torque Chart

Capscrews - Grade 5

NOTE:

- Grade 5 capscrews can be identified by three radial dashes on the head. 
- For wheel torque requirements, refer to Wheels and Tires.
- Tighten U-bolts evenly and equally to have the same number of threads exposed on each end.

SIZE	FOOT POUNDS	NEWTON METERS
1/4-20	8-10	11-13
1/4-28	9-11	12-15
5/16-18	15-17	20-23
5/16-24	17-19	23-26
3/8-16	25-28	34-38
3/8-24	28-31	38-42
7/16-14	40-45	54-61
7/16-20	45-50	61-68
1/2-13	62-68	84-92
1/2-20	68-75	92-102
9/16-12	90-98	122-133
9/16-18	100-110	134-148
5/8-11	120-135	162-183
5/8-18	124-137	168-186
3/4-10	200-220	270-300
3/4-16	210-230	285-310
7/8-9	330-350	425-475
7/8-14	360-380	460-515
1-8	500-525	675-710
1-14	540-560	730-760
1 1/8-7	600-635	815-860
1 1/8-12	665-700	920-950
1 1/4-7	850-895	1150-1215
1 1/4-12	940-990	1275-1340
1 3/8-6	1125-1175	1525-1590
1 3/8-12	1280-1335	1735-1810
1 1/2-6	1500-1560	2035-2115
1 1/2-12	1685-1755	2285-2380

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

Complete Torque Chart

Capscrews - Grade 8

NOTE:

- Grade 8 capscrews can be identified by six radial dashes on the head.
- For wheel torque requirements, refer to Wheels and Tires.
- Tighten U-bolts evenly and equally to have the same number of threads exposed on each end.



SIZE	FOOT POUNDS	NEWTON METERS
5/16-18	20-22	27-30
5/16-24	21-23	28-31
3/8-16	35-39	47-53
3/8-24	36-41	49-55
7/16-14	54-58	73-78
7/16-20	55-60	75-80
1/2-13	82-88	110-120
1/2-20	94-99	125-135
9/16-12	127-134	170-180
9/16-18	147-155	199-210
5/8-11	160-170	215-230
5/8-18	165-175	225-235
3/4-10	280-295	380-400
3/4-16	330-365	445-495
7/8-9	410-430	555-580
7/8-14	420-440	570-595
1-8	630-650	850-880
1-14	680-700	920-950
1 1/8-7	900-930	1220-1260
1 1/8-12	930-950	1260-1290
1 1/4-7	1250-1300	1695-1760
1 1/4-12	1280-1320	1735-1790

IMPORTANT

- *Follow these torque recommendations except when specified in text.*

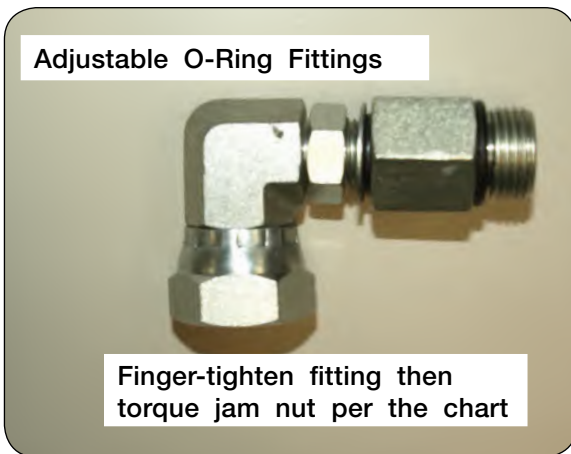
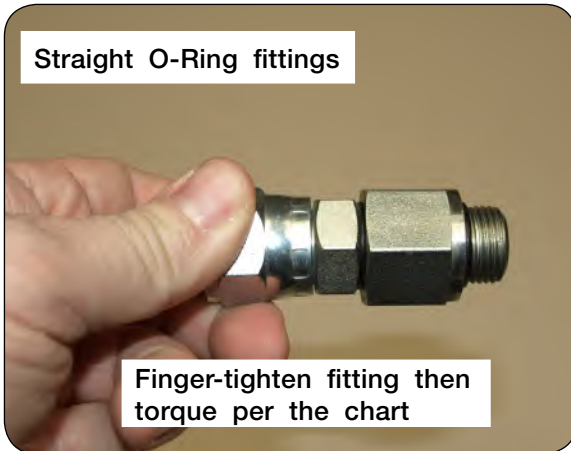
Hydraulic Fittings - Torque and Installation

Tightening O-Ring Fittings

1. Inspect components for damage or contamination. Do not connect any other type of fitting to an O-ring fitting.
2. For adjustable fittings, insure the jam nut and washer are fully backed up.
3. Lubricate the O-ring and threads on the fitting.
4. Turn the fitting into the port until it is finger tight.
5. For adjustable fittings, set in the desired position.
6. Using a wrench, torque the fitting to the value in the below table. For adjustable fittings the jam nut will be tightened.

NOTE: Never use a power tool to install a fitting.

Dash Size	Thread Size	Straight Stud Torque (Ft-Lbs)	Adjustable Stud Torque (Ft-Lbs)
-5	1/2-20	14-19	10-14
-6	9/16-18	18-24	12-16
-8	3/4-16	27-43	20-30
-10	7/8-14	36-48	30-36
-12	1-1/16-12	65-75	44-54
-14	1-3/16-12	75-99	53-70
-16	1-5/16-12	85-123	59-80
-20	1-5/8"-12	115-161	75-100
-24	1-7/8"-12	125-170	105-125

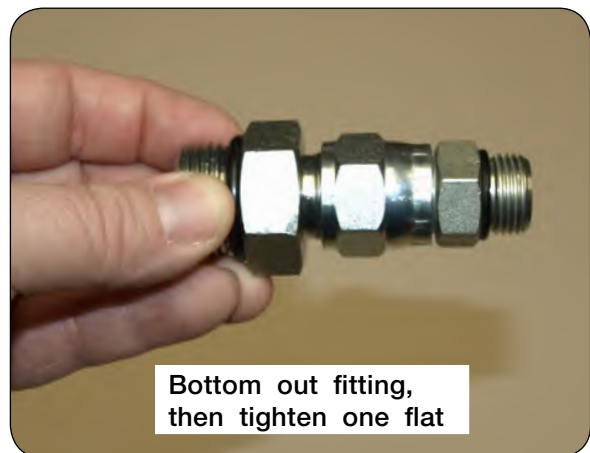


Hydraulic Fittings - Torque and Installation

Tightening JIC Fittings

1. Inspect all components for damage or contamination. Do not connect any other type of fitting to a JIC fitting.
2. Lubricate the threads.
3. Turn the fitting into the port until it bottoms out.
4. Use one wrench on the fixed hex on the hose to prevent twisting and a second on the swivel. Tighten the fitting another 60 degrees (or one flat)

NOTE: Never use a power tool to install a fitting



Wheels and Tires

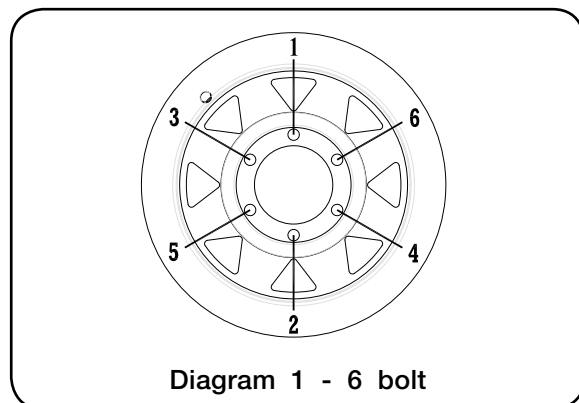
Wheel Nut Torque

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 INITIAL USE, AFTER ONE HOUR OF USE, AND EACH HOUR UNTIL WHEEL NUTS/BOLTS MAINTAIN TORQUE VALUE. CHECK TORQUE EVERY 10 HOURS OF USE THEREAFTER. AFTER EACH WHEEL REMOVAL START TORQUE PROCESS FROM BEGINNING. WARRANTY DOES NOT COVER FAILURES CAUSED BY IMPROPERLY TORQUED WHEEL NUTS/BOLTS.**

Failure to check torque before 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 the applicable torque value shown below. 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.
9/16-18 (UNF)	110 Ft.-Lbs.



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.**

Recommended....44 PSI maximum

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:

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

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

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

Kenda
/Americana
Tire & Wheel www.americanatire.com
Phone 800-225-4714

Notes

SECTION V

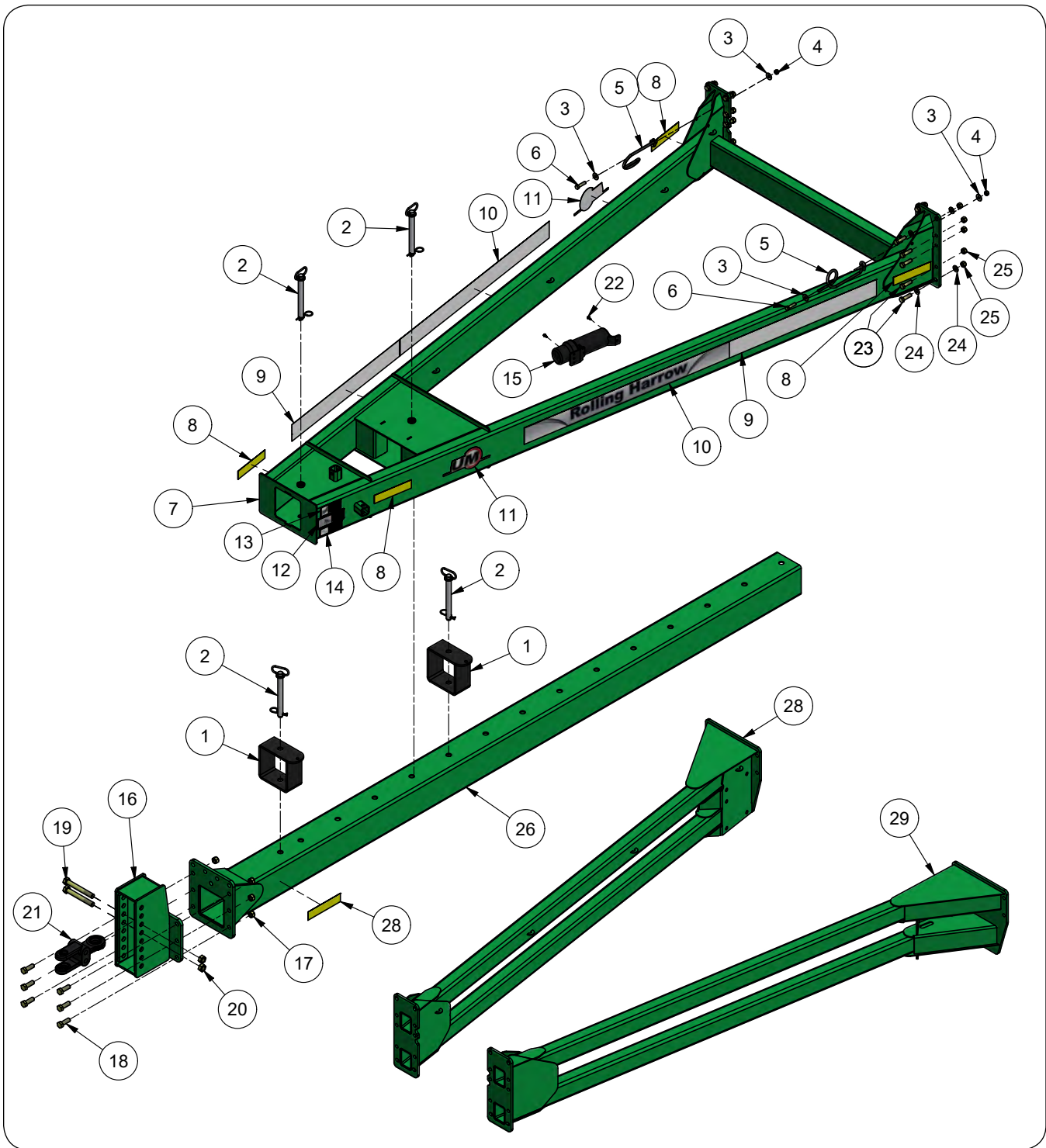
Parts

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Vertical-Fold Rolling Harrow 1645/1645D — Parts

Combination Hitch Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Combination Hitch Components

