

# REACH POLE WAGON HI-RISE WAGON

## OPERATOR'S MANUAL AND PARTS BOOK

**REACH POLE WAGONS**

M1000, M1450, M1750, M2000,  
M2100, M2200, SM1450, SM2200

**HI-RISE WAGONS**

N1000, N1000-120, SN1000,  
SN1000-120, SN1010, SN1010-120

**OTHER**

PCUM10, PCUM11, SN1600,  
SN1650-CB, DAT8-22



Read and understand the manual. This manual provides information and procedures to safely operate and maintain the equipment.

(800) 243-2583  
[WWW.DUOLIFT.COM](http://WWW.DUOLIFT.COM)







## **DUO LIFT MANUFACTURING**

### **FERTILIZER WAGON**

#### **WARRANTY**

This is to certify that we warrant to the original purchaser equipment manufactured by Duo Lift Manufacturing Company, Inc., identified and recorded by serial number, to be free of defects in material and workmanship under normal use and service to replace, free of cost, to the original purchaser any part or parts of said equipment that in our judgement shows evidence of such defects; and provide further that the said part or parts shall be returned to the factory, freight prepaid, within five years of shipping date. Manufacturer agrees to replace or repair during this period of no charge any defective part or parts returned to the factory, and deemed defective by authorized factory inspection. Should it become impractical to return said parts to the factory, the manufacturer shall not be liable for any labor costs, or any other costs encountered, in repairing or replacing any part or parts involved, but will be obligated to supply only the necessary repair and/or replacement items.

Duo Lift Manufacturing Company, Inc., as the manufacturer shall not be liable for any other damage, whether direct or consequential.

No representative or other person is authorized or permitted to make any other warranty or assume for his company any liability not strictly in accordance with the foregoing. This limited warranty is in lieu of all warranties expressed or implied and of all other obligations on the part of the factory.

This limited warranty shall not apply to any item which shall have been operated in a manner not recommended by the Company nor which shall have been repaired, altered, neglected or used in any way which in the Company's opinion adversely affects its performance and results.

This limited warranty shall not apply to any equipment which has been tampered with in any way or which has been subject to misuse, neglect or accident, or which has the serial number altered, defaced, or removed.

This limited warranty does not apply to exterior finishes, tires, bearings, springs, jacks, couplers or any such items not directly manufactured by Duo Lift Manufacturing Company, Inc., except to the extent of their individual manufacturer's guarantee.







## DUO LIFT MANUFACTURING FERTILIZER WAGON

### WARRANTY REGISTRATION FORM & INSPECTION REPORT

#### WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer's Name _____	Distributor's Name _____
Address _____	Address _____
City, State, Code _____	City, State, Code _____
Phone Number ( _____ ) _____	
Wagon Model _____	Check One:
Serial Number _____	Farm Use <input type="checkbox"/>
Tank Number _____	Commercial Use <input type="checkbox"/>
Delivery Date _____	

#### DEALER INSPECTION REPORT

\_\_\_\_ Wheel Bolts Tight  
\_\_\_\_ Check Tire Pressures  
\_\_\_\_ Fasteners Tight  
\_\_\_\_ Lubricate

#### SAFETY

\_\_\_\_ All Signs Installed  
\_\_\_\_ Reflectors, Lights and SMV Clean  
\_\_\_\_ Guards and Shields Installed  
\_\_\_\_ Review Operating and Safety Instructions

Comments:

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Owner's Signature \_\_\_\_\_







## DUO LIFT MANUFACTURING FERTILIZER WAGON

### WARRANTY REGISTRATION FORM & INSPECTION REPORT

#### WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer's Name _____	Distributor's Name _____
Address _____	Address _____
City, State, Code _____ <input type="checkbox"/>	City, State, Code _____
Phone Number ( _____ ) _____	
Wagon Model _____	Check One:
Serial Number _____	Farm Use <input type="checkbox"/>
Tank Number _____	Commercial Use <input type="checkbox"/>
Delivery Date _____	

#### DEALER INSPECTION REPORT

\_\_\_\_ Wheel Bolts Tight  
\_\_\_\_ Check Tire Pressures  
\_\_\_\_ Fasteners Tight  
\_\_\_\_ Lubricate

#### SAFETY

\_\_\_\_ All Signs Installed  
\_\_\_\_ Reflectors, Lights and SMV Clean  
\_\_\_\_ Guards and Shields Installed  
\_\_\_\_ Review Operating and Safety Instructions

Comments:

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Owner's Signature \_\_\_\_\_







## DUO LIFT MANUFACTURING FERTILIZER WAGON

### WARRANTY REGISTRATION FORM & INSPECTION REPORT

#### WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer's Name _____	Distributor's Name _____
Address _____	Address _____
City, State, Code _____	City, State, Code _____
Phone Number ( _____ ) _____	
Wagon Model _____	Check One:
Serial Number _____	Farm Use <input type="checkbox"/>
Tank Number _____	Commercial Use <input type="checkbox"/>
Delivery Date _____	

#### DEALER INSPECTION REPORT

\_\_\_\_ Wheel Bolts Tight  
\_\_\_\_ Check Tire Pressures  
\_\_\_\_ Fasteners Tight  
\_\_\_\_ Lubricate

#### SAFETY

\_\_\_\_ All Signs Installed  
\_\_\_\_ Reflectors, Lights and SMV Clean  
\_\_\_\_ Guards and Shields Installed  
\_\_\_\_ Review Operating and Safety Instructions

Comments:

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Owner's Signature \_\_\_\_\_

Customer copy





# TABLE OF CONTENTS

SECTION	TITLE	PAGE
1	INTRODUCTION.....	1
1.1	SERIAL NUMBER LOCATION .....	2
2	SAFETY.....	3
2.1	GENERAL SAFETY.....	4
2.2	OPERATING SAFETY .....	5
2.2.1	PLUMBING SAFETY .....	5
2.3	TIRE SAFETY .....	6
2.3.1	TIRE MOUNTING SAFETY.....	6
2.4	SAFETY SIGNS .....	6
3	SAFETY SIGN LOCATIONS .....	7
4	OPERATION .....	8
4.2	WAGON BREAK-IN .....	9
4.3	PRE-OPERATION CHECKLIST .....	9
4.4	EQUIPMENT MATCHING .....	10
4.5	ATTACHING/UNHOOKING .....	11
4.6	FIELD OPERATION .....	13
4.7	TRANSPORTING .....	15
4.8	STORAGE .....	17
5	SERVICE AND MAINTENANCE .....	18
5.1.2	GREASING .....	18
5.1.3	SERVICING INTERVALS .....	20
5.1.4	SERVICE RECORD .....	21
5.2	MAINTENANCE .....	22
5.2.1	WHEEL SPACING .....	22
5.2.2	FRAME LENGTH .....	23
6	TROUBLESHOOTING .....	24
7	SHIPPING AND ASSEMBLY .....	27
8	OPTIONS .....	29
8.2	LARGE FLOTATION TIRES .....	29
8.3	LIQUID TANK .....	30
9	SPECIFICATIONS .....	31
9.1	MECHANICAL SPECIFICATIONS .....	31
9.2	BOLT TORQUE .....	32
LISTS	PARTS LISTS .....	33+





# 1 INTRODUCTION

Congratulations on your choice of a new Duo Lift Fertilizer Wagon to complement your fertilizer operation. This equipment has been designed and manufactured to meet the needs of a discerning fertilizer industry for efficient moving of fertilizer.

Safe, efficient and trouble free operation of your Wagon requires that you and anyone else who will be using or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.



This manual covers the Models M-1000, M-1000-NA, MP-1000, M-1450, M-1450-NA, SM-1450, M-2000, M-2200, PCUM-10, PCUM-11, N-1000, N-1000-120, NP-1000, SN-1000, SN-1000-120, SN-1600 and SN-1650-CB. Differences are covered and explained where appropriate. Use the Table of Contents as a guide to locate required information.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Duo Lift dealer or distributor if you need assistance, information or additional copies of the manuals.

**OPERATOR ORIENTATION** - The directions left, right, front and rear, as mentioned throughout this manual, are as seen from the driver's seat and facing in the direction of travel.

**CONTACT THE FOLLOWING AGENCIES BEFORE HANDLING OR PLUMBING ANHYDROUS AMMONIA:**

- I. **American National Standards Institute, Inc. (ANSI)** 1819 L Street, NW, Washington, D.C., 20036 (202)
- II. **Compressed Gas Association, Inc. (CGA)** 4221 Walney Rd, 5th floor, Chantilly, VA 20151 (202)
- III. **State or Province Regulatory Enforcement Agency**, with jurisdiction over: Anhydrous Ammonia, Fertilizers and other chemicals
- IV. **The Fertilizer Institute**, 820 First St, NE Washington, D.C. 20002-4839 (202) 962-0490
- V. **ANSI/ASABE S620 American Society of Agricultural and Biological Engineers**, Safety for Anhydrous Ammonia Application Equipment (269) 932-7015

Regulations and standards for the safe handling of anhydrous ammonia may change from time to time due to the advancement of technology and equipment. Review all current regulations and standards annually to always be informed of the most recent information possible.

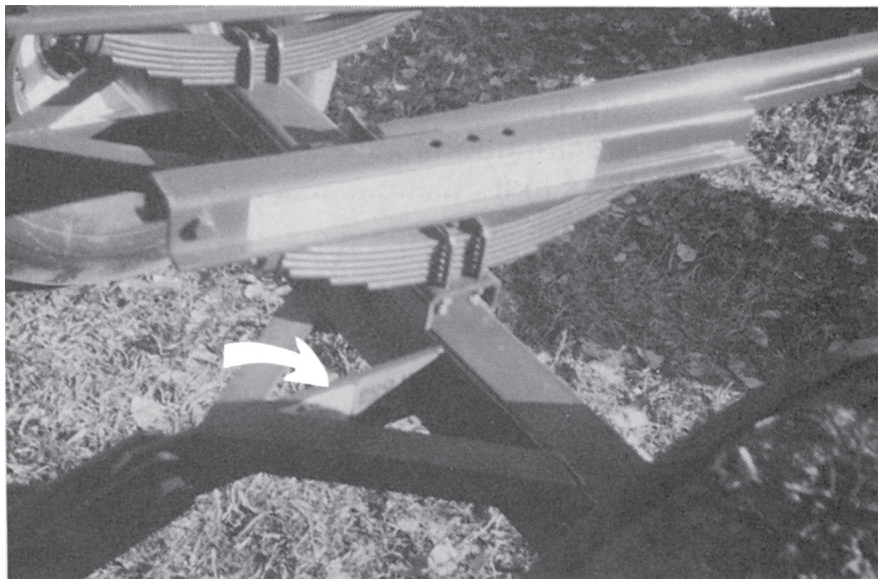




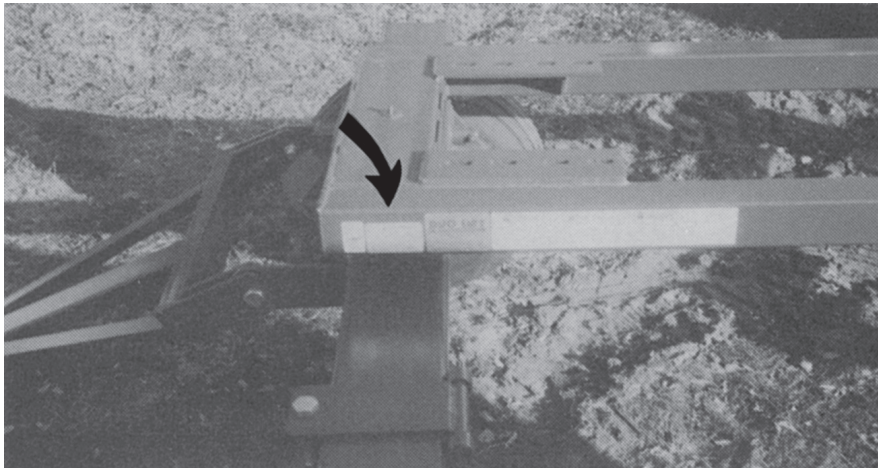
## SERIAL NUMBER LOCATION

Always give your distributor or dealer the serial number of your Fertilizer Wagon when ordering parts or requesting service or other information.

The serial number plate(s) is located where indicated. Please mark the number in the space provided for easy reference.



**"M" and "P" Series Wagon**



**"N" Series Wagon**

**SERIAL NUMBER LOCATION**

**Model Type** \_\_\_\_\_

**Serial Number** \_\_\_\_\_



## 2 SAFETY

### SAFETY ALERT SYMBOL

This Safety Alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



The Safety Alert symbol identifies important safety messages on the Duo Lift Fertilizer Wagon and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

#### 3 Big Reasons

**Accidents Disable and Kill**  
**Accidents Cost**  
**Accidents Can Be Avoided**

#### SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

**DANGER -** An immediate and specific hazard which **WILL** result in severe personal injury or death if the proper precautions are not taken.

**WARNING -** A specific hazard or unsafe practice which **COULD** result in severe personal injury or death if proper precautions are not taken.

**CAUTION -** Unsafe practices which **COULD** result in personal injury if proper practices are not taken, or as a reminder of good safety practices.



## SAFETY

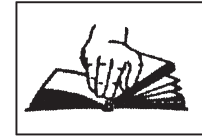
**YOU** are responsible for the **SAFE** operation and maintenance of your Duo Lift Fertilizer Wagon. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Wagon be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Wagon.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Wagon owners must give operating instructions to operators or employees before allowing them to operate the Wagon, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to use the equipment. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Duo Lift Manufacturing Company Inc., follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Wagon must read and clearly understand **ALL** Safety, Operating and Maintenance information presented in this manual.

## 2.1 GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or repairing the Wagon.



2. Have a first-aid kit available for use should the need arise and know how to use it.



3. Have a fire extinguisher available for use should the need arise and know how to use it.



4. Wear appropriate protective gear. This list includes but is not limited to:

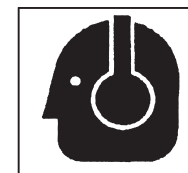
- A hard hat
- Rubber boots
- Protective goggles
- Neoprene gloves
- Water repellant clothing
- Respirator or filter mask



5. Install and secure all guards before starting.

6. Do not allow riders.

7. Wear suitable ear protection for prolonged exposure to excessive noise.



8. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or maintaining.

