

Rev.3.21.2018

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## To The Dealer

Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration found on the Dealer Portal website located at [dealer.jm-inc.com](http://dealer.jm-inc.com) and return it to J&M Mfg. Co., Inc. at the address indicated on the form. Warranty claims will be denied if the Warranty Registration has not been submitted.

### **EXPRESS WARRANTY:**

J&M Mfg. Co., Inc. warrants against defects in construction or materials for a period of ONE year. We reserve the right to inspect and decide whether material or construction was faulty or whether abuse or accident voids our guarantee.

Warranty service must be performed by a dealer or service center authorized by J&M Mfg. Co., Inc. to sell and/or service the type of product involved, which will use only new or remanufactured parts or components furnished by J&M Mfg. Co., Inc. Warranty service will be performed without charge to the purchaser for parts or labor based on the Warranty Labor Times schedule. Under no circumstance will allowable labor times extend beyond the maximum hours indicated in the Warranty Labor Times schedule for each warranty procedure. The purchaser will be responsible, however, for any service call and/or transportation of the product to and from the dealer or service center's place of business, for any premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranty. Costs associated with equipment rental, product down time, or product disposal are not warrantable and will not be accepted under any circumstance.

Each Warranty term begins on the date of product delivery to the purchaser. Under no circumstance will warranty be approved unless (i) the product warranty registration card has been properly completed and submitted to the equipment manufacturer, and (ii) a warranty authorization number has been issued by the equipment manufacturer. This Warranty is effective only if the warranty registration card is returned within 30 days of purchase.

This Warranty does not cover a component which fails, malfunctions or is damaged as a result of (i) improper modification or repair, (ii) accident, abuse or improper use, (iii) improper or insufficient maintenance, or (iv) normal wear or tear. This Warranty does not cover products that are previously owned and extends solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. J&M Mfg. Co., Inc. makes no Warranty, express or implied, with respect to tires or other parts or accessories not manufactured by J&M Mfg. Co., Inc. Warranties for these items, if any, are provided separately by their respective manufacturers.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.

In no event shall J&M Mfg. Co., Inc. be liable for special, direct, incidental or consequential damages of any kind. The exclusive remedy under this Warranty shall be repair or replacement of the defective component at J&M Mfg. Co., Inc.'s option. This is the entire agreement between J&M Mfg. Co., Inc. and the Owner about warranty and no J&M Mfg. Co., Inc. employee or dealer is authorized to make any additional warranty on behalf of J&M Mfg. Co., Inc.

The manufacturer reserves the right to make product design and material changes at any time without notice. They shall not incur any obligation or liability to incorporate such changes and improvements in products previously sold to any customer, nor shall they be obligated or liable for the replacement of previously sold products with products or parts incorporating such changes.

### **SERVICE:**

The equipment you have purchased has been carefully manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and maintenance. Lubricate the unit as specified. Observe all safety information in this manual and safety signs on the equipment.

For service, your authorized J&M dealer has trained mechanics, genuine J&M service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine J&M service parts. Substitute parts may void warranty and may not meet standards required for safety and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

**Model No:** \_\_\_\_\_ **Serial No:** \_\_\_\_\_ **Date of Purchase:** \_\_\_\_\_

**Purchased From:** \_\_\_\_\_


Provide this information to your dealer to obtain correct repair parts.


### TO THE OWNER:


The purpose of this manual is to assist you in operating and maintaining your soil conditioner in a safe manner. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance and help maintain safe operating conditions. If this machine is used by an employee or is loaned or rented, make certain that the operator(s), prior to operating:


1. Is instructed in safe and proper use.
2. Reviews and understands the manual(s) pertaining to this machine.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol (a triangle with an exclamation mark) to indicate the degree of hazard for items of personal safety. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

 This Safety-Alert symbol indicates a hazard and means **ATTENTION!**  
**BECOME ALERT! YOUR SAFETY IS INVOLVED!**

 **DANGER** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

 **WARNING** Indicates a potentially hazardous situation that, if not avoided, will result in death or serious injury, and includes hazards that are exposed when guards are removed.

 **CAUTION** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**IMPORTANT** Indicates that failure to observe can cause damage to equipment.

**NOTE** Indicates helpful information.

## Bolt Torque Chart

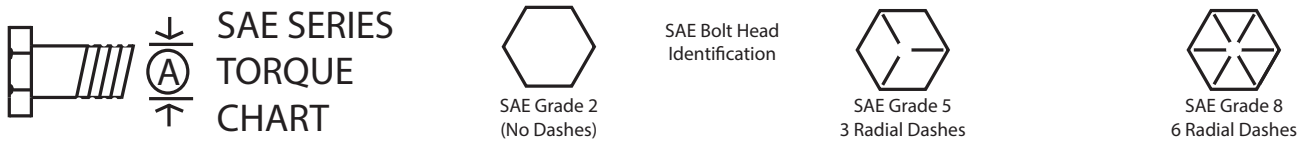
### BOLT TORQUE CHART

Always tighten hardware to these values unless a different torque or tightening procedure is listed for a specific application.

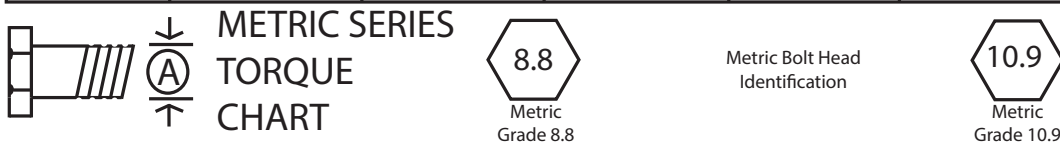
Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware. SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start the thread engagement properly. All torque values are given to specification used on hardware defined by SAE J1701 & J1701M (Jul 96).



Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		LBS.-FT.	N-m	LBS.-FT.	N-m	LBS.-FT.	N-m
1/4	7/16"	6	8	10	13	14	18
5/16	1/2"	12	17	19	26	27	37
3/8	9/16"	23	31	35	47	49	67
7/16	5/8"	36	48	55	75	78	106
1/2	3/4"	55	75	85	115	120	163
9/16	13/16"	78	106	121	164	171	232
5/8	15/16"	110	149	170	230	240	325
3/4	1-1/8"	192	261	297	403	420	569
7/8	1-5/16"	306	416	474	642	669	907
1	1-1/2"	467	634	722	979	1020	1383



Diameter & (Millimeters) Thread Pitch	Wrench Size	COARSE THREAD				FINE THREAD				Diameter & (Millimeters) Thread Pitch
		MARKING ON THREAD				MARKING ON THREAD				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12.1.75	18 mm	68	50	94	70	75	55	103	76	12.1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

## Specifications

	Specifications					Basket Sizes & Layout			
	Working Width	Transport Width	Base Width	Wings Each	Approx. Width	Side Wing	Base Unit		Side Wing
Model TF2	12'	12'	12'	N/A	2,195 lbs.		6'	6'	
	13'	13'	12'	N/A	2,310 lbs.		4'	5'	4'
	14'	14'	12'	N/A	2,425 lbs.		5'	4'	5'
	15'	15'	15'	N/A	2,540 lbs.		5'	5'	5'
	16'	16'	15'	N/A	2,655 lbs.		5'	6'	5'
	17'	17'	15'	N/A	2,770 lbs.		6'	5'	6'
	18'	18'	15'	N/A	2,885 lbs.		6'	6'	6'
Model TF212	20'	13'5"	12'	4'	4,415 lbs.	4'	6'	6'	4'
	22'	13'5"	12'	5'	4,645 lbs.	5'	6'	6'	5'
	23'	13'5"	12'	5'6"	4,760 lbs.	5.5'	6'	6'	5.5'
	24'	13'5"	12'	6'	4,875 lbs.	6'	6'	6'	6'
	26'	13'5"	12'	7'	5,105 lbs.	3.5' 3.5'	6'	6'	3.5' 3.5'
	27'	13'5"	12'	7'6"	5,220 lbs.	3.5' 4'	6'	6'	4' 3.5'
	28'	13'5"	12'	8'	5,335 lbs.	4' 4'	6'	6'	4' 4'
	29'	13'5"	12'	8'6"	5,450 lbs.	3.5' 5'	6'	6'	5' 3.5'
	30'	13'5"	12'	9'	5,565 lbs.	4' 5'	6'	6'	5' 4'
	31'	13'5"	12'	9'6"	5,680 lbs.	3.5' 6'	6'	6'	6' 3.5'
	32'	13'5"	12'	10'	5,795 lbs.	5' 5'	6'	6'	5' 5'
	33'	13'5"	12'	10'6"	5,910 lbs.	5' 5.5'	6'	6'	5.5' 5'
	34'	13'5"	12'	11'	6,025 lbs.	5.5' 5.5'	6'	6'	5.5' 5.5'
	35'	13'5"	12'	11'6"	6,140 lbs.	5.5' 6'	6'	6'	6' 5.5'
Model TF215	36'	13'5"	15'	12'	6,255 lbs.	5' 5.5'	5' 5'	5'	5.5' 5'
	37'	15'5"	15'	11'	6,370 lbs.	5' 6'	6'	6'	5' 5'
	38'	15'5"	15'	11'6"	6,485 lbs.	5.5' 6'	5' 5'	5'	6' 5.5'
	39'	15'5"	15'	12'	6,600 lbs.	6' 6'	5' 5'	5'	6' 6'
	40'	15'5"	15'	12'6"	6,715 lbs.	3.5' 5' 5'	5' 5'	5'	5' 4' 3.5'
	41'	15'5"	15'	13'	6,830 lbs.	4' 5' 5'	5' 5'	5'	5' 4' 4'
	42'	15'5"	15'	13'6"	6,945 lbs.	3.5' 5' 5'	5' 5'	5'	5' 5' 3.5'
	43'	15'5"	15'	14'	7,060 lbs.	4' 5' 5'	5' 5'	5'	5' 5' 4'
	44'	15'5"	15'	14'6"	7,175 lbs.	4' 5' 5.5'	5' 5'	5'	5.5' 5' 4'
	45'	15'5"	15'	15'	7,290 lbs.	5' 5' 5'	5' 5'	5'	5' 5' 5'

### **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be erased by an operator's single careless act. In addition, hazard control and accident prevention are dependent upon the awareness, concern, judgment, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Make certain that the operator(s), prior to operating is instructed in safe and proper use and reviews and understands the manual(s) pertaining to this machine.

Read this manual before you operate this machine. If you do not understand any part of this manual, or need more information, contact the manufacturer or your authorized dealer.

### **SAFETY**

Understand that your safety and the safety of other persons is measured by how you service, and operate this machine. Know the positions and functions of all controls before you try to operate them. Make sure to check all controls in a safe area before starting your work.

The safety information given in this manual does not replace safety codes, federal, state or local laws. Make certain your machine has the proper equipment as designated by local laws and regulations.

A frequent cause of personal injury or death is from persons falling off equipment and being run over. Do not permit persons to ride on this machine.

Travel speeds should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments and holes. Reduce speed when turning, crossing slopes and rough, slick or muddy surfaces.

Collision of high speed road traffic and slow moving machines can cause personal injury or death. On roads, use flasher lights according to local laws. Keep slow-moving-vehicle emblem visible. Pull over to let faster traffic pass.

Never adjust, service, clean, or lubricate running gear until all power is shut off.

Keep all safety shields in place.

Keep hands, feet, hair and clothing away from moving parts while unit is in operation.

Make sure that everyone is clear of equipment before applying power or moving the machine.

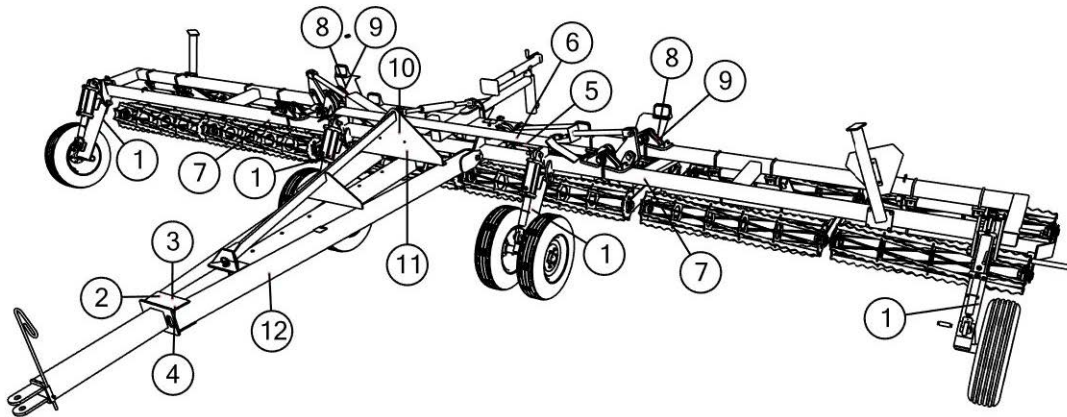
Make sure that the implement is fastened securely to the tractor by using the proper hitch pin, clip and safety chains.

Do NOT exceed speeds in excess of 20 MPH. Also be sure slow moving vehicle emblem is attached to rear of transport.

Before unhooking the implement from the towing unit, be sure to properly block the wheels to prevent the implement from moving. Be sure the jack assembly is positioned in the park position and the weight has been transferred to the jack assembly before unhooking the implement.

## Safety Signs

**IMPORTANT:** Install new safety signs if the old signs are destroyed, lost, painted over or cannot be read. When parts are replaced that have safety signs, make sure you install a new sign with each new part. New signs are available from the manufacturer or your authorized dealer.



