



DUMP TRAILER OWNER'S MANUAL

**Superior Mfg. Inc.
11333 Elberfeld Rd.
Elberfeld, IN 47613**

1-888-877-5674

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INTRODUCTION

This manual is provided to every user of a newly manufactured SUPERIOR trailer to acquaint you with the importance of maintenance and safety in the operation of your trailer.

The life of a trailer can be increased with adequate regular service and an organized Trailer Preventative Maintenance program (TPM). The Department of Transportation requires by regulation that maintenance records be kept on every commercial highway vehicle. It is to your advantage to be able to show that regularly scheduled TPM inspection checks have been performed on every piece of equipment operated and will place you in the most favorable position from a legal standpoint in the event of an accident involving your equipment.

If Superior MFG can be of help in your Trailer Preventative Maintenance program, please give us a call.

IMPORTANT NOTICE

Vehicles manufactured by Superior Mfg. Inc. are designed to be operated in accordance with the gross axle weight rating (GAWR) shown on the certification label and at legal highway speeds in the service for which they were intended.

GENERAL INFORMATION

Maintenance should be performed by a Superior Dealer or by other qualified service facilities that regularly provide such service.

Alterations to a Superior Trailer should not be made without first consulting the Superior Trailer Engineering Department. Alterations could affect the structural integrity of the trailer and void the warranty. Welding or other alterations should never be made to any air reservoir, wheel, rim, air chamber, or spring.

The gross axle weight rating (GAWR) that is stamped on the certification plate is the structural capacity of the lowest rated component of the suspension, springs, hubs, drums, wheels, rims, bearings, brakes, axles, or tires.

If components are substituted that affect GAWR that are of less capacity than those originally installed, the GAWR on the certification plate must be lowered to the corresponding lower capacity by adding an "Altered Vehicle" label. If components are substituted that are of equal or greater capacity than those originally installed, then GAWR labels need not be changed.

Appearance maintenance is important to the Trucking Industry. It can favorably project the public image of your company. It also adds to their physical condition and ultimate trade-in value.

Protective films such as paints and other coatings are necessary to prevent corrosion and protect the metal surfaces. Trailers that operate in environments that are conducive to severe corrosion may require more or different protective coatings than those usually applied as standard; check with your Superior representative for recommendations.

There are "**WARNING**" and "**CAUTION**" decals prominently displayed on all trailers. All personnel operating the vehicle should follow these.

REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect, which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Superior Trailers warranty or engineering departments at the numbers below.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Superior Mfg. Inc..

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153) or write to National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington D.C. 20590; or go to <http://www.safercar.gov>. You can also obtain other information about motor vehicle safety from the Hotline.

Upon request we will furnish any additional or more detailed maintenance and operational instructions including any non-standard make of equipment that was specified and installed.

Please contact your dealer first:

Toll Free:	(888) 877-5674
Phone:	(812) 983-9900
Fax:	(812) 983-4220



SUPERIOR MFG INC
11333 ELBERFELD ROAD. ELBERFELD, IN 47613
GENERAL LOCATION: INTERSECTION OF I-64 AND I-69 OFF OF ST RD. 57

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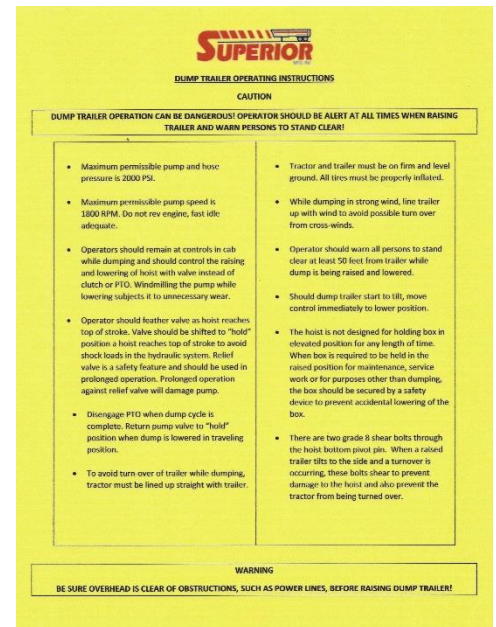
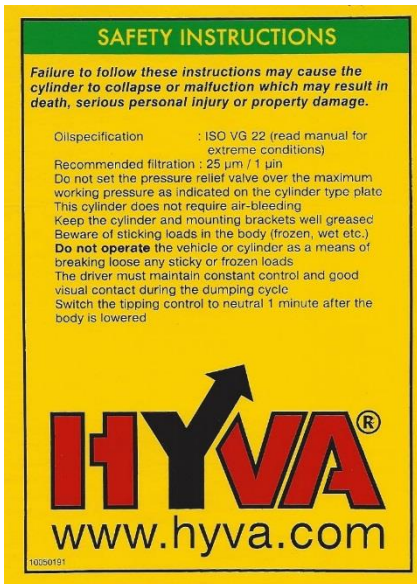
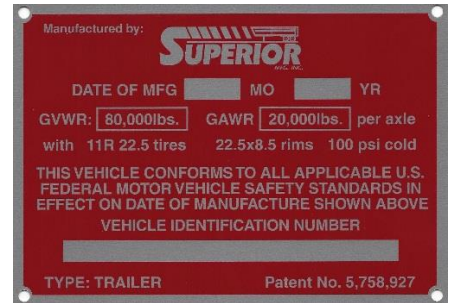
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SECTION 1

1.1 TRAILER SAFETY/CAUTION DECALS

There are many important decals on your SUPERIOR trailer. These decals serve several different purposes, including maintenance information, safety information, and information about compliance with state and federal regulations. If your trailer is missing any of the decals shown below, please contact SUPERIOR for replacement information.

These decals should be on the front of a SUPERIOR Dump Trailer.



SIDE DECALS

The serial plate and basic operating instructions will be on the front Driver Side Upright outside of the hoist enclosure.





DUMP TRAILER OPERATING INSTRUCTIONS

CAUTION

DUMP TRAILER OPERATION CAN BE DANGEROUS! OPERATOR SHOULD BE ALERT AT ALL TIMES WHEN RAISING TRAILER AND WARN PERSONS TO STAND CLEAR!

- | | |
|---|--|
| <ul style="list-style-type: none">• Maximum permissible pump and hose pressure is 2000 PSI.• Maximum permissible pump speed is 1800 RPM. Do not rev engine, fast idle adequate.• Operators should remain at controls in cab while dumping and should control the raising and lowering of hoist with valve instead of clutch or PTO. Windmilling the pump while lowering subjects it to unnecessary wear.• Operator should feather valve as hoist reaches top of stroke. Valve should be shifted to "hold" position a hoist reaches top of stroke to avoid shock loads in the hydraulic system. Relief valve is a safety feature and should be used in prolonged operation. Prolonged operation against relief valve will damage pump.• Disengage PTO when dump cycle is complete. Return pump valve to "hold" position when dump is lowered in traveling position.• To avoid turn-over of trailer while dumping, tractor must be lined up straight with trailer. | <ul style="list-style-type: none">• Tractor and trailer must be on firm and level ground. All tires must be properly inflated.• While dumping in strong wind, line trailer up with wind to avoid possible turn over from cross-winds.• Operator should warn all persons to stand clear at least 50 feet from trailer while dump is being raised and lowered.• Should dump trailer start to tilt, move control immediately to lower position.• The hoist is not designed for holding box in elevated position for any length of time. When box is required to be held in the raised position for maintenance, service work or for purposes other than dumping, the box should be secured by a safety device to prevent accidental lowering of the box.• There are two grade 8 shear bolts through the hoist bottom pivot pin. When a raised trailer tilts to the side and a turnover is occurring, these bolts shear to prevent damage to the hoist and also prevent the tractor from being turned over. |
|---|--|

WARNING

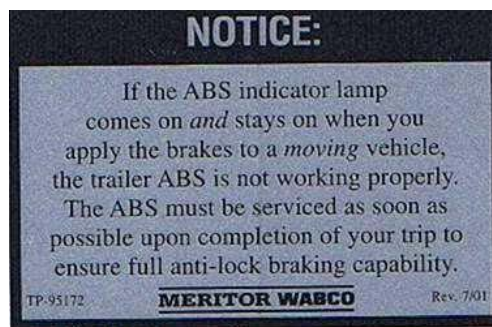
BE SURE OVERHEAD IS CLEAR OF OBSTRUCTIONS, SUCH AS POWER LINES, BEFORE RAISING DUMP TRAILER!