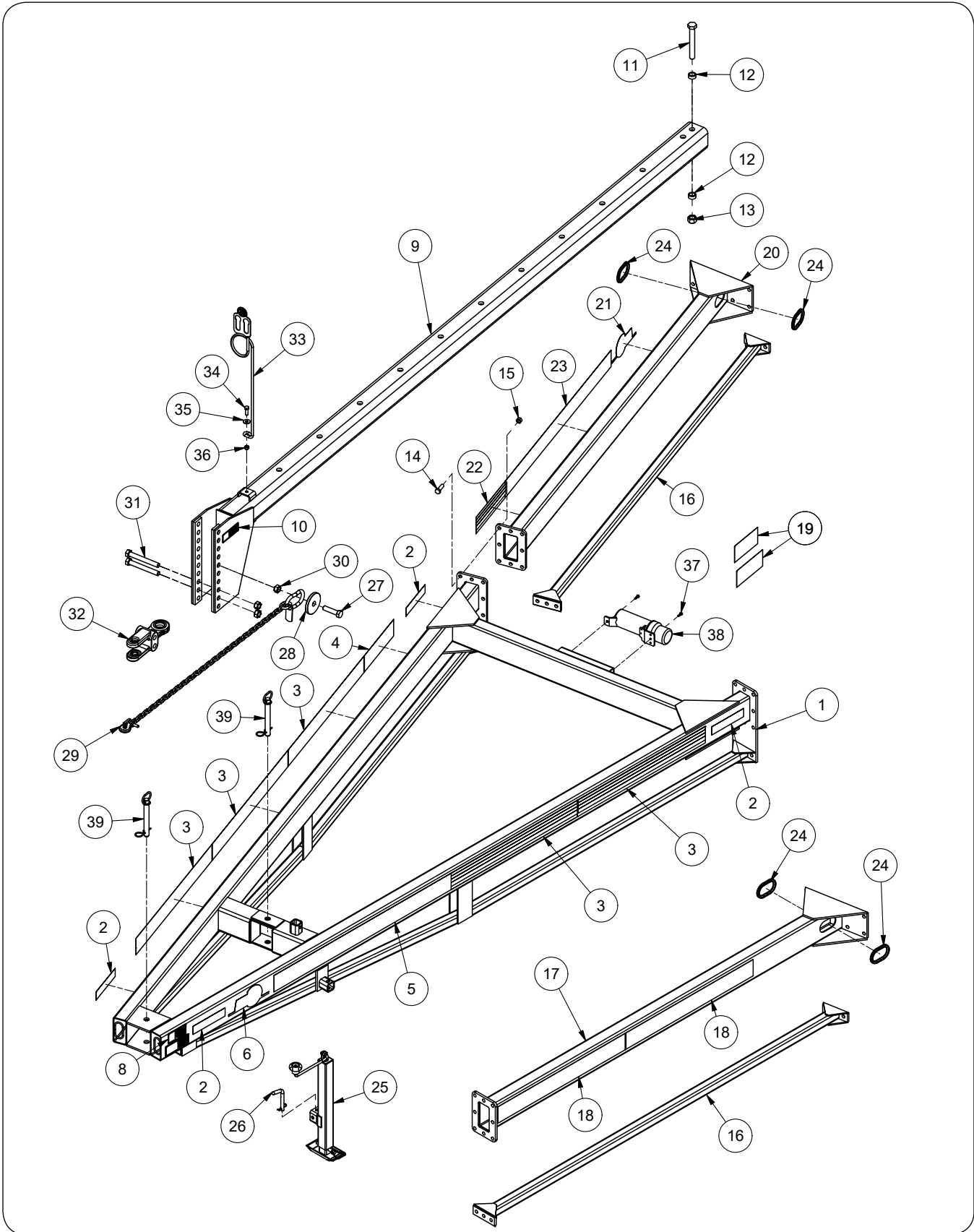
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	78085B	Stop Weldment =Black=	2	
2	9502801	Hitch Pin 1" Dia. w/Hairpin	4	
3	9405-088	Flat Washer 1/2"	4	
4	9800	Lock Nut, 1/2"-13UNC	2	
5	902979B	Hose Holder =Black=	2	
6	9390-103	Capscrew, 1/2"-13UNC x 2" G5	2	
7	78575G	Hitch A-Frame Assembly =Green=	1	Includes Items 8-14
	78575R	Hitch A-Frame Assembly =Red=		
8	9003127	Reflector 2 x 9 =Amber=	4	
9	900706	Decal, Stripe (4 x 36)	2	
10	901129	Decal, Rolling Harrow	2	
11	901607	Decal, UM Oval Logo	2	
12	94094	Decal, WARNING (Rising or Falling Tongue...)	1	
13	95445	Decal, WARNING (High-Pressure...)	1	
14	97575	Decal, CAUTION (Transport Chain)	1	
15	900552	Manual Holder	1	
16	78138G	Clevis Hitch Weldment =Green=	1	
	78138R	Clevis Hitch Weldment =Red=		
17	9802	Lock Nut, 3/4"-10UNC	6	
18	9390-146	Capscrew, 3/4"-10UNC x 2 1/4" G5	6	
19	9390-178	Capscrew, 7/8"-9UNC x 7" G5	2	
20	91141	Lock Nut, 7/8"-9UNC	2	
21	83301B	Hitch Clevis	1	
22	97420	Flange Screw, 1/4"-20UNC x 3/4"	20	
23	9390-125	Capscrew, 5/8"-11UNC x 2 1/4" G5	20	
24	9405-098	Flat Washer, 5/8" SAE	16	
25	9801	Lock Nut, 5/8"-11UNC	20	
26	79877G	Tongue Weldment w/Decal =Green=	1	Includes Item 27
	79877R	Tongue Weldment w/Decal =Red=		
27	9003127	Reflector 2 x 9 =Amber=	2	
28	78091G	Hitch Extension Right-Hand Weldment =Green=	1	
	78091R	Hitch Extension Right-Hand Weldment =Red=		
29	78113G	Hitch Extension Left-Hand Weldment =Green=	1	
	78113R	Hitch Extension Left-Hand Weldment =Red=		

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Hitch Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Hitch Components

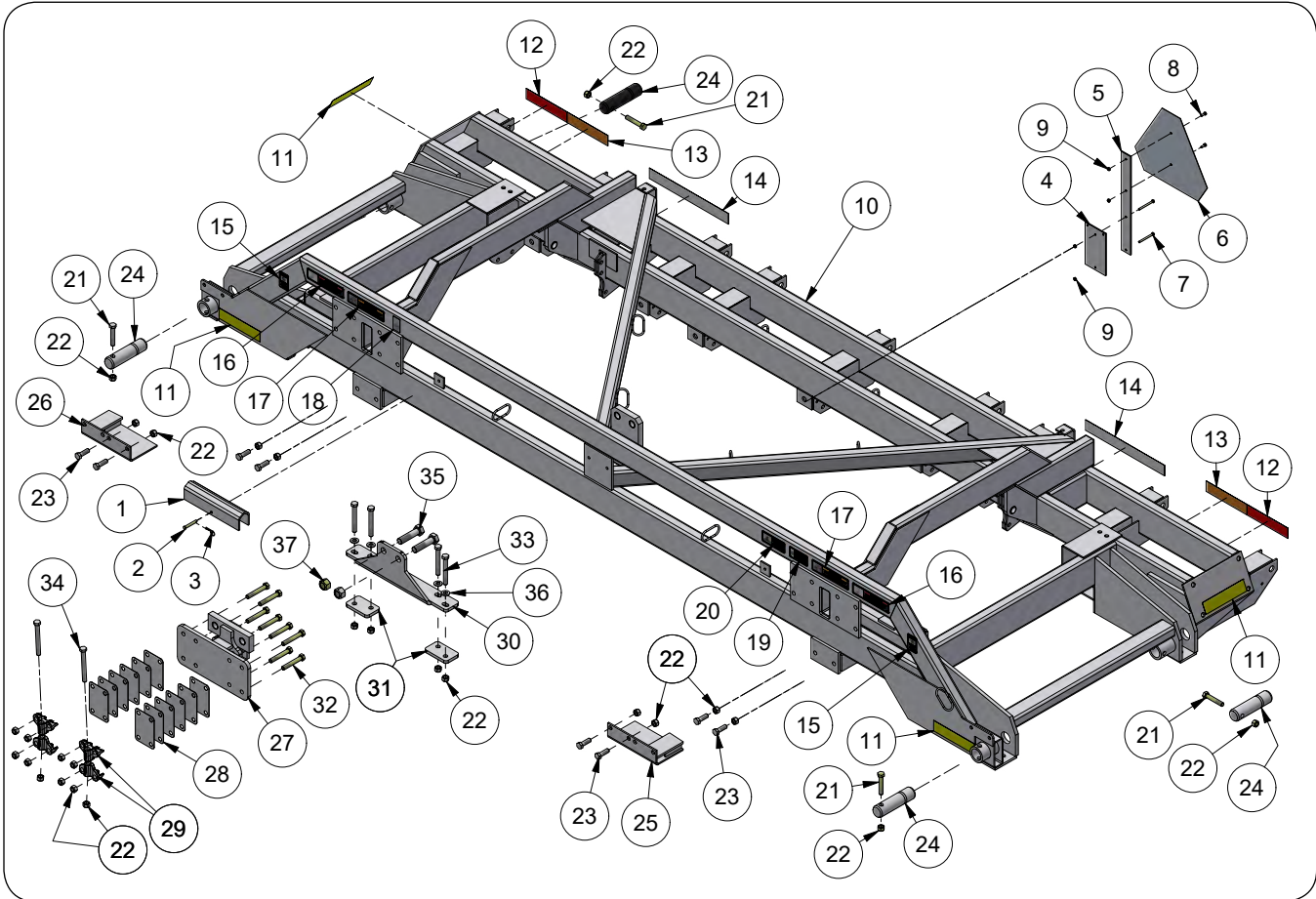
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	NOTES
1	88623G	Hitch A-Frame Assembly =Green=	Model 1645
	88623R	Hitch A-Frame Assembly =Red=	
2	9003127	Reflector 2 x 9 =Amber=	
3	900706	Decal, Stripe (4 x 36)	
4	900732	Decal, Stripe (4 x 14)	
5	901129	Decal, Rolling Harrow	
6	901607	Decal, UM Oval Logo	
7	94094	Decal, WARNING (Rising or Falling Tongue...)	
8	95445	Decal, WARNING (High-Pressure...)	
9	76524G	Tongue Weldment w/Decal =Green=	
	76524R	Tongue Weldment w/Decal =Red=	
10	97575	Decal, CAUTION (Transport Chain...)	
11	9390-198	Capscrew 1-8UNC x 7 1/2	Grade 5
12	87623	Tube/Bushing 1 1/2 OD x 1 1/16 ID x 5/8	
13	9663	Locknut 1-8UNC	
14	9390-124	Capscrew 5/8-11UNC x 2	Grade 5
15	9801	Locknut 5/8-11UNC	
16	88334G	Hitch Truss Weldment =Green=	
	88334R	Hitch Truss Weldment =Red=	
17	88624G	Extension Left-Hand Assembly w/Decals =Green=	Model 1645
	88624R	Extension Left-Hand Assembly w/Decals =Red=	
18	900706	Decal, Stripe (4 x 36)	
19	9501494	Decal, 1645	Model 1645
	9501495	Decal, 1645D	Model 1645D
20	88619G	Extension Right-Hand Assembly w/Decals =Green=	
	88619R	Extension Right-Hand Assembly w/Decals =Red=	
21	901607	Decal, UM Oval Logo	
22	900732	Decal, Stripe (4 x 14)	
23	901129	Decal, Rolling Harrow	
24	87754	U-Channel/Trim-lok	
25	901061	Jackstand	
26	84979	Bent Pin 5/8" Dia. w/Hairpin Cotter	
27	9390-170	Capscrew 7/8-9UNC x 3 1/2	Grade 5
28	106941	Washer	
29	97436	Transport Chain	
30	91141	Locknut 7/8-9UNC	
31	9390-178	Capscrew 7/8-9UNC x 7	Grade 5
32	83301B	Hitch Clevis	
33	79337B	Hose Holder	
34	9390-101	Capscrew 1/2-13UNC x 1 1/2	Grade 5
35	9405-088	Flat Washer 1/2"	
36	9800	Locknut 1/2-13UNC	
37	9512	Self-Drilling Screw 1/4-14 x 1	
38	900552	Manual Holder	
39	93950	Hitch Pin 1" Dia. w/Hairpin	

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Main Frame Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Main Frame Components