### TORSION-FLEX™



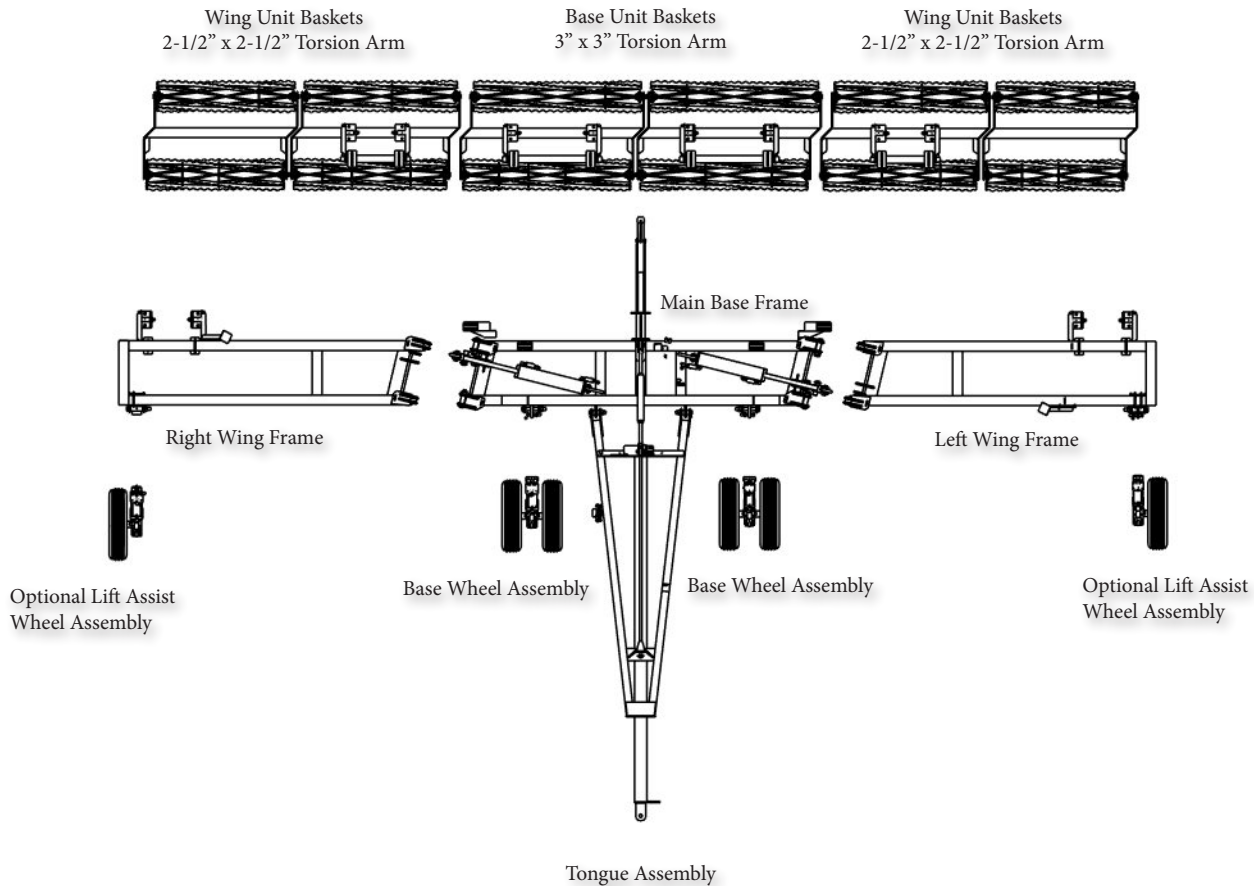
#	Description	Part #
1	Warning: Keep Lug Nuts Tight	JM0010150
2	Warning: Rapidly Rising Tongue	JM0010181
3	Warning: Electric Lines	JM0010182
4	Warning: High Pressure Fluid	JM0010163
5	Warning: Transport Locks	JM0010167
6	Warning: Folding Wings	JM0014992
7	Reflective Amber Decal	JM0009946
8	Reflective Red Decal	JM0009945
9	Reflective Orange Decal	JM0009944
10	Medium Size J&M Oval	JM0010179
11	Small "J&M Manufacturing" Decal	JM0010180
12	"TF2" Decal Driver Side	JM0027693
12	"TF2" Decal Passenger Side	JM0027688
12	"TF212" Decal Drivers Side	JM0027692
12	"TF212" Decal Passenger Side	JM0027689
12	"TF215" Decal Drivers Side	JM0027691
12	"TF215" Decal Passenger Side	JM0027690
13	"Torsion-Flex" Decal	JM0010173

## Set-Up Instruction

The J&M Torsion-Flex Soil Conditioner is shipped with components partially assembled. Hardware required to connect the Base Wheel Assembly, Main Base Frame Assembly, Wing Frames and Tongue Assembly should already be secured to the components at the point of attachment.

The hydraulic cylinders have the fittings already installed and are secured to the base wheel assembly. The hydraulic hoses and light harness wires should be inserted into the component tubing and simply require the ends to be connected.

Each basket frame should have the rolling baskets and torsion flex arm installed. Refer to the Basket Size and Layout, located on the right side of the chart on page 5 of the Operator's Manual for recommended basket layout. Be sure the baskets with the 3" x 3" Torsion Bars are secure to the Main Base Unit and the baskets with the smaller 2 1/2" x 2 1/2" Torsion Bars are secured to the side wings.



## Set-Up Instructions

- **Wheel Arm Weldment**

Attach the wheel arm weldment to the main frame.

Use a 1-1/4" x 9" hex bolt and 1-1/4" hex nut.

Tighten hardware.

- **Wheel & Tire Assembly**

Attach the wheel and tire assembly using (6) 1/2" wheel nuts.

**Align the wheel and hub and tighten the wheel nuts in a star pattern to 80 Ft. Lbs. Check the wheel nuts periodically to ensure they remain tight.**

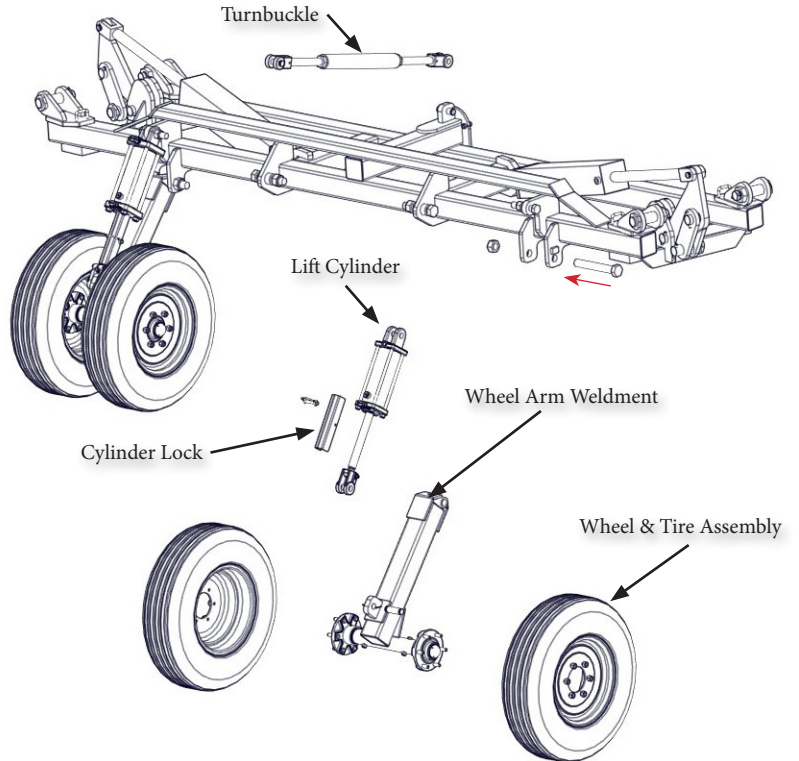
- **Lift Cylinder**

Attach the lift cylinder to the main frame using a 1" x 5" hex bolt and a 1" nylon locking hex nut. Attach the lift cylinder to the wheel arm weldment using a 1" x 3-1/2" clevis pin and (2) cotter pins. Fasten hardware once secured.

Install the cylinder lock, fasten with provided lynch pin.

- **Turnbuckle**

Secure one end of the turn buckle assembly to the top of the main frame as shown using one 1" x 3-1/2" clevis pin and cotter pin.



- **A-Frame Weldment**

Connect the A-Frame to the Base Unit.

Use (2) 1-1/4" x 6" hex bolts and (2) 1-1/4" nylon locking hex nuts.

Both bolts face the inside of the A-frame. Fasten hardware once secured.

- **Turnbuckle**

Secure the other end of the turn buckle assembly to the top of the A-frame using a 1" x 3-1/2" clevis pin and cotter pin.

- **Tongue Weldment**

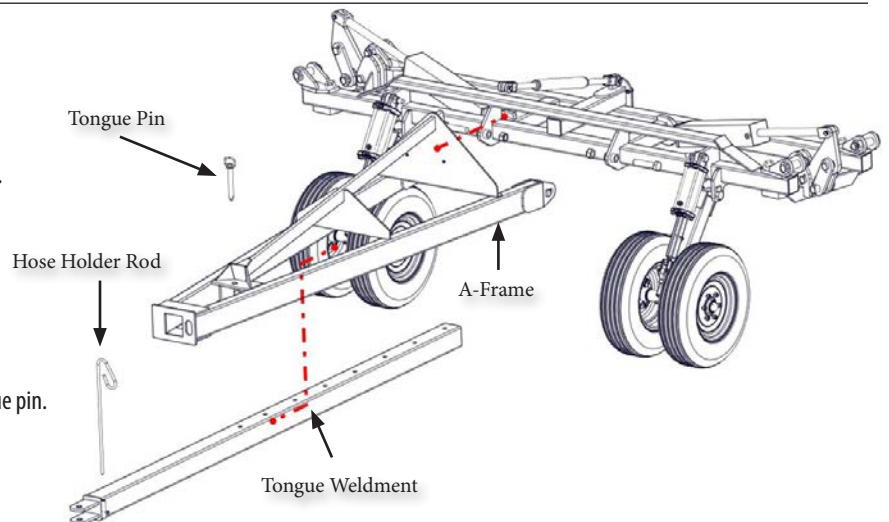
Slide Tongue Weldment inside the A-frame. Secure with 1" x 8" tongue pin.

Attach Hose Holder Rod to the Tongue Weldment.

Fasten with 3/8" x 3/4" hex bolt. Fasten hardware once secured.

- **Hydraulic Hoses & Light Harness**

Based on your model go to pages 22-28 to find the destination of each hydraulic hose. Connect the A-Frame harness to the Main Frame harness. Secure with zip-ties.



**⚠ WARNING:** Before attaching the cylinders to the wing linkage, charge the cylinders with hydraulic oil to bleed all air out of the system, and then check for any leaks. Failure to do so could cause erratic, sudden movement of the wings which could damage the equipment and cause serious injury or death.

## Set-Up Instructions

### • Base Unit Baskets

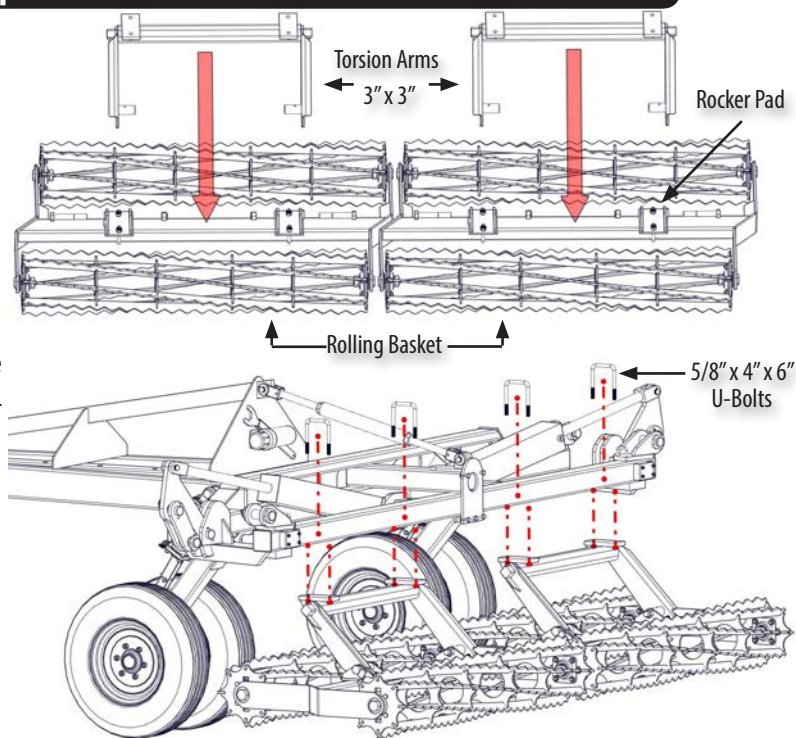
Attach the 3' Heavy Torsion arms to the rolling basket. Secure with 1" x 6-1/2" hex bolt and 1" nylon locking hex nut. Fasten hardware once secured.

(Rocker Pads may need installed. Use 4-1/8" x 4-1/2" x 5/8" U-Bolt and (2) 5/8" nylon locking hex nuts.)

**Make sure the baskets are symmetrically placed on the Base Unit Main Frame and have a 1-1/2" clearance between baskets.**

*NOTE:* Be sure the basket assemblies with the 3" x 3" torsion arms are secured to the Base Unit Main Frame. The rolling basket assemblies for the side wings have a smaller 2-1/2" x 2-1/2" torsion arm.

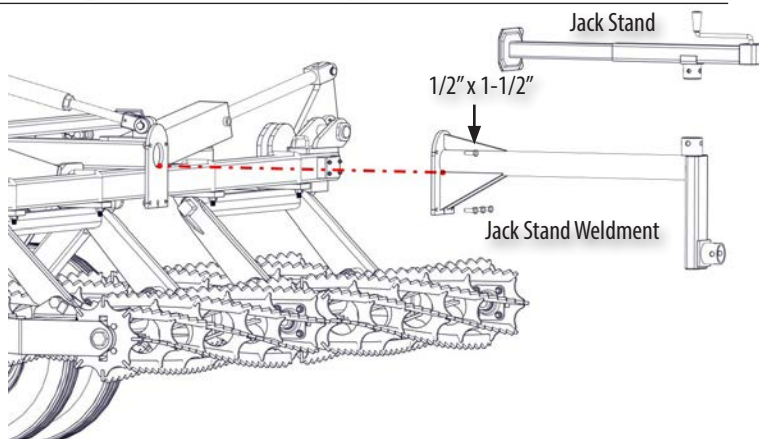
- Attach the torsion arm - rolling basket assembly to the main frame. Secure each torsion arm with (2) 5/8" x 4" x 6" U-bolts and a 5/8" centerlock hex nut. Fasten hardware once secured.



### • Jack Stand

Secure the Jack Stand Weldment to the Main Frame using (5) 1/2" x 1-1/2" hex bolts and (5) 1/2" centerlock hex nuts. Fasten hardware once secured.

Attach the jack stand to the support arm using the supplied pin.



### • Wing Frame

Attach the Wing Frames to the Main Frame. For each wing use :

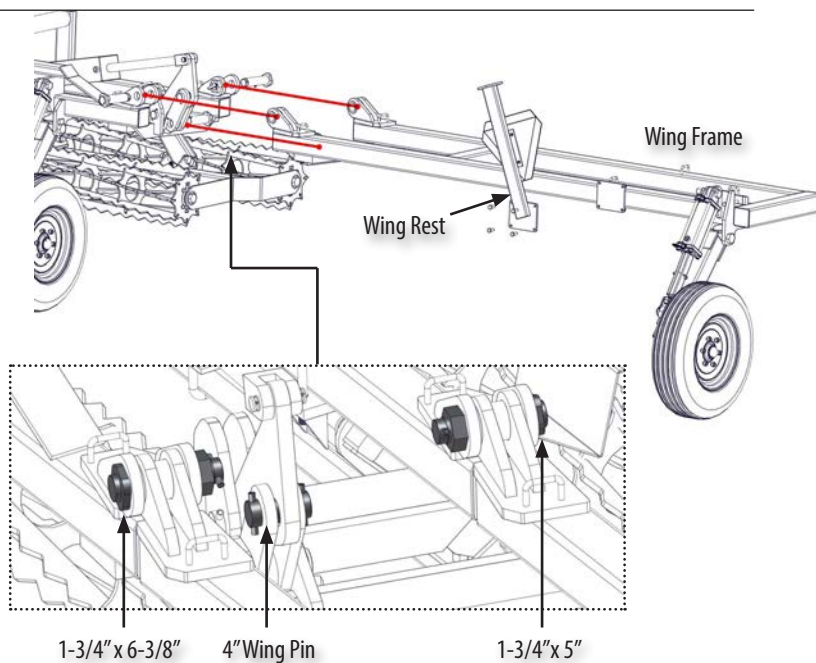
- 1-3/4" x 6-3/8" Welded Pin
- 1-3/4" x 5" Welded Pin
- (2) 1-3/4" Hex Nuts
- 4" Wing Pin
- (4) Roll Pins

Once secured, fasten hardware.