9. Clear the area of people, especially small children, before moving the unit.

10. Review safety related items with all personnel who will be operating or maintaining the Wagon.



## 2.2 OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or servicing.
2. Read and follow the chemical manufacturers' instructions on the handling, storage and disposal of chemicals before starting.
3. Agricultural chemicals are among the most toxic substances known to man. Minute quantities can contaminate clothing, machinery, the workplace and the environment. Follow the chemical manufacturers' instructions exactly.
4. Do not breathe, touch or ingest chemicals. Always wear protective clothing and follow safe handling procedures.
5. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or maintaining.
6. Do not allow riders on the Wagon or towing unit.
7. Install and properly secure all guards and shields before operating.
8. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
9. Keep hands, feet, hair and clothing away from all moving parts.
10. Clear the area of bystanders, especially small children, before moving.
11. Securely attach to towing unit. Use a hardened pin with a mechanical retainer and attach the safety chains. On the gooseneck model, be sure the jaws around the ball are closed and locked with a retainer. Attach safety chains.
12. Ensure that the SMV and all reflectors and lights required by the local transport authorities are in place and are clean and visible by overtaking or oncoming traffic.
13. Do not exceed 20 mph (33 kph). Slow down for corners and rough terrain.
14. Shift towing unit to a lower gear before going down steep down-grades to use engine as retarding force. Keep towing vehicle in gear at all times.

15. Maintain proper brake setting at all times if so equipped.
16. Do not attempt to operate this equipment under the influence of drugs and/or alcohol.
17. Review safety instructions with all users annually.
18. Support the Wagon with blocks or safety stands when changing tires or working beneath it.
19. Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.



### 2.2.1 PLUMBING SAFETY

1. To prevent serious injury or death, conform to all Federal, State and Local Regulations before the plumbing or handling of Anhydrous Ammonia or other Fertilizers
2. There are several different designs of Fertilizer applicators/toolbars. Always use proper equipment and fittings when designing your anhydrous ammonia delivery system. When assembling/connecting the anhydrous ammonia delivery system to the applicator/toolbar make sure the entire system is designed and plumbed properly to conform to Federal, State, and local regulations. Use appropriate length of transfer hose to fit your system.

#### CONFORM TO ALL FEDERAL, STATE AND LOCAL REGULATIONS BEFORE THE PLUMBING OR HANDLING OF ANHYDROUS AMMONIA OR OTHER FERTILIZERS

##### Refer to the following:

- American National Standards Institute, Inc. (ANSI), 1819 L Street NW, Washington, DC 20036 (202)293-8020
- Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151 (703) 788-2700
- State or Province Regulatory Enforcement Agency with Jurisdiction Over: ANHYDROUS AMMONIA, FERTILIZERS, AND OTHER CHEMICALS BEING USED.
- The Fertilizer Institute, 820 First St. NE Washington, D.C. 20002-4839 (202) 962-0490
- ANSI ASABE S620, American Society of Agricultural and Biological Engineers, Safety for Anhydrous Ammonia Application Equipment (269) 932-7015



## 2.3 TIRE SAFETY

1. 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.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.
4. Always order and install tires and wheels with the appropriate capacity to meet or exceed the anticipated weight to be placed on the equipment.

- e. Only when the tire beads are seated correctly on the rim shoulder may the pressure be increased to support the best bead seating and optimized fit on the rim flanges. However, this “seating pressure” should never exceed 400 kpa (4.0 bar)/58 psi.
- f. Once the tire is mounted correctly, adjust the pressure to the operating pressure of 65 psi.



### 2.3.1 TIRE MOUNTING INSTRUCTIONS FOR 22.5 TIRE/WHEEL ASSEMBLY

1. Before a tire is removed from the rim, the valve insert must be unscrewed and removed to ensure remaining pressure is released completely.
2. Tire mounting:
  - a. Always coat the tire beads and the rim with a permitted tire fitting lubricant before mounting. Silicone, petroleum or solvent based lubricants must not be used for this purpose.
  - b. While the tire is being inflated, the rim must remain firmly secured on the mounting machine.
  - c. If the tire is mounted on a machine that does not have a positive lock-down device to hold the rim, inflation should be done in a safety cage or other restraining device.
  - d. Never put flammable substances in tire/rim assemblies at any time. Never put any flammable substance into a tire/rim assembly and attempt to ignite to seat the beads. This practice is extremely unsafe and may also cause undetected damage to the tire or rim that could result in failure of the tire in service.

## 2.4 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your Distributor or Dealer Parts Department or the factory.

### How to Install Safety Signs

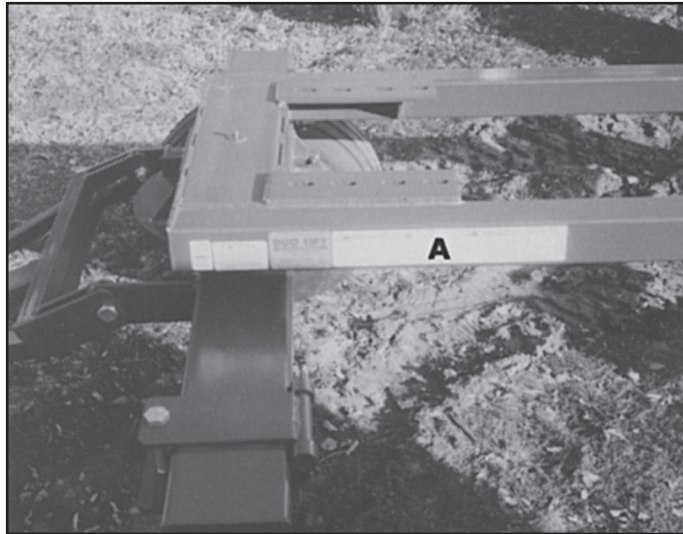
- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.



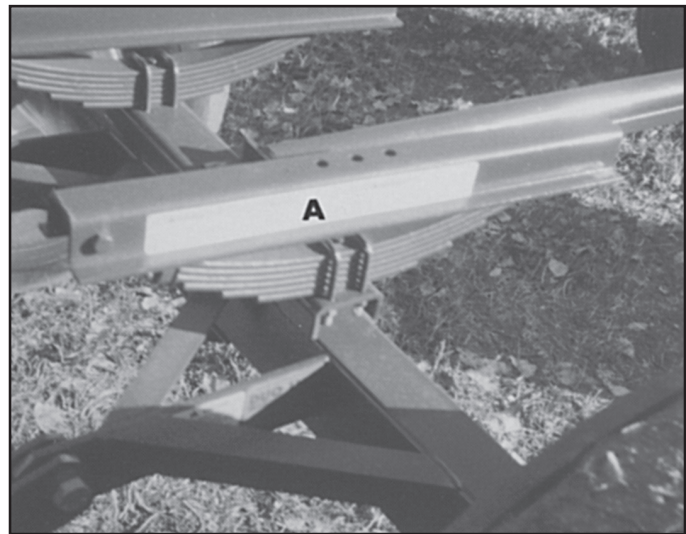
### 3 SAFETY SIGN LOCATIONS

The types of sign and locations on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various Safety Signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!




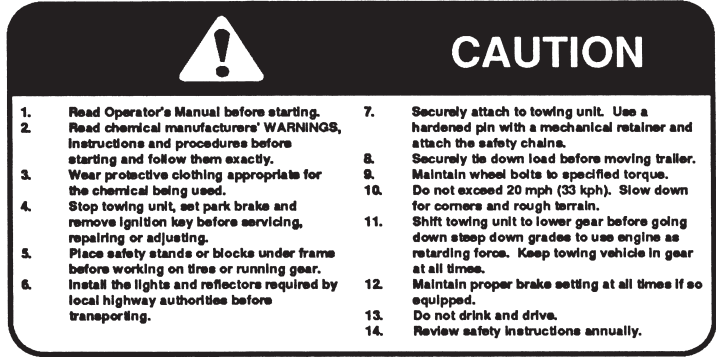
"N" Series Wagon




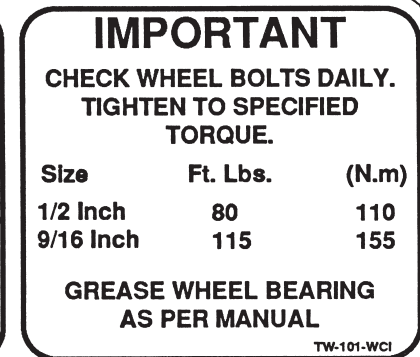
"M" Series Wagon

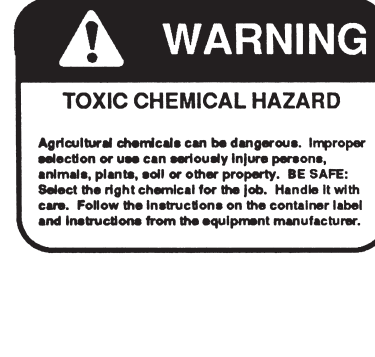
**A**











**REMEMBER** - If Safety Signs have been damaged, removed, become illegible or parts replaced without signs, new signs must be applied. New signs are available from your authorized distributor or factory.

(800) 243-2583

SALES@DUOLIFT.COM

WWW.DUOLIFT.COM



## 4 OPERATION



### OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or servicing.
2. Read and follow the chemical manufacturers' instructions on the handling, storage and disposal of chemicals before starting.
3. Agricultural chemicals are among the most toxic substances known to man. Minute quantities can contaminate clothing, machinery, the workplace and the environment. Follow the chemical manufacturers' instructions exactly.
4. Do not breathe, touch or ingest chemicals. Always wear protective clothing and follow safe handling procedures.
5. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or maintaining.
6. Do not allow riders on the Wagon or towing unit.
7. Install and properly secure all guards and shields before operating.
8. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
9. Keep hands, feet, hair and clothing away from all moving parts.
10. Clear the area of bystanders, especially small children, before moving.
11. Securely attach to towing unit. Use a hardened pin with a mechanical retainer and attach the safety chains. On the gooseneck model, be sure the jaws around the ball are closed and locked with a retainer. Attach safety chains.
12. Ensure that the SMV and all reflectors and lights required by the local transport authorities are in place and are clean and visible by overtaking or oncoming traffic.
13. Do not exceed 20 mph (33 kph). Slow down for corners and rough terrain.
14. Shift towing unit to a lower gear before going down steep down-grades to use engine as retarding force. Keep towing vehicle in gear at all times.
15. Maintain proper brake setting at all times if so equipped.
16. Do not attempt to operate this equipment under the influence of drugs and/or alcohol.
17. Review safety instructions with all users annually.
18. Support the Wagon with blocks or safety stands when changing tires or working beneath it.
19. Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.

### 4.1 TO THE NEW OPERATOR OR OWNER

The Duo Lift Wagon is designed for mounting a fertilizer or chemical container to it. It efficiently carries the container and chemical on the road or in the field.

#### Owner's Responsibility:

**It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the Wagon. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the worksite. Untrained operators are not qualified to use the equipment.**

Many features incorporated into this Wagon are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the Wagon safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your Wagon will provide many years of trouble-free service.



## 4.2 WAGON BREAK-IN

Although there are no operational restrictions on the Wagon when used for the first time, it is recommended that the following mechanical items be checked:

- A. After traveling for 1/2 hour or going 5 miles (8 km):
  - 1. Tighten wheel bolts to their specified torque levels. Refer to Section 9.2.
  - 2. Check all nuts, bolts and other fasteners. Tighten to their specified torque level.
  - 3. Check tire pressure. Used super single tires have a maximum pressure of 65 PSI.
  - 4. Check the container mounting hardware. Tighten to the specified torque.
  - 5. Check hubs for proper tightness. The spindle castle nuts are set at the factory but may need additional adjustment to ensure the bearings are seated properly.
  - 6. Refer to trouble shooting section for any abnormal occurrences.
- B. After operating for 5 and 20 hours or 50 and 200 miles (80 and 320 km):
  - 1. Repeat items 1 through 4 of Section A.
  - 2. Then go to the regular service schedule as outlined in the Maintenance Section.
- C. Repeat the retorquing of wheel bolts after 5, 50 and 200 miles (8, 80 and 320 km) or whenever a wheel is removed and installed on the Wagon.

## 4.3 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Wagon requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both the personal safety and maintaining the good mechanical condition of the Wagon that this checklist is followed.

Before operating the Wagon and each time thereafter, the following areas should be checked off:

- 1. Lubricate the Wagon per the schedule outlined in Section 5 Service and Maintenance.
- 2. Use only a towing vehicle of adequate power and weight to pull the Wagon.
- 3. Check that the Wagon is properly attached to the towing vehicle. Be sure there is a mechanical retainer through the pin and the safety chains are installed.
- 4. Check tire pressure. Used super single tires have a maximum pressure of 65 PSI.
- 5. Check the wheel bolts. Tighten to their specified torque.
- 6. Check the container mounting hardware. Be sure it is tightened to its specified torque.
- 7. Check the container and accessory equipment. Be sure that all components are in good condition and working properly.
- 8. Be sure that all lights, reflectors and SMV emblem required by the local highway authorities are installed, clean and in good working order.



## 4.4 EQUIPMENT MATCHING

To insure the safe and reliable operation of the Wagon, it is necessary that the Wagon and bulk material container be matched and function as a complete unit. Use the following list as a guide in selecting the container and the towing vehicle to use with the unit.

### 1. Towing Vehicle:

#### a. Tractor:

The tractor used to tow the Wagon should be matched to the weight of the Wagon, the container and the chemical when the container is fully loaded. As a general rule, the tractor weight should be equal to or greater than the weight of the fully loaded Wagon. This will insure adequate stability during transport and sufficient traction in hilly terrain or soft field conditions.

#### b. Truck:

It is recommended that only a 3/4 ton or larger capacity truck be used for towing on the road. This size of truck plus careful driving will provide the recommended stability and control when transporting.

A one ton or larger capacity truck should be used on the M-2000 and M-2200.