These are the decals located at the rear driver side of the trailer. (Always check tailgate latches before operation)



These decals may be seen at the rear of the trailer near the ABS light.



SECTION 2

2.1 SUSPENSIONS

2.1.1 TORQUE VALUES

The suspension is the assembly that connects the axles to the trailer frame and absorbs shock loads and braking loads through the leaf springs or air springs (air bags). It is therefore important that it be maintained.

The life of the suspension depends upon keeping the connections tight. These bolts can become loose from vibration and shock and, if not properly maintained at recommended torque, will shorten the life of the suspension, reduce tire life, and eventual failure of the suspension, which could cause a serious accident.

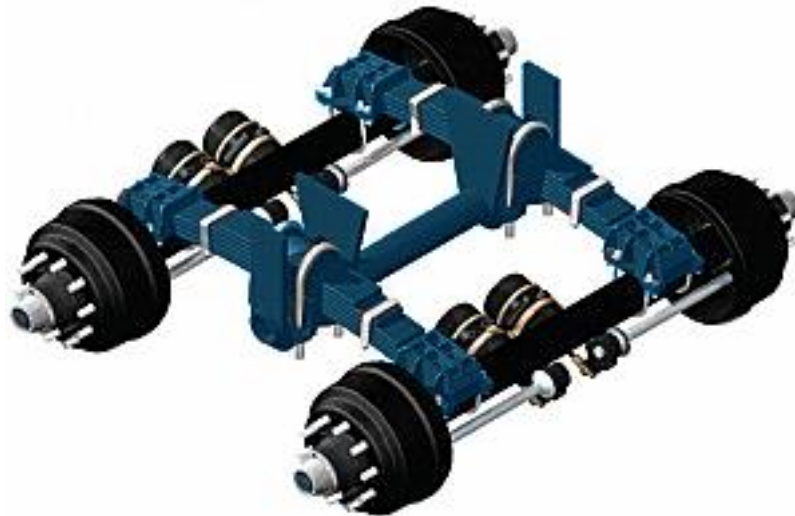
The following suspensions are standard on SUPERIOR Trailers and the torque given must be maintained at the recommended intervals as well as the periodic inspections as listed.

All fasteners on the suspension of your new SUPERIOR Trailer were torqued before delivery to the proper torque values. Due to vibration and shock loads it is necessary after a break-in period of 1000 miles or three months, and every six (6) months thereafter, to tighten all nuts and bolts to the recommended torque. Always check the torque on the nut and not on the head of the bolt. Do not lubricate the threads unless values given are for lubricated threads.

2.1.1.1 SINGLE POINTS

WATSON AND CHALIN

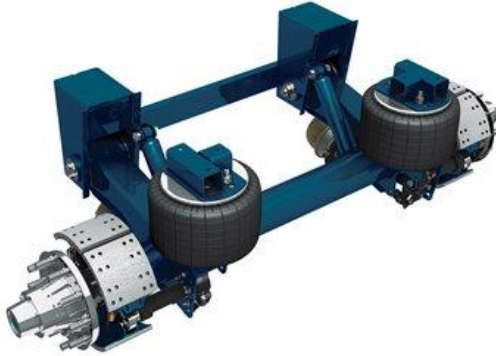
[LINK TO VENDOR FILE](#)



2.1.1.2 AIR RIDE

WATSON AND CHALIN INTEGRA SERIES

[LINK TO VENDOR FILE](#)



HENDRICKSON INTRAAX SERIES

[LINK TO VENDOR FILE](#)

COMPONENT DESCRIPTION	FT-LBS	N•m
QUIK-ALIGN Pivot Connection	505 to 595	685 to 807
Welded Pivot Connection (1 1/8 inches)	750 to 825	1017 to 1119
Shock Bolts	210 to 235	285 to 319
Upper Air Spring Nuts	80 to 100	108 to 136
Lower Air Spring Nuts (INTRAAX)	25 to 35	34 to 47
Brake Chamber Mounting Nut (INTRAAX)	100 to 110	136 to 149
S-Cam Support Bearing Mounting Nut (INTRAAX)	35 to 45	47 to 61

2.1.2 AIR SPRING SUSPENSION INFORMATION

Regular preventive maintenance checks on air spring suspensions are the same as on leaf spring suspensions with the addition of the air bags and air components. With the air pressure above 65 psi, the height between axle and frame should be within 1/4" of the same height at all air bags. If not, it may be an indication of air loss at one or more air bags, air leaks at fittings, or malfunctioning leveling valves. Leveling valves should have proper clearance to permit leveling arm to actuate freely and not be bent or twisted. Do not grease leveling valves. There is a time delay of 2 to 6 seconds before the leveling valve will add or exhaust air to the air springs. The proper position of the valve actuating lever is in the center or neutral. Lever up will add air; lever down will exhaust air. Check leveling valve lever for being in proper position while trailer is connected to tractor in drive away condition.

In the event of failure in one or more air springs, it is recommended the height control valve link be disconnected and the lever arm be rotated to a vertical down position. This will exhaust air from the bags, allowing load to be carried on internal rubber stops within the bags. This procedure is intended for temporary operation only. See Figure 1.

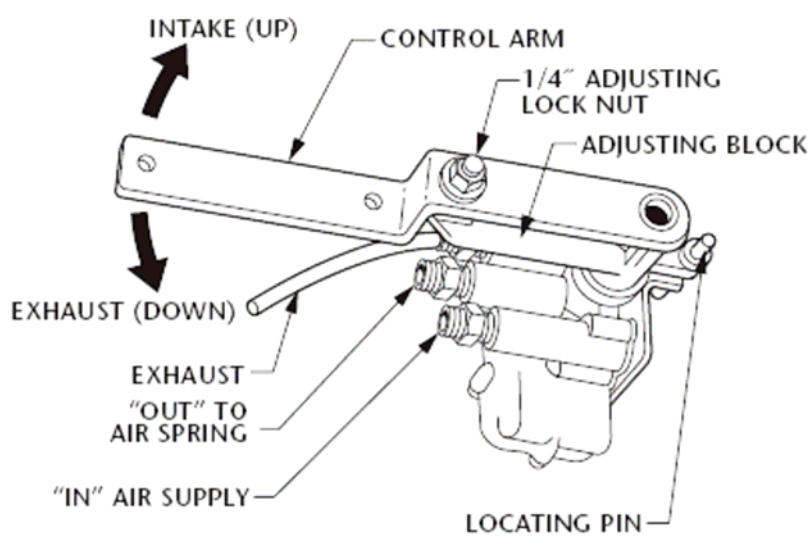


Figure 1 - AIR SPRING LEVELING VALVE

Air spring suspensions are equipped with an air brake protection valve. Check and clean air filter periodically. This valve and filter are located on the air reservoir that supplies the air for the air suspension. Additional filters are located in the input and output ports of the height control valves. Check periodically. For more information on height control valves click on the link below.

