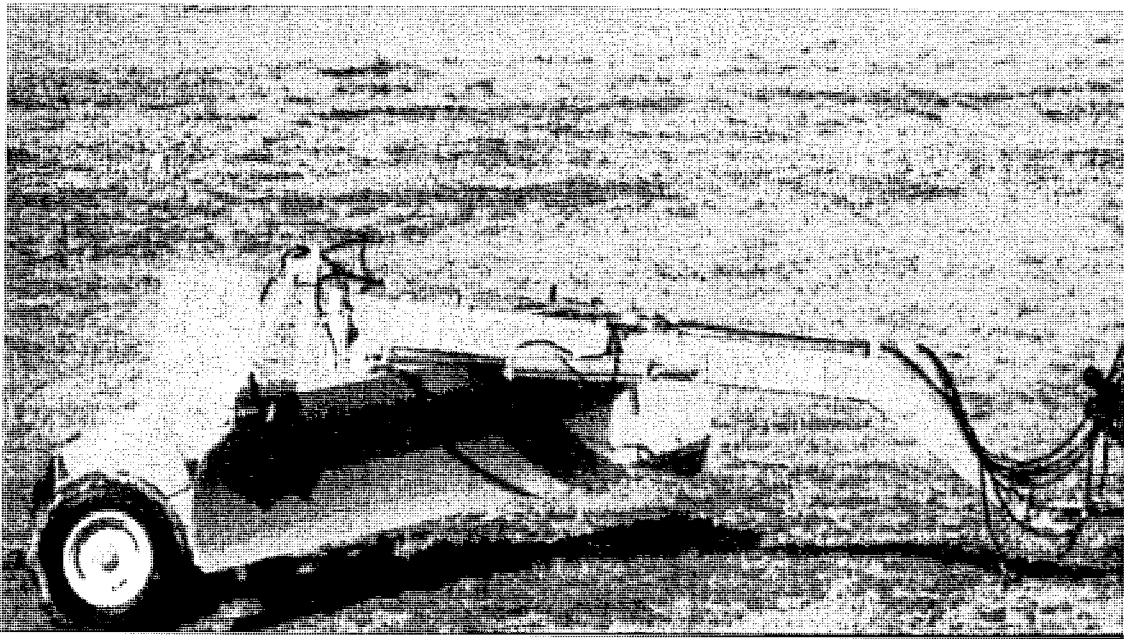


Art's-Way / LANDSTAR

LS900, LS1200, and LS1400

Grader

Illustrated Parts List
Set Up Instructions
and
Operating Instructions



Art's-Way Manufacturing Co., Inc.

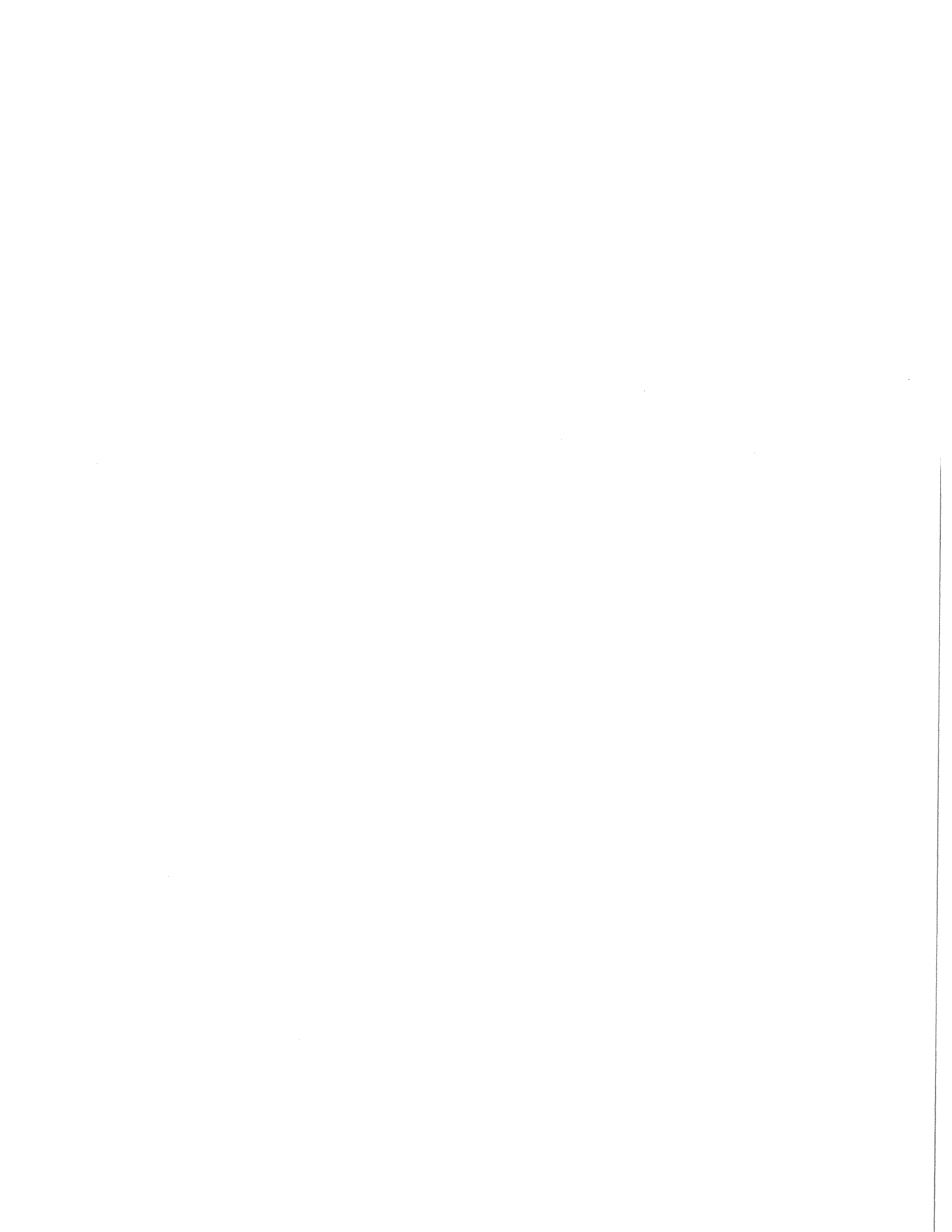


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LIMITED WARRANTY

Art's-Way Manufacturing Co., Inc. warrants the products it sells to be free from defects in material and workmanship for a period of one (1) year after the date of delivery to the first purchaser, subject to the following conditions:

- **Art's-Way Manufacturing Co., Inc.** obligation and liability under this warranty is to repair or replace (at the company's option) any parts which, upon manufacture, were defective in material or workmanship.
- All parts and repairs under this warranty shall be supplied at an authorized **Art's-Way Manufacturing Co., Inc.** dealer or at the factory, at the option of **Art's-Way Manufacturing Co., Inc.**
- **Art's-Way Manufacturing Co., Inc.** warranty does not extend to parts and elements not manufactured by **Art's-Way Manufacturing Co., Inc.** and which carry the warranty of the other manufacturer.
- Transportation or shipping to an authorized dealer for necessary repairs is at the expense of the purchaser.
- **Art's-Way Manufacturing Co., Inc.** makes no other warranty expressed or implied and makes no warranty of merchantability or fitness for any particular purpose beyond that expressly stated in this warranty. **Art's-Way Manufacturing Co., Inc.** liability is limited to the terms set forth in this warranty and does not include any liability for direct, indirect, incidental or consequential damages or expenses of delay and the Company's liability is limited to repair or replacement of defective parts as set forth herein.
- Any improper use, and maintenance, including operation after discovery of defective or worn parts, operation beyond the rated capacity, substitution of parts not approved by **Art's-Way Manufacturing Co., Inc.** or any alteration or repair by other than an authorized **Art's-Way Manufacturing Co., Inc.** dealer which affects the product materially and adversely, shall void this warranty.
- No dealer, employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of **Art's-Way Manufacturing Co., Inc.** at its home office.
- Some states do not allow limitations on how long an implied warranty lasts or exclusions of, or limitations on relief such as incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you the specific legal rights and you may have other rights which vary from state to state.