### • Wing Rest

Attach a Wing Rest weldment to each wing. Secure using (4) 1/2" x 1-1/4" hex bolts and (4) 1/2" centerlock hex nuts.

Once secured, fasten hardware.



## Set-Up Instructions

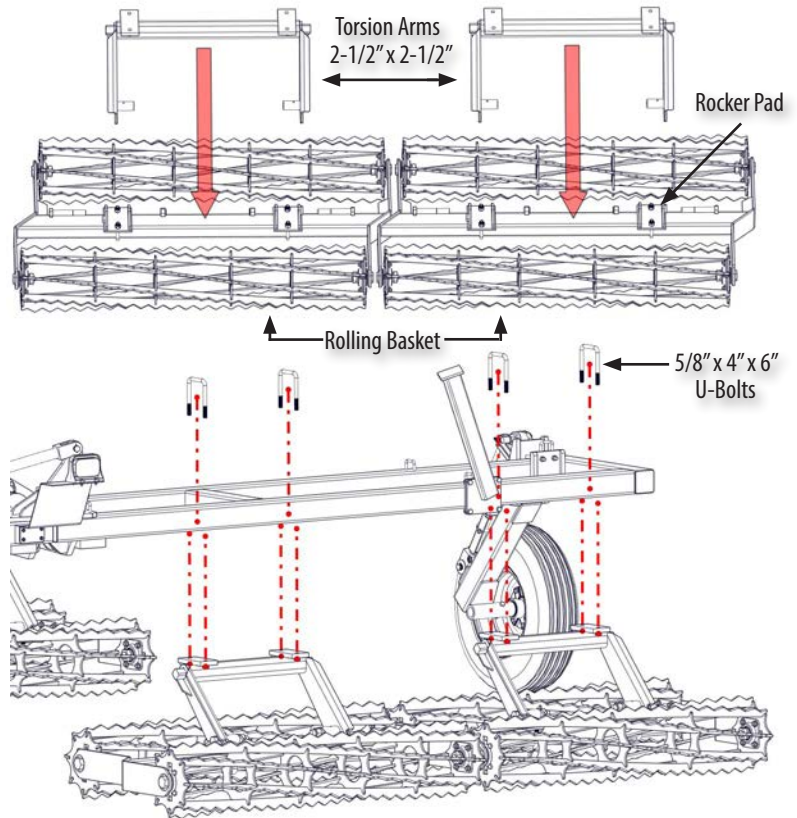
### • Wing Baskets

Attach the 2' Light Torsion arms to the rolling basket. Secure with 1" x 6-1/2" hex bolt and 1" nylon locking hex nut. Fasten hardware once secured.

(Rocker Pads may need installed. Use 4-1/8" x 4-1/2" x 5/8" U-Bolt and (2) 5/8" nylon locking hex nuts.)

Make sure the wing baskets are placed according to the "Basket Sizes and Layout" section of the chart found on page 5. **IMPORTANT: Make sure the wing baskets closest to the baskets on the Base Unit baskets have a clearance of 2". The spacing between each wing baskets should have a clearance of 1-1/2".**

- Attach each torsion arm - rolling basket assembly to the wing. Secure each torsion arm with (2) 5/8" x 4" x 6" U-bolts and (4) 5/8" centerlock hex nuts.

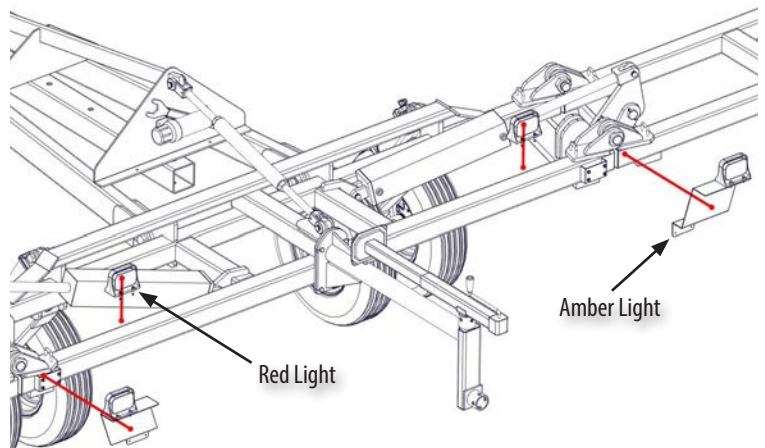


### • Lights and Light Brackets

Secure both Red Lights to the Main Frame using (4) 1/4" self tapping screws for each light.

Secure both Amber Lights and Light Brackets to the Main Frame using (4) 1/4" x 5/8" hex bolts and (4) 1/4" hex nuts per light.

Connect all lights to the main wiring harness. The main harness is installed and located inside the frame. All remaining wiring needs to be stored inside the frame.



### • Optional Wing Wheels

Secure the Wing Arm Mount Bracket to the Wing. Place bracket approximately 6" from the outside of the Wing. Secure using (2) 1/2" x 6" hex bolts and (2) 1/2" centerlock hex nuts. Fasten hardware once secured.

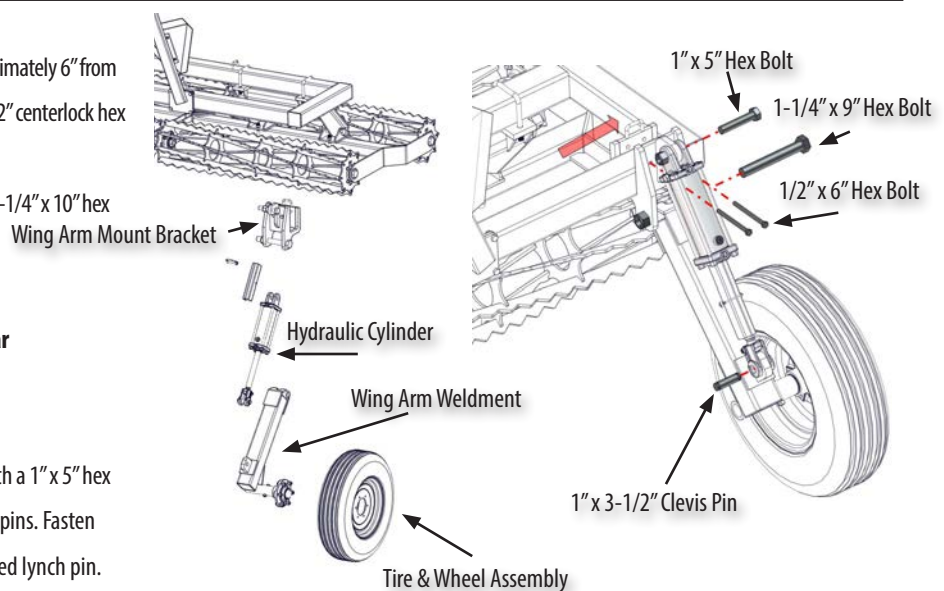
Attach the Wing Arm Weldment to the Mount Bracket. Secure with a 1-1/4" x 10" hex bolt and 1-1/4" nylon locking hex nut.

Attach the wheel and tire assembly using (6) 1/2" wheel nuts.

**Align the wheel and hub and tighten the wheel nuts in a star pattern to 80 Ft. Lbs. Check the wheel nuts periodically to ensure they remain tight.**

Attach the hydraulic cylinder to the Wing Arm Weldment. Secure with a 1" x 5" hex bolt, 1" nylon locking hex nut, 1" x 3-1/2" clevis pin, and (2) cotter pins. Fasten hardware once secure. Install the cylinder lock, fasten with provided lynch pin.

NOTE: See page 22-26 for correct hydraulic cylinder layout.



## Set-Up Instructions

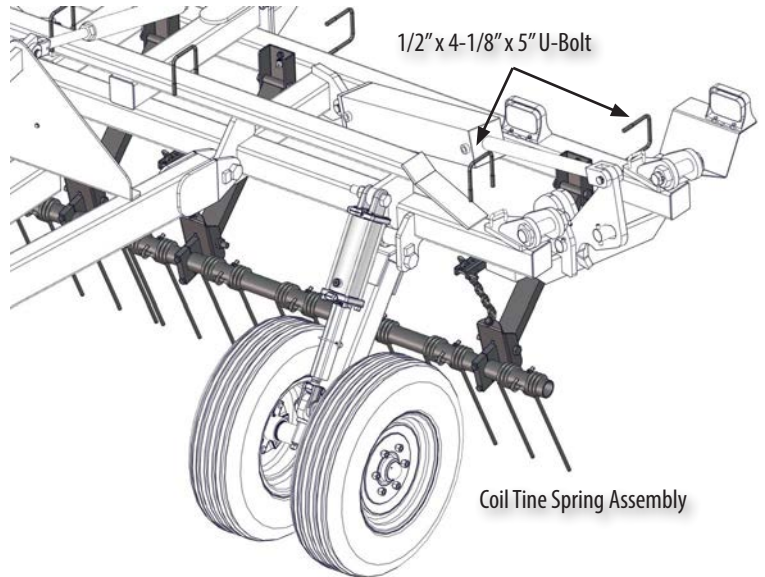
- **Coil Tine Spring Assembly**

For part identification, refer to page 24.

For Coil Tine Spring Assembly layout see page 14.

Attach the Coil Tine Spring Assembly to the main frame or wing weldment.

Secure the Coil Tine Spring Assembly with (2) 1/2" x 4-1/8" x 5" U-bolts and (4) 1/2" centerlock hex nuts. Fasten hardware once secured.



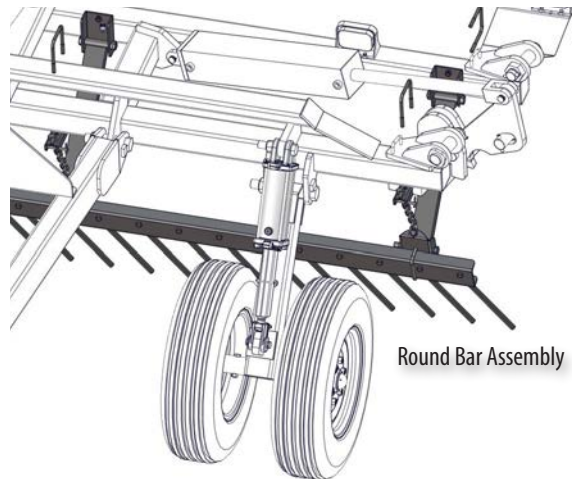
- **Round Bar Assembly**

For part identification, refer to page 24.

For Round Bar Assembly layout see page 14.

Attach the Round Bar Assembly to the main frame or wing weldment.

Secure the Round Bar Assembly with (2) 1/2" x 4-1/8" x 5" U-bolts and (4) 1/2" centerlock hex nuts. Fasten hardware once secured.



## Coil Tine Pipe Bar & Round Bar Bracket Layout

Below is a recommended layout of the harrow pipe bar and round bar bracket lengths along the width of the conditioner. Be sure the Harrow is properly and evenly spaced along the Base Unit Main Frame and Wing Frames, making adjustments as necessary.

	Specifications	Basket Sizes & Layout			
	Working Width	Side Wing	Base Unit		Side Wing
Model TF2	12'		6' 6'		
	13'		4'	5' 4'	
	14'		5' 4'	5'	
	15'		5' 5'	5'	
	16'		5' 6'	5'	
	17'		6' 5'	6'	
	18'		6' 6'	6'	
Model TF 212	20'	4'	6'	6'	4'
	22'	5'	6'	6'	5'
	23'	5'	6'	6'	5'
	24'	6'	6'	6'	6'
	26'	7'	6'	6'	7'
	27'	7'	6'	6'	7'
	28'	4' 4'	6'	6'	4' 4'
	29'	4' 5'	6'	6'	5' 4'
	30'	4' 5'	6'	6'	5' 4'
	31'	4' 6'	6'	6'	6' 4'
	32'	5' 5'	6'	6'	5' 5'
	33'	5' 5'	6'	6'	5' 5'
	34'	5' 6'	6'	6'	6' 5'
	35'	5' 6'	6'	6'	6' 5'
	36'	6' 6'	6'	6'	6' 6'
Model TF215	37'	5' 6'	6'	6'	5' 5'
	38'	5' 6'	5' 5'	5'	6' 5'
	39'	6' 6'	5' 5'	5'	6' 6'
	40'	7' 5'	5' 5'	5'	5' 7'
	41'	4' 4' 5'	5' 5'	5'	5' 4' 4'
	42'	4' 4' 5'	5' 5'	5'	5' 4' 4'
	43'	4' 5' 5'	5' 5'	5'	5' 5' 4'
	44'	4' 5' 5'	5' 5'	5'	5' 5' 4'
	45'	5' 5' 5'	5' 5'	5'	5' 5' 5'

### **PREPARING THE TORSION-FLEX SOIL CONDITIONER**

Before putting the soil conditioner into operation, check the machine for damaged or worn parts and replace as necessary.

#### **Hardware**

Make sure all hardware is properly fastened according to the Bolt Torque chart found in this manual. Recheck all hardware for tightness after the unit has been operated for several hours. Check all pins and retaining rings are in good condition. Replace any pins or retaining rings that are worn, damaged or missing.

#### **Hydraulic Hoses**

Check all the hydraulic hoses to make sure there are not rubbing against sharp edges or are kinked or twisted. Hoses should be secured to the soil conditioner with nylon tie straps. Check hoses and fitting for hydraulic leaks. Tighten or replace as necessary.

#### **Lubrication**

Lubricate the Torsion-Flex soil conditioner according to the Lubrication Schedule outlined in the SERVICE section of this manual.

#### **Tires and Wheels**

Check the tire pressure in the transport tires. The recommended air pressure is 46 PSI. Make sure the tire pressure is equal in all tires. Make sure the wheel lug nuts are tightened to 80 Ft. Lbs. Check the wheel lug nuts before initial operation and after the unit has been operated for several hours to ensure the lug nuts remain tight.