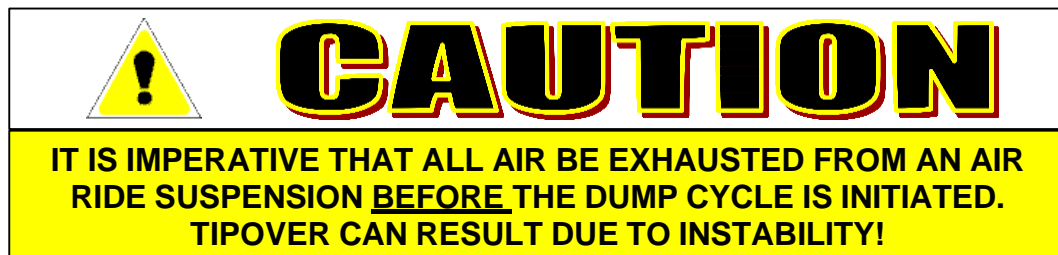
[LINK TO VENDOR FILE](#)

Hendrickson height control valves

2.1.2.1 LIFT AXLE OPERATION

Caution must be exercised when using lift axles. Frame damage can result, as well as bending axles, should the liftable axle be raised under loaded conditions which will transfer additional weight to the axles remaining on the ground.

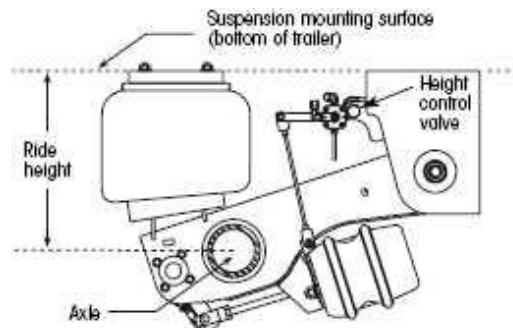
2.1.2.2 DUMP VALVE OPERATION



If specified by the customer, a trailer may be equipped with a dump valve. An air ride end dump is equipped with an automatic dump valve that is activated when the trailer starts the dump cycle. This allows the air to be exhausted from the bags, increasing stability by eliminating the possibility of air bag failure. When using a trailer equipped with a dump valve you should do the following:

- Always check to be sure all air bags are fully inflated before driving away.
- Do not operate loaded trailer in excess of five miles per hour (5 mph) with current applied and air bags exhausted.
- Do not operate trailer when air bags are exhausted except in parking lots or loading areas.
- It is unlawful to operate trailers with air bags exhausted on public thoroughfares.

2.1.2.3 GENERAL ADJUSTMENT PROCEDURES FOR SETTING RIDE HEIGHT



[LINK TO VENDOR FILE](#)

Figure 2

- 2.1.2.3.1 Level the trailer so that mounting surface of suspension is parallel to centerline of axles.
- 2.1.2.3.2 Verify proper ride height of suspension by looking at tag on suspension or calling SUPERIOR Trailers.
- 2.1.2.3.3 Block axle to trailer frame to proper dimension by subtracting 1/2 of axle O.D. from ride height. Cut a block of wood to this dimension, and insert the block between axle and frame. Lower trailer onto this block.
- 2.1.2.3.4 Center the leveling valve to neutral position, adjust linkage, and secure it.
- 2.1.2.3.5 Remove blocks. Apply air and verify ride height.

2.1.3 ALIGNMENT

2.1.3.1 SINGLE POINT SUSPENSION & AIR SINGLE SUSPENSION

Single Point and some Air Spring suspensions are aligned during installation and welded in place. If alignment is required, it is necessary to burn loose the inner and outer adjusting bushing to realign.

Many Air Spring suspensions feature adjustable non-welded pivot bolts. Be sure to re-torque these to recommended values after realignment.

Visual checks of these suspensions should be made periodically. Check the rubber bushing on the end of the trunnion tube of single point suspensions. If frayed and torn this could be an indication of loose "U" bolts.

2.1.3.2 ALIGNMENT PROCEDURE

Before taking axle alignment measurements, make sure the trailer is unloaded and free the suspension of any "binds" by pushing the trailer backwards and then pulling the trailer forward. While pulling the trailer forward on a level floor, apply the brakes and release. This will assure that an adjustable undercarriage is in its rearmost locked position. Trailers with air ride suspensions shall be aligned with the suspension at its nominal ride height. The trailer MUST be level from side to side as well as from front to rear.

Note: Neither service nor parking brakes should be applied during the measurement procedure.

- 2.1.3.2.1 Use axle end extenders (or remove outer wheels and any obstructions) to achieve a straight line for measuring from king pin to the axle ends.
- 2.1.3.2.2 Proper tools for axle alignment inspection are:
 - A. Spring loaded, kingpin extender with bubble level.
 - B. Axle end extenders.
 - C. 50 ft. steel tape.
 - D. Adjustable tram.
 - E. Gauge for measuring axle center to axle center.

2.1.3.2.3 Measure distances A and B from the king pin to the front axle. Refer to Figure 4. These must be equal within 1/8 inch of each other. Measure distances C and D between axles using gauge as shown in Figure 5. Note that all currently available trailer axles have dimples or recesses at the center of the axle spindle ends. These also must be equal within 1/16 inch of each other. Determine lateral centerline of trailer body and axles. Distance E should not exceed 1/4 inch for either axle. (Distance E is the distance between axle and trailer centerlines.)

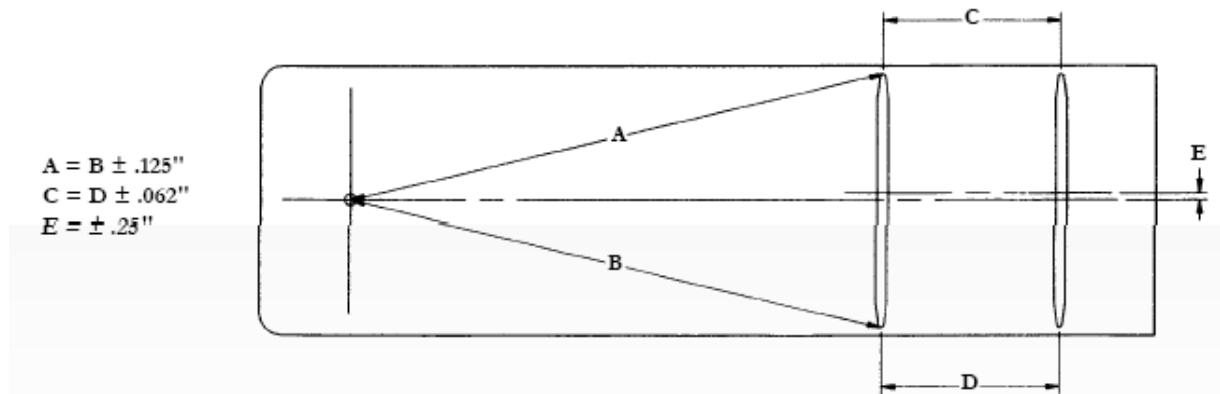


Figure 4

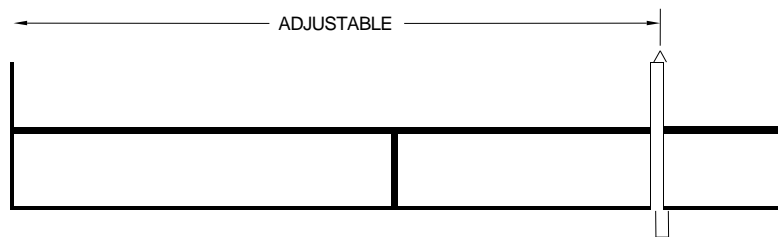


Figure 5

Gauge for measuring axle centers

* The gauge can be made of drill rod and must be rigid and true. The pointer arms of the gauge must be parallel and held at the same height.

2.1.3.2.4 Precautions:

- A. Always measure to the front axle ends for accurate alignment.
- B. Avoid measuring to rims, suspension brackets, hub cap vent holes, brake drums and the like. This can result in improper alignment.
- C. If difficulty is encountered in obtaining true alignment, check and repair or replace problem suspension parts.
- D. Always align any succeeding axles with the front axles, not the kingpin.

2.1.4 ADDITIONAL SUSPENSION MAINTENANCE CHECKS



Check leaf springs for broken leaves. Replace broken leaves immediately to prevent the other leaves from being overloaded. On taper leaf springs be sure the plastic liner is serviceable and on top of the spring. The liners between leaves should be in place and serviceable. Replace with factory approved liners if necessary.