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

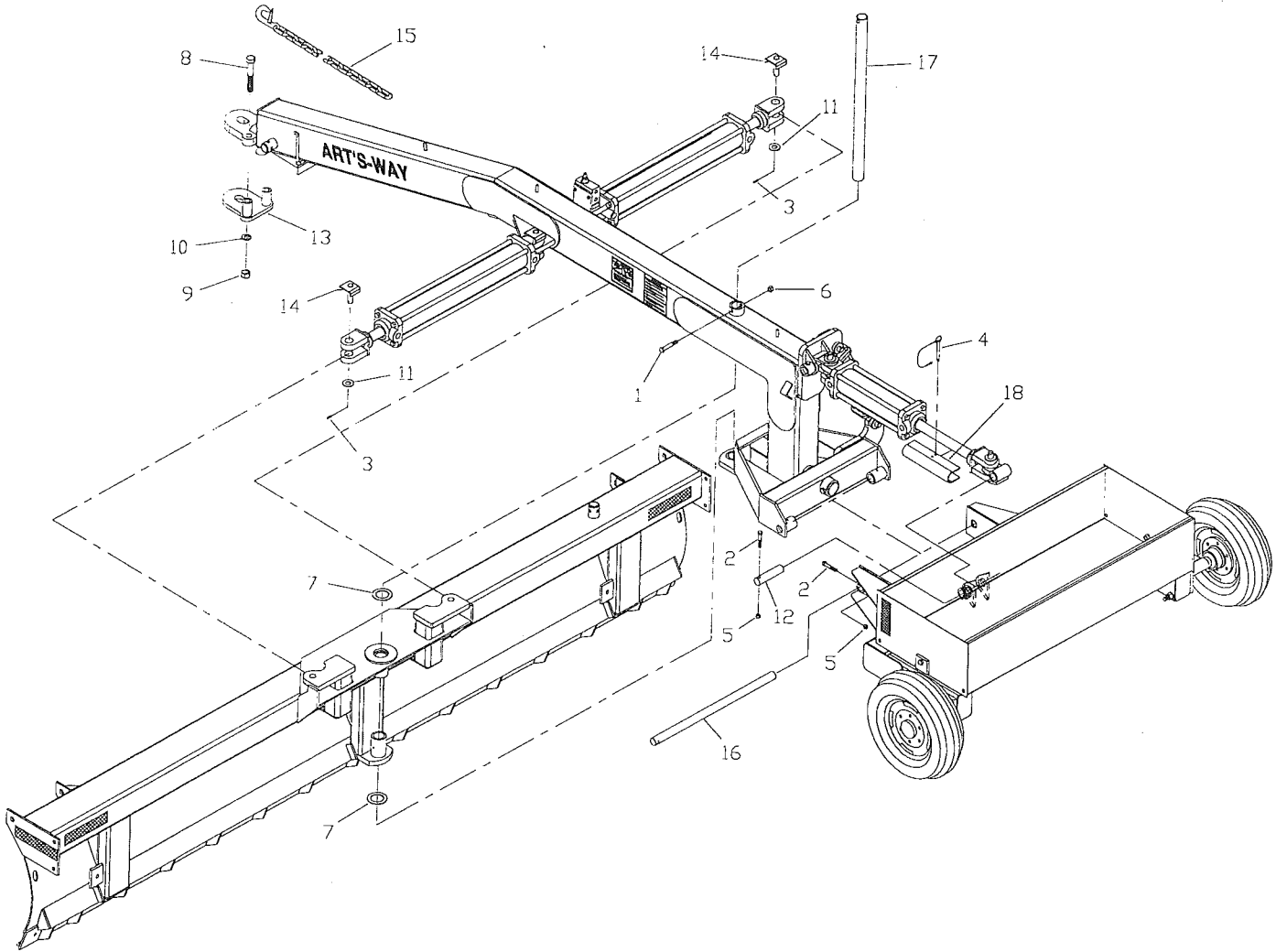
- Use adequate manpower to perform assembly procedures safely.
- Assemble the grader in an area with sufficient space to maneuver the largest components and allow easy access to all sides of the machine.
- Use only forklifts, lift cranes, jacks and tools with sufficient capacity for the loads.
- **Do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

Remember:

The Best Operator is a Safe Operator

GRADER HARDWARE ASSEMBLY

Hardware Kit LS2000029

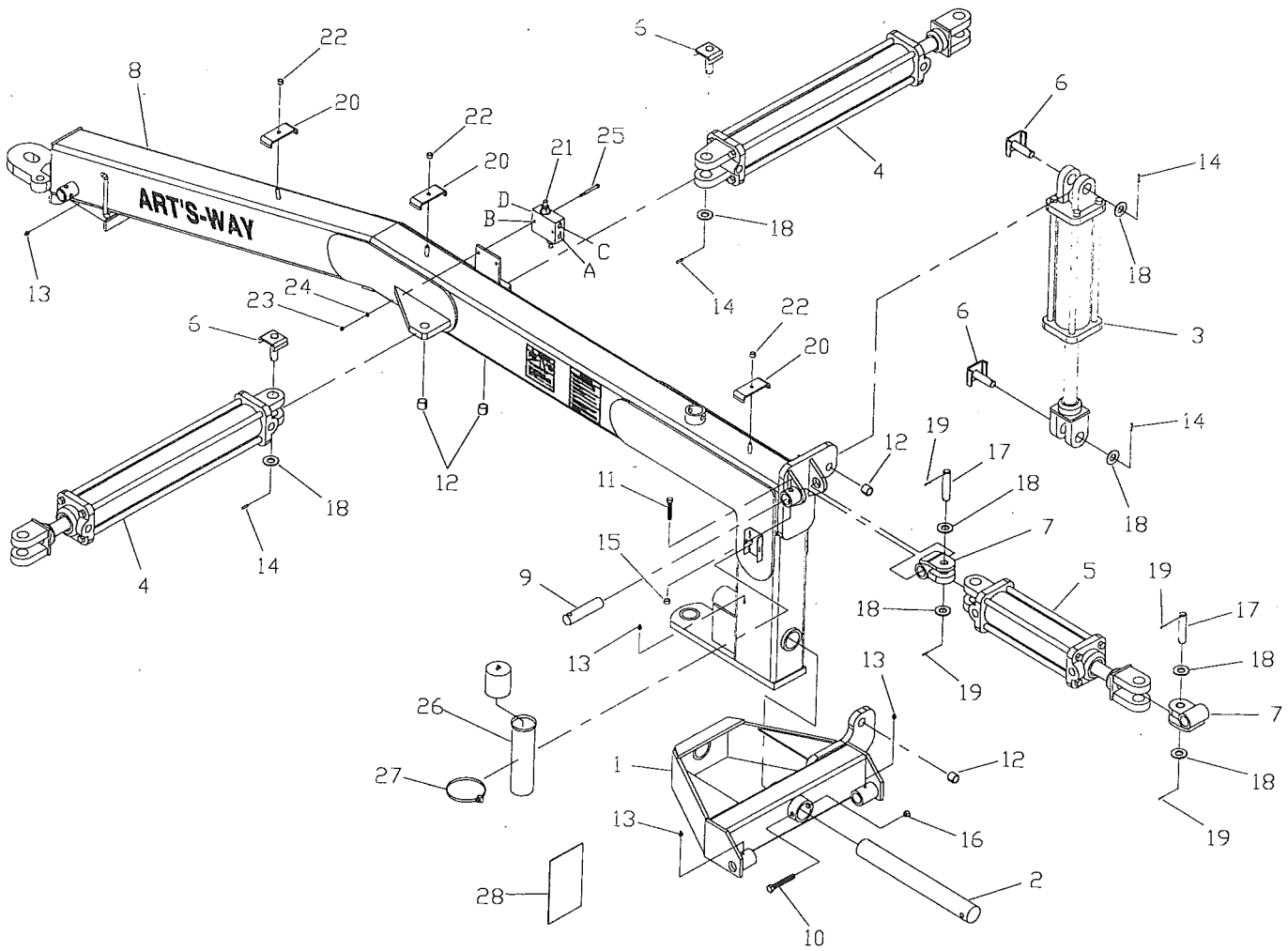


GRADER HARDWARE ASSEMBLY
Hardware Kit LS2000029

ITEM	ITEM NO.	QTY	DESCRIPTION
1	J19H2969	1	Bolt, HHCS 5/8-11 x 3-1/2 Gr.5
2	990840	2	Bolt, HHCS 1/2-13 x 3 Gr.5
3	J34H334	2	Pin, Roll 5/16 x 2
4	R18660	1	Pin, Snapper 5/16 x 2-3/4
5	037540	2	Nut, Lock 1/2-13
6	I19508R1	1	Nut, Lock 5/8-11
7	U10200163	2	Washer, Machine 2.0 x .135
8	J08H4722	2	Bolt, HHCS 1-8 x 6-1/2 Gr.8
9	J14H805	2	Nut, Hex 1-8
10	003350	2	Washer, Lock 1.0
11	990720	2	Washer, Flat 1.0
12	LSGRA2061	1	Shaft, 1-1/2 x 6-1/4
13	LSGRA2053	1	Hitch Wldt, Bolt-On
14	LSGRA1600	2	Pin Wldt, Cylinder
15	1765302	1	Chain, Safety 5/16 x 5'
16	LS9400004	1	Pin, Pivot Rear, 1-1/2 x 31
17	LS9400003	1	Pin, Pivot Main, 2 x 36
18	LS9300057	1	Stop, Cylinder 12" Transport

GRADER FRAME ASSEMBLY

Basic Unit 500650

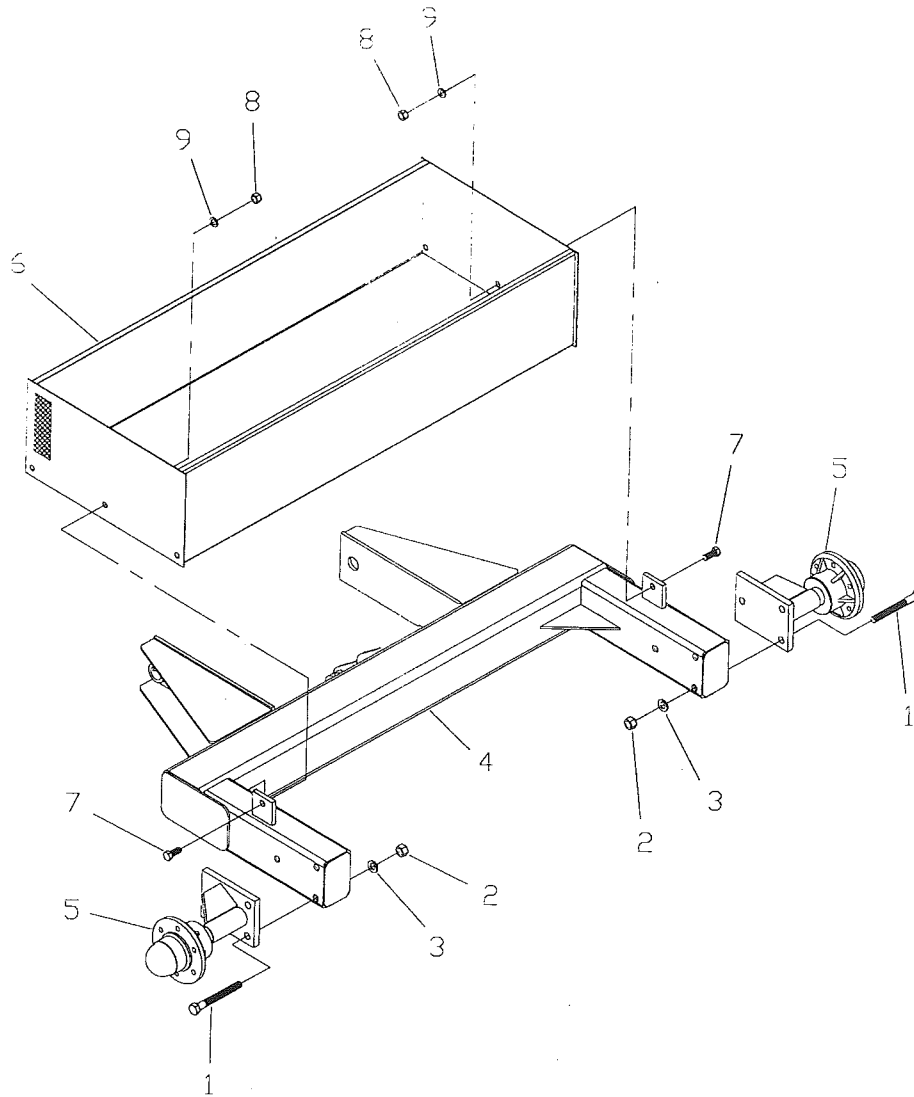


GRADER FRAME ASSEMBLY
Basic Unit 500650

QTY	PART NUMBER	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
	493580	-	Seal Kit, 4" Cylinder
4	LS4000228	2	Cylinder, Hydraulic Pivot, 4 x 24
	493580	-	Seal Kit, 4" Cylinder
5	LS4000027	1	Cylinder, Hydraulic Lift, 3 x 12
	Prinoc 493590 or 597620		Seal Kit, 3" Cylinder
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	4	Fitting, Zerk 1/8-27 Taper
14	J34H334	4	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	4	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	493290	1	Manual, Landstar Grader

