



LS900R, LS1200R, LS1400R, and LS1600R Rear Steer Grader

Illustrated Parts List Set Up and Operating Instructions



Art's-Way Manufacturing Co., Inc.

TO THE OWNER

Congratulations on the purchase of your new Art's-Way Grader. You have selected a top quality machine that is designed and built with pride to ensure that you have many years of efficient, reliable service.

Even if you are an experienced operator of this or similar equipment, *we ask that you read the Operating Instructions before using this grader.* The way you operate, adjust and maintain this unit will have much to do with its successful performance. Any further questions you may have about this piece of Art's-Way equipment should be directed to your local Art's-Way dealer or to Art's-Way Manufacturing Co., Inc., Armstrong, Iowa 50514, (712) 864-3131.

Specifications And Design Are Subject To Change Without Notice

Art's-Way Manufacturing Co., Inc. is continually making product improvements. In doing so, we reserve the right to make changes or add improvements to our products without obligation for the equipment previously sold.

Because modifications to this grader may affect the performance, function and safety of its operation, no modifications are to be made without the written permission of Art's-Way Manufacturing Co., Inc. Any modifications made without the written permission of Art's-Way Manufacturing Co., Inc. shall void the warranty of this product.

In the interest of continued safe operation of this grader, *pay particular attention to the safety alert symbol throughout this manual.*

Art's-Way Manufacturing Co., Inc. Statement of Liability

Art's-Way Manufacturing Co., Inc. recognizes its responsibility to provide its customers with a safe and efficient product. Art's-Way attempts to design and manufacture its product in accordance with accepted engineering practices in effect at the date of design. This statement should not be interpreted to mean that our products will protect against the user's own carelessness or failure to follow common safety practices as set forth in this manual, nor will Art's-Way be liable for any such act. In addition, Art's-Way assumes no liability for product altered or modified in any way by users or anyone other than an authorized dealer.

PARTS AND SERVICE

As the new purchaser of your Grader, it is very important to consider the following factors:

- A. Original Quality**
- B. Availability of Service Parts**
- C. Availability of adequate Service Facilities**

Art's-Way Manufacturing Co., Inc. has an excellent dealership network ready to answer any questions you may have about your grader. Parts for your machine may be ordered through our dealers. When placing a parts order, please have the model and serial number ready. This will allow the dealer to fill your order as quickly as possible.

For your convenience, we have provided this space for you to record your model number, serial number and the date of purchase, as well as your dealer's name and address.

Owner's Name: _____

Owner's Address: _____

Purchase Date: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone No.: _____



SERIAL NO.

MODEL NO.

*Manufactured By
Art's-Way Manufacturing Co., Inc.
Armstrong, IA*

Machine Serial Number Location

(Located on the rear of the moldboard on the right-hand side)

Enter the serial number and model number of your grader in the spaces provided above.

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SAFETY FIRST

Accidents can be prevented if the operator:

- Fully understands how the machine functions
- Knows the precautions and observes them
- Is careful to consider the safe action at all times.

Take note! This Safety Alert Symbol found throughout this manual is used to call your attention to instructions involving your personal safety and the safety of others. Failure to follow these instructions can result in injury or death.



**THIS SYMBOL MEANS
ATTENTION !
BECOME ALERT !
YOUR SAFETY IS INVOLVED !**

Signal Words: Note the use of the signal words DANGER, WARNING, and CAUTION on the Grader and in this manual. The appropriate signal word for each has been selected using the following guidelines:



DANGER: Indicates an imminently hazardous situation that, if not avoided, *will* result in death or serious injury. This signal word is limited to the most extreme situations for machine components which for functional purposes cannot be guarded.



WARNING: Indicates a potentially hazardous situation that, if not avoided, *could* result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, *may* result in minor or moderate injury. It may also be used to alert against unsafe practices.

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as it can possibly be. The Grader conforms to applicable safety standards at the time of manufacturing. A safety conscious equipment operator makes an effective accident-prevention program complete.

Safety features and instructions for the Grader are detailed elsewhere in the Operating Instructions section of the manual. It is the responsibility of the Grader owner to ensure that **all** operators read and understand the Manual before they are allowed to operate the grader.



CAUTION: Remember, a careful operator is the best insurance against an accident.



CAUTION: *Read and Understand the Operating Instructions and all the safety decals before operating the grader. Review all safety instructions with all operators annually.*

Before Operating

- **Do not** wear loose fitting clothing as it may catch in moving parts
- Make sure to install and/or secure all guards and shields before starting the tractor or operating the grader.
- Check to be sure all hydraulic lines and fittings are secure and that no lines are crimped or worn. Tighten, adjust, and replace as necessary. Do not attempt to make temporary repairs to hydraulic lines.
- Install the safety chains when attaching the grader to the tractor.
- Clear the area of bystanders, especially children, when making adjustments, repairs, or performing maintenance on the grader.
- **Do not** allow riders while transporting.
- Put all tractor and machine controls in *neutral* before starting. Follow the starting instructions according to your tractor Manual.
- Operate the grader only while seated on the tractor seat.
- Make sure the unit is adequately supported with safety blocks or stands when changing tires or working on it.

During Operation

- Keep hands, feet, hair and clothing away from moving parts.
- Keep all shields and guards in place and in good repair.
- Keep all children and bystanders away from the Grader when in operation.

- **Do not** allow riders while the grader is in operation.
- **Do not** attempt to lubricate, repair or adjust the grader while the tractor is running.
- Before servicing, adjusting, repairing or unplugging the grader, stop the tractor engine, place all controls in neutral, set the parking brake, remove the ignition key, and wait for all moving parts to stop.
- Keep all hydraulic lines, fittings, and couplers tight and free of leaks. (See the Hydraulic Safety section below.)

Maintenance Safety

- Follow all operating, maintenance and safety instructions found in the Manual.
- Before servicing, adjusting, repairing or lubricating the grader, stop the tractor engine, place all controls in neutral, set the parking brake, and remove the ignition key.
- Use only the tools, jacks and hoists that are of sufficient capacity for the job.
- Use support blocks or safety stands when changing tires or working under the machine.
- Follow the good shop practices of keeping the service area clean and dry and use adequate light for the job at hand.

Hydraulic Safety

- Before applying pressure from the hydraulic system, make sure all lines, fittings, and couplers are tight and in good condition.
- Relieve pressure from the hydraulic circuit before servicing or disconnecting from the tractor.
- Make sure all shields/guards are in place and properly secured when maintenance work is complete.
- Replace any worn, cut, abraded, flattened or crimped hoses.
- **Do not** make any temporary repairs to the hydraulic lines, fittings or hoses by using tape, clamps, or cement. The hydraulic

system operates under extremely high pressure and temporary repairs may fail suddenly and create a hazardous situation.

- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to identify and isolate a leak. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop if hydraulic fluid penetrates the surface of the skin.

Transportation Safety

- Be sure to comply with all local regulations regarding transporting equipment on public roads and highways.
- Make sure the Slow Moving Vehicle (SMV) emblem and all reflectors required by local highway and transportation authorities are in place, clean and clearly visible to all oncoming or following traffic.
- **Do not** allow riders while transporting.
- Make sure the Grader is securely attached to the tractor and install a safety chain to the grader. Install a retainer through the drawbar pin and attach the safety clip. Install cylinder lock assembly to raise/lower hydraulic cylinder and secure with clip.
- Do not fail to latch the tractor brake pedals together.
- Do not exceed 20 MPH (32 km/h) when transporting the grader. Always reduce speed on rough roads and surfaces or when going down inclines.
- Drive slowly when turning and always use turn signals on the tractor to indicate your turning intentions to other traffic.
- The weight of the trailed grader should **NEVER** exceed the capacity of the towing vehicle.
- Check clearances carefully whenever the grader is towed.

Storage Safety

- Store the grader in an area away from human activity.
- **Do not** permit children to play on or around the stored machine.
- Park the Grader on firm level ground and block the tires. Support the grader with the jack provided and wooden blocks as needed.

Tire Safety

- Have a qualified tire dealer or repair service perform tire repairs.
- **Do not** attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Follow proper procedures when mounting a tire on a rim to prevent an explosion which could result in serious injury.
- **Do not** substitute tires of lesser road rating and capacity for the original equipment tires.

CAUTION: Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion, which may result in serious injury or death. Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your dealer or qualified tire repair service.



Assembly Safety

- Use adequate manpower to perform assembly procedures safely.
- Assemble the grader in an area with sufficient space to maneuver the largest components and allow easy access to all sides of the machine.
- Use only forklifts, lift cranes, jacks and tools with sufficient capacity for the loads.
- **Do Not** allow spectators in the working area.

***Remember:
The Best Operator is a Safe Operator***

Illustrated Parts List

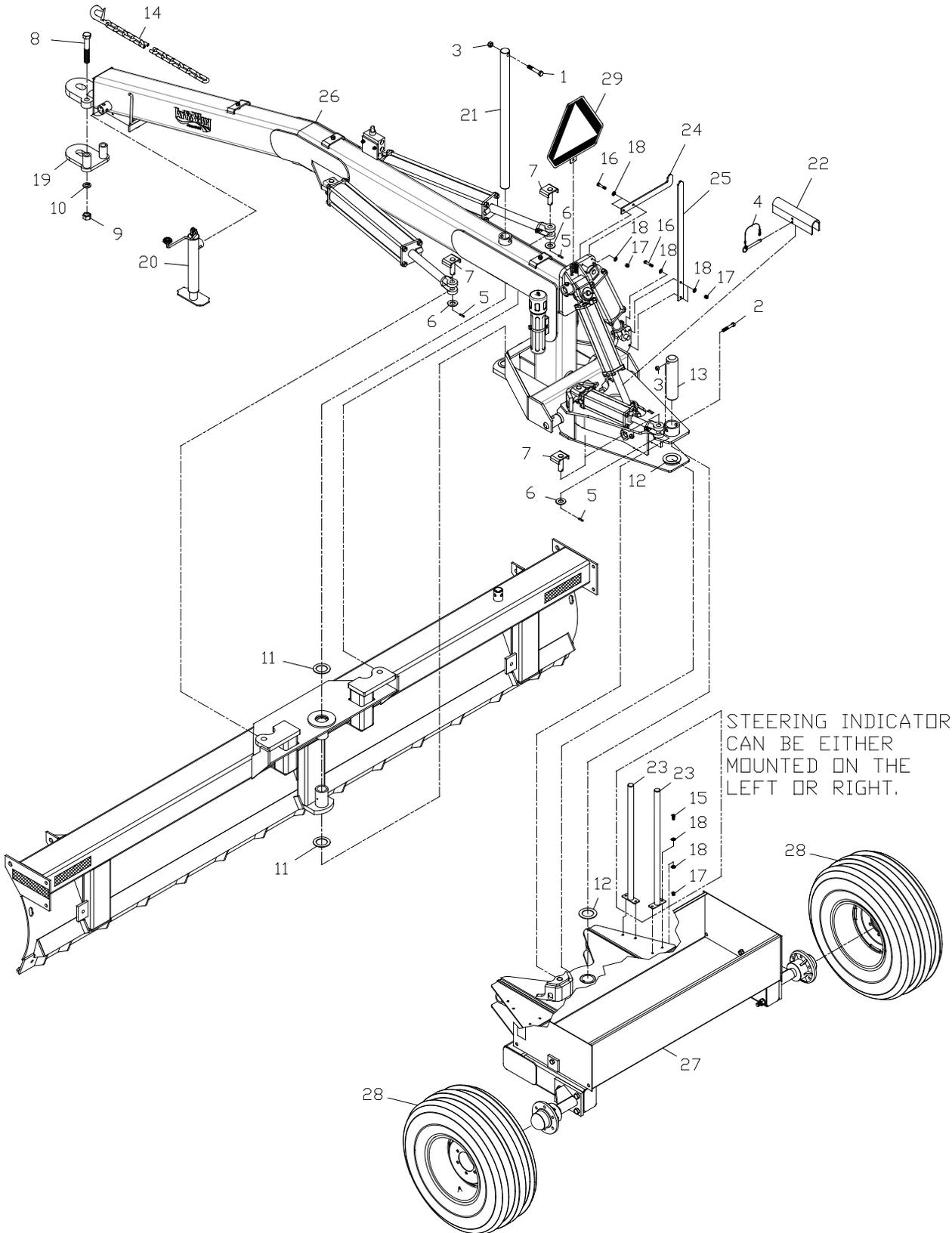
- The **ITEM** figure corresponds to the number shown in the illustration.
- Numbers listed in the **PART NO.** column are the numbers under which the parts are manufactured and by which the parts are identified by the manufacturer.
- Requirement shown in the **QTY** column is per Grader or assembly. Items that have no specified quantity are designated by the letters "AR" (as required). "RF" listed in the Units Per Assy column indicates that the item is listed as a reference and the requirement is listed in another figure of the IPC.
- The **DESCRIPTION** column is the nomenclature of the part as identified by the manufacturer.