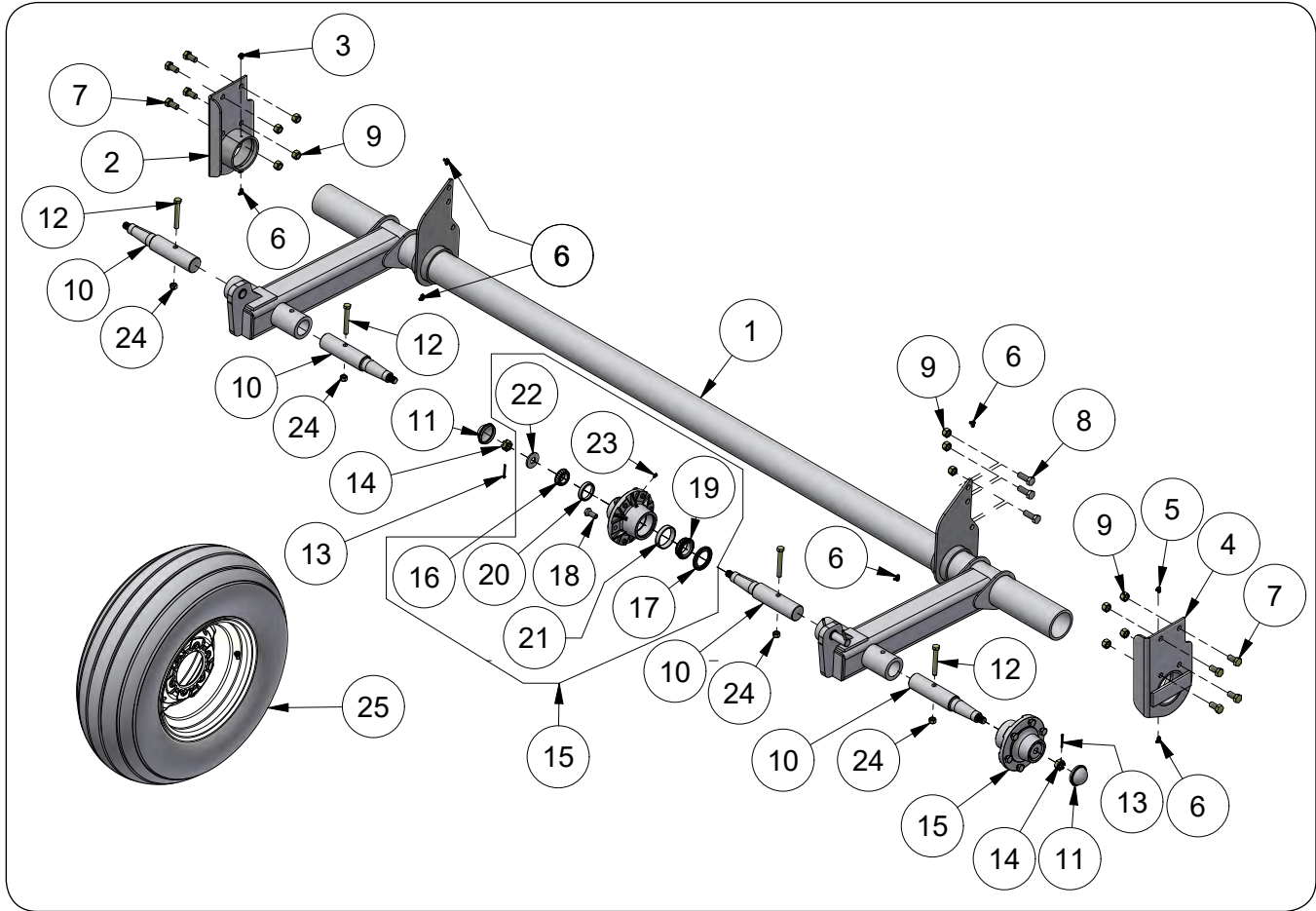
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY
1	73130B	Stop/Transport Lock	2
2	9828	Clevis Pin, 3/8" Dia. x 2 1/2"	2
3	9514	Hairpin Cotter, .092" Dia. x 1 7/8"	2
4	88587B	Plate, 4 1/2" x 8"	1
5	88259B	Strip/Bracket for SMV	1
6	9829	SMV Emblem	1
7	9390-013	Capscrew, 1/4"-20UNC x 3" G5	2
8	9390-003	Capscrew, 1/4"-20UNC x 3/4" G5	2
9	9936	Locknut, 1/4"-20UNC	4
10	87970G	Main Frame Assembly =Green=	1
	87970R	Main Frame Assembly =Red=	
11	9003127	Reflector, 2" x 9" =Amber=	4
12	9003126	Reflector, 2" x 9" =Red=	2
13	9003125	Fluorescent Strip 2" x 9" =Red/Orange=	2
14	901576	Decal, Unverferth	2
15	97048	Decal, WARNING (Pinch Point...)	2
16	901891	Decal, DANGER (Electrocution...)	2
17	95136	Decal, WARNING (Folding or Unfolding Wings...)	2
18	91605	Decal, FEMA	1
19	97961	Decal, WARNING (Read & Understand)	1
20	95605	Decal, WARNING (Falling Equipment...)	1
21	9390-130	Capscrew, 5/8"-11UNC x 3 1/2" G5	4
22	9801	Locknut, 5/8"-11UNC	38
23	9390-124	Capscrew, 5/8"-11UNC x 2" G5	20
24	88375	Pin, 2" Dia. x 7 5/8"	4
25	76416G	Stop Block Weldment LH Wing =Green=	1
	76416R	Stop Block Weldment LH Wing =Red=	
26	76415G	Stop Block Weldment RH Wing =Green=	1
	76415R	Stop Block Weldment RH Wing =Red=	
27	78323G	Bracket Weldment =Green=	1
	78323R	Bracket Weldment =Red=	
28	78330G	Plate, 4 1/8" x 6" =Green=	12
	78330R	Plate, 4 1/8" x 6" =Red=	
29	67922B	Extension Clamp Casting	4
30	78324G	Plate =Green=	1
	78324R	Plate =Red=	
31	78325G	Plate, 3" x 4 7/8" =Green=	2
	78325R	Plate, 3" x 4 7/8" =Red=	
32	9390-132	Capscrew, 5/8"-11UNC x 4" G5	8
33	9390-134	Capscrew, 5/8"-11UNC x 5" G5	4
34	9390-136	Capscrew, 5/8"-11UNC x 6" G5	2
35	9390-191	Capscrew, 1"-8UNC x 4" G5	2
36	9405-098	Flat Washer, 5/8" SAE	4
37	9663	Lock Nut/Top, 1"-8UNC	2

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Axle, Hub & Wheel Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Axle, Hub & Wheel Components

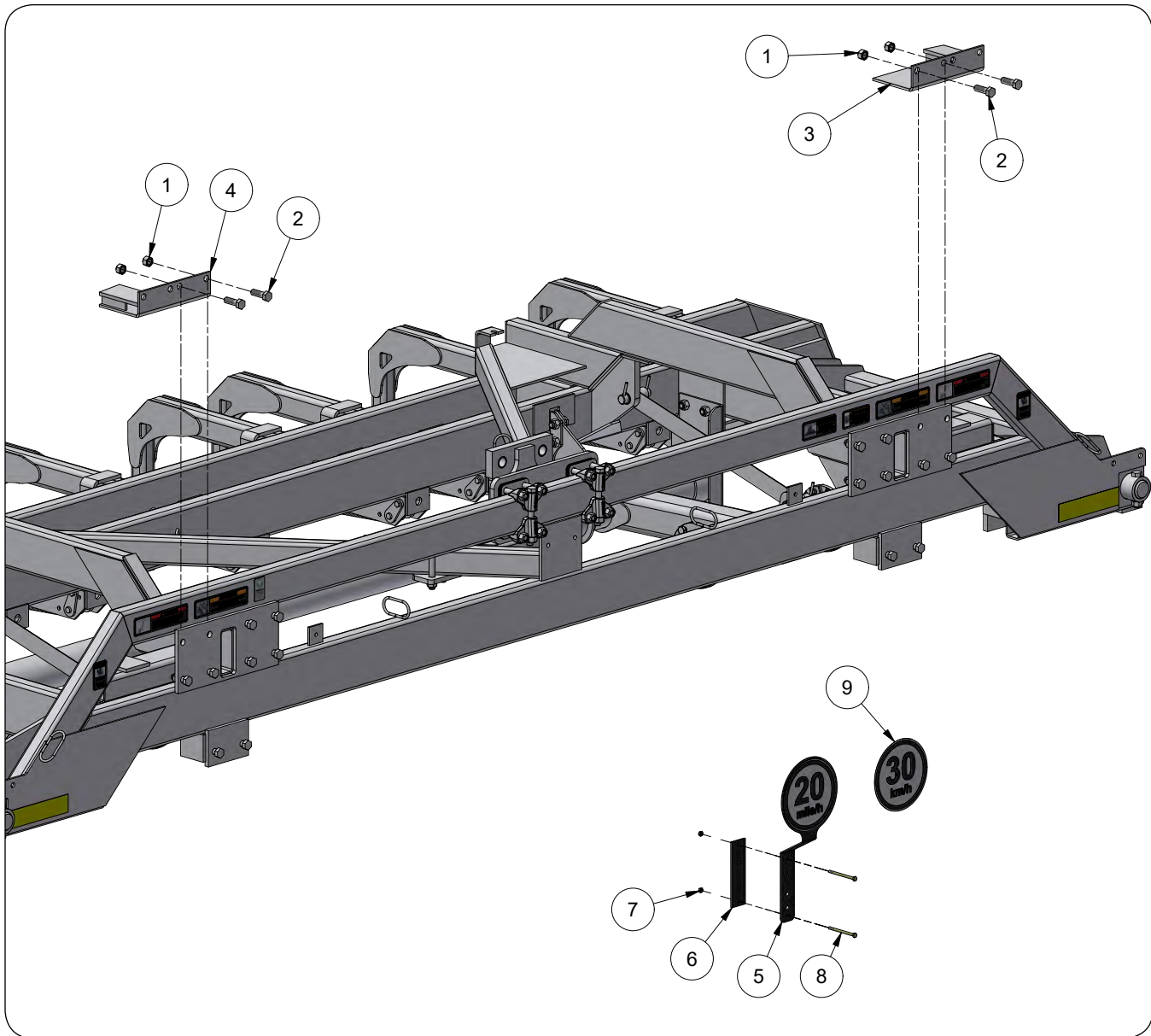
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	
1	76374B	Axle Weldment =Black= (Includes Items 6, 10, 12, 14, 24)	1	
2	75635B	Bearing Housing Right-Hand with Grease Zerk	1	
	3	93415	Grease Zerk	2
4	75637B	Bearing Housing Left-Hand with Grease Zerk	1	
	5	93415	Grease Zerk	2
6	93415	Grease Zerk	4	
7	9390-121	Capscrew 5/8-11UNC x 1 1/4	8	
8	9390-123	Capscrew 5/8-11UNC x 1 3/4	6	
9	9801	Locknut 5/8-11UNC	38	
10	88361	Spindle 2" Dia. x 12 w/3/4-16UNF Threaded End	4	
11	9162	Hub Cap =Black=	4	
12	9390-110	Capscrew 1/2-13UNC x 3 3/4 (Grade 5)	4	
13	9391-035	Cotter Pin 5/32" Dia. x 1 1/2	4	
14	9393-016	Slotted Nut 3/4-16UNF	4	
15	9500003B	Hub 6 Bolt Assembly Complete (Includes Items 16 through 23)	4	
	16	9165	Bearing Cone 1.25 Bore (LM67048)	1
	17	9230	Seal	1
	18	9231	Wheel Bolt 9/16-18UNF x 1 1/8 (Grade 5)	6
	19	9247	Bearing Cone 1.62 Bore (LM501349)	1
	20	9345	Bearing Cup (LM67010)	1
	21	9349	Bearing Cup (LM501310)	1
	22	9234	Flat Washer 13/16 ID	1
	23	91160	Grease Zerk	1
24	9800	Locknut 1/2-13UNC	4	
25	17679	Mounted Tire & Wheel (TL 11LB15 12-Ply I-1) (Off White)	4	
	17679SM	Mounted Tire & Wheel (TL 11LB15 12-Ply I-1) (Silver Mist)		
	9002500	Valve Stem Only	-	
	W815-6-08	Implement Wheel Only (Off White)	-	
	W815-6-08SM	Implement Wheel Only (Silver Mist)		

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Wing Stop Block and SIS Decals Components

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



ITEM	PART NUMBER	DESCRIPTION	QTY
1	9801	Lock Nut/Top, 5/8"-11UNC	4
2	9390-124	Capscrew, 5/8"-11UNC x 2" G5	4
3	76416G	Stop Block Weldment Left-Hand Wing =Green=	1
4	76415G	Stop Block Weldment Right-Hand Wing =Green=	1
5	79340B	SIS Bracket w/20 MPH Decal	1
6	64157B	Plate 2" x 7 1/4"	1
7	9936	Lock Nut/Top, 1/4"-20UNC	2
8	9390-012	Capscrew, 1/4"-20UNC x 2 3/4" G5	2
9	9008720	Decal, SIS 30 KPH	1