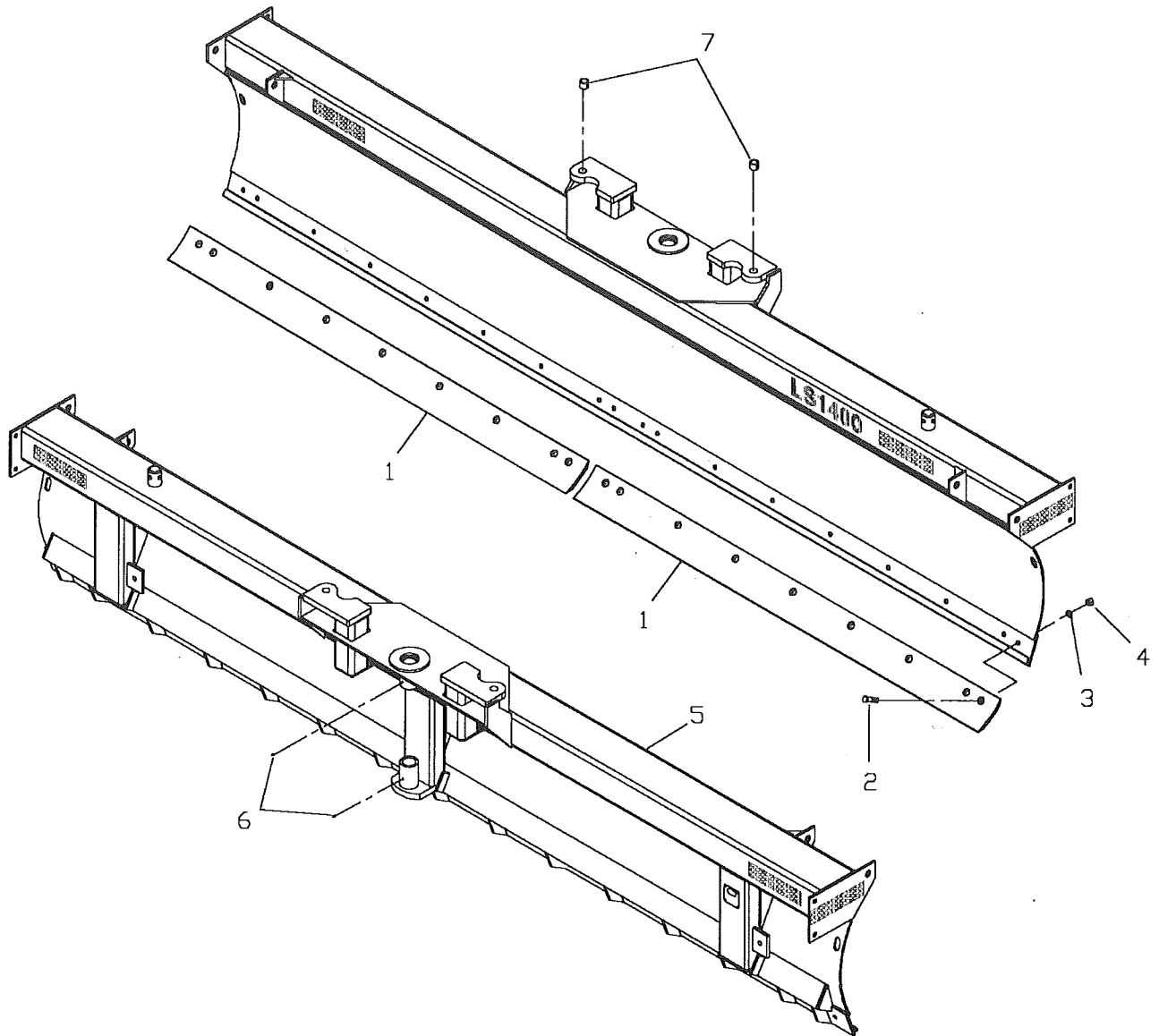
REAR FRAME ASSEMBLY

Sandbox and Running Gear 500760



1	G146711	6	Bolt, HHCS 3/4-10 x 6 Gr.8
2	JN135098	6	Nut, Hex 3/4-10 Gr.8
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

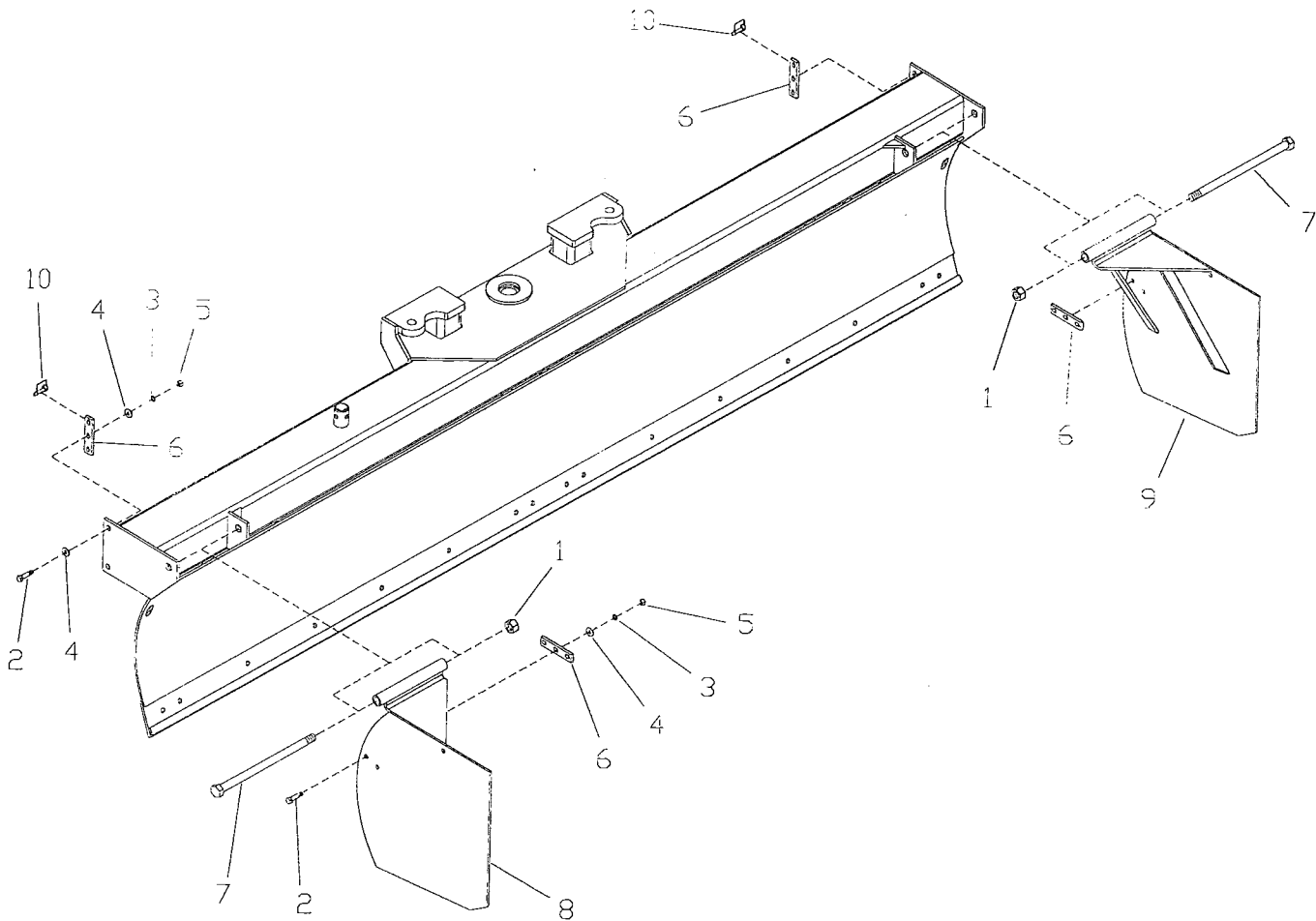
MOLDBOARD ASSEMBLY
 9' - 511000, 12' - 500670, 14' - 500850



