

# ***BWImplement Co.***

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## **Wheel Tandem Series**

Version: 6.3.15

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# ***Operators Manual***

**Disk Information:**

Model #: \_\_\_\_\_

Serial #: \_\_\_\_\_

Date Manufactured: \_\_\_\_\_

Width of Cut: \_\_\_\_\_

No. of Blades: \_\_\_\_\_

Blade Size: 24" x 6mm NF/SR

Approx. Weight: \_\_\_\_\_

Options: \_\_\_\_\_

## **BW IMPLEMENT COMPANY WARRANTY**

### **LIMITED WARRANTY STATEMENT**

BW Implement Company warrants to the original purchaser all new Culti-Mulch Equipment, along with attachments, to its authorized dealers and they in turn warrant the equipment to the original retail purchaser to be free from defects in material and workmanship under normal use and service for which intended for a period of one (1) season or one thousand (1000) acres of use from the warranty start date, whichever occurs first. BW Implement Company also warrants to the original purchaser all new Tillage Equipment, along with attachments, to its authorized dealers and they in turn warrant the equipment to the original retail purchaser to be free from defects in material and workmanship under normal use and service for which intended for a period of six (6) months from the warranty start date. Implements used in construction or land development are warranted for a period of ninety (90) days from the warranty start date. This warranty is valid only if the machinery is set up properly and operated in accordance with the recommendations set forth in the Operator's Manual.

Our obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part, or defect in material and workmanship, that in our judgment shows evidence of such defect, provided further that such part shall be returned within thirty (30) days of failure to BW Implement Company, routed through the dealer from whom the purchase was made, transportation charges prepaid.

This warranty shall not be interpreted to render BW Implement liable for injury or damages of any kind or nature to persons or property. This warranty does not extend to the loss of crops, loss due to delay in planting or harvesting, or any expense or loss incurred for labor, substitute machinery, rental or for any other reason.

This warranty is subject to any existing conditions of supply that may directly affect our ability to obtain materials or manufacture replacement parts.

BW Implement reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold.

### **WARRANTY REGISTRATION REQUIRED**

BW Implement Company shall have no obligations under this warranty unless the completed Warranty Registration form is returned to BW Implement Company within thirty (30) days of the sale of the product.

### **SECURING WARRANTY SERVICE**

Warranty service will be performed by any authorized BW Implement Company dealer. At the time warranty service is requested, the purchaser must present evidence showing the equipment is eligible for warranty service

## UNAPPROVED MODIFICATIONS OR ATTACHMENTS

The warranty obligations of BW Implement Company shall be terminated if equipment is modified or altered and such modification or alteration has not been approved by BW Implement Company, or if the equipment has been equipped with an attachment not approved by BW Implement Company

## ACCIDENTS AND NORMAL MAINTENANCE

The provisions of this warranty do not apply to any equipment or components thereof, which in the judgment of the dealer or BW implement Company has been damaged by: (1) improper use; (2) accident; (3) lack of maintenance; (4) improper storage; (5) in the case of Mulchers and Power Cultivators, when used on an articulated tractor; (6) use when the tractor PTO horsepower rating exceeds the maximum horsepower rating established by BW Implement Company; (7) if repairs have been made with parts other than those obtained through BW Implement Company; (8) any other casualty or negligence. The following items are considered "Normal Wear" items and are **NOT** covered by this warranty: Mulcher Teeth, Bed Shaper Parts, all UHMW and plastic parts, Disc Blades, Disc Scraper Blades, Chisel and Ripper points and Wear Plates, Box and Drag Scraper Blades, Shredder Flails, Til-N-Pak Rings.

Except as stated above, no dealer, employee or representative of the dealer or BW Implement Company has any authority to bind BW Implement Company to any affirmation of fact, representation, or warranty concerning BW Implement Company manufactured equipment unless made in writing and executed by the General Manager and Chief Executive Officer of BW Implement Company. No one is authorized to alter, modify or enlarge this warranty nor the exclusion, limitations and reservations except the General Manager and Chief Executive Officer of BW Implement Company.

**This warranty is given in lieu of all other warranties, whether express or implied, and BW Implement Company makes no representations or warranties expressed or implied, including the implied warranties of merchantability and fitness for particular purpose, except as specifically described in the warranty.**

## **WHEEL TANDEM DISK HARROW**

Thank you for purchasing a B.W. Implement Company Disk. Our equipment is manufactured to precise specifications using the best quality parts and materials available. With proper care and maintenance, this piece of equipment should last for many years. Before operating this machine however, thoroughly read and become familiar with this manual.

### **OPERATOR'S RESPONSIBILITY**

It is the responsibility of the user/purchaser to read the Operator's Manual and understand the safe and correct procedures for use of the product, and to lubricate and maintain this product according to the schedule in this manual.

The user is responsible for inspecting the machine, and for having parts repaired or replaced when continued use of the product would cause damage or excessive wear to other parts. It is the users responsibility to deliver this product to the Manufacturer or to a BW Implement dealer when repairs that are covered by the standard warranty need to be made.