### 2. Weight Capacity:

Each model is designed to carry a specified load. To insure that no components are overloaded, do not exceed the design specifications. To determine the total load, always combine the container and chemical weight. Refer to Table 1 to determine the load capacity for each model.

### 3. Container Attachment:

Attachment systems can be custom designed to match the container that will be used.

Check with your dealer or distributor for an attachment system best suited for your application. Check the mounting hardware daily to insure that it is kept tight.

### 4. Lighting and Marking:

It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.

### 5. Drawbar Pin:

Use only a hardened pin that has provisions to mechanically hold it in position. A tension-lock, pin-lock, snap-lock pin or a hardened bolt with a double nut is acceptable.

### 6. Brakes (Optional):

If the Wagon is equipped with brakes, the customer must mount the appropriate controls at the operator's station. Refer to the instructions provided from the brake manufacturer.

**Table 1 Load Capacity (G.V.W.R.)**

Model	Capacity	K.G.
M-1000	12,000 lbs.	5400
M-1450	14,000 lbs.	6300
M-1750	19,600 lbs.	8920
M-2000	22,000 lbs.	10,000
M-2100	22,000 lbs.	10,000
M-2200	22,000 lbs.	10,000
SM-1450	14,000 lbs.	6300
N-1000	14,000 lbs.	6300
SN-1000	14,000 lbs.	6300
SN-1000-120	14,000 lbs.	6300
PCUM-10	14,000 lbs.	6300
PCUM-11	14,000 lbs.	6300



## 4.5 ATTACHING/UNHOOKING

The Wagon should always be located on a level, dry area that is free of debris and other foreign objects. When attaching the unit to a towing vehicle, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Make sure there is enough room and clearance to safely back up to the unit.
3. Slowly back up to the Wagon.



### WARNING

Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the Wagon.

4. Raise the tongue, align the holes and install the pin.

### IMPORTANT

Use only a hardened pin with provisions for a mechanical retainer. A tension-lock, pin-lock, snap-lock or a hardened bolt with a double nut is acceptable.

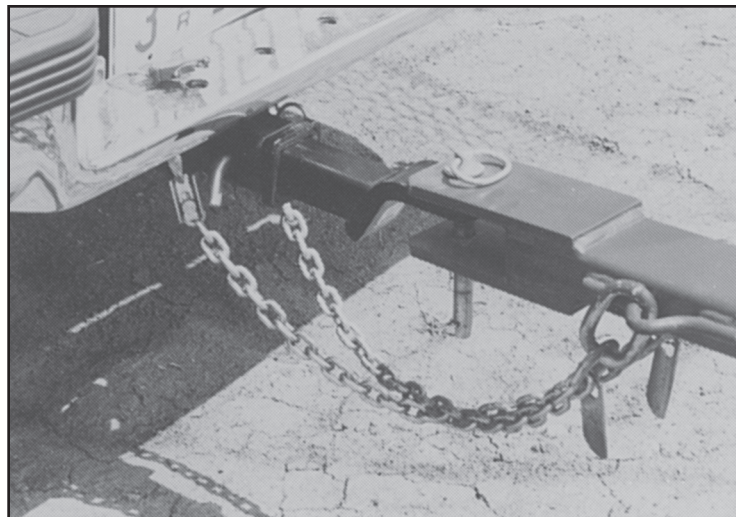


Fig. 1 ATTACHED

5. Install the safety chain by crossing the chains under the tongue and attaching securely to the drawbar cage or bumper frame.
6. If equipped with extra lights:  
Extend the plug and wiring harness over the hitch point and plug into the electrical outlet on the towing vehicle. Be sure the wiring harness does not drag on the ground and there is enough slack for turning. Secure with clips, tape or plastic ties.



7. If equipped with chemical lines:

- a. Be sure all fittings and ends are clean before connecting.



## WARNING

1. Read chemical manufacturers' **WARNINGS**, instructions and procedures before starting and follow them exactly.
2. Have a first-aid kit available for use should the need arise and know how to use it.
3. Have a fire extinguisher available for use should the need arise and know how to use it.
4. Wear appropriate protective gear. This list includes but is not limited to:
  - Protective chemical goggles
  - Respirator or filter mask
  - Neoprene gloves
  - Water repellent clothing
  - Rubber boots
  - Supply of fresh water as required by Safety Standard Regulations
5. Turn on required flashing warning lights whenever traveling on roads or highways, except where such use is prohibited by law.
6. Do not allow riders.
7. Wear suitable ear protection for prolonged exposure to excessive noise.
8. Place all controls in neutral, stop engine, set park brakes, remove ignition key before servicing, adjusting, repairing or maintaining.
9. Clear the area of people, especially small children, before moving the unit.
10. Review safety related items with all personnel who will be operating or maintaining the Wagon.

- b. Connect and secure the lines. Follow equipment manufacturers' attachment instructions. (See Section 2.2)
  - c. Use appropriate length transfer hose to fit your system. Do not allow hose to drag on the ground or be pinched while operating. If hose is not the proper length, replace it.
  - d. You may route the lines across the tongue and hitch point, being sure to provide enough slack for turning. **DO NOT** attach hose to tongue.
8. Remove blocks or chocks from the wheels.
  9. Very carefully conduct a dry run turning test to ensure the entire system is compatible and safe for operation and pinching or pulling will not occur.
  10. There are several different designs of Fertilizer applicators / toolbars. Always use proper equipment and fittings when designing your anhydrous ammonia delivery system. When assembling / connecting the anhydrous ammonia delivery system to the applicator/toolbar make sure the entire system is designed and plumbed properly to conform to Federal, State and local regulations. Use appropriate length of transfer hose to fit your system.
  11. Reverse the above procedure when unhooking.

### Refer to the following:

American National Standards Institute, Inc. (ANSI)  
Compressed Gas Association, Inc. (CGA)



## 4.6 FIELD OPERATION



### OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or servicing.
2. Read and follow the chemical manufacturers' instructions on the handling, storage and disposal of chemicals before starting.
3. Agricultural chemicals are among the most toxic substances known to man. Minute quantities can contaminate clothing, machinery, the workplace and the environment. Follow the chemical manufacturers' instructions exactly.
4. Do not breathe, touch or ingest chemicals. Always wear protective clothing and follow safe handling procedures.
5. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or maintaining.
6. Do not allow riders on the Wagon or towing unit.
7. Install and properly secure all guards and shields before operating.
8. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
9. Keep hands, feet, hair and clothing away from all moving parts.
10. Clear the area of bystanders, especially small children, before moving.
11. Securely attach to towing unit. Use a hardened pin with a mechanical retainer and attach the safety chains. On the gooseneck model, be sure the jaws around the ball are closed and locked with a retainer. Attach safety chains.
12. Ensure that the SMV and all reflectors and lights required by the local transport authorities are in place and are clean and visible by overtaking or oncoming traffic.
13. Do not exceed 20 mph (33 kph). Slow down for corners and rough terrain.
14. Shift towing unit to a lower gear before going down steep down-grades to use engine as retarding force. Keep towing vehicle in gear at all times.
15. Maintain proper brake setting at all times if so equipped.
16. Do not attempt to operate this equipment under the influence of drugs and/or alcohol.
17. Review safety instructions with all users annually.
18. Support the Wagon with blocks or safety stands when changing tires or working beneath it.
19. Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.

Duo Lift Wagons are designed to efficiently move the product and container on the road or in the field. However, the operator has the responsibility of being familiar with all operating and safety procedures for the Wagon, the container and the chemical and following them.

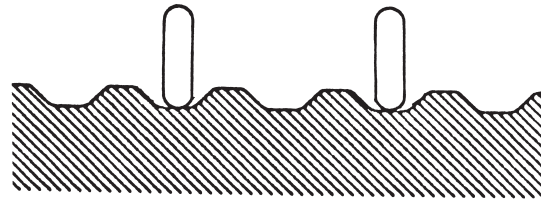
Each operator should review this section of the manual at the start of the season and as often as required to be familiar with the unit. When using, follow this procedure:

1. Review and follow the Pre-Operation Checklist.

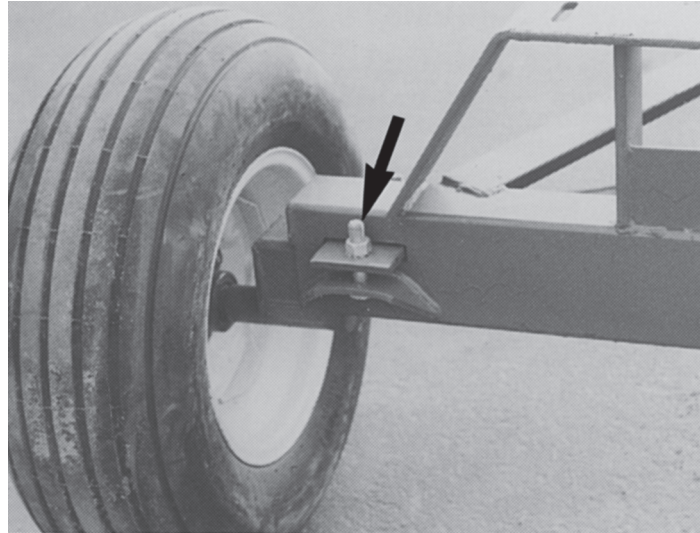
2. Read and follow the chemical manufacturers' WARNINGS, instructions and procedures on the specific chemical being used.
3. Attach the Wagon to the towing vehicle (See Section 4.6).
4. Review Section 4.8 before transporting.
5. All anhydrous ammonia tanks are required to be equipped with a fresh water supply tank. This tank is to be full of fresh water at all times, even if the ammonia tank is empty.



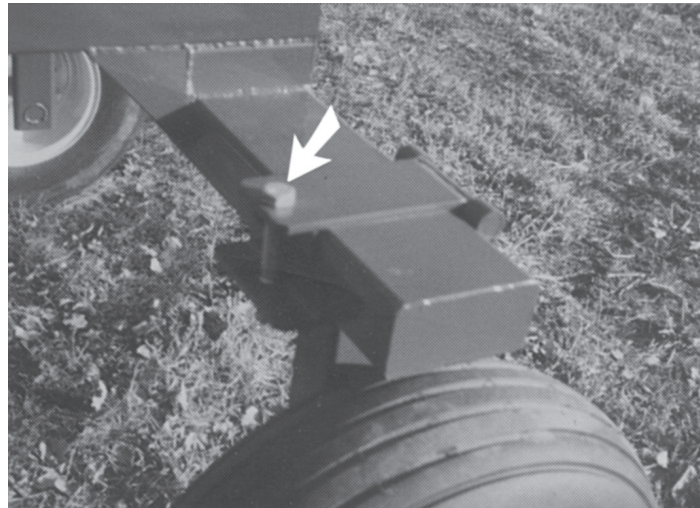
6. If operating in row-crop or ridge till conditions, set wheel spacing so the tires are centered between the rows. This will prevent damage to the ridge and minimize the dynamic loads to the structural members when traveling through the field.
7. Do not allow riders on the towing vehicle, the tongue or the container at any time.
8. Provide extra clearance for the Wagon when turning. The Wagon will turn through a shorter turning radius than the towing vehicle.
9. Do not turn sharper than the 5th wheel pivot will allow. Turning past the stops on the front axle will overload the frame, hubs and wheels and cause potential failures.
10. Check all fasteners occasionally to be sure they are tight. Loose fasteners can lead to serious problems at a later time.
11. Do not turn up the hill when traveling across a steep slope in the field. The pivoting of the front bolster affects the stability of the Wagon. If turns are required on a steep slope, it is better to turn down the hill rather than up.
12. If your Wagon is equipped with brakes, periodically check the adjustment and condition of the working components. They must be maintained in good working order to function effectively when needed.
13. Check the tightness of the wheel bolts on a regular basis. It is important that the bolts be kept tight. Once the Wagon is moved a few miles with loose bolts, the holes can become elongated. From that time on, the bolts seldom stay tight. The best way to correct this problem is to replace the rim. Prevent this costly repair by keeping the bolts tight.



**Row Crop**



**"M" Series Wagon**



**"N" Series Wagon**

**Fig. 2 WHEEL SPACING**

### **NOTE**

Over tightening the wheel bolts will deflect the inner bevel of the wheel. This will damage the wheel and cause the bolts to continually loosen.



## 4.7 TRANSPORTING



### TRANSPORT SAFETY

1. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
2. Make sure the SMV (Slow Moving Vehicle) emblem and all lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
3. Do not allow anyone to ride on the Wagon or towing vehicle during transport.
4. Do not exceed 20 mph (33 kph). Reduce speed on rough roads and surfaces.
5. Use a retainer on the drawbar pin and install the safety chain before transporting.

When transporting the Wagon, review and follow these instructions:

1. It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities. Install an SMV, reflectors and extra lights as required to comply with the regulations.

Clean the reflectors and check that the lights are in good working order before starting.

2. Be sure the Wagon is securely attached to the towing vehicle. Use a hardened pin that has provisions for a mechanical retainer and use a retainer. Attach the safety chains.
3. Attach the brake safety chain to the towing vehicle if equipped with the optional brake package.
4. If transporting during times of limited visibility or dusk, install extra lights or use pilot vehicles.
5. Do not allow riders on the tongue, the Wagon or the towing vehicle.
6. Never exceed a safe travel speed. Slow down for corners and rough road conditions.
7. Always shift to a lower gear when going down hills to use the engine as a retarding force.



8. Always keep drivetrain engaged when transporting. Do not depress clutch or take out of gear and coast down hills. Maintain control of vehicle.
9. Do not exceed 20 mph (33 kph). Reduce speed on rough roads and surfaces.
10. Use only a 3/4 ton or larger truck to tow the Wagon on a public road.  
  
A one ton or larger capacity truck should be used on the M-2000 and M-2200.
11. Be a safe and courteous driver. Anticipate what other drivers will do and drive accordingly.
12. Apply the brakes carefully to prevent jackknifing.
13. Apply brakes early. Extra distance will be required to stop the vehicle.
14. Leave extra distance between the car ahead of you to provide stopping space.