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GRADER HARDWARE ASSEMBLY

Hardware Kit 592450



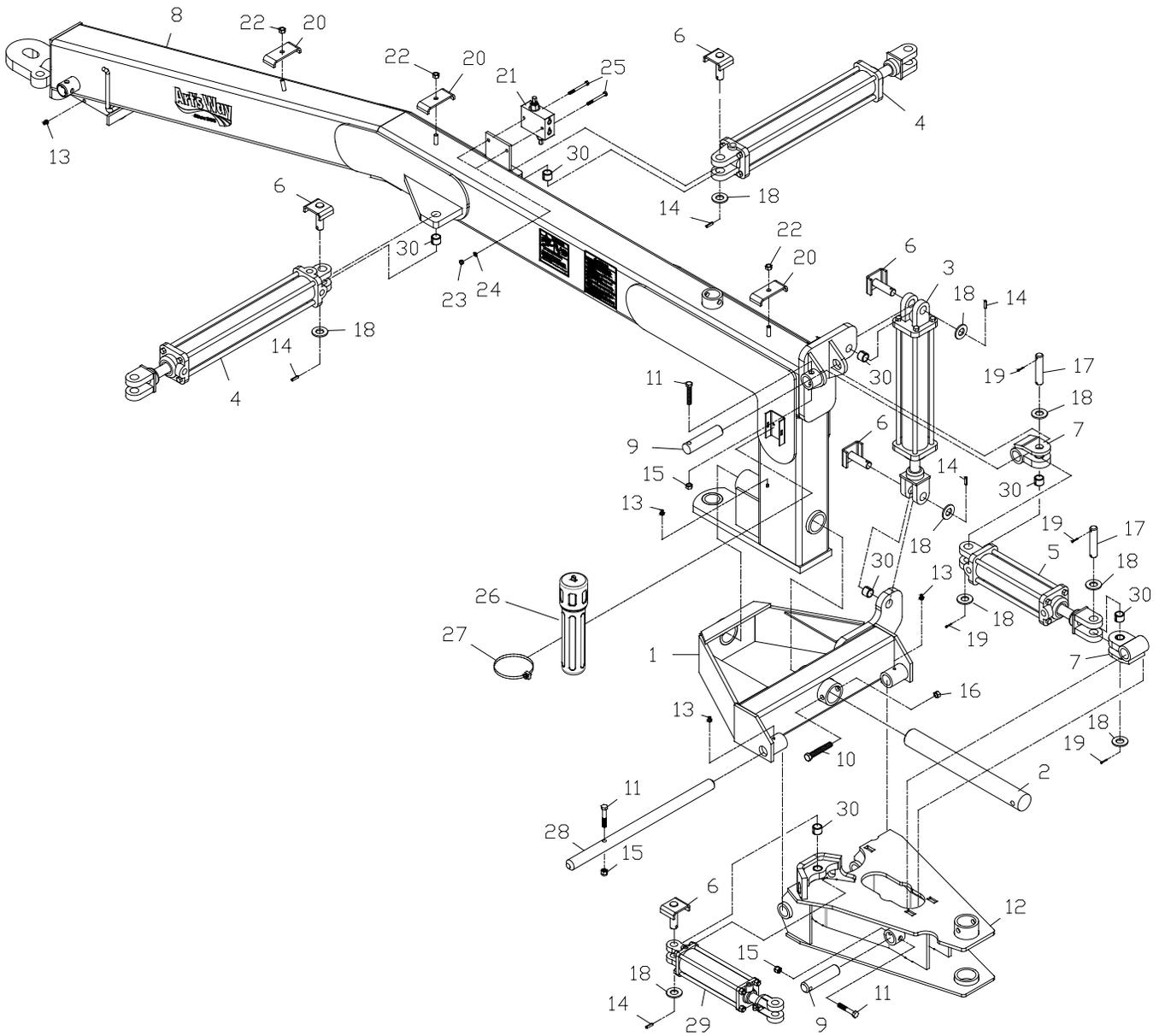
GRADER HARDWARE ASSEMBLY

Hardware Kit 592450

ITEM	PART NO.	QTY.	DESCRIPTION
1	J19H2969	1	Bolt, HHCS 5/8-11 x 3-1/2 Gr5 Zn
2	J19H3170	1	Bolt, HHCS 5/8-11 x 4-1/2 Gr5 Zn
3	I19508R1	2	Nut, Lock 5/8-11 Gr5 Zn
4	R18660	1	Pin, Snapper 5/16 x 2-3/4
5	J34H334	3	Pin, Roll 5/16 x 2
6	990720	3	Washer, Flat 1.0 Std
7	LSGRA1600	2	Pin Wldt, Cylinder
8	J08H4722	2	Bolt, HHCS 1-8 x 6-1/2 Gr8
9	J14H805	2	Nut, Hex 1-8
10	003350	2	Washer, Lock 1.0
11	396120	2	Washer, Machine 2-1/32 x 3 x .135
12	E126201	2	Bushing, Mach. 2-1/2 x 3-7/8
13	592140	1	Shaft, 2-1/2 x 10-3/4
14	1765302	1	Chain, Safety 5/16 x 5'
15	006690	4	Bolt, HHCS 3/8-16 x 1-1/4 Gr5 Zn
16	037790	4	Bolt, HHCS 3/8-16 x 2 Gr5 Zn
17	073630	8	Nut, Lock 3/8-16 Nylon Hex
18	021190	16	Washer, Flat 3/8 Std
19	LSGRA2053	1	Tongue Wldt, Bolt-On
20	LS4000001	1	Jack, 5000 lb
21	LS9400003	1	Pin, Pivot Main, 2 x 36
22	LS9300057	1	Stop, Cylinder 12" Transport
23	592240	2	Indicator Wldt, Steering
24	592330	1	Plate, Level Reference
25	592350	1	Plate, Level Indicator
26	592400	1	Basic Unit, LS Rear
27	592410	1	Frame Assy, Rear Grader Rear Steer
28	592460	2	Wheel & Tire Assy, 11L-15 3-Rib Bias Steer
29	E224133	1	Decal Assy, SMV

GRADER FRAME ASSEMBLY

Basic Unit 592400

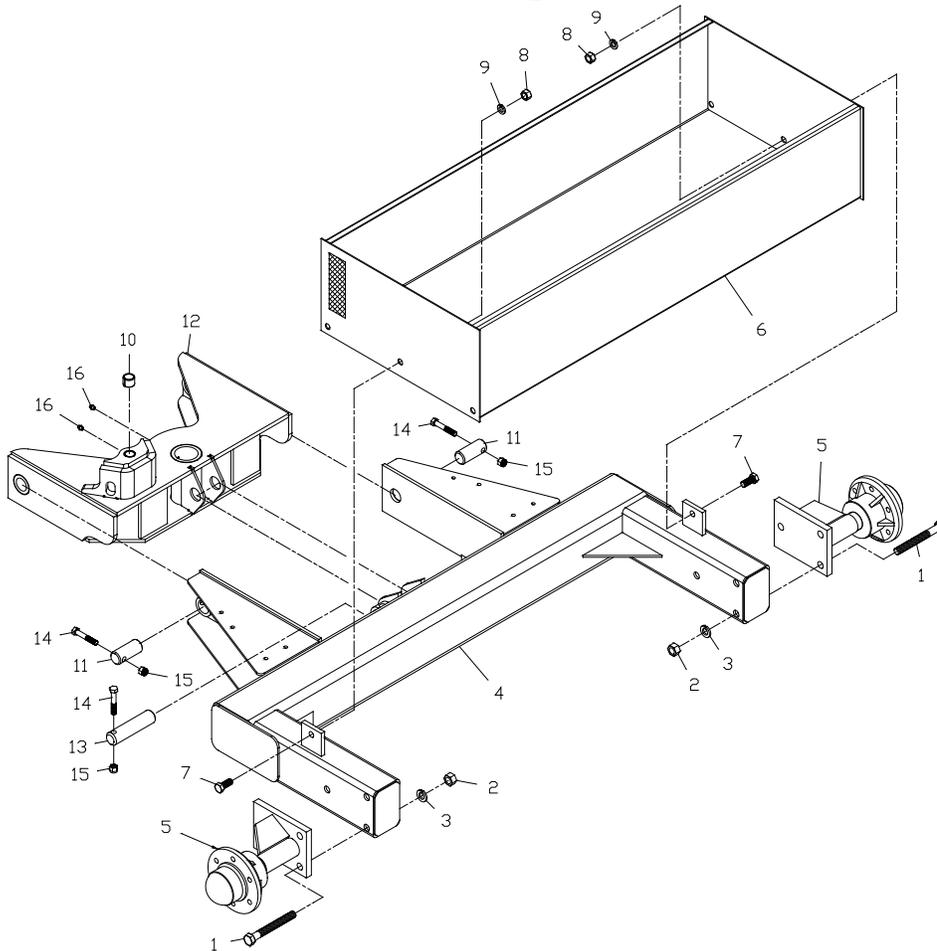


GRADER FRAME ASSEMBLY
Basic Unit 592400

ITEM	PART NO.	QTY.	DESCRIPTION
1	LSGRA2056	1	Frame Wldt, Center Pivot
2	LSGRA2057	1	Shaft, 2-1/2 x 21-3/4
3	LS4000028	1	Cylinder, Hydraulic Tilt, 4 x 8
	581370	-	Seal Kit, 4" Cylinder (4C4507)
4	LS4000228	2	Cylinder, Hydraulic Pivot, 4 x 24
	581370	-	Seal Kit, 4" Cylinder (4C4507)
5	LS4000027	1	Cylinder, Hydraulic Lift, 3 x 12
	384840	-	Seal Kit, 3" Cylinder (1C4630)
6	LSGRA1600	4	Pin Wldt, Cylinder
7	LSGRA2060	2	Pivot Wldt, Cylinder
8	LSGRA2054	1	Frame Wldt, Tongue
9	LSGRA2061	1	Shaft, 1-1/2 x 6-1/4
10	J19H3170	1	Bolt, HHCS 5/8-11 x 4-1/2 Gr.5
11	990840	1	Bolt, HHCS 1/2-13 x 3 Gr.5
12	V180220	4	Bushing, Tension
13	JJD7798	3	Fitting, Zerk 1/8-27 Taper
14	J34H334	5	Pin, Roll 5/16 x 2
15	037540	1	Nut, Lock 1/2-13 Nylon
16	I19508R1	1	Nut, Lock 5/8-11 Nylon
17	510100	2	Pin, 1.0 x 4-1/4
18	990720	8	Washer, Flat 1.0
19	003950	2	Pin, Cotter 3/16 x 2
20	LSGRA1813	3	Clamp, Hydraulic line
21	LS4000097	1	Valve, Hydraulic Cushion
22	127890	3	Nut, Lock 1/2-13 Top
23	023630	2	Nut, Hex 5/16-18
24	023620	2	Washer, Lock 5/16
25	160230	2	Bolt, HHCS 5/16-18 x 3
26	449190	1	Tube, Manual Holder
27	455160	1	Clamp, Hose 3-3/4
28	592130	1	Pin, Pivot Rear
29	592160	1	Cylinder, Hydraulic Steer 3 x 8
	355350P	-	Seal Kit, 3" Cylinder (1C4629)
30	V180220	7	Bushing, Steel 1 x 1-1/4 x 1