#### **Adjusting the Inner Tongue**

Before attaching the Torsion-Flex soil conditioner to your primary tillage tool, extend the inner tongue of the A-Frame Tongue Assembly to ensure adequate turning clearance between the implements when turning. Adjust the Inner Tongue length by removing the 1" x 8" Tongue Pin and Cotter Pin. Readjust the Inner Tongue to the appropriate setting and re-pin as before.

#### **Attaching to the Primary Tillage Tool**

Back the primary tillage tool into position and attach the soil conditioner to the implement using a high quality hitch pin and clip and lock into place. Install a transport chain. Transport chain should have a minimum rating equal to the gross weight of implement and all attachments. Use only ASAE approved chains. If the unit is parked in the transport position, turn the handle on the jack stand after the soil conditioner has been connected to the primary tillage tool to remove pressure. Remove the Jack Assembly from the storage position and re-pin to the transport position located on top of the Storage Extension Arm.

#### **Unfolding the Wings / Removing the Transport Locks**

It is recommended to unfold the side wings in the field. Remove the wheel lift cylinder transport locks so the unit may be lowered to the field working position. Pin the transport locks on the back of the A-Frame Tongue Assembly for easy storage.

## Transporting

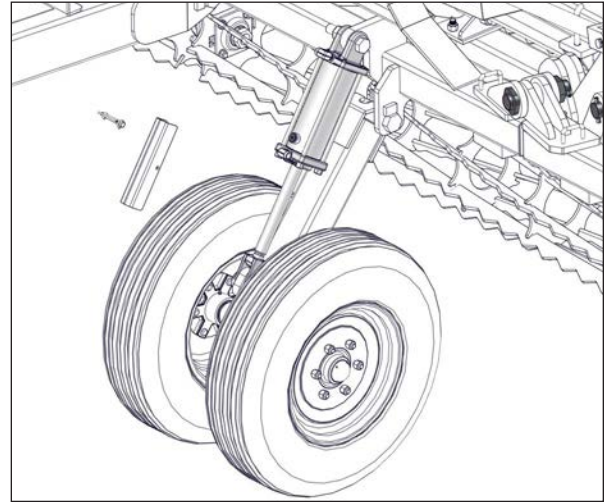
Before the soil conditioner is transported, be sure to secure the Jack Assembly in the transport position located on the top of the Storage Extension Arm.

The Torsion-Flex Soil Conditioner will increase the overall length of the primary tillage tool. Use extreme caution when turning to avoid obstacles. Reduce ground speed as necessary to maintain control of equipment.

Install hydraulic cylinder transport locks on the Base Unit wheels BEFORE transporting.

Comply with ALL state and local laws governing highway safety and regulations when moving machinery on public roads. Be sure an SMV emblem is in place and clearly visible on the rear of the conditioner. Make sure all lights are clearly visible and working properly BEFORE highway travel. Be sure the amber, red and orange retroreflective tape on the implement is in place and clearly visible.

The transport speed should not exceed 10 MPH in the field or over rough terrain. Reduce transport speed when necessary to maintain full control of the implement at all times.



## Unhitching

**WARNING** – Before unhooking the soil conditioner, be sure to install the hydraulic cylinder transport locks. Reposition the jack stand on the Storage Extension Arm to the parked position and lower the jack stand to the ground by turning the handle until weight of the soil conditioner is transferred to the jack. Keep hands and feet away from the jack stand when lowering.

Remove the Hitch Pin and unhook the safety chains.

**WARNING** – Always relieve hydraulic system pressure before disconnecting hoses from tractor or servicing hydraulic system. See the tractor's operators manual for proper procedures. Disconnect the hydraulic hoses. Install dust covers over the hose plugs and outlets.

## Field Adjustments

The Torsion-Flex Soil Conditioner is designed to provide an excellent seedbed when used in conjunction with your primary tillage tool. For maximum performance in normal field conditions, the soil conditioner should be used with the transport wheels in the raised position to allow maximum transfer of weight to the rolling baskets.

With the wheels in the raised position, adjust the Turn Buckle Adjustment Bar until the wheels are approximately 2" above the ground. This will set your Torsion-Flex Soil Conditioner at the maximum clearance height during transport.

The Spring Coil-Tine Harrow Bar is designed to improve the soil leveling capabilities of your conditioner. To improve the ground leveling capabilities of the harrow in heavier soils, pin the harrow bar so the coil-tines are positioned more vertically. In softer soils or to improve field residue flow through the leveler bar, position the bar with a decreased vertical angle of the tines.

## Storage

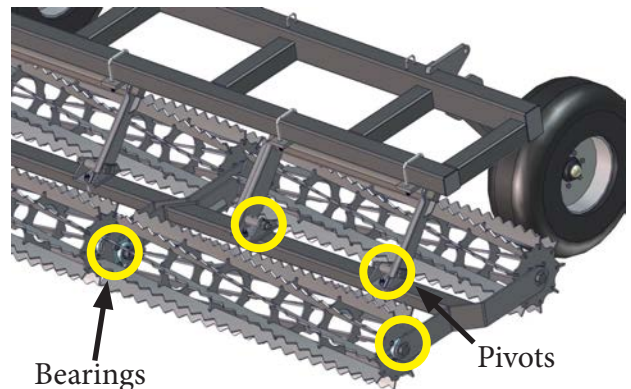
To add longer service and life to your Torsion-Flex Soil Conditioner, perform the following before placing the implement in storage:

1. Remove dirt and trash that may cause rusting.
2. Repaint any areas where the paint has been chipped, scratched or worn away.
3. Coat all earth moving surfaces with a suitable rust preventative.
4. Inspect for damaged or worn parts and replace before next use.
5. Lubricate wing and wheel pivot points.
6. Block up the conditioner to keep the wheels and ground tools off the ground.
7. Replace all worn, torn and faded decals and reflectors.
8. Store the implement inside away from inclement weather.

## Service

To add longer life to your Torsion-Flex Soil Conditioner, perform the following on a regular basis:

1. Grease hinge, linkage area and wheel transport pivots (3X) weekly or every 40 hours. Grease the 4-Hole Flange Bearings (1X) on the Rolling Basket Assembly every 50 Hours.
2. Check lighting before over the road transport. Make sure lights and SMV emblem are clean from dirt and field debris.
3. Check implement for damage, cracked welds, loosened hardware, etc. Promptly repair to prevent further damage.
4. Check hydraulic system for leaks and hose damage, twists or kinks and make necessary repairs.
5. Check tire pressures and lug nuts periodically and adjust as required.



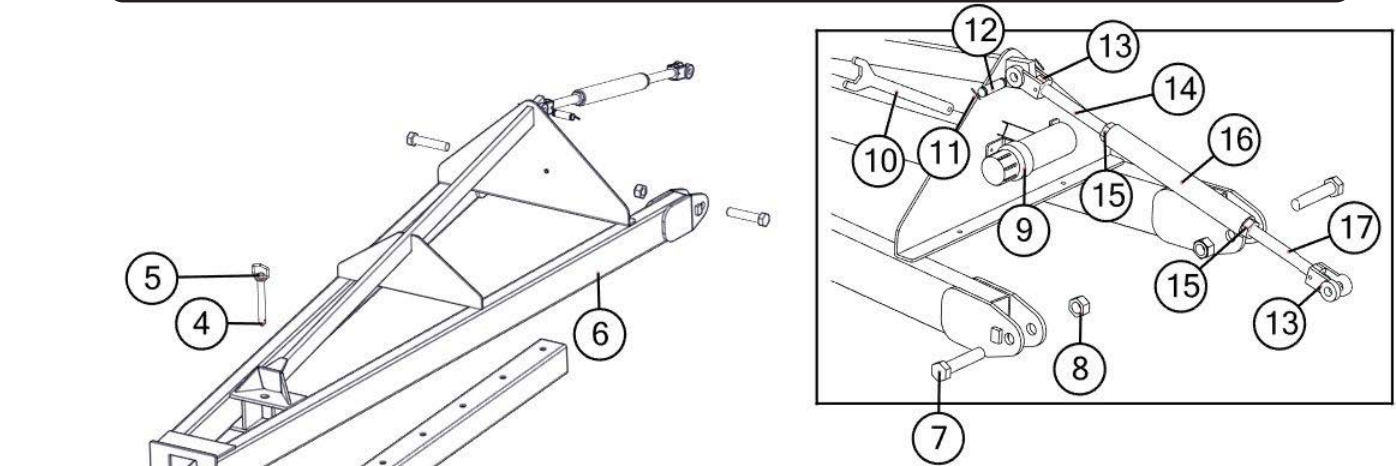
**NOTE:** Basket bearings do not need greased before the first use. The basket bearings are greased at the factory.

## Troubleshooting

### When Hydraulics Are Not Functioning Properly...

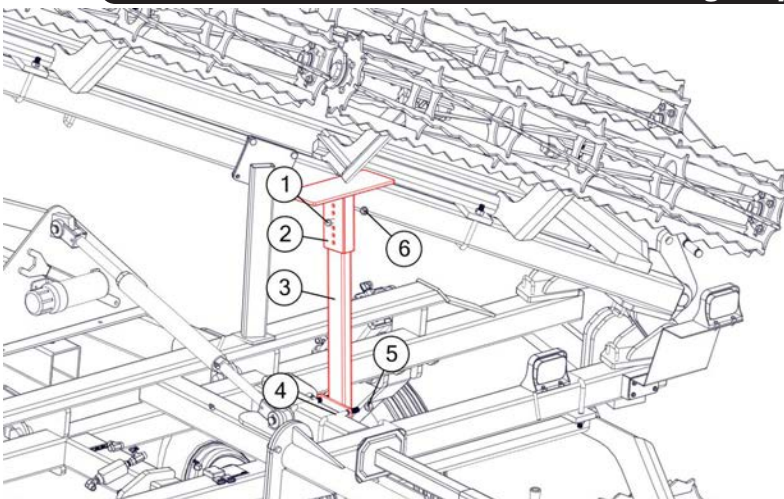
PROBABLE CAUSE	CORRECTION
Hoses are incorrectly connected to the tractor control levers.	See the Tractor Operator's Manual for valve and control lever arrangement.
Insufficient hydraulic pressure from Tractor.	Check the hydraulic reservoir oil level. See the tractor Operator's Manual for hydraulic system recommendations.
Hydraulic components leaking oil.	Locate the leak and replace or repair components.
Hydraulic hoses are kinked or twisted.	Locate the twisted hose and correct.
Hydraulic cylinders are leaking.	Repair or replace cylinders. See Repair Parts section for cylinder or seal kit part numbers.
The orifice in the wing-fold cylinder is plugged.	Remove the contamination from the system. Flush system and change the oil and filter.

## A-Frame Assembly



#	Description	Part. No.
1	1/2" Hose Holder Rod for TF Soil Conditioner, NitroGro (12HHR)	JM0027120
2	3/8"-16 x 3/4" Gr5 Z Hex Bolt	JM0001663
3	Inner Tongue Weldment for TF2, TF212 and TF215 (ITW-TF1)	JM0026437
4	Hair Pin Clip For TF Hitch Pin	JM0028344
5	1" x 8" Tongue Pin (18PCP)(includes cotter pin)	JM0027117
6	A-Frame Tongue Weldment (TF2) (AFTW-2)	JM0027700
6	A-Frame Tongue Weldment (TF212) (AFTW-212)	JM0026439
6	A-Frame Tongue Weldment (TF215) (AFTW-215)	JM0026444
7	1-1/4" x 6" Grade 5 Bolt (1146G5B)	JM0016690
8	1-1/4" Nylon Lock Nut (114NLN)	JM0026789
9	Operator's Manual Canister	JM0010115
10	Wrench	JM0015256
11	1/2" x 1 1/2" Clevis Pin with Cotter Pin	JM0016381
12	1" x 3 1/2" Pin (1312P)	JM0026782
13	Turn Buckle Clevis End 1-1 1/4-12 THD (CE-2)	JM0026759
14	Turn Buckle Shaft (both end R/H thread) (TBS-2RH)	JM0026755
15	1 1/4"-7 Gr5 Hex Nut	JM0001700
16	Turn Buckle Center Pipe (TBCB-1)	JM0026758
17	Turn Buckle Shaft (1 L/H, 1 R/H) (Gold Plated) (TBS-1RH1LH)	JM0026757

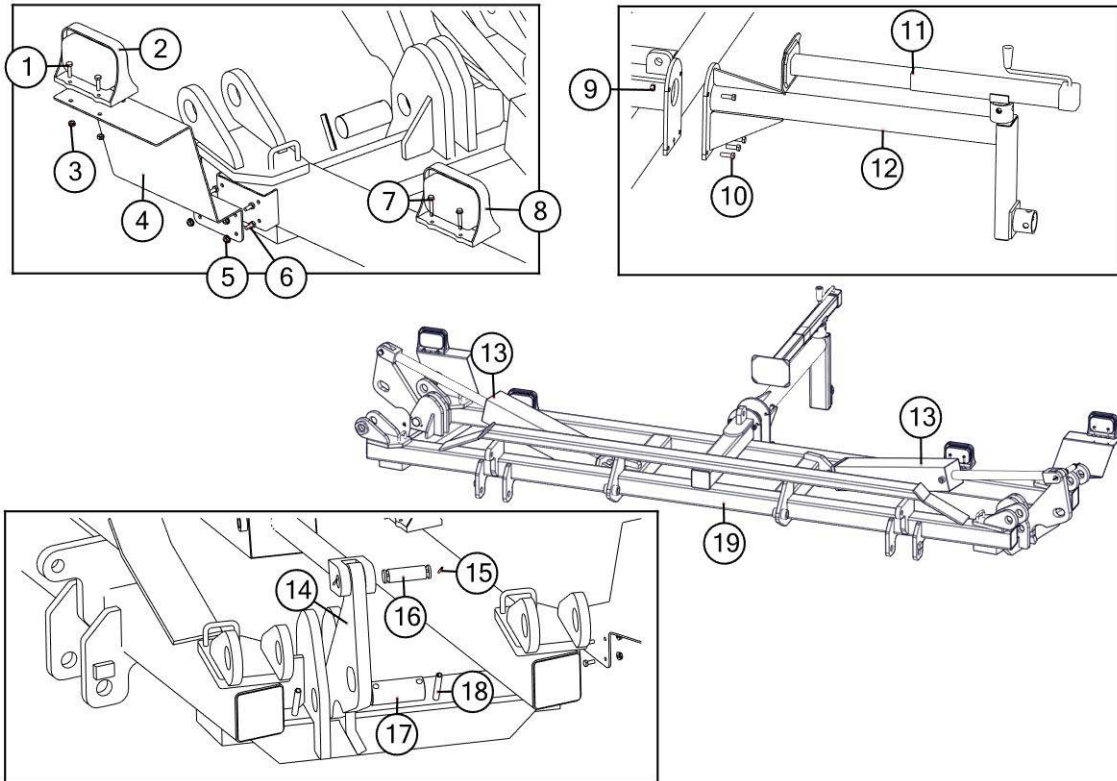
## Wing Prop



#	Description	Part. No.
1	1/2"-13 x 3" Gr5 Z Hex Bolt (123G5B)	JM0016678
2	Adjustable Prop - Platform (8" long tube)	JM0044535
3	Adjustable Prop - Upright (31" long tube)	JM0044536
4	5/8" x 4" x 5 1/2" U-Bolt (584512UB)	JM0014190
5	5/8"-11 Gr5 Z Centerlock Hex Nut	JM0002146
6	1/2"-13 Gr5 Z Centerlock Hex Nut	JM0001511