1	LS4000125	-	2	-	Edge, Cutting 6'
	LS4000126	-	-	2	Edge, Cutting 7' (shown)
	511020	1	-	-	Edge, Cutting 9'
2	500550	11	16	18	Bolt, Plow 5/8-11 x 2 Gr.8
3	020440	11	16	18	Washer, Lock 5/8
4	I124589	11	16	18	Nut, Hex 5/8-11
5	511010	1	-	-	Moldboard Weldment, 9'
	LSGRA2063	-	1	-	Moldboard Weldment, 12'
	LSGRA2058	-	-	1	Moldboard Weldment, 14' (shown)
6	JJD7798	2	2	2	Fitting, Zerk 1/8-27 Taper
7	V180220	2	2	2	Bushing, Tension

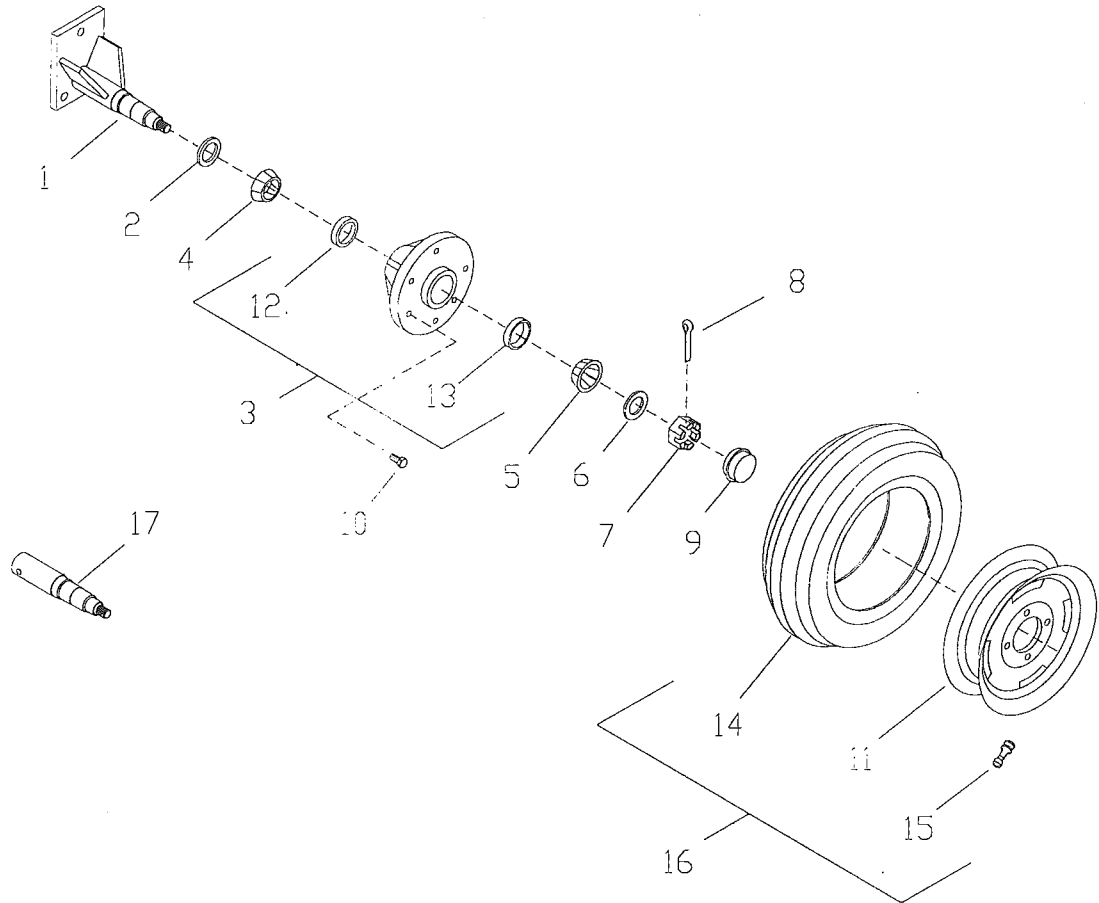
BOX END SET ASSEMBLY

Right and Left Sides LS2000019



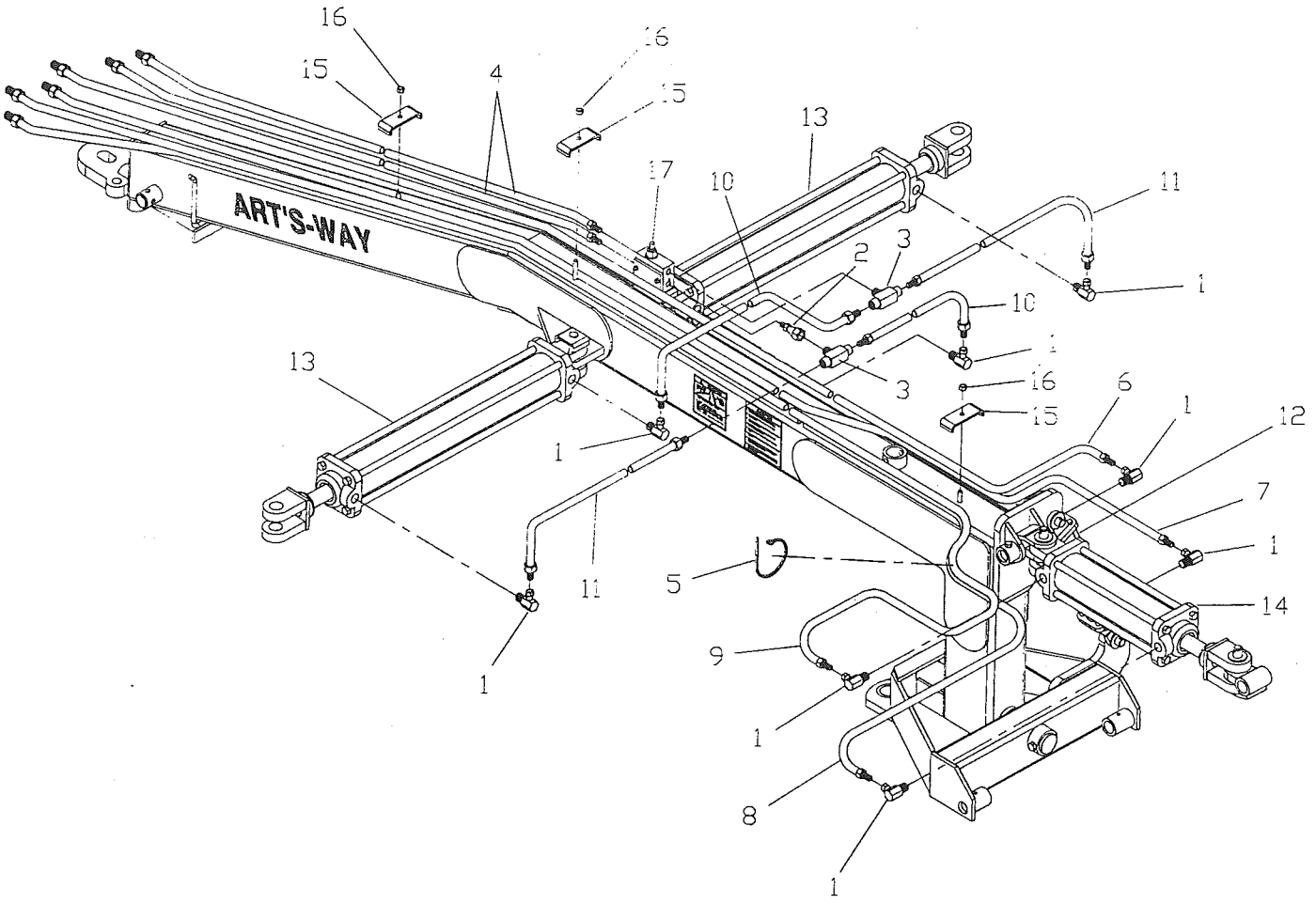
PART NUMBER		DESCRIPTION	
1	J14H805	2	Nut, Hex 1-8 Gr5
2	014770	6	Bolt, HHCS ½-13 x 1-½ Gr5
3	005370	6	Washer, Lock ½
4	005200	8	Washer, Flat ½
5	005360	6	Nut, Hex ½-13 Gr5
6	LSGRA1941	4	Bracket, Box End
7	LSGRA1784	2	Pin Wldt, Box End
8	500730	1	Plate Wldt, RH Box End
9	500740	1	Plate Wldt, LH Box End
10	143710	2	Pin, Snapper 3/8 x 2-1/2