REAR FRAME ASSEMBLY

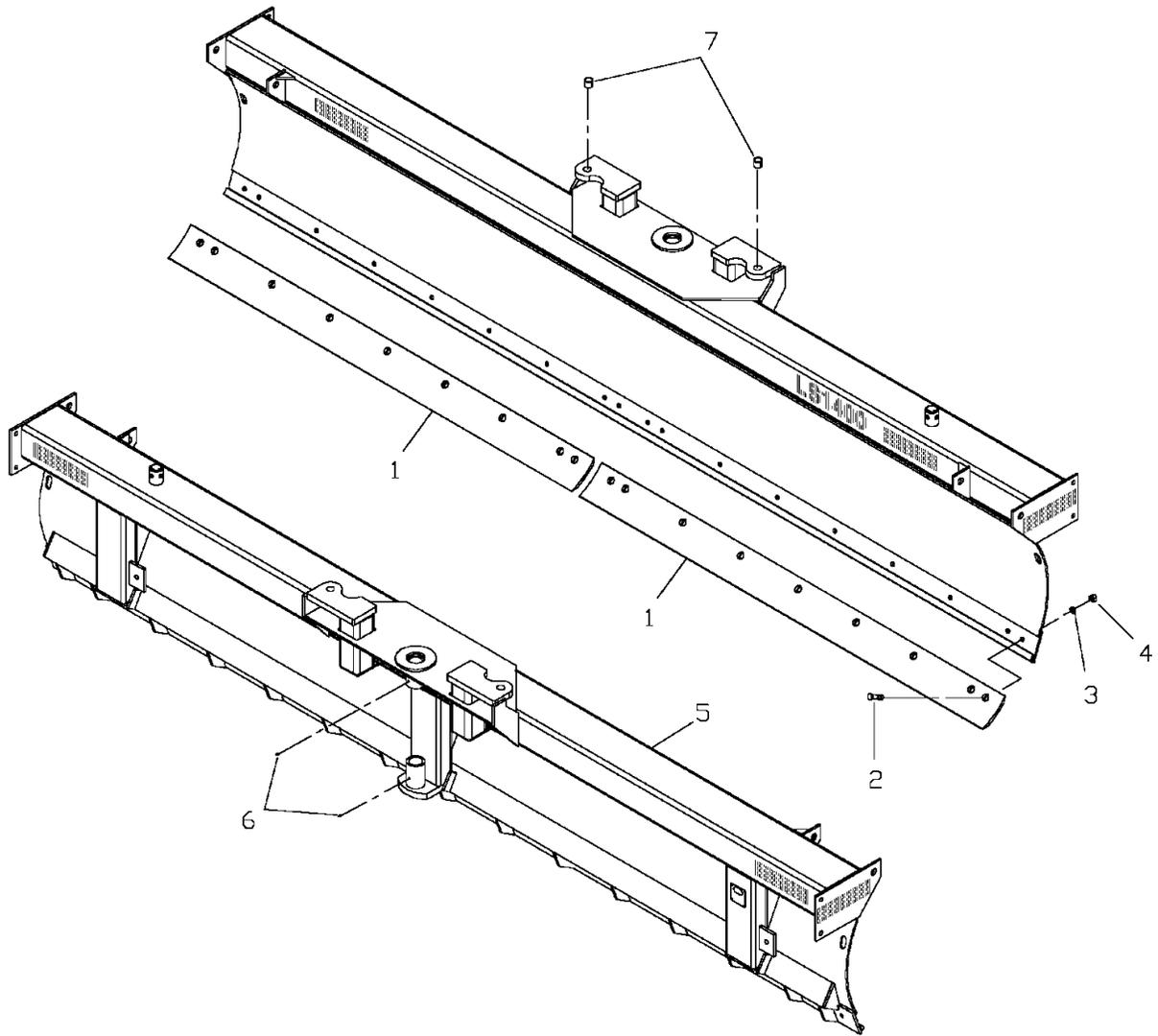
Sandbox and Running Gear 592410



ITEM	PART NO.	QTY.	DESCRIPTION
1	G146711	6	Bolt, HHCS 3/4-10 x 6 Gr8
2	JN135098	6	Nut, Hex 3/4-10 Gr8
3	036800	6	Washer, Lock 3/4
4	LSGRA2055	1	Frame Wldt, Rear Grader
5	LSGRA1970	2	Hub & Axle Assembly, 6-Bolt
6	LSGRA1885	1	Box Weldment, Sand
7	438880	2	Bolt, HHCS 5/8-11 x 1-1/2 Gr.8
8	I19724R1	2	Nut, Hex 5/8-11 Gr.8
9	020440	2	Washer, Lock 5/8
10	V180220	1	Bushing, Steel 1 x 1-1/4 x 1
11	592150	2	Pin, Rear 1-1/2 Dia x 3-1/2
12	592200	1	Rear Wldt, Grader Rear Steer
13	LSGRA2061	1	Shaft, 1-1/2 Dia 6-1/4
14	990840	3	Bolt, HHCS 1/2-13 x 3
15	037540	3	Nut, Lock 1/2-13 Hex Nylock
16	JJD7798	2	Fitting, Lubrication 1/8-27 NPT

MOLDBOARD ASSEMBLY

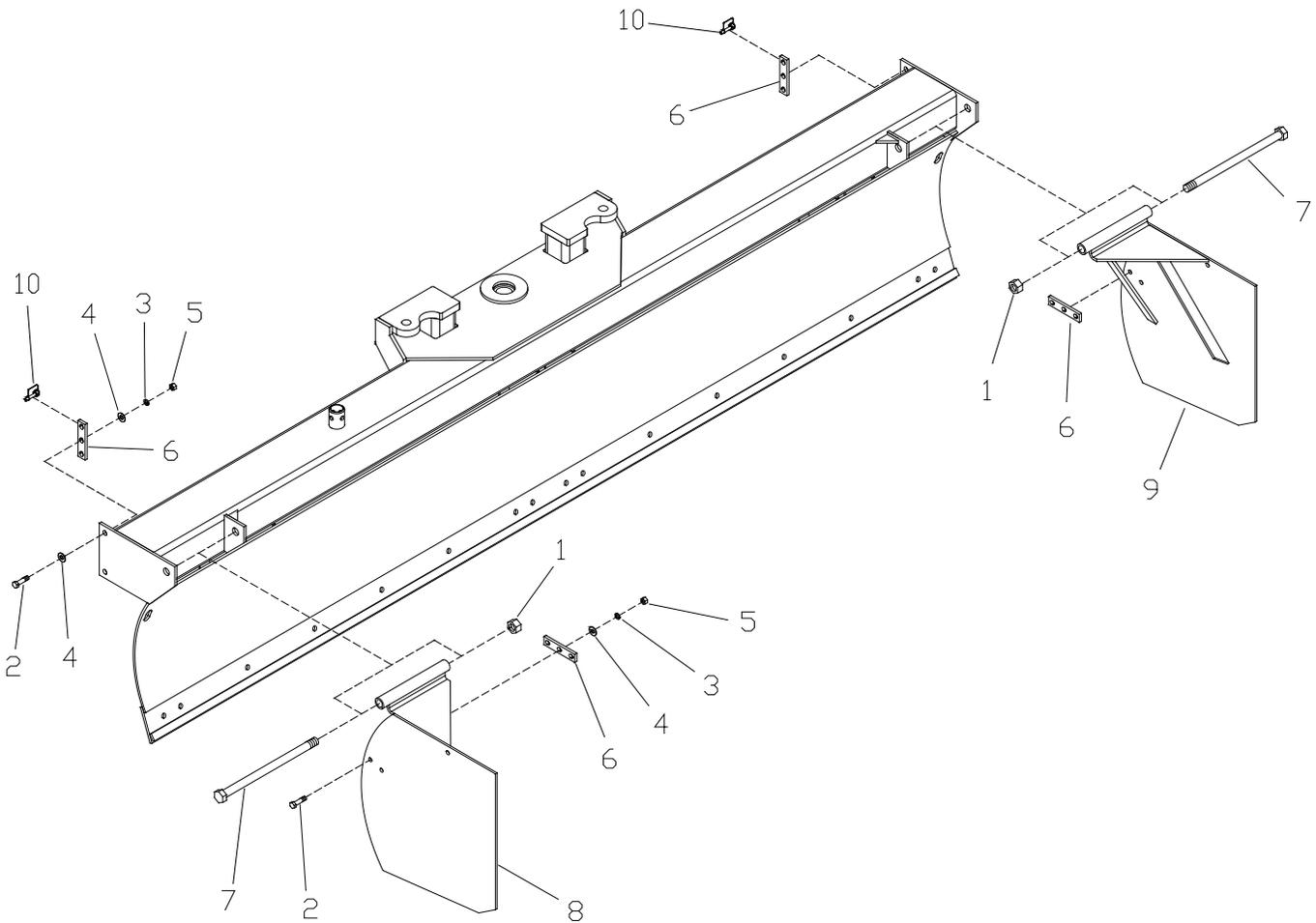
9' - 511000, 12' - 500670, 14' - 500850, 16' - 583780



ITEM	PART NO.	LS900	LS1200	LS1400	LS1600	DESCRIPTION
1	LS4000125	-	2	-	-	Edge, Cutting 6'
	LS4000126	-	-	2	-	Edge, Cutting 7' (shown)
	583360	-	-	-	2	Edge, Cutting 8'
	511020	1	-	-	-	Edge, Cutting 9'
2	500550	11	16	18	20	Bolt, Plow 5/8-11 x 2 Gr.8
3	020440	11	16	18	20	Washer, Lock 5/8
4	I124589	11	16	18	20	Nut, Hex 5/8-11
5	511010	1	-	-	-	Moldboard Weldment, 9'
	LSGRA2063	-	1	-	-	Moldboard Weldment, 12'
	LSGRA2058	-	-	1	-	Moldboard Weldment, 14' (shown)
	583370	-	-	-	1	Moldboard Weldment, 16'
6	JJD7798	2	2	2		Fitting, Zerk 1/8-27 Taper
7	V180220	2	2	2		Bushing, Tension