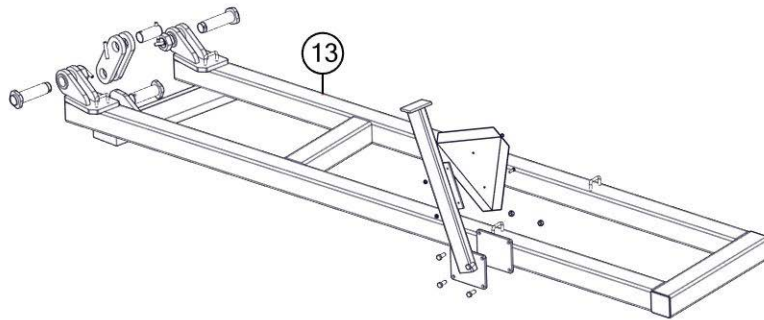
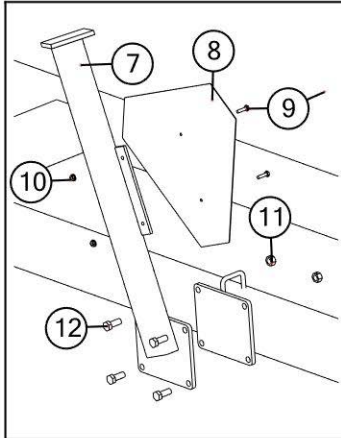
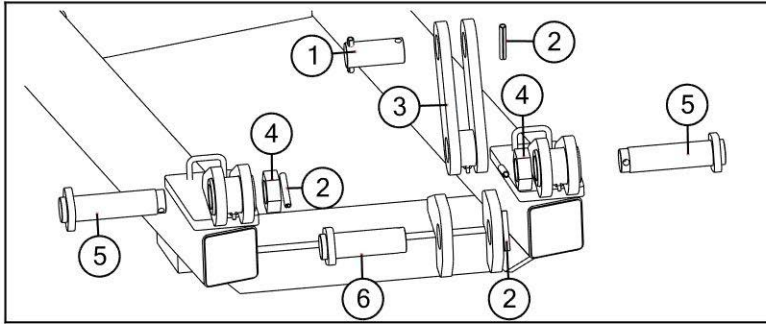
\*Wing Prop only for TF212 & 215  
w/ 13" basketes & harrow bars.

## Main Frame Assembly



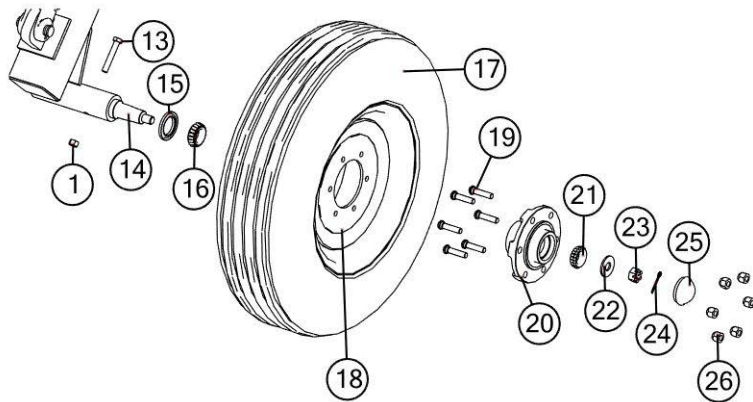
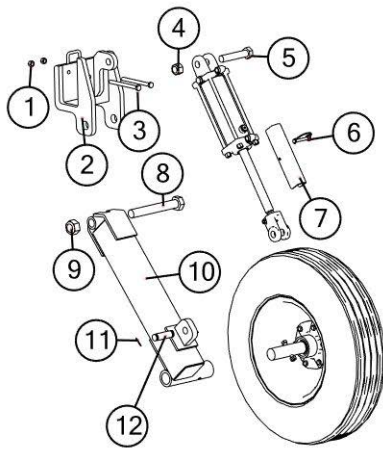
#	Description	Part. No.
1	1/4"-20 x 1" Gr5 Z Hex Bolt	JM0002095
2	TF Amber Light (LED)	JM0032204
3	1/4"-20 Gr5 Z Centerlock Hex Nut	JM0001505
4	Light Mounting Bracket (R/H) (LMB-TF-R)	JM0015232
4	Light Mounting Bracket (L/H) (LMB-TF-L)	JM0015233
5	1/4"-20 Gr5 Z SF Hex Nut	JM0001630
6	1/4"-20 x 5/8" Gr5 Z Hex Bolt	JM0001479
7	1/4" x 1-1/2" Self Tapping Screw	JM0001571
8	TF Red Light (LED)	JM0032205
9	1/2"-13 Gr5 Z Centerlock Hex Nut	JM0001511
10	1/2"-13 x 1-1/2" Gr5 Z Hex Bolt	JM0002100
11	Jack Stand Assembly (8,000 lbs.) (JSA-TF)	JM0026798
12	Bolt-On Jack Weldment (For TF212 & 215 w/ 13in baskets)	JM0044131
12	Bolt-on Jack Stand Weldment for Soil Conditioner	JM0026472
13	4" x 24" Hydraulic Cylinder (424HC)(TF212)	JM0018348
13	4" x 30" Hydraulic Cylinder (430HC)(TF215)	JM0019909
14	Leverage Arm (for units 24' and below) (LA-2TF24)	JM0015221
14	Leverage Arm (oblong hole)(TF212 over 25' wide) (LA-2TF212)	JM0015222
14	Leverage Arm (TF215) (LA-2TF215)	JM0015223
15	1/2" x 1 1/2" Clevis Pin with Cotter Pin	JM0016381
16	1" x 3 1/2" Pin (1312P)	JM0026782
17	1 3/4" x 4" Pin (1344P)	JM0026689
18	7/16" x 2-3/4" Z Roll Pin	JM0009895
19	Base Unit Main Frame (TF2 12' or 13') (BMF-2-12)	JM0031862
19	Base Unit Main Frame (TF2 14' or 15') (BMF-2-14)	JM0031863
19	Base Unit Main Frame (TF2 16' or 17') (BMF-2-16)	JM0031864
19	Base Unit Main Frame (TF2 18') (BMF-2-18)	JM0031865
19	Base Unit Main Frame (TF212) (BMF-212)	JM0026374
19	Base Unit Main Frame (TF215) (BMF-215)	JM0026389

## Outside Wing Assembly

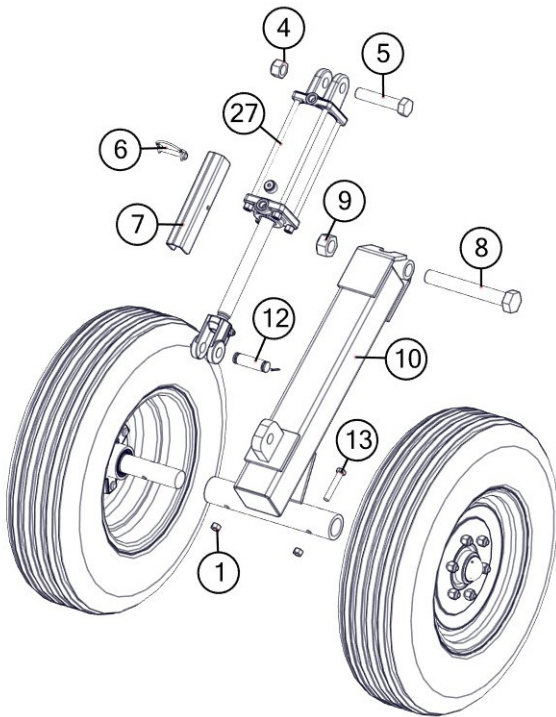


#	Description	Part. No.
1	1 3/4" x 4" Pin (1344P)	JM0026689
2	7/16" x 2-3/4" Z Roll Pin	JM0009895
3	Pivot Linkage Arm (PLA-2)(TF212)	JM0026682
3	Pivot Linkage Arm (PLA-2L)(TF215)	JM0026683
4	1 3/4"-5 Gr5 Hex Nut (HN-134)	JM0019334
5	1-3/4" x 6-3/8" Wing Bolt (Zinced)	JM0026691
6	1-3/4" x 5" Wing Bolt (Zinced)	JM0026690
7	Wing Rest Arm (L/H Side) (WRA-1L)	JM0026639
7	Wing Rest Arm (R/H Side) (WRA-1R)	JM0026640
8	Slow Moving Vehicle Sign	JM0001616
9	1/4"-20 x 1" Gr5 Z Hex Bolt	JM0002095
10	1/4"-20 Gr5 Z SF Hex Nut	JM0001630
11	1/2"-13 Gr5 Z Centerlock Hex Nut	JM0001511
12	1/2"-13 x 1-1/4" Gr5 Z Hex Bolt	JM0001513
13	Wing Frame (TF212) (4' L) (WF-212-4)	JM0026536
13	Wing Frame (TF212) (5' L) (WF-212-5)	JM0026535
13	Wing Frame (TF212) (6' L) (WF-212-6)	JM0026534
13	Wing Frame (TF212) (7' L) (WF-212-7)	JM0026533
13	Wing Frame (TF212) (8' L) (WF-212-8)	JM0026532
13	Wing Frame (TF212) (9' L) (WF-212-9)	JM0026372
13	Wing Frame (TF212) (10' L) (WF-212-10)	JM0026539
13	Wing Frame (TF212) (11' L) (WF-212-11)	JM0026540
13	Wing Frame (TF212) (12' L) (WF-212-12)	JM0026551
13	Wing Frame (TF215) (11' L) (WF-215-11)	JM0026552
13	Wing Frame (TF212) (12' L) (WF-212-12)	JM0026551
13	Wing Frame (TF215) (13' L) (WF-215-13)	JM0026550
13	Wing Frame (TF215) (14' L) (WF-215-14)	JM0026549
13	Wing Frame (TF215) (15' L) (WF-215-15)	JM0026548

## Wheel Assemblies



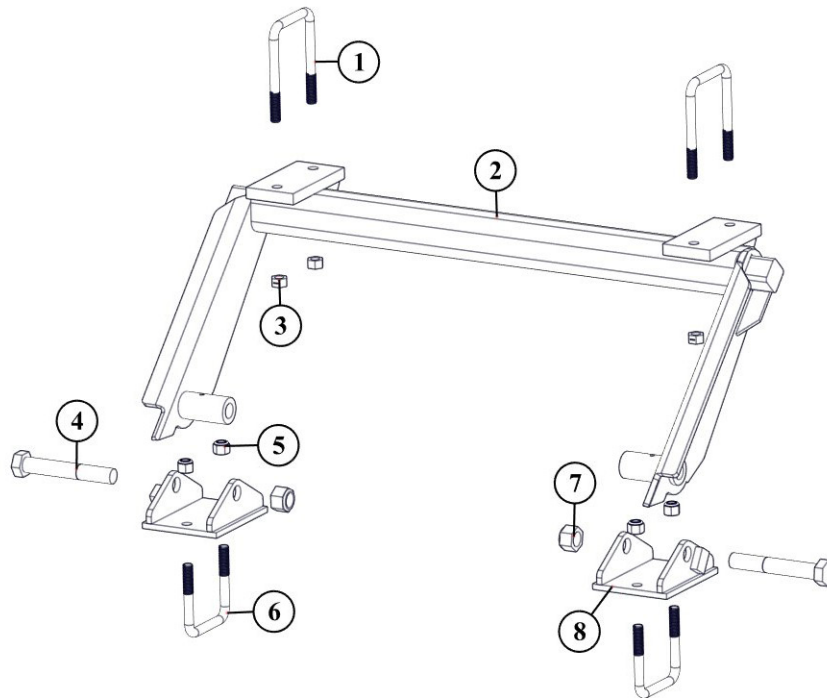
Wing Wheel Assembly



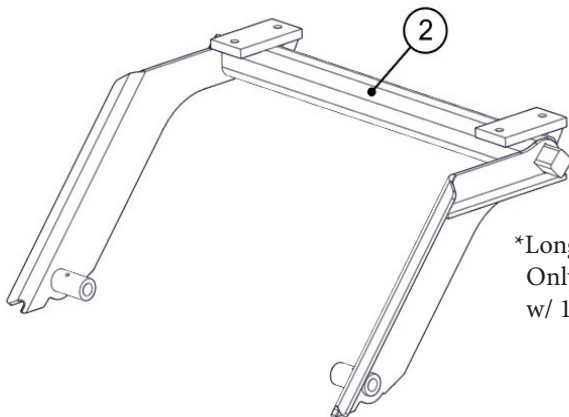
Main Frame Wheel Assembly

#	Description	Part. No.
1	1/2"-13 Gr5 Z Centerlock Hex Nut	JM0001511
2	Wing Arm Mounting Bracket (WMB-2)	JM0026429
3	1/2"-13 x 6" Gr5 Z Hex Bolt	JM0016679
4	1"-8 Gr5 Z Nylon Locking Hex Nut	JM0002161
5	1"-8 x 5" Gr5 Z Hex Bolt	JM0016688
6	3/8" x 2-1/2" Wire Lock Pin (38212WLP)	JM0014929
7	Cylinder Lock (CYLK-2)	JM0015237
8	1 1/4" x 9" Grade 5 Bolt (1149G5B)	JM0016691
9	1 1/4" Nylon Lock Nut (114NLN)	JM0026789
10	Wheel Arm Weldment - Right (TF212-TF215)(WAW-2R)	JM0026714
10	Wheel Arm Weldment - Left (TF212-TF215)(WAW-2L)	JM0026713
10	Wheel Arm Weldment - Main Frame (TF2)(WAW-1)	JM0031866
10	Wheel Arm Weldment - Main Frame (TF212-TF215)(WAW-2)	JM0026696
11	1/2" x 1 1/2" Clevis Pin with Cotter Pin	JM0016381
12	1" x 3 1/2" Pin (1312P)	JM0026782
13	1/2"-13 x 3" Gr5 Z Hex Bolt (123G5B)	JM0016678
14	1 3/4" Diameter Spindle (SS-134SC)	JM0026569
15	Grease Seal, 6-8 Ton (103953)	JM0026572
16	Large Inner Bearing for 6-8 Ton (104579)	JM0019563
17	11L-15 Tire - 10 ply	JM0027743
18	Wheel Rim, 6 hole 15" x 8" (WR-158)	JM0026801
19	Wheel Stud for Hub, 6-8 Ton (1/2"-20 x 1 7/8") (4187)	JM0019559
20	Hub with Races, Studs and Nuts, 7-8 Ton (105218)	JM0026566
21	Small Outer Cone for 6-10 Ton (LM67048)	JM0019564
22	3/4" ID, 2" OD Z Flat Washer	JM0010006
23	3/4"-10 Gr5 Z Castle Hex Nut	JM0002130
24	5/32" x 1-1/2" Cotter Pin	JM0014348
25	Dust Cap, 6-10 Ton (103969)	JM0026567
26	1/2"-20 Lug Nut, 6-8 Ton (5552)	JM0003062
27	3" x 8" Hydraulic Cylinder (left or right side wheel cylinder on units equipped WITHOUT wing wheels)(38HC)	JM0026724
27	3 1/4" x 8" MS Hydraulic Cylinder (for units equipped WITH wing wheels) (32TP08-125 639706)(3148HCMS)	JM0014958
27	3 1/2" x 8" MS Hydraulic Cylinder (for units equipped WITH wing wheels) (35TP08-125 639707)(3128HCMS)	JM0014960

