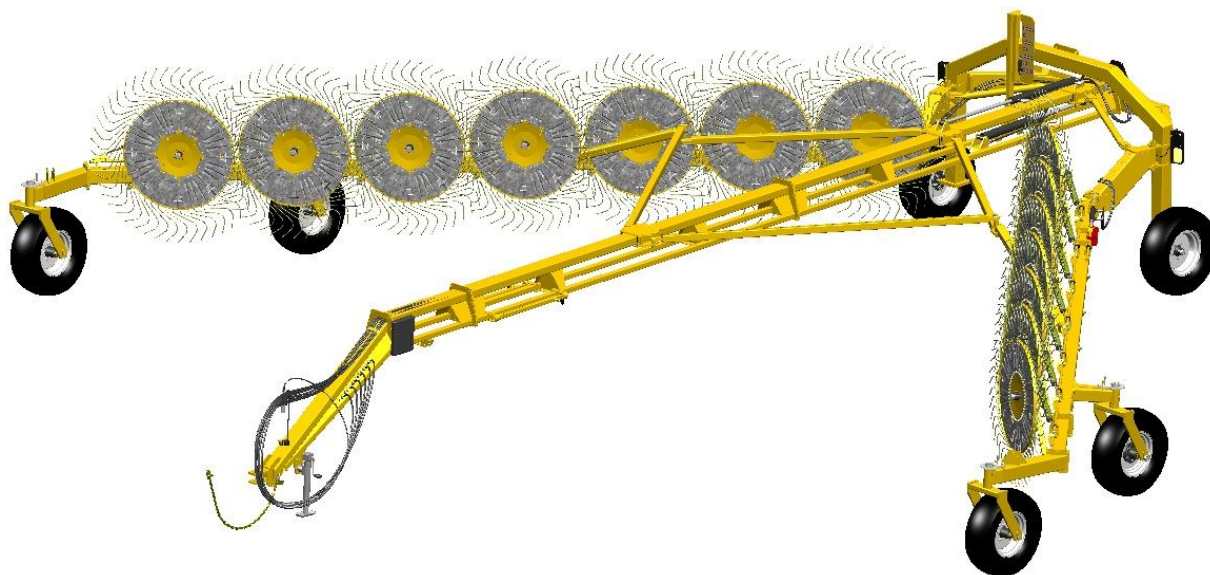




# **BRIDGEVIEW**



## **VR481 Hay Rake**

### **OPERATOR & PARTS MANUAL**

Last Updated: June 17, 2014

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**Your Authorized Dealer**

**Your Serial Number**

The Serial Number is located near the front of the hitch beam on the left side.

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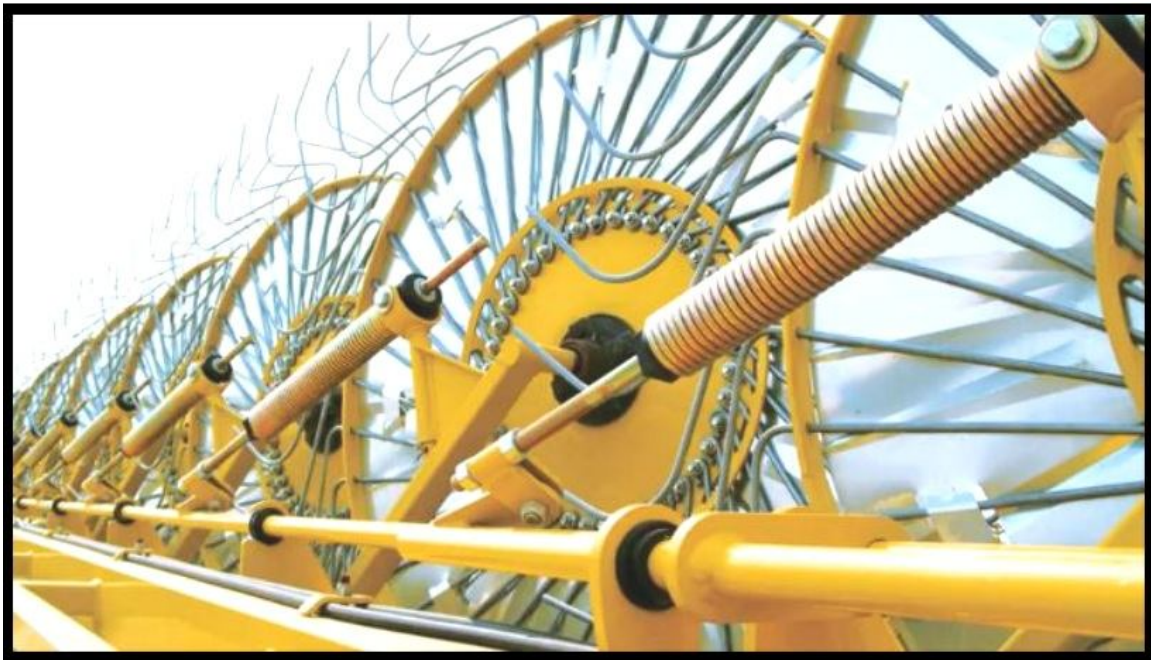
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## 1.0 Introduction

Thank you for purchasing your new **Bridgeview Bale King VR481 Hay Rake**. With the proper operation and service as outlined in this manual, this rake will provide you with years of trouble free operation.

This is a complete safety, operation, and parts manual for the VR481. The manual covers in detail how to safely and effectively use the rake and these steps should be followed to ensure safety and longevity of your machine. The parts manual covers all the parts you may need to order in case of accident or breakdown. Also included in this manual is the procedures on how to assemble the Bridgeview 12 Wheel Rake and optional 14 Wheel Extension Kit. Please read through this manual before beginning assembly.



*\*Please note that some parts and assemblies may not be as shown\**

## 2.0 Safety and Operation

### 2.1 Safety Precautions

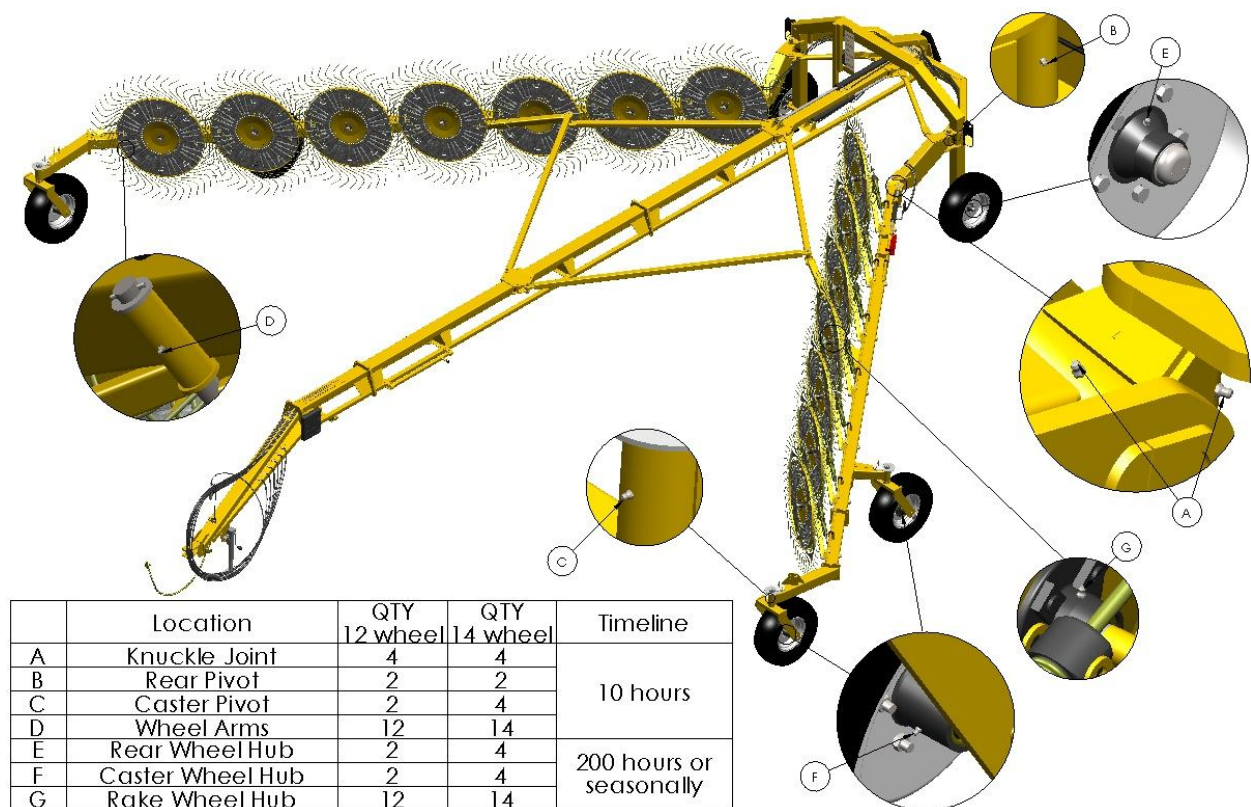
The following safety precautions **MUST** be followed to ensure the safe operation of the VR481:

1. This trailed machine was designed and intended for on-farm use only. **Tow at speeds not to exceed 20 MPH.** Slow down for hills, curves, rough areas, and in advance of braking to prevent loss of control and possible injury or death.
2. **Always** turn off the tractor when leaving the operating platform.
3. **Always** read and follow the Highway Transport section before towing the VR481 on the highway.
4. Unless operating tractor, **stand clear** of the rake when in operation.
5. **Do not** stand inside the rake while it is being opened or closed.

## 2.2 Machine Maintenance & Lubrication

General maintenance of your VR481 should be done on a regular basis. This includes checking all bolts to ensure they are tight, making sure all grease zerks are accepting grease and ensuring that all moving parts are functioning correctly.

Your Bale King VR481 is equipped with a number of grease zerks. It is important that these locations are lubricated according to the following maintenance schedule:



**NOTE:** For ease of greasing, all zerks are accessed from the outside. The rake should be in the closed "Transport" position, otherwise access to fitting "A" is restricted. Fitting "D" is accessed from the bottom of the main arms.



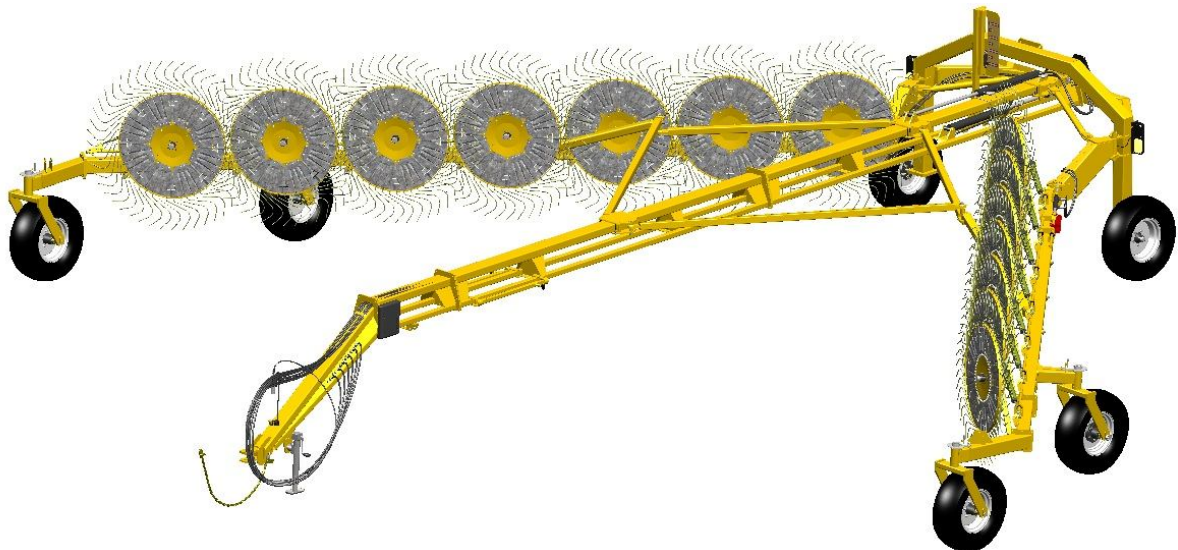
## ***2.3 Wheel & Tire Information***

The proper tire pressure for the Bale King VR481 is **35 psi**. Proper tire inflation will help alleviate a puncture problem when pulling and operating the machine in rough terrain. The optimum tire size is 9.5L-15, 8 Ply on a 5-bolt, 5.5" pattern rim.

- **NOTE:** Check and tighten wheel bolts on a regular basis to ensure that bolts are tightened to **90 ft-lbs**.
- Warranty **does not** cover damaged rims and hubs due to loose wheel bolts.
- Tire warranty is covered by the tire manufacturer.

## ***2.4 Wheel Extension Kit***

The 12 wheel rake can be fitted with an optional 14 wheel extension kit. This allows the rake to cover a wider area. The kit extends the length of the rake arms, adding a rake wheel to each side, and can be purchased as a separate kit to the 12 wheel rake.





## 2.5 Hydraulic Hook Up

There are six hydraulic hoses to be connected to the tractor. All six hoses run out of the gooseneck of the rake, near the hitch.

Each hose is colour coded so that they are easier to keep track of. They are also marked with a long and short marker to determine direction.

- **Green Hose** controls the **main wing cylinder**, used to open (long) and close (short) the rake arms.
- **Blue Hose** controls the **windrow adjustment cylinder**, to change the width of the rear opening, and the size of the windrow.
- **Yellow Hose** adjusts the **wheel lift cylinders used** to raise (long) and lower (short) the rake wheels.

An optional diverter valve kit is available to allow your machine to operate on only four hoses.

- **Yellow Hose** adjusts the **wheel lift cylinders used** to raise (long) and lower (short) the rake wheels.
- **Blue Hose** controls both the main wing and windrow adjustment actions. To switch back and forth between the two, a control box is supplied for the cab, which will allow easy transfer between the two functions.

Further information on the diverter kit can be found in section 2.11.

## 2.6 Highway Transport

When transporting your rake on the highway there are a number of safety precautions that must be taken to ensure safe travel.

**DO NOT EXCEED 20 mph (32 km/h) DURING TRANSPORT**

<u>Rake</u>	<u>Transport Width</u>	<u>Transport Weight</u>
12 wheel	10'1"	4800 lb
14 wheel	12'7"	5600 lb

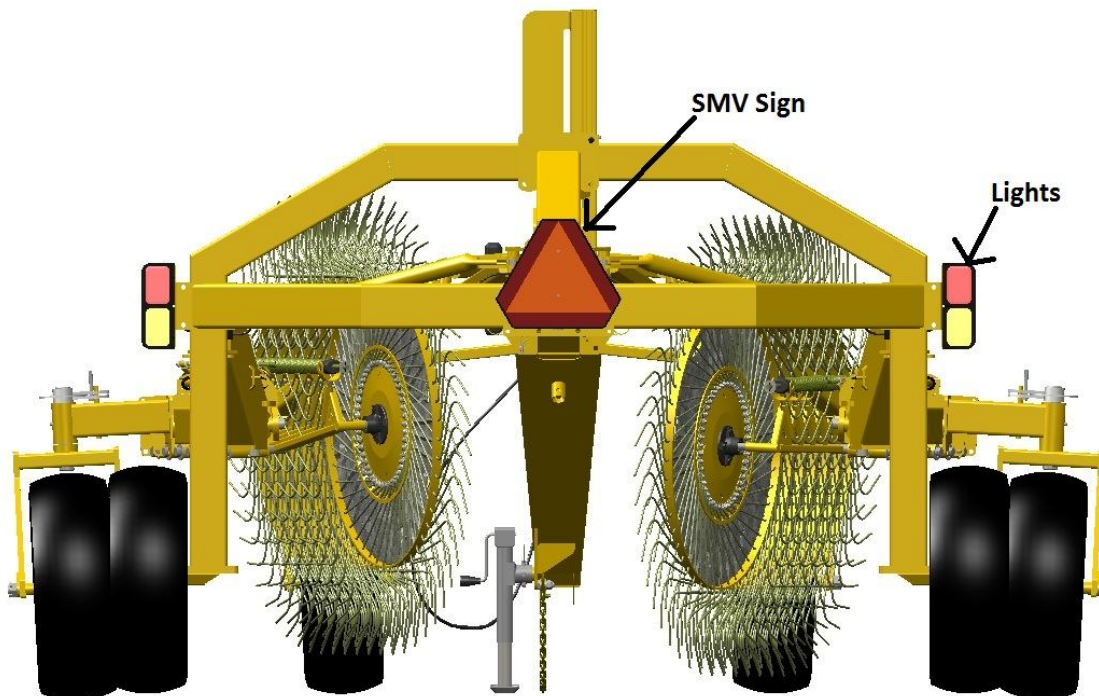
### 2.6.1 Safety Chains

Make sure that you have attached the safety chain to the hitch through the safety chain hole. The chain is rated at 11,000lb. The jack is stored underneath the hitch.

### 2.6.2 Lights and Marking

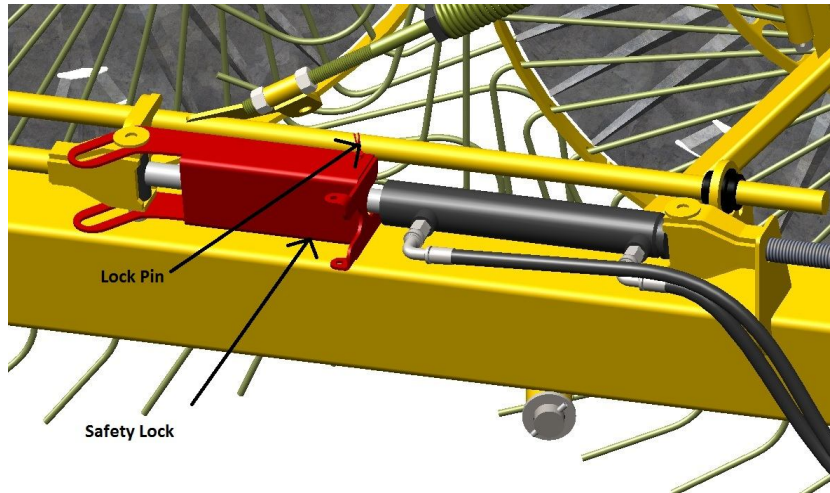
The VR481 is supplied with a light kit for better visibility. The lights can be plugged into the tractor or truck using a 7-pin trailer plug. These lights will act as flashing amber lights, as well as red tail lights. Ensure that the lights work properly before highway transport.

Ensure that the SMV (Slow Moving Vehicle) sign is in place and visible.



### 2.6.3 Cylinder Safety Locks

The lift arm cylinders (located on the left and right rake arms) should be fitted with cylinder safety locks. To insert the safety locks, raise the rake wheels to their highest position, then insert the lock pin.



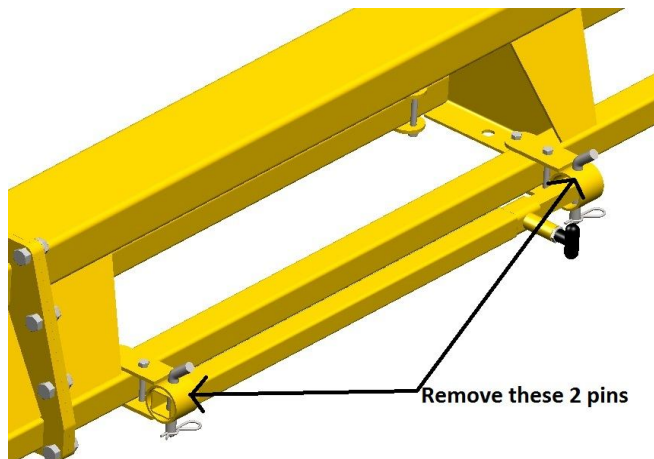
#### 2.6.4 Retract Windrow Arms

Ensure that the rear opening is in the narrow position by fully stroking the windrow adjustment cylinder. Then bring in the arms by retracting the wing cylinder until the front casters are brought in near the hitch.