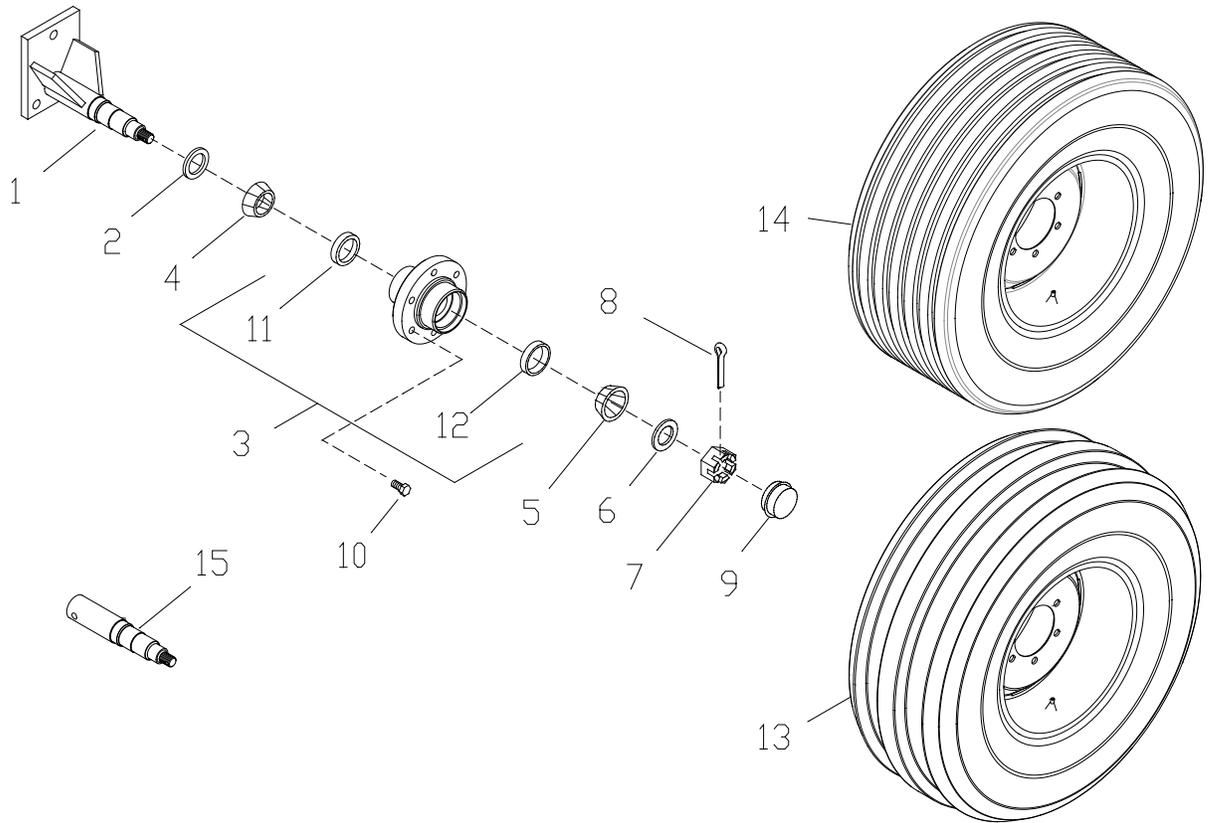
BOX END SET ASSEMBLY

Right and Left Sides LS200019



ITEM	PART NO.	QTY	DESCRIPTION
1	J14H805	2	Nut, Hex 1-8 Gr5
2	014770	6	Bolt, HHCS ½-13 x 1-½ Gr5
3	005370	6	Washer, Lock ½
4	005200	8	Washer, Flat ½
5	005360	6	Nut, Hex ½-13 Gr5
6	LSGRA1941	4	Bracket, Box End
7	LSGRA1784	2	Pin Wldt, Box End
8	500730	1	Plate Wldt, RH Box End
9	500740	1	Plate Wldt, LH Box End
10	143710	2	Pin, Snapper 3/8 x 2-1/2

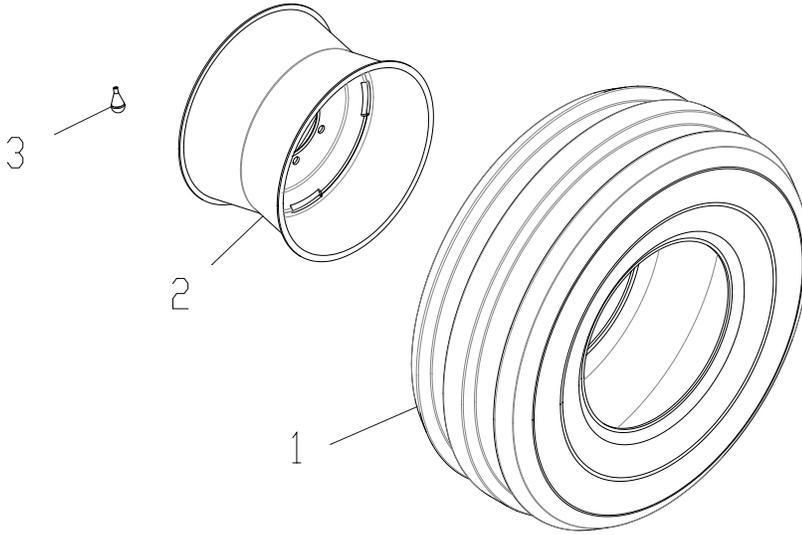
WHEEL & AXLE ASSEMBLY



ITEM	PART NO.	Grader Rear Steer QTY	Gage Wheel QTY	DESCRIPTION
1	LSGRA1445	1	-	Axle Weldment, Grader
2	129810	1	1	Seal, 2.00 x 3.62 x .250
3	U51100008	1	1	Hub, w/ Cups 6 Bolt 10 Ton
4	129800	1	1	Cone, Bearing 1.38 ID
5	129790	1	1	Cone, Bearing 1.80 ID
6	I131018	1	1	Washer, Flat 15/16 x 1-3/4 x 7/64
7	129830	1	1	Nut, Slotted 7/8-14 Gr5 ZN Hex
8	V063761	1	1	Pin, Cotter 1/4 x 1-1/2 ZN
9	G200147	1	1	Cap, Hub
10	042440	6	6	Bolt, Wheel 9/16-18 x 1-1/8
11	U51200010	1	1	Cup, Bearing Inner
12	U51200006	1	1	Cup, Bearing Outer
13	592460	1	-	Wheel & Tire Assembly Bias Steer
14	500770	-	1	Wheel & Tire Assembly Implement
15	LSGRA1595	-	1	Spindle, Gage Wheel

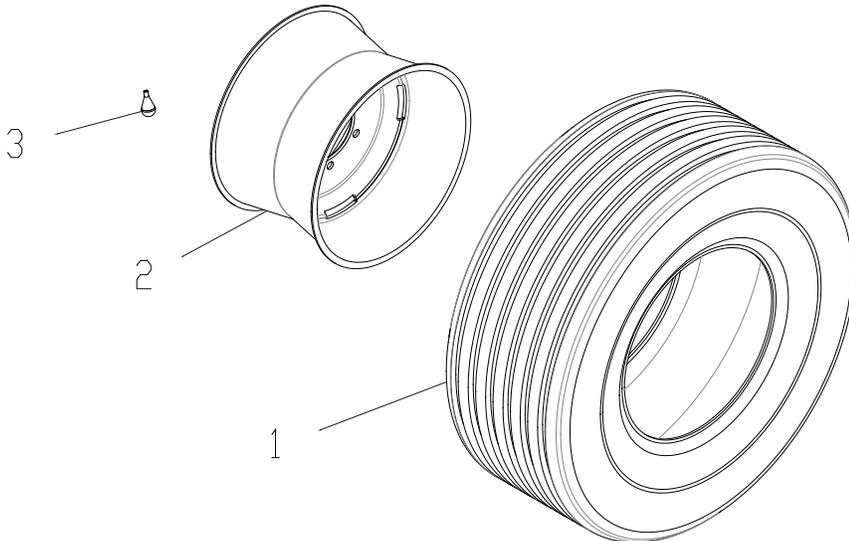
WHEEL ASSEMBLIES

Wheel & Tire Assembly 11L-15 3-Rib Bias Steer-592460



ITEM	PART NO.	QTY.	DESCRIPTION
1	592470	1	Tire, 11L-15 8-Ply 3-Rib Bias Steer
2	U51900004	1	Rim, 10 x 15 6 Bolt
3	164420	1	Stem, Valve Core & Cap

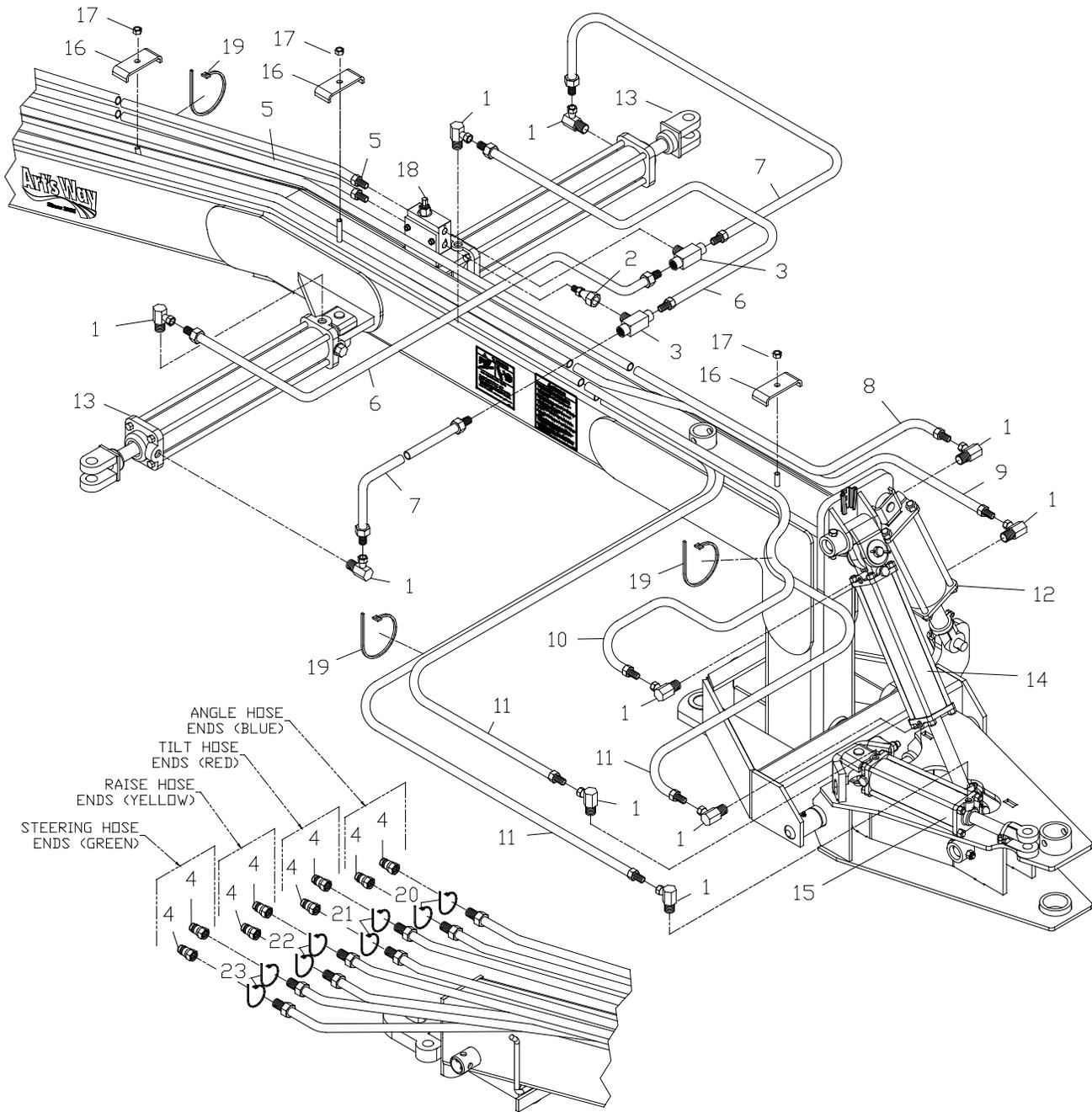
Wheel & Tire Assembly 11L-15 Implement-500770



ITEM	PART NO.	QTY.	DESCRIPTION
1	I1980927C1	1	Tire, 11L-15 8-Ply Implement
2	U51900004	1	Rim, 10 x 15 6 Bolt
3	164420	1	Stem, Valve Core & Cap