**Truck**



**Tractor**

**Fig. 3 TRANSPORTING**



## WARNING

Do not connect 2 Wagons together for transporting when Wagons are loaded.

15. When towing with a tractor, never travel faster than 20 mph (33kph). The ratio of tractor weight to the Wagon and container weight plays an important role in defining acceptable travel speed. Table 2 summarizes the weight ratio to travel speed. Use it as a guide to determine a safe travel speed.
16. Swing wide when making corners as the Wagon will not follow in the tracks of the towing vehicle.
17. Do not attempt to operate this equipment under the influence of drugs and/or alcohol.

**Table 2 Speed vs Weight Ratio**

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of towing machine
Up to 32 km/h (20 mph)	1 to 1, or less
Up to 16 km/h (10 mph)	2 to 1, or less
Do not tow	More than 2 to 1



## 4.8 STORAGE



### STORAGE SAFETY

1. Store the unit in an area away from human activity.
2. Do not permit children to play on or around the stored unit.
3. Store the unit in dry, level area. Support the jack base with planks if required.

At the end of the season, the Wagon should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the start of next season.

To insure a long, trouble free life, this procedure should be followed when preparing the unit for storage:

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the unit using a pressure washer to remove all dirt, mud, debris and residue.
3. Lubricate all grease fittings. Make sure that all grease cavities have been filled with grease to remove any water residue from the washing.
4. Inspect the Wagon and equipment mounted on it for any worn, damaged or failed components. Repair or replace components as required.
5. Touch up all paint nicks and scratches to prevent rusting.
6. Move the Wagon to its storage area.
7. Select an area that is dry, level and free of debris.
8. Unhook from the towing vehicle (Section 4.6).
9. Place chocks in front of and behind a tire.
10. Store the Wagon in an area away from human activity.
11. Do not allow children to play on or around the stored unit.



## 5 SERVICE AND MAINTENANCE



### MAINTENANCE SAFETY

1. Review all the operating, maintenance and safety information in the manual.
2. Support the Wagon with blocks or safety stands when changing tires or working beneath it.
3. Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.
4. Use only tools, jacks and hoists of sufficient capacity for the job.
5. Make sure all guards are in place and properly secured when maintenance work is completed.
6. Keep hands, feet, hair and clothing away from moving or rotating parts.
7. Clear the area of bystanders, especially small children, when carrying out any maintenance and repairs or making any adjustments.
8. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

### 5.1 SERVICE

#### 5.1.1 FLUIDS AND LUBRICANTS

1. Grease  
Duo Lift uses an SAE multi-purpose lithium based grease. Also acceptable is an SAE multi-purpose high temperature grease with extreme pressure (EP) performance.
2. Storing Lubricants  
Your Wagon can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

#### 5.1.2 GREASING

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. To repack bearings refer to "Specifications for Lubricating and Assembling Hubs for Farm Implements" on page 18.



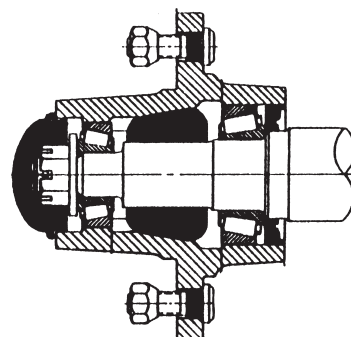


## Specifications for Lubricating and Assembling Hubs for Farm Implements

Shading indicates the  
Recommended Amount of Grease

Type of Grease: Lithium Base  
ASTM Worked Penetration of 284  
Drop Point 368 Degrees F

Examples: Shell Alvania EP2  
Mobilux EP2



### Hub and Spindle Assembly Procedure

- Inspect hub/cup assembly to assure cups are seated against shoulders in the tub.
- Wash bearings and completely flush between rollers using proper solvents.
- Use a bearing packer to insure correct placement of grease inside the bearings.
- Grease the inner cone and place it into the cup. **MAKE SURE IT IS STRAIGHT.**
- Install a new original factory grease seal using a plug to place pressure evenly around the seal. **SUPPORT THE SEAL SO YOU DON'T BEND THE CASE DURING INSTALLATION.**
- Pump grease into the hub cavity as indicated above. **DO NOT OVERFILL** because too much grease can cause the seal to fail or the dust cap to pop loose after assembly.
- Use grease to lubricate the seal lip.
- Place the spindle into the hub. Rotate the hub while installing to the spindle so the seal doesn't roll under. As the spindle goes into the inner cone, try to feel that the cone is not cocked and is properly seated on the spindle bearing journal.
- Grease the outer cone and place it over the spindle and into the cup.
- Assemble the washer and nut to the spindle. You may use an air wrench to bring the nut down to the cone, but the washer **MUST NOT CONTACT THE CONE** under power. A torque wrench must be used to make 1st contact to a torque reading of 15 ft. lbs. **ROTATE THE HUB WHILE TIGHTENING THE NUT.**
- Back off the nut until it just becomes loose.
- While rotating the hub, retighten the nut to finger tight, line up the cotter pin hole in the spindle with the slot in the nut.
- Insert cotter pin and bend it. Fill hub cap with grease and install.
- Check seal for turned under lip. Check HUB for excessive end play. Check HUB for free rotation and any indication of roughness which might indicate misalignment. If any roughness is noted, disassemble hub and check inner cup for any small nick. If nick is found, place hub aside for rework.



### 5.1.3 SERVICING INTERVALS

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

#### Weekly or 40 Hours

1. Lubricate 5th wheel pivot (3 locations).

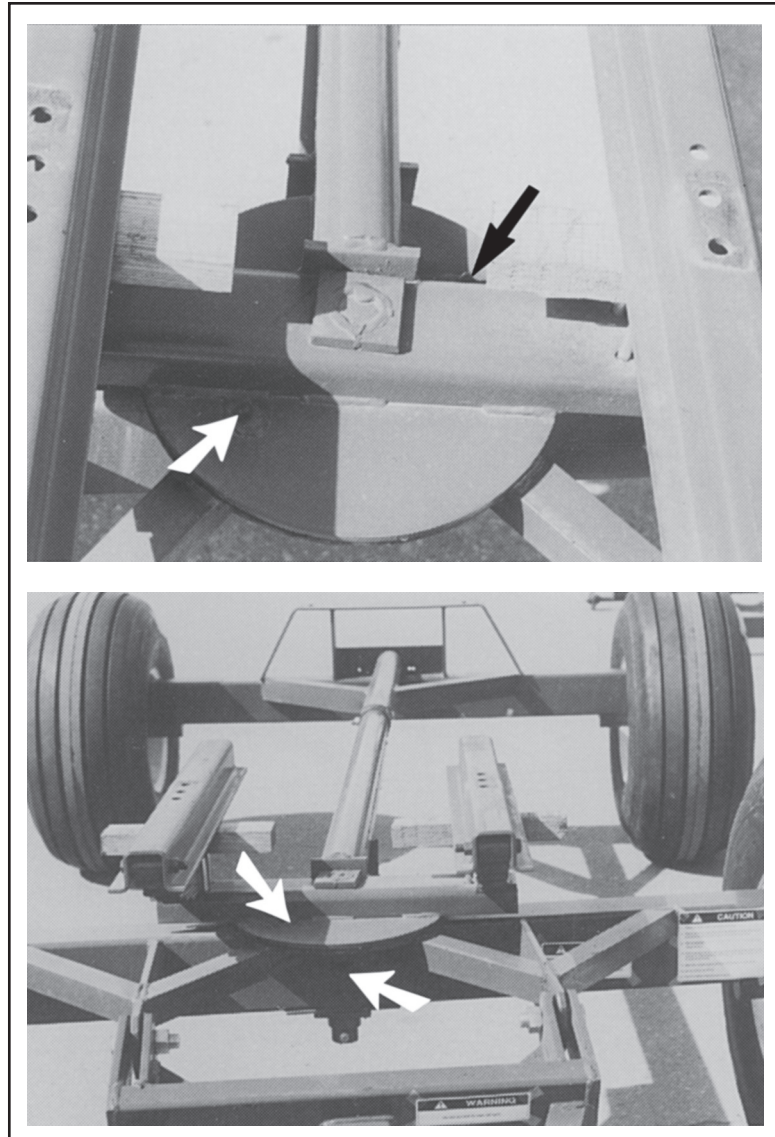


Fig. 4 5th WHEEL PIVOT

#### BI-Annually

1. Repack wheel bearings. Refer to page 18.
2. Wash unit.





5.1.4 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

ACTION CODE:    L    LUBRICATE                    CL    CLEAN                    R    REPACK

<div><div></div><div></div></div> <div>MAINTENANCE</div>	HOURS																		
	SERVICED BY																		
Weekly or 40 Hours																			
L 5th Wheel Pivot (3)																			
BI-Annually																			
R Wheel Bearings																			
CL Entire Unit																			

It is recommended that a separate service record be kept for each unit in your fleet.



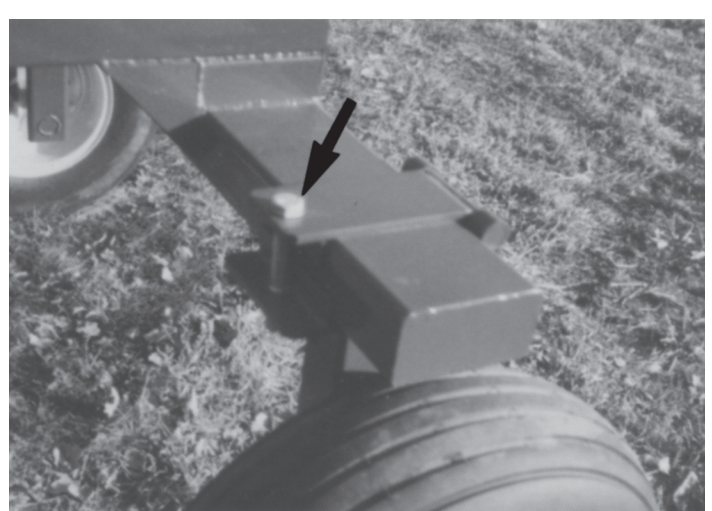
## 5.2 MAINTENANCE

By following a regular maintenance program, your Wagon will provide many years of trouble-free service.

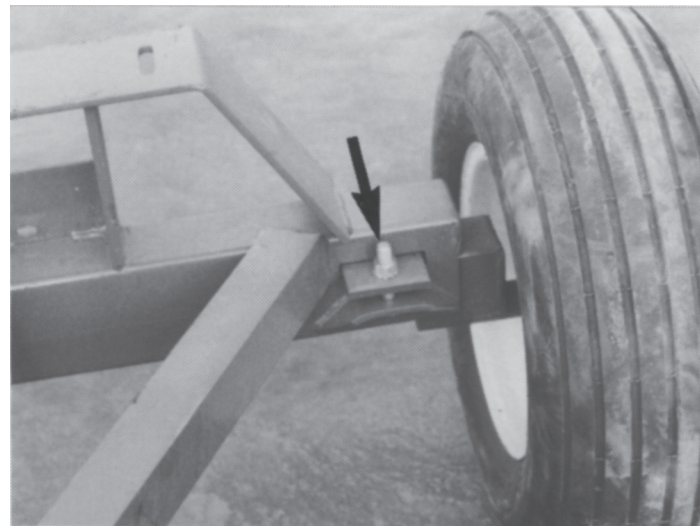
### 5.2.1 WHEEL SPACING

To change the wheel spacing, follow this procedure:

1. Clear the area of bystanders.
2. Be sure the container is empty before adjusting the wheel spacing.
3. Know the spacing required before starting.
4. Use a jack or forklift with sufficient capacity to raise the frame.
5. Place safety stands or blocks under the bolster to support the machine.
6. Loosen the bolster clamping bolt.



"N" Series Wagon



"M" and "P" Series Wagon

**Fig. 5 CLAMPING BOLT AND PLATE**

7. Tap or slide the strut to the desired position.
8. Measure from the center of the Wagon to the centerline of the tire. Remember that this dimension must be half the desired tire spacing.
9. Tighten the clamping bolt to its specified torque.
10. Remove the blocks or safety stands.
11. Repeat with the other axles.



## 5.2.2 FRAME LENGTH

To adjust the length of the Wagon frame, follow this procedure:

1. Clear the area of bystanders.
2. The frame length is normally set before a container is mounted. If a container is installed, it should be removed before starting.
3. Remove the bolt through the extension pole in the center of the Wagon.



**Fig. 6 EXTENSION POLE**

4. Extend or retract the pole until the desired dimension is reached.
5. Install and tighten the bolt.
6. Tighten until the nut just touches the bushing.
7. Be careful not to pull the extension pole completely out of the tube or the center of the frame will drop to the ground.





## 6 TROUBLE SHOOTING

The Duo Lift Fertilizer Wagon is designed to efficiently transport fertilizer and its container to and in the field.

In the following section, we have listed some possible problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local Duo Lift dealer or distributor. Before you call, please have this Operator's Manual ready.

PROBLEM	CAUSE	SOLUTION
Wagon doesn't track through field.	Poor wheel spacing.	Set wheels in center of crop row.
	Bent reach pole.	Replace.
	Bent tongue.	Replace.
	Loose wheel strut clamp.	Realign wheel and tighten.
Wagon sways on road.	5th wheel worn.	Replace.
	Dry 5th wheel assembly.	Lubricate.
	Tire pressure too low.	Inflate to proper pressure.
	Uneven tire pressure.	Inflate all tires to the same pressure.
	Traveling too fast.	Slow down to 20 mph (33 kph).
	Bent axle or spindle.	Replace.
	Loose wheel bolts.	Tighten to specified torque.
	Loose or worn wheel bearings.	Tighten or replace.
	Bent reach pole.	Replace.
	Pulling more than one unit.	Pull only one unit.
Wagon pulls to one side.	Uneven tire pressure.	Inflate to proper pressure.
	One brake is dragging.	Adjust brakes.
		Replace shoes if worn.