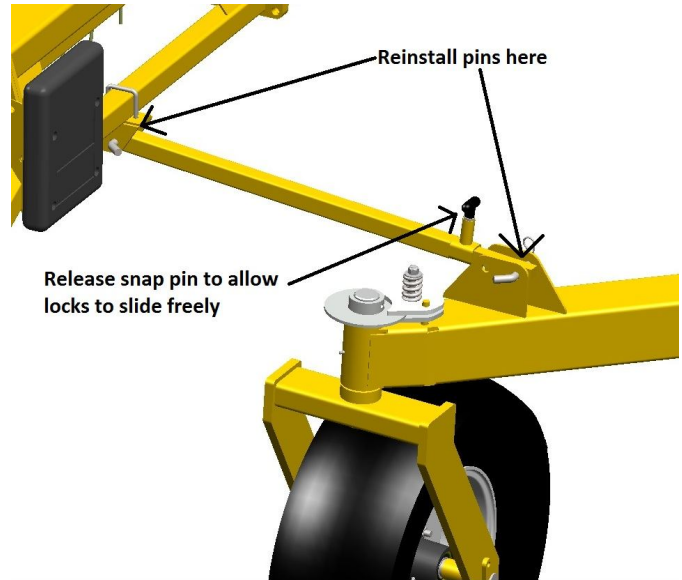


#### 2.6.5 Transport Locks

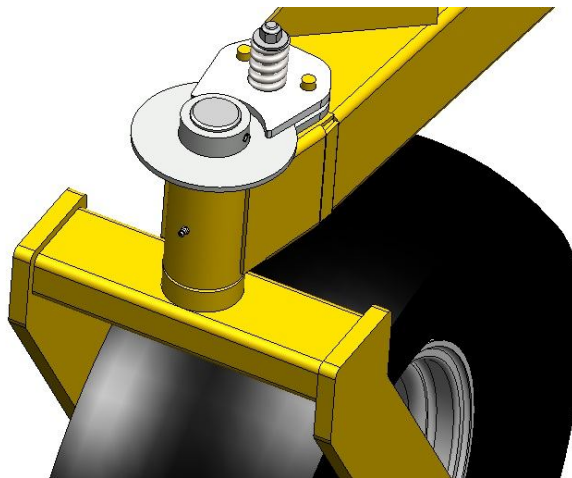
Next install the transport locks. First, remove the links from the carrying brackets by removing the pin at each end, as shown below.



Next insert the large end into the bracket at the bottom of the main frame. Pull out the self-locking pin and allow the inside tube to freely slide, then insert the small end into the bracket on the arm. Retract the wing cylinder until the self-locking pin locks in transport position. Ensure that both arms are secured and all hairpins are in place.



Align the road wheels and tighten the brake springs for all casters. The caster wheels will whip if the brakes are not sufficiently tight. Make sure that you loosen the brakes off before operation.

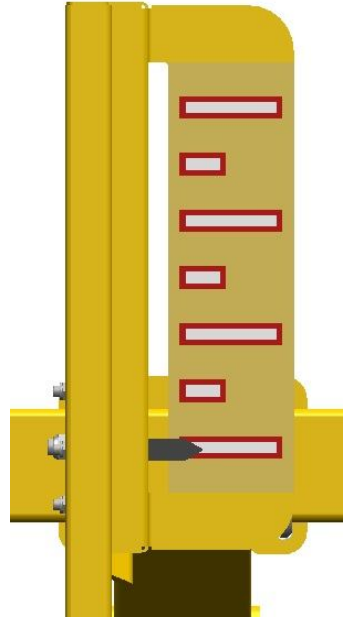


Ensure that all of the tires are at the correct pressure and that all wheel bolts are secured.

## ***2.7 Windrow Width Adjustment***

The rear opening of the VR481 is adjustable using the windrow adjustment cylinder. It must be in the narrow position to be able to transport on the highway. Widening the rear opening will space the rear rake wheels further apart, creating a wider windrow. Pulling the rear opening closer together will also pull the rake wheels closer together, and make a tighter swath. This allows the operator to adjust the width of the windrow to suit field conditions, and accommodate different baler sizes.

An indicator is provided to show you how wide the rear end is set. This will allow you to consistently set the machine to your desired windrow width. The needle moves up and down on the gauge.



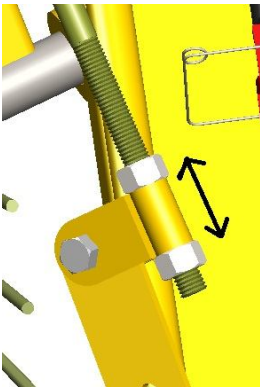
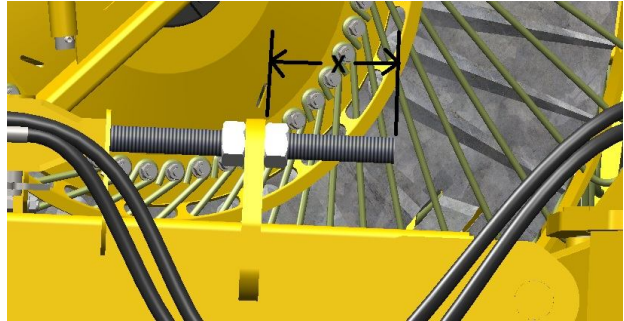
## ***2.8 Field Operation***

The **recommended MAXIMUM raking speed is 8 mph (13 km/h)**, depending on field conditions. Rougher land and heavier windrows require slower operation. This will prevent damage to the rake wheels, and ensure that hay is picked up properly. For faster operation, it is recommended that rake wheel spring tension is increased to prevent bouncing of the tines.

## ***2.9 Adjusting Rake Wheel Arm Spring Tension***

Optimum rake performance is achieved when the rake wheels are lightly scratching the ground. If the spring tension is set too heavy, premature rake tine damage will occur. If tension is too light, the hay will not be properly picked up. If the tension in the spring arms needs to be adjusted there are a number of ways to accomplish this. The first is by moving the threaded rod adjusters.

The threaded rod adjusters are located at the rear end of each rake arm and are directly attached to the lift rod cylinder. By adjusting the bolts attached to the rod adjusters the tension in all the springs of that rake arm are adjusted evenly. To increase tension, increase rod length "X" , as shown above. To decrease tension, decrease rod length.



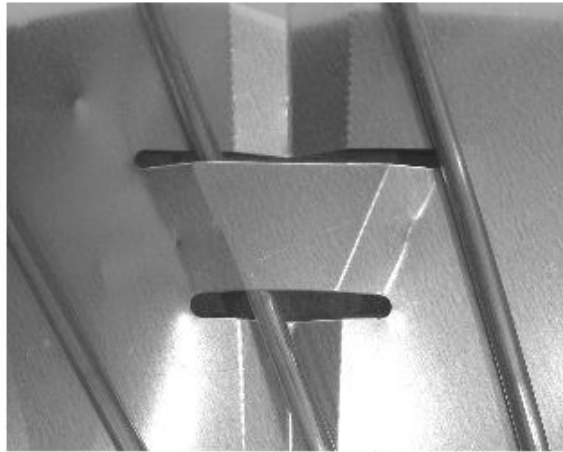
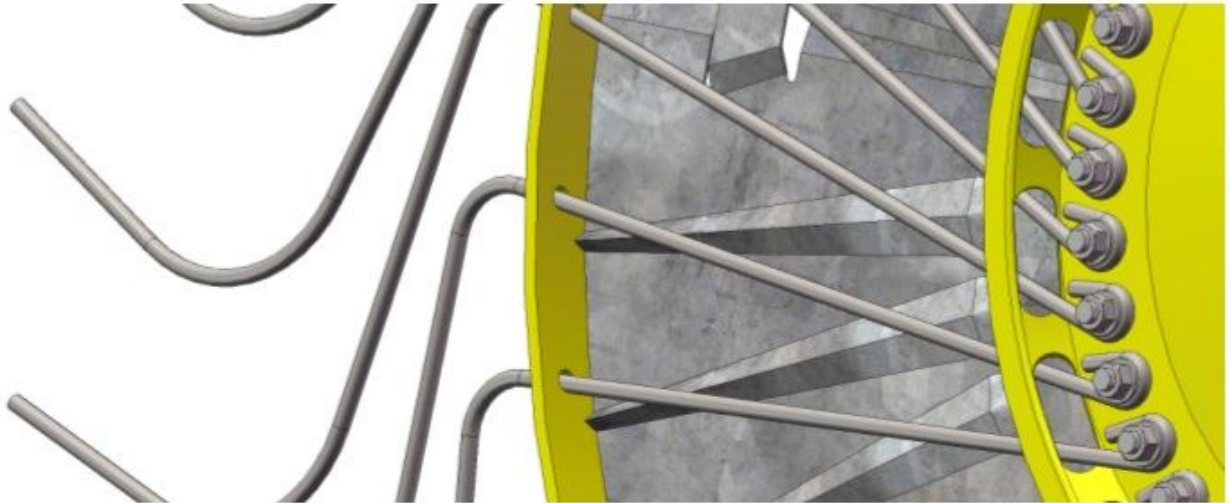
If the spring tension in only one spring needs to be adjusted then the adjustment can be done on the individual spring. There are two nuts near the end of the spring (LEFT) that allow the spring to be loosened or tightened.

## ***2.10 Tine Replacement***

**Note: If a tine on one of the rake wheels needs to be replaced, the following procedure can be used:**

1. The bolt on the back of the rake wheel that corresponds to that tine should be loosened and removed completely.
2. Slide the tine out of the hole in the center disk.
3. Slide the tine out of the wind guard tab if necessary.
4. Slide the tine out of the hole in the outer ring by pushing it in the opposite direction from before.
5. Insert the replacement tine in the same direction as the other tines on the rake wheel.
6. Then insert the bolt back in to the wind guard and tighten the nut.







## 2.11 Diverter Valve Kit (Option)

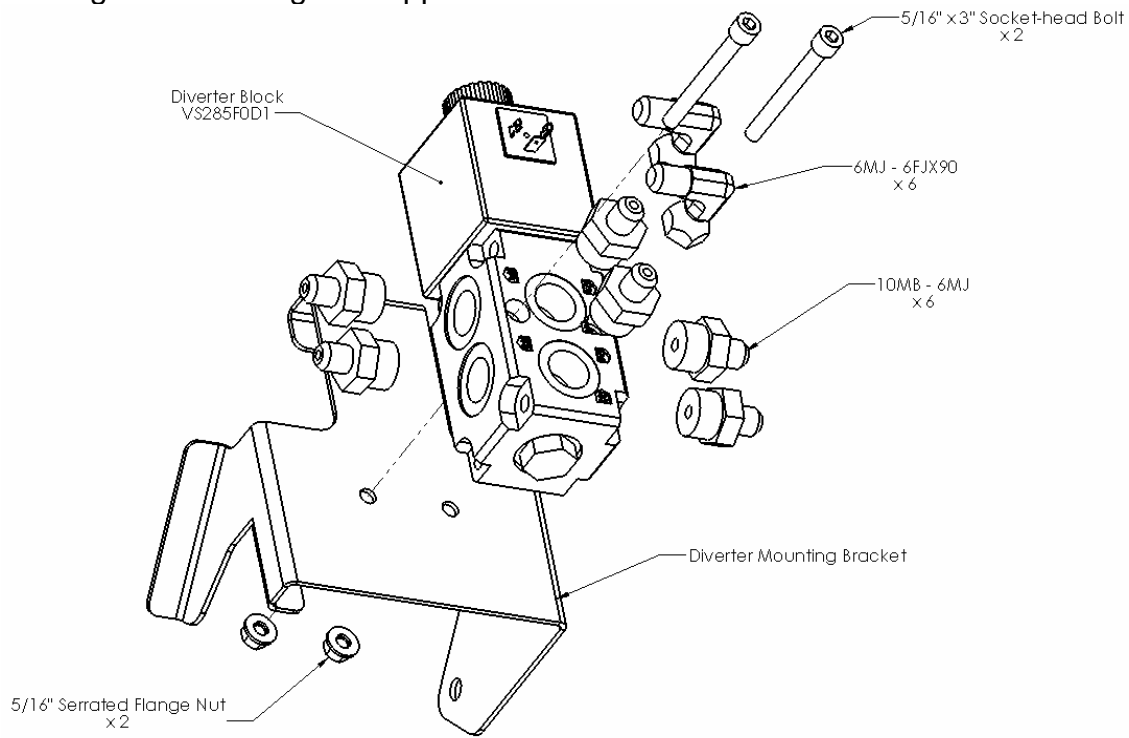
This section will explain how to install a diverter kit (to convert from 3 hydraulic remotes to 2 remotes) on the VR481 hay rake.

The kit includes the following components:

1/4" Hydraulic Hoses	28" OAL 6FJX-6FJX	2
Hydraulic Adaptors	10MB - 6MJ	6
	6MJ - 6FJX90	2
Diverter Valve Mounting Bracket		1
Diverter Valve		1
Square Plug (for electrical connection)		1
44' electrical wire with 3-prong plug		1
Fused switch box (with 2 wires coming out)		1
Bolt, 5/16" x 3" socket head		2
Nut, 5/16" serrated flange		2
U-Bolt, 3/8" x 4" x 7"		1
Nut, 3/8" serrated flange		2
Bolt, 5/8" x 1"		1
Nut, 5/8" serrated flange		1
Grommet, 5/16" ID x 1/4" THICK		1

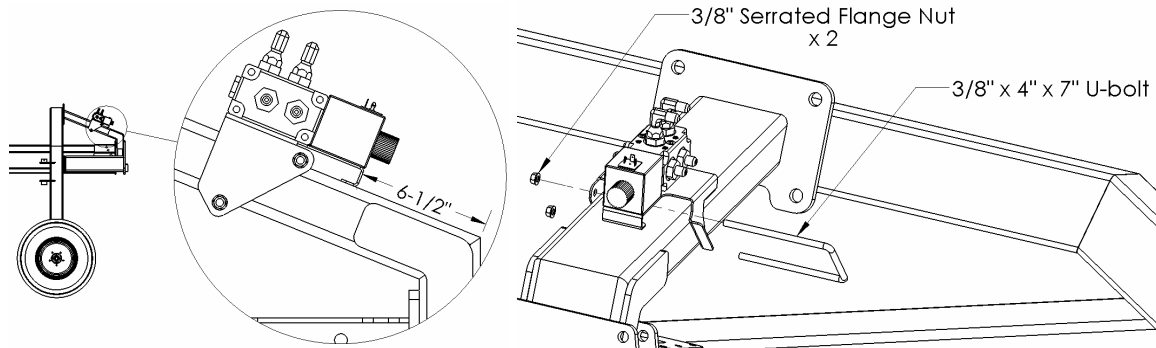
### Step-by-Step Instructions:

1. Install fittings into the diverter valve block as shown. Bolt diverter block to the mounting bracket using the supplied 5/16" hardware.



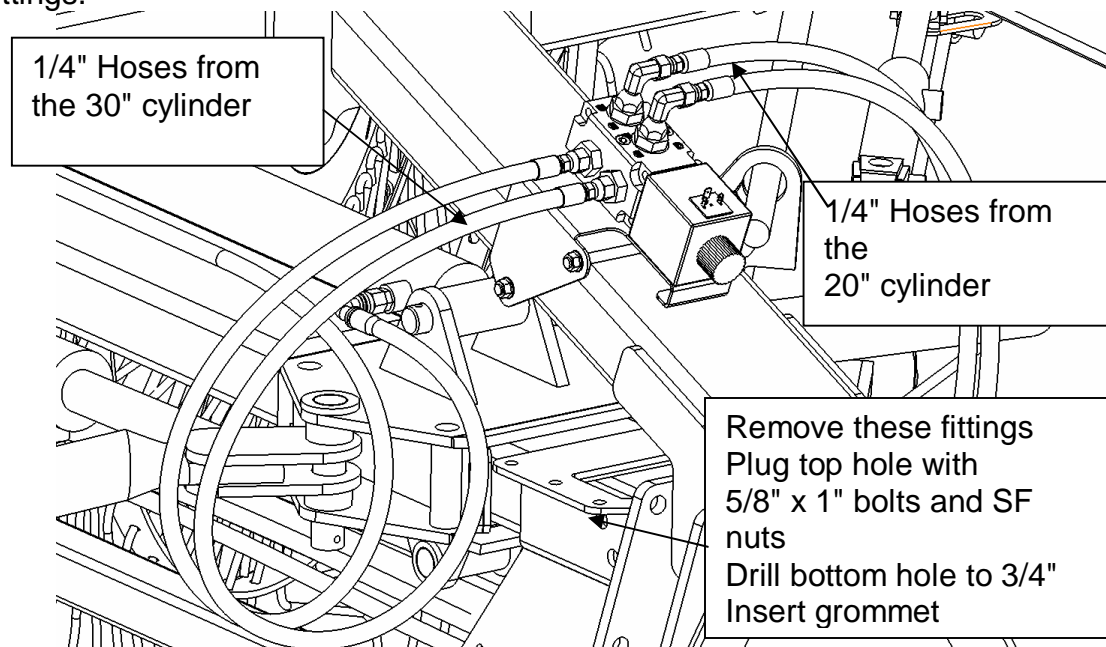
**Step 1**

2. Mount the diverter to the top of the rear frame member as shown. Use the supplied 3/8" U-bolt to fasten to the frame.



**Step 2**

3. Remove the 1/4" hoses from the left bulkhead fittings on the rear of the machine and re-route them to the left side of the diverter. Remove the hoses from the right bulkhead fittings and re-route them to the top of the diverter. Tighten all fittings.



**Step 3 & 4**

4. Remove the bulkhead cover plate and disconnect the hoses from the **LEFT** bulkhead fittings. Remove the fittings from the left side of the bulkhead as well.  
Drill out the bottom hole to 3/4" and insert the supplied grommet.  
Plug the top hole with the supplied 5/8" x 1" bolt and serrated flange nut (bolt head to the outside)

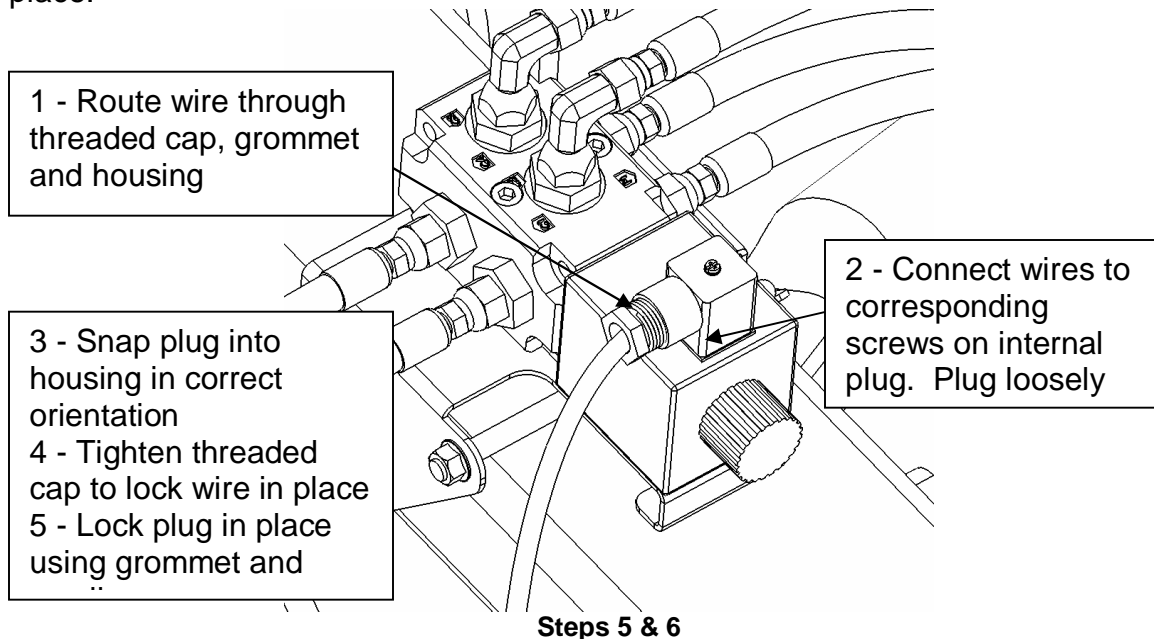
5. Tie the plug end of the 44' length of wire to **ONE** of the 1/4" hoses removed in the previous step. Pull the 1/4" (red) hoses out from the front of the hitch to fish the electrical cord through.

Route the electrical cord through the grommet and up to the diverter. Peel back the coating on the cord and connect the two wires to the square electrical plug as per the drawing:

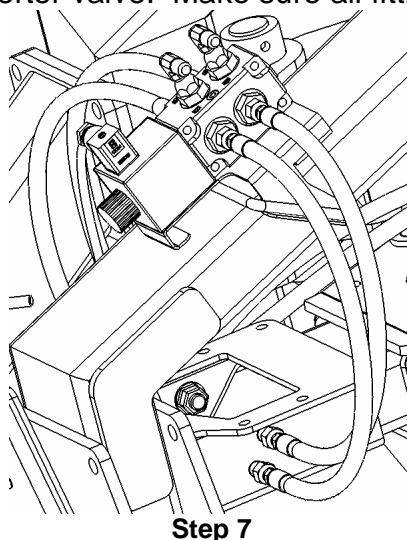
Black wire to leg 1

White wire to leg 2

6. Assemble the plug such that it will sit the correct way on the diverter valve (as shown), then plug into the diverter valve and tighten the supplied screw to lock into place.