WHEEL & AXLE ASSEMBLY



ITEM	PART NO.	LSGRA1970 Grader	LS4000089 Gage Wheel	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	LS4000085	1	1	Rim, 10 x 15 6 Bolt
12	U51200010	1	1	Cup, Bearing Inner
13	U51200006	1	1	Cup, Bearing Outer
14	I1980927C1	1	1	Tire, 11L-15 8-PLY Utility
15	164420	1	1	Stem, Valve Core & Cap
16	500770	1	1	Wheel & Tire Assembly
17	LSGRA1595	-	1	Spindle, Gage Wheel

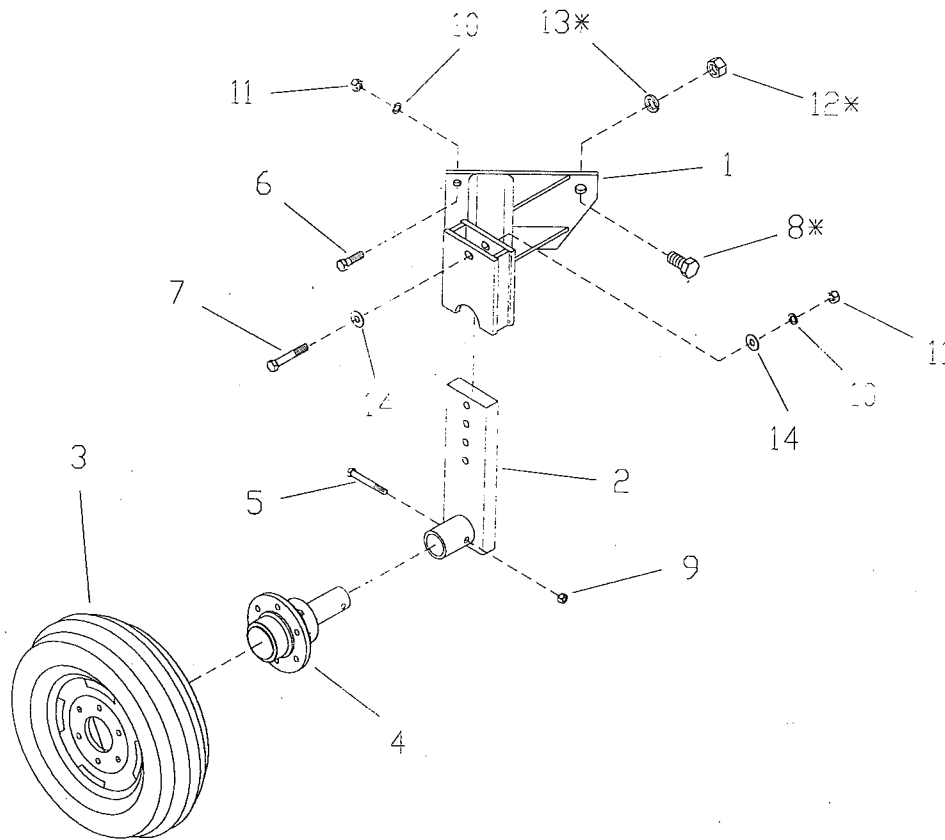
HYDRAULIC ASSEMBLY
Fittings Kit LS5000108, Hose Kit LS5000019



HYDRAULIC ASSEMBLY
Fittings Kit LS5000108, Hose Kit LS5000019

ITEM	DESCRIPTION	QTY	DESCRIPTION
1	LS5000027	8	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	U50300372	2	Hose, 3/8 x 120 w/ 1/2 NPT
5	149670	1	Tie, Cable 3/16 x 11
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 226 w/ 3/8 NPT x 1/2 NPT
9	LS5000462	1	Hose, 3/8 x 212 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
	393580	-	Seal Kit, 4" Cylinder
13	LS4000228	2	Cylinder, Hydraulic Pivot, 4 x 24
	493580	-	Seal Kit, 4" Cylinder
14	LS4000027	1	Cylinder, Hydraulic Lift, 3 x 12
	493590	-	Seal Kit, 3" Cylinder
15	LSGRA1813	3	Clamp, Hydraulic Line
16	127890	3	Nut, Lock 1/2-13 Top
17	LS4000097	1	Valve, Hydraulic Cushion