PROBLEM	CAUSE	SOLUTION
Tire wobbles.	Bent wheel.	Replace.
	Loose wheel bolts.	Tighten to specified torque.
	Loose or worn wheel bearings.	Tighten or replace.
	Loose spindle nut.	Snug appropriately and insert cotter key.
Excessive bearing wear.	Lack of lubrication.	Lubricate.
	Spindle nut is too loose or too tight.	Snug appropriately and insert cotter key.
	Bent spindle.	Replace.
	Dirt inside of hub.	Replace seal and inspect dust cap.
	Moisture inside of hub.	Use lithium based grease.
Trouble stopping.	Traveling too fast.	Slow down to 20 mph (33 kph).
	Pulling vehicle too light.	See Table 2, page 15.
	Brake not working.	See brake manual for adjustment or replacement.
Bad tire wear.	Axle bent or out of line.	Replace or repair.
	Bent spindle.	Replace.
	Bent wheel.	Replace.
	Traveling too fast.	Slow down to 20 mph (33 kph).





PROBLEM	CAUSE	SOLUTION
Loss of grease in hub.	Bad seal.	Replace seal with new original factory seal.
	Spindle nut is too tight causing grease to heat.	Back off spindle nut 1 slot at a time until the appropriate tightness is reached. Be sure to install cotter pin.
<hr/>		
Hub is heating.	Spindle nut is too tight causing bearings to heat.	Back off spindle nut 1 slot at a time until hub does not heat. Be sure to install cotter pin.
<hr/>		
Grease leaks around seal.	Spindle nut is too tight causing bearings to heat up the grease.	Back off spindle nut 1 slot at a time until bearings do not heat. Be sure to install cotter pin.
	Bad seal.	Replace with new factory seal.
	Wrong size seal.	Replace with correct factory seal. Refer to hub parts page in owners manual for correct size and part number.
<hr/>		
Front hubs are breaking.	Front axle is turned all the way, "jackknifed", and is still being pulled or backed causing excessive side pressure on hub.	Do not pull wagon after the front axle is bottomed-out against the axle turn stop. Stop and straighten the wagon and towing vehicle before proceeding.
<hr/>		
Hubs are breaking.	Tire size is too large for hub.	Be sure to match tires and wheels with the hubs. Too large of tire diameter may cause excessive side pressure on the hub and premature failure.
	Improper wheel offset.	Wheel offset is matched to the hub at the factory. After market wheels must also match the hub.



## 7 SHIPPING AND ASSEMBLY

If the Wagon is shipped by truck, some assembly may be required before it can be used. Although it is heavy, it is not difficult to handle by following this procedure:

1. Clear the area of bystanders, especially small children.
2. Use a forklift or hoist to unload and move the Wagon.

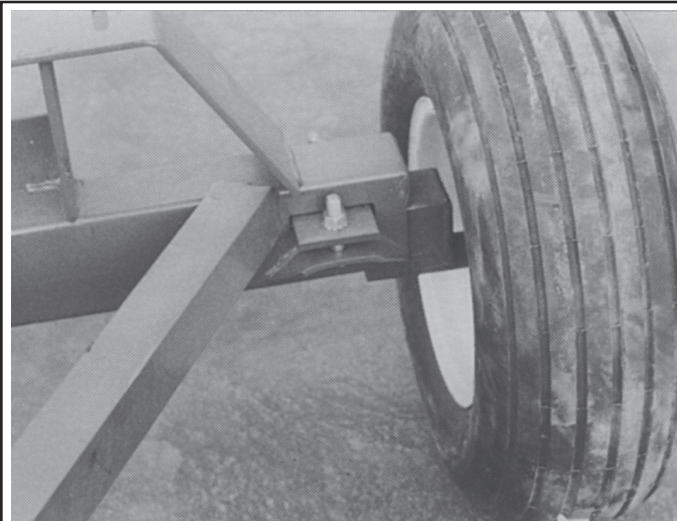


### CAUTION

1. Use lifting devices with sufficient weight stability and lifting capacity to handle the Wagon.
  2. Use 2 men to handle heavy components.
3. Raise the Wagon slightly and remove the tie down straps and dunnage.
  4. Raise slightly above the base and back up slowly until the Wagon clears the truck.
  5. Lower until the unit is just above the ground and move to storage or assembly area.
  6. Install axles into bolster and secure.



Fig. 7 LOADED TRUCK



"M" Series Wagon



"N" Series Wagon

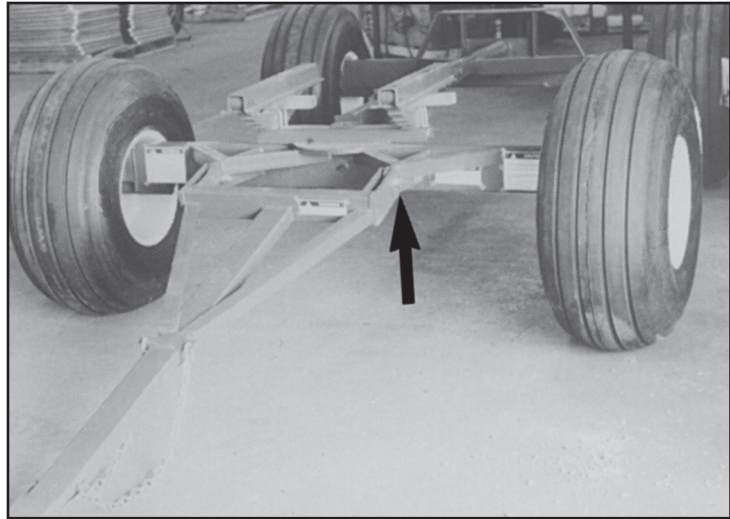
Fig. 8 ADJUSTABLE WHEEL SPACING



7. Attach tongue and secure.
8. Raise the frame and mount the wheels. Tighten wheel bolts to their specified torque.

**NOTE**

All wheel bolts are Grade 5.  
Refer to Section 9.2.



**Fig. 9 TONGUE ASSEMBLY**



## 8 OPTIONS

### 8.1 HIGH CLEARANCE AXLES

An optional 20" high ground clearance axle is available on the "M" Series Wagons. It works well in special side-dressing applications in more advanced crop conditions.

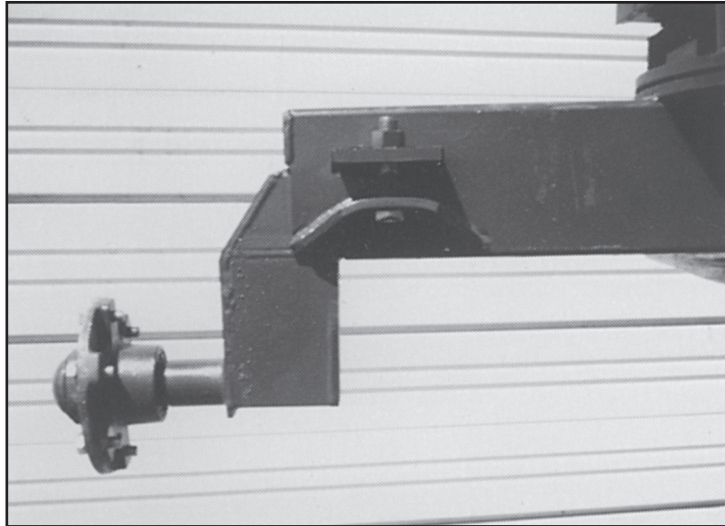


Fig. 10 HIGH CLEARANCE AXLES

### 8.2 LARGE FLOTATION TIRES

Optional large flotation tires are available to reduce compaction in the field.

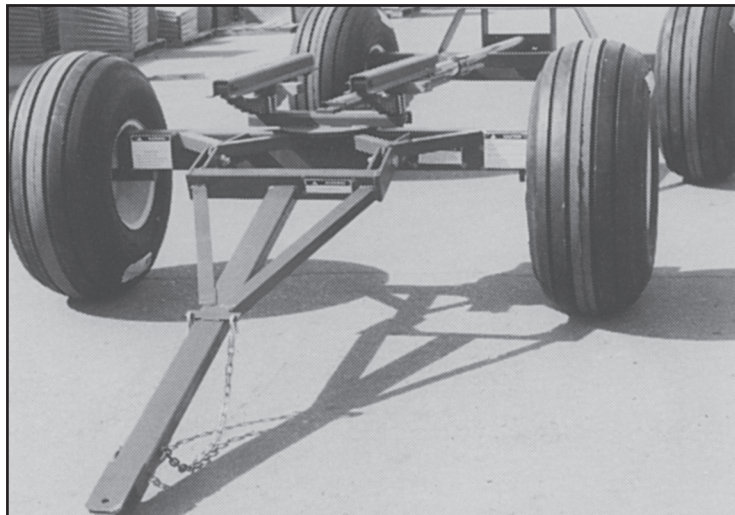


Fig. 11 LARGE FLOTATION TIRES



## 8.3 LIQUID TANK

The Model N-1000 Wagon can be field converted or ordered with a liquid tank package.



**Fig. 12 SN-1000-120 WITH 1000 GALLON LIQUID TANK KIT**

## 8.4 LIQUID ADAPTOR KIT

An optional liquid tank package is available on the Models M-1450 and M-2000 Wagons.



**Fig. 13 SM-1450 WITH 1000 GALLON LIQUID TANK KIT**



## 9 SPECIFICATIONS

### 9.1 MECHANICAL

MODEL	M-1000	M-1450, SM-1450 N-1000, SN-1000 SN-1000-120 PCUM-10, PCUM-11	M-2000 M-2100 M-2200 M-3200
G.V.W.:	12,000 lbs. (5500 kg)	14,000 lbs. (6400 kg)	22,000 lbs. (10,000 kg)
King Pin:	2 inch (50.8 mm)	2 inch (50.8 mm)	2 inch (50.8 mm)
Hubs:	6 bolt	6 bolt	8 bolt

- Options:**
- 2 or 4 wheel electric or hydraulic brakes.
  - Adjustable tread width.
  - Various ground clearance.
  - Various tire sizes.
  - Desired wheel base.
  - Tires:
    - 11L x 15 8-ply, inflate to recommended PSI, printed on tire
    - 12.5L x 15 8-ply, inflate to recommended PSI, printed on tire
    - 12.5L x 15 10-ply, inflate to recommended PSI, printed on tire
    - 14L x 16.1 8-ply, inflate to recommended PSI, printed on tire
    - 16.5L x 16.10-ply, inflate to recommended PSI, printed on tire
    - 16.5L x 16.1, 14-ply, inflate to recommended PSI, printed on tire
    - 21.5L x 16.1 10 or 14 ply, inflate to recommended PSI, printed on tire
    - 385/65-22.5 Super Single Truck Tire, inflate to a maximum of 65 PSI
    - 425/65-22.5 Super Single Truck Tire, inflate to a maximum of 65 PSI
    - 445/65-22.5 Super Single Truck Tire, inflate to a maximum of 65 PSI
    - 445/50-22.5 Super Single Truck Tire, inflate to a maximum of 65 PSI
    - 11:00x22.5 Super Single Truck Tire, inflate to a maximum of 65 PSI
- NOTE: ALL 22.5 WHEELS HAVE A MAXIMUM PSI OF 65**
- Wheels:
    - 16.1 x 11
    - 16.1 x 14
    - 16.1 x 16
    - 16.1 x 18
    - 22.5 x 8.25, rim capacity 65 PSI
    - 22.5 x 11.75, rim capacity 65 PSI
    - 22.5 x 13, rim capacity 65 PSI
    - 22.5 x 13.5, rim capacity 65 PSI
    - 22.5 x 14, rim capacity 65 PSI

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**



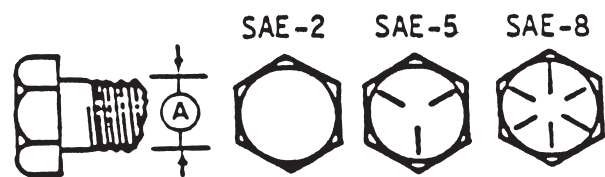
## 9.2 BOLT TORQUE

### CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

### TORQUE SPECIFICATIONS

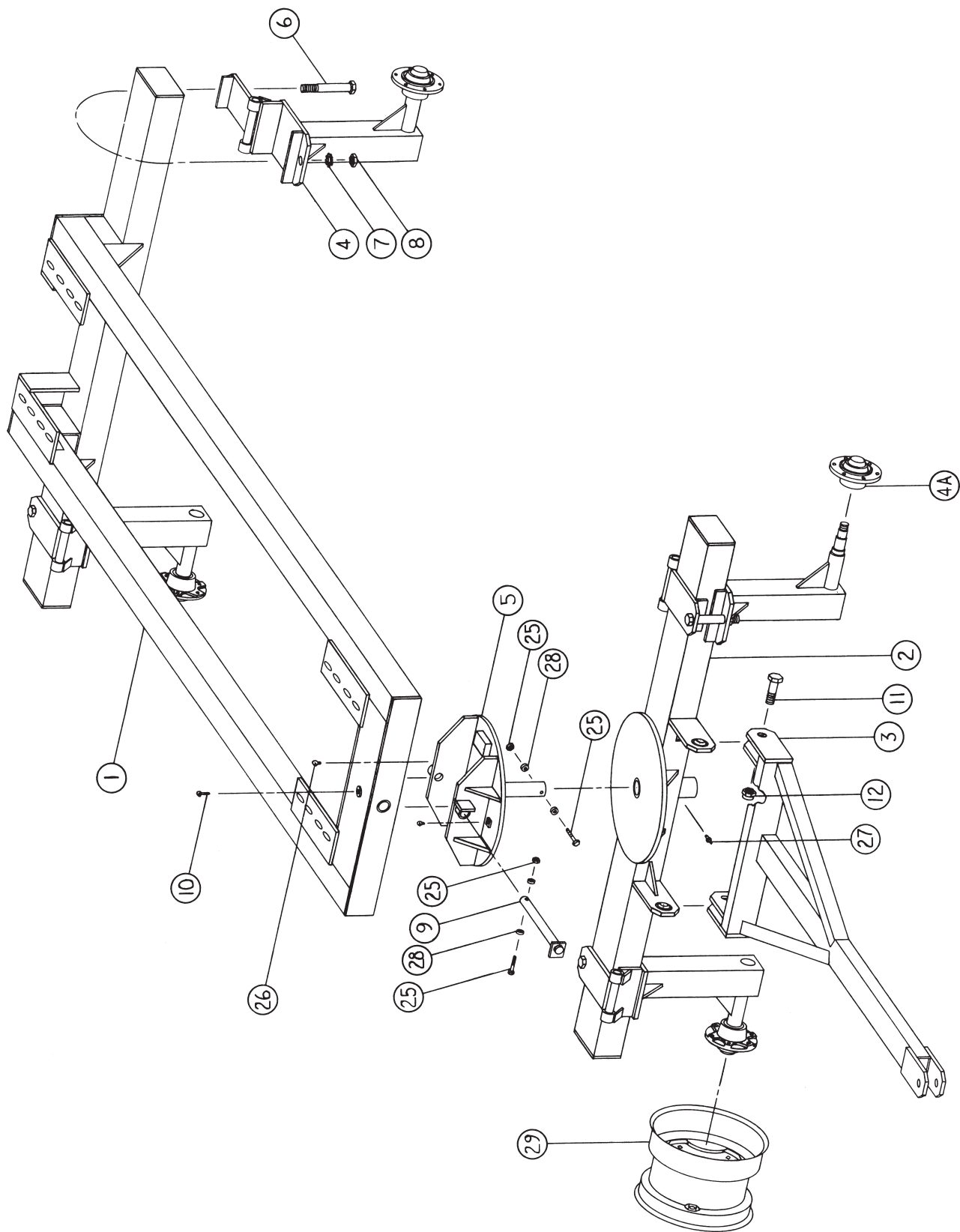
Bolt Diameter "A"	Bolt Torque *					
	SAE 2		SAE 5		SAE 8	
	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
1/4"	6	(8)	9	(12)	12	(17)
5/16"	10	(13)	19	(25)	27	(36)
3/8"	20	(27)	33	(45)	45	(63)
7/16"	30	(41)	53	(72)	75	(100)
1/2"	45	(61)	80	(110)	115	(155)
9/16"	70	(95)	115	(155)	165	(220)
5/8"	95	(128)	160	(215)	220	(305)
3/4"	165	(225)	290	(390)	400	(540)
7/8"	170	(230)	420	(570)	650	(880)
1"	225	(345)	630	(850)	970	(1320)