7. Install the two supplied hydraulic hoses between the RIGHT bulkhead fittings and the right side of the diverter valve. Make sure all fittings are tight.



8. Remove any slack from the wire and pull inside the bulkhead. Set the hitch wire length as desired (usually 2ft longer than hydraulic lines) and roll up the rest inside the rear bulkhead. **NOTE:** for 12 wheel machines, there will be about 4' of slack in the wire.

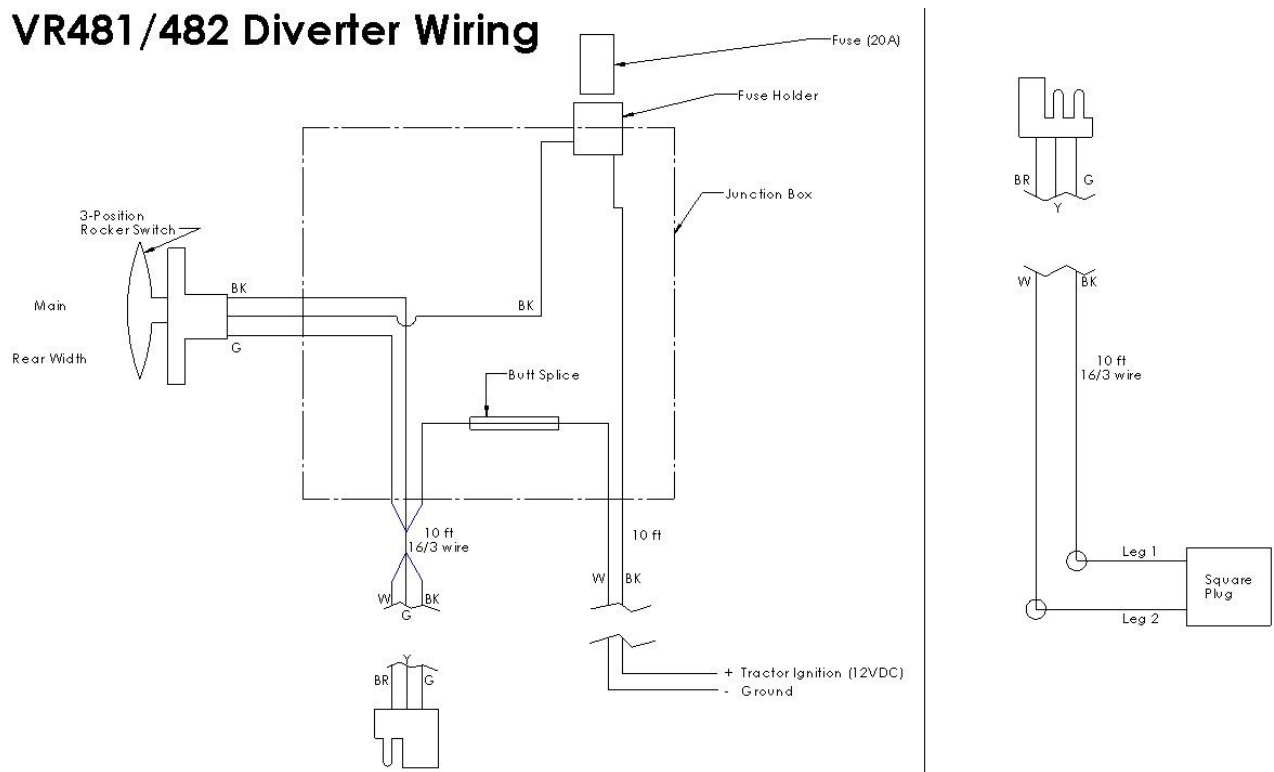
Reinstall the rear bulkhead cover.

Tape this wire to the 7-pin ended wire near their ends to keep the new wire from dragging on the ground.

9. Install fused switch box in cab of tractor and run 3-prong plug end to drawbar. Run the other cable as desired so that it is on the ignition circuit of the tractor (black to positive, white to ground). See wiring diagram.

10. Connect tractor to machine and check for function. With the rocker switch in the central (MAIN) or upper position, the hydraulic remote should operate the main booms. With the rocker switch in the bottom (REAR WIDTH) position, the hydraulic remote should open and close the rear end to set the windrow width.

## VR481/482 Diverter Wiring



## 2.12 Specifications

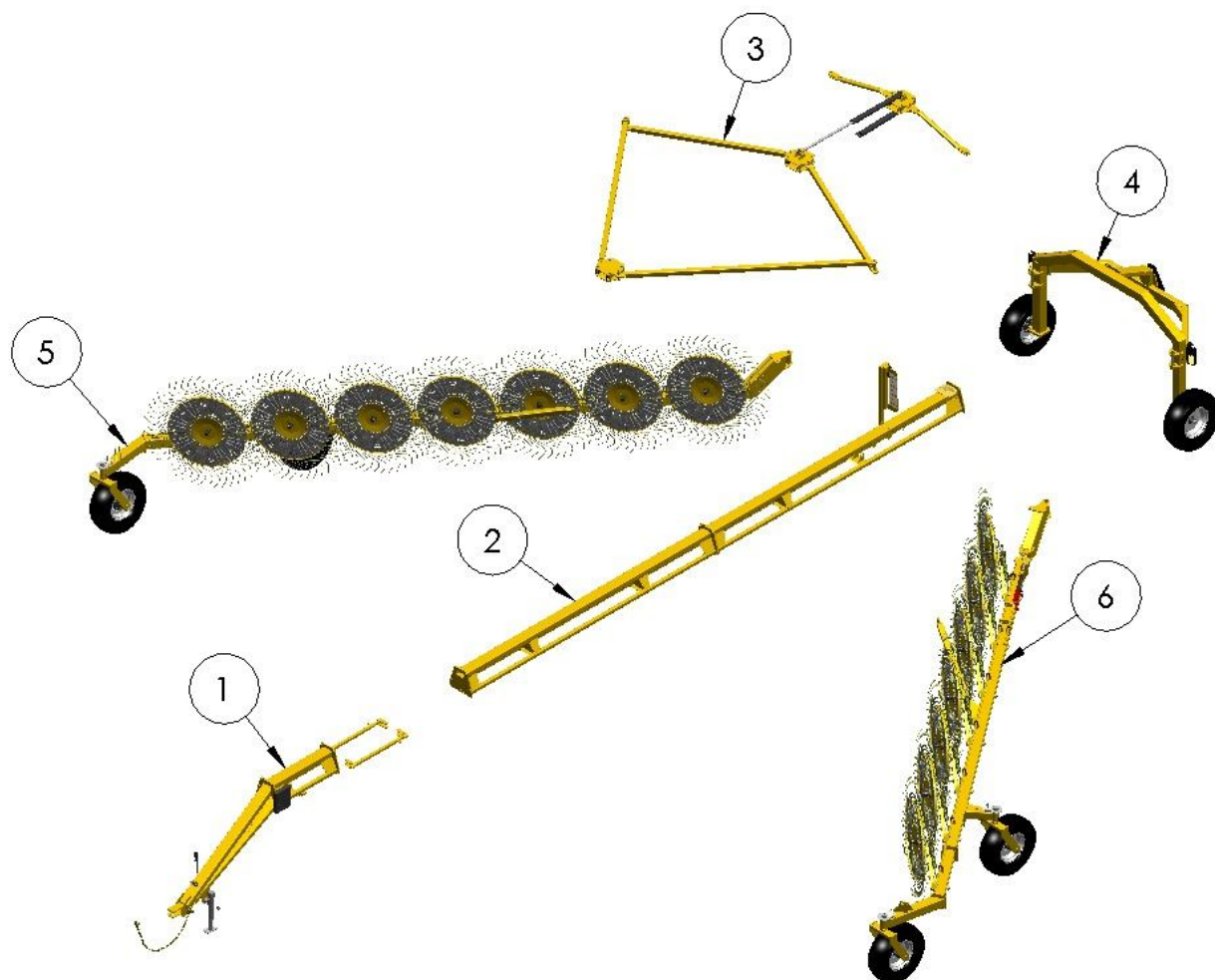
### Dimensions and Weights

	12 Wheel	14 Wheel
OPERATION		
Raking Width (Front)	28'	32'
Rear Opening (MIN)	4'1"	
Rear Opening (MAX)	6'-8"	
Rake Wheel Tines	48	
Rake Wheel Diameter	62"	
TRANSPORT		
Transport Width	9'-6"	12'-7"
Transport Height	7'-7"	7'-7"
Transport Length	33'-7"	36'-11"
Weight	4800 lbs	5600 lbs
TIRES		
Tire Size	9.5L-15SL, 8 ply	
Tire Pressure	35 psi	
Wheel Nut Torque	90 ft-lb (dry)	

## 3.0 Parts Diagrams and Part Numbers

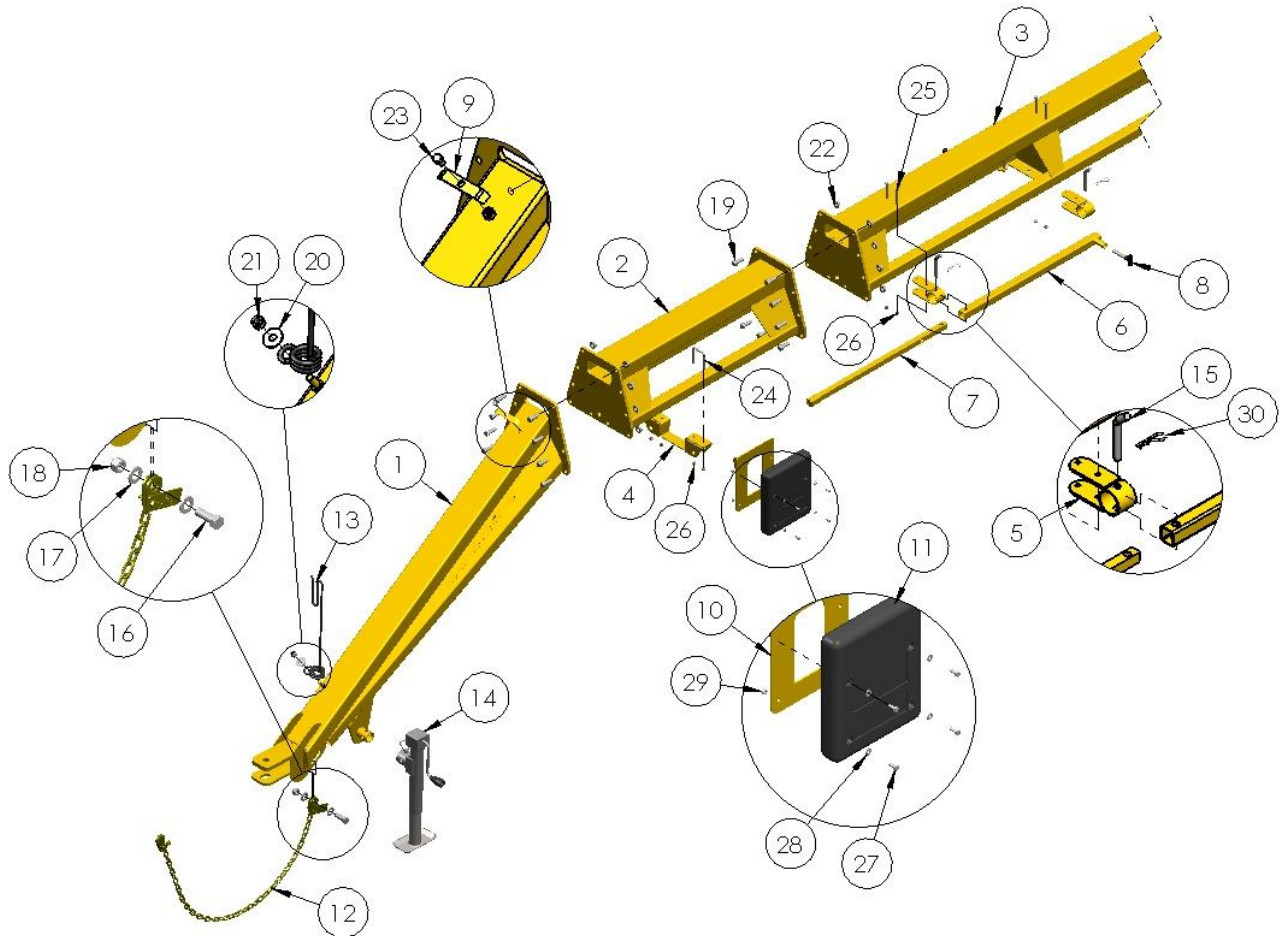
NOTE: Quantities shown are for the drawing shown, not necessarily total for your machine. Quantities in brackets or for the opposite side from shown (ie. Right side shown, left side part in brackets).

### 3.1 General Assembly



#	Name	Part #	QTY
1	Gooseneck Assembly	See Section 3.2	1
2	Main Frame	See Section 3.3	1
3	Scissor Assembly	See Section 3.4	1
4	Rear End	See Section 3.6	1
5	Right Arm Assembly	See Section 3.9	1
6	Left Arm Assembly	See Section 3.9	1

### 3.2 Gooseneck Assembly

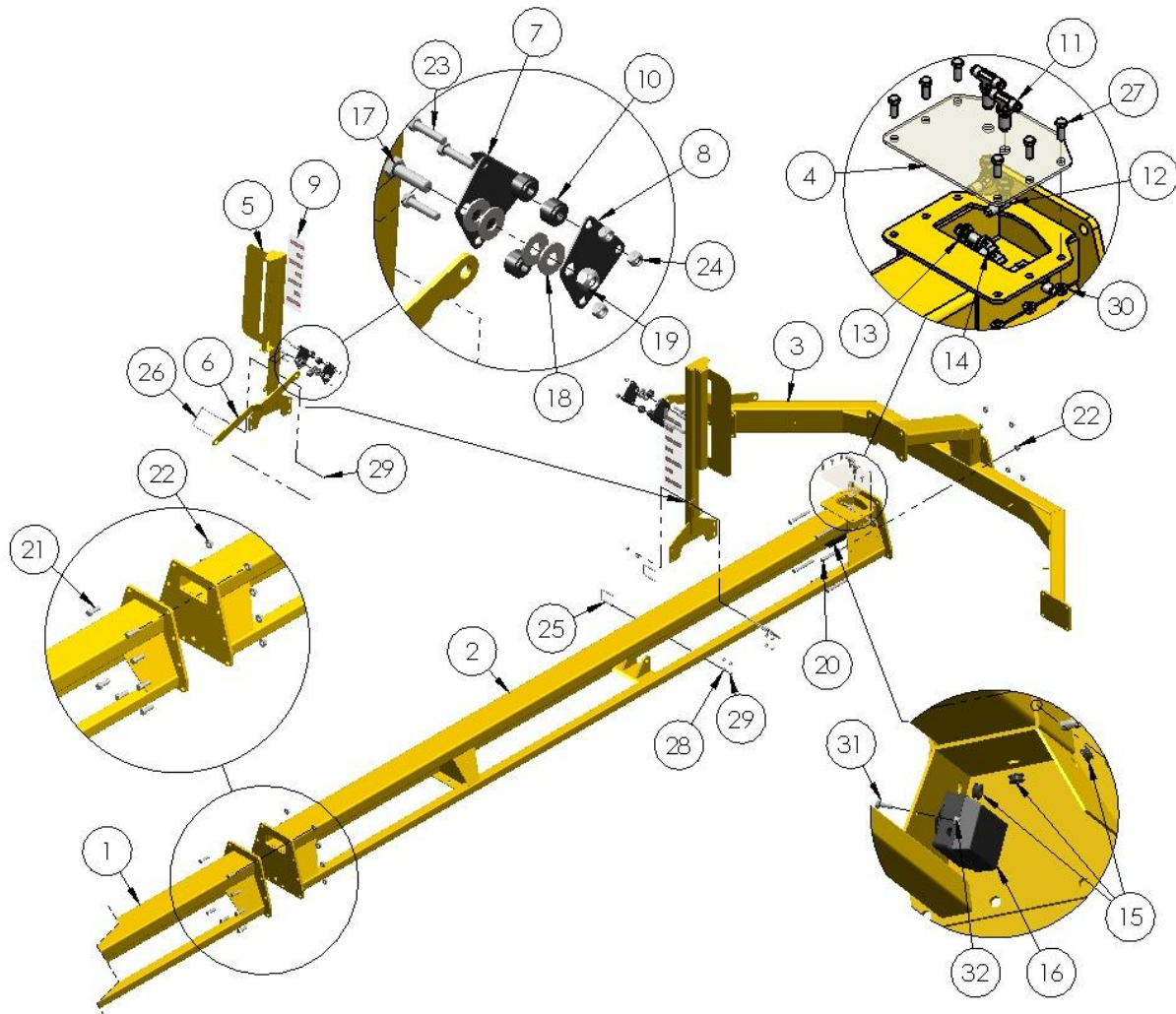


#	Name	Part #	QTY	#	Name	Part #	QTY
1	Gooseneck Hitch	22226	1	16	Bolt, 3/4 x 2"	21243	1
2	Hitch Extension	22192	1	17	Washer, 3/4" Flat	20687	2
3	Main Frame Front	22232	1	18	Nut, 3/4" Stover Lock	11823	1
4	Transport Lock Bracket	23133	1	19	Bolt, 5/8 x 1-3/4"	12379	20
5	Transport Lock Mount	22228	4	20	Washer, 5/8" Flat	21390	1
6	Transport Lock Outer Tube	22231	2	21	Nut, 5/8" Nylon Lock	10364	1
7	Transport Lock Inner Tube	22230	2	22	Nut, 5/8" Serrated Flange	11614	20
8	Transport Locking Pin	21246	2	23	Bolt, 1/2 x 3/4"	15851	1
9	Hydraulic Hose Clamp	22227	1	24	U-Bolt, 3/8 x 2 x 3"	21459	2
10	Operator's Manual Bracket	23294	1	25	Bolt, 3/8 x 3"	20905	4
11	Operator's Manual Holder	22409	1	26	Nut, 3/8" Nylon Lock	13802	12
12	Safety Chain	21715	1	27	Bolt, 1/4 x 3/4"	11809	4
13	Spring Hose Holder	18080	1	28	Washer, 1/4" Flat	11666	4
14	Side Wind Jack	18034	1	29	Nut, 1/4" Nylon Lock	11664	4
15	Hitch Pin, 5/8 x 3" *	16339	4	30	Hairpin, 5/32 x 2-15/16"	16363	4