## Torsion Arm

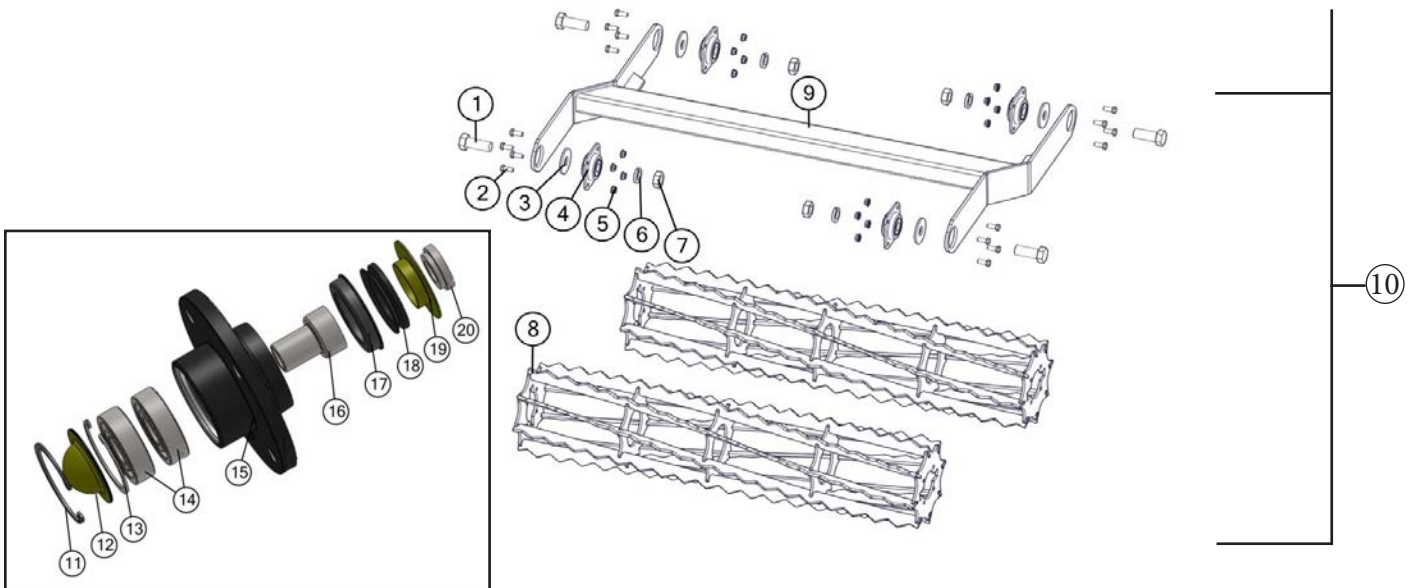


#	Description	Part. No.
1	5/8" x 4" x 5 1/2" U-Bolt (584512UB)	JM0014190
2	Short 3' Heavy Torsion Arm Weldment (3" x 3" x 3'-0")(3330TFA)	JM0008446
2	Short 2' Heavy Torsion Arm Weldment (3" x 3" x 2'-0" )(3320TFA)	JM0008447
2	Short 2' Light Torsion Arm Weldment (2-1/2" x 2-1/2" x 2'-0")(21220TFA)	JM0008448
2	Long 3' Heavy Torsion Arm Weldment (3" x 3" x 3'-0")	JM0043556
2	Long 2' Heavy Torsion Arm Weldment (3" x 3" x 2'-0" )	JM0044694
2	Long 2' Light Torsion Arm Weldment (2-1/2" x 2-1/2" x 2'-0")	JM0044651
3	5/8"-11 Gr5 Z Centerlock Hex Nut	JM0002146
4	1"-8 X 6-1/2" Gr5 Z Hex Bolt	JM0014192
5	5/8"-11 Gr5 Z Nylon Locking Hex Nut	JM0008428
6	5/8" x 4" x 4" U-Bolt (5844UB)	JM0014189
7	1"-8 Gr5 Z Nylon Locking Hex Nut	JM0002161
8	Swivel Bracket for 13" Baskets (SWB-1)	JM0008427
8	Swivel Bracket For 16" Baskets (SWB-2)	JM0028405



\*Long Torsion Arm  
Only For TF212 & 215  
w/ 13in baskets

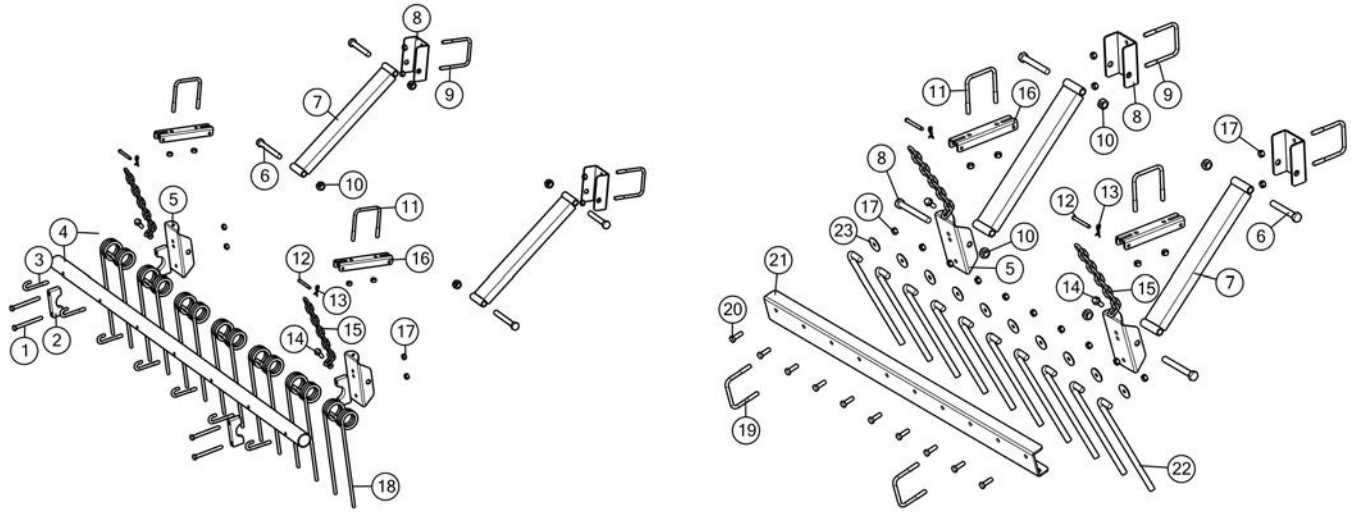
## Rolling Basket



Optional Upgraded Basket Hub

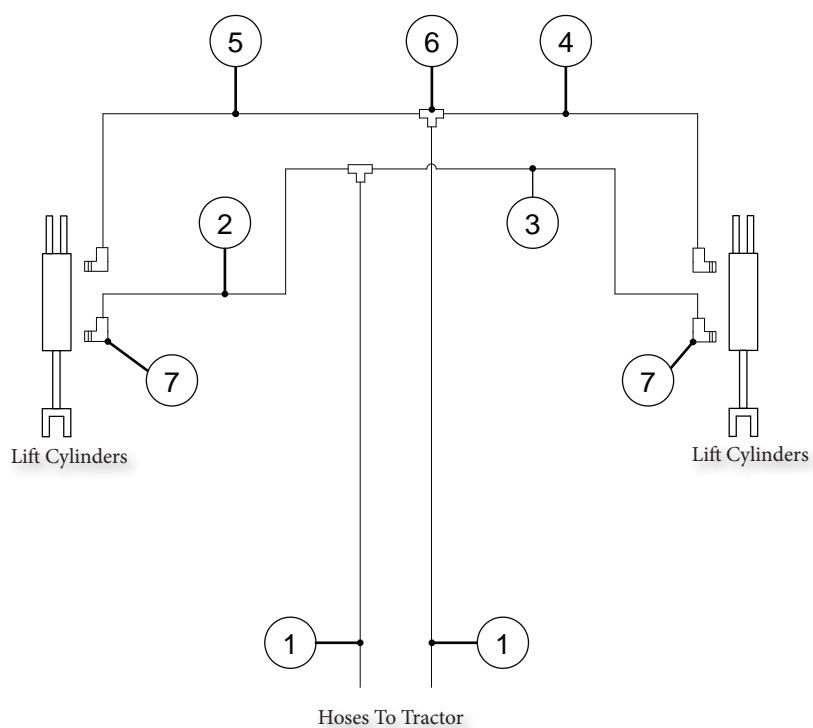
#	Description	Part. No.	#	Description	Part. No.
1	1-1/4"-12 x 3-1/4" Gr5 Z Hex Bolt	JM0001529	10	6' Double Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD16-6)	JM0026944
1	3/4"x 3-1/2 "Gr8 Z Hex Bolt (Upgraded Basket Hub)	JM0042405	10	5-1/2' Double Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD16-56)	JM0026945
2	1/2"-13 x 1-1/4" Gr5 Z Hex Bolt	JM0001513	10	5' Double Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD16-5)	JM0026946
3	1/4" Thick Crazy Leg Washer	JM0001445	10	4' Double Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD16-4)	JM0026949
4	1 1/4" Flange Bearing, 4 hole (ST491A-162-114)	JM0001489	10	3-1/2' Double Basket Assembly (16"Dia.) (Flat Disc) (2:1 Twist) (DRBAFD16-36)	JM0026938
5	1/2"-13 Gr5 Z SF Hex Nut	JM0002153	10	6' Double Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD13-6)	JM0008551
5	3/4"-16 Gr8 Z Hex Nut (Upgraded Basket Hub)	JM0041245	10	5-1/2' Double Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD13-56)	JM0026929
6	1-1/4" Zinc Finish Lock Washer	JM0001530	10	5' Double Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD13-5)	JM0001671
7	1-1/4"-12 Z Gr5 Hex Jam Nut	JM0002158	10	4' Double Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist) (DRBAFD13-4)	JM0026935
7	3/4"-16ZGr5HexJam Nut (Upgraded Basket Hub)	JM0016699	10	3-1/2' Double Basket Assembly (13"Dia.) (Flat Disc) (2:1 Twist) (DRBAFD13-36)	JM0026963
8	6' Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist)	JM0005747	11	Outer Retaining Ring (1488 Hub)(A-5745)	JM0041316
8	5-1/2' Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist)	JM0005745	12	Dust Cap w/Seal (1488 Hub)(A-5579)	JM0041317
8	5' Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist)	JM0005742	13	Inner Retaining Ring (1488 Hub)(A-4436)	JM0041318
8	4' Basket Assembly (16"Dia.)(Flat Disc) (2:1 Twist)	JM0005740	14	6305 Bearing (1488 Hub)(Qty 2) (6305)	JM0041319
8	3-1/2' Basket Assembly (16"Dia.) (Flat Disc) (2:1 Twist)	JM0005734	15	1488 Hub (only)(A-5645)	JM0041320
8	6' Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist)	JM0003259	16	Bearing Sleeve (1488 Hub)(A-5645)	JM0041321
8	5-1/2' Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist)	JM0002586	17	Counterface (1488 Hub)(A-5623)	JM0041322
8	5' Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist)	JM0003252	18	Seal (1488 Hub)(A-907-B1-434)	JM0041323
8	4' Basket Assembly (13"Dia.)(Flat Disc) (2:1 Twist)	JM0005713	19	Grass Wrap Guard (1488 Hub)(A-5573)	JM0041324
8	3-1/2' Basket Assembly (13"Dia.) (Flat Disc) (2:1 Twist)	JM0026962	20	Flange Washer (1488 Hub)	JM0041325
9	6' Crazy Leg Weldment (2:1 Twist)	JM0001770			
9	5.5' Crazy Leg Weldment (2:1 Twist)	JM0001769			
9	5' Crazy Leg Weldment (2:1 Twist)	JM0001768			
9	4' Crazy Leg Weldment (2:1 Twist)	JM0001767			
9	3.5' Crazy Leg Weldment (2:1 Twist)	JM0001766			