Any left or right references made in this manual are determined by standing at the rear of the machine and facing forward.

All fasteners should be checked and tightened periodically and as necessary.

When supporting the frame or the machine, use stands that are capable of handling the weight of the assembly. Insure that the supports are on a clean, dry surface.

## INITIAL ASSEMBLY

Your Wheel Tandem Disk was partially assembled at the factory for shipping purposes. Assembly of gangs, tongue and wheels may be required. All bolts and nuts are placed on each section as required. Some or all of the below listed sections may be required for assembly.

- 1 Main Frame. Also includes the following:
  - a. 2- Front Gang Beams
  - b. 2- Rear Gang Beams
  - c. 1- Hydraulic Cylinder
  - d. 1- Wheel Axle with Attachments
  - e. 1- Center Shank
  - f. 1- Transport Latch
  - g. 2- Adjusting Bars
  
- 1 Tongue. Also includes the following:
  - a. 1- Clevis
  - b. 1- Leveling Rod
  - c. 2- Leveling Springs
  - d. 4- Leveling Spring Guides
  - e. 1- Pad Eye with Plate
  - f. 1- Leveling Rod Nut
  - g. 1- Leveling Rod Jam Nut
  
- 4 Tires and Wheels. Also includes:
  - a. 4- Hubs with bolts
  - b. 4- Slip on Spindles
  
- 2 Front Gang Assembly. Also includes:
  - a. 4 or 6- Strut Mounting Plates
  - b. 4 or 6- Struts
  - c. 2- Scraper Assemblies
  
- 2 Rear Gang Assembly. Also includes:
  - a. 4 or 6- Strut Mounting Plates
  - b. 4 or 6- Struts
  - c. 2- Scraper Assemblies

## ASSEMBLING GANGS TO FRAME

The main frame should be positioned on steel horses high enough for disk gangs to be placed underneath it. Be sure the horses are strong enough to support the weight of the frame with the gangs attached. Remove all bolts, nuts and mounting plates. Slip right front disc gang under right front gang beam. Raise strut to gang beam and replace bolts, mounting plates, and nuts. Snug lock washers and nuts but do not tighten. Slide gang sideways until gang is in desired position and tighten all bolts and nuts. Left front disc gang should be mounted in the same manner.

Slip right rear disc gang under right rear gang beam. Raise strut to gang beam and replace bolts, mounting plates and nuts. Snug lock washers and nuts but do not tighten. Slide gang sideways until gang is in desired position and tighten all bolts and nuts. Left rear gang should be mounted in the same manner.

## WHEEL AND AXLE INSTALLATION

After gangs are assembled, remove nuts and bolts from wheel axle spindle tubes. Slip spindle with tire and wheel into spindle tube, replace bolt and nut and tighten. All four wheels and spindles are the same, so placement does not matter.

## TONGUE INSTALLATION

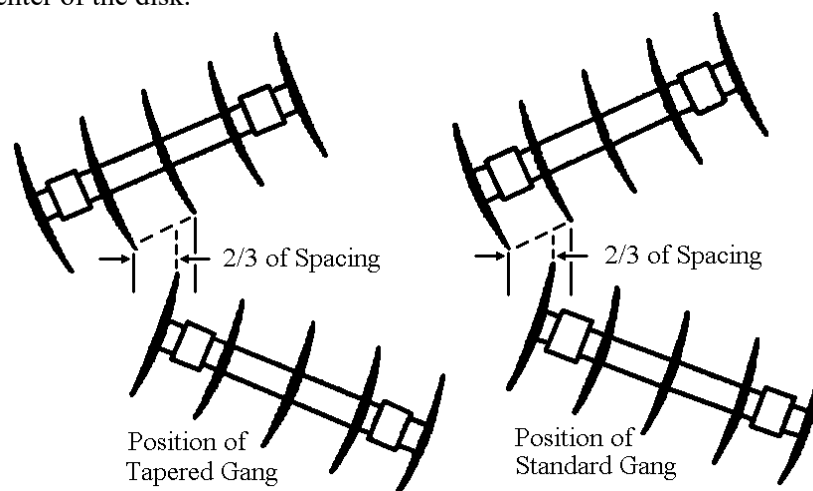
Remove all nuts and bolts from tongue hitch plates in front of main frame. Slip tongue into hitch plates. Replace all bolts and nuts and tighten. Leveling rod should then be screwed into trunion nut on main frame. Further adjustment on gangs and tongue should then be done accordingly.

## BLEEDING AXLE CYLINDER

Relieve hydraulic pressure by turning engine off and moving the hydraulic control levers in both directions before attaching or detaching hoses from the breakaway couplers. The first time the harrow is connected to a tractor hydraulic system, the cylinder should be cycled several times to purge air from the system. Then check the oil level in the tractor hydraulic reservoir and add oil if needed.

## POSITIONING OF GANGS

The innermost blades of the rear gangs should be positioned so they run  $\frac{2}{3}$  of the distance between the first two blades of the front gangs. A distance of 14" to 16" between the rear inside blades should result in level soil in the center of the disk.