**\*NOTE:** Hitch pin comes with hairpin

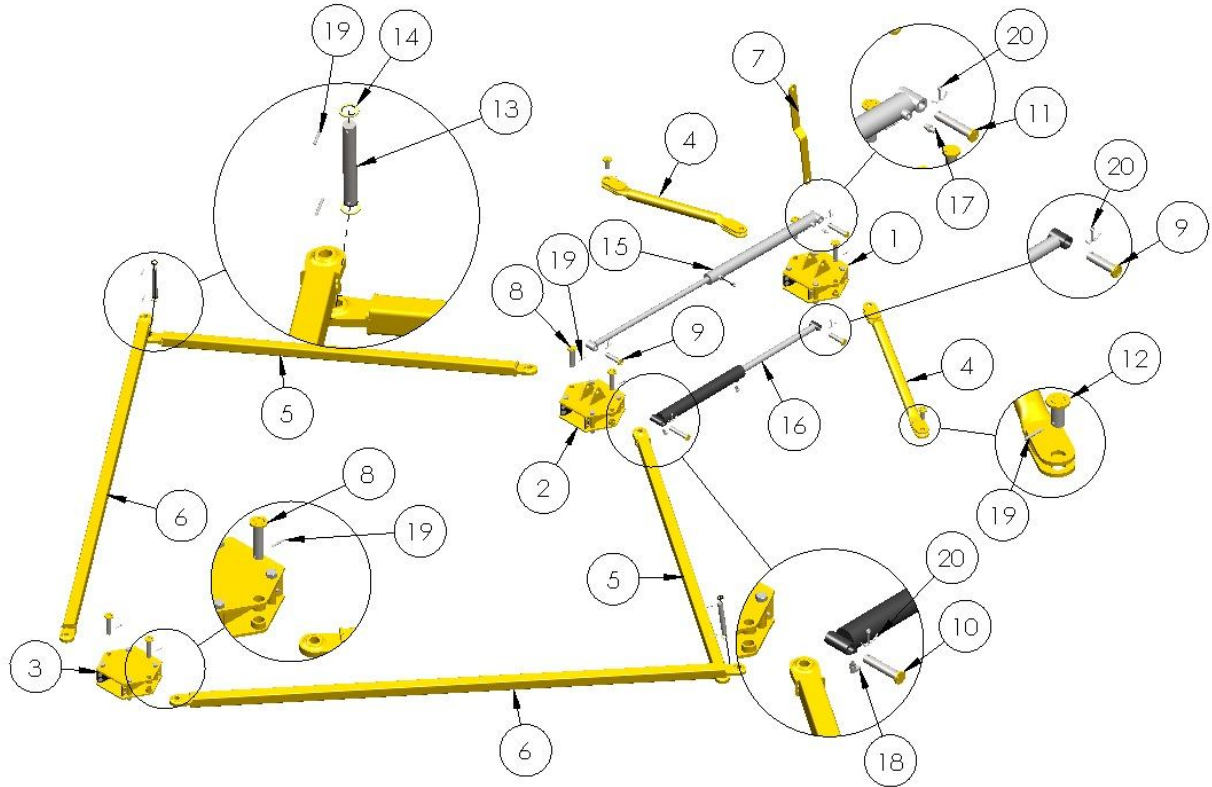


### 3.3 Main Frame Assembly



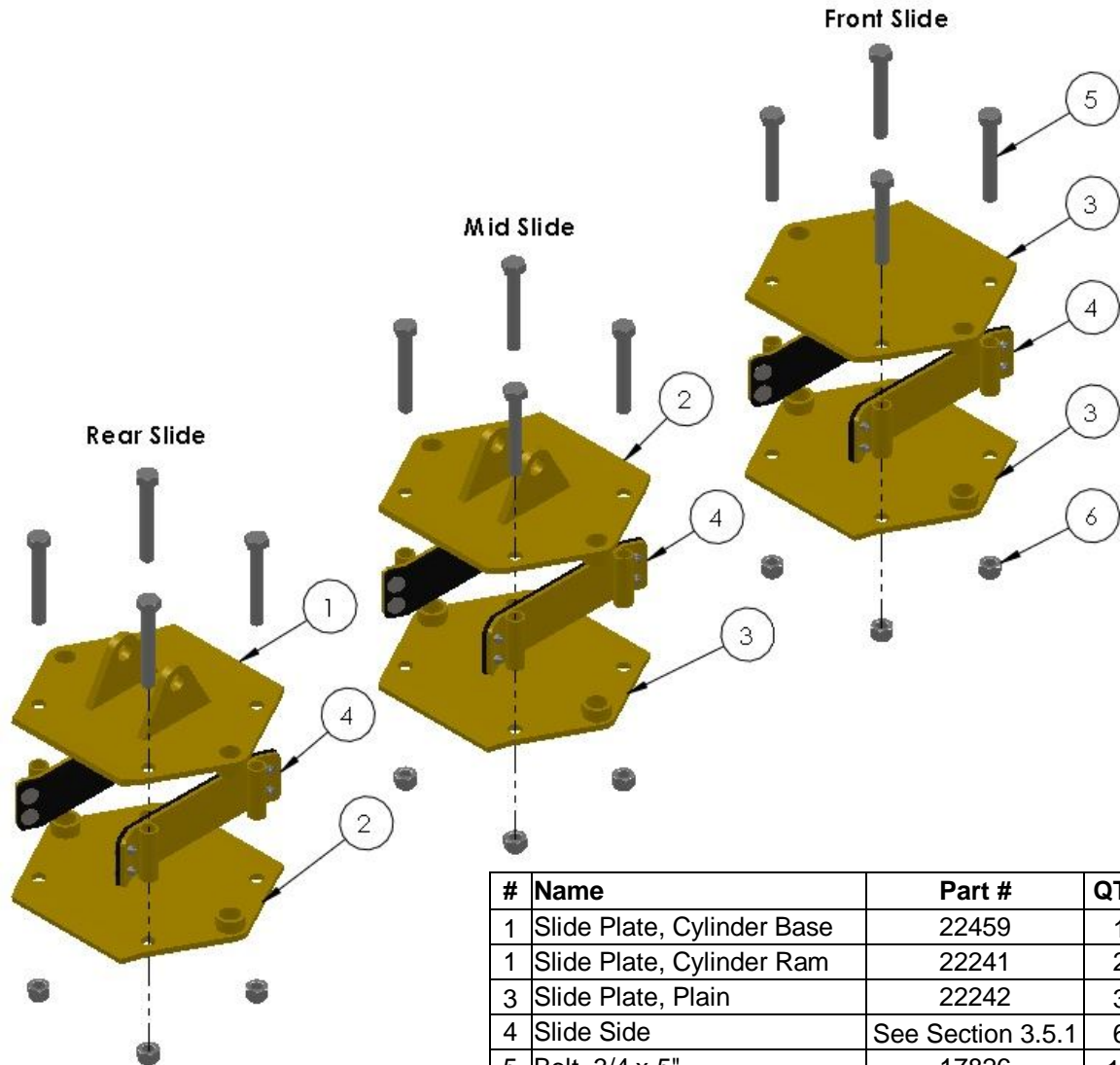
#	Name	Part #	QTY	#	Name	Part #	QTY
1	Main Frame Front	22232	1	17	Bolt, 3/4 x 2-1/2"	14470	1
2	Main Frame Rear	22233	1	18	Washer, 3/4" Flat	13717	4
3	Rear Frame Connection	22248	1	19	Nut, 3/4" Stover Lock	11823	1
4	Bulkhead Cover Plate	22234	1	20	Bolt, 5/8 x 5"	21392	8
5	Width Indicator Bracket	23222	1	21	Bolt, 5/8 x 1-3/4"	12379	10
6	Width Indicator Linkage	24673	1	22	Nut, 5/8" Serrated Flange	11614	18
7	Width Indicator Needle	23049	1	23	Bolt, 1/2 x 2-1/4"	11820	3
8	Width Indicator Roller Plate	23064	1	24	Nut, 1/2" Nylon Lock	10241	3
9	Width Indicator Decal	23011	1	25	U-Bolt, 3/8 x 2 x 3"	21459	1
10	Plastic Roller, 2 piece	11637	3	26	U-Bolt, 3/8 x 4 x 7"	23013	2
11	Hyd. Fitting, 6MJBHL-6MJT	10188	2	27	Bolt, 3/8 x 1"	13806	6
12	Hyd. Fitting, 6MJ-6FJX90	12162	2	28	Washer, 3/8" Flat	11667	4
13	Washer, 9/16" Lock	23369	4	29	Nut, 3/8" Nylon Lock	10806	6
14	Hyd. Fitting, 3/8" Bulkhead 90	10187	4	30	Nut, 3/8" Serrated Flange	10271	6
15	Grommet, 7/16" ID x 1/4"	21428	3	31	Bolt, 1/4 x 3/4"	11809	2
16	Junction Box, 7 pin	13668	1	32	Nut, 1/4" Nylon Lock	11664	2

### 3.4 Scissor Assembly



#	Name	Part #	QTY
1	Rear Slider ASM	See Section 3.5	1
2	Mid Slider ASM	See Section 3.5	1
3	Front Slider ASM	See Section 3.5	1
4	Width Adjustment Linkage	22239	2
5	Rear Scissor Linkage	22236	2
6	Front Scissor Linkage	22235	2
7	Width Indicator Linkage	24673	1
8	Pin, 1-1/8 x 4" Usable	22244	6
9	Pin, 1 x 3-1/2" Usable	22245	2
10	Pin, 1 x 4-1/2" Usable	22240	1
11	Pin, 1 x 4-7/8" Usable	24671	1
12	Pin, 1-1/8 x 1-5/8" Usable	22256	2
13	Pin, 1-1/8 x 7-1/2" Usable	21296	2
14	Washer, Rake Arm	21384	4
15	Hyd. Cylinder, 1-1/2 x 30"	See Section 3.17	1
16	Hyd. Cylinder, 1-1/2 x 20"	See Section 3.17	1
17	Hyd. Fitting, 6MB-6MJ	10162	2
18	Hyd. Fitting, 6MB-6MJ90	10201	2
19	Roll Pin, 1/4 x 2"	15872	4
20	Cotter Pin, 1/4 x 2"	10580	1

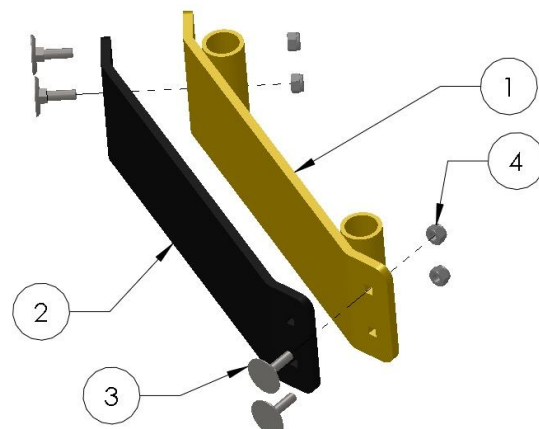
### 3.5 Slides



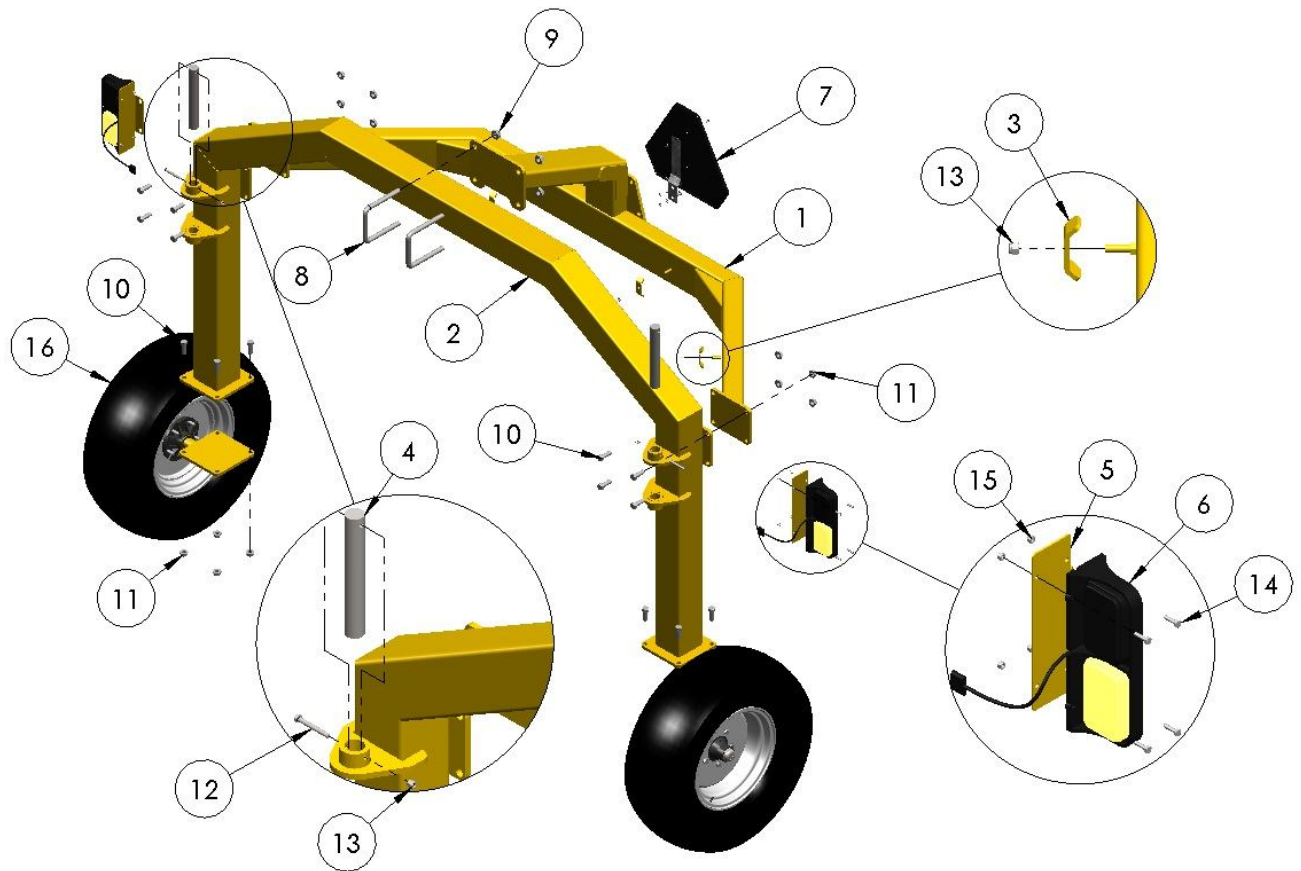
#	Name	Part #	QTY
1	Slide Plate, Cylinder Base	22459	1
1	Slide Plate, Cylinder Ram	22241	2
3	Slide Plate, Plain	22242	3
4	Slide Side	See Section 3.5.1	6
5	Bolt, 3/4 x 5"	17826	16
6	Nut, 3/4" Stover Lock	11823	16

#### 3.5.1 Slide Side

#	Name	Part #	QTY
1	Slide Side Plate	22246	1
2	Plastic Slide	18011	1
3	Elevator Bolt, 1/4 x 1"	17970	4
4	Nut, 1/4" Nylon Lock	11664	4

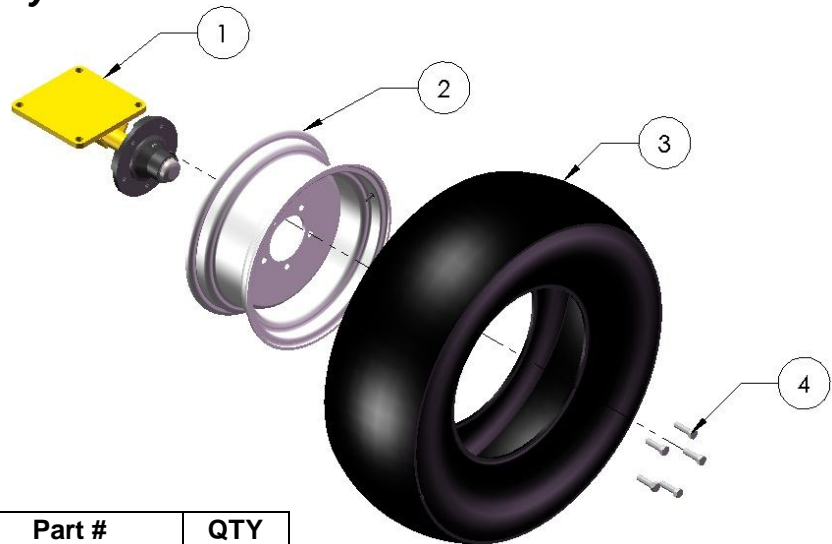


### 3.6 Rear End Assembly



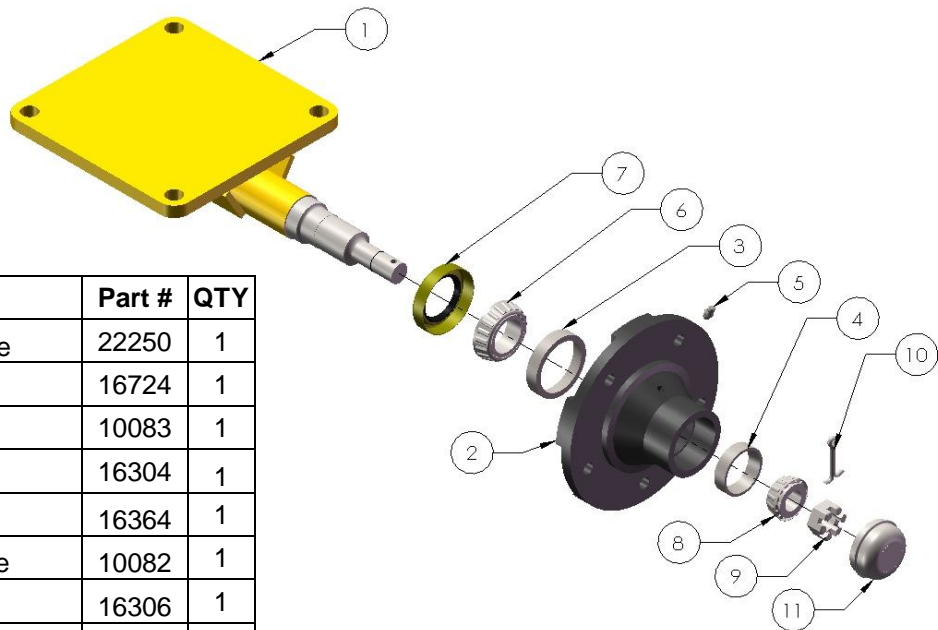
#	Name	Part #	QTY
1	Rear/Center Frame Connection	22248	1
2	Rear Frame	22247	1
3	Hydraulic Hose Clamp	22249	4
4	Rake Arm Pivot Pin	21302	2
5	Light Mounting Bracket	23101	2
6	Ag. Dual Light Assembly, LH	22968	1
	Ag. Dual Light Assembly, RH	22969	1
7	SMV Sign Kit	See Section 3.19	1
8	U-bolt, 3/4 x 5 x 5"	16091	2
9	Nut, 3/4" Serrated Flange	10283	4
10	Bolt, 5/8 x 1-3/4"	12379	16
11	Nut, 5/8" Serrated Flange	11614	16
12	Bolt, 3/8 x 3"	13770	2
13	Nut, 3/8" Nylon Lock	10806	4
14	Bolt, 1/4 x 1"	11810	8
15	Nut, 1/4" Nylon Lock	11664	8
16	Rear Wheel Assembly	See Section 3.7	2

### 3.7 Rear Wheel Assembly



#	Name	Part #	QTY
1	Spindle & Hub Assembly	See Section 3.8	1
2	5-Bolt Rim, Outset	18425	1
3	Tire 9.5L-15	See your local tire dealer	1
4	Wheel Stud, 1/2 x 1-3/4"	16307	5

### 3.8 Rear Spindle & Hub Assembly

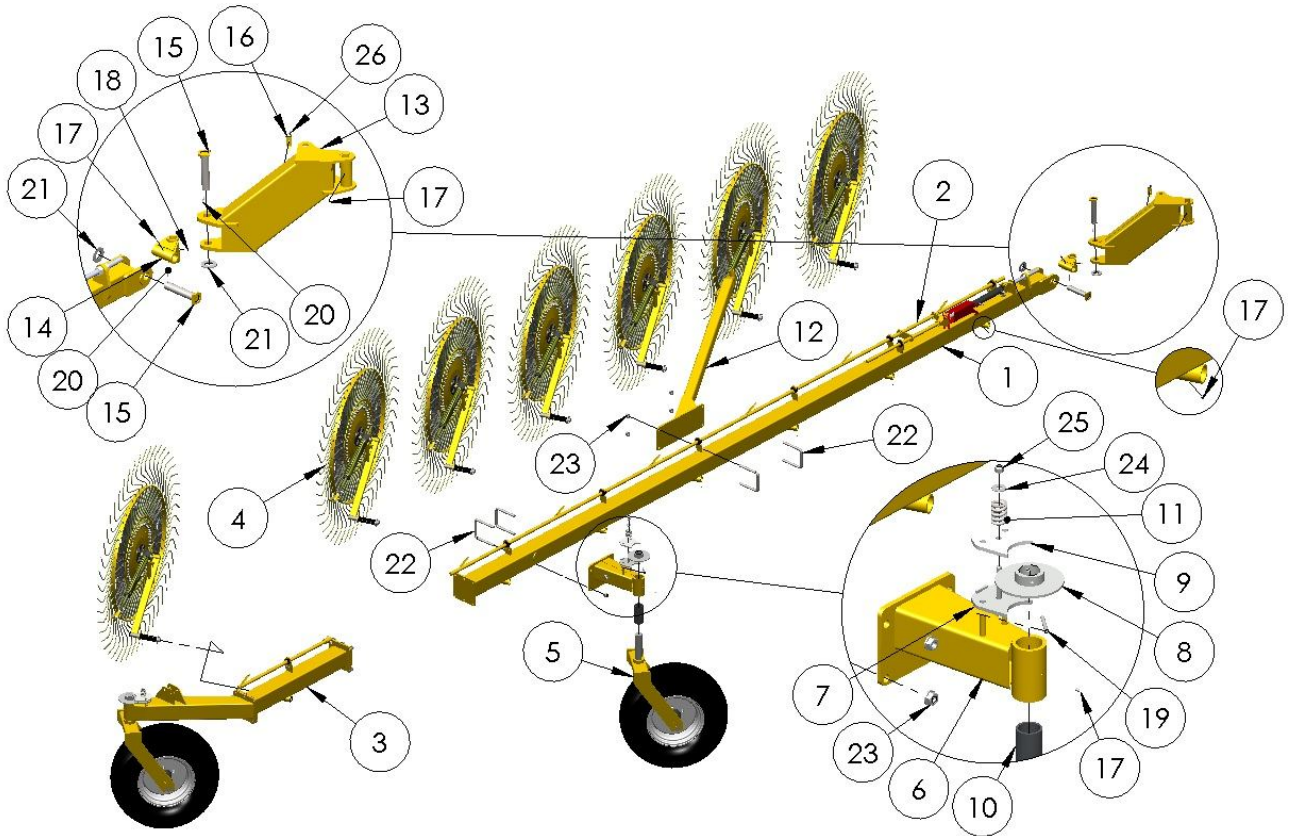


#	Name	Part #	QTY
1	Spindle with Flange	22250	1
2	Hub*	16724	1
3	Inner Bearing Cup	10083	1
4	Outer Bearing Cup	16304	1
5	Grease Zerk	16364	1
6	Inner Bearing Cone	10082	1
7	Oil Seal	16306	1
8	Outer Bearing Cone	16305	1
9	Castle Nut, 3/4"-16	16358	1
10	Cotter Pin, 3/16 x 1-1/4"	11669	1
11	Dust Cap	16308	1