Torque arms should be checked for being tight. If slack is found it should be repaired immediately since this indicates that there is wear in the rubber bushing or torque arm parts. Check the adjustable torque arm clamps for being tight. Loose clamps will cause wear on the adjusting threads and the suspension cannot be kept in alignment.



On leaf spring type suspensions, have the trailer checked for axle alignment after two to three thousand miles.

SECTION 3

3.1 AUTOMATIC SLACK ADJUSTERS (ASA)

The brakes were properly adjusted on your SUPERIOR Trailer before delivery.

Automatic slack adjusters are required by law, effective on all trailers produced since December 1993. Depending on the brand of slack adjuster used, the operating, and adjusting procedures may vary.

Procedures for adjusting slack adjusters may be found by clicking on the links below.

Bendix Automatic Slack Adjusters

[LINK TO VENDOR FILE](#)

Haldex Automatic Slack Adjusters

[LINK TO VENDOR FILE](#)

3.2 AIR SYSTEM MAINTENANCE

3.2.1 BRAKE AIR ACTUATION MAINTENANCE

The air system on your trailer is the system that actuates and releases the brakes on the trailer. It also has a second separate function that controls the parking brake and emergency brake system. It is important to maintain the system in good working order through preventive maintenance. This system was checked with the latest test equipment at the factory for function and timing as required by the Department of Transportation.

As the complexity of the air brake system has increased, so has the need for clean air. Many of the later design valves contain small orifices and passages and thus, are more susceptible to contaminants. The prevention of freeze-ups in the system is also equally important. The use of an air dryer, filter, and alcohol evaporator is highly recommended.

The following items should be checked by properly trained personnel on a periodic basis and any time brake problems occur.

- 3.2.1.1 The air system must be kept free of leaks. Check all connections while system is charged with a minimum of 100 psi air pressure. Check seals on glad hands each time they are coupled. Replace if leak occurs.
- 3.2.1.2 Anti-compounding two-way check valve on top of the spring brake valve can be checked by charging the service line and emergency line, then disconnect each line—one at a time—with the other charged. There should not be any bleed back from the open line. If so, the anti-compounding valve is stuck or malfunctioning. There should not be any continuous exhausting of air from the body vents or exhaust valve on the spring brake valve.

- 3.2.1.3 The relay valve should not have a continuous flow of air from the exhaust port except immediately after a brake release. If air continues to discharge, it could be a malfunction of the exhaust valve, or the “O” ring seal on the push rod of the spring brake chamber is bad and is allowing air to be discharged through the service chamber and out the relay valve exhaust port. To check this, the system must be charged, parking brakes off, service brakes off, then disconnect the service hose at service brake chamber. If air is discharging from service port, the “O” ring is bad. If air is escaping from service brake hose, the exhaust valve is malfunctioning. Repair “O” ring seal or exhaust valve or replace complete part.

DANGER

DO NOT REMOVE CLAMP RING FROM SPRING BRAKE CHAMBER UNLESS SPRING IS PROPERLY CAGED! IF NOT CAGED, THE INTERNAL SPRING WILL BE RELEASED WITH EXPLOSIVE FORCE AND MAY CAUSE SEVERE BODILY INJURY!

Caging tools are supplied with trailer and are on a bracket attached to the trailer frame near the spring brake chamber, or on the chamber. For vendor files on brake chambers, see below.

DI-PRO Brake Chambers

[LINK TO VENDOR FILE](#)

MGM Brake Chambers

[LINK TO VENDOR FILE](#)

Air reservoir tanks should be drained daily to remove moisture and other contaminants. More than once a day may be necessary in the winter when the humidity is high.

DANGER

DO NOT OPERATE TRAILER WITH SPRING BRAKES CAGED, OR IN ANY WAY DISABLED, EXCEPT IN AN EMERGENCY SITUATION! WHEN SPRING BRAKES ARE CAGED, THERE ARE NO EMERGENCY BRAKES AVAILABLE.

Parking brake application will begin after air pressure falls below 55 psi and application increases as air pressure drops.

Parking brakes will start releasing after the system pressure reaches 55 psi and should be fully released when pressure reaches 70 psi.

Parking brakes may be disengaged in an emergency by manually caging the spring in each spring brake chamber using the tool provided. Do not operate the vehicle except in emergency as there are no emergency brakes available when the spring brakes are caged.

WARNING!

DO NOT ATTEMPT TO DISASSEMBLE SPRING-BRAKE. THIS CAN RESULT IN FATAL INJURY.

CAUTION!

The following precautions should be observed when working on or around air brake systems and components.

1. Stop vehicle engine and block vehicle wheels. Depleting vehicle air system pressure may cause the vehicle to roll. Keep clear of chamber push rods and slack adjusters; they may automatically apply as system air pressure drops.
2. Deplete all air pressure from the system before disconnecting a hose, plug, or component.
3. Do not look into air jets or direct them at anyone. Always wear safety glasses when working with air pressure as contaminants may be expelled and cause bodily harm.
4. Always read and understand recommended procedures before disassembling any component. Warning and caution notices should be followed as some components contain powerful springs and injury can result if not properly disassembled.

IMPORTANT NOTE:

THE BRAKE SYSTEM ON SUPERIOR TRAILERS IS DESIGNED AND CONSTRUCTED TO MEET FMVSS 121 REQUIREMENTS. IN ADDITION, COMPONENTS ARE SELECTED THAT WILL PROMOTE BRAKE BALANCE BETWEEN TRACTOR AND TRAILER. IF ANY BRAKE COMPONENT IS REPLACED, IT SHOULD BE REPLACED WITH AN EXACT DUPLICATE PART. THIS INCLUDES, BUT IS NOT LIMITED TO, RELAY VALVES, QUICK RELEASE VALVES, BRAKE LINING, SLACK ADJUSTERS (SAME LENGTH), AND BRAKE CHAMBER SIZE.

3.3 ANTILOCK BRAKE SYSTEM (ABS)

It is required by law that all trailers manufactured after March 1, 1998, have ABS. Your trailer may be equipped with any brand currently available. Please see vendor links below for reference to installation and trouble-shooting, or contact your SUPERIOR representative.

Meritor-Wabco ABS

[LINK TO VENDOR FILE](#)

Bendix ABS

[LINK TO VENDOR FILE](#)

Because the law requires a constant power circuit for ABS, your trailer may be equipped with two connectors on the front of the trailer. This arrangement provides electrical circuits for auxiliary equipment that would normally use the middle pin on the J560 connector (Blue Wire) which now is dedicated to ABS. The second connector is an ISO 3731, which is polarized to prevent inadvertent connection with the J560 plug. The ISO 3731 series is an auxiliary plug for the operation of auxiliary equipment.

SECTION 4

4.1 ELECTRICAL/LIGHTING SYSTEM

The electrical system is 12 volts DC and is primarily for the required lamps installed on the trailer. The harness system installed on the trailer is internally grounded. The anti-lock brake system gets its power through the middle pin/blue wire. The electrical circuit to the trailer is completed using a jumper cable from the truck connected to the 7-way receptacle on the front of the trailer. The receptacle is equipped with a hinged cover to protect it from dirt and water. Any wiring replaced should be standard copper wire not smaller in gauge than the original. Replacement lamps and reflector devices should be properly marked with certification for that usage, such as "DOT".

Keep 7-way receptacle and wiring connectors clean and free of corrosion.

Any lamp/reflector replacement must conform to the existing system.

It is required by law that all trailers manufactured after March 1, 1998 have ABS. The law further states that the Blue Wire #7 pin of the SAE 560 connector will provide constant power.

Your SUPERIOR Trailer, as manufactured, meets or exceeds the requirements set forth in FMVSS 108 which describes the various required lighting and reflectors. The law also requires these trailers be equipped with reflective tape that is so placed as to describe the general outline of the trailer when viewed at night so that other motorists may be alerted as to its presence.