# OPERATION

## TRACTOR AND MACHINE PREPARATION

Unlike offset disk harrows, tandem harrows can be operated in both directions. In other words, the operator may turn around and return back through the field on either side of the previous pass. The operator only has to be sure that the harrow overlaps the previous pass enough to ensure thorough disking of the field.

Factors affecting performance and desired results include: soil texture and density, ground speed, cutting angle, and depth of penetration. Any change in any of these variables could cause a need for further adjustment.

## HARROW PREPARATION

All disk harrows should be hitched to a tractor having a drawbar free to swing right and left. This minimizes side draft and permits shorter turns when the harrow is raised. Acute turns with the harrow in the ground must be avoided, as this creates excessive force on the harrow and can lead to bearing failure and breakage of blades and mounting struts. It is always recommended to raise the harrow out of the ground when making acute or sharp turns.

Before using this or any new machine, check for completeness and tightness of all bolts, especially gang and hanger bolts. If your disk harrow has been in storage, lubricate properly.

## TRACTOR PREPARATION

Set your tractor drawbar so it is free to swing. However, be sure it is pinned for road transport.

For narrow width harrows, it will be necessary to set tractor tread width to a minimum if the harrow is to trail directly behind the tractor.

## HITCHING

For ease of hitching, the disk should be on the ground before it is attached to or detached from the tractor. Back the tractor to the disk, and raise the tongue into alignment by using the jack on the tongue.

To detach, the disk should be on the ground. Adjust the tongue crank and remove the hitch pin, detach the hydraulic hoses, and drive away.

## TRANSPORTING

To transport the machine, extend the axle cylinders and place the transport pin into the transport slots.

**CAUTION:** When transporting any farm implement, use the necessary devices required by local regulations for adequate warning to operators of other vehicles. Transport at safe speeds for conditions.

## ADJUSTMENTS

The design of the Wheel Tandem disk harrow permits more or less angle to be set to the front or rear gangs. Both front and rear gangs are individually adjustable. When more angle is set to the gangs, increased penetration will occur, along with greater soil breaking. A smoother and more leveling type of operation will occur if less angle is set to the gangs. Adjusting bars are provided to adjust the cutting angle. Remove the lynch pin from the larger pin on the gang adjusting plate, slip the adjusting lock bar off the pin. Your disk harrow has adjusting features that will create efficient operation under a variety of different conditions.

The disk can also be adjusted front to rear by using the leveling crank found on the front of the disk. Turning the crank clockwise will put more pressure on the front gangs resulting in deeper cutting. Turning the crank counter clockwise will have the opposite effect and put more pressure on the rear gangs. The leveling crank can also be used to level out the disk during transportation. However, you may have to re-level the disk once it is put back to work in the field.

This disk is also equipped with a depth control hydraulic cylinder. The cylinder has a depth stop that can easily be adjusted by loosening

### RECOMMENDED INITIAL SETUP PROCEDURES

The procedure assumes the harrow has been assembled correctly and lateral position of the front and rear gangs is correct.

1. Withdraw pin from tractor drawbar so it swings freely.
2. For medium to heavy disking, set the front gang in the middle angle position and the rear gang in the full angle position.
3. Check position of the gangs for the proper lateral position by lowering the disk to the ground so the blades scratch the surface when the disk is drawn forward. Watch to see if the rear blades will cut between the front blades.
4. Pull disk forward until desired operating depth is reached.

**NOTE:** When changing gang angles, be sure to thoroughly retighten all bolts.

### LEVELING CRANK AND SPRING ASSEMBLY

This assembly can be adjusted to provide proper balance while supporting the disk, and to provide for weight transfer to the rear gangs.

When the disk is in the raised position, a level condition can be obtained by adjusting the length of the rod assembly.

During operation, the amount of weight on the rear gangs greatly affects disk performance.

**If disk does not perform properly, refer to the TROUBLE SHOOTING CHART and check that all adjustments conform to the recommendations made. When making any adjustment keep in mind the previous setting in case the adjustment does not correct the problem. Always make two rounds before evaluating the effect of a change in a given setting.**