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Inner Wing Components

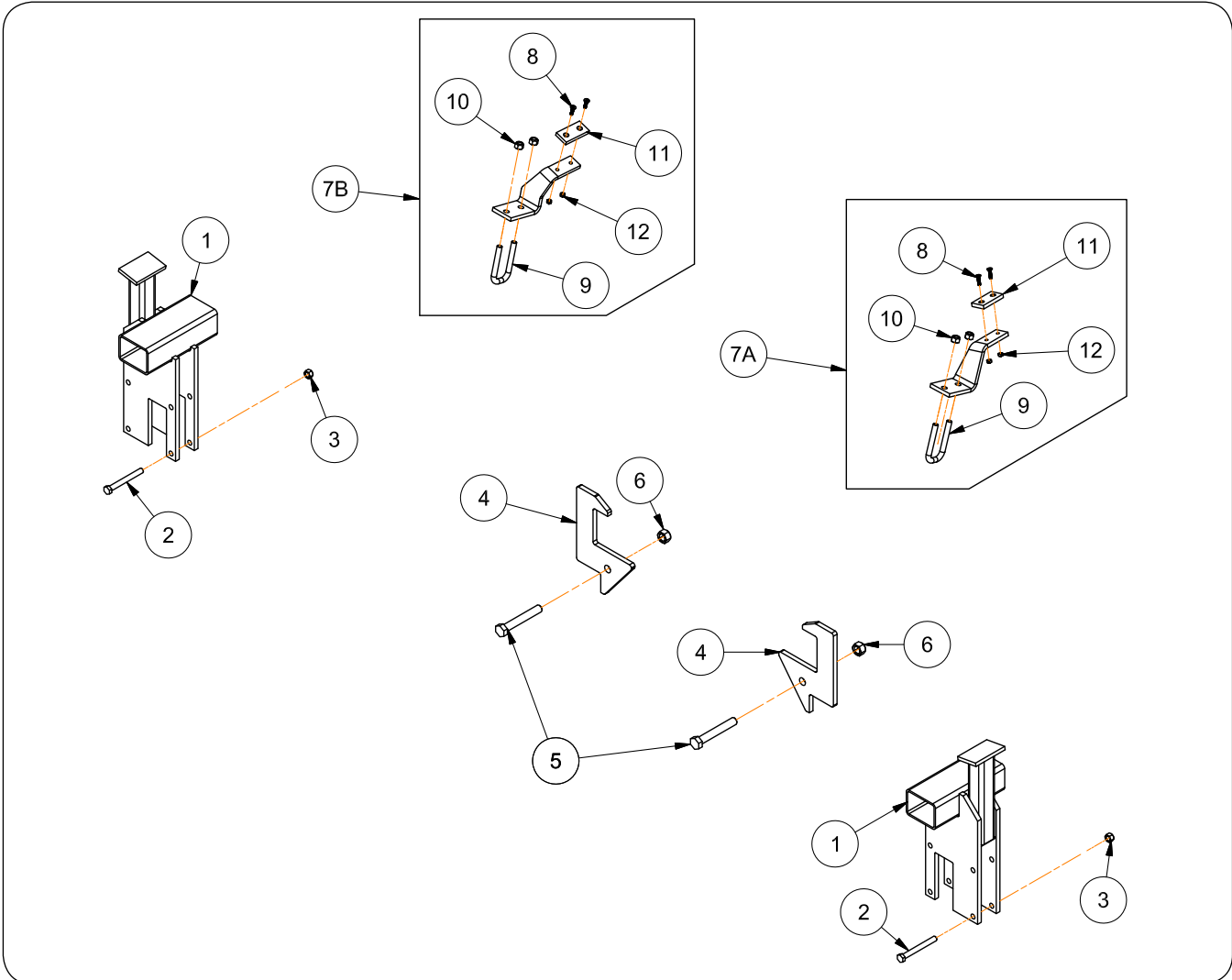
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	NOTES
1A	700301G	Wing 11' LH Weldment =Green=	Includes Items 2 through 5
	700301R	Wing 11' LH Weldment =Red=	
1B	700302G	Wing 11' RH Weldment =Green=	Includes Items 2 through 5
	700302R	Wing 11' RH Weldment =Red=	
2	91144-186	Spiral Pin 5/16" Dia. x 2	
3	87292	D-Pin 1 1/4" Dia. x 2 5/8	
4	91160	Grease Zerk	
5	93415	90° Grease Zerk	
6	81504B	Arm/Fold Link	

Gravity Latch/Wing Stand/Bumper Assembly Components

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



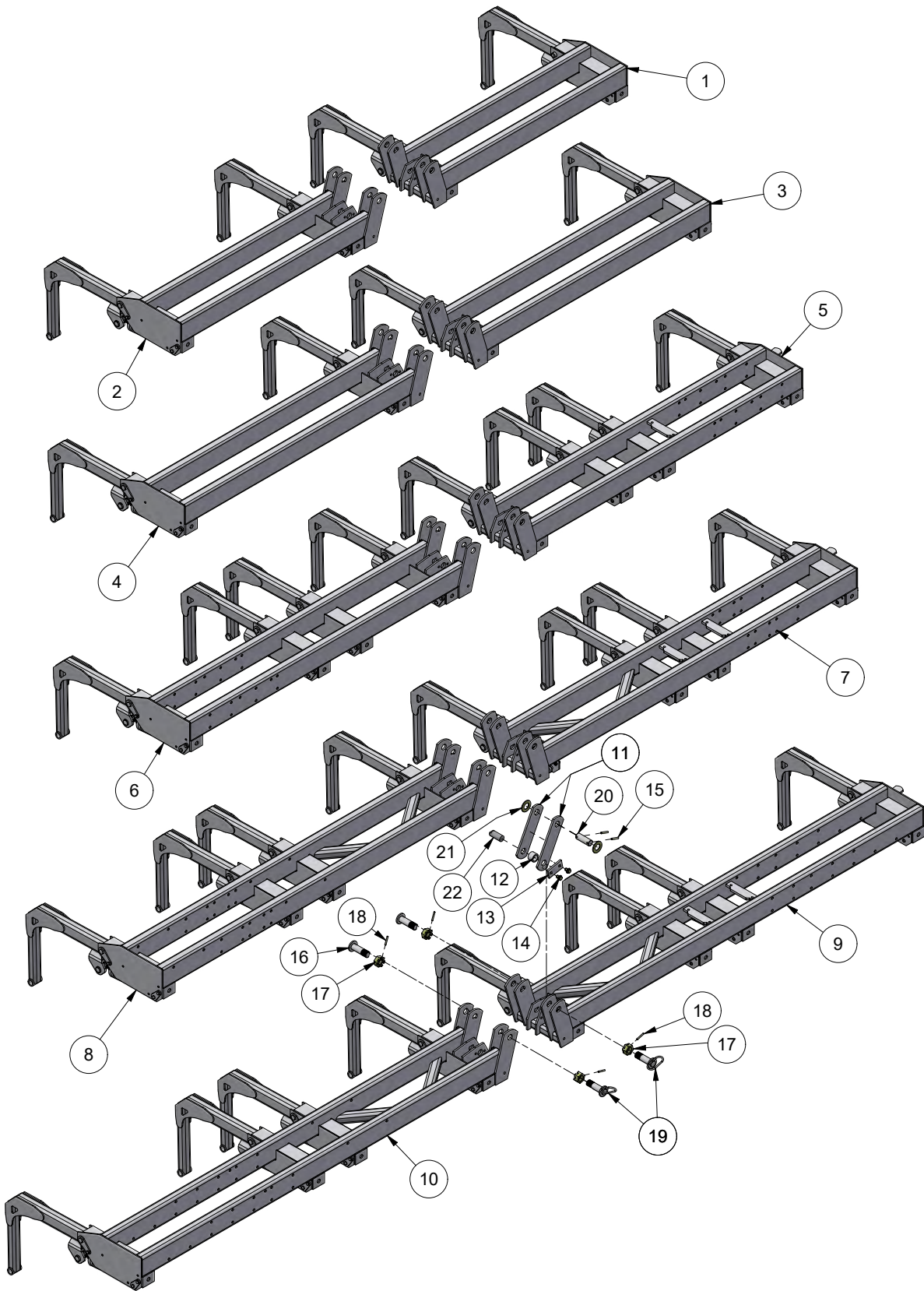
Gravity Latch/Wing Stand/Bumper Assembly Components

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

ITEM	PART NUMBER	DESCRIPTION	NOTES
1	88553B	Wing Stand Weldment	
2	9390-110	Capscrew 1/2-13UNC x 3 3/4	Models 47-59' / Grade 5
3	9800	Locknut 1/2-13UNC	
4	88570B	Gravity Latch Plate	
5	9390-155	Capscrew 3/4-10UNC x 5	Grade 5
6	9802	Locknut 3/4-10UNC	
7A	76504B	Bumper Assembly Left-Hand	
7B	76505B	Bumper Assembly Right-Hand	
8	902703-021	Capscrew 1/4"-20UNC x 1" w/Socket Flat Head	
9	901837	U-Bolt 1/2"-20UNC	
10	9800	Locknut/Top 1/2"-20UNC	
11	2005110	Wear Pad	
12	9936	Locknut 1/4"-20UNC	

Outer Wing Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Outer Wing Components

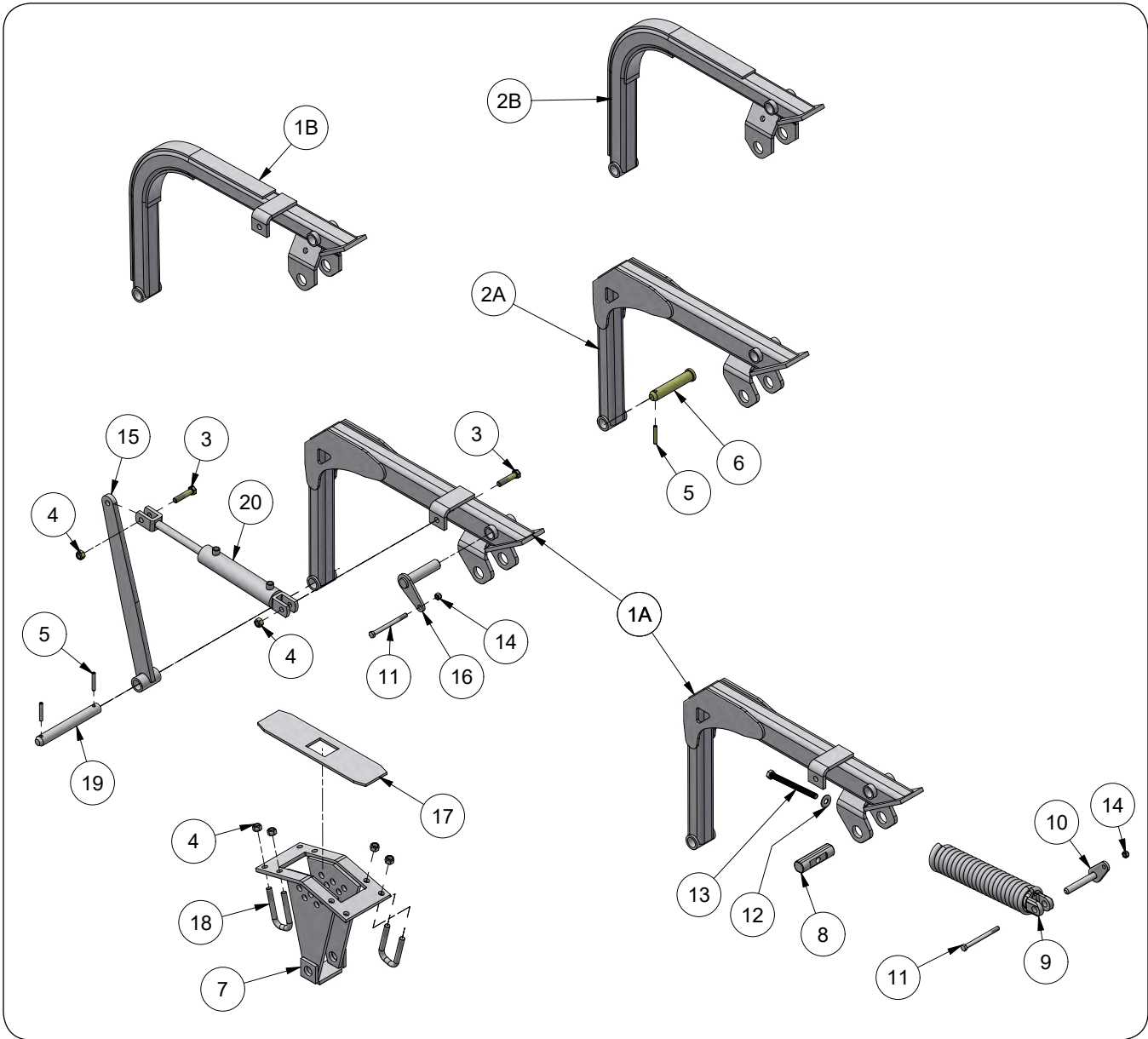
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	NOTES
1	700291G	Wing 5' LH Assembly =Green=	
	700291R	Wing 5' LH Assembly =Red=	
2	700292G	Wing 5' RH Assembly =Green=	
	700292R	Wing 5' RH Assembly =Red=	
3	700293G	Wing 6' LH Assembly =Green=	
	700293R	Wing 6' LH Assembly =Red=	
4	700294G	Wing 6' RH Assembly =Green=	
	700294R	Wing 6' RH Assembly =Red=	
5	700295G	Wing 7' LH Assembly =Green=	
	700295R	Wing 7' LH Assembly =Red=	
6	700296G	Wing 7' RH Assembly =Green=	
	700296R	Wing 7' RH Assembly =Red=	
7	700297G	Wing 8' LH Assembly =Green=	
	700297R	Wing 8' LH Assembly =Red=	
8	700298G	Wing 8' RH Assembly =Green=	
	700298R	Wing 8' RH Assembly =Red=	
9	700299G	Wing 9' LH Assembly =Green=	
	700299R	Wing 9' LH Assembly =Red=	
10	700300G	Wing 9' RH Assembly =Green=	
	700300R	Wing 9' RH Assembly =Red=	
11	87005B	Strap/Linkage Bar	
12	81561	Spacer Tube, 1 3/4" OD x 1 5/16" ID x 1 1/4"	
13	88574	Plate, 2" x 3 7/8"	
14	901119	Flange Screw, 1/2"-13UNC x 3/4"	
15	91144-186	Spiral Pin, 5/16" Dia. x 2"	
16	83146	D-Pivot Pin, 1 1/4" Dia. w/1 1/4"-12UNF Threaded End	
17	9393-024	Slotted Nut, 1 1/4-12UNF	
18	91144-165	Spiral Pin, 1/4" Dia. x 1 7/8"	
19	73906	Pivot Pin, 1 1/4" Dia. x 4 5/8"	
20	87283	Pin, 1 1/4" Dia. x 3 5/8"	
21	9405-128	Flat Washer, 1 1/4"	
22	88575	D-Pin, 1 1/4" Dia. x 2 15/16"	

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Basket/Drum Mounting Arms Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