BLADE GAUGE WHEEL ASSEMBLY

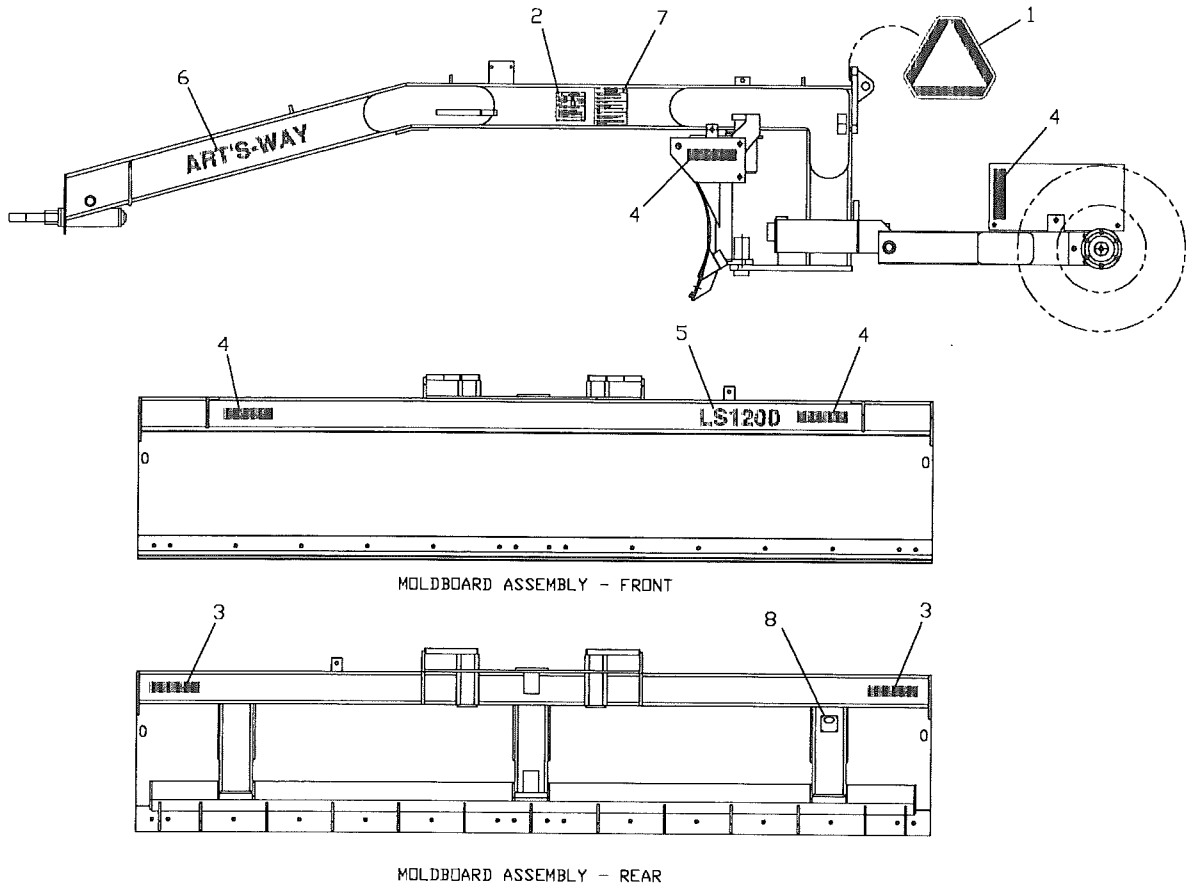


ITEM	DESCRIPTION	LSG000008	LSG2000037	DESCRIPTION
1	LSGRA1593	1	-	Bracket Wldt, RH Gauge Wheel (Shown)
1	502550	-	1	Bracket Wldt, LH Gauge Wheel
2	LSGRA1594	1	1	Arm Wldt, Gauge Wheel
3	500770	1	1	Wheel & Tire Assembly (See Pg. 8)
4	LS4000089	1	1	Hub & Axle Assembly (See Pg. 8)
5	1770608	1	1	Bolt, HHCS 1/2-13 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 1/2-13 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

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

DECAL LOCATION

Decal Kit 500790



Item #	Part Number	Quantity	Quantity	Quantity	Description
1	E224138	1	1	1	Decal, SMV on Plate
2	346310	2	2	2	Decal, Warning High Pressure Fluid
3	476450	2	2	2	Decal, Red Retroreflective
4	476460	6	6	6	Decal, Yellow Retroreflective
5	511030	1	-	-	Decal, Grader LS900
	493470	-	1	-	Decal, Grader LS1200 (shown)
	493480	-	-	1	Decal, Grader LS1400
6	493600	2	2	2	Decal, Art's Way
7	500780	1	1	1	Decal, Caution Grader Operation
9	355500	1	1	1	Tag, Serial Number
	204510	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
	G202850	-	-	-	Paint, Prairie Gold 1 Quart

SET UP INSTRUCTIONS

Receipt Inspection

Below is a list of items that were shipped from the factory with your Art's-Way 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.

Received	Quantity			Part Number	Description
	LS900	LS1200	LS1400		
	1	1	1	500650	Basic Unit, Grader Tongue and Pivot Assembly
	1	1	1	500760	Rear Frame and Sandbox Assembly
	1	-	-	511000	Moldboard Assembly, 9' Grader
	-	1	-	500670	Moldboard Assembly, 12' Grader
	-	-	1	500850	Moldboard Assembly, 14' Grader
	2	2	2	500770	Wheel and tire assembly
	1	1	1	LS2000019	Box End Set (RH and LH) w/Hardware Bag
	1	1	1	LS2000029	Bag, Grader Hardware Kit
	1	1	1	LS9400003	Moldboard Pin (2" x 36")
	1	1	1	LS9400004	Frame Lift Pin (1-1/2" x 31")
	1	1	1	LS9300057	Stop, Lift Cylinder Transport Lock
	1	1	1	LSGRA2053	Tongue Wldt, Hitch
	1	1	1	LS4000001	Jack, 5000 lb. Capacity
	1	1	1	E224138	Decal, SMV On Plate
	1	1	1	LS2000018	RH Gauge Wheel (Optional) w/Hardware Bag
	1	1	1	LS2000017	LH Gauge Wheel (Optional) w/Hardware Bag

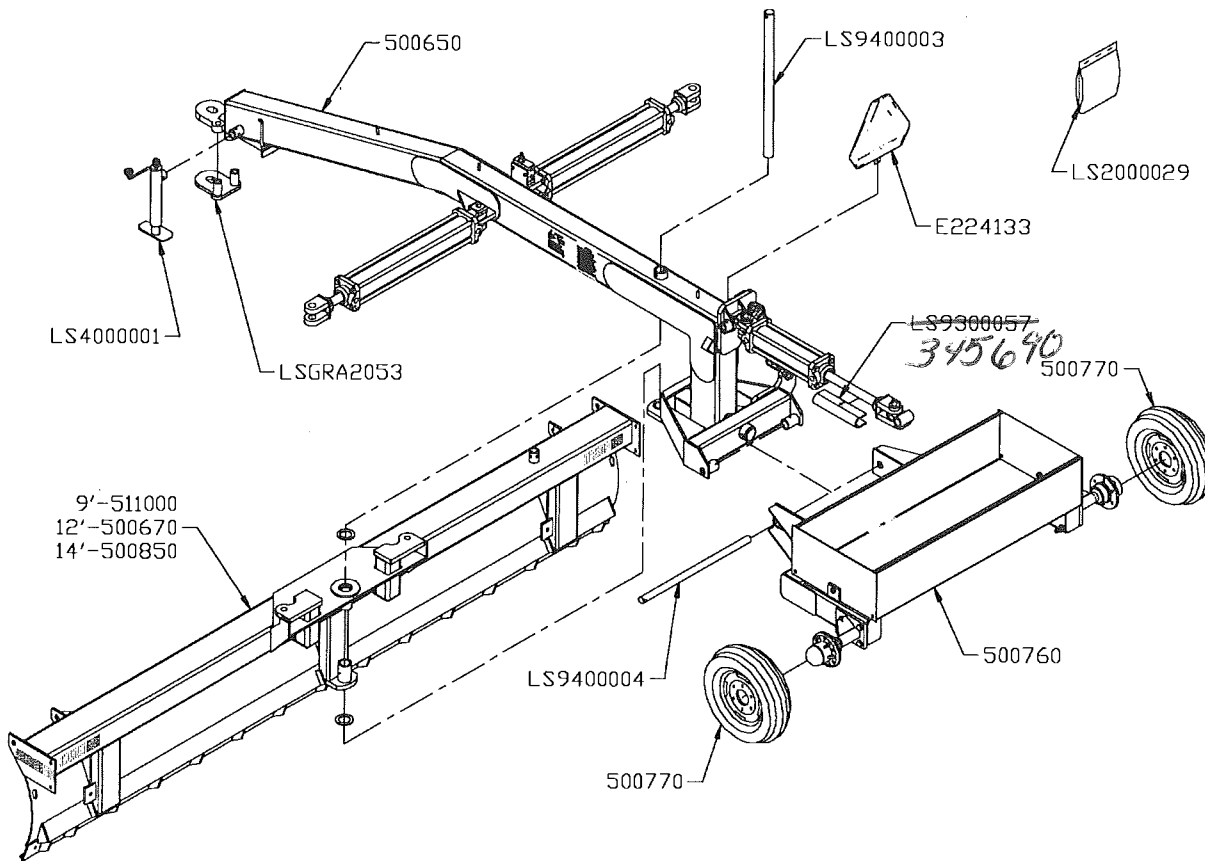


Figure 1. Grader Receipt and Setup Assembly

SET UP INSTRUCTIONS



CAUTION: Follow the Assembly Safety items found in the Safety section of this manual.