## TROUBLE SHOOTING CHART

PROBLEM	POSSIBLE REMEDY
<b>REAR GANGS BEDDING IN CENTER</b>	
Rear gangs spaced too close together Too much angle in rear gangs or too little in front gangs Rear gangs operating deeper than front gangs Too much angle in front gang or too little angle in rear gang	<ul style="list-style-type: none"> <li>• Space rear gangs 14" to 16" apart.</li> <li>• Decrease angle in rear gangs and/or increase angle in front gangs.</li> <li>• Decrease operating depth of rear gangs and/or increase operating depth of front gangs by adjusting leveling rod.</li> </ul>
<b>BEDDING ON EACH SIDE OF DISK</b>	
Rear gangs operating too shallow or with less angle than front gangs  Rear gangs spaced too far apart	<ul style="list-style-type: none"> <li>• Increase angle on rear gangs and/or increase operating depth of rear gangs.</li> <li>• Decrease angle of front gangs and/or decrease operating depth of front gangs.</li> <li>• Space rear gangs 14" to 16" apart.</li> </ul>
<b>DISK WILL NOT PENETRATE</b>	
Too little angle in gangs Depth control stop is set too short to allow free travel of axle.	<ul style="list-style-type: none"> <li>• Increase angle equally in all gangs.</li> <li>• Lengthen depth control stop.</li> </ul>
<b>DISK UNSTEADY</b>	
Gangs not centered on frame  All gang bars not set in same angle position.	<ul style="list-style-type: none"> <li>• Position rear gangs along their respective bars an equal distance from center of frame. Repeat for front gangs.</li> <li>• Correct angle settings.</li> </ul>
<b>SHEARING BOLT IN CYLINDER LATCH</b>	
Axle pipe binding	<ul style="list-style-type: none"> <li>• Lubricate axle bearing daily.</li> </ul>
<b>FURROW BEHIND TRACTOR TIRES</b>	
Reduced ground speed due to tractor tire slippage Too little angle in gangs Reduced ground speed due to overloaded tractor	<ul style="list-style-type: none"> <li>• Add ballast to tractor.</li> <li>• Increase gang angles.</li> <li>• Increase tractor HP or decrease cutting depth of disk.</li> </ul>
<b>BREAKING FRONT OUTSIDE DISCS &amp; AXLES</b>	
Turning with disk in ground	<ul style="list-style-type: none"> <li>• Lift disk out of ground before turning.</li> </ul>
<b>BEARING FAILURE</b>	
Loose gang bolt Blades worn Bent gang bolt Failure to lubricate	<ul style="list-style-type: none"> <li>• Tighten gang bolt.</li> <li>• Replace with new blades.</li> <li>• Straighten or replace.</li> <li>• Grease bearings per owners manual.</li> </ul>
<b>BENDING GANG BOLTS</b>	
Loose gang bolt  Operating disk in conditions for which it was not designed	<ul style="list-style-type: none"> <li>• Tighten gang bolts. Check for broken spools and replace if broken.</li> <li>• Verify purpose for which disk was designed and apply accordingly.</li> </ul>

## MAINTENANCE

- All disk harrow should be inspected after the disking season. Note excessively worn or broken parts and replace during the off-season. That way it is ready for use when needed.
- After a few hours of operation, the gang bolts should be checked for tightness. To insure correct performance and avoid needless wear and breakage, these bolts must be tight at all times.
- Regularly check ALL nuts and bolts and make sure they are tight.
- Regularly check ALL pins and lynch pins to make sure they are in place.
- Check scraper blades and adjust or replace as needed.
- Check bearing dirt shields and replace as needed.
- Check grease points and grease as needed. Check gang and wheel bearings daily and grease as recommended in the Lubrication section below.
- Check tires for correct tire pressure and wear. Replace as needed.
- Check hydraulic cylinder and hoses and replace as needed.
- When not in use, store disk out of weather, if possible.

## LUBRICATION

Your disk is equipped with pre-lubricated, greaseable gang bearings. No additional lubricant is needed is required for start up. However, they should be greased daily when using the disk. When greasing, rotate the gangs to insure even distribution of grease in the bearing. Always use a hand powered pump, as air or electric powered pumps provide too much pressure and result in ruptured seals. **Ruptured seals are not covered by warranty.** Use enough grease to fill each bearing.

The axle bearings, leveling crank pad eye and nut, and hydraulic pins require multipurpose grease and should be greased every 10 hours of operation.

The wheel hub bearings should be checked for end-play and repacked with SAE multipurpose grease before operation and every 200 hours thereafter. Should end-play occur in the hub, remove hubcap and cotter pin. Tighten the spindle nut until the bearing binds. Loosen spindle nut until bearing turns free with no endplay and reinstall cotter pin (nut may be tightened slightly for hole alignment). Replace hubcap.

## GANG BOLTS

After first 8 hours of use, check gang bolts for correct tightness. Gang bolts nuts should be tightened to a pull of approximately 100 lbs on a five-foot extension on the wrench for correct tightness.