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

\* Torque value for bolts and capscrews are identified by their head markings.





M-1000	10-25-85	DBW
--------	----------	-----

**DUO LIFT** Manufacturing Company, Inc.





**N-1000  
Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	13934	800050	Main Frame with 4" x 4" Stringers and 80" Back Axle Length	1
1	1393480	800287	Main Frame with 4" x 4" Stringers and 110" Back Axle Length	1
2	482580	800051	Front Bolster with 80" Axle Length	1
2	4825110	800288	Front Bolster with 120" Axle Length	1
3	246428	800004	Tongue with Two Safety Chains	1
4	4418	800052	Strut Assembly with Spindle, Less Hub	4
4	4418WS	800234	Strut Assembly with Spindle and Weld-On Strut Step, Less Hub	4
4A	611WP	HB000002	Hub, 6-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For Complete Parts, See 6-Bolt Ag Hubs Parts Sheet)	
5	91620	800053	5th Wheel Assembly with King Pin, Rocker Pin, (2) Grease Fittings, and Keeper Bolt	1
6	187GR8	BT000002	1" Strut Clamp Bolt	4
7	LN18	WA000001	1" Star Lock Washer	4
8	N18	NT000001	1" Nut	4
9	125135	800054	Rocker Pin, 1.25" Dia. x 13.5" Long	1
10	ST1606B	ZK000006	Grease Fitting, Rocker Pin	1
11	1845	BT000001	1" Tongue Bolt	2
12	1864	NT000002	1" Lock Nut	2
25	38163	800277	Keeper Bolt and Nut	1
26	5400	ZK000004	Grease Fitting, 5th Wheel	2
27	5003	ZK000002	Grease Fitting, King Pin	1
28	3825	O7100001	Spacer, 3/8" DOM x 1/4"	2
29	151066	WH000006	15" x 10" x 6 - 6" Wheel	4
--	8605452	800242	Safety Chain 3/8" x 40" w/ Slip Hook, Latch, & Mounting Bracket	2
--	TW-101-WCI	800275	Safety Sign Set (Warning Decals)	1
--	1285DL	--	Rocker Pin Bushing, 1.25" Diameter x 8.5" Long	1
--	2508DL	--	King Pin Bushing, 2.50" ID x 8.5" Long	1
--	251175S	8090001	King Pin Shaft, 2.5" Diameter x 11.75" Long	1

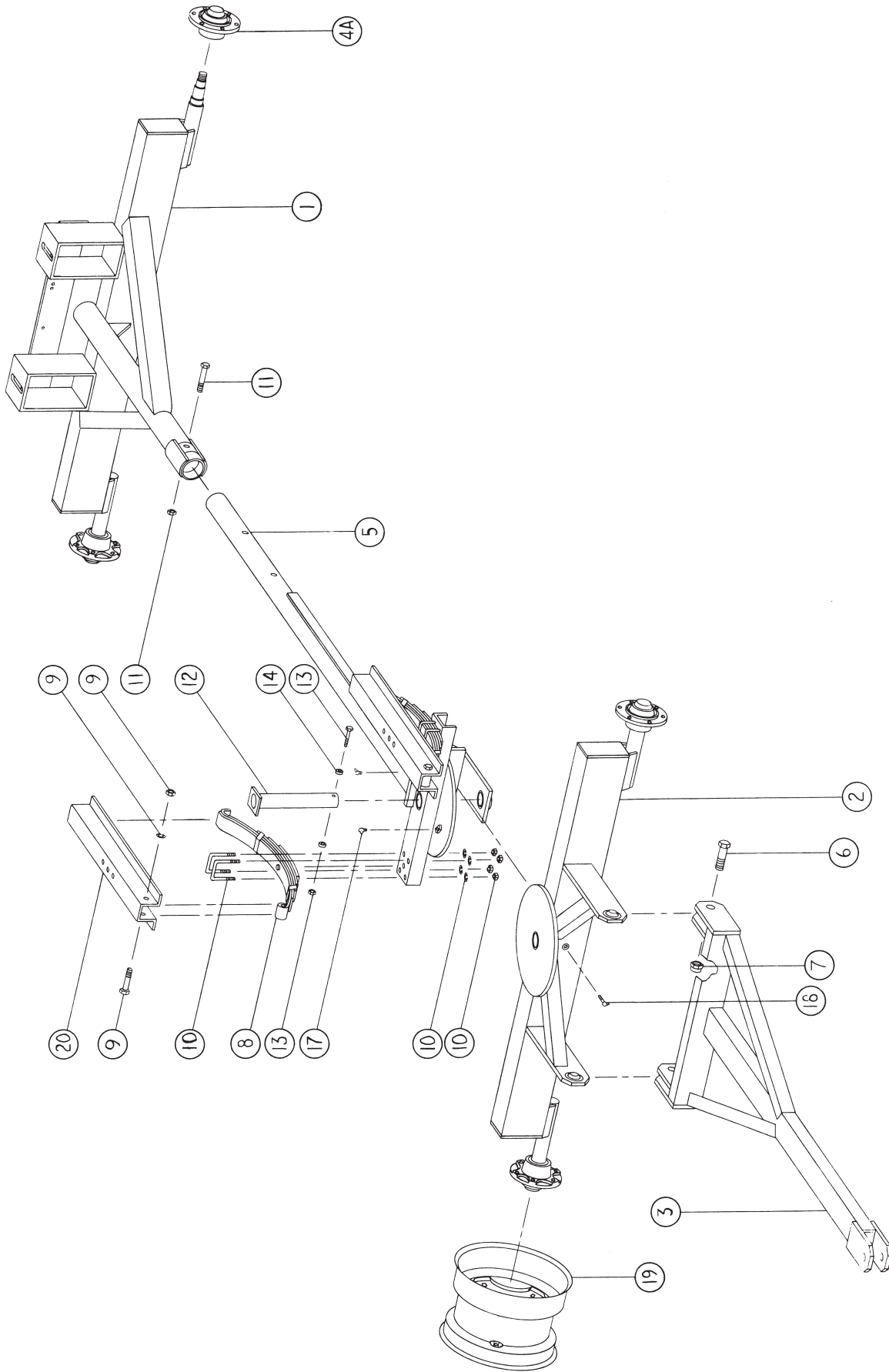
**SN-1000  
Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	13993480	800057	Main Frame with 4" x 6" Stringers and 80" Back Axle Length	1
1	13934110	800058	Main Frame with 4" x 6" Stringers and 110" Back Axle Length	1
1	13934126	800059	Main Frame with 4" x 6" Stringers and 126" Back Axle Length	1
1	16934	800241	Frame with Rear Pump Plates, ADD TO MAIN FRAME ABOVE	1
2	482580	800051	Front Bolster with with 80" Axle Length	1
2	4825110	800588	Front Bolster with 120" Axle Length	1
2	4825126	800289	Front Bolster with 136" Axle Length	1
4	4418GD	800099	Strut Assembly with Ground Drive Mounting Arm, Less Hub	1

ALL OTHER PARTS ARE THE SAME AS N-1000 ABOVE

We reserve the right to make specification changes without notice.

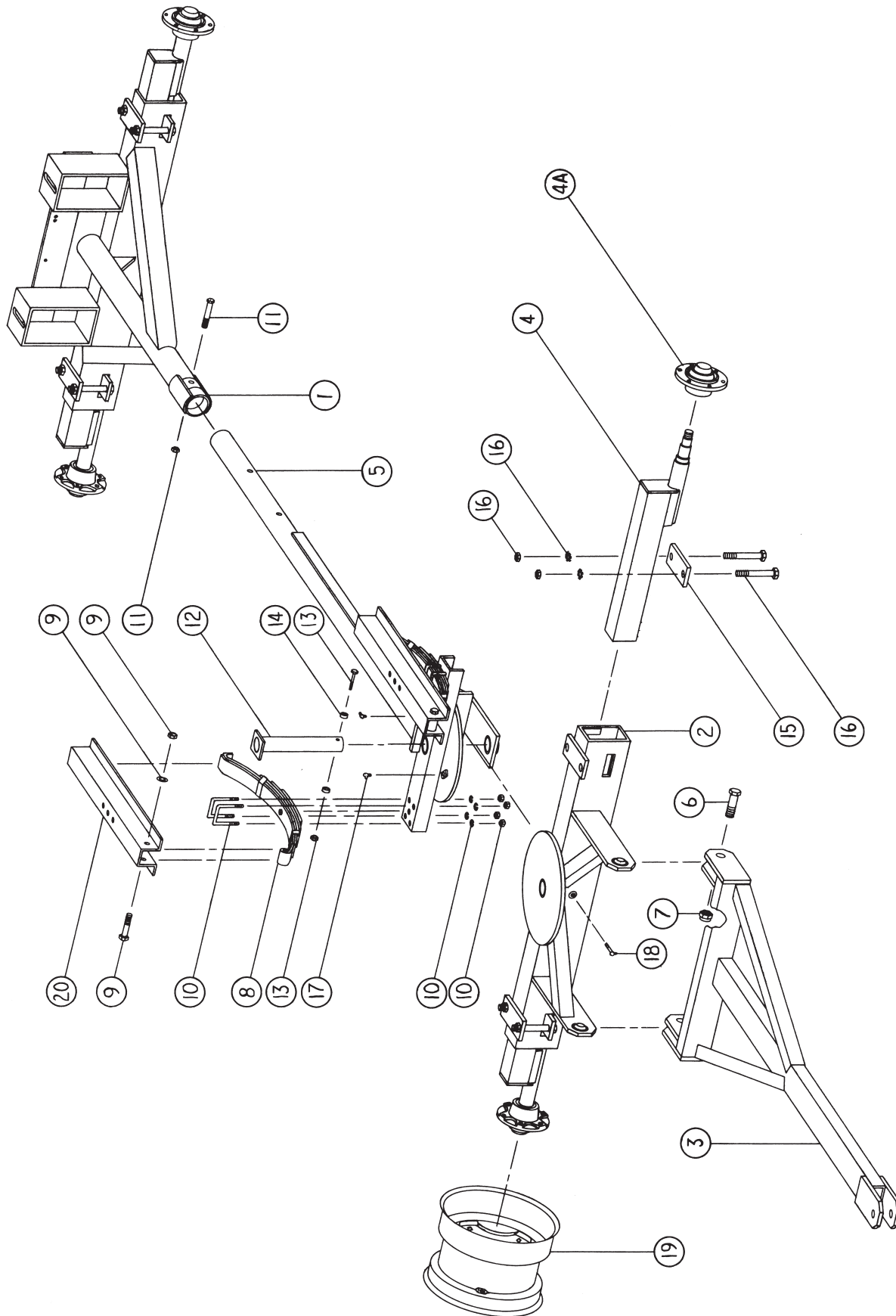




M-1000 NON-ADJ.	11-4-85	DBW
-----------------	---------	-----

**DUO LIFT** Manufacturing Company, Inc.









**M-1450  
Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	464645	800001	Back Axle, Adjustable Track	1
1	467245	800028	Back Axle, Non Adjustable Track	1
2	464684	800002	Front Axle, Adjustable Track	1
2	467284	800029	Front Axle, Non Adjustable Track	1
3	246428	800004	Tongue with Two Safety Chains	1
4	353524-16	800003	Adjustable Strut with Spindle (less hub), 16" Ground Clearance	4
4	353525-20	800009	Adjustable Strut with Spindle (less hub), 20" Ground Clearance	4
4A	611WP	HB000002	Hub, 6-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For Complete Parts, See 6-Bolt Ag Hubs Parts Sheet)	
5	16484	800005	5th Wheel and Pole	1
6	1835	BT000001	1" Tongue Bolt	2
7	1864	WT000002	1" Lock Nut	2
8	E5115	SG000003	6-Leaf x 2" Wide Slipper Spring	2
9	91635	800195	9/16" x 5" Spring Bolt, Nut and Lock Washer	2
10	245	800294	2" ID x 4 1/2" Long U-Bolt with Nuts & Lock Washers	4
11	5845	800276	5/8" x 4 1/2" Long Reach Pole Bolt with Lock Nut	1
12	2121045	800006	King Pin	1
13	38163	800277	King Pin Keeper Bolt and Lock Nut	1
14	3825	O7100001	Spacer, 3/8" DOM x 1/4"	2
15	538	O1090006	Strut Clamp Plate, 4" x 8" x 1/2"	4
16	7560	800278	3/4" x 6" Long Strut Bolt, Nut and Star Lock Washer	8
17	5410	ZK000005	Grease Fitting, 5th Wheel	2
18	5010	ZK000002	Grease Fitting, King Pin	1
19	151066	WH000006	15" x 10" x 6 - 6" Wheel	4
20	516323	800026	Tank Support Member	2
--	8605452	800242	Safety Chain 3/8 x 40" w/ Slip Hook, Latch & Mounting Bracket	2
--	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.