It is advised that the reflection tape and all lights must be maintained in constant working order by replacement, cleaning, or other known acceptable methods.

Vendor files related to electrical/lighting are given below.

Trucklite User's Guide

[LINK TO VENDOR FILE](#)

SECTION 5

5.1 TIRES

5.1.1 GENERAL INFORMATION

Over and under inflation are the greatest causes of tire damage. Over inflation does not compensate for overloading. Rapid tire wear is the result of either condition and may be apparent at different places on the tire. Always keep tires inflated to proper pressure as stamped on the side of the tire.

Driving on tires that are not properly inflated is dangerous and will cause tire damage. Under inflation causes excessive heat to build up which may result in sudden tire failure. Factors that can affect your needed tire pressure are load, speed, road surface and handling. The correct tire pressure can be obtained from your tire dealer.

Always deflate a tire by removing the valve core prior to removal from the vehicle or disassembling of parts. Never reflate a tire that has been run flat or seriously under inflated without removing and checking for damage.

5.1.2 SAFETY RECOMMENDATIONS FOR TRAILER TIRES



EXCEEDING THE MAXIMUM SPEED WILL CAUSE HEAT BUILD-UP WHICH CAN RESULT IN SUDDEN TIRE DESTRUCTION, PROPERTY DAMAGE, AND PERSONAL INJURY.



THE MAXIMUM LOAD THAT CAN BE PUT ON A TRUCK TIRE IS DEPENDENT UPON THE SPEED AT WHICH THE TIRE WILL BE USED. CONSULT THE TIRE MANUFACTURERS' DATA BOOK FOR THE INFORMATION ON THE ALLOWABLE LOADS FOR YOUR TIRES IN YOUR APPLICATION.



CAUTION

CHECK TIRES BEFORE EACH TRIP WHILE THEY ARE COOL.

EXAMINE YOUR TIRES FOR BULGES, CUTS, CRACKS, OR PENETRATIONS. USE OF A DAMAGED TIRE COULD RESULT IN TIRE DESTRUCTION, PROPERTY DAMAGE, AND PERSONAL INJURY. REPORT TIRE DAMAGE TO YOUR DEALER AT ONCE.



CAUTION

WHEEL ALIGNMENT IS RECOMMENDED AFTER TWO MONTHS.

AFTER THE FIRST TWO MONTHS OF OPERATION, THE TRAILER SHOULD BE SERVICED FOR WHEEL ALIGNMENT. THIS IS RECOMMENDED TO PREVENT UNEVEN TIRE WEAR AND HELP YOU GET THE MAXIMUM LIFE OUT OF YOUR TIRES.

SECTION 6

6.1 WHEELS AND RIMS

6.1.1 HUB-PILOTED MOUNTING

Disc wheels are standard on SUPERIOR trailers. These wheels may be either steel or aluminum. It is important that the wheel nuts be tightened independently to the recommended torque values.

Hub piloted wheels are designed to center on the hub at the center hole or bore of the wheel (see Figures 7 and 8). Because of this feature, they need a close tolerance in the center hole. Hub piloted wheels are used with flange nuts (see Figure 8) which contact the disc face around the bolt hole and do not rely on contacting the bolt hole chamfer to function properly. Hub piloted wheels generally have straight through bolt holes with no chamfers which provides a visual way of identifying hub piloted wheels. It is important to note that some hub piloted wheels and stud piloted wheels may have the same bolt circle pattern. Therefore, they could mistakenly be interchanged. Each mounting system requires its correct mating parts. It is important that the proper components are used for each type of mounting and the wheels are fitted to the proper hubs.

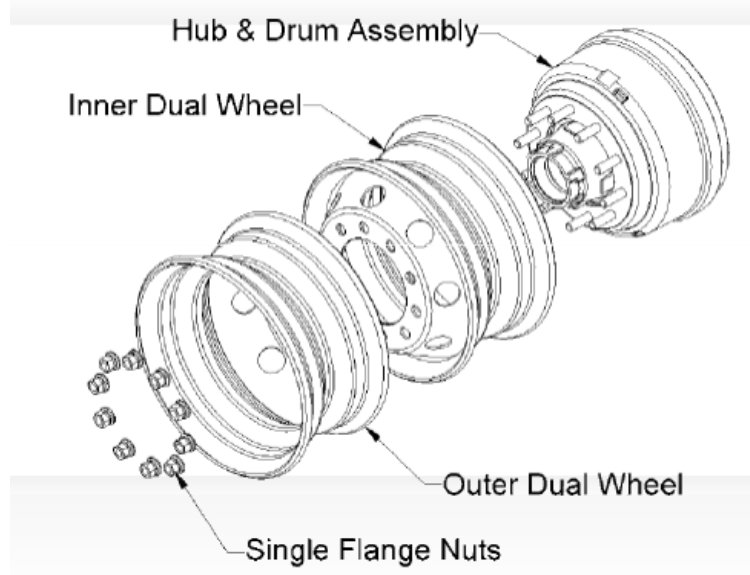


Figure 6

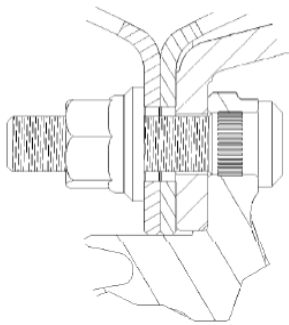


Figure 7

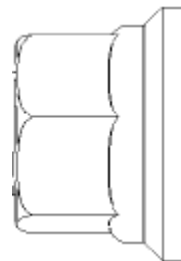


Figure 8

You must never use the hub piloted wheels, which have straight holes, with ball seat or spherical chamfer nuts. These parts are not engineered to work together and can cause premature wheel failure. On heavy truck dual wheels, this condition would not allow the inner cap nut to fit into the inner wheel causing the inner cap nut to interfere with the outer wheel. This could cause premature cracking and failure of the outer dual wheel.

Stud piloted wheels should not be used with the hub piloted hubs, wheels, or flange nuts. Chamfered stud piloted wheels do not have sufficient surface area near the bolt hole to support the flange nut. This type of misassembly may lead to loss of torque, broken studs, and cracked wheels.

WARNING! ALWAYS USE HUB PILOTED WHEELS AND FLANGE NUTS ON HUB PILOTED HUBS, AND STUD PILOTED WHEELS, AND CHAMFERED NUTS ON STUD PILOTED HUBS. If different designs are mixed or improperly matched, premature wheel failure will result, which could cause an accident or injury.

Before reusing flange nuts that have already been used in service, apply 2 drops of oil at one point between the flange and the hex. This will allow the parts to rotate freely and provide the proper clamping force when tightened. Use any common lubricant typically used for fasteners. Examples are: motor oil and general-purpose lubricating oils. Excessive lubricant is not desirable and will not improve nut performance. This will make the nuts hard to handle, attract dirt to the nuts, and may cause unsightly appearance to the wheel. Only used nuts should be lubricated.

Since flange nuts generate higher clamping force, always use grade eight studs with hub piloted wheels.

WARNING! Not all nuts and studs can be used with all types of wheels. The use of improper nuts and studs can cause nut loosening, stud failure, or premature wheel failure, which could cause an accident or injury.

TORQUE NUTS PROPERLY.

Be sure to tighten wheel nuts to the recommended nut torque. Do not overtighten. Tighten nuts first to 50 ft-lbs., then to 450-500 ft-lbs. torque (dry). Torque sequence should be per Figure 9.

After the first 50 to 100 miles of operation, recheck the torque level and retighten nuts to the proper level.

Maintain nut torque at the recommended level through planned, periodic checks.

Do **not** lubricate the nuts or studs.

If air wrenches are used, they must be periodically calibrated for proper torque output. Use a torque wrench to check the air wrench output and adjust the line pressure to give correct torque.