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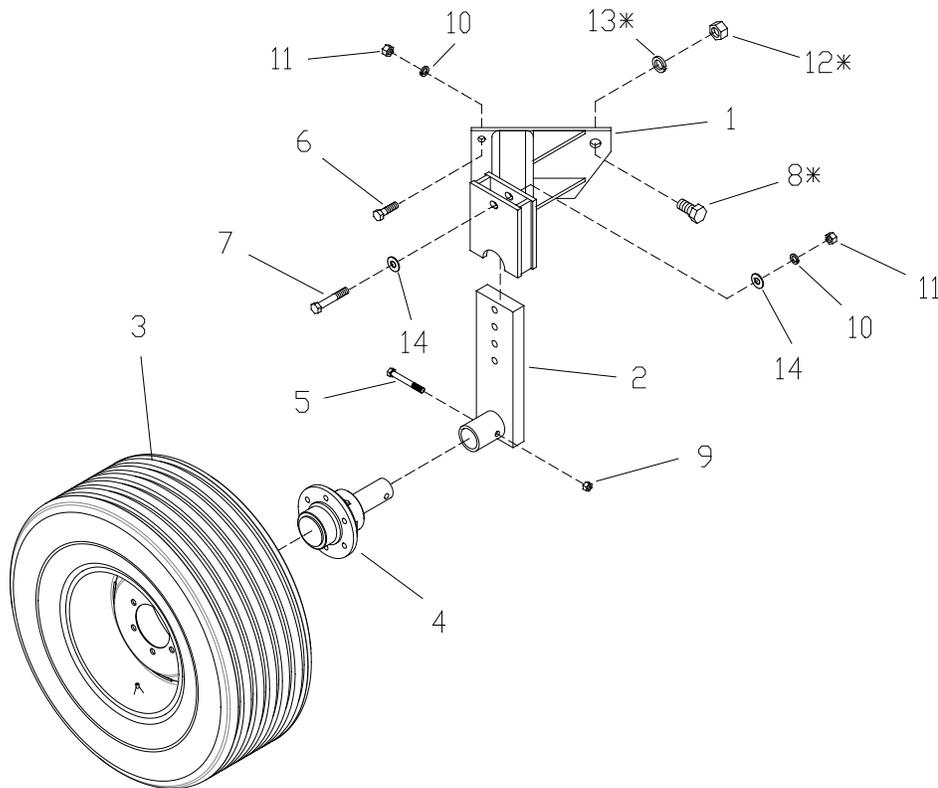
HYDRAULIC ASSEMBLY



HYDRAULIC ASSEMBLY

ITEM	PART NO.	QTY	DESCRIPTION
1	LS5000027	10	Fitting, 90 Deg. 3/4 OR x 3/8 NPSM
2	LS5000033	1	Fitting, Straight 1/2 NPSM
3	LS5000063	2	Fitting, Tee 1/2 NPT Branch
4	I1272770C2	8	Coupling, Pioneer Nipple 1/2 NPT
5	U50300372	2	Hose, 3/8 x 120 w/ 1/2 NPT
6	LS5000459	1	Hose, 3/8 x 196 w/ 3/8 NPT x 1/2 NPT
7	LS5000460	1	Hose, 3/8 x 204 w/ 3/8 NPT x 1/2 NPT
8	LS5000461	1	Hose, 3/8 x 212 w/ 3/8 NPT x 1/2 NPT
9	LS5000462	3	Hose, 3/8 x 226 w/ 3/8 NPT x 1/2 NPT
10	LS5000220	2	Hose, 3/8 x 18 w/ 3/8 NPT x 1/2 NPT
11	LS5000221	2	Hose, 3/8 x 36 w/ 3/8 NPT x 1/2 NPT
12	LS4000028	1	Cylinder, Hydraulic Tilt, 4 x 8
	581370	-	Seal Kit, Cyl. Cross (4C4507) 4" Bore 1-3/4" Rod
13	LS4000228	2	Cylinder, Hydraulic Pivot, 4 x 24
	581370	-	Seal Kit, Cyl. Cross (4C4507) 4" Bore 1-3/4" Rod
14	LS4000027	1	Cylinder, Hydraulic Lift, 3 x 12
	384840	-	Seal Kit, Cyl. Cross (1C4630) 3" Bore 1-1/2" Rod
15	592160	1	Cylinder, Hydraulic Steer, 3 x 8 Standard
	355350P	-	Seal Kit, Cyl. Cross (1C4629) 3" Bore 1-1/4" Rod
16	LSGRA1813	3	Clamp, Hydraulic Line
17	127890	3	Nut, Lock 1/2-13 Top
18	LS4000097	1	Valve, Hydraulic Cushion
19	149670	3	Tie, Cable 3/16 x 11
20	MP17.00564	2	Cable Tie – Blue (Angle)
21	MP17.00565	2	Cable Tie – Red (Tilt)
22	MP17.00566	2	Cable Tie – Yellow (Raise)
23	MP17.00567	2	Cable Tie – Green (Steering)

BLADE GAUGE WHEEL ASSEMBLIES
Right Gauge Wheel Option-LS2000018 (Shown)
and Left Gauge Wheel Option-LS2000017

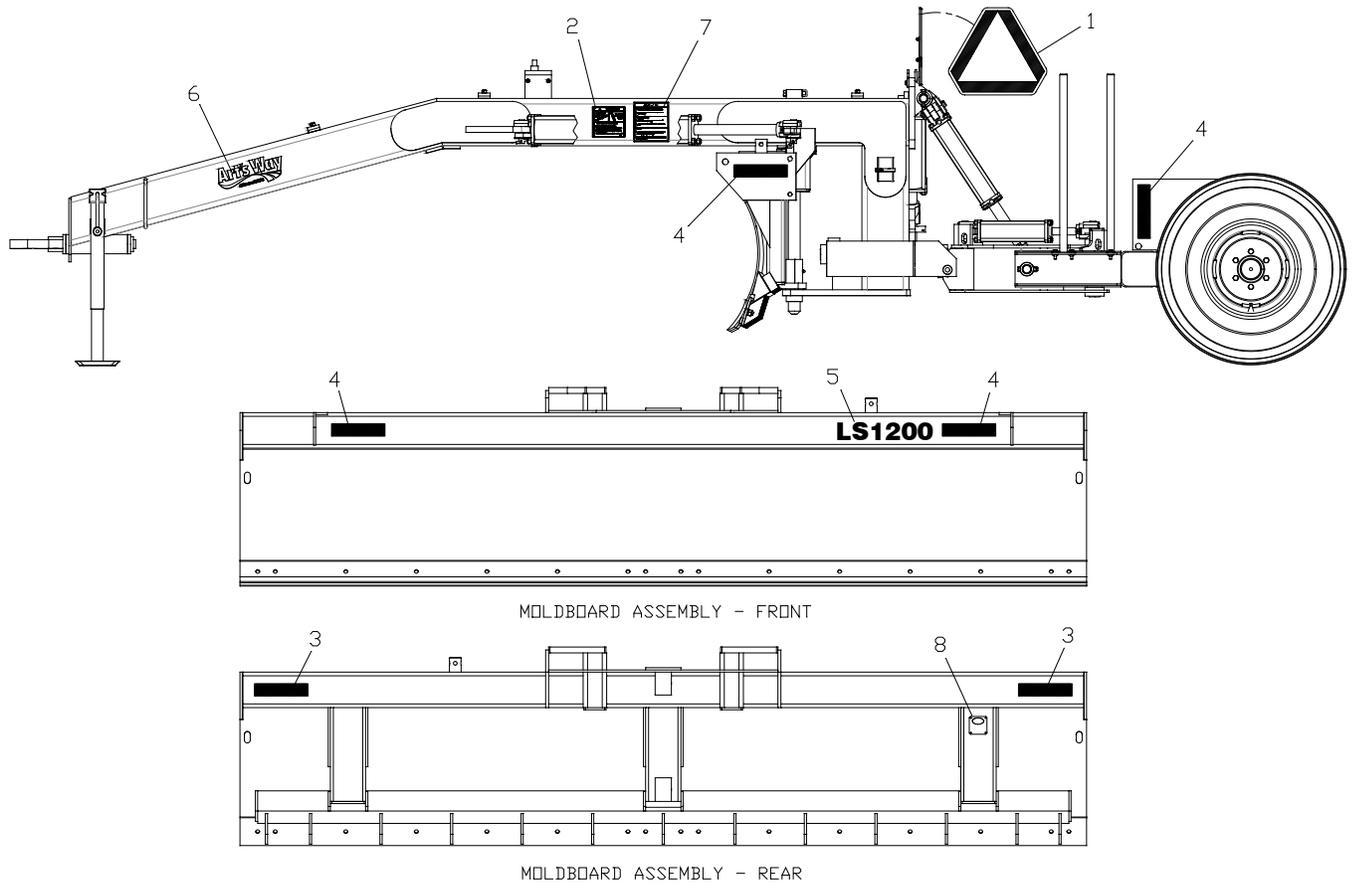


ITEM	PART NO.	Right Hand LS2000018	Left Hand LS2000017	DESCRIPTION
1	LSGRA1593	1	-	Bracket Wldt, RH Gauge Wheel (Shown)
1	502550	-	1	Bracket Wldt, LH Gauge Wheel
2	LSGRA1594	1	1	Arm Wldt, Gauge Wheel
3	500770	1	1	Wheel & Tire Assembly (See Page 12)
4	LS4000089	1	1	Hub & Axle Assembly (See Page 11)
5	1770608	1	1	Bolt, HHCS ½-13 x 3-1/2 Gr.5
6	990620	2	2	Bolt, HHCS 5/8-11 x 2 Gr.5
7	056720	1	1	Bolt, HHCS 5/8-11 x 4 Gr.5
8*	R66338	1	1	Bolt, HHCS 1-8 x 3 Gr.5
9	037540	1	1	Nut, Lock ½-13 Nylon
10	020440	3	3	Washer, Lock 5/8
11	I124589	3	3	Nut, Hex 5/8-11
12*	J14H805	1	1	Nut, Hex 1-8
13*	003350	1	1	Washer, Lock 1
14	035210	2	2	Washer, Flat 5/8

*** Used only on installations without Box-End assemblies.**

DECAL LOCATIONS

Decal Kit-500790



ITEM	PART NO.	LS900	LS1200	LS1400	LS1600	DESCRIPTION
1	E224138	1	1	1	1	Decal, SMV on Plate
2	346310	2	2	2	2	Decal, Warning High Pressure Fluid
3	476450	2	2	2	2	Decal, Red Retro-reflective
4	476460	6	6	6	6	Decal, Yellow Retro-reflective
5	511030	1	-	-	-	Decal, Grader LS900
	493470	-	1	-	-	Decal, Grader LS1200 (shown)
	493480	-	-	1	-	Decal, Grader LS1400
	583790	-	-	-	1	Decal, Grader LS1600
6	582470	2	2	2	2	Decal, Art's Way
7	500780	1	1	1	1	Decal, Caution Grader Operation
8	355500	1	1	1	1	Tag, Serial Number
	204510	4	4	4	4	Nail, ¼ Grip
10	163350	-	-	-	-	Paint, Black 16 oz. Spray
	431260	-	-	-	-	Paint, Black 1 Quart
	G201309	-	-	-	-	Paint, Prairie Gold 16 oz. Spray
	G202850	-	-	-	-	Paint, Prairie Gold 1 Quart

SET UP INSTRUCTIONS

Receipt Inspection for Complete Unit

Below is a list of items that were shipped from the factory with your Art's-Way Rear Steer Grader. Actual receipt of parts depends on which model of Grader that was purchased.

The company recommends that this listing be used as a checklist to insure that all parts have been received with your Grader.