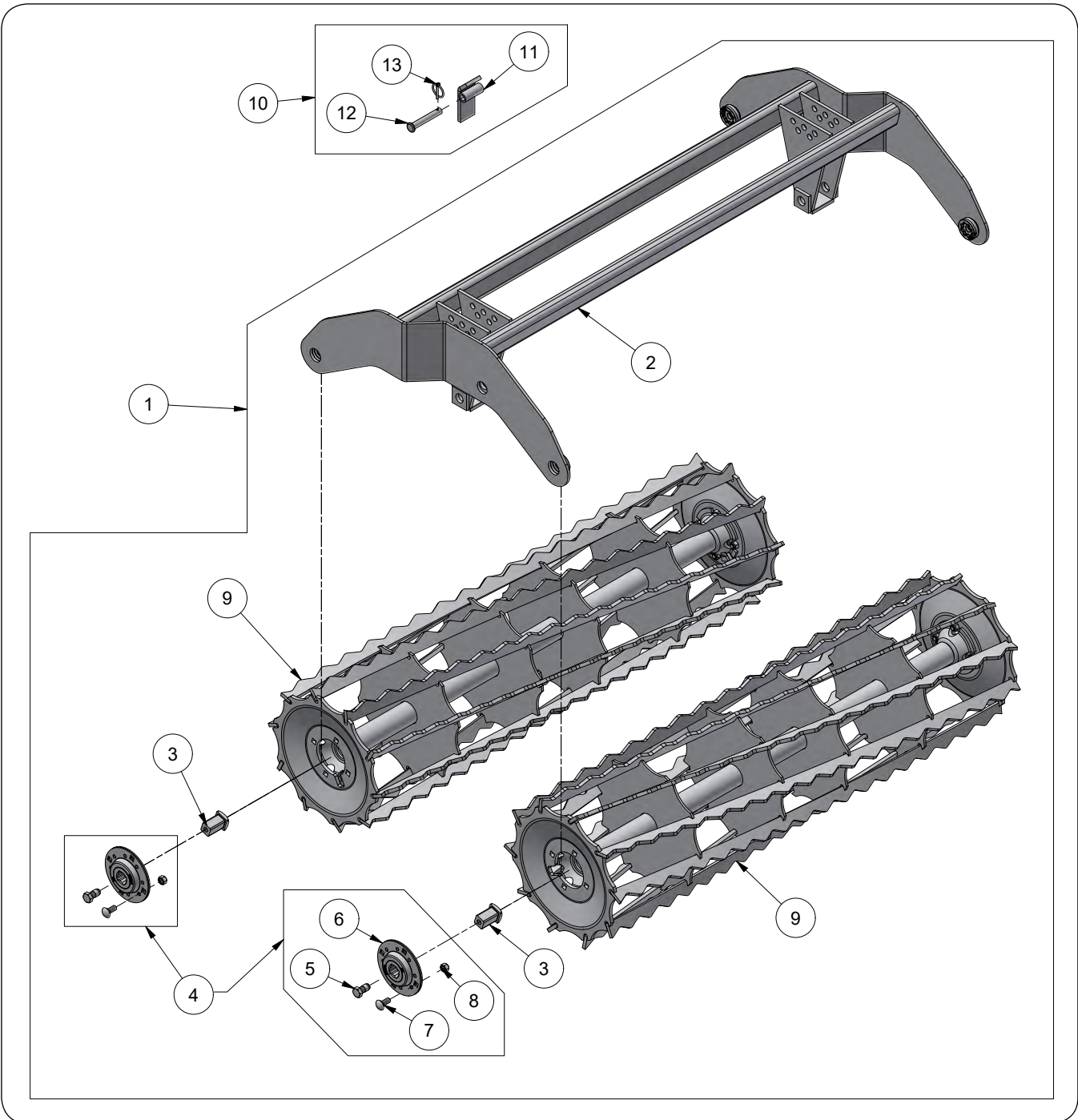
Basket/Drum Mounting Arms Components

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

ITEM	PART NO.	DESCRIPTION	NOTES
1A	77858G	Main Frame Welded Arm Weldment Tall/Long =Green= (Gen 4)	
	77858R	Main Frame Welded Arm Weldment Tall/Long =Red= (Gen 4)	
1B	77078G	Main Frame Bent Arm Weldment Tall/Long =Green= (Gen 3)	
	77078R	Main Frame Bent Arm Weldment Tall/Long =Red= (Gen 3)	
2A	77875G	Wing Welded Arm Weldment Tall =Green= (Gen 4)	
	77875R	Wing Welded Arm Weldment Tall =Red= (Gen 4)	
2B	77077G	Wing Bent Arm Weldment Tall =Green= (Gen 3)	
	77077R	Wing Bent Arm Weldment Tall =Red= (Gen 3)	
3	9390-104	Capscrew, 1/2"-13UNC x 2 1/4" G5	
4	9800	Locknut/Top, 1/2"-13UNC	
5	91144-186	Spiral Pin, 5/16" Dia. x 2"	
6	9500423	Pin, 1" Dia. x 5 1/8"	
7	75691B	Bolt-On Basket Bracket	
8	74850	Trunnion, 1 1/4" Dia. x 4 1/4"	
9	75473B	Spring Assembly, 2 13/16" Dia. x 14 1/4"	
10	86251B	Pin-Link Weldment, 5/8" Dia. x 3 7/8"	
11	9390-068	Capscrew, 3/8"-16UNC x 4 1/2" G5	
12	9405-082	Flat Washer, 7/16" USS	
13	97171	Capscrew, 1/2"-13UNC x 6" G5	
14	9928	Locknut/Top, 3/8"-16UNC	
15	75930B	Link Weldment Basket Rocker	
16	76331B	Pin Weldment, 1" Dia. x 4 5/16"	
17	77108	Cover (Rubber Pad)	
18	901837	U-Bolt, 1/2"-13UNC	
19	9501583	Pin, 1" Dia. x 8 1/8"	
20	TA0-904623-0	Cylinder, 1 1/2" x 6"	

Basket Components - Model 1645

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Basket Components - Model 1645

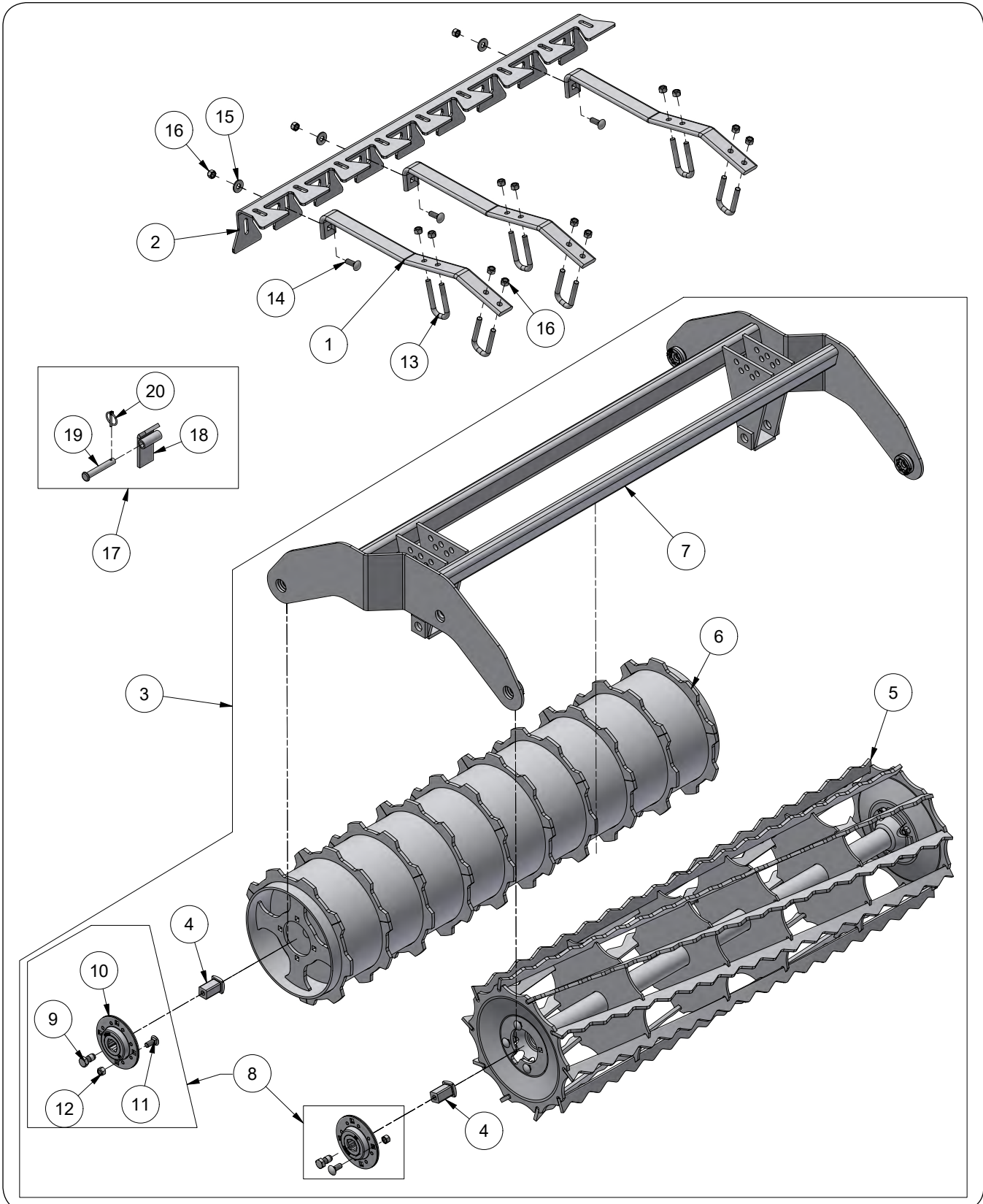
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	NOTES	
1	77083B	Basket & Frame 3' Assembly	Includes Items 2-9	
	77084B	Basket & Frame 4' Assembly		
	77085B	Basket & Frame 5' Assembly SHOWN		
	77086B	Basket & Frame 6' Assembly		
2	77079B	Frame 3' Weldment		
	77080B	Frame 4' Weldment		
	77081B	Frame 5' Weldment SHOWN		
	77082B	Frame 6' Weldment		
3	74280	Bearing Bolt		
4	74006	Bearing Kit	Includes Items 5-8	
	5	900872	Capscrew 5/8-11UNC x 1 1/4	
	6	902714	Flange Bearing	
	7	9388-103	Carriage Bolt 1/2-13UNC x 1 1/4	
	8	9800	Locknut 1/2-13UNC	
9	75341B	Basket 3' Aggressive Weldment		
	75342B	Basket 4' Aggressive Weldment		
	75343B	Basket 5' Aggressive Weldment SHOWN		
	75344B	Basket 6' Aggressive Weldment		
10	77660B	Basket Pivot Limit (Pair)	Includes Items 11-13	
11	77042B	Basket Pitch Adjustment Bushing		
12	91523	Clevis Pin 5/8" Dia. x 4"		
13	9093	Klik Pin 3/16" Dia.		

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Basket/Drum Components - Model 1645D

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Basket/Drum Components - Model 1645D