**\*NOTE:** Hub comes with bearing cups and grease zerk installed

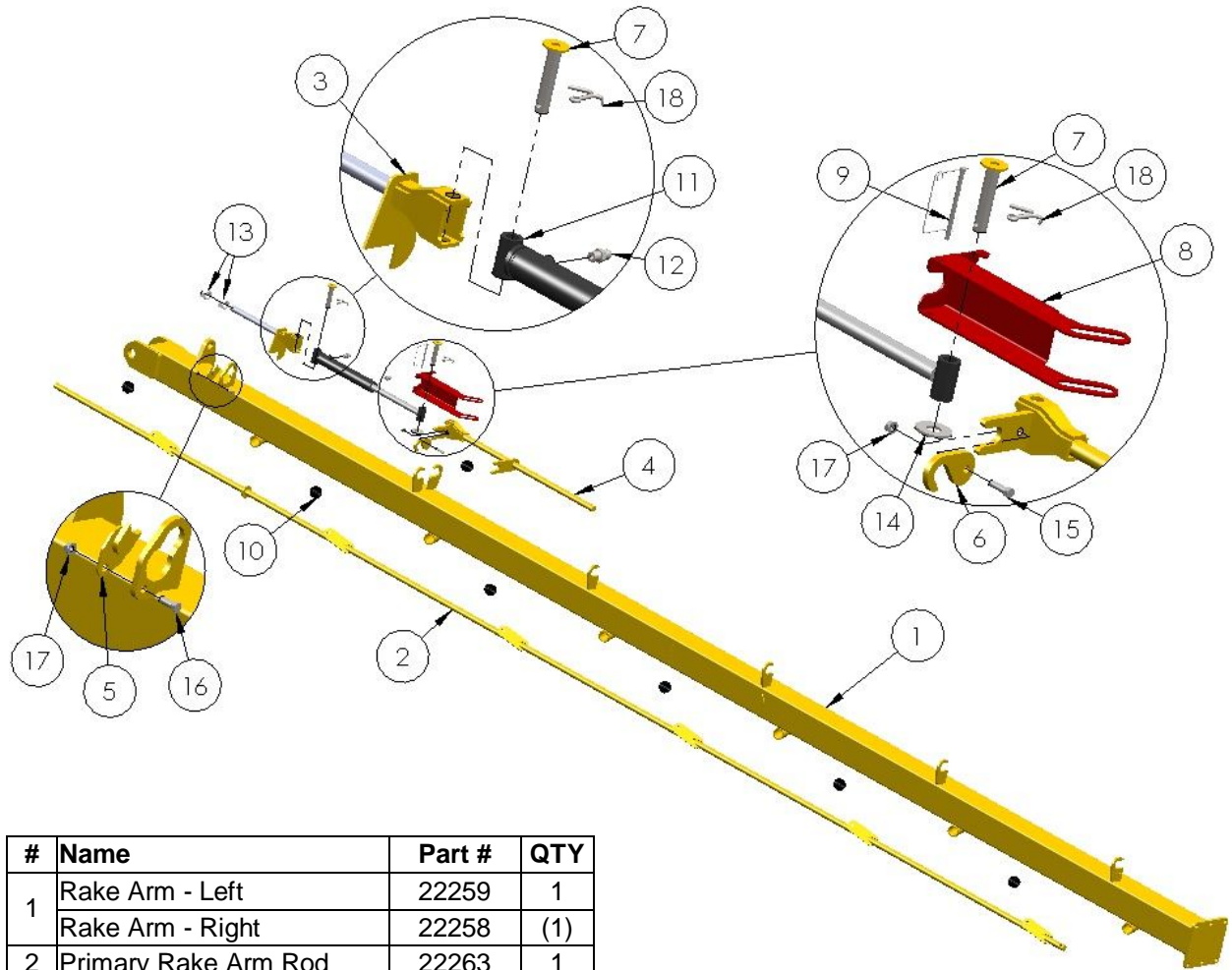


### 3.9 Rake Arm Assembly



#	Name	Part #	QTY	#	Name	Part #	QTY
1	Rake Arm - Left	22259	1	14	Knuckle - Left	23096	1
	Rake Arm - Right	22258	(1)		Knuckle - Right	22253	(1)
2	Lift Rod Assembly	See Section 3.10	1	15	Pin, 1-1/2 x 7-5/16"	22254	2
3	Outer Extension	See Section 3.11	1	16	Hydraulic Hose Clamp	22249	1
4	Rake Wheel Assembly	See Section 3.14	1	17	Grease Zerk	16364	10
5	Caster Wheel Assembly	See Section 3.12	1	18	Grease Zerk, 45°	20888	1
6	Bolt-on Caster Mount	24502	1	19	Roll Pin, 3/8 x 2-3/4"	16039	1
7	Caster Brake Plate	16137	1	20	Roll Pin, 1/4 x 2"	15872	2
8	Brake Disc, 2 Inch	17330	1	21	Washer, 1-1/2" Flat	20434	2
9	Caster Damper Plate	16138	1	22	U-Bolt, 3/4 x 5 x 5"	16091	4
10	Caster Pivot Bushing	21150	3	23	Nut, 3/4" Serrated Flange	10283	8
11	Brake Spring	16093	1	24	Washer, 1/2"	16322	1
12	Riser Arm - Left	22237	1	25	Nut, 1/2" Stover Lock	14393	1
	Riser Arm - Right	22238	(1)	26	Nut, 3/8" Nylon Lock	10271	1
13	Box Pivot - Left	22251	1				
	Box Pivot - Right	22252	(1)				

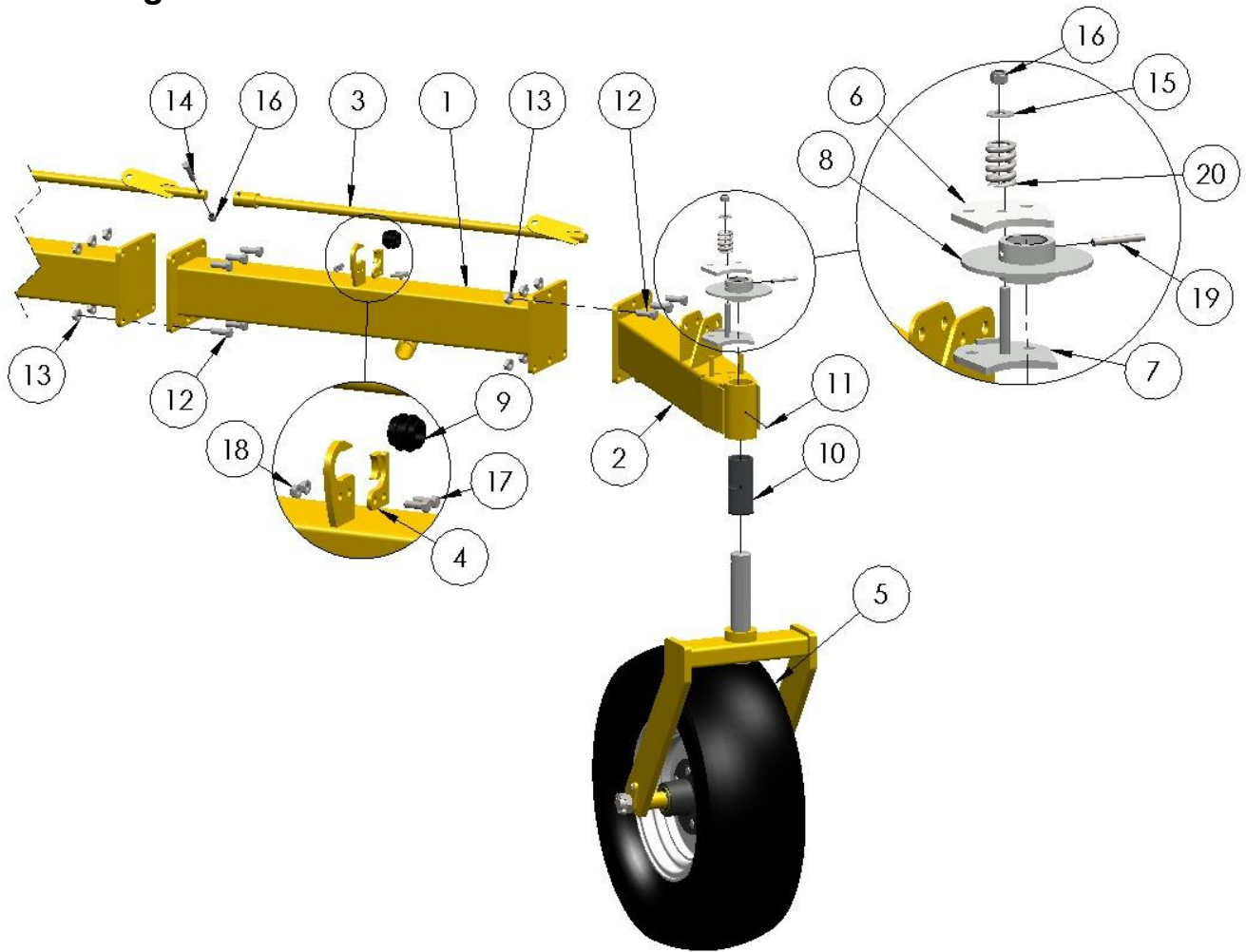
### 3.10 Lift Rod Assembly



#	Name	Part #	QTY
1	Rake Arm - Left	22259	1
	Rake Arm - Right	22258	(1)
2	Primary Rake Arm Rod	22263	1
3	Lift Arm Adj. Left	22261	1
	Lift Arm Adj. Right	22260	(1)
4	Secondary Lift Rod	22264	1
5	Lift Rod Lock - Rear	22262	1
6	Lift Rod Fork Lock	23098	1
7	Pin, 3/4 x 3-1/4" Usable	22019	2
8	Cylinder Safety Lock	21373	1
9	Lock Pin	21389	1
10	Lift Rod Bushing	16099	7
11	Hyd. Cylinder, 1-1/2 x 8"	21213	1
12	Hyd. Fitting, 6MB-6MJ	10162	2
13	Nut, 1"	12946	2
14	Washer, 3/4" Flat	13717	1
15	Bolt, 3/8 x 1-1/4"	10253	1
16	Bolt, 3/8 x 1"	13806	1
17	Nut, 3/8" Serrated Flange	10271	2
18	Cotter Pin, 1/4 x 2"	10580	2



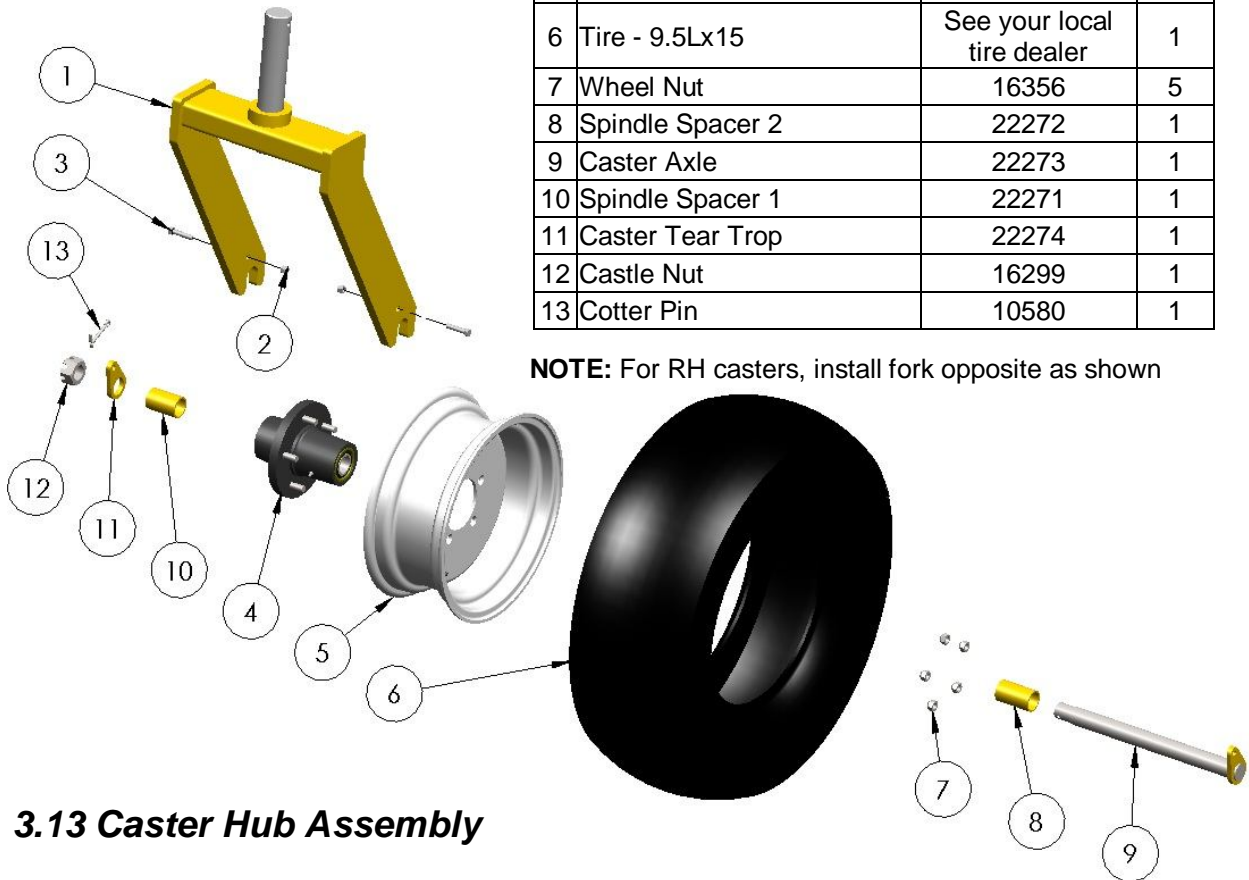
### 3.11 Right/Left Outer Extension



#	Name	Part #	QTY	#	Name	Part #	QTY
1	Rake Arm Extension, RH	22267	(1)	10	Caster Pivot Bushing	21150	1
	Rake Arm Extension, LH	22268	1	11	Grease Zerk	16364	1
2	Front Caster Support, RH	22265	(1)	12	Bolt, 5/8 x 1-3/4"	12379	12
	Front Caster Support, LH	22266	1	13	Nut, 5/8" Serrated Flange	11614	12
3	Lift Rod Extension	22269	1	14	Bolt, 1/2 x 2-1/4"	11820	1
4	Lift Rod Lock - Front	22257	1	15	Washer, 1/2"	16322	1
5	Caster Wheel Assembly	See section 3.12	1	16	Nut, 1/2" Stover Lock	14393	2
6	Caster Damper Plate	16138	1	17	Bolt, 3/8 x 1"	13806	2
7	Caster Brake Plate	16137	1	18	Nut, 3/8" Serrated Flange	10271	2
8	Brake Disc, 2 Inch	17330	1	19	Roll Pin, 3/8 x 2-3/4"	16039	1
9	Lift Rod Bushing	16099	1	20	Brake Spring	16093	1

### 3.12 Caster Wheel Assembly

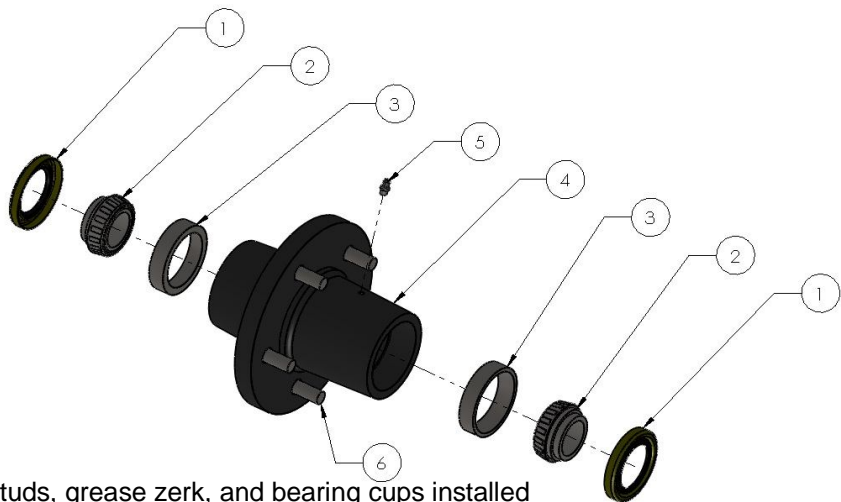
#	Name	Part #	QTY
1	Caster Fork	22270	1
2	Bolt, 3/8 x 1-3/4"	16040	2
3	Nut, 3/8" Nylon Lock	10271	2
4	Caster Hub Assembly	See Section 3.13	1
5	5 Bolt Rim	18425	1
6	Tire - 9.5Lx15	See your local tire dealer	1
7	Wheel Nut	16356	5
8	Spindle Spacer 2	22272	1
9	Caster Axle	22273	1
10	Spindle Spacer 1	22271	1
11	Caster Tear Trop	22274	1
12	Castle Nut	16299	1
13	Cotter Pin	10580	1



**NOTE:** For RH casters, install fork opposite as shown

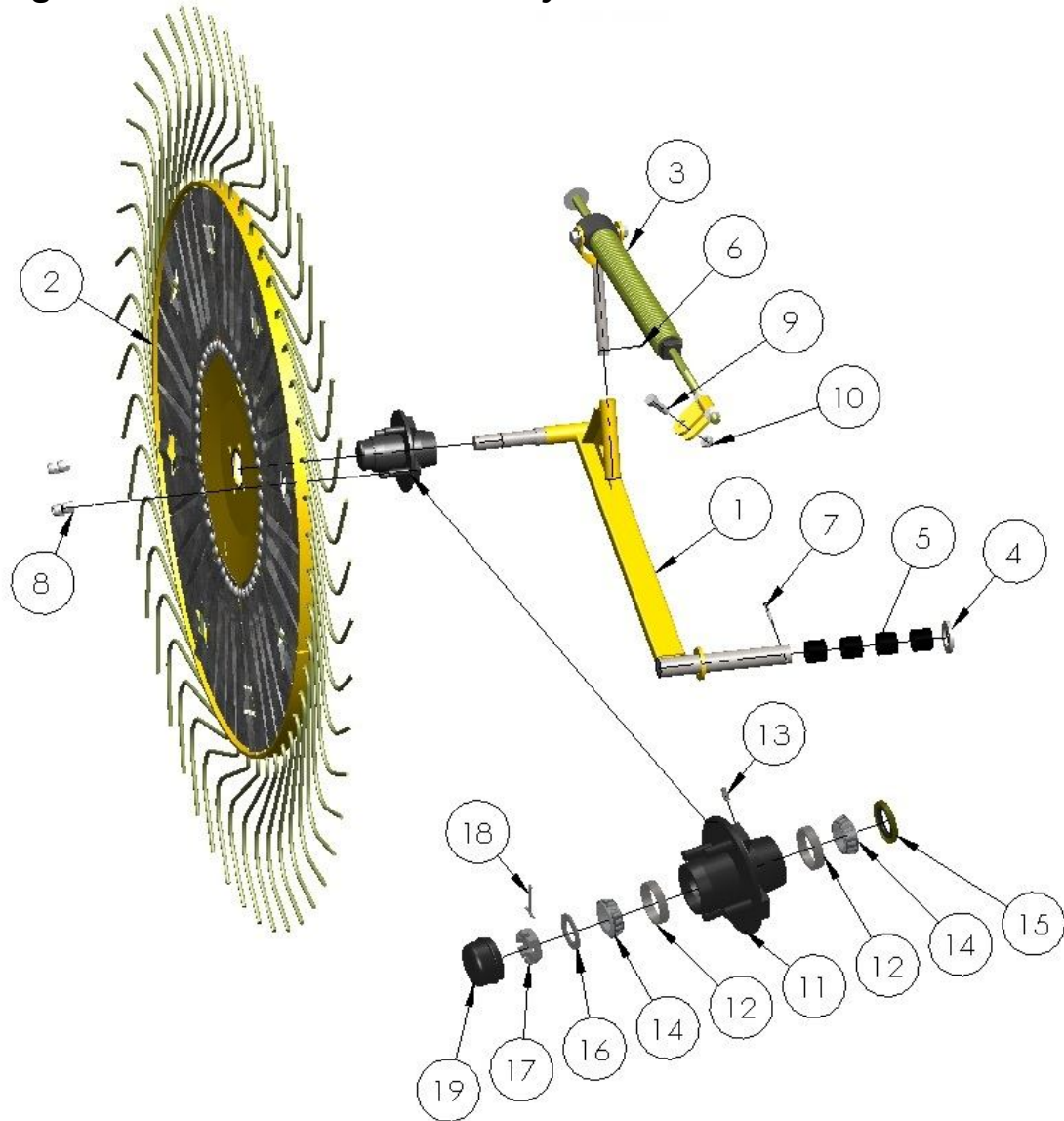
### 3.13 Caster Hub Assembly

#	Name	Part #	QTY
1	Oil Seal	16297	2
2	Bearing Cone	16296	2
3	Bearing Cup	16295	2
4	Caster Hub*	18819	1
5	Grease Zerk	16364	1
6	Wheel Stud	16391	1