## GANG BEARING REPLACEMENT

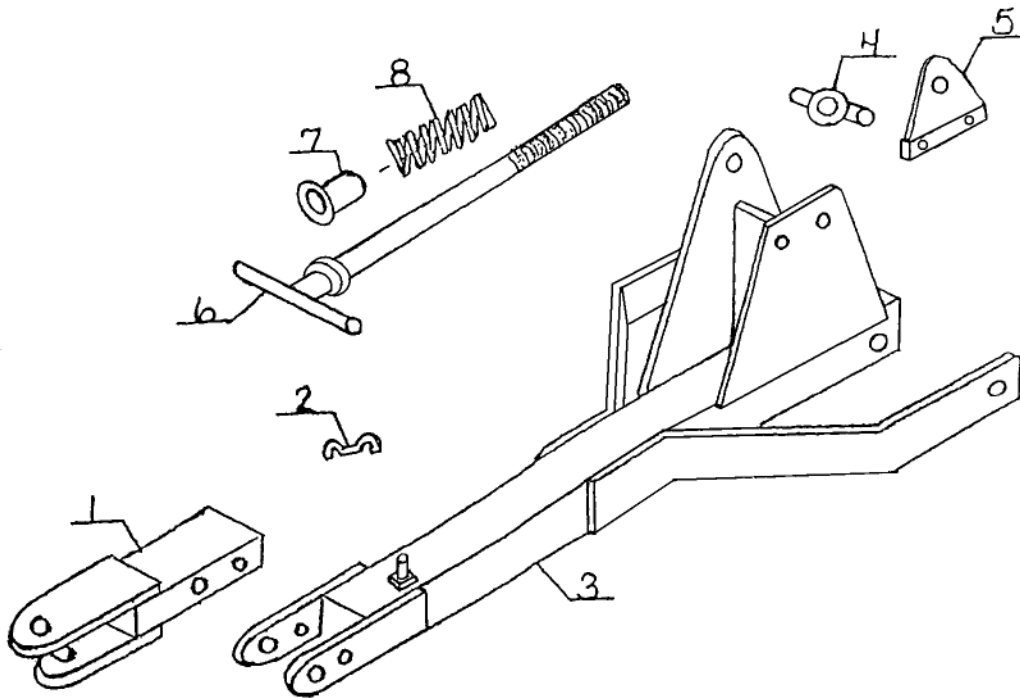
Should it become necessary to replace gang bearings, follow the procedure outlined below and refer to the accompanying illustration.

1. Remove bearing and housing from gang bolt.
2. Remove the snap ring from the housing and press the bearing out of the housing.
3. Press the new bearing back into the housing and replace snap ring.

**Be sure to only press against the outer race of the bearing to avoid damage to the bearing.**

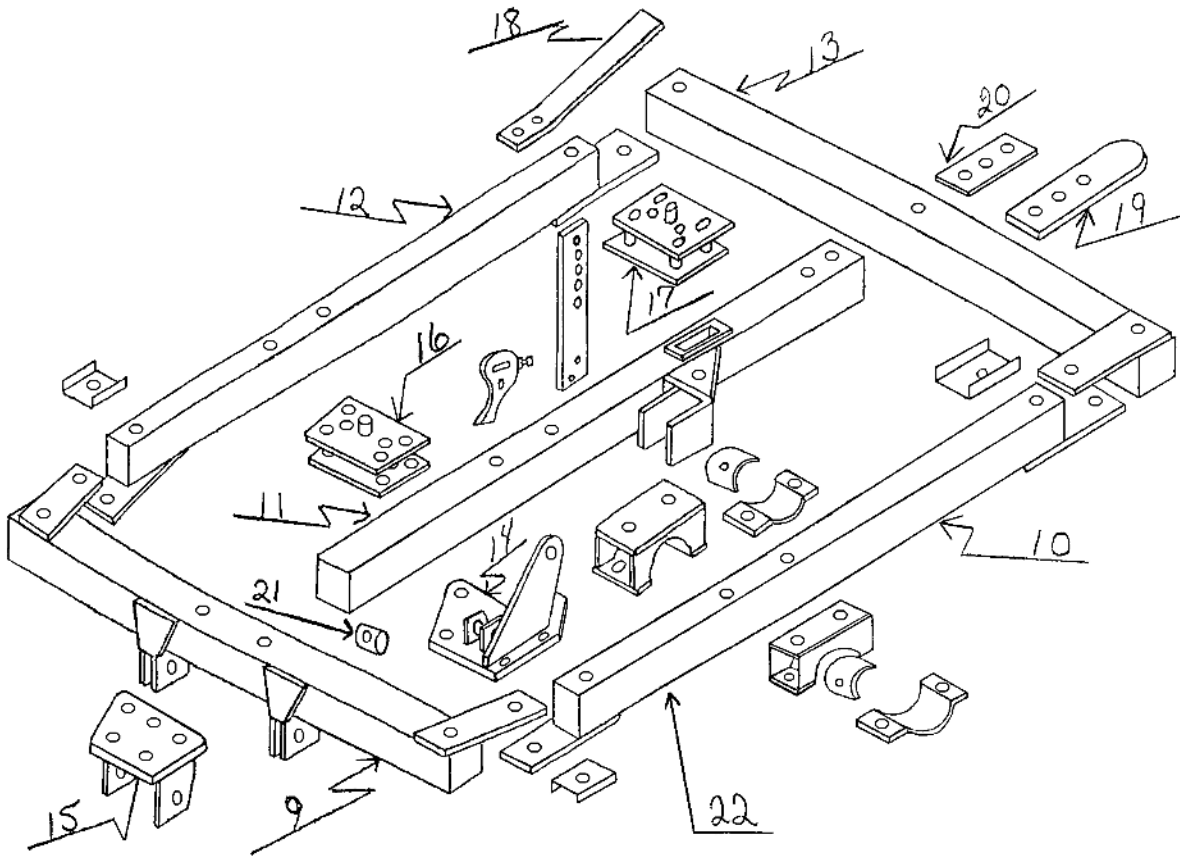
Special care must be taken so that the proper side of the bearing is placed into the housing. Note that the small grease holes in the outer race are offset to match the grease groove machined in the bearing housing. These holes should align with the grease groove when the bearing is place into the housing.