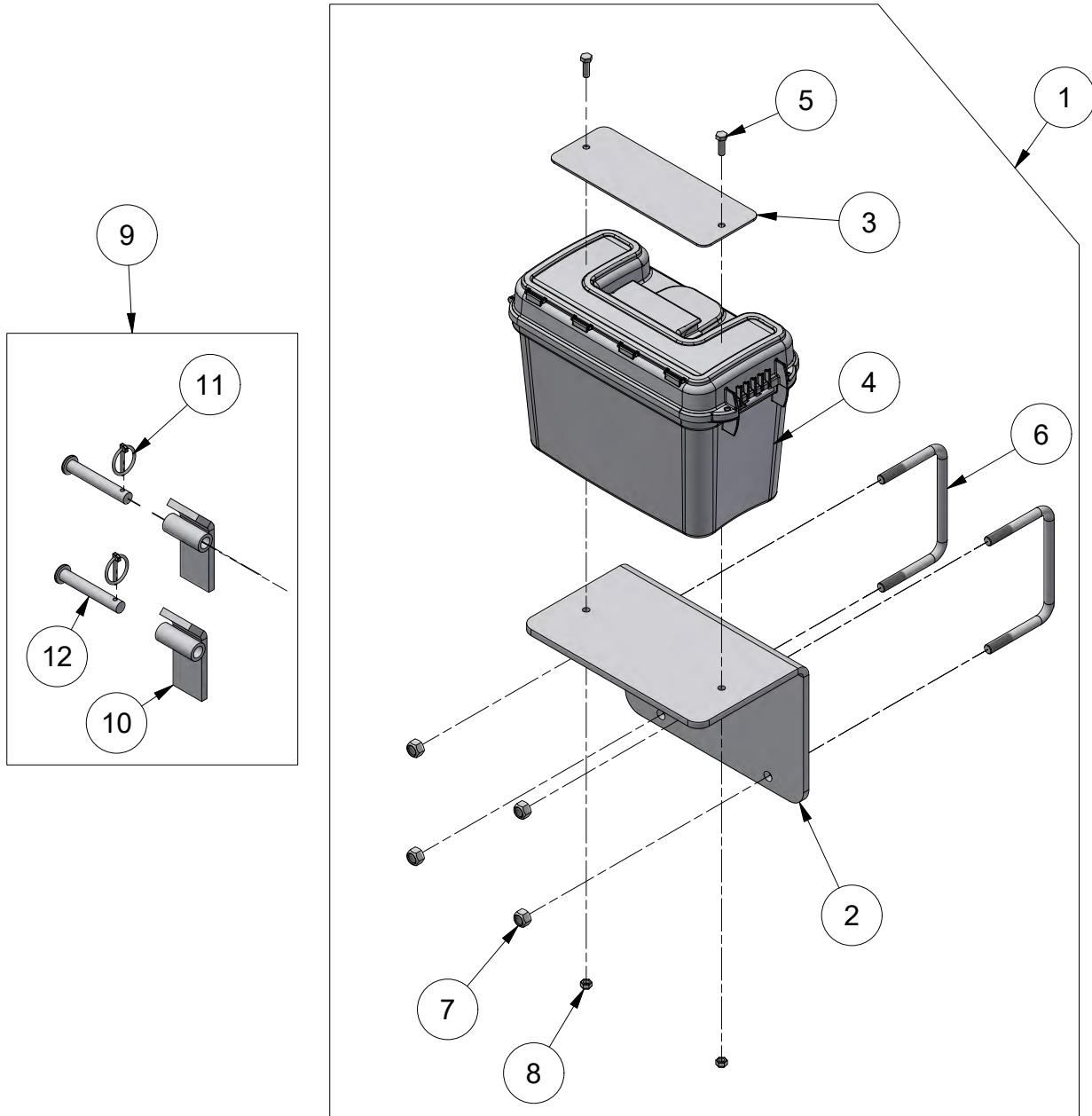
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NO.	DESCRIPTION	NOTES
1	75564B	Drum Scraper Bar Mount	
2	76968B	Drum Scraper 3'	
	76969B	Drum Scraper 4'	
	76970B	Drum Scraper 5'	
	76971B	Drum Scraper 6'	
3	77087B	Basket/Drum & Frame 3' Assembly	Includes Items 4-12
	77088B	Basket/Drum & Frame 4' Assembly	
	77089B	Basket/Drum & Frame 5' Assembly	
	77090B	Basket/Drum & Frame 6' Assembly	
4	74280	Bearing Bolt, 1.125" Square x 2 1/16"	
5	75341B	Basket 3' Aggressive Weldment	
	75342B	Basket 4' Aggressive Weldment	
	75343B	Basket 5' Aggressive Weldment SHOWN	
	75344B	Basket 6' Aggressive Weldment	
6	75530B	Drum Roller 3' Weldment	
	75529B	Drum Roller 4' Weldment	
	75528B	Drum Roller 5' Weldment	
	75527B	Drum Roller 6' Weldment	
7	77079B	Frame 3' Weldment	
	77080B	Frame 4' Weldment	
	77081B	Frame 5' Weldment SHOWN	
	77082B	Frame 6' Weldment	
8	74006	Bearing Kit	Includes Items 9-12
9	900872	Capscrew, 5/8"-11UNC x 1 1/4" G5	
10	902714	Flange Bearing, 1 1/8" Square Bore	
11	9388-103	Carriage Bolt, 1/2"-13UNC x 1 1/4" G5	
12	9800	Locknut/Top, 1/2"-13UNC	
13	901837	U-Bolt, 1/2"-13UNC	
14	9388-104	Carriage Bolt, 1/2"-13UNC x 1 1/2"	
15	9405-088	Flat Washer, 1/2" USS	
16	9800	Locknut/Top, 1/2"-13UNC	
17	77660B	Basket Pivot Limit (Pair)	Includes Items 18-20
18	77042B	Basket Pitch Adjustment Bushing	
19	91523	Clevis Pin 5/8" Dia. x 4"	
20	9093	Klik Pin 3/16" Dia.	

Basket Pin Up & Storage Box Components

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

Model 1645D - Standard
Model 1645 - Optional



Basket Pin Up & Storage Box Components

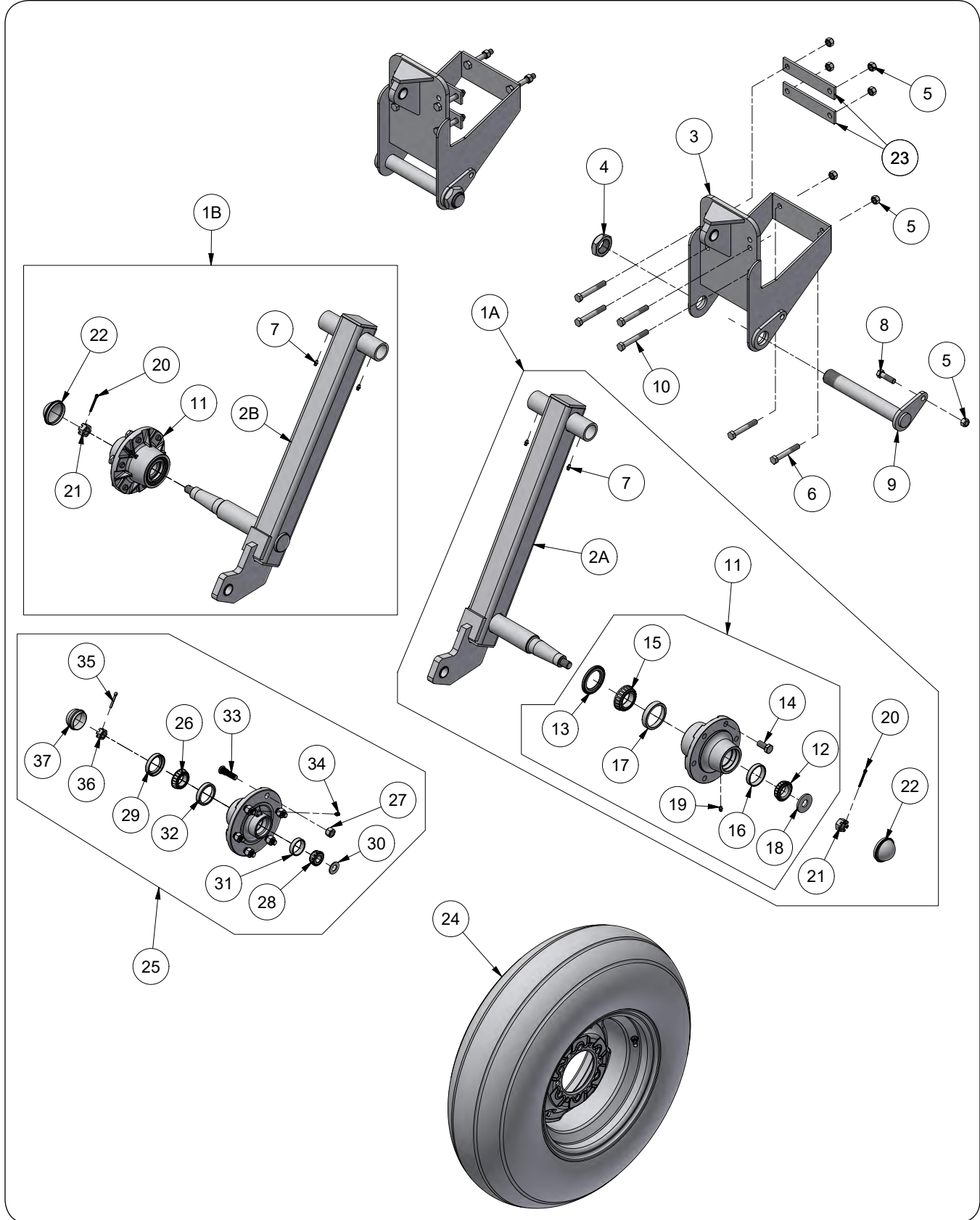
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY	NOTES
1	77401B	Storage Box Bracket Assembly	1	Includes Items 2 through 8
2	77400B	Storage Box Bracket =Black=	1	
3	27741B	Plate 4" x 11"	1	
4	902456	Storage Box	1	
5	9390-030	Capscrew, 5/16"-18UNC x 1" G5	2	
6	9502320	U-Bolt, 1/2"-13UNC x 4 1/16"	2	
7	9800	Lock Nut/Top, 1/2"-13UNC	4	
8	9807	Lock Nut/Top, 5/16"-18UNC	2	
9	77660B	Basket Pivot Limit {PAIR}	1	Includes Items 10, 11, 12
10	77042B	Basket Pin Up Bushing Weldment =Black=	2	
11	9093	Klik Pin 3/16" Dia. x 1 9/16"	2	
12	91523	Clevis Pin 5/8" Dia. x 4"	2	

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Wing Gauge Wheel & Hub Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Wing Gauge Wheel & Hub Components

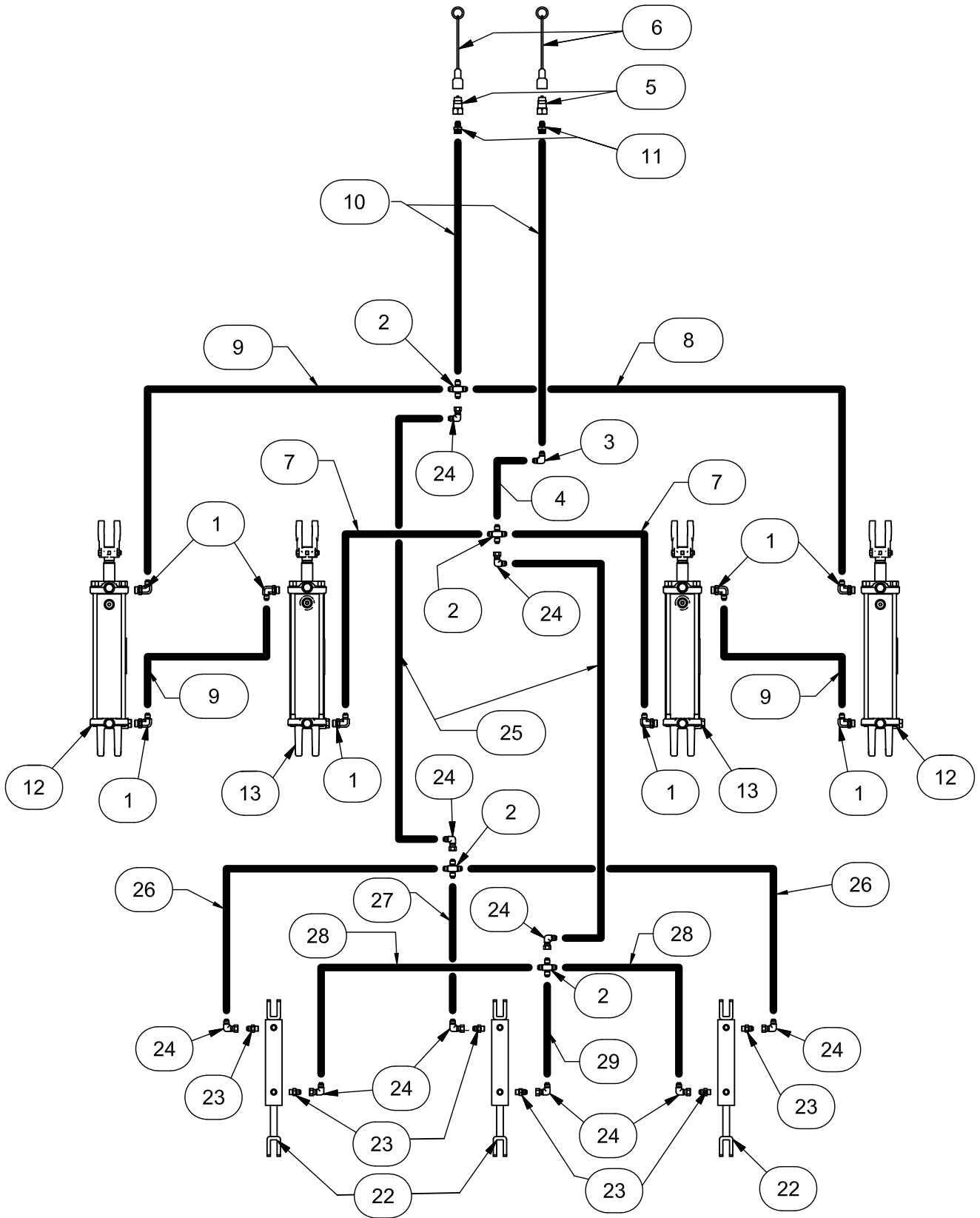
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	NOTES
1A	76403B	Gauge Wheel Assembly LH	Includes Items 2A, 3-23
	76746B	Gauge Wheel Assembly LH Less Wheel Bracket Weldment & Mounting Hardware	Includes Items 2A, 11-22
1B	76396B	Gauge Wheel Assembly RH	Includes Items 2B, 3-23
	76745B	Gauge Wheel Assembly RH Less Wheel Bracket Weldment & Mounting Hardware	Includes Items 2B, 11-22
2A	76740B	Axle Wweldment LH (Less Zerks)	
2B	76739B	Axle Wweldment RH (Less Zerks)	
3	75641B	Wheel Bracket Weldment	
4	9397-022	Elastic Jam Nut, 1 1/2"-12UNF (For Service ONLY)	
5	9800	Locknut/Top, 1/2"-13UNC	
6	9390-108	Capscrew, 1/2"-13UNC x 3 1/4" G5	
7	91160	Grease Zerk, 1/4-28	
8	9390-102	Capscrew, 1/2"-13UNC x 1 3/4" G5	
9	89261	Pin Weldment & Nut	Includes Item #4
10	9390-109	Capscrew, 1/2"-13UNC x 3 1/2" G5	
11	9500003B	Hub Assembly With Wheel Bolts	Includes Items 12-19
12	9165	Bearing Cone #LM67048	
13	9230	Seal, 2" Dia. Shaft	
14	9231	Wheel Bolt, 9/16"-18UNC x 1 1/8" G5	
15	9247	Bearing Cone #LM501349	
16	9345	Bearing Cup #LM67010	
17	9349	Bearing Cup #LM501310	
18	9234	Flat Washer, 13/16" ID	
19	91160	Grease Zerk, 1/4-28	
20	9391-035	Cotter Pin, 5/32" Dia. x 1 1/2"	For Hub Assembly w/Wheel Bolts
21	9393-016	Slotted Nut, 3/4"-16UNF	For Hub Assembly w/Wheel Bolts
22	9162	Hub Cap	For Hub Assembly w/Wheel Bolts
23	73722B	Plate/Bar	
24	17679	Inner Mounted Tire & Wheel (TL11LB15 12-Ply) (Off White)	
	17679SM	Inner Mounted Tire & Wheel (TL11LB15 12-Ply) (Silver Mist)	
	60911	Outer Mounted Tire & Wheel (TL9.5LB15 8-Ply) (Off White)	
	60911SM	Outer Mounted Tire & Wheel (TL9.5LB15 8-Ply) (Silver Mist)	
	9002500	Valve Stem Only	
	W815-6-08	Implement Wheel Only (Off White)	
	W815-6-08SM	Implement Wheel Only (Silver Mist)	
25	9500001B	Hub Assembly With Drive-In Studs	
26	9165	Bearing Cone #LM67048	
27	9348	Beveled Nut, 1/2"-20UNF	
28	9789	Bearing Cone #LM11949	
29	9790	Seal, 1.625" Shaft	
30	9791	Flat Washer, 21/32" ID	
31	9784	Bearing Cup #LM11910	
32	9345	Bearing Cup #LM67010	
33	9347	Stud Bolt, 1/2"-20UNF x 1.88"	
34	9504710	Grease Zerk	
35	9391-043	Cotter Pin, 3/16" Dia. x 1 1/4"	For Hub Assembly w/Drive-In Studs
36	9393-014	Slotted Nut, 5/8"-18UNF	For Hub Assembly w/Drive-In Studs
37	9787	Hub Cap	For Hub Assembly w/Drive-In Studs