**\*NOTE:** Hub comes with wheel studs, grease zerk, and bearing cups installed

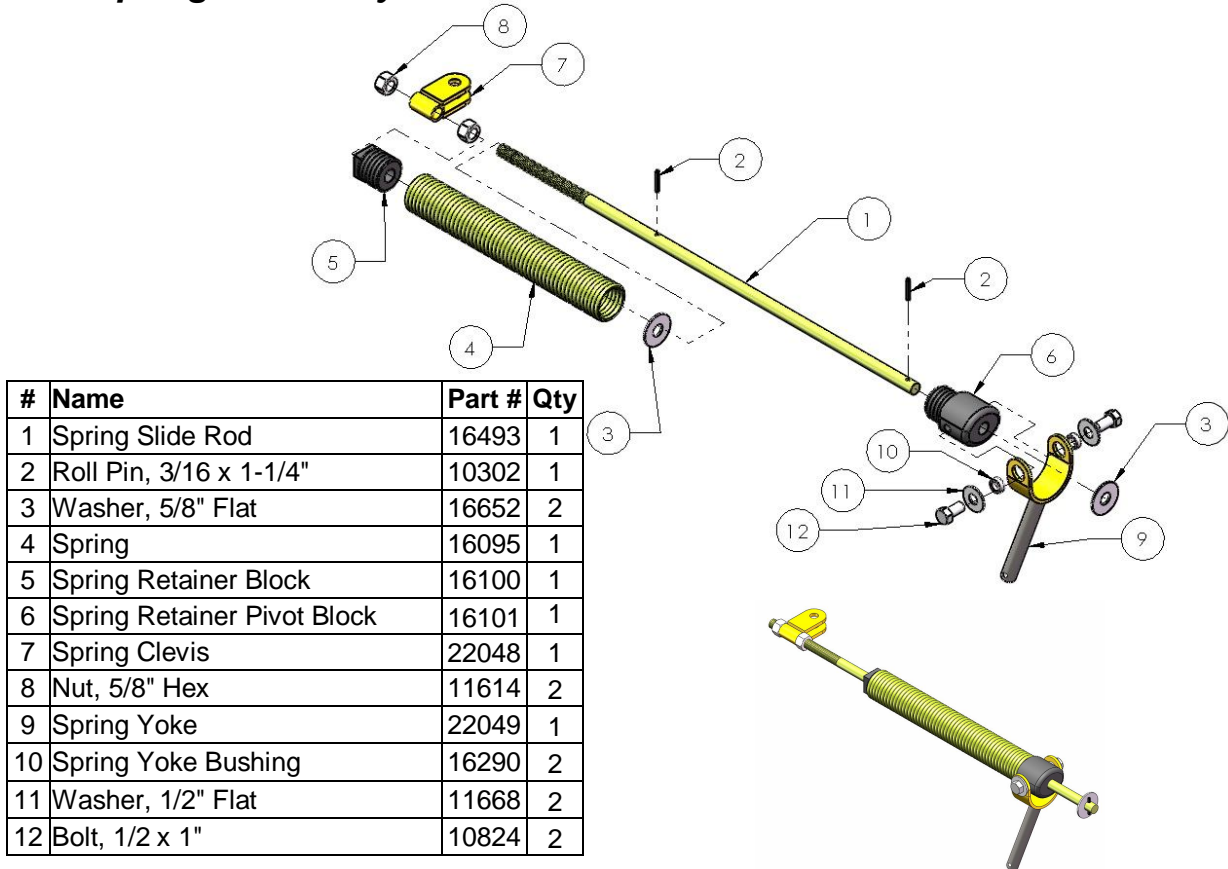
### 3.14 Right/Left Rake Wheel Assembly



#	Name	Part #	QTY	#	Name	Part #	QTY
1	Rake Wheel Arm, LEFT	22275	1	10	Nut, 1/2" Stover Lock	14393	1
	Rake Wheel Arm, RIGHT	22276	1	11	Rake Wheel Hub *	16413	1
2	Rake Wheel	See Section 3.16	1	12	Bearing Cup	16081	2
3	Spring Assembly	See Section 3.15	1	13	Grease Zerk	16364	1
4	Rake Arm Washer	16650	1	14	Cone Bearing	16082	2
5	Rake Arm Pivot Bushing	16096	4	15	Oil Seal	16083	1
6	Roll Pin, 1/4 x 1-1/4"	16021	1	16	Washer	16088	1
7	Roll Pin, 1/4 x 2"	15872	1	17	Castle Nut	16087	1
8	Rake Wheel Nut	16085	4	18	Cotter Pin	16089	1
9	Bolt, 1/2 x 1-1/2"	14461	1	19	Dust Cap	16084	1

**\*NOTE:** Hub comes with wheel studs, grease zerk, and bearing cups installed

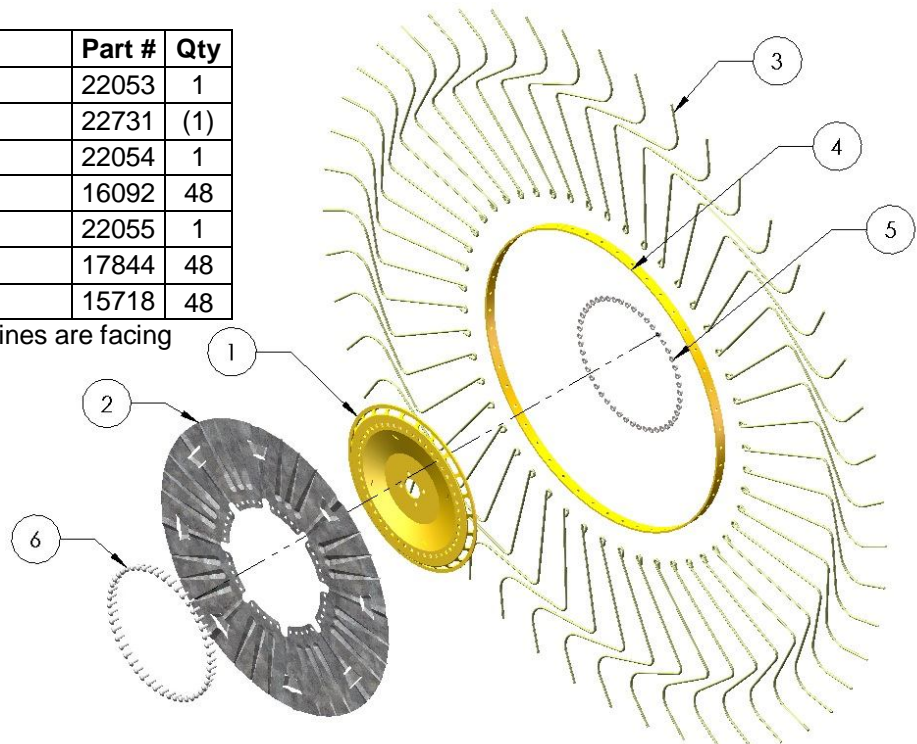
### 3.15 Spring Assembly



### 3.16 Rake Wheel

#	Name	Part #	Qty
1	Center Disk, Left	22053	1
	Center Disk, Right	22731	(1)
2	Wind Guard	22054	1
3	Tine	16092	48
4	Outer Ring	22055	1
5	Nut, 3/8" Stover Flange	17844	48
6	Bolt, 3/8 x 1" Carriage	15718	48

**NOTE:** Make sure that the tines are facing the correct way



### **3.17 Hydraulic Cylinders**

#### **1-1/2" x 8" x 1" Rod**

Complete Cylinder - 21213

Cylinder Rod – N/A

Cylinder Seal Kit - 17613

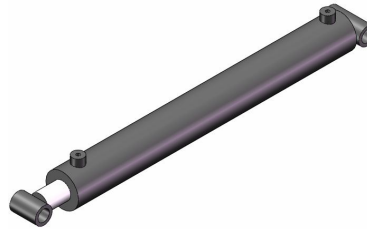


#### **2-1/2" x 20" x 1-1/2" Rod**

Complete Cylinder - 17328

Cylinder Rod – N/A

Cylinder Seal Kit - 16396

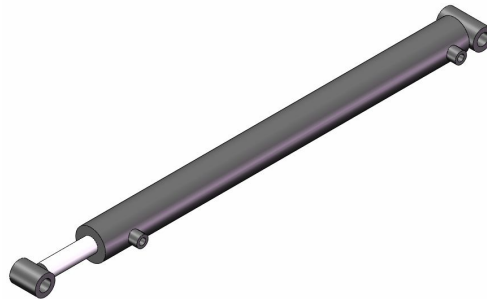


#### **2-1/2" x 30" x 1-1/4" Rod**

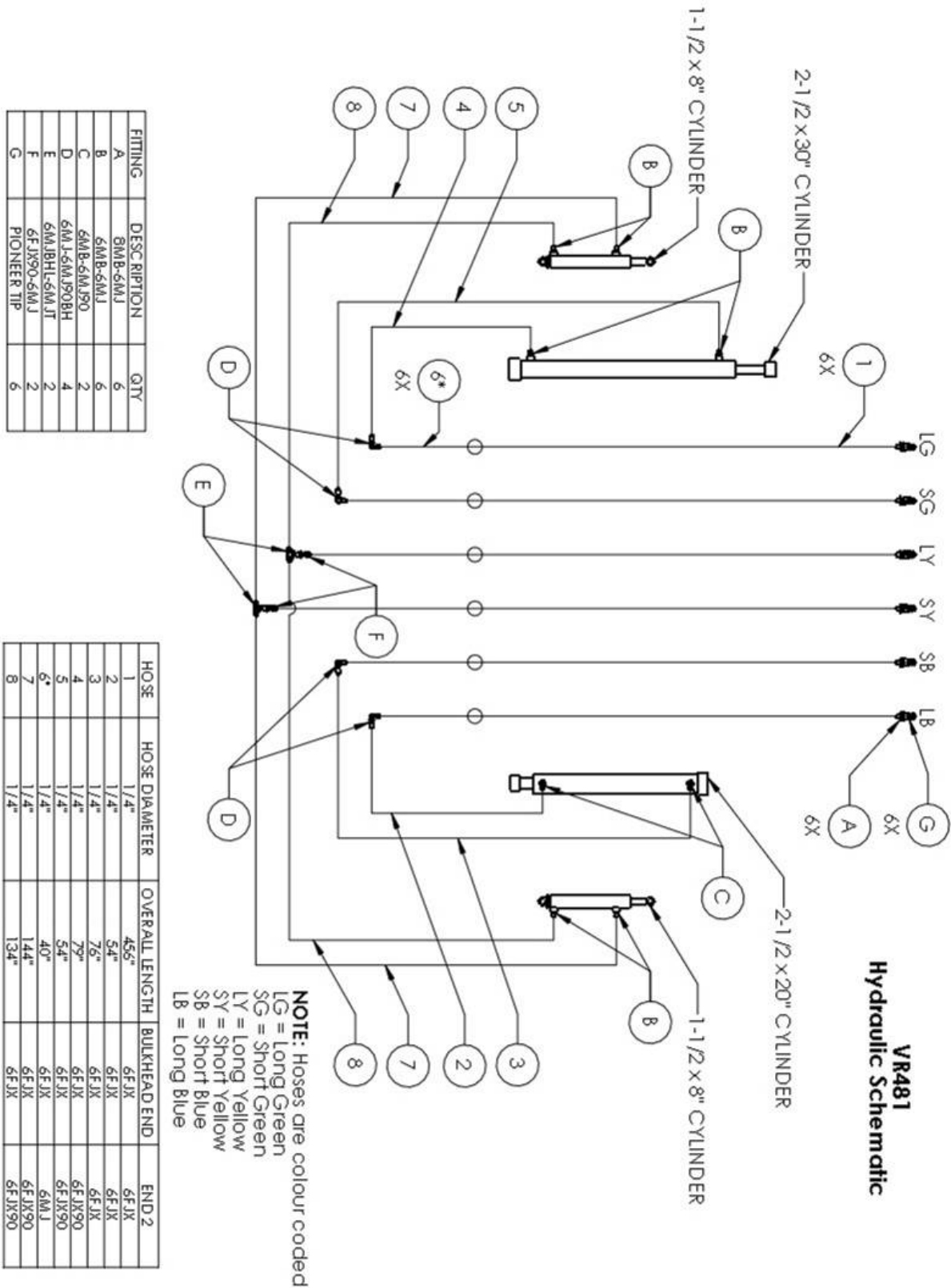
Complete Cylinder - 16301

Cylinder Rod – N/A

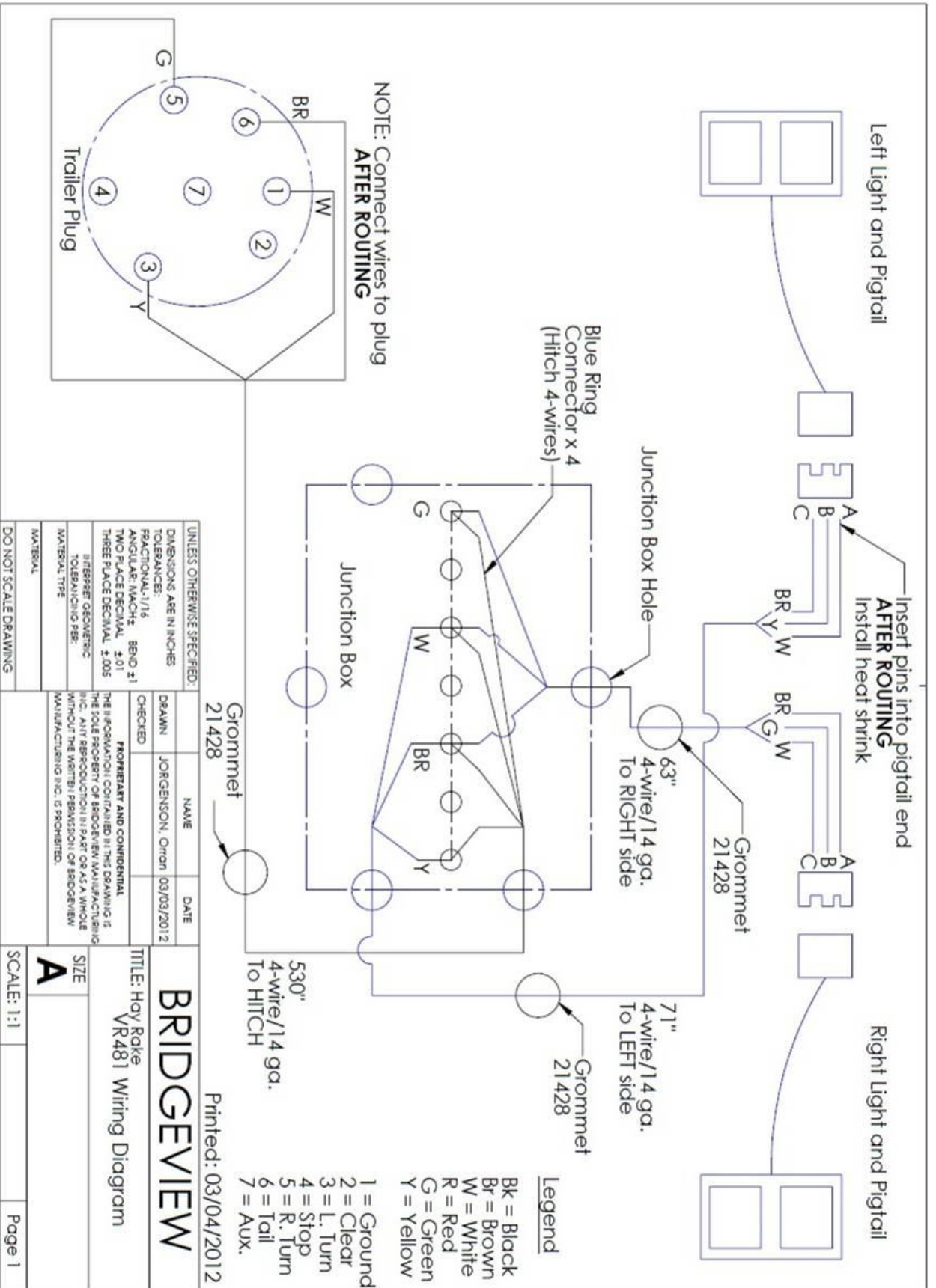
Cylinder Seal Kit - 16396



3.18 Hydraulics & Electrical

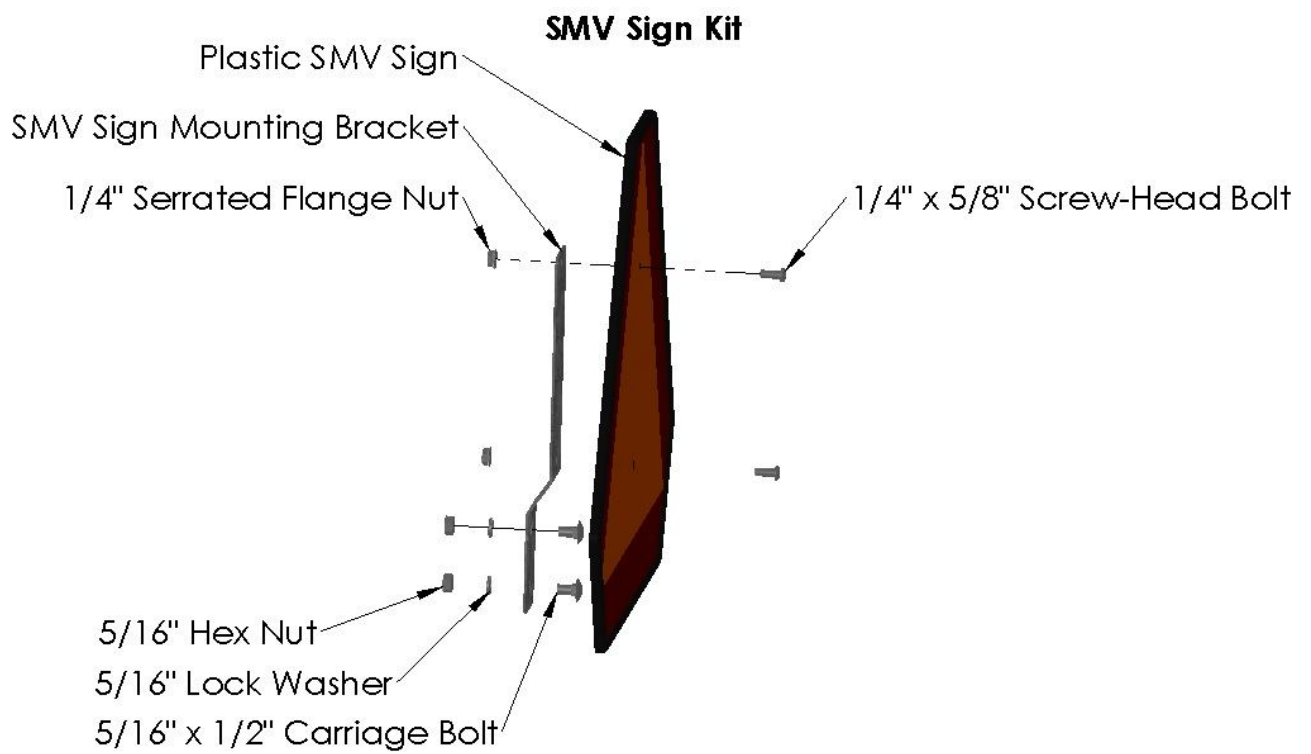








### **3.19 Slow Moving Vehicle Sign Kit**



**Complete Kit - Part # 22411**

## 4.0 Extension Kit: 14 Wheels

### 4.1 Introduction

This section describes the assembly process in order to attach the Bridgeview Rake Extension Kit. Please read through this before beginning assembly of the kit. Before assembly, ensure that all of the components are included.