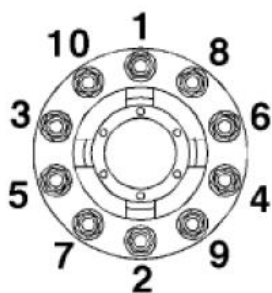


Figure 9

WARNING!

Nuts must be kept tight by retorquing nuts on a routine basis and using the proper nut torque and tightening sequence. Loose nuts could result in loose wheels or premature wheel failure. This can result in an accident or injury.

6.1.2 STUD-PILOTED MOUNTING

Wheels with the stud-piloted mounting system are called stud mount wheels. Stud mount wheels are designed to be centered by the nuts on the studs. The seating action of the chamfered nuts in the chamfered bolt holes centers the wheels (see Figures 10 and 11).

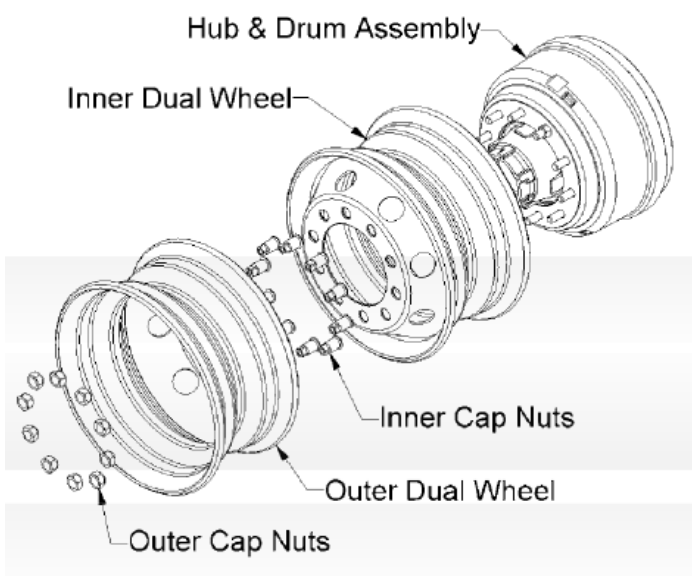


Figure 10

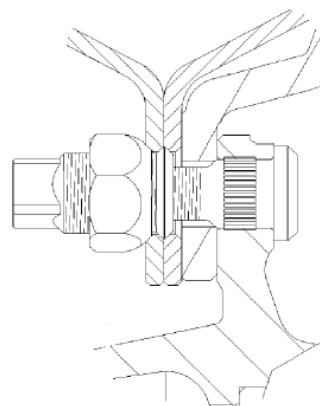


Figure 11

For dual rear wheels, slide the inner dual wheel over studs, being careful not to damage the stud threads. Snug up the inner cap nuts to 50 ft.-lbs. in sequence shown in Figure 9. Do not tighten them fully until all have been seated. This procedure will permit the uniform seating of nuts and ensure the even, fact-to-face contact of wheels, hub and drum. Tighten to 450-500 ft.-lbs (dry) using the same criss-cross pattern.






Align the hand holes to allow access to the air valves.

Slide the outer dual wheel over the inner cap nuts and repeat the entire procedure using the same nut tightening sequence in Figure 9.

WARNING!

Not all nuts and studs can be used with all types of wheels. The use of improper nuts and studs can cause nut loosening, stud failure or premature wheel failure, which could cause an accident or injury.

TORQUE NUTS PROPERLY.




-  Be sure to tighten wheel nuts to the recommended nut torque. Do not overtighten. Tighten nuts first to 50 ft-lbs., then to 450-500 ft-lbs. torque (dry). Torque sequence should be per Figure 9.
-  After the first 50 to 100 miles of operation, recheck the torque level and retighten nuts to the proper level. When inner cap nuts are retightened, be sure to loosen the outer cap nuts first, tighten inner cap nuts next, and then retighten outer cap nuts to proper torque level.
-  Maintain nut torque at the recommended level through planned, periodic checks.
-  Do **not** lubricate the nuts or studs.
-  If air wrenches are used, they must be periodically calibrated for proper torque output. Use a torque wrench to check the air wrench output and adjust the line pressure to give correct torque.

WARNING!

Nuts must be kept tight by retorquing nuts on a routine basis and using the proper nut torque and tightening sequence. Loose nuts could result in loose wheels or premature wheel failure. This can result in an accident or injury.

6.1.3 RIM AND WHEEL MAINTENANCE

DURING TIRE CHANGE:

-  Inspect the rims and wheels for corrosion, cracks, and damage. Thoroughly remove rust, dirt, and other foreign materials from all surfaces. Pay particular attention to grooves for lock rings.
-  Brush and spray paint where corrosion existed with a fast-drying metal primer.
-  Replace all damaged or cracked parts.

NOTICE:

WHEN MIXING STEEL AND ALUMINUM WHEELS, USE AN INSERT BETWEEN THE TWO WHEELS TO PREVENT CORROSION.

For vendor information, click on the links below.

Accuride Wheels [LINK TO VENDOR FILE](#)

Conmet Hub/Drums Service Manual [LINK TO VENDOR FILE](#)

KIC Hub/Drum Catalog [LINK TO VENDOR FILE](#)

SECTION 7

7.1 LANDING GEAR—GENERAL



- Do not couple or uncouple trailer without trailer wheels being chocked or braked.
- Do not load or unload a trailer without wheels being chocked.
- Do not load or unload doubles trailer without support also at nose.
- Do not move trailer without lower leg fully retracted.
- Do not drop trailer on landing gear.
- Do not park a loaded trailer on soft ground, asphalt, or unlevel ground without proper support.

7.1.1 MAINTENANCE

To ensure your landing gear will operate properly follow the manufacturers' recommended maintenance instructions. See the links below.

Holland

[LINK TO VENDOR FILE](#)

Jost International

[LINK TO VENDOR FILE](#)

7.1.2 EMPTY WEIGHT

Your SUPERIOR Dump trailer may be equipped with landing gear supports that are intended for empty weight only.

Caution should be exercised to not drop a loaded trailer when these support legs are used.

SECTION 8

8.1 KING PIN AND UPPER COUPLER

- 8.1.1 Check king pin wear on the 2" diameter. Replace if worn down 1/8" or more.
- 8.1.2 Check bottom flange of king pin for cracks or broken pieces. Replace if necessary.

8.2 INSPECTION CRITERIA

- 8.2.1 Check fasteners connecting upper coupler assembly to chassis rail on vans. Check welds on members supporting fifth wheel plate. Replace missing fasteners and gouge out and reweld visible cracks
- 8.2.2 Check for cracks around attachment points where radius arm connects to the coupler.
- 8.2.3 Check for abnormal wear at all moving parts.
- 8.2.4 Check for cracks around the top of the king pin where it was welded to the fifth wheel plate.

8.3 FIFTH WHEELS

Fifth wheels are usually mounted on the tractor and are the connecting link to the trailer. The location on the tractor frame has to be determined by tractor wheel base, desired weight distribution, tractor frame section, trailer loading, and landing gear clearance. For proper steering control and weight distribution, the fifth wheel is located ahead of tractor axle or ahead of tractor bogie centerline. Mount fifth wheel according to tractor manufacturer's recommendations. Do not use "U" bolts to mount fifth wheel to tractor. The height must provide clearance between tires and the trailer when loaded allowing for spring deflection and tire chains. Proper mounting is necessary for the safe operation of the product and the safety of others.

The locking plunger on Holland fifth wheels must be adjusted on new fifth wheels and periodically with wear. There is an adjusting screw in the crotch of the ramps on the right side. Adjust so locking plunger moves freely into position with full travel behind the hinged lock.

After connecting the trailer to fifth wheel, block wheels, or lock brakes on trailer and pull against king pin to check for-complete locking.