## Tongue Assembly



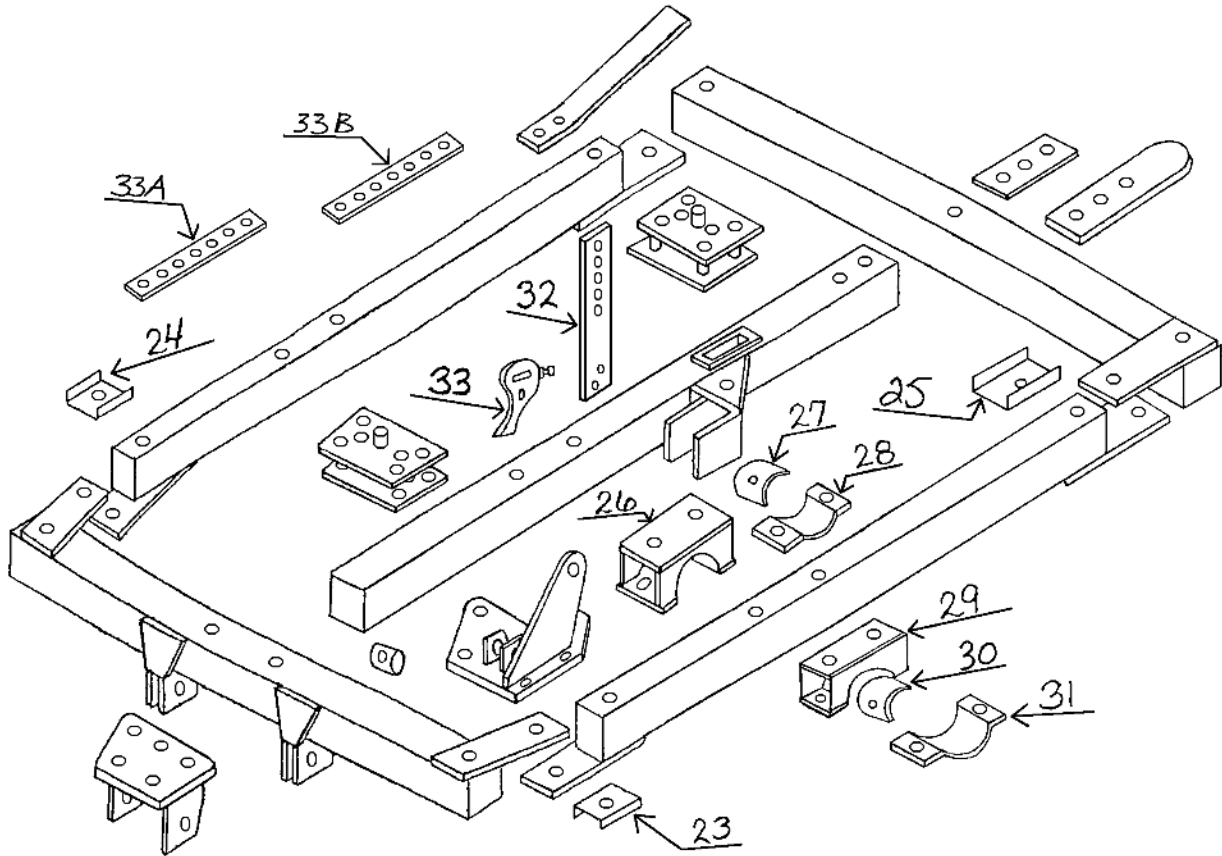
Ref.	Part No.	Description
1	WT001	Clevis
2	770108	Hyd. Hose Clamp
3	WT002	Tongue
	WT002B	Tongue (Short)
4	WO6073	Pad Eye
5	WT003	Tongue Pad Eye Plate
6	WO6015	Crank
7	WO6045	Spring Guide
8	WO6021	Spring