(800) 243-2583

SALES@DUOLIFT.COM

WWW.DUOLIFT.COM





## M-1000 Parts List

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	464645	800001	Back Axle, Adjustable Track	1
1	467245	800028	Back Axle, Non Adjustable Track	1
2	464684	800002	Front Axle, Adjustable Track	1
2	467284	800029	Front Axle, Non Adjustable Track	1
3	246428	800004	Tongue with Two Safety Chains	1
4	353524-16	800003	Adjustable Strut with Spindle (less hub), 16" Ground Clearance	4
4	353525-20	800009	Adjustable Strut with Spindle (less hub), 20" Ground Clearance	4
4A	611WP	HB000002	Hub, 6-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For Complete Parts, See 6-Bolt Ag Hubs Parts Sheet)	
5	16484	800005	5th Wheel and Pole	1
6	1835	BT000001	1" Tongue Bolt	2
7	1864	WT000002	1" Lock Nut	2
8	E5226	SG000002	5-Leaf x 2" Wide Slipper Spring	2
9	91635	800195	9/16" x 5" Spring Bolt, Nut and Lock Washer	2
10	246	800194	2" ID x 3-3/4" Long U-Bolt with Nuts and Lock Washers	4
11	5845	800276	5/8" x 4 1/2" Long Reach Pole Bolt with Lock Nut	1
12	2121045	800006	King Pin	1
13	38163	800277	King Pin Keeper Bolt and Lock Nut	1
14	3825	O7100001	Spacer, 3/8" DOM x 1/4"	2
15	538	O1090006	Strut Clamp Plate, 4" x 8" x 1/2"	4
16	7560	800278	3/4" x 6" Long Strut Bolt, Nut and Star Lock Washer	8
17	5410	ZK000005	Grease Fitting, 5th Wheel	2
18	5010	ZK000002	Grease Fitting, King Pin	1
19	15866	WH000005	15" x 8" x 6 - 6" Wheel	4
20	25253	800007	Tank Support Member	2
--	8605452	800242	Safety Chain 3/8 x 40" w/ Slip Hook, Latch & Mounting Bracket	2
--	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.





**M-1750  
Parts List**

				NUMBER PER TRAILER
KEY	PART NO.	REF. NO.	DESCRIPTION	
1			Back Axle, Adjustable Track	1
1	467245	800028	Back Axle, Non Adjustable Track	1
2			Front Axle, Adjustable Track	1
2	467284	800029	Front Axle, Non Adjustable Track	1
3	34316	8000040	Tongue, Heavy Duty with Two Safety Chains	1
4	353524-16	800003	Adjustable Strut with Spindle (less hub), 16" Ground Clearance	4
4	353525-20	800009	Adjustable Strut with Spindle (less hub), 20" Ground Clearance	4
4A	778WP-I	HB000004	Hub, 8-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For Complete Parts, See 8-Bolt Ag Hubs Parts Sheet)	
5	16484	800005	5th Wheel and Pole	1
6	1835	BT000001	1" Tongue Bolt	2
7	1864	WT000002	1" Lock Nut	2
8	E5115	SG000003	6-Leaf x 2" Wide Slipper Spring	2
9	91635	800195	9/16" x 5" Spring Bolt, Nut and Lock Washer	2
10	245	800294	2" ID x 4 1/2" Long U-Bolt with Nuts & Lock Washers	4
11	5845	800276	5/8" x 4 1/2" Long Reach Pole Bolt with Lock Nut	1
12	2121045	800006	King Pin	1
13	38163	800277	King Pin Keeper Bolt and Lock Nut	1
14	3825	O7100001	Spacer, 3/8" DOM x 1/4"	2
15	538	O1090006	Strut Clamp Plate, 4" x 8" x 1/2"	4
16	7560	800278	3/4" x 6" Long Strut Bolt, Nut and Star Lock Washer	8
17	5410	ZK000005	Grease Fitting, 5th Wheel	2
18	5010	ZK000002	Grease Fitting, King Pin	1
19	1611188	WH000011	16.1" x 11" x 8 - 8" Wheel	4
20	516323	800026	Tank Support Member	2
--	8605451	800243	Safety Chain 1/2 x 40" w/ Slip Hook, Latch & Mounting Bracket	2
--	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.





**M-2000  
Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	553848450	8000030	Back Axle, Non Adjustable Track	1
2	55384820	800031	Front Axle, Non Adjustable Track	1
3	34316	8000040	Tongue, Heavy Duty with Two Safety Chains	1
4A	821WP-L	HB000004	Hub, 8-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
4A	819BWP-I	HB000009	Braked Hub, 8-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	1
--	--	--	(For Complete Parts, See 8-Bolt Ag Hubs Parts Sheet)	
5	16484	800036	5th Wheel and Pole	1
6	1835	BT000001	1" Tongue Bolt	2
7	1864	WT000002	1" Lock Nut	2
8	E5115	SG000003	6-Leaf x 2" Wide Slipper Spring	2
9	91635	800195	9/16" x 5" Spring Bolt, Nut and Lock Washer	2
10	245	800294	2" ID x 4 1/2" Long U-Bolt with Nuts & Lock Washers	4
11	5845	800276	5/8" x 4 1/2" Long Reach Pole Bolt with Lock Nut	1
12	2121045	800006	King Pin	1
13	38163	800277	King Pin Keeper Bolt and Lock Nut	1
14	3825	O7100001	Spacer, 3/8" DOM x 1/4"	2
17	5410	ZK000005	Grease Fitting, 5th Wheel	2
18	5010	ZK000002	Grease Fitting, King Pin	1
19	1611188	WH000011	16.1" x 11" x 8 - 8" Wheel	4
20	516323	800026	Tank Support Member	2
--	8605451	800243	Safety Chain 1/2 x 40" w/ Slip Hook, Latch & Mounting Bracket	2
--	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.





M-2200

## Parts List

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	4664	800034	Back Axle with Spindles, Less Hubs	1
2	4664	800035	Front Axle with Spindles, Less Hubs	1
3	34316	8000040	Tongue, Heavy Duty with Two Safety Chains	1
4A	821WP-L	HB000008	Hubs, 8-Bolt with Bearings, Seal, Dust Cap, and Wheel Bolts	4
4A	819BWP-I	HB000009	Braked Hub, 8-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	
--	--	--	(For Complete Parts, see 8-Bolt Ag Hubs Parts Sheet)	
5	9.16E+08	800036	5th Wheel and Pole	1
--	4412	800037	Rocking Front Bolster	1
6	1845	BT000001	1" Tongue Bolt	2
7	1864	NT000002	1" Lock Nut	2
9	2135	O8030003	Rocker Pin, 2" Dia. x 8 3/4" Long	1
10	ST1606B	ZK000006	Grease Fitting, Rocker Pin	1
17	2121045	O8030001	King Pin	1
18	38163	800277	King Pin Keeper Bolt and Lock Nut	1
19	3825	O7100001	Spacer	2
--	5410	ZK000004	Grease Fitting, 5th Wheel	2
--	5010	ZK000002	Grease Fitting, King Pin	1
	1611188	WH000011	16.1" x 11" x 8 - 8" Wheel	4
	8605451	800243	Safety Chain 1/2" x 40" w/ Slip Hook, Latch, & Mounting Bracket	2
	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.





**M-2100  
Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1			Back Axle with Spindles, Less Hubs	1
2			Front Axle with Spindles, Less Hubs	1
3	34316	8000040	Tongue, Heavy Duty with Two Safety Chains	1
4A	821WP-L	HB000008	Hubs, 8-Bolt with Bearings, Seal, Dust Cap, and Wheel Bolts	4
4A	819BWP-I	HB000009	Braked Hub, 8-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For Complete Parts, see 8-Bolt Ag Hubs Parts Sheet)	
5	916202200	800036	5th Wheel and Pole	1
--			Rocking Front Bolster	1
6	1845	BT000001	1" Tongue Bolt	2
7	1864	NT000002	1" Lock Nut	2
9	2135	O8030003	Rocker Pin, 2" Dia. x 8 3/4" Long	1
10	ST1606B	ZK000006	Grease Fitting, Rocker Pin	1
17	2121045	O8030001	King Pin	1
18	38163	800277	King Pin Keeper Bolt and Lock Nut	1
19	3825	O7100001	Spacer	2
--	5410	ZK000004	Grease Fitting, 5th Wheel	2
--	5010	ZK000002	Grease Fitting, King Pin	1
	1611188	WH000011	16.1" x 11" x 8 - 8" Wheel	4
	8605451	800243	Safety Chain 1/2" x 40" w/ Slip Hook, Latch, & Mounting Bracket	2
	TW-101-WCI	800274	Safety Sign Set (Warning Decals)	1

We reserve the right to make specification changes without notice.





## P.C.U.M. Adjustable Track Parts List

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	464845	800041	Back Axle, Adjustable Track	1
2	464884	800042	Front Axle, Adjustable Track	1
3	246428	800004	Tongue with Two Safety Chains	1
4	353524-20	800043	Strut with Spindle (less hub), 20" Ground Clearance	4
4A	611WP	HB000002	Hub, 6-Bolt with Bearings, Seal, Dust Cap and Wheel Bolts	4
--	--	--	(For complete parts, See 6-Bolt Ag Hubs Price Sheet)	
5	91620	800044	5th Wheel Assembly with King Pin, Rocker Pin, (2) Grease	1
--	--	--	Fittings, and Keeper Bolt	
9	125135	800045	Rocker Pin, 1.25" Dia. x 13.5" Long	1
10	1618B	ZK000007	Grease Fitting, Rocker Pin	1
11	1845	BT000001	1" Tongue Bolt	2
12	1864	NT000002	1" Lock Nut	2
15	538	O1090006	Strut Clamp Plate, 4" x 8" x 1/2"	4
16	7560	800278	3/4" x 6" Long Strut Bolt, Nut and Star Lock Washer	4
19	15866	WH000005	15" x 8" x 6 - 6" Wheel	4
25	38163	800277	Keeper Bolt & Nut	1
26	5400	ZK000004	Grease Fitting, 5th Wheel	2
27	5003	ZK000002	Grease Fitting, King Pin	1
28	3825	O7100001	Spacer, 3/8" DOM x 1/4"	4
29	1616	70000007	Receiver Box and Rocking Bolster Assembly	1
--	8605452	800242	Safety Chain 3/8" x 40" w/ Slip Hook, Latch, & Mounting Bracket	2
--	TW-101-WC	800274	Safety Sign Set (Warning Decals)	1

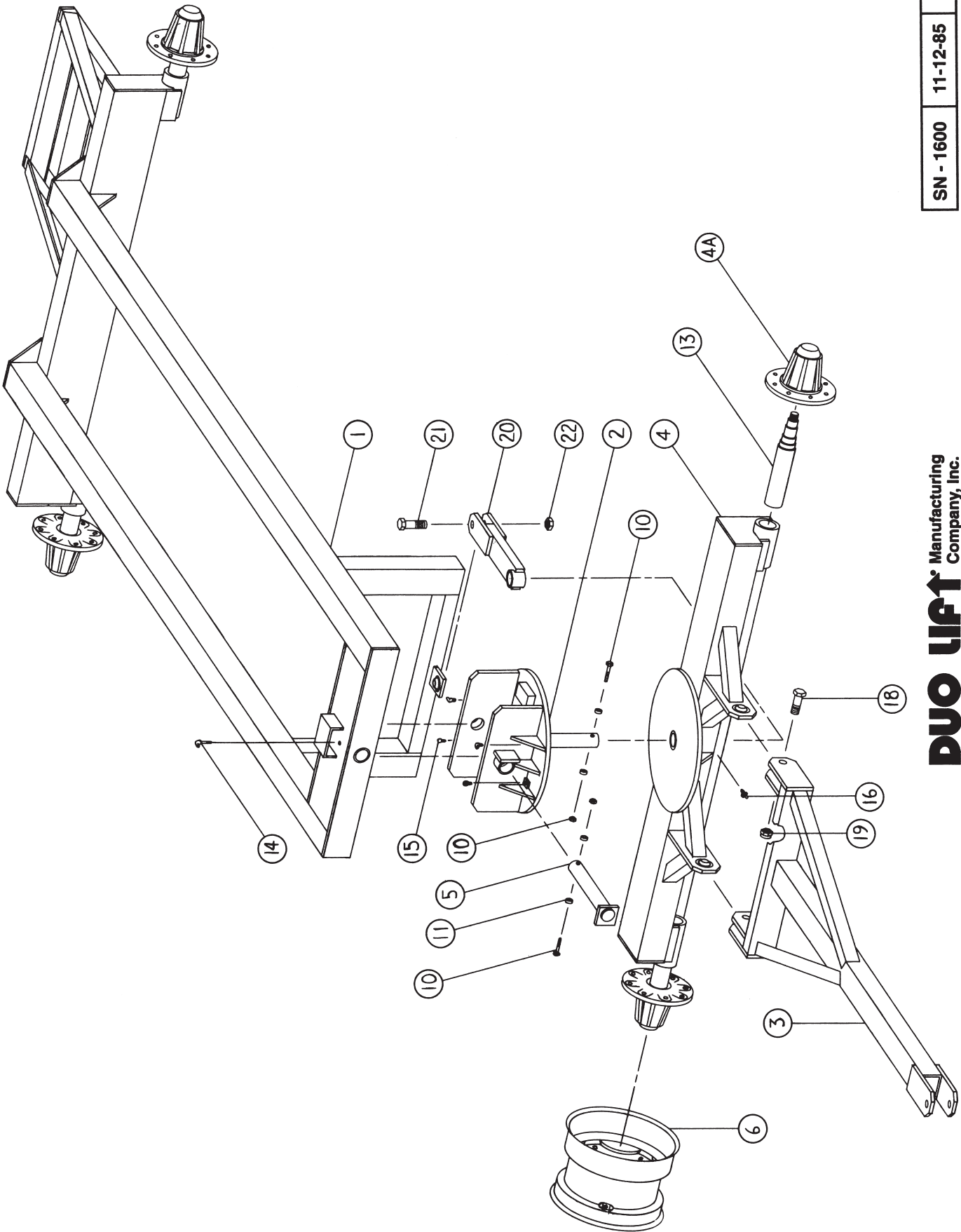
## PCUM Non-Adjustable Track

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	468245	800048	Back Axle with Spindles, Less Hubs	1
2	467284	800049	Front Axle with Spindles, Less Hubs	1

ALL OTHER PARTS ARE THE SAME AS ADJUSTABLE TRACK PARTS ABOVE

We reserve the right to make specification changes without notice.