8.3.1 FIFTH WHEEL MAINTENANCE

To maintain proper operation the following must be performed periodically:

1. Lubricate all moving parts with Number 2 diesel oil or suitable lubricant.
2. Check lock guard operation. Make sure lock guard is between jaws before coupling.
3. Check for proper locking and unlocking with free moving plunger. If jaws do not open and close properly, check for foreign matter between jaws and jaw guides. Foreign matter will prevent complete opening and closing.
4. Replace all cracked or missing parts.
5. Lubricate top plate with wheel bearing grease periodically.

MUST BLOCK 5TH WHEEL FOR USE WITH END DUMPS – SEE SECTION 9.8.4

SECTION 9

9.1 END DUMP TRAILER OPERATING INSTRUCTIONS



CAUTION

**DUMP TRAILER OPERATION CAN BE DANGEROUS!
OPERATOR SHOULD BE ALERT AT ALL TIMES WHEN RAISING
TRAILER, AND WARN PERSONS TO STAND CLEAR!**

- 9.1.1 Maximum permissible pump and hose pressure is 2000 psi.
- 9.1.2 Do not race engine or exceed rated pump rpm; fast idle is adequate.
- 9.1.3 Operator should remain at controls in cab while dumping and should control the raising and lowering of hoist with valve instead of clutch or power take-off. Windmilling the pump while lowering subjects it to unnecessary wear.
- 9.1.4 Operator should feather valve as hoist reaches top of stroke. Valve should be shifted to “hold” as hoist reaches top of stroke to avoid shock loads in the hydraulic system. Relief valve is a safety feature and should not be used in prolonged operation. Prolonged operation against relief valve will damage pump.
- 9.1.5 DISENGAGE “POWER TAKE-OFF” WHEN DUMP CYCLE IS COMPLETE. RETURN PUMP VALVE TO “HOLD” POSITION WHEN DUMP IS LOWERED AND IN TRAVELING POSITION.
- 9.1.6 TO AVOID TURNOVER OF TRAILER WHILE DUMPING, TRACTOR MUST BE LINED UP STRAIGHT WITH TRAILER. TRACTOR AND TRAILER MUST BE ON FIRM AND LEVEL GROUND.
- 9.1.7 AVOID DUMPING IN STRONG WIND. LINE TRAILER UP WITH WIND TO AVOID POSSIBLE TURNOVER FROM CROSS WIND.
- 9.1.8 OPERATOR SHOULD WARN ALL PERSONS TO STAND CLEAR AT LEAST 35 FEET FROM TRAILER WHILE DUMP IS BEING RAISED AND LOWERED.
- 9.1.9 SHOULD DUMP TRAILER START TO TILT, MOVE CONTROL IMMEDIATELY TO “LOWER” POSITION.
- 9.1.10 THE HOIST IS NOT DESIGNED FOR HOLDING BOX IN ELEVATED POSITION FOR ANY LENGTH OF TIME. WHEN BOX IS REQUIRED TO BE HELD IN THE ELEVATED POSITION FOR MAINTENANCE, SERVICE WORK, OR FOR PURPOSES OTHER THAN DUMPING, THE BOX SHOULD BE SECURED BY A OVERHEAD CRANE OR OTHER SAFETY DEVICE TO PREVENT THE ACCIDENTAL LOWERING OF THE BOX.
- 9.1.11 There are two grade 5 shear bolts through the hoist bottom pivot pin. When a raised trailer tilts to the side and turnover is occurring, these bolts shear to prevent the tractor from being turned over.

9.1.12 Depending on landing gear configuration, some trailers are equipped with fifth wheel safety latch supports that must be disengaged prior to dumping to avoid vehicle damage.



9.2 LOADING PROCEDURES AND METHODS

9.2.1 HOPPER

Hopper loading provides the opportunity to load a trailer more uniformly since the load is metered and flows from above the trailer. The end dump trailer may be slowly advanced forward during loading to accomplish this.

9.2.2 END LOADER

The most common method of loading a trailer is with a front-end loader. It has several disadvantages. The loader operator, not being able to see where to dump the load, may load off center, which can create problems when the trailer is dumped. Loader operators have a tendency to hit the trailer side boards or top rail with the lift arms and bucket, causing damage. The trailer operator should always check the distribution of load in the trailer and inspect for any board/top rail damage.

9.2.3 CROWN LOADING

Crown loading is a way of distributing a load fore or aft to place weight over axles to get maximum legal load distribution.


9.3 TARPING

9.3.1 Tarping should be used to prevent commodities such as sand, gravel, scrap metal, etc., from damaging other vehicles following the trailer. Tarping is mandatory on dumps in several states. When tarping is not used, the dump body of the vehicle should only be filled within 6 inches of the top of the top rail. There are several means available for spreading and removing tarps without requiring the operator to work on the trailer. These means should be used when practicable.

9.4 COMMODITIES

9.4.1 Consideration should be given to the numerous types of commodities to be hauled in a dump trailer. Commodities, such as lime, cement, or clay, are best hauled dry. If they become wet they may hang up in the dump body. When hauling bricks, cement slab sections, etc., the body should have a cushioned floor to absorb loading impact. Sludge requires a watertight tailgate to contain the liquid. When hauling wet material in freezing weather the interior body surfaces should be treated with a solution to keep material from freezing to the body.

9.5 UNLOADING PROCEDURES


	CAUTION
BEFORE RAISING THE BODY, OBSERVE OVERHEAD FOR ELECTRICAL WIRES AND BOTH SIDES AND REAR OF THE TRAILER FOR PERSONNEL AND OTHER VEHICLES. DO NOT RAISE THE BODY IF ANYONE OR ANYTHING IS CLOSE ENOUGH TO THE TRAILER TO BE HIT IF THE TRAILER TIPS OVER, OR IF ANYONE IS HEADING INTO THE AREA. PERSONNEL IN THIS AREA MAY BE INJURED IF THE TRAILER IS MISOPERATED AND TIPS OVER.	

9.5.1 STOCK PILE

The most common method for unloading most commodities from an end dump trailer is to discharge the load onto a pile. A clean, compacted, level dump site is required. Any rapid tractor acceleration/deceleration should be avoided with the trailer body elevated to reduce dynamic tailgate impacts. These humping forces exert high stresses on both the hydraulic systems and the trailer structural members.

9.5.2 HOPPER

Unloading into a hopper using a conveyor system to transfer the cargo elsewhere is a common method of unloading. Spillage in front of hoppers should be cleaned up to maintain a level surface.

	CAUTION
ALWAYS MAKE SURE THAT THE CHAINS AT THE FRONT AND REAR OF THE DOORS ARE SET THE SAME, OTHERWISE GATE TWISTING CAN RESULT IN PERMANENT DAMAGE TO THE GATES OR HINGES.	

9.5.3 SPREAD OPERATION

In road construction, a uniform distribution or material spread is desirable so that the road grader time is minimized. Common hazards to this type of operation include insufficient overpass clearances during spread, loading buildup on tailgate due to restricted flow, dumping on crown of road, and going over previously unevenly spread material. An elevated dump body can go up as high as 35 feet or more, requiring constant observation for overhead obstructions including electrical wires.



9.6 TAILGATE OPERATION

9.6.1 OPEN TAILGATE

The tailgate must be unlocked prior to significantly elevating the body; otherwise, the load builds up against the tailgate, causing undue forces on the body structure and greatly increases the risk of tip-over. The locking mechanism should be checked daily for proper operation.

9.6.2 LOCK TAILGATE

The dump body must be completely down to close the tailgate and lock it. Also some automatic latches must be activated from the cab to lock the tailgate. Manufacturers' recommendations must be followed to insure proper locking. Tailgate should be closed and locked before leaving dump sight.

9.6.3 TAILGATE SAFETY REMINDERS

Check tailgate lock for proper operation and hook engagement. Check tailgate hook area for possible load material interference. Check tailgate contact with body before opening gate. Pushing on the tailgate with bulldozers or loaders will damage the tailgate and affect tailgate operations.