## Frame Assembly



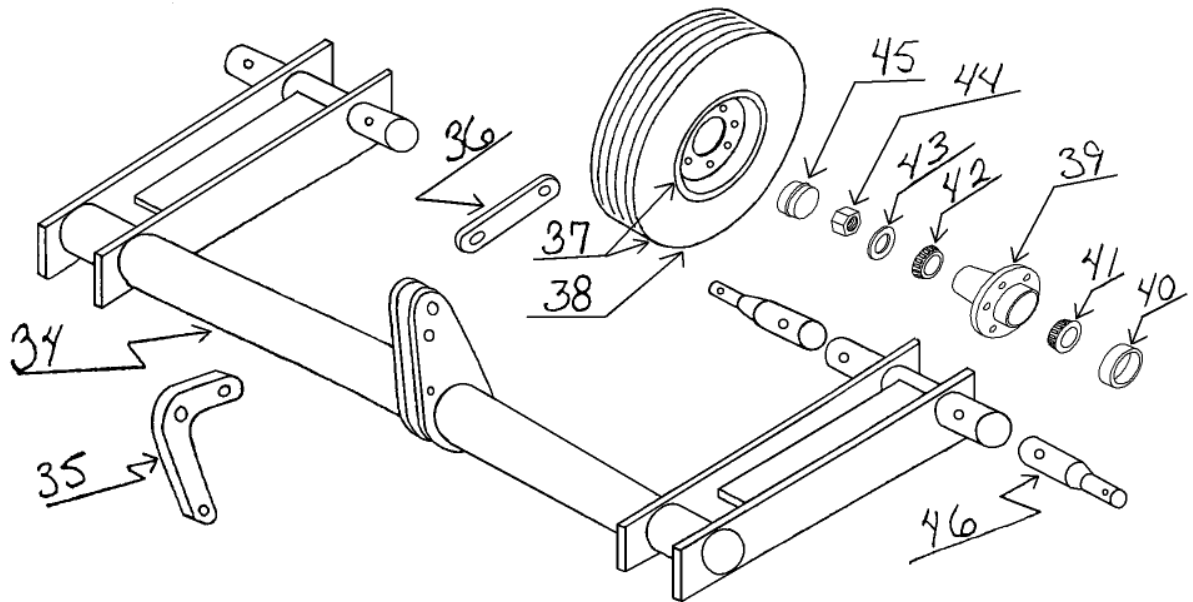
Ref.	Part No.	Description
9	WT004	Front Main Frame Tube
10	WT005	Left Main Frame Tube
11	WT006	Center Main Frame Tube
12	WT007	Right Main Frame Tube
13	WT008	Rear Main Frame Tube
14	WT009	Main Frame Hyd. Cylinder Plate
15	WT010	Main Frame Tongue Plate
16	WT011	Front Gang Beam Adj. Plate
17	WT012	Rear Gang Beam Adj. Plate
18	WT013	Adj. Plate Handle
19	WT014	Center Beam Hitch Plate
20	WT015	Center Beam Mount Plate
21	WO6078	Trunion Nut
22	WT008A	Complete Welded Main Frame (Large)
	WT008B	Complete Welded Main Frame (Small)

## Frame Assembly



Ref.	Part No.	Description
23	WT016	Left Front Main Frame Tube Shim
	WT017	Right Front Main Frame Tube Shim
24	WT018	Right & Left Main Frame Tube Shim
25	WT019	Rear Main Frame Tube Shim
26	WO6005	Wheel Axle Mount (N/S)
27	WO6005A	Wheel Axle Bushing
28	WO6069	Wheel Axle Cap
29	74005	Wheel Axle Mount
30	74007	Wheel Axle Bushing
31	74006	Wheel Axle Cap
32	185083	1" x 3" Shank
33	185084	Foot Piece
33A	WT062	Front Gang Adj. Locks
33B	WT063	Rear Gang Adj. Locks