## Coil Tine Pipe Bar and Round Bar Bracket

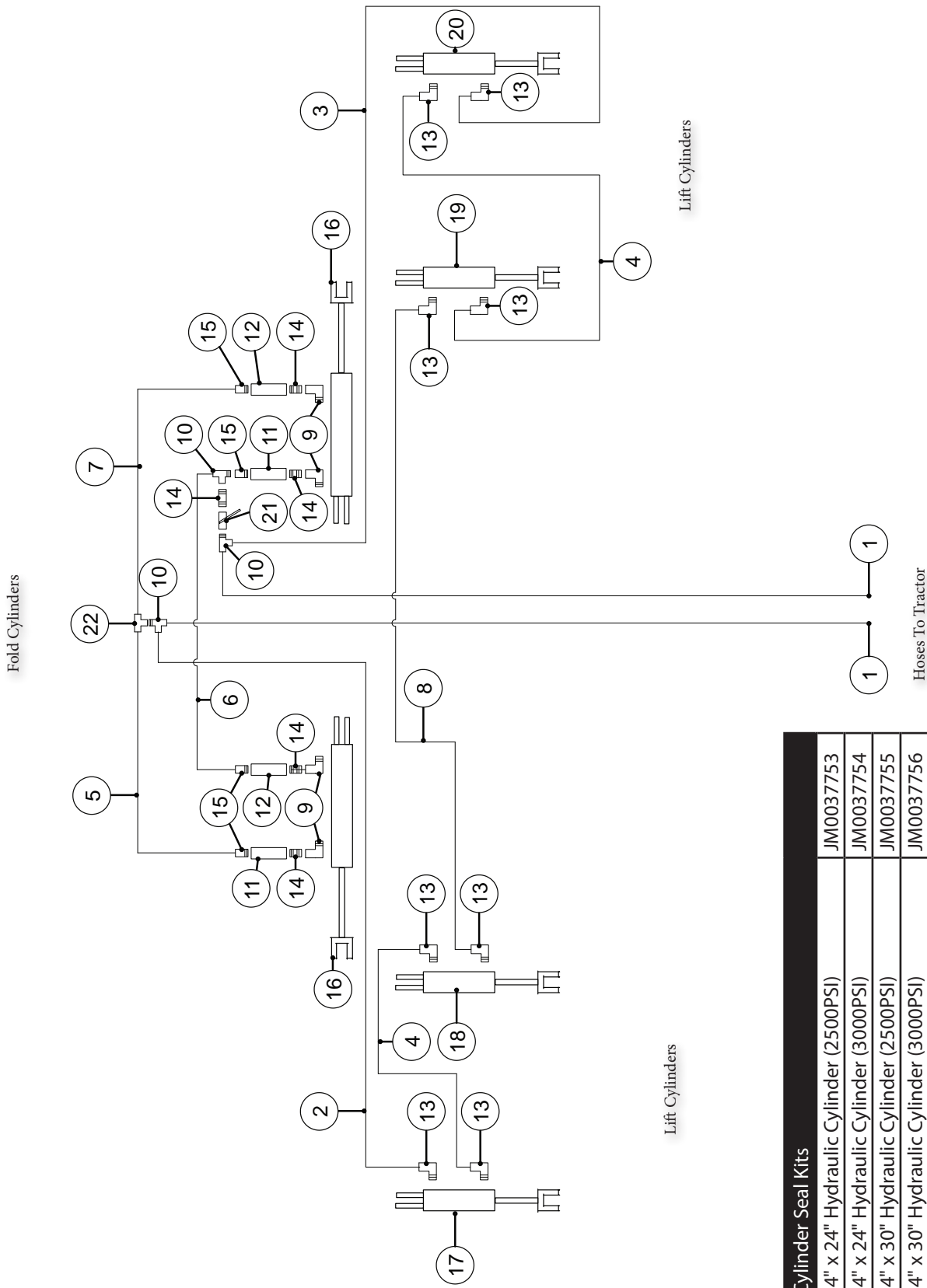


#	Description	Part. No.
1	1/2"-13 x 5" Gr5 Z Hex Bolt	JM0001594
2	Harrow Squeeze Block (2 pcs) (HSB-2)	JM0027006
3	1/2" x 3 1/2" J Bolt (12312JB)	JM0020373
4	Coil Tine Pipe x 3'-8" L (CTP-38)	JM0026999
4	Coil Tine Pipe x 4'-8" L (CTP-48)	JM0026996
4	Coil Tine Pipe x 5'-8" L (CTP-58)	JM0010011
4	Coil Tine Pipe x 6'-8" L (CTP-68)	JM0026998
5	4" x 8" Pivot Bracket (48PB)	JM0015242
6	3/4"-10 x 6" Gr5 Z Hex Bolt	JM0016683
7	3" x 21" Harrow Arm (321HA)	JM0017558
8	2 1/2" x 4" x 6" Mounting Bracket (21246MB)	JM0015241
9	4-1/8" x 5" (1/2"-13) Square U-Bolt	JM0010001
10	3/4"-10 Gr5 Z Centerlock Hex Nut	JM0002147
11	4-1/8" x 5" (1/2"-13) Square U-Bolt	JM0010001
12	3/8" x 3" Usable Length Clevis Pin	JM0010003
13	1/8" x 3/4" cotter pin, zinc plated (CP1834Z)	JM0010005
14	1/2"-13 x 1-1/4" Gr5 Z SF Hex Bolt	JM0010002
15	Chain, 16" Long (16RC)	JM0020360
16	2" x 8 1/4" Chain Plate (2814CP)	JM0015254
17	1/2"-13 Gr5 Z Centerlock Hex Nut	JM0001511
18	Coil Tine Spring (CTS-1)	JM0020358
19	1/2" x 4" x 4" U-Bolt (1244UB)	JM0026990
20	1/2"-13 x 1-1/2" Gr5 Z Hex Bolt	JM0002100
21	4'-0" L Round Bar Bracket (RBB40)	JM0015227
21	5'-0" L Round Bar Bracket (RBB50)	JM0015228
21	6'-0" L Round Bar Bracket (RBB60)	JM0015229
21	7'-0" L Round Bar Bracket (RBB70)	JM0015230
22	3/4" x 15" Round Bar (Spike Tooth) (3415RB)	JM0026972
23	1/2" ID x 2-1/4" OD Flat Washer - 3/16" Thick	JM0059670

## TF2 (12' to 18' Working Width)



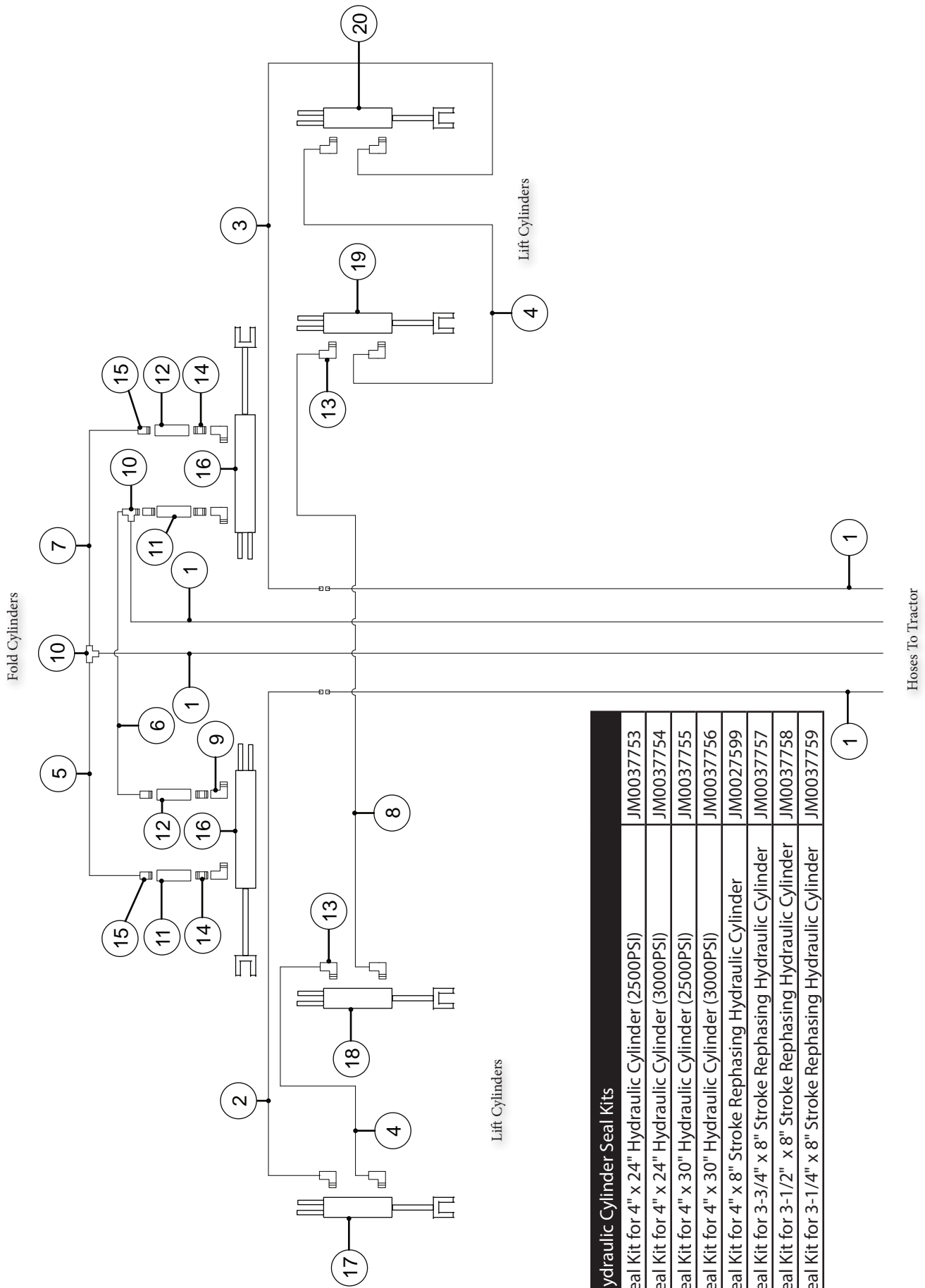
#	Description	Part. No.
1	3/8" x 264" Hydraulic Hose	JM0030831
2	3/8" x 77" Hydraulic Hose	JM0027152
3	3/8" x 44" Hydraulic Hose	JM0027155
4	3/8" x 32" Hydraulic Hose	JM0027143
5	3/8" x 65" Hydraulic Hose	JM0027154
6	Tee, 3/8" Female (3)	JM0046965
7	Elbow, 1/2" Male, 3/8" Female	JM0010292



Hydraulic Cylinder Seal Kits	
Seal Kit for 4" x 24" Hydraulic Cylinder (2500PSI)	JM0037753
Seal Kit for 4" x 24" Hydraulic Cylinder (3000PSI)	JM0037754
Seal Kit for 4" x 30" Hydraulic Cylinder (2500PSI)	JM0037755
Seal Kit for 4" x 30" Hydraulic Cylinder (3000PSI)	JM0037756
Seal Kit for 4" x 8" Stroke Rephrasing Hydraulic Cylinder	JM0027599
Seal Kit for 3-3/4" x 8" Stroke Rephrasing Hydraulic Cylinder	JM0037757
Seal Kit for 3-1/2" x 8" Stroke Rephrasing Hydraulic Cylinder	JM0037758
Seal Kit for 3-1/4" x 8" Stroke Rephrasing Hydraulic Cylinder	JM0037759

## TF212-TF215 with Lift Assist (2 Hoses)

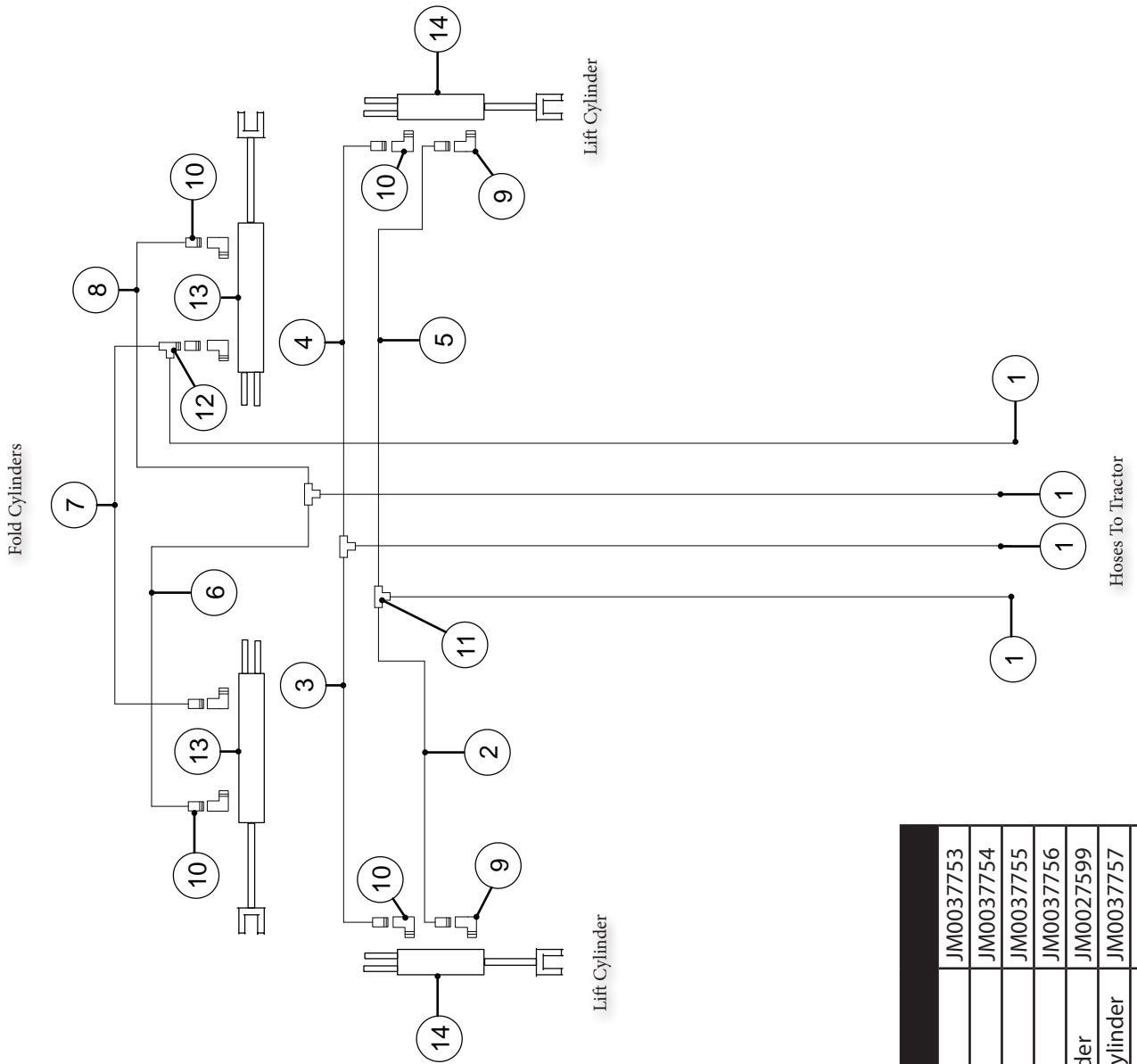
#	Description	Part. No.
1	1/2" x 336" Hydraulic Hose (TF212) (HH-12336)	JM0027137
1	1/2" x 384" Hydraulic Hose (TF215) (HH-12384)	JM0027263
2	3/8" x 200" Hydraulic Hose (TF212)(32',33')	JM0027129
2	3/8" x 219" Hydraulic Hose (TF212)(34',35')	JM0027125
2	3/8" x 295" Hydraulic Hose (TF215)(35'-47')	JM0031975
2	3/8" x 283" Hydraulic Hose (TF215)(43',44')	JM0031974
2	3/8" x 271" Hydraulic Hose (TF215)(41',42')	JM0027239
2	3/8" x 259" Hydraulic Hose (TF215)(39',40')	JM0027238
2	3/8" x 194" Hydraulic Hose (TF215)(36'-38')	JM0027129
3	3/8" x 183" Hydraulic Hose (TF212)(32',33')	JM0027128
3	3/8" x 169" Hydraulic Hose (TF212)(34',35')	JM0031973
3	3/8" x 245" Hydraulic Hose (TF215)(35'-47')	JM0027236
3	3/8" x 233" Hydraulic Hose (TF215)(43',44')	JM0027126
3	3/8" x 221" Hydraulic Hose (TF215)(41',42')	JM0027125
3	3/8" x 211" Hydraulic Hose (TF215)(39',40')	JM0027124
3	3/8" x 146" Hydraulic Hose (TF215)(36'-38')	JM0031972
4	3/8" x 176" Hydraulic Hose (TF212)(32',33')	JM0027127
4	3/8" x 169" Hydraulic Hose (TF212)(34',35')	JM0027127
4	3/8" x 235" Hydraulic Hose (TF215)(35'-47')	JM0027126
4	3/8" x 223" Hydraulic Hose (TF215)(43',44')	JM0027125
4	3/8" x 211" Hydraulic Hose (TF215)(41',42')	JM0027124
4	3/8" x 201" Hydraulic Hose (TF215)(39',40')	JM0027129
4	3/8" x 133" Hydraulic Hose (TF215)(36'-38')	JM0031971
5	3/8" x 60" Hydraulic Hose (TF212)	JM0027131
5	3/8" x 85" Hydraulic Hose (TF215)	JM0027149
6	3/8" x 36" Hydraulic Hose (TF212)	JM0027148
6	3/8" x 54" Hydraulic Hose (TF215)	JM0027240
7	3/8" x 24" Hydraulic Hose (TF212)	JM0027146
7	3/8" x 31" Hydraulic Hose (TF215)	JM0027132
8	3/8" x 106" Hydraulic Hose (TF212)	JM0031970
8	3/8" x 108" Hydraulic Hose (TF215)	JM0031969
9	3/8" Female NPT x 1/2" Male NPT 90 degree elbow	JM0010292
10	3/8" Tee (Female-Female-Male)	JM0027116
11	Parker Relief Valve PCK600s-1.5	JM0027086
12	Parker Relief Valve PCK600s-5.0	JM0027085
13	Elbow, 3/8" Male, 3/8" Female, O-Ring	JM0027082
14	3/8" Male, 3/8" Male Nipple 0.62 x 2.4	JM0027096
15	3/8" Male, 3/8" Female Swivel 0.86 x 2.4	JM0027110
16	4" x 24" Hydraulic Cylinder	JM0018348
17	4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014964
18	3-3/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014963
19	3-1/2" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014960
20	3-1/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014958
21	Ball Valve	JM0027113
22	3/8" Female x 3/8" Female x 3/8" Female Tee	JM0046965