**Note:** Some of the hardware used in assembly may be used as packaging hardware. Please save the packaging hardware.

### 4.2 Safety

Proper precautions must be taken to ensure safe assembly of the Bale King VR481 Extension Kit:

- Wear proper safety equipment when assembling the rake. Steel toe boots and safety glasses are required. Earplugs are recommended when tightening bolts.
- Gloves are recommended when handling materials.
- Ensure that all parts of the rake are **safely supported** before working around or beneath it.
- Always have help when lifting heavy pieces.
- **Relieve hydraulic pressure** and disconnect lines before installing hose extensions.

### 4.3 Tools required

The following tools may be required for the assembly of the Bridgeview Extension Kit:

- Forklift or Hoist
- Impact Wrench
- Basic Hand Tools

#### **4.4 Fastener Information**

Your Bale King VR481 is fastened with a variety of bolts. For these bolts to work properly the correct washer and nut must be used in the proper situation. Please consult this guide for correct fastener information. Also ensure that all fasteners are securely tightened. Serrated flange nuts must be installed tightly with an impact wrench. The flanged nut must be tight against the steel in order for the nut to correctly bind.

All of the bolts should be tightened to their correct torque settings, as follows:

1/2" .....	Dry 90 ft-lb.
9/16" .....	Dry 120 ft-lb.
3/4" .....	Dry 300 ft-lb.

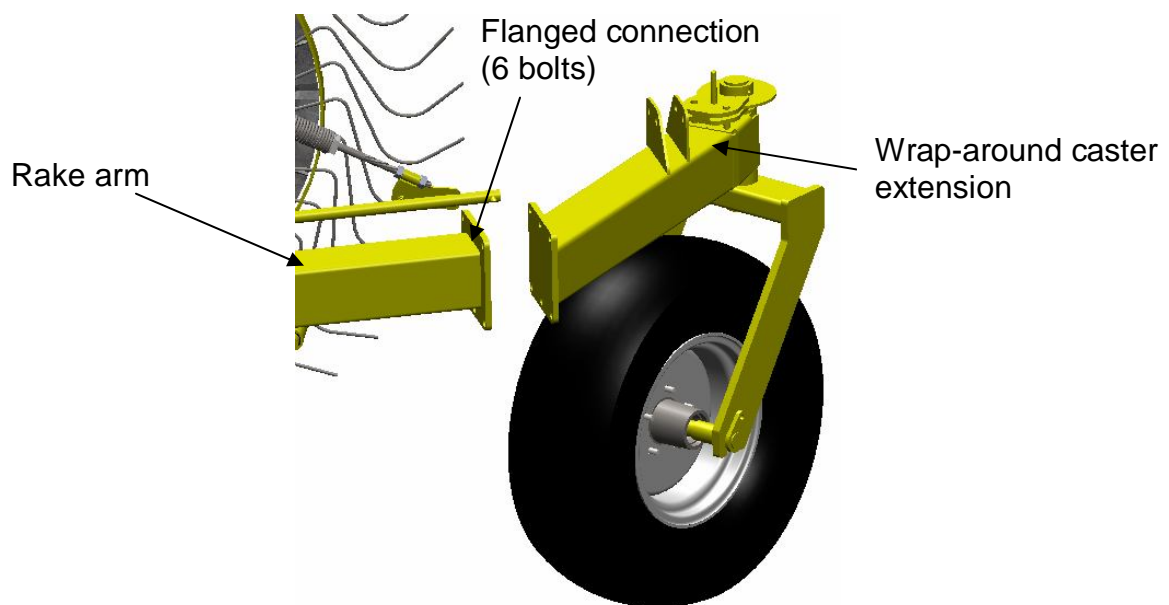
## 4.5 Rake Wheel Extension Assembly Procedure

The following is the standard procedure used to attach the VR481 Extension Kit. For ease of connection, extend the rake to the open position (space permitting).

**Note:** Left and right, as referred to in this guide, are taken as if you are standing at the rear of the rake, looking along the length of the rake towards the tractor hitch.

### 4.5.1 Remove Wrap-around Caster Extension

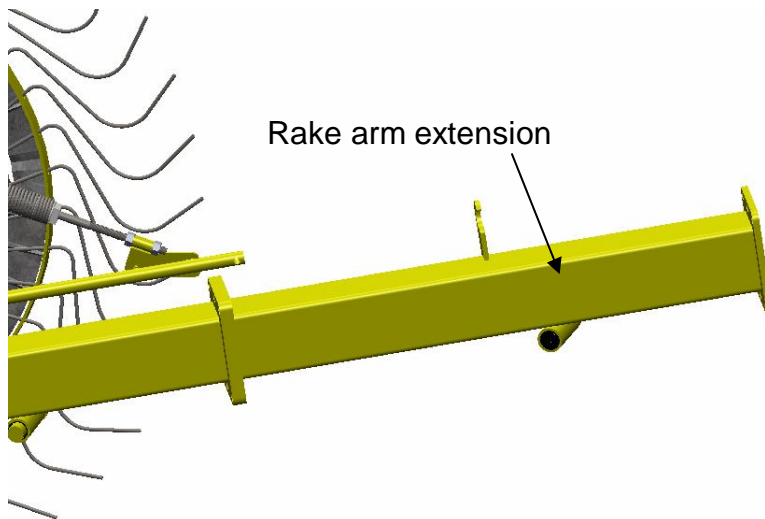
First, the wrap-around caster extension must be removed. To do this, support the rake arm near the front rake wheel to take the weight off of the flanged connection. Remove the 6 bolts ( $5/8"$  x  $1 \frac{3}{4}"$ ) and flange nuts and save for later use.



### 4.5.2 Install Rake Arm Extension

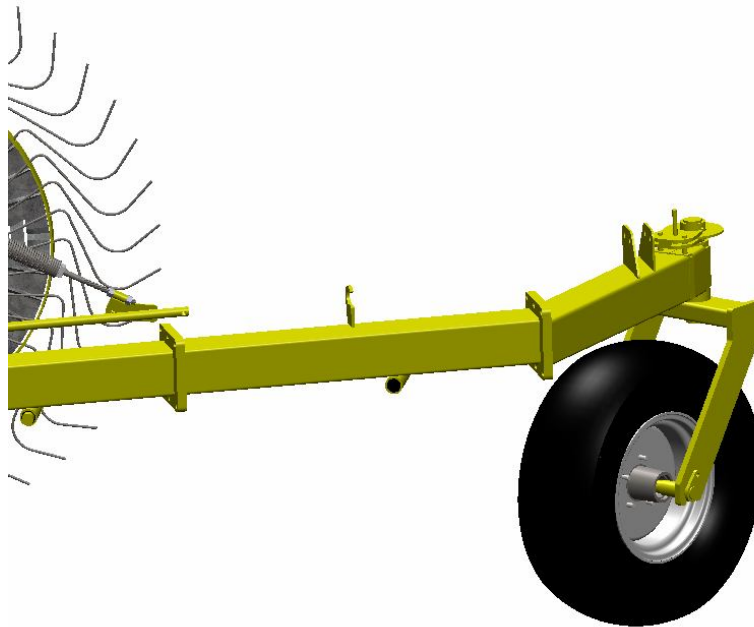
Next, install the rake arm extension. The rake arm extension is bolted to the open end of the rake arm using six  $5/8"$  x  $1 \frac{3}{4}"$  bolts and serrated flange nuts. Make sure that the lift arm brackets are located on the same side and that the rake arm

hinges are at the same angle as on the rake wheel arm. **Ensure that the left arm extension is on the left side of the machine, and vice versa.**



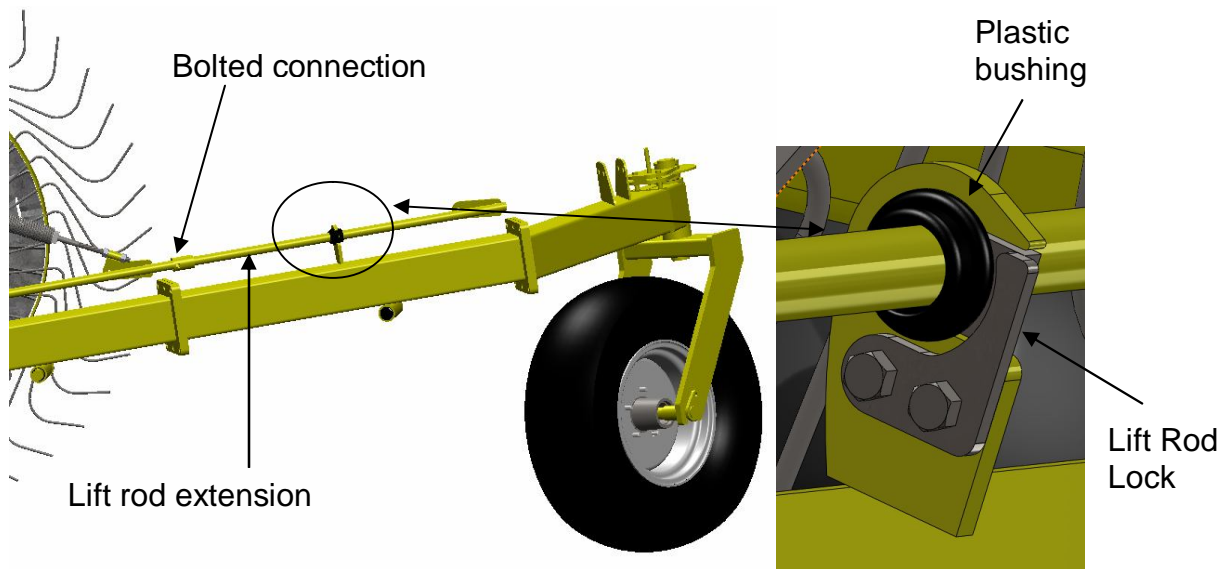
#### 4.5.3 Reinstall Wrap-around Caster Extension

The wrap around caster extension can now be remounted on the end of the rake arm extension, in the same orientation as before. Reuse the six 5/8" x 1 3/4" bolts and serrated nuts that were removed previously.



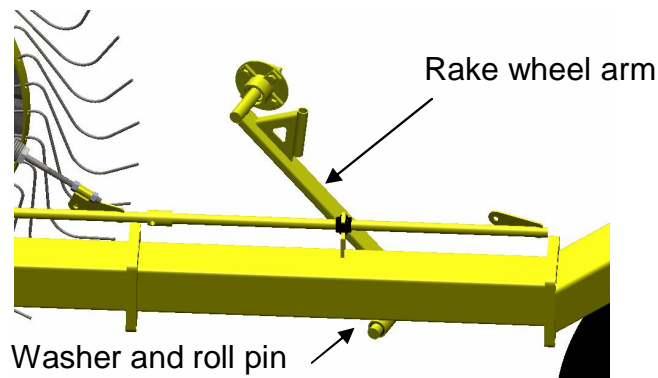
#### 4.5.4 Install Lift Rod Extension

The lift rod extension can now be installed. This extension mounts directly to the end of the regular lift rods. Slide the plastic bushing over the lift rod extension and slide the lift rod extension into the bracket. The extension is bolted to the end of the lift rod using a 1/2" x 2 1/4" bolt and Stover lock nuts. Move the lift rod lock from the previous tab to the new tab, reusing the same hardware.



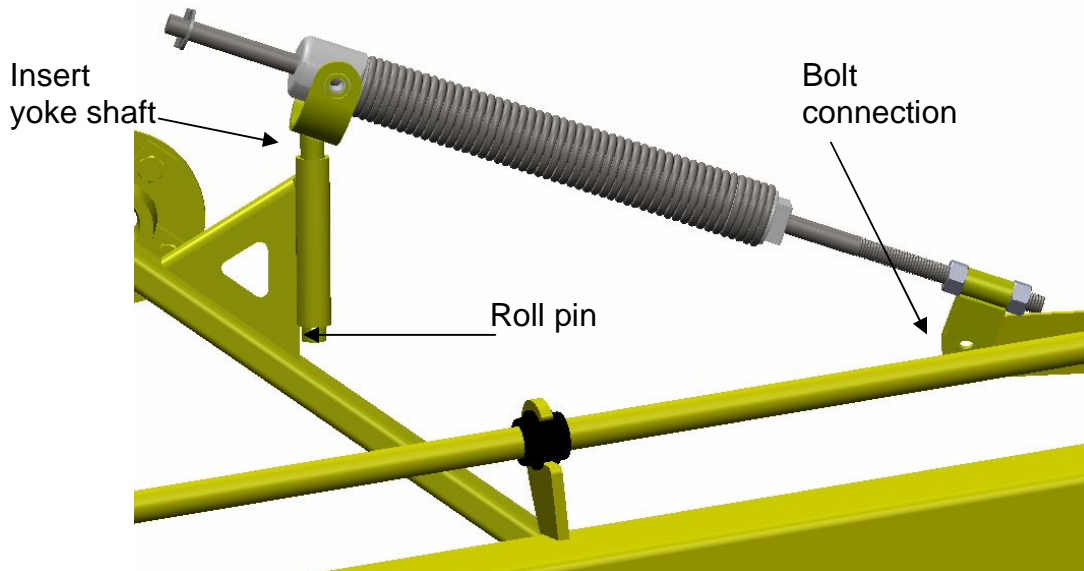
#### 4.5.5 Install Rake Wheel Arm

There is one mounting arm for each side of the rake. The wheel arm is installed through the pivot on the bottom of the rake arm extension with the hub towards the rear of the rake, and the spring mount facing upwards, as shown. The arm is slid through the bushings and secured on the outside of the rake with a 1 1/4" inside diameter washer and 1/4" x 2" roll pin.



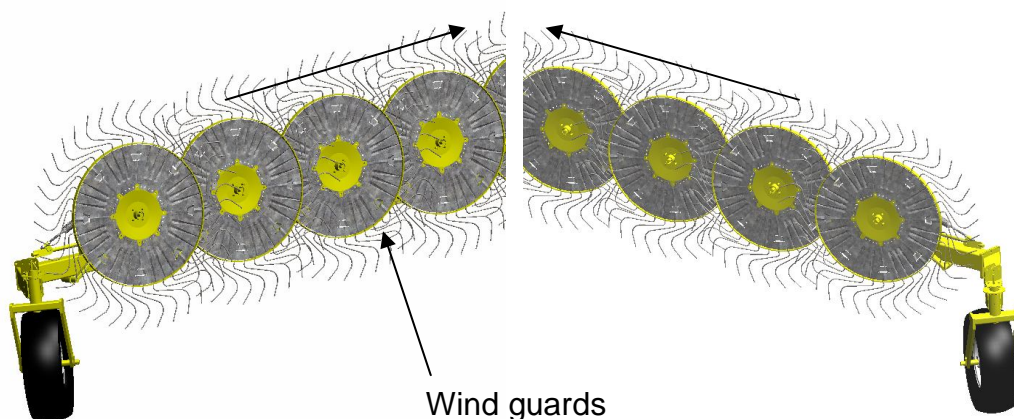
#### 4.5.6 Install Spring Assembly

To mount the spring assembly, first insert the yoke shaft into the rake wheel arm pivot, and insert the clevis over the bracket on the lift rod extension, as shown. Attach the clevis to the bracket using a 1/2" x 1 1/2" bolt and Stover lock nut. Insert a 1/4" x 1 1/4" roll pin to secure the yoke shaft.



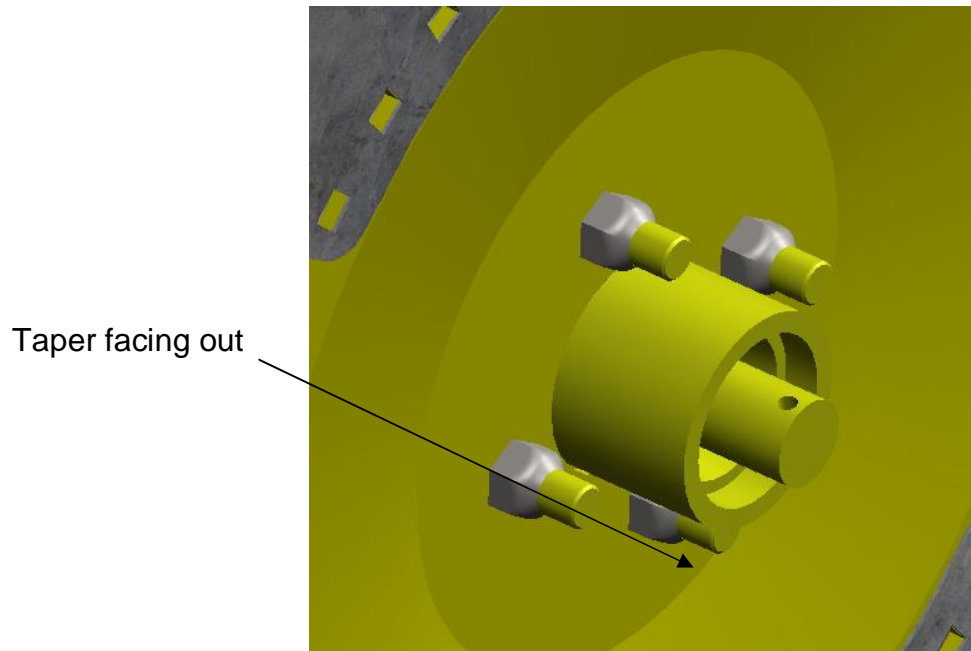
#### 4.5.7 Install Rake Wheels

The rake wheels are installed onto the hubs of the rake wheel arms. There is one wheel for each side of the rake. Ensure that the tines point in the same direction as the other wheels on the same side, with the wind guard facing inward.

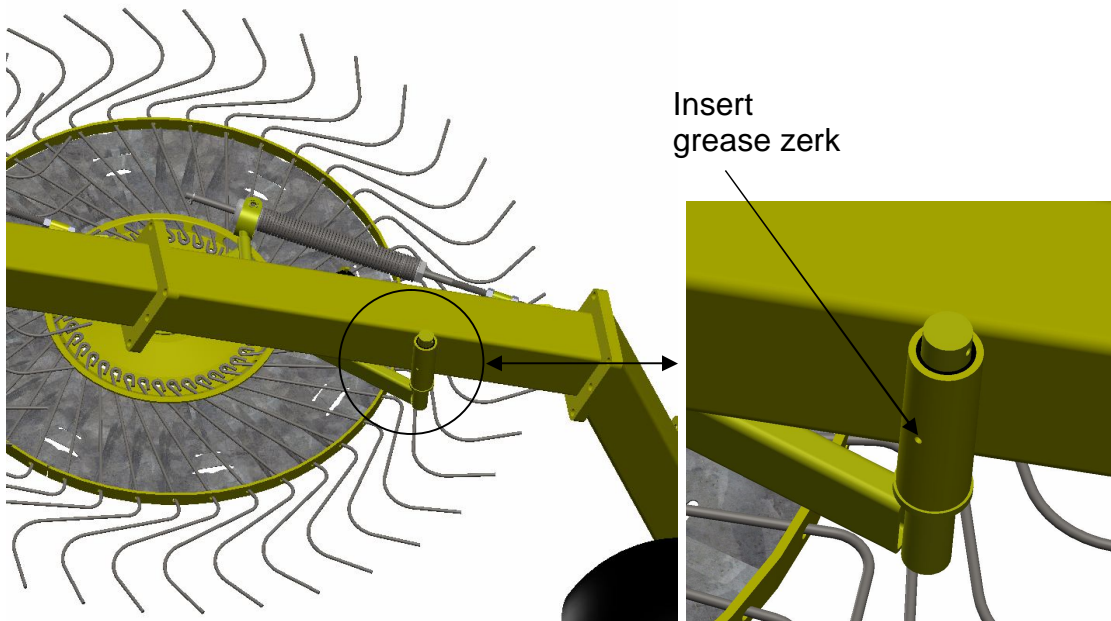




The wheels are mounted using ½” tapered wheel nuts. FOR MOUNTING THE RAKE WHEELS, THE TAPERED EDGE OF THE NUTS FACES OUT. This means that the flat edge of the nut is tightened against the rake wheel. **Torque nuts to 90 ft-lb.**



Finally, the ¼” grease zerk should be installed in the rake wheel arm pivot, as shown.