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Raise & Lower Hydraulic Components For 47-49' Models

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Raise & Lower Hydraulic Components For 47-49' Models

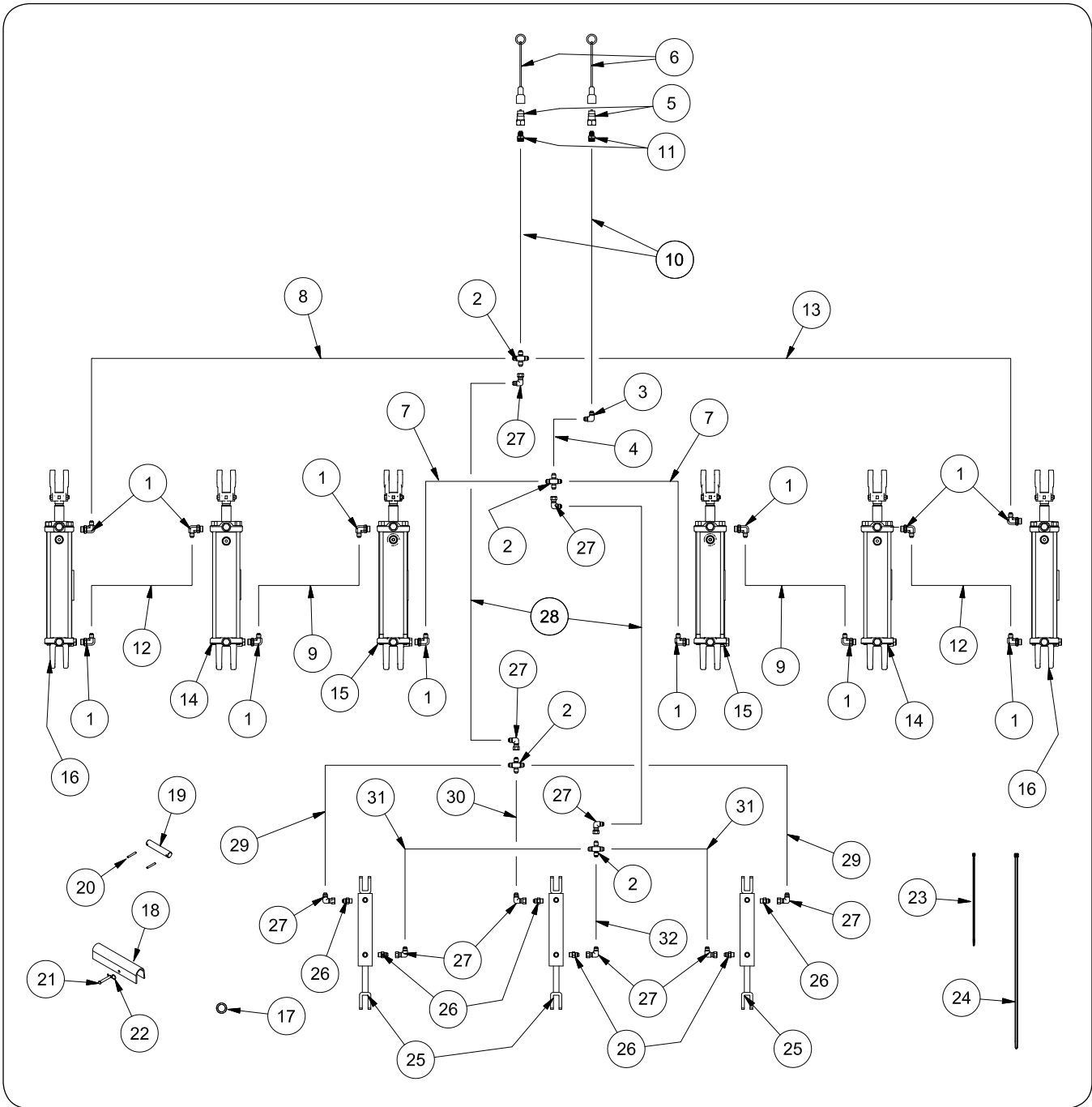
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY
1	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	8
2	9002273	Cross 9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male	4
3	9897	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Male	1
4	9501700	Hose 3/8 x 48 (3000 PSI)	1
5	91383	Male Tip Coupling 3/4-16 O-Ring Female Thread (3000 PSI)	2
6	91511	Dust Cap	2
7	9501702	Hose 3/8 x 84 (3000 PSI)	2
8	9501691	Hose 3/8 x 228 (3000 PSI)	1
9	9501698	Hose 3/8 x 334 (3000 PSI)	3
10	9501714	Hose 3/8 x 464 (3000 PSI)	2
11	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male Boss	2
12	9501723	Cylinder 3 1/4 x 12 (3000 PSI)	2
	902654	Seal Kit	-
13	9501755	Cylinder 3 1/2 x 12 (3000 PSI)	2
	902653	Seal Kit	-
14	9840	"O"-Ring (For Repairs ONLY)	-
15	73130B	Stop (For Main Frame Wheel Cylinders)	2
16	85631	Pin 1" Dia. x 4	8
17	91144-165	Spiral Pin 1/4" Dia. x 1 7/8	16
18	9828	Clevis Pin 3/8" Dia. x 2 1/2 (For Main Frame Wheel Cylinders)	2
19	9514	Hairpin Cotter (For Main Frame Wheel Cylinders)	2
20	94037	Cable Tie, 15 1/2" Long	6
21	94038	Cable Tie, 32" Long	12
22	TA0-904623-0	Cylinder 1 1/2 x 6	3
23	9001495	Adapter 9/16-18 JIC Male x 9/16-18 O-Ring Male	6
24	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female Swivel Nut	6
25	9501687	Hose 3/8 x 96 (3000 PSI)	2
26	9501684	Hose 3/8 x 68 (3000 PSI)	2
27	9501679	Hose 3/8 x 22 (3000 PSI)	1
28	9501685	Hose 3/8 x 80 (3000 PSI)	2
29	9501680	Hose 3/8 x 26 (3000 PSI)	1

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Raise & Lower Hydraulic Components For 51-59' Models

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

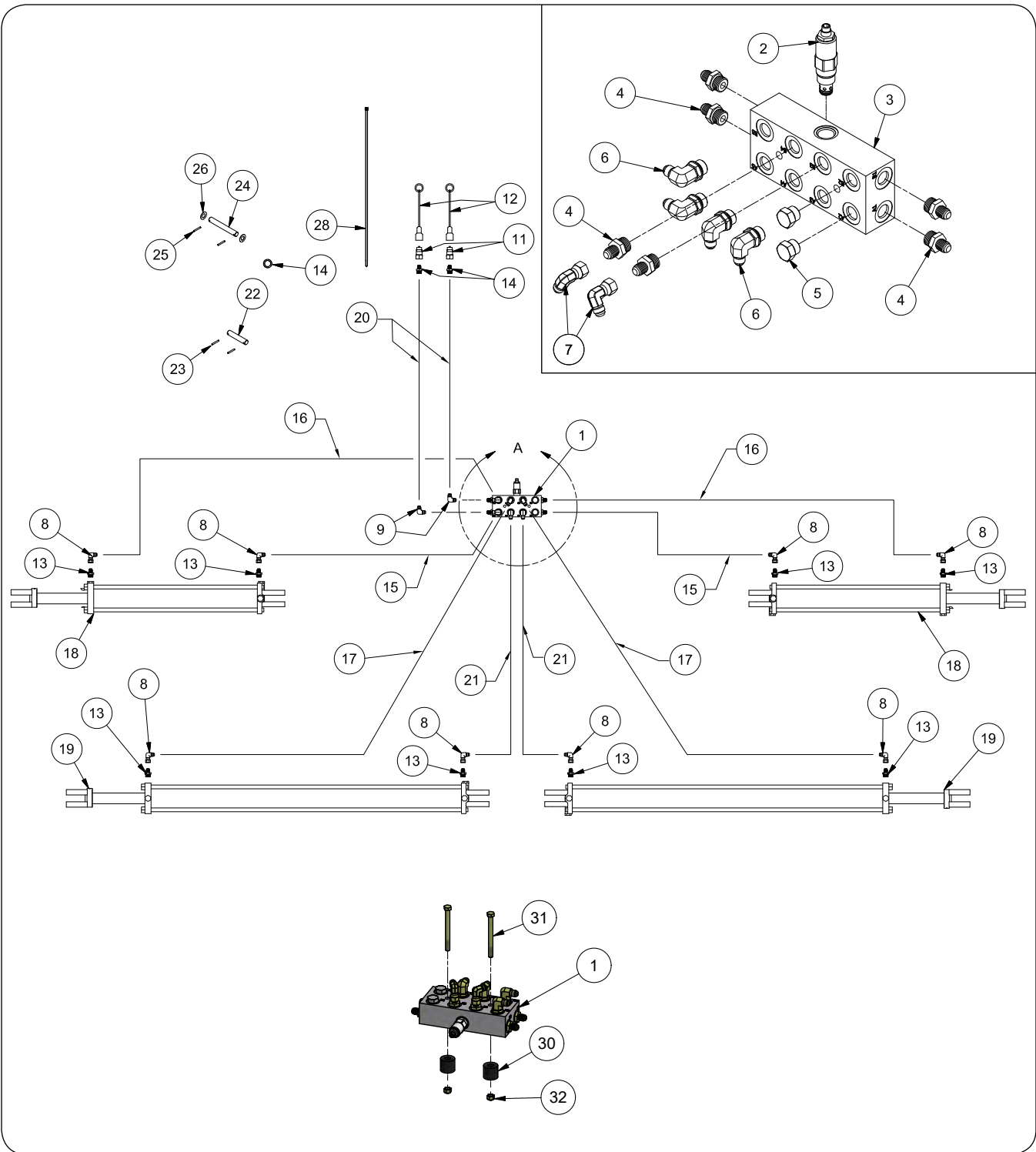
Raise & Lower Hydraulic Components For 51-59' Models

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

ITEM	PART NUMBER	DESCRIPTION	QTY
1	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	12
2	9002273	Cross 9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male x 9/16-18 JIC Male	4
3	9897	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Male	1
4	9501700	Hose 3/8 x 48 (3000 PSI)	1
5	91383	Male Tip Coupling 3/4-16 O-Ring Female Thread (3000 PSI)	2
6	91511	Dust Cap	2
7	9501702	Hose 3/8 x 84 (3000 PSI)	2
8	9501713	Hose 3/8 x 404 (3000 PSI)	1
9	9501698	Hose 3/8 x 334 (3000 PSI)	2
10	9501714	Hose 3/8 x 464 (3000 PSI)	2
11	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male Boss	2
12	9501697	Hose 3/8 x 178 (3000 PSI)	2
13	9501710	Hose 3/8 x 304 (3000 PSI)	1
14	9501723	Cylinder 3 1/4 x 12 (3000 PSI)	2
	902654	Seal Kit	-
15	9501755	Cylinder 3 1/2 x 12 (3000 PSI)	2
	902653	Seal Kit	-
16	9501736	Cylinder 3 x 12 (3000 PSI)	2
	902655	Seal Kit	-
17	9840	"O"-Ring (For Repairs ONLY)	-
18	73130B	Stop (For Main Frame Wheel Cylinders)	2
19	85631	Pin 1" Dia. x 4	12
20	91144-165	Spiral Pin 1/4" Dia. x 1 7/8	24
21	9828	Clevis Pin 3/8" Dia. x 2 1/2 (For Main Frame Wheel Cylinders)	2
22	9514	Hairpin Cotter (For Main Frame Wheel Cylinders)	2
23	94037	Cable Tie, 15 1/2" Long	6
24	94038	Cable Tie, 32" Long	12
25	TA0-904623-0	Cylinder 1 1/2 x 6	3
26	9001495	Adapter 9/16-18 JIC Male x 9/16-18 O-Ring Male	6
27	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female Swivel Nut	6
28	9501687	Hose 3/8 x 96 (3000 PSI)	2
29	9501684	Hose 3/8 x 68 (3000 PSI)	2
30	9501679	Hose 3/8 x 22 (3000 PSI)	1
31	9501685	Hose 3/8 x 80 (3000 PSI)	2
32	9501680	Hose 3/8 x 26 (3000 PSI)	1