Hydraulic Cylinder Seal Kits	
Seal Kit for 4" x 24" Hydraulic Cylinder (2500PSI)	JM0037753
Seal Kit for 4" x 24" Hydraulic Cylinder (3000PSI)	JM0037754
Seal Kit for 4" x 30" Hydraulic Cylinder (2500PSI)	JM0037755
Seal Kit for 4" x 30" Hydraulic Cylinder (3000PSI)	JM0037756
Seal Kit for 4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0027599
Seal Kit for 3-3/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037757
Seal Kit for 3-1/2" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037758
Seal Kit for 3-1/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037759

## TF212 EQUIPPED with 2 sets of hoses & optional Wing Wheels

#	Description	Part. No.
1	1/2" x 336" Hydraulic Hose	JM0027264
2	3/8" x 210" Hydraulic Hose	JM0027124
2	3/8" x 222" Hydraulic Hose	JM0027125
2	3/8" x 234" Hydraulic Hose	JM0027126
3	3/8" x 174" Hydraulic Hose	JM0027127
3	3/8" x 186" Hydraulic Hose	JM0027128
3	3/8" x 198" Hydraulic Hose	JM0027129
4	3/8" x 162" Hydraulic Hose	JM0027130
4	3/8" x 174" Hydraulic Hose	JM0027127
4	3/8" x 186" Hydraulic Hose	JM0027128
5	3/8" x 62" Hydraulic Hose	JM0027131
6	3/8" x 34" Hydraulic Hose	JM0027132
7	3/8" x 29" Hydraulic Hose	JM0027133
8	3/8" x 112" Hydraulic Hose	JM0027134
9	3/8" Female NPT x 1/2" Male NPT 90 degree elbow	JM0010292
10	3/8" Tee (Female-Female-Male)	JM0027116
11	Parker Relief Valve PCK600s-1.5	JM0027086
12	Parker Relief Valve PCK600s-5.0	JM0027085
13	Elbow, 3/8" Male, 3/8" Female, O-Ring	JM0027082
14	3/8" Male, 3/8" Male Nipple 0.62 x 2.4	JM0027096
15	3/8" Male, 3/8" Female Swivel 0.86 x 2.4	JM0027110
16	4" x 24" Hydraulic Cylinder	JM0018348
17	4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014964
18	3-3/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014963
19	3-1/2" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014960
20	3-1/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0014958



#	Description	Part. No.
1	3/8" x 336" Hydraulic Hose (TF212)	JM0027137
1	3/8" x 384" Hydraulic Hose (TF215)	JM0027139
2	3/8" x 77" Hydraulic Hose (TF212)	JM0027152
2	3/8" x 81" Hydraulic Hose (TF215)	JM0030844
3	3/8" x 65" Hydraulic Hose (TF212)	JM0027154
3	3/8" x 71" Hydraulic Hose (TF215)	JM0027141
4	3/8" x 32" Hydraulic Hose (TF212)	JM0027143
4	3/8" x 27" Hydraulic Hose (TF215)	JM0027146
5	3/8" x 40" Hydraulic Hose (TF212)	JM0027144
5	3/8" x 35" Hydraulic Hose (TF215)	JM0027148
6	3/8" x 62" Hydraulic Hose (TF212)	JM0027131
6	3/8" x 89" Hydraulic Hose (TF215)	JM0027149
7	3/8" x 44" Hydraulic Hose (TF212)	JM0027155
7	3/8" x 62" Hydraulic Hose (TF215)	JM0027145
8	3/8" x 29" Hydraulic Hose (TF212)	JM0027133
8	3/8" x 32" Hydraulic Hose (TF215)	JM0027148
9	Elbow, 1/2" Male, 3/8" Female	JM0010292
10	3/8" Orifice Restrictor (.045)	JM0027081
11	Tee, 3/8" Female (3)	JM0046965
12	3/8" Tee (female-female-male)	JM0027116
13	4" x 24" Hydraulic Cylinder	JM0018348
14	3" x 8" Hydraulic Cylinder	JM0026724

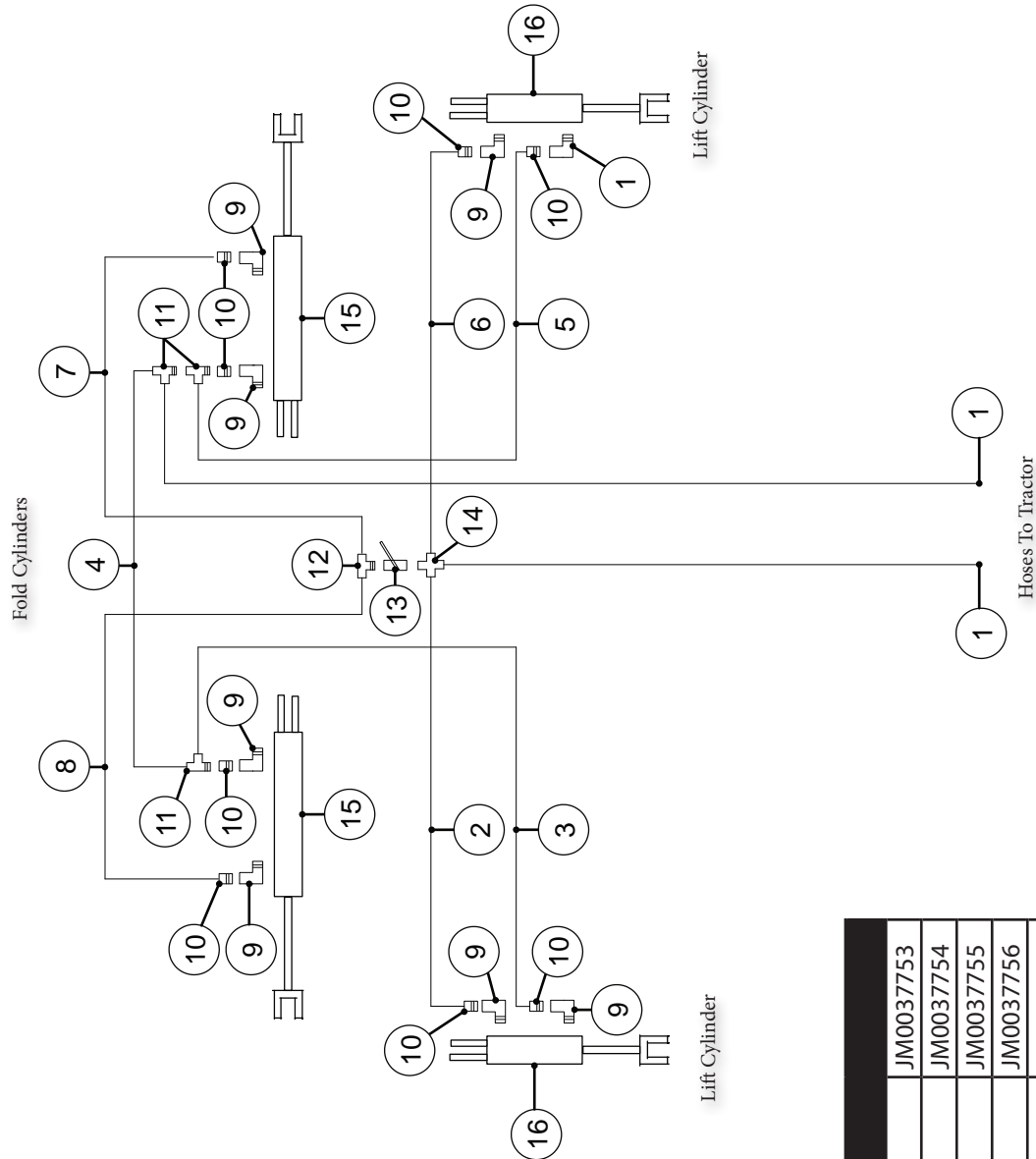
Hydraulic Cylinder Seal Kits

Seal Kit for 4" x 24" Hydraulic Cylinder (2500PSI)	JM0037753
Seal Kit for 4" x 24" Hydraulic Cylinder (3000PSI)	JM0037754
Seal Kit for 4" x 30" Hydraulic Cylinder (2500PSI)	JM0037755
Seal Kit for 4" x 30" Hydraulic Cylinder (3000PSI)	JM0037756
Seal Kit for 4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0027599
Seal Kit for 3-3/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037757
Seal Kit for 3-1/2" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037758
Seal Kit for 3-1/4" x 8" Stroke Rephasing Hydraulic Cylinder	JM0037759

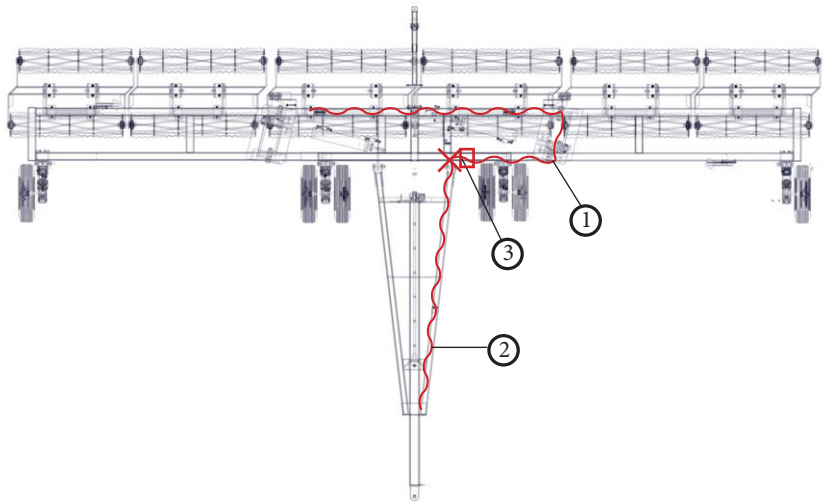
#	Description	Part. No.
1	3/8" x 336" Hydraulic Hose (TF212)	JM0027137
1	3/8" x 384" Hydraulic Hose (TF215)	JM0027139
2	3/8" x 66" Hydraulic Hose (TF212)	JM0027140
2	3/8" x 75" Hydraulic Hose (TF215)	JM0027141
3	3/8" x 43" Hydraulic Hose (TF212)	JM0027142
3	3/8" x 32" Hydraulic Hose (TF215)	JM0027143
4	3/8" x 40" Hydraulic Hose with swivel end (TF212)	JM0027144
4	3/8" x 60" Hydraulic Hose with swivel end (TF215)	JM0027145
5	38" x 43" Hydraulic Hose (TF212)	JM0027142
5	3/8" x 32" Hydraulic Hose (TF215)	JM0027143
6	3/8" x 34" Hydraulic Hose (TF212)	JM0027132
6	3/8" x 25" Hydraulic Hose (TF215)	JM0027146
7	3/8" x 29" Hydraulic Hose (TF212)	JM0027133
7	3/8" x 35" Hydraulic Hose (TF215)	JM0027148
8	3/8" x 62" Hydraulic Hose (TF212)	JM0027131
8	3/8" x 88" Hydraulic Hose (TF215)	JM0027149
9	Elbow, 1/2" Male, 3/8" Female	JM0010292
10	3/8" Orifice Restrictor (.045)	JM0027081
11	3/8" Tee (male-female-female)	JM0018230
12	3/8" Tee (female-female-male)	JM0027116
13	Ball Valve	JM0027113
14	Cross (1 male / 3 female)	JM0027115
15	4" x 24" Hydraulic Cylinder	JM0018348
16	3" x 8" Hydraulic Cylinder	JM0026724

#### Hydraulic Cylinder Seal Kits

Seal Kit for 4" x 24" Hydraulic Cylinder (2500PSI)	JM0037753
Seal Kit for 4" x 24" Hydraulic Cylinder (3000PSI)	JM0037754
Seal Kit for 4" x 30" Hydraulic Cylinder (2500PSI)	JM0037755
Seal Kit for 4" x 30" Hydraulic Cylinder (3000PSI)	JM0037756
Seal Kit for 4" x 8" Stroke Rephausing Hydraulic Cylinder	JM0027599
Seal Kit for 3-3/4" x 8" Stroke Rephausing Hydraulic Cylinder	JM0037757
Seal Kit for 3-1/2" x 8" Stroke Rephausing Hydraulic Cylinder	JM0037758
Seal Kit for 3-1/4" x 8" Stroke Rephausing Hydraulic Cylinder	JM0037759



## Light Harness



#	Description	Part. No.
1	Light Wiring Harness (torsion flex) (Rear/Base) (LWH-TF2)	JM0027080
2	Main A-Frame Wiring Harness W/ 7 Prong Connector End (torsion flex) (MWH-TF2)(Nitro Gro)	JM0027077
3	Light Enhancer and Adapter Kit (3 wires)	JM0010566