**SN-1600**  
**Parts List**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	13938CW	800279	Frame Assembly with Spindles, Less Hubs	1
2	9162022	800280	5th Wheel Assembly	1
3	34316	8000040	Tongue, Heavy Duty with Two Safety Chains	1
4	482587	800282	Front Axle with Spindles, Less Hubs	1
4A	819WP	HB000009	Hubs, 8-Bolt with Bearings, Seal, Dust Cap, and Wheel Bolts	4
--	--	--	(For Complete Parts, see 8-Bolt Ag Hubs Parts Sheet)	
5	21322	800283	Rocker Pin	1
6	1611189	WH000011	16.1" x 11" x 8 - 8" Wheel	4
9	210104500	--	Brake Flange (welds to spindle)	
10	383	--	King Pin Keeper Bolt & Nut	1
11	3825		Spacer	2
13	S819-1144	SL000012	Spindle with Castle Nut, Washer & Cotter Pin	4
14	S819B-1144	--	Spindle with Castle Nut, Washer, Cotter Pin, & Brake Flange	4
14	1606B	--	Grease Fitting	1
15	5400	ZK000004	Grease Fitting, 5th Wheel	2
16	5003	ZK000002	Grease Fitting, King Pin	1
17	101087100	--	Brake Line Kit	1
18	1845	BT000001	1" Tongue Bolt	2
19	1864	NT000002	1" Lock Nut	2
20	3228	--	Stabilizer Bar	1
21	1835	--	1" Stabilizer Bolt	1
22	1864	NT000002	1" Lock Nut	1
23	TWL-151-DS	JK000001	2,000 Lb. Top-Wind Jack (mounted to tongue)	1
-	8605451	800243	Safety Chain 1/2" x 40" with Slip Hook, Latch, & Mounting Bracket	2
-	TW-101-WC	800275	Safety Sign Set (Warning Decals)	1

**SN-1650-CB**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	13938165	800284	Frame Assembly with Spindles, Less Hubs	1

ALL OTHER PARTS ARE SAME AS SN-1600 ABOVE

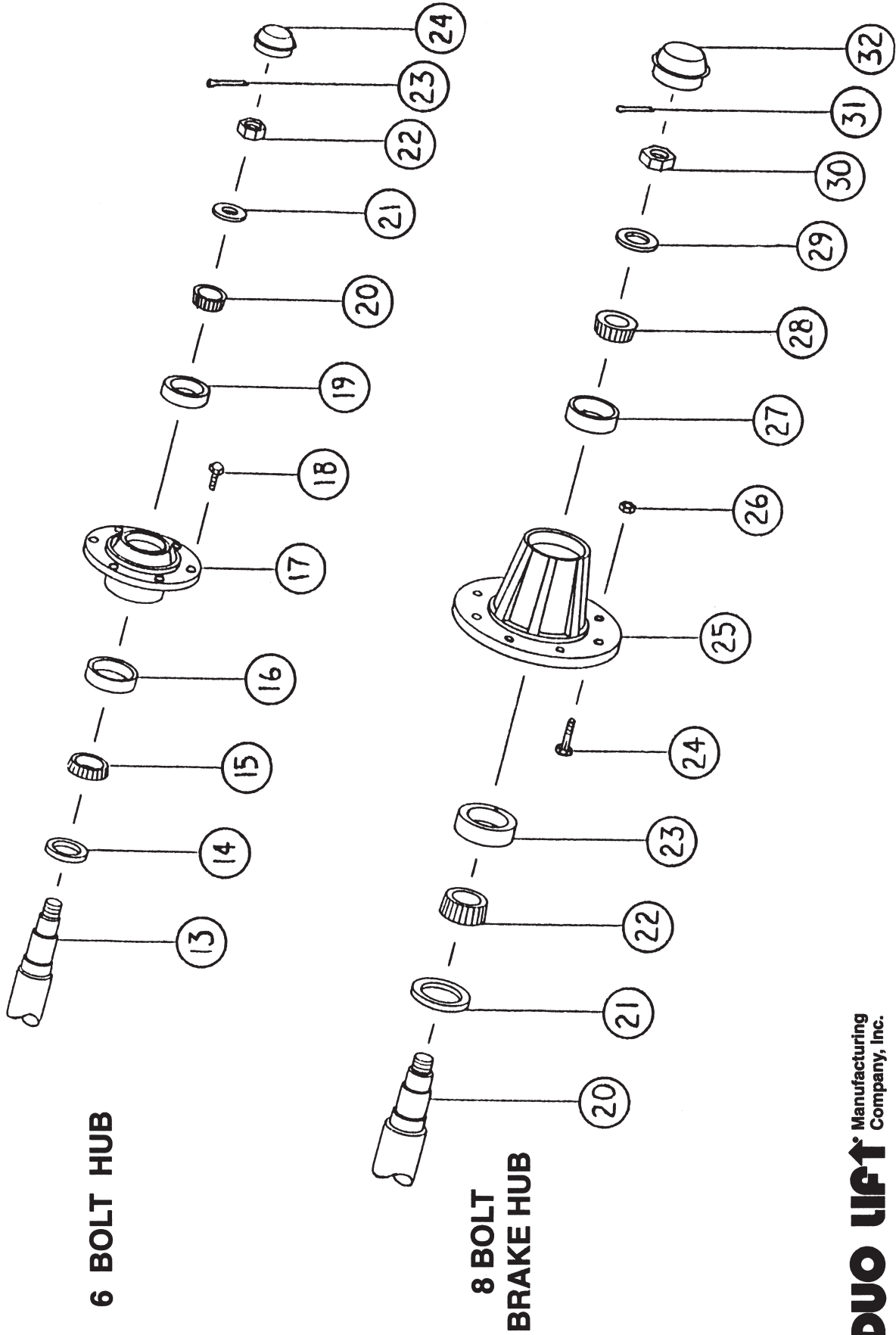
**DAT-8-22**

KEY	PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
1	13938	800285	Frame Assembly with Spindles, Less Hubs	1

ALL OTHER PARTS ARE SAME AS SN-1600 ABOVE

We reserve the right to make specification changes without notice.









## 6-Bolt Hub Parts List

### 611 Hub:

6-Bolt on 6" Bolt Circle, 3,600 Lbs. Capacity Each

PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
611WP	HB000002	611 Hub, Complete with All Parts	4
611	--	611 Hub with Cups and Wheel Bolts Only	4
29749	HB000039	Inner Bearing	4
67048	HB000040	Outer Bearing	4
29710	--	Inner Cup	4
67010	HB000038	Outer Cup	4
17617	HB000015	Seal	4
P502007	HB000016	Dust Cap	4
617378	HB000092	Wheel Bolt	24
S611-1144-11	SL000003	Spindle, 2.0" Dia. x 11" Long, with Castle Nut, Washer and Cotter Pin	4
S611-1144-13	SL000005	Spindle, 2.0" Dia. x 13.625" Long, with Castle Nut, Washer and C. Pin	4
2309SL	SL000016	1" Castle Nut	4
--	SL000019	Washer	4
--	SL000014	Cotter Pin	4

### 611B Braked Hub

6-Bolt on 6" Bolt Circle, 3,600 Lbs. Capacity Each

PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
611BWP	HB000003	611B Hub, Complete with All Parts	4
611B	--	611B Hub with Cups, Wheel Studs and Nuts	4
S611B-1144	--	Spindle, 2.0" Dia. x 13.625" Long, with Brake Flange, Castle Nut,	4
-	-	Washer and Cotter Pin	4

ALL OTHER PARTS ARE SAME AS 611WP HUB ABOVE.

We reserve the right to make specification changes without notice.





## 8-Bolt Hub Parts List

### 819 Braked Hub:

8-Bolt on 8" Bolt Circle, 5,790 Lbs. Capacity Each

PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
819BWP-I	HB000009	819 Hub, Complete with all Parts, Wheel Studs Installed	4
819BWP-L	HB000008	819 Hub, Complete with all Parts, Wheel Studs Loose	4
819B	--	819 Hub with Cups Only	4
3780	BG000003	Inner Bearing	4
2790	BG000004	Outer Bearing	4
3720	--	Inner Cup	4
2720	--	Outer Cup	4
25091	HB000051	Seal	4
NA	--	Dust Cap	4
ST625	HB000017	Wheel Stud (9/16" x 2" Long)	32
STN-629	--	9/16" Nut	32
S819-1144	SL000011	Spindle, 2.50" Diameter x 18" Long with Castle Nut,	4
-	--	Washer, and Cotter Pin	4
S819B-1144	--	Same as Above with Brake Flange Installed	4
S819-1144	SL000012	Spindle, 3.0" Diameter x 18" Long with Castle Nut,	4
-	--	Washer, and Cotter Pin	4
S819B-1144	--	Same as Above with Brake Flange Installed	4
-	SL000016	1" Castle Nut	4
-	SL000014	Washer	4
-	SL000019	Cotter Pin	4

### 821 Hub:

8-Bolt on 8" Bolt Circle, 5,790 Lbs. Capacity Each

PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
821WP-I	HB000047	821 Hub, Complete with all Parts, Wheel Studs Installed	4
821WP-L	--	821 Hub, Complete with all Parts, Wheel Studs Loose	4
821B	--	821 Hub with Cups Only	4
3780	BG000003	Inner Bearing	4
2790	BG000004	Outer Bearing	4
3720	--	Inner Cup	4
2720	--	Outer Cup	4
CR25091	HB000051	Seal	4
P502001	--	Dust Cap	4
ST625	HB000017	Wheel Stud (9/16" x 2" Long)	32
STN-629	--	9/16" Nut	32
S821-1144	HB000011	Spindle, 2.50" Diameter x 18" Long with Castle Nut,	4
-	--	Washer, and Cotter Pin	4
S821-1144-3	SL000039	Spindle, 3.0" Diameter x 18" Long with Castle Nut,	4
-	--	Washer, and Cotter Pin	4
--	SL000016	1" Castle Nut	4
--	SL000019	Washer	4

We reserve the right to make specification changes without notice.





## 8-Bolt Hub Parts List

### 778 Hub:

8-Bolt on 8" Bolt Circle, 4,910 Lbs. Capacity Each

PART NO.	REF. NO.	DESCRIPTION	NUMBER PER TRAILER
778WP-I	HB000004	778 Hub, Complete with all Parts, Wheel Studs Installed	4
778WP-L	--	778 Hub, Complete with all Parts, Wheel Studs Loose	4
25590	--	Inner Bearing	4
25877	--	Outer Bearing	4
25520	--	Inner Cup	4
25821	--	Outer Cup	4
CR20148	--	Seal	4
P502001	--	Dust Cap	4
ST625	HB000017	Wheel Stud (9/16" x 2" Long)	32
STN-629	--	9/16" Nut	32
S778-1144	--	Spindle, 2.50" Diameter x 18" Long with Castle Nut,	4
-	--	Washer, and Cotter Pin	4
S778-1144	--	Same as Above with Brake Flange Installed	4
--	SL000016	1" Castle Nut	4
--	SL000019	Washer	4
--	SL000014	Cotter Pin	4

We reserve the right to make specification changes without notice.



# INDEX

## A

ATTACHING/UNHOOKING..... 11

## B

BOLT TORQUE ..... 32

## E

EQUIPMENT MATCHING ..... 10

## F

FIELD OPERATION ..... 13

FRAME LENGTH ..... 23

## G

GENERAL SAFETY ..... 4

GREASING ..... 18

## I

INTRODUCTION..... 1

## L

LARGE FLOTATION TIRES ..... 29

LIQUID TANK ..... 30

## M

MAINTENANCE ..... 22

MECHANICAL SPECIFICATIONS 31

## O

OPERATING SAFETY ..... 5

OPERATION ..... 8

OPTIONS ..... 29

## P

PARTS LISTS ..... 33+

PLUMBING SAFETY ..... 5

PRE-OPERATION CHECKLIST .... 9

## S

SAFETY SIGN LOCATIONS ..... 7

SAFETY SIGNS ..... 6

SAFETY..... 3

SERIAL NUMBER LOCATION ..... 2

SERVICE AND MAINTENANCE .... 18

SERVICE RECORD ..... 21

SERVICING INTERVALS ..... 20

SHIPPING AND ASSEMBLY ..... 27

SPECIFICATIONS ..... 31

STORAGE ..... 17

## T

TIRE MOUNTING SAFE- 6

TIRE SAFETY ..... 6

TRANSPORTING ..... 15

TROUBLESHOOTING ..... 24

## W

WAGON BREAK-IN ..... 9

WHEEL SPACING ..... 22







**DUO LIFT MANUFACTURING  
COMPANY, INC.  
2810 38th STREET  
COLUMBUS, NEBRASKA 68601  
PHONE (402) 564-8023**

**PRINTED IN USA  
ISSUE DATE: JUNE 4, 2024**

**PART NUMBER: W-OM-108**