Rec'd	Item	Qty.	Part Number	Description
	1	1	592400	Basic Unit, Grader Tongue and Pivot Ass'y
	2	1	592410	Rear Frame and Sandbox Assembly
	3	1	511000	Moldboard Assembly, 9' Grader (Shown)
			500670	Moldboard Assembly, 12' Grader
			500850	Moldboard Assembly, 14' Grader
			583780	Moldboard Assembly, 16' Grader
	4	2	592460	Wheel and Tire Assembly 3-Rib Bias Steer
	5	1	LS2000019	Box End Set (RH and LH) w/Hardware Bag
	6	1	LS2000029	Bag, Grader Hardware Kit
	7	1	LS9400003	Moldboard Pin (2" x 36")
	8	1	345690	Sleeve, Stop Cylinder
	9	1	LSGRA2053	Tongue Wldt, Bolt-On
	10	1	LS4000001	Jack, 5000 lb. Capacity
	11	1	E224133	Decal, SMV On Plate
	12	2	592240	Indicator Wldt, Steering
	13	1	592330	Plate, Level Reference
	14	1	592350	Plate, Level Indicator

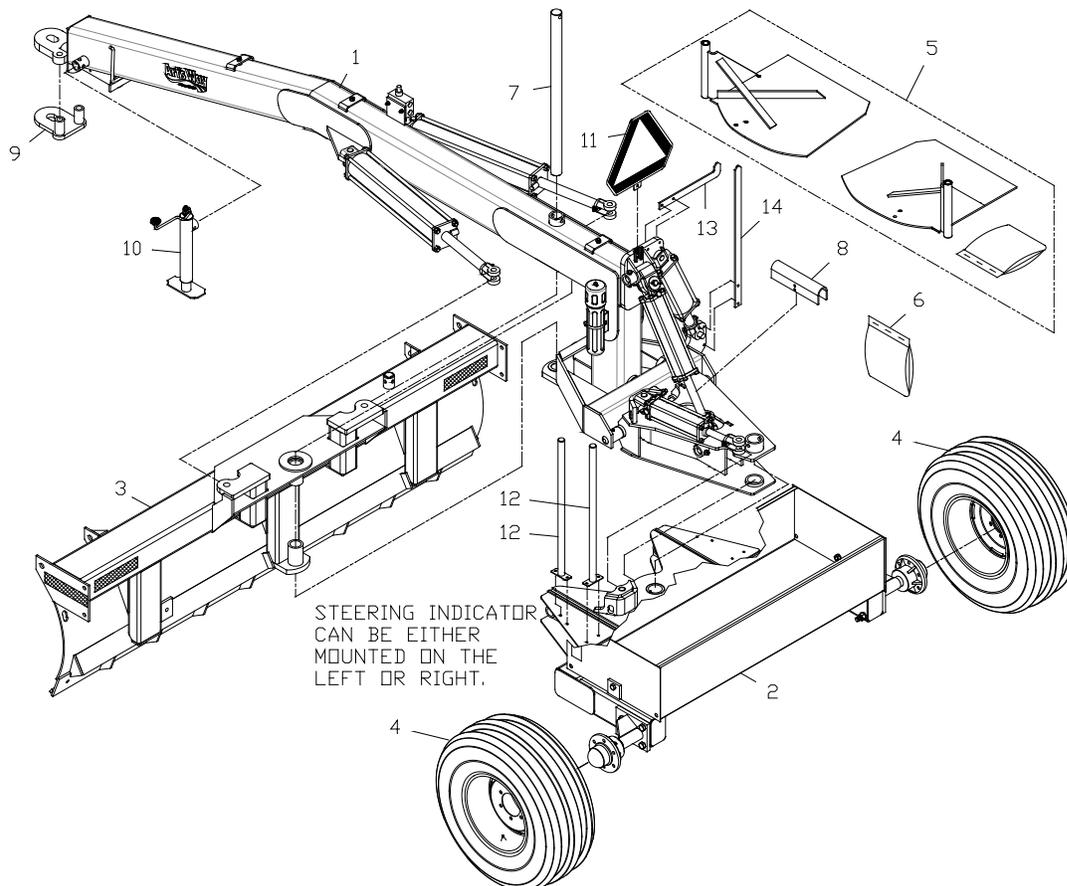


Figure 1. Grader Receipt

SET UP INSTRUCTIONS

Receipt Inspection for Kit

Below is a list of items that were shipped from the factory with your Art's-Way Rear Steer Grader Kit (P/N 592000).

The company recommends that this listing be used as a checklist to insure that all parts have been received with your Rear Steer Grader Kit.

Rec'd	Item	Qty.	Part Number	Description
	1	1	-	Steering Assembly, Rear Grader
	2	1	592020	Hardware Bag, Grader Rear Steer
	3	2	592460	Wheel and Tire Assembly
	4	1	592010	Manual, Grader Rear Steer Operator & IPL
	5	1	592130	Pin, Pivot Rear 1-1/2" x 27-1/2"
	6	2	592240	Indicator Wldt, Steering
	7	1	592330	Plate, Level Reference
	8	1	592350	Plate, Level Indicator
	9	1	LSGRA2061	Shaft, 1-1/2" Dia. x 6-1/4" (in Hardware Bag)
	10	2	592150	Pin, Rear 1-1/2" Dia. X 3-1/2" (in Hardware Bag)
	*	4	006690	Bolt, HHCS 3/8-16 x 1-1/4 Gr5 Zn (in Hardware Bag)
	*	4	037790	Bolt, HHCS 3/8-16 x 2 Gr5 Zn (in Hardware Bag)
	*	16	021190	Washer, Flat 3/8 Standard Zn (in Hardware Bag)
	*	8	073630	Nut, Lock 3/8-16 Hex Nylock (in Hardware Bag)
	*	4	037540	Nut, Lock 1/2-13 Hex Nylock (in Hardware Bag)
	*	4	990840	Bolt, HHCS 1/2-13 x 3 Gr5 Zn (in Hardware Bag)
	*	2	MP17.00564	Cable Tie – Blue (in Hardware Bag)
	*	2	MP17.00565	Cable Tie – Red (in Hardware Bag)
	*	2	MP17.00566	Cable Tie – Yellow (in Hardware Bag)
	*	2	149670	Tie, 3/16" x 11" Cable (in Hardware Bag)

Items Marked '**' Are Not Shown

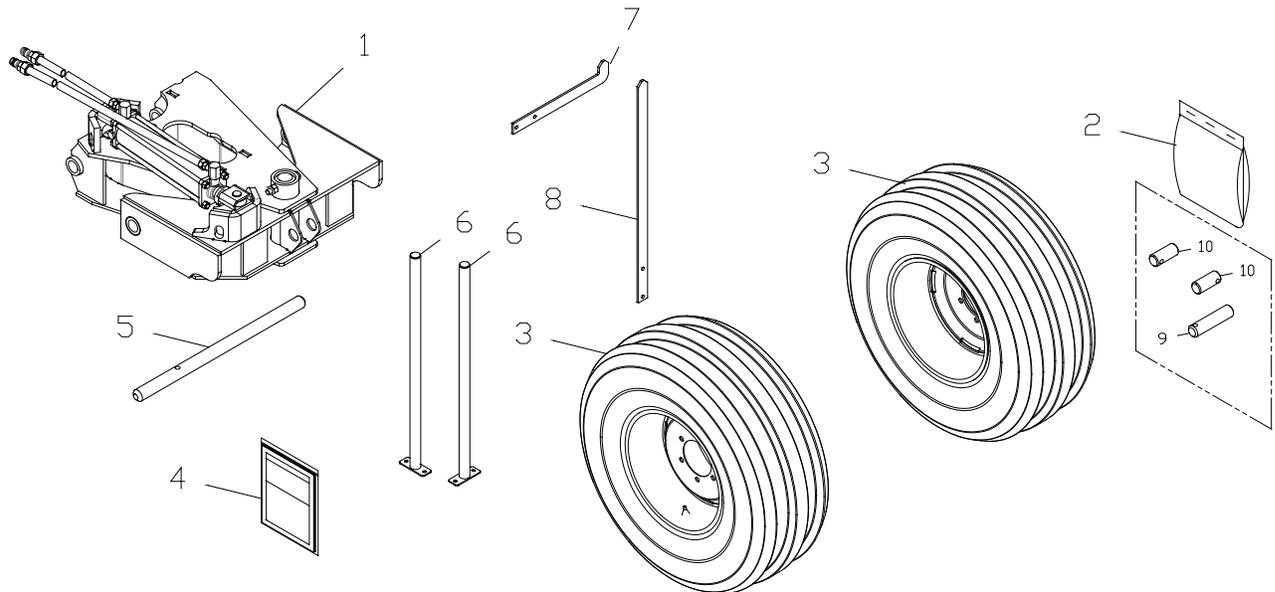


Figure 2. Rear Steer Grader Kit Receipt

SET UP INSTRUCTIONS

GRADER REAR STEER KIT ASSEMBLY ILLUSTRATION

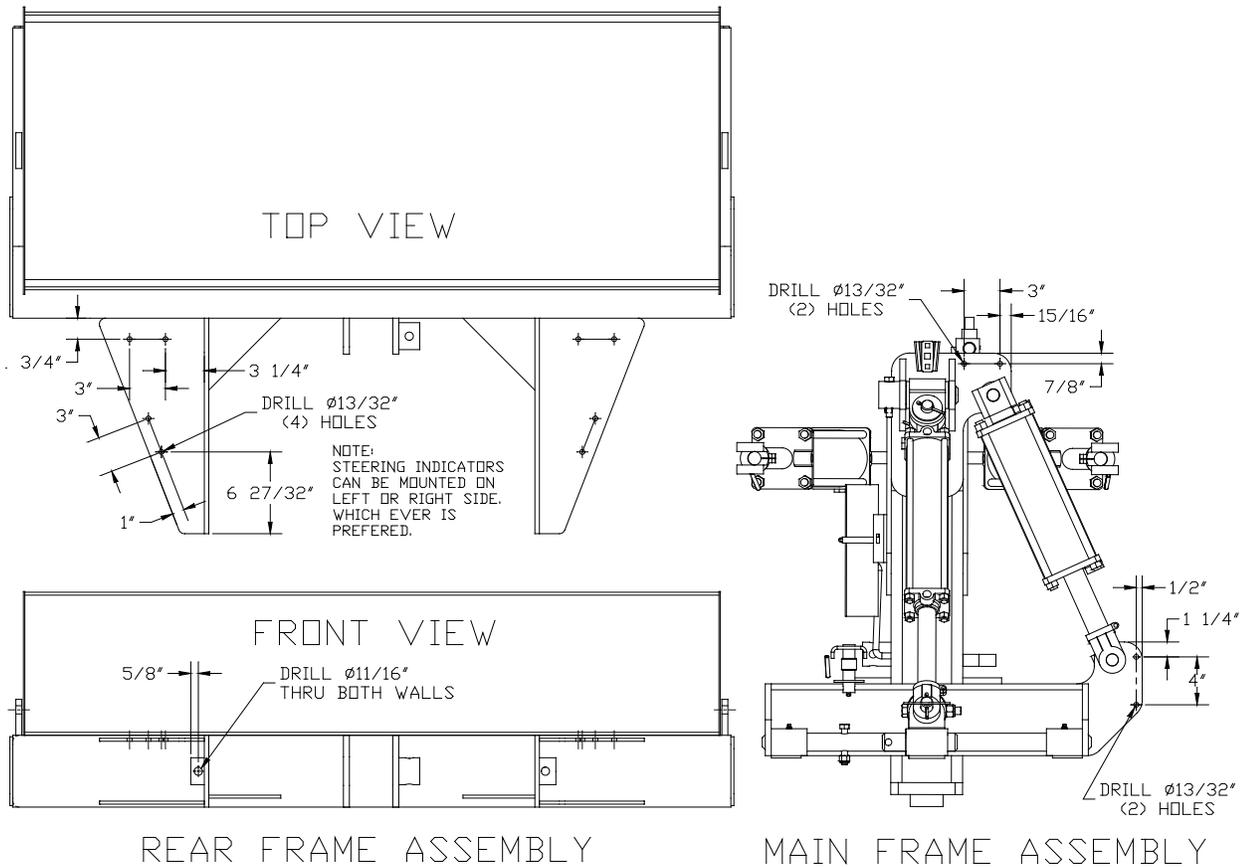


Figure 3. Rear Steer Grader Kit New Hole Locations for Indicators.