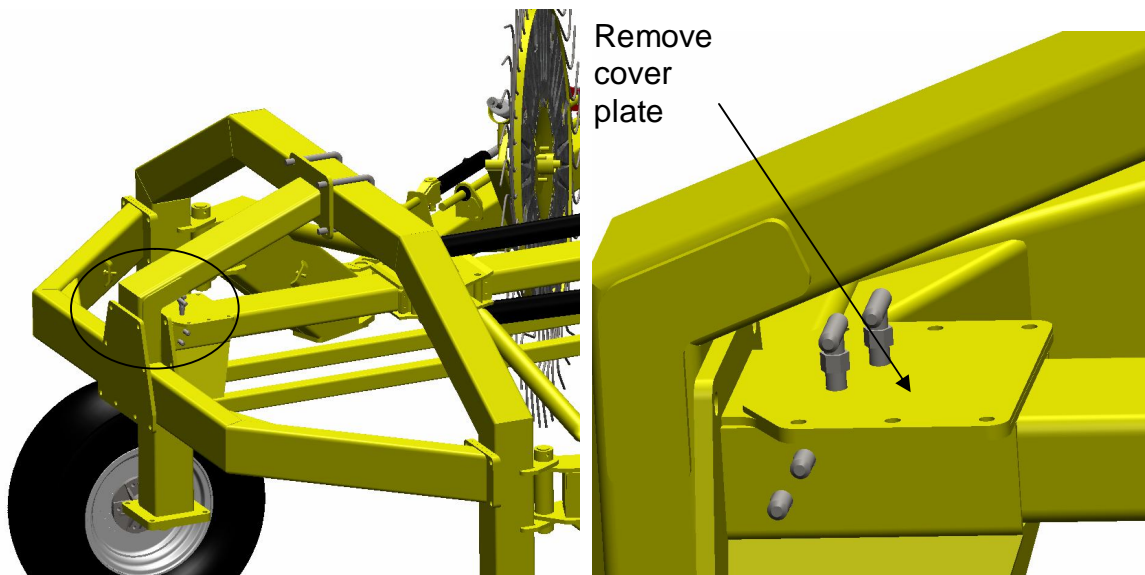
Repeat all previous steps on the opposite side.

## 4.6 Hitch Extension Assembly Procedure

This part of the manual covers the steps involved in adding the hitch extension. Ensure that the hydraulic pressure is relieved and disconnected before beginning.

### 4.6.1 Install Hydraulic Hose Extensions

In order to extend the hitch length, the hydraulic hoses must first be extended. This is accomplished using the connections at the rear of the machine. First remove the cover plate (6 bolts) to access the hydraulic connections.

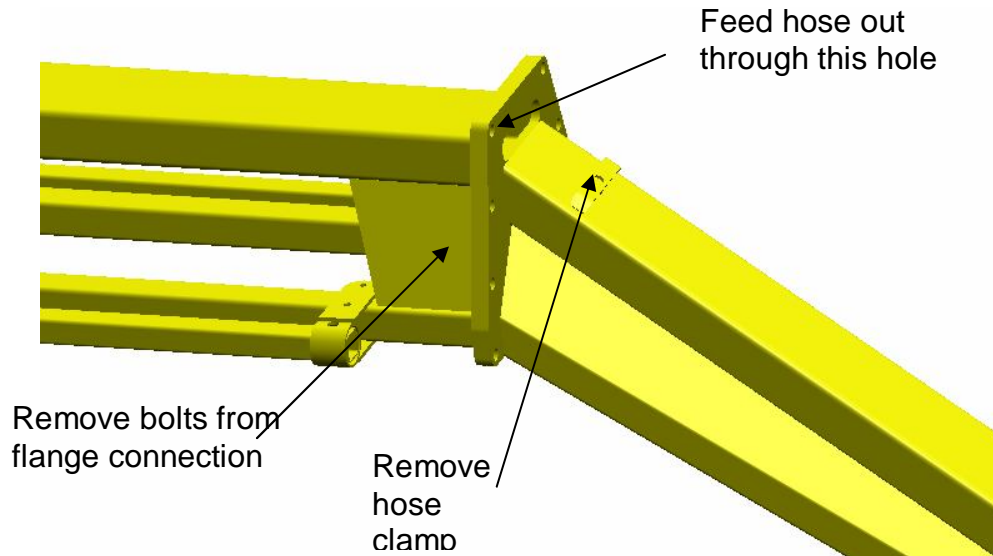


Remove each individual hose and install a 40" hose extension on each hose, making sure that they are reconnected to the same port that they came off of. Bolt cover plate back on once all six hoses have been extended.

### 4.6.2 Remove Front Hitch

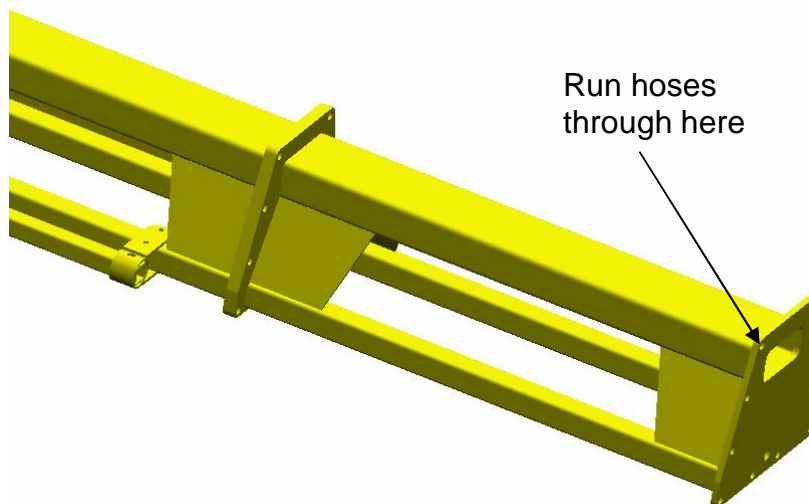
Next, the front hitch must be removed. Before doing this, ensure that both sides of the flange connection are supported to take weight off of the connection, and so that the hydraulic lines are not damaged. Remove all 10 bolts (5/8"x1 3/4")

and save for later use. Also, remove the hose clamp from the front hitch, and feed the hose out through the hole.



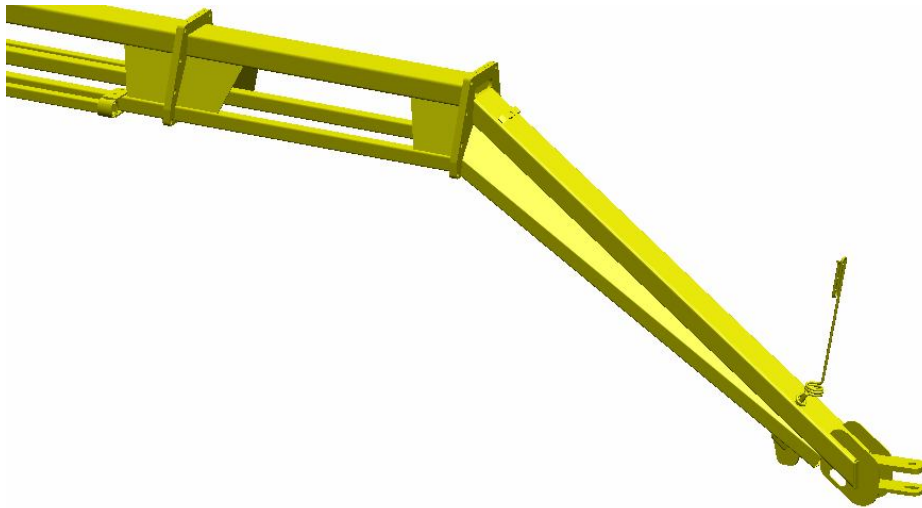
#### 4.6.3 Install Hitch Extension

Once the hitch is removed, the hydraulic hose should be run through the top pipe of the hitch extension, then the hitch extension should be bolted to the flange on the hitch of the machine using 10 bolts (5/8"x1 3/4") and serrated flange nuts.



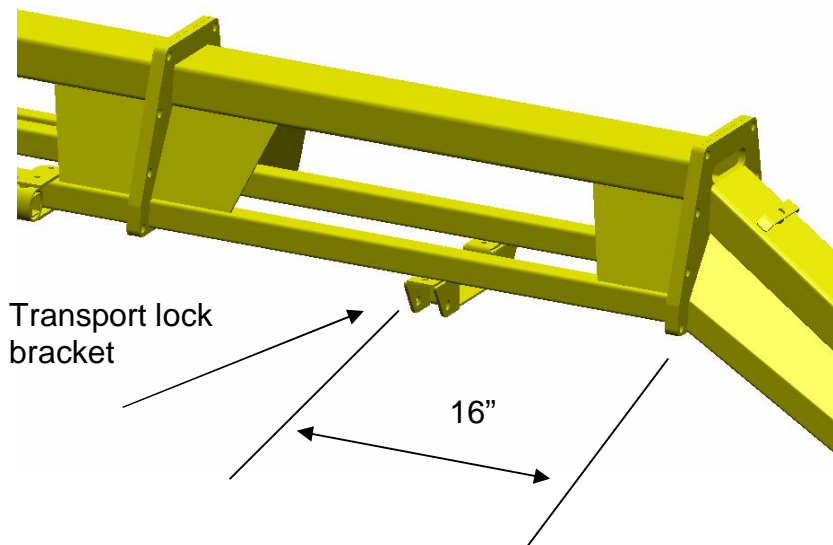
#### 4.6.4 Reinstall Front Hitch

Next, the front hitch can be reinstalled. First, feed the hydraulic hoses back through the opening, and reconnect the flange using the bolts removed earlier. Reattach the hose clamp and run the hoses down along the hitch as before.



#### 4.6.5 Move Transport Lock Bracket

Finally, the transport lock bracket needs to be moved. The correct position is 16" from the front flange to the center of the U-bolt, on the bottom of the hitch extension. First, remove it from its current location on the hitch by removing the U-bolts, then reinstall as shown.



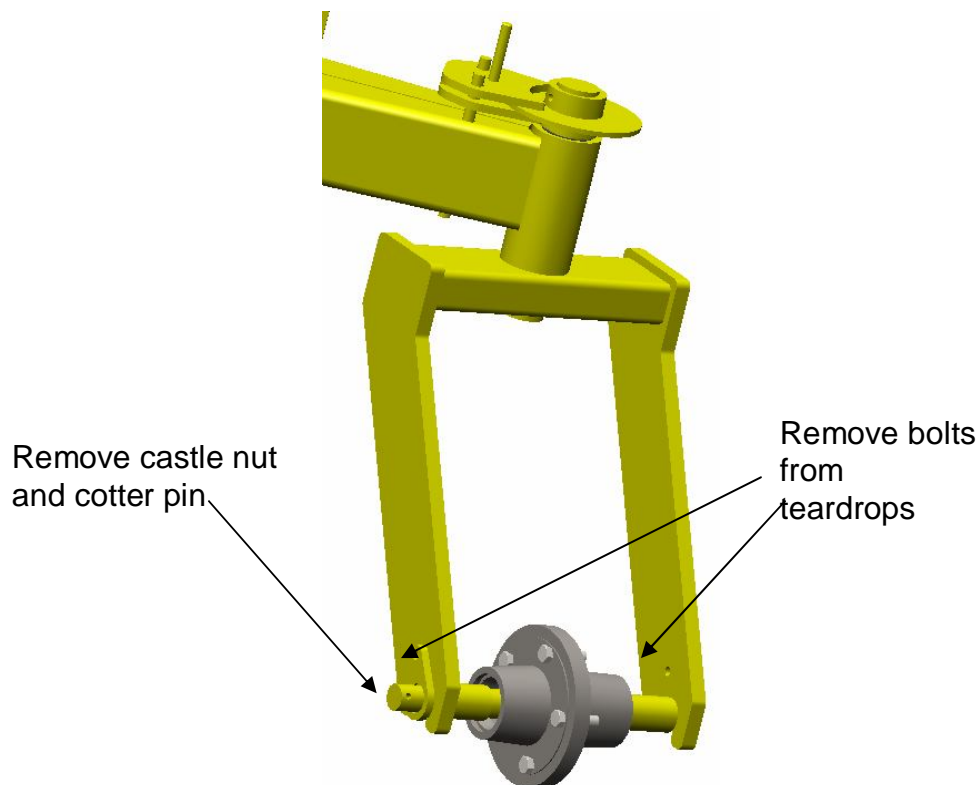
## 4.7 Caster Kit Assembly Procedure

This part of the manual involves the steps required to install the caster kit. It is strongly recommended that this be installed along with the extension kit.

### 4.7.1 Install Wheel and Tire

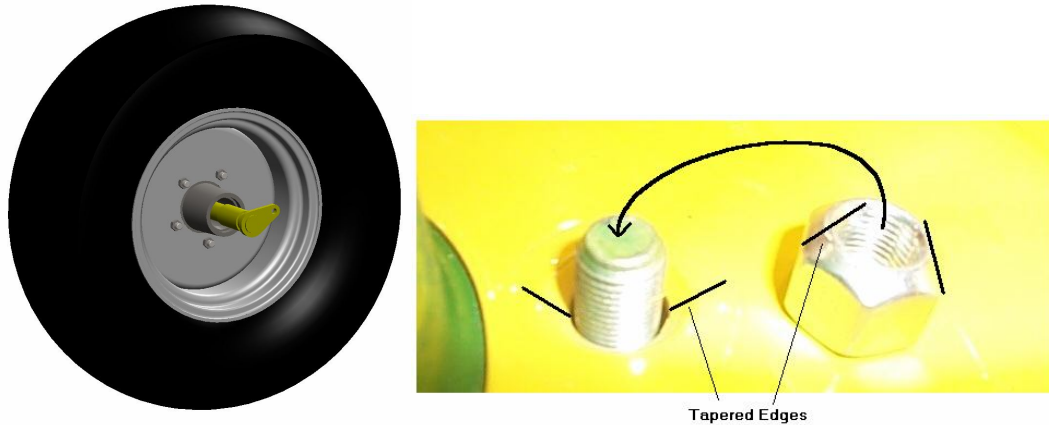
The caster kit is shipped pre-assembled. However, the wheel needs to be installed. To install the wheel, first remove the castle nut (and cotter pin) on the end of the axle.

Next, remove the two 3/8" bolts holding on the teardrops, so that the axle can drop out of the forks.



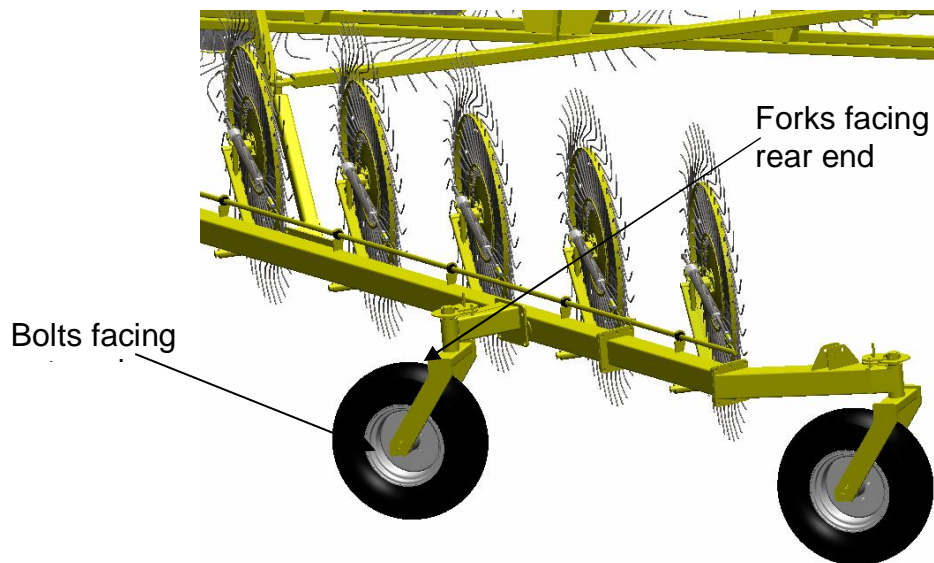
Once the axle is removed, install the wheel onto the hub. Be careful not to lose or mix up either of the spacers on the axle (the longer spacer is on the stud side, which faces the welded-on teardrop). Ensure that the **valve stem is on the same side as the wheel nuts**.

Mount the wheel to the hub using the tapered 1/2" wheel nuts. The wheel should be mounted so the tapered edge of the nuts fit into the tapered holes of the wheel (flat edge facing outwards). **Torque wheel nuts to 90 ft-lb.**



#### 4.7.2 Reinstall Axle

Next, reinstall the axle to the caster forks according to which side it is mounted. When the caster forks are facing towards the back, the wheel nuts should be on the outside, as shown.

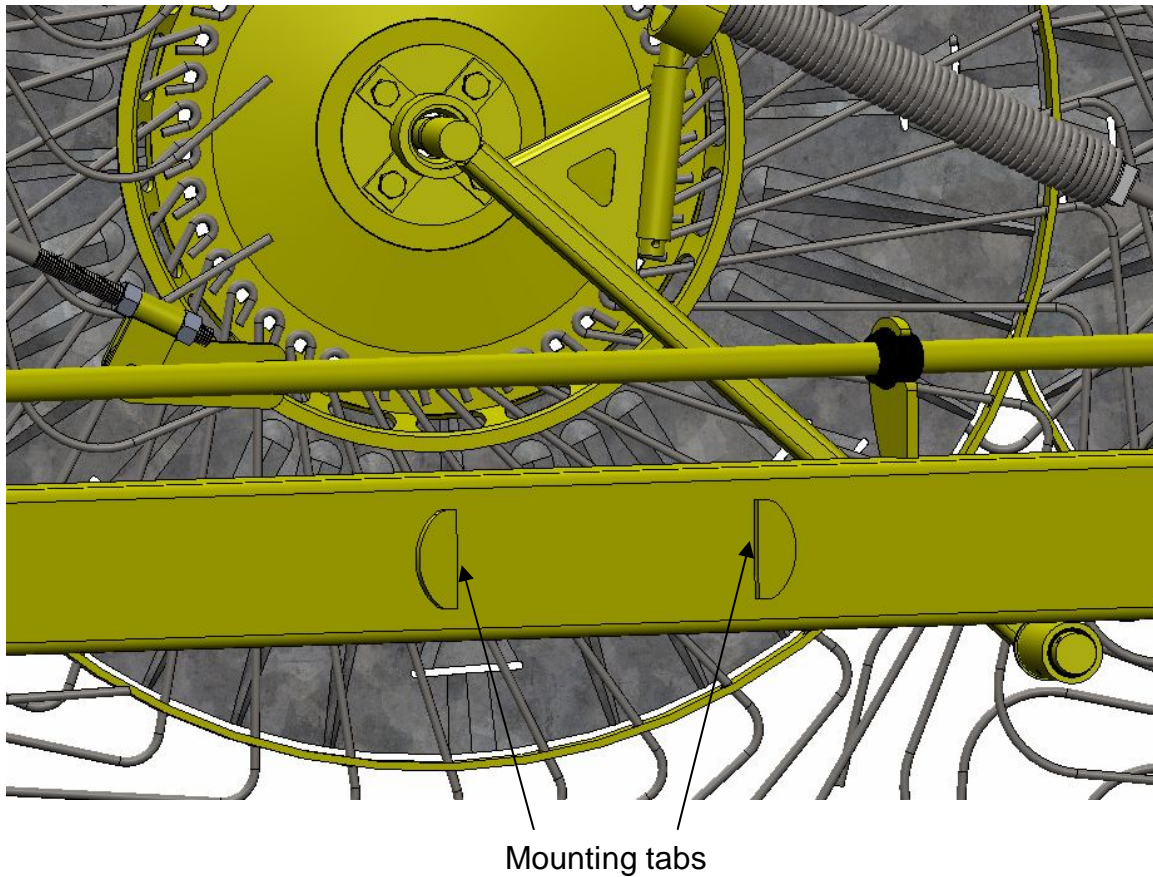




Insert the 3/8"x1 3/4" bolts and nylon lock nuts into the teardrops, making sure that the spacers are between the forks and hub. Finally, tighten the assembly with the castle nut, and secure with the cotter pin.

#### **4.7.3 Install Flanged Caster Mount**

Once the wheel is reinstalled on the axle, the entire caster assembly should be bolted to the rake arm. The caster flange should mount between the tabs on the rake arm, and secured using two 3/4" U-bolts and serrated flange nuts.



Repeat on opposite side.

**- Assembly is now complete -**



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