Set Up and Assembly

The Art's-Way Grader is shipped partially assembled from the factory. Refer to page 1 **Grader Assembly** for hardware and final assembly layout. To complete assembly:

- Assemble wheel and tire assemblies to the rear frame assembly (See figure 1).
- Assemble the rear frame to the tongue and pivot frame assembly using the frame lift pin and hardware. Attach the lift cylinder to the rear frame and install the lift cylinder lock.
- 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 7 for box end assembly.
- Assemble optional gauge wheels to moldboard as desired for your applications. See page 11 for gauge wheel assembly.

Preparation for Operation

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

- Install six hydraulic couplers (not provided) on the ends of the hoses for proper tractor hookup.
- 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 five 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 have been purged. Refill to the proper operating level as necessary.

OPERATING INSTRUCTIONS

Grader

The rugged Art's-Way Grader Model LS900, LS1200, or LS1400 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 five 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 to raise approximately 14" 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 40° front to back.

When using the Grader as a blade, either pushing to the side or digging at an angle,

always operate with the box ends up to avoid damage to the grader assembly. When using the Grader as a scraper and pulling straight, the box ends may be put down to hold more material in the moldboard. Always lock the box ends in place when either up or down.

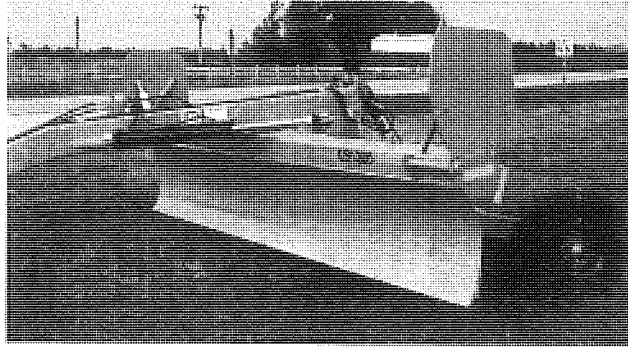


Figure 2. Box ends locked in up position.

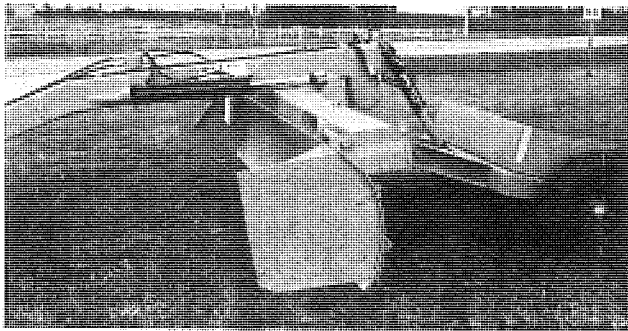


Figure 3. Box ends locked in down position.

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.

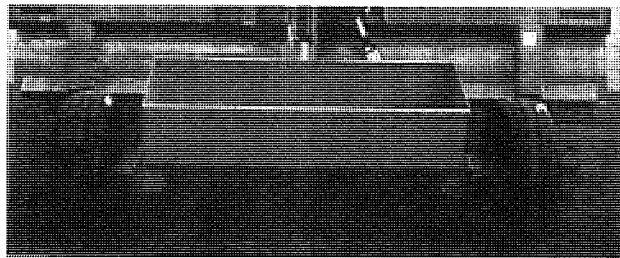


Figure 4. Sandbox on rear frame assembly.

OPERATING INSTRUCTIONS

Operation Safety

A mechanical safety stop is provided for placement on the lift cylinder when transporting or working on the machine. 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 5. Lift cylinder mechanical safety stop.

The jack can be rotated 90 degrees for transport storage. 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.

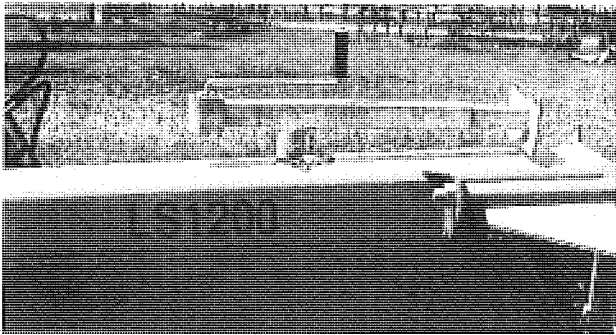


Figure 6. Jack storage on moldboard.

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

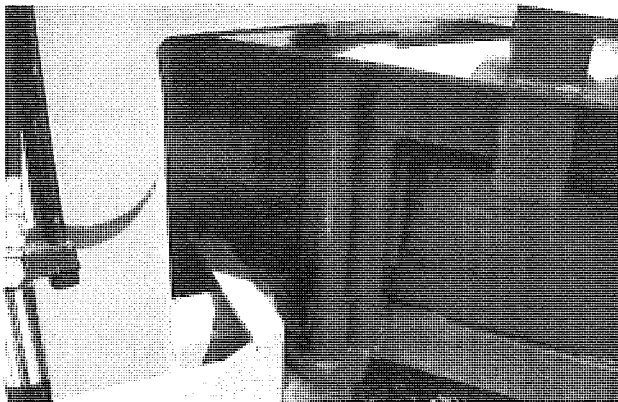


Figure 7. Moldboard pivot (2) and tilt zerks.



Figure 8. Lift pivot zerks (2).



Figure 9. Tongue pivot zerk.

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.

MAINTENANCE

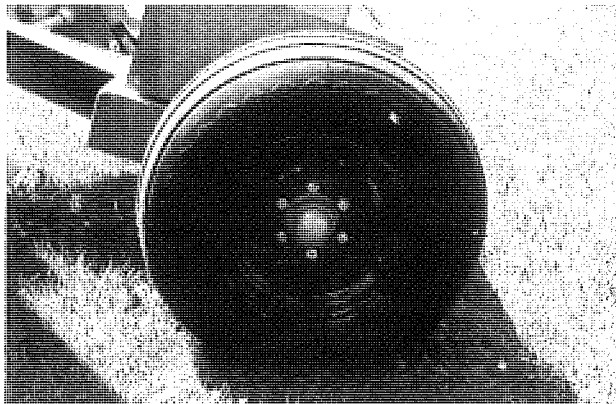


Figure 10. Hub and wheel bearing.

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.

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.

Specifications

General Specifications	LS900	LS1200	LS1400
Blade Width	9'	12'	14'
Grader Width (Transport)	7' 9"	8' 11"	10' 11"
Overall Length	17' 5"	17' 5"	17' 5"
Blade Angle	42°	42°	42°
Blade Tilt	15°	15°	15°
Blade Height	30"	30"	30"
Blade Cutting Edge	Replaceable	Replaceable	Replaceable
Blade Box Ends	Standard	Standard	Standard
Blade Gauge Wheels	Optional	Optional	Optional
Clearance to Ground	15"	15"	15"
Transport Width Unpinned	7' 9"	8' 4"	9'
Weight Box Size	23 x 58 x 12	23 x 58 x 12	23 x 58 x 12
Hydraulic Remotes (3 for blade)	Angle Raise Tilt	Angle Raise Tilt	Angle Raise Tilt
Tires	2 – 11L x 15	2 – 11L x 15	2 – 11L x 15
Hubs	6 bolt	6 bolt	6 bolt
HP Required	40 – 150	60 – 180	80 – 200
Total Weight	2650 lbs.	2890 lbs.	3050 lbs.
Tongue Weight	473 lbs.	555 lbs.	610 lbs.
Tongue Tube Size	8 x 6 x 5/16	8 x 6 x 5/16	8 x 6 x 5/16