Item	Qty.	Part Number	Description
1	1	-	Steering Assembly, Rear Grader
2	2	592460	Wheel and Tire Assembly
3	1	592130	Pin, Pivot Rear 1-1/2" x 27-1/2"
4	2	592240	Indicator Wldt, Steering
5	1	592330	Plate, Level Reference
6	1	592350	Plate, Level Indicator
7	1+*	LSGRA2061	Shaft, 1-1/2" Dia. x 6-1/4"
8	2	592150	Pin, Rear 1-1/2" Dia. X 3-1/2"
9	4	006690	Bolt, HHCS 3/8-16 x 1-1/4 Gr5 Zn
10	4	037790	Bolt, HHCS 3/8-16 x 2 Gr5 Zn
11	16	021190	Washer, Flat 3/8 Standard Zn
12	8	073630	Nut, Lock 3/8-16 Hex Nylock
13	4+*	037540	Nut, Lock 1/2-13 Hex Nylock
14	4+*	990840	Bolt, HHCS 1/2-13 x 3 Gr5 Zn
15	2	MP17.00564	Cable Tie – Blue
16	2	MP17.00565	Cable Tie – Red
17	2	MP17.00566	Cable Tie – Yellow
-	2	149670	Tie, 3/16" x 11" Cable

Items Marked '*' Are Parts That Were Disassembled From Grader Earlier.

SET UP INSTRUCTIONS

GRADER REAR STEER KIT ASSEMBLY ILLUSTRATION

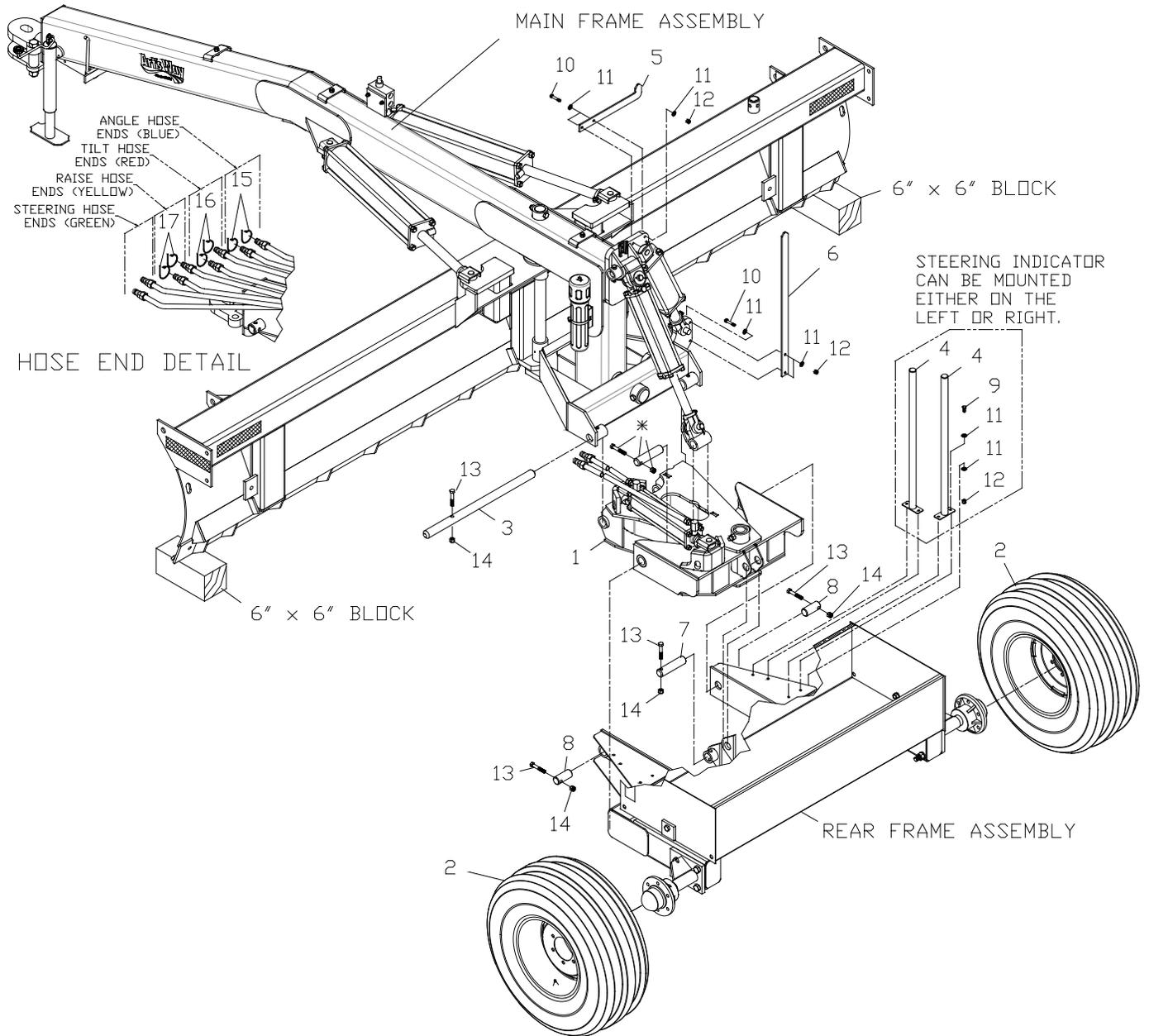


Figure 4. Rear Steer Grader Kit Assembly

SET UP INSTRUCTIONS



CAUTION: Follow the Assembly Safety items found in the Safety section of this manual. Use floor jack or overhead hoist as parts are heavy.

Set Up and Assembly of Rear Steer Grader

The Art's-Way Grader is shipped partially assembled from the factory. Refer to page 2, **Grader Hardware Assembly**, unless otherwise noted, for hardware and final assembly layout.

To complete assembly:

- Assemble Wheel and Tire Assemblies to the Rear Frame and Sandbox Assembly (See figure 1).
- Assemble the Rear Frame and Sandbox Assembly to the Tongue and Pivot Frame Assembly using the 2-1/2" x 10-3/4" Shaft and Hardware. Make certain to install the Spacer Washers on top and bottom of the Rear Frame and Sandbox Assembly. Attach the Lift Cylinder to the Rear Frame and Sandbox Assembly, and install the Lift Cylinder Lock. Attach the Steer Cylinder to the Rear Frame and Sandbox Assembly.
- Support the Grader Tongue and install the Moldboard Assembly using the Moldboard Pin and Hardware. Make certain to install the Spacer Washers on top and bottom of the Moldboard at this time. Attach the two 4x24" cylinders to the moldboard.
- Install the Tongue Weldment, Jack, Safety Chain, and SMV symbol to the tongue.
- Assemble the Box Ends to the Moldboard as desired for your application. See page 8 for Box End Assembly.
- Assemble Optional Gauge Wheels to Moldboard as desired for your applications. See page 16 for Gauge Wheel Assembly.

Set Up and Assembly of Rear Steer Grader Kit

The Art's-Way Rear Steer Grader Kit is shipped partially assembled from the factory. Refer to figure 4, **Grader Rear Steer Kit Assembly**, unless otherwise noted, for hardware and final assembly layout.

- Block Moldboard as shown with wood blocks as shown or other suitable material so moldboard is 5-1/2" to 6" off the ground.
- Support front portion of Rear Frame Assembly. Disconnect Rod End of Lift Cylinder from Rear Frame and Sandbox Assembly, set aside Shaft, Bolt, and Nut for use later. Remove the Old Pivot Pin that holds Rear Frame Assembly to Main Frame Assembly, and discard.
- Remove the Old Implement Wheel and Tire Assemblies from the Rear Frame and Sandbox Assembly.
- Assemble New Bias Steer Wheel and Tire Assemblies (Items #2) to the Rear Frame Assembly.
- Position and install Rear Steering Assembly (Item #1) to Main Frame Assembly with New Rear Pivot Pin (Item #3) and Hardware. Attach the Lift Cylinder to the Rear Steering Assembly with the Shaft and Hardware removed earlier.
- Attach the Rear Frame Assembly to the Rear Steering Assembly (Item #1) using the Shaft (Item #7) and Rear Pins (Item #8) and Hardware.
- Drill holes in Main Frame Assembly and Rear Frame Assembly as shown in figure 3.
- Assemble the Steering Indicators to the Rear Frame Assembly and Level Indicators to Main Frame Assembly as shown.
- Rout Steering Cylinder Hoses with existing hoses and secure with Hose Clamps and Cable Ties.
- Attach colored Cable Ties as shown to identify hoses.

SET UP INSTRUCTIONS

Preparation for Operation

Follow these step-by-step instructions and guidelines to prepare the grader safely and efficiently for operation:

- Fill the hydraulic system completely with hydraulic fluid and bleed free of all air. Smooth operation of the systems depends on a system completely purged of air.
- Test-cycle all hydraulics to insure a smooth operation of the grader. If rough operations are discovered, bleed and refill the hydraulic system as needed until smooth operation is attained.
- Grease seven points as noted in **Maintenance** section of this manual. Check wheel bearings for grease.
- Check all nuts, bolts, and cotter pins to be sure each is properly tightened and secured.
- Check tire pressure to attain cold pressure of 36 psi as indicated on the tire side wall.
- Fill the sandbox on the rear frame assembly with sand, dirt, concrete blocks or other weights as needed for your particular operation.
- Check the hydraulic fluid level in the tractor after the grader hydraulics has been purged. Refill to the proper operating level as necessary.

OPERATING INSTRUCTIONS

Rear Steer Grader

The rugged Art's-Way Rear Steer Grader Model LS900R, LS1200R, LS1400R, or LS1600R has been engineered and manufactured to meet the needs of the modern farmer. With the farm tractor, the Art's-Way Grader provides a quick and economical way to maintain terraces and waterways, level ground, clean out feedlots, rebuild ponds, grade roads, clean ditches, remove snow, maintain levies, level headlands, dig irrigation ditches, and many other jobs.

For dependable operation of the grader, there are few items to routinely check prior to use:

- Grease the seven grease points before each day's operation or after 8 hours of use.
- Check to be sure all hydraulic lines and fittings are secure and that no lines are crimped or worn. Tighten, adjust, and replace as necessary. Do not attempt to make temporary repairs to hydraulic lines.
- Check and be sure the hydraulic system is full of oil and free of air. A test cycle of all cylinders prior to beginning work is recommended.
- Check the cutting edge bolted to the blade to ensure that it has not worn to the point where the moldboard is being abraded thereby causing damage to the machine. Replacement cutting edges are available from your dealer.

Operation of the Grader is not a complex undertaking. A short familiarization with the machine will prove to make operation much easier.

- The lift cylinder will allow the Grader Blade to raise approximately 18" from the ground.
- The tilt cylinder will allow the Grader to adjust the blade angle side to side approximately 14° up or down.
- The two angle cylinders will allow the Grader to adjust the angle of the moldboard blade 43°, front to back.

- The steering cylinder will allow the rear frame assembly to pivot 29 ° left or right, extending the reach of the grader blade by slightly over 5 feet.

The Level Indicators (figure 5, white arrows) mounted to the Main Frame Assembly will help the operator level the blade after tilt operation.

The Steering Indicators (figure 5, red arrows) mounted to the Rear Frame Assembly will help the operator in adjusting the Grader steering.

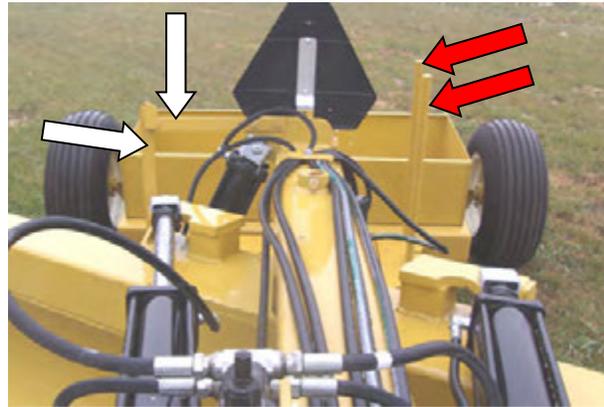


Figure 5. Level and Steering Indicators

When using the Grader as a blade, either pushing to the side or digging at an angle, always operate with the box ends up (figure 6) to avoid damage to the grader assembly. When using the Grader as a scraper and pulling straight, the box ends may be put down (figure 7) to hold more material in the moldboard. Always lock the box ends in place when either up or down.