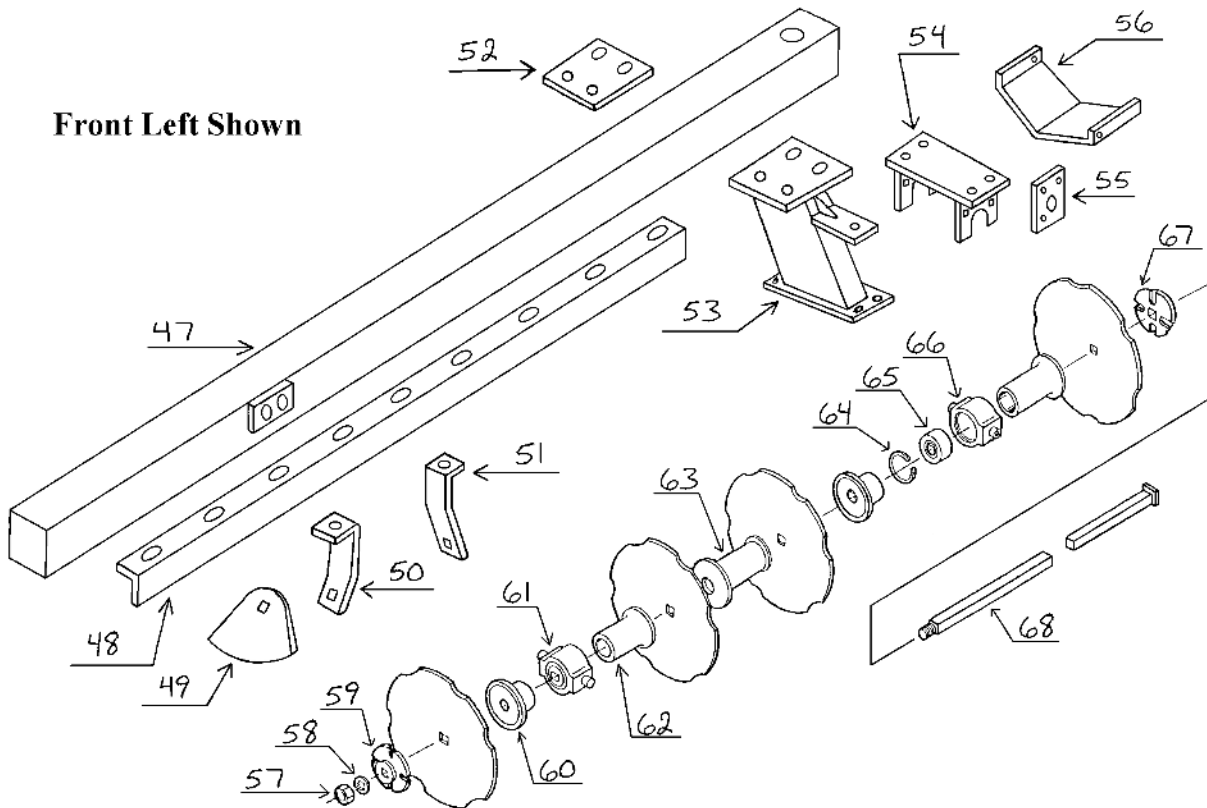
## Gauge Wheel Assembly



Ref.	Part No.	Description
34	WT020	Wheel Axle
	WT020B	Wheel Axle (Short)
35	WT021	Hydraulic Cylinder Lug
36	WT022	Transport Lug
37	143012A	Tire & Wheel
38	143012	Wheel
39	143013	Hub Complete
40	143014	Hub Seal
41	143015	Inner Bearing
42	143016	Outer Bearing
43	143022	Spindle Washer
44	143021	Spindle Nut
45	143019	Hub Dust Cover
46	Q888	Q888 Spindle



## Gang Assembly



Ref.	Part No.	Description	
47	WT023	Front Gang Beam Left or Right – 6 Blade	
	WT024	Rear Gang Beam Left or Right – 6 Blade	
	WT025	Front Gang Beam Left or Right – 7 Blade	
	WT026	Rear Gang Beam Left or Right – 7 Blade	
	WT027	Front Gang Beam Left or Right – 8 Blade	
	WT028	Rear Gang Beam Left or Right – 8 Blade	
	WT029	Front Gang Beam Left or Right – 9 Blade	
	WT030	Rear Gang Beam Left or Right – 9 Blade	
	WT031	Front Gang Beam Left or Right – 10 Blade	
	WT032	Rear Gang Beam Left or Right – 10 Blade	
	WT033	Front Gang Beam Left or Right – 11 Blade	
	WT034	Rear Gang Beam Left or Right – 11 Blade	
	48	WT035	Left Front, Right Rear Scraper Bar – for 6 Blade
		WT036	Right Front, Left Rear Scraper Bar – for 6 Blade
WT037		Left Front, Right Rear Scraper Bar – for 7 Blade	
WT038		Right Front, Left Rear Scraper Bar – for 7 Blade	
WT039		Left Front, Right Rear Scraper Bar – for 8 Blade	
WT040		Right Front, Left Rear Scraper Bar – for 8 Blade	
WT041		Left Front, Right Rear Scraper Bar – for 9 Blade	
WT042		Right Front, Left Rear Scraper Bar – for 9 Blade	
WT043		Left Front, Right Rear Scraper Bar – for 10 Blade	
WT044		Right Front, Left Rear Scraper Bar – for 10 Blade	
WT045		Left Front, Right Rear Scraper Bar – for 11 Blade	
WT046		Right Front, Left Rear Scraper Bar – for 11 Blade	

### Gang Assembly (continued)

Ref.	Part No.	Description
49	WO6042	Scraper Blade
50	WO6041-L	Scraper Mount Arm Left
51	WO6041-R	Scraper Mount Arm Right
52	WT047	Strut Top Plate
53	WT048	Left Front or Right Rear Strut
	WT049	Right Front or Left Rear Strut
54	WO6081	Bearing Mount
55	WO6072	Bearing Holder Plate
56	WO6082	Bearing Guard
57	WO6033	Axle Nut – 1 ½”
58	WO6032	Axle Lock Washer – 1 ½”
59	185083	Nut Washer
60	185052	Half Spool – 1 ½” – Concave
61	770013	Bearing & Housing Assembly
62	185051	Half Spool – 1 ½” – Convex
63	WO6029	Full Spool – 1 ½”
64	770016	Snap Ring
65	770017	Bearing
66	770018	Bearing Housing
67	185054	Axle Washer – 1 ½”
68	WO6024	6 Blade Axle – 1 ½”
	WO6025	7 Blade Axle – 1 ½”
	WT050	8 Blade Axle – 1 ½”
	WT051	9 Blade Axle – 1 ½”
	WT052	10 Blade Axle – 1 ½”
	WT053	11 Blade Axle – 1 ½”
**	WT066-RL	Scraper Extension for Extension Blades
	WT066-RR	Scraper Extension for Extension Blades