Wing Fold Hydraulic Components

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



Vertical-Fold Rolling Harrow 1645/1645D — Parts

Wing Fold Hydraulic Components

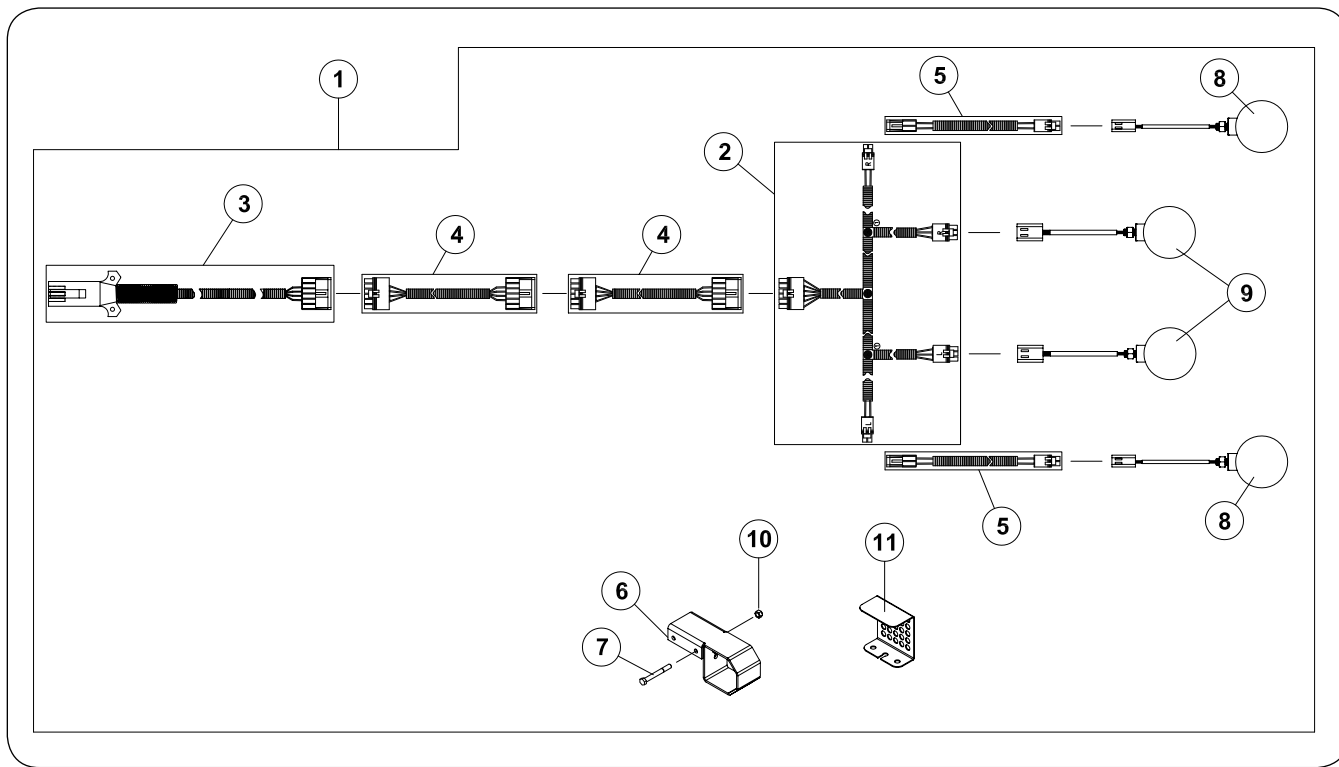
Please visit www.unverferth.com/parts/ for the most current parts listing.

ITEM	PART NUMBER	DESCRIPTION	QTY
1	88476	Block & Valve Assembly	1
2	901707	Valve Pressure Relief 7/8-14UNF (2500 PSI)	1
3	901712	Manifold Block	1
4	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male Boss	6
5	93657	Plug 3/4-16 O-Ring	2
6	9874	90° Elbow 9/16-18 JIC Male x 3/4-16 O-Ring Male	4
7	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female	2
8	9876	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Female	8
9	9897	90° Elbow 9/16-18 JIC Male x 9/16-18 JIC Male	2
10	9840	"O"-Ring (For Repairs ONLY - NOT SHOWN)	-
11	91383	Male Tip Coupling 3/4-16 O-Ring Female Thread (3000 PSI)	2
12	91511	Dust Cap	2
13	98474	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male Boss w/.078 Restrictor	8
14	92927	Adapter 9/16-18 JIC Male x 3/4-16 O-Ring Male Boss	2
15	9501690	Hose 3/8 x 198 (3000 PSI)	2
16	9501704	Hose 3/8 x 220 (3000 PSI)	2
17	9501701	Hose 3/8 x 63 (3000 PSI)	2
18	96960	Cylinder 4 x 24 (3000 PSI) For 51-59' Units	2
	95407	Seal Kit for Cylinder 4 x 24 For 51-59' Units	-
	96959	Cylinder 3 1/2 x 24 (3000 PSI) For 47 & 49' Units	2
	95393	Seal Kit for Cylinder 3 1/2 x 24 For 47 & 49' Units	-
19	901630	Cylinder 4 x 48 (3000 PSI) For 51-59' Units	2
	95407	Seal Kit for Cylinder 4 x 48 For 51-59' Units	-
	901546	Cylinder 3 1/2 x 48 (3000 PSI) For 47 & 49' Units	2
	95393	Seal Kit for Cylinder 3 1/2 x 48 For 47 & 49' Units	-
20	9501714	Hose 3/8 x 464 (3000 PSI)	2
21	9501699	Hose 3/8 x 16 (3000 PSI)	2
22	85631	Pin 1" Dia. x 4"	6
23	91144-165	Spiral Pin 1/4" Dia. x 1 7/8"	12
24	88376	Pin 1" Dia. x 7"	2
25	91144-207	Spiral Pin 3/8" Dia. x 2"	4
26	9405-116	Flat Washer 1"	4
27	94037	Cable Tie, 15 1/2" Long	6
28	94038	Cable Tie, 32" Long	12
29	75884	Velcro Hose Wrap (NOT SHOWN)	4
30	78479B	Spacer/Bushing	2
31	9390-067	Capscrew, 3/8"-16UNC x 4" G5	2
32	9928	Lock Nut/TOP, 3/8"-16UNC	2

Vertical-Fold Rolling Harrow 1645/1645D — Parts

Transport Marking & Light Kit (88278B)

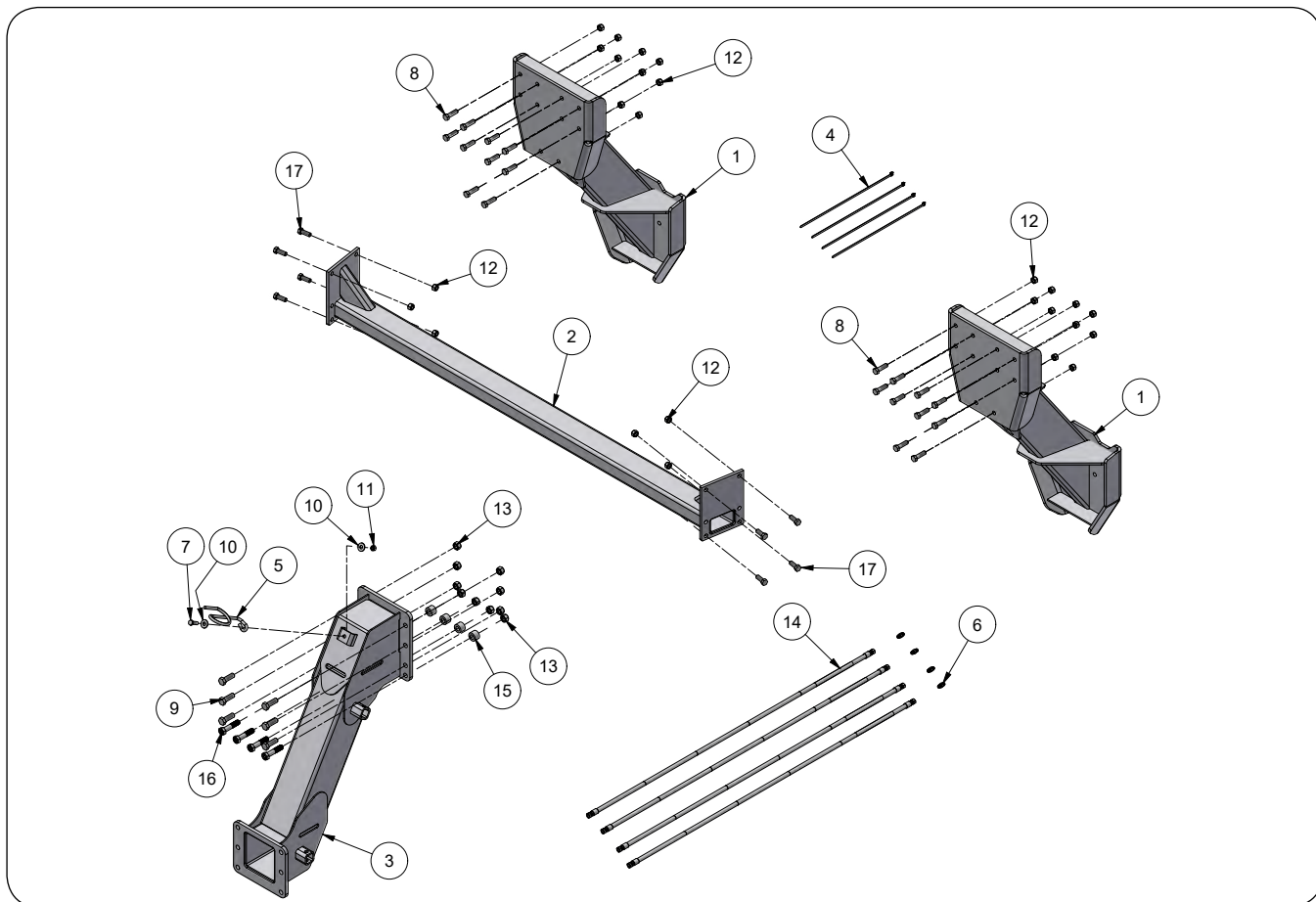
Please visit www.unverferth.com/parts/ for the most current parts listing.



ITEM	PART NUMBER	DESCRIPTION	NOTES
1	88278B	Lights/Transport Marking Package	
2	22790	Wiring Harness/132" 3-T	
3	89467	Wiring Harness/336" Main	
4	86467	Wiring Extension 120" - 6 Pin	
5	86700	Wiring Extension 120" - 2 Pin	
6	88824B	Light Bracket Weldment	
7	9390-100	Capscrew 1/2-13UNC x 1 1/4	Grade 5
8	9003876	Light - Amber	
9	9003877	Light - Red	
10	9800	Locknut 1/2-13UNC	
11	73338B	Guard	

Gooseneck Hitch Components (Optional)

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



ITEM	PART NUMBER	DESCRIPTION	QTY
1	77944G	Gooseneck Extension Weldment =Green=	2
	77944R	Gooseneck Extension Weldment =Red=	
2	77947G	Cross Tube Weldment =Green=	1
	77947R	Cross Tube Weldment =Red=	
3	79870G	Gooseneck Drop-down Hitch Weldment =Green=	1
	79870R	Gooseneck Drop-Down Hitch Weldment =Red=	
4	9000104	Cable Tie 21 1/2"	A/R
5	902979B	Hose Holder =Black=	1
6	92295	Adapter, 9/16"-18 JIC Male x 9/16"-18 JIC Male	4
7	9390-101	Capscrew, 1/2"-13UNC x 1 1/2" G5	1
8	9390-125	Capscrew, 5/8"-11UNC x 2 1/4" G5	20
9	91299-146	Capscrew, 3/4"-10UNC x 2 1/4" G8	6
10	9405-088	Flat Washer 1/2"	2
11	9800	Locknut/Top, 1/2"-13UNC	1
12	9801	Locknut/Top, 5/8"-11UNC	28
13	9802	Locknut/Top, 3/4"-10UNC	10
14	9504072	Hydraulic Hose, 3/8" Dia. x 66" (9/16"-18 JIC Female x 9/16"-18 JIC Female)	4
15	79873	Bushing, 1 1/2" OD x 0.812" ID x 1"	4
16	91299-151	Capscrew, 3/4"-10UNC x 3 1/2" G8	4
17	9390-123	Capscrew, 5/8"-11UNC x 1 3/4" G5	8



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