Figure 6. Box ends locked in up position.

OPERATING INSTRUCTIONS



Figure 7. Box ends locked in down position.

The Rear Steer feature adds the ability to shift the Moldboard to the Left by extending the Steering Cylinder or to the Right by Retracting the Steering Cylinder (see figure 8).

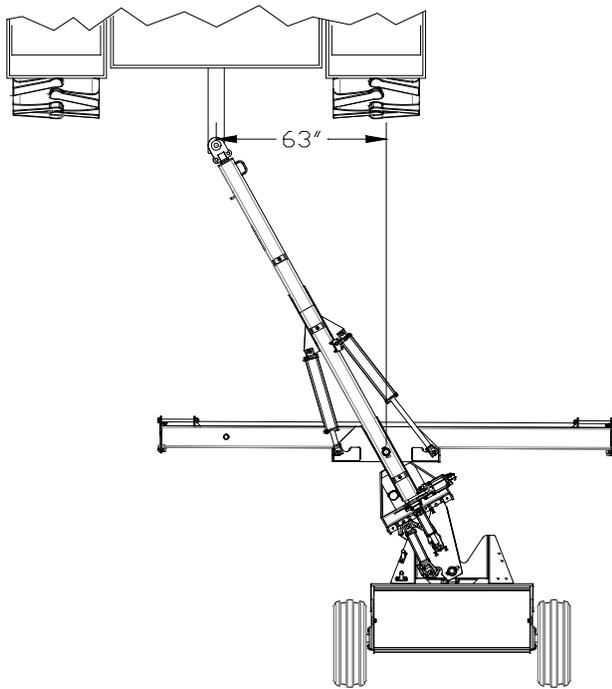


Figure 8. Steering Offset Operation.

Weight can be added to the Grader sandbox on the rear frame assembly if additional digging action is required. Additional weight will also help hold the grader from skidding to the side with the moldboard set at an angle. **DO NOT** add sideboards to the sandbox or hang additional weights from the rear of the grader, as overloading the Grader running gear will shorten the service life of these components.



Figure 9. Sandbox on rear frame assembly.

A mechanical safety stop is provided for placement on the lift cylinder when transporting or working on the machine (figure 10). When not in use the safety stop may be stored on the backside of the moldboard by pinning it to one of the shipping tabs.

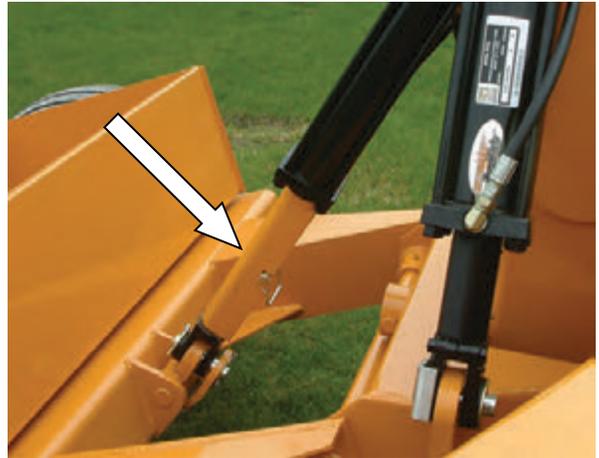


Figure 10. Lift cylinder mechanical safety stop.

The Jack can be rotated 90 degrees for transport storage (figure 11). It can also be stored on the top of the moldboard while the grader is in operation. This will help prevent the jack from being damaged when using the Grader.



Figure 11. Jack storage on moldboard.

OPERATING INSTRUCTIONS

Operation Safety



CAUTION: *Read and understand this section prior to operation of the Grader and follow all instructions when using the grader.*

- Keep all children and bystanders away from the Grader when in operation.
- Do not allow riders on the Grader at anytime.
- Use safe operating practices at all times.
- Keep all hydraulic lines, fittings and couplers tight and free of leaks.
- Be sure all safety decals and reflectors are mounted securely and are wiped clean before transporting. Comply with state and local laws governing highway safety when transporting machinery on a public road or highway.
- Before servicing, adjusting, repairing or lubricating the Grader, stop the tractor engine, place all controls in neutral, set the parking brake and remove the ignition key.
- Do not service the Grader with the Moldboard Blade in the raised position. Service the grader only when the blade is lowered to the ground, or supported on blocks with the lift cylinder stop installed.

MAINTENANCE

Maintenance & Repair

Proper and consistent maintenance is a key to long and satisfactory performance of the Grader.

Before servicing, adjusting, repairing or lubricating the Grader, stop the tractor engine, place all controls in neutral, set the parking brake and remove the ignition key.

Do not service the grader with the moldboard blade in the raised position. Service the grader only when the blade is lowered to the ground, or supported on blocks with the lift cylinder stop installed.

Hydraulics

Check and be sure the hydraulic system is full of oil and free of air. A test cycle of all cylinders prior to beginning work is highly advisable.

Check to be sure all hydraulic lines and fittings are secure and that no lines are crimped or worn. Tighten, adjust, and replace as necessary. Do not attempt to make temporary repairs to hydraulic lines.

Lubrication

Grease the seven grease points before each day's operation or every 8 hours of operation with SAE multi-purpose type grease.

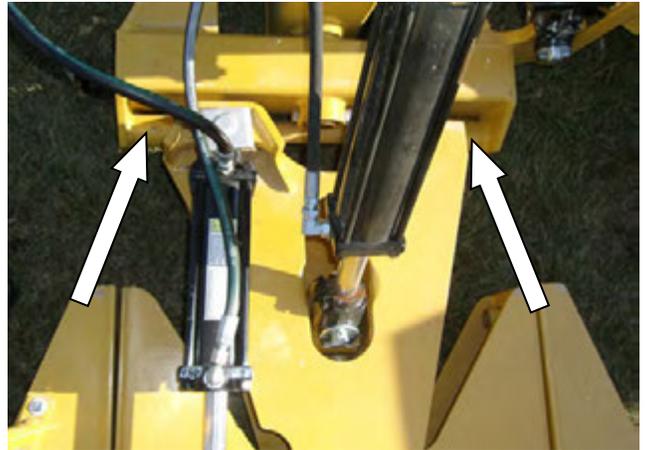


Figure 12. Lift pivot zerks (2).

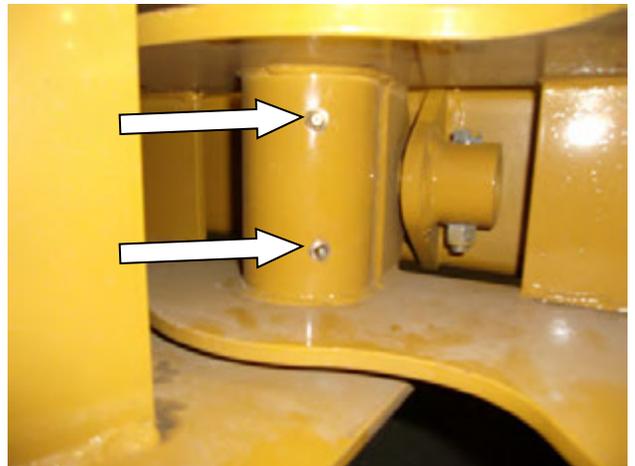


Figure 13. Steering pivot zerks (2).

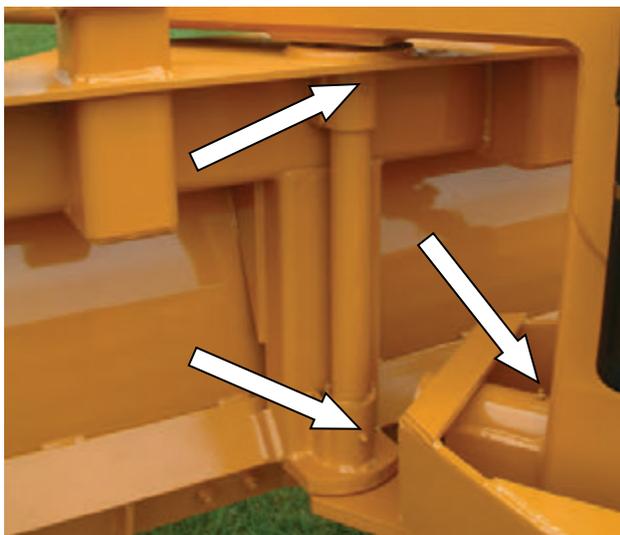


Figure 11. Moldboard pivot (2) and tilt (1) zerks.

MAINTENANCE

Wheel Bearings

Clean and repack wheel bearings once a year or every 100 hours of operation with SAE multi-purpose type wheel grease. To access the wheel bearings:

1. Raise the wheel off the ground.
2. Remove hub cap and pull cotter pin from the slotted nut.
3. Remove slotted nut, hub and bearing cones.
4. Clean all parts thoroughly and inspect for damage or wear. Replace worn or damaged parts as necessary.
5. Pack bearing and hub with SAE multi-purpose type wheel grease.
6. Reinstall parts in the opposite order that they were taken off. Tighten the slotted nut only until a slight drag is felt on the wheel bearings.

Paint all parts which have chipped or require painting.

Inspect Grader for broken or missing parts. See your dealer during the off season, so that parts or service can be obtained when the machine is not needed in the field.

Cap the hydraulic hose ends and store them in the hose bracket on the side of the Grader tongue. **DO NOT** let the hose ends lay on the ground.

Store Grader under cover with all parts in good operating condition.



Figure 14. Hub and Wheel Bearing.

Service at the End of the Season

When work is completed for the season, clean the implement thoroughly to remove dirt and trash which would hold moisture and cause rusting. Be especially observant of possible moisture retention in the Sandbox.

Clean and repack the wheel bearings with grease annually.

Specifications

General Specifications	LS900R	LS1200R	LS1400R	LS1600R
Blade Width	9'	12'	14'	16'
Grader Width (Transport)	7' 4"	9' 7"	11'	12' 5"
Overall Length	18' 7"	18' 7"	18' 7"	18' 7"
Blade Angle	43°	43°	43°	43°
Blade Tilt	15°	15°	15°	15°
Blade Height	30"	30"	30"	30"
Steer Max. Angle	29°	29°	29°	29°
Blade Offset Distance with Steer	Up to 63"	Up to 63"	Up to 63"	Up to 63"
Blade Cutting Edge	Replaceable	Replaceable	Replaceable	Replaceable
Blade Box Ends	Standard	Standard	Standard	Standard
Blade Gauge Wheels	Optional	Optional	Optional	Optional
Clearance to Ground	15"	15"	15"	15"
Transport Width Unpinned	7' 9"	8' 4"	9'	9' 8"
Weight Box Size	23 x 58 x 12			
Hydraulic Remotes (4) (3 for blade) (1 for steer)	Angle Raise Tilt Steer	Angle Raise Tilt Steer	Angle Raise Tilt Steer	Angle Raise Tilt Steer
Tires	2 – 11L x 15 3-Rib Bias Steer			
Hubs	6- bolt	6- bolt	6- bolt	6- bolt
HP Required	40 – 150	60 – 180	80 – 200	100 – 220
Total Weight	2920 lbs.	3160 lbs.	3320 lbs.	3575 lbs.
Tongue Weight	521 lbs.	607 lbs.	664 lbs.	736 lbs.
Tongue Tube Size	8 x 6 x 5/16			

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