9.7 DUMP VALVE OPERATION

9.7.1 RELEASE MANUAL DUMP VALVE

The air suspension on all air ride SUPERIOR dump trailers must be exhausted before unloading. Pull the valve located at the front driver side of the trailer suspension to exhaust air from the suspensions air springs. All air must be exhausted before raising the dump body. Failure to do so will lead to tip over. After unloading and only when the dump body is in the lowered position, push in the valve control to inflate the suspensions air springs.

9.7.2 POWER TAKE-OFF CONTROLS

The power take-off (PTO) unit is an auxiliary unit, which bolts onto the transmission and is used to drive the hydraulic pump to lift the body. Most hydraulic pumps are rated from 1,000 to 2,000 psi. The motor should not exceed rated rpm, as high speeds shorten pump life and create high pressures that may cause seal blowouts in the cylinder.



9.7.3 HOIST CONTROL

The hoist control is usually a three-way valve, having three positions—"LIFT", "HOLD" and "LOWER"—and is located in the tractor cab. The valve controls the flow of hydraulic fluid from the pump to the hoist cylinder.

9.7.4 OPERATION OF HOIST

The power take-off is engaged, the pump valve is shifted into the "LIFT" position, and the engine is speeded up as required to lift the body. If necessary, the pump valve can be shifted into the "HOLD" position to maintain proper material discharge speed and then again shifted into the "LIFT" position.

Upon completion of dumping, the valve is shifted into "LOWER" until the dump body is returned to the transit position. Finally, the valve is shifted into "HOLD" and the power take-off is disengaged. Serious damage to the pump could occur if the power take-off (PTO) remains in gear while operating the truck. Do not operate the PTO while the truck is in gear unless the PTO is used in spreading the load.



While the body is in dump position, do not leave the controls. Keep the body in sight. Be alert to stop or lower the body instantly.

9.7.5 IN TRANSIT

Do not operate a dump trailer IN TRANSIT with the body slightly raised, the cylinder pressurized, and the valve in "Hold". The use of the cylinder as a shock absorber may lead to failure of the cylinder and/or its mounting parts.

9.7.6 HYDRAULIC HOSES

Hydraulic hoses should be maintained in good condition. A worn or damaged hose may blow out while the dump body is being raised.

9.8 TIP-OVER CONDITIONS

9.8.1 WIND

Do not attempt dumping operations in unsafe wind conditions. This could cause a tip-over.

9.8.2 TERRAIN

The body should be raised only when both the tractor and the trailer wheels are on smooth, level, compacted surfaces. Lower the body immediately if leaning is detected.

9.8.3 HUNG LOADS

A hung load is a commodity that does not discharge when a dump body is raised to an elevated position. To avoid a tip-over due to a hung load, the driver should be warned by an observer of this condition and immediately lower the dump body.

9.8.4 JACKKNIFE

A jackknife position of the tractor with the trailer is dangerous when dumping. With a frame type end dump in a jackknifed condition, the upper coupler pivots on bearings, contributing nothing to the dump stability. When the tractor and trailer are straight, the coupler bearings are apart, assisting in stabilizing the unit. When a frameless end dump trailer is coupled to a tractor fifth wheel, the fifth wheel must be "blocked". Blocking restricts pivoting of the fifth wheel plate and draft arms. Lift the dump body only when the tractor and trailer are in a straight line. If a loaded trailer does start to lean while jackknifed, releasing the tractor brakes and rolling ahead may actually assist in tipping the trailer. However, if dumping in a straight line, releasing the tractor brakes and rolling ahead may prevent a tip-over.

9.8.5 TIRES

A blown tire or severely under inflated tire can cause instability when dumping. Always check tires visually for cuts or punctures. Make sure all tires are properly inflated.

9.8.6 HUMPING

Humping is a rapid acceleration/deceleration method used to loosen a hung load from a trailer. If the load is off center, and the trailer is moved, a tip-over may occur. Serious damage to the hoist or collapsed arms may result when a humping motion is used to free a hung load from the trailer.

9.8.7 STAY AT CONTROLS

An operator who fails to stay at the controls cannot control the body when it starts to lean. After a body is lowered, the operator can check and remedy any potential problems, then resume dumping the load.

9.8.8 OVERLOADING

Overloading is a very common occurrence that aggravates all of the above conditions that cause tip-overs. SUPERIOR Trailers are designed to carry and dump legal loads.

9.8.9 SUSPENSION

Prior to dumping, the trailer suspension should be checked to make sure there are no broken springs, damaged air bags, loose U-bolts, etc. Broken or weak springs should be replaced in matched pairs.

9.9 MAXIMUM HEIGHT AND DUMP ANGLE

9.9.1 Dumping site should be carefully inspected for possible hazards such as unlevel or unstable ground and especially overhead obstructions.

9.9.2 If overhead obstructions are present, such as power lines, check the raised height of your trailer and the height of the obstruction. Be absolutely certain there is no chance of contact.

SECTION 10

10.1 END DUMP MAINTENANCE

10.1.1 TAIL GATE LATCHES AND ASSEMBLY

The tailgate latch normally opens with the use of a push pull valve located near the center of the trailer. In some cases, however, an automatic tailgate latch may be installed, which allows the tailgate latches to open as the dump cycle begins. Before the first load is hauled, the dump should be raised to check for proper release of the latches. There are two (2) grease fittings on the tailgate hinges. They should be periodically greased to keep them operating properly. Grease with a premium grade of wheel bearing grease.

10.1.2 FIFTH WHEEL ASSEMBLY

The upper fifth wheel assembly needs greasing periodically to prevent wear and flush out foreign matter at the exposed pivot points. There are eight (8) on the draft arm bushings, four (4) at front and four (4) at rear, two (2) on the hydraulic hoist, one (1) at top pivot pin(excludes HYVA Alpha models, and one (1) at bottom pivot pin. Grease with a premium grade of wheel bearing grease.

10.1.3 HYDRAULIC CYLINDERS

Some hydraulic cylinders are equipped with an automatic air bleeder valve, which is located in top of the top stage. This valve will permit air to exhaust from the top of the cylinder until hydraulic oil forces the ball up and seals. This replaces the manual bleeder valve. There will be a small mist of oil escaping in the air and is not indicative of a malfunction. If oil continues to leak after cylinder is pressurized, it may be used as a manual bleeder until repair can be made. To stop flow, use a 7/32" Allen Key to turn the set screw in the center of the bleeder cartridge in a clockwise direction until it bottoms out. To allow release of air, back out screw until it is flush with top of cartridge body. Pressurize cylinder and when all air is purged, turn set screw clockwise to bottom out. Usually the malfunction is due to foreign matter preventing the ball from seating. The cartridge can be removed with a 3/4" thin wall deep socket. Remove the set screw, spring, and ball. Flush out, wipe clean, and reassemble. The correct set screw depth is determined by the top of the set screw head being flush with the top of the cartridge body.


Hydraulic fluid used in dump trailer operation is very important to the life of the pump. SUPERIOR recommends a hydraulic fluid that is rated as a petroleum base (PB) with 150-160 SSU/100°F. Hydraulic fluids have additives to control foaming, rusting, oxidation, and to release entrained air quickly. Do not mix motor oil with hydraulic fluid. If foaming occurs, it will be blown out the vent cap. Vent should be kept clean and open. It is recommended that when hydraulic fluid is added to a reservoir that it be run through 100 mesh screen to filter out contamination. Starving a pump of fluid or air in the fluid will cause scoring of the pump side plates and gears. Usually a high-pitched whining or screaming noise indicates cavitation. If the pump sounds as though it is "gargling marbles," it is an indication that air bubbles are present. Keep a check on fluid in the reservoir. Low fluid level can cause both cavitation and aeration. Slowing down pump speed will help both problems. Either a rigid mount or oscillating fifth wheel can be used for a dump trailer operation. **If oscillating fifth wheel is used, it must be blocked so it will not oscillate.**

Never let a pump run dry of fluid because only a few seconds will destroy it.

10.1.4 FLOORS AND WALLS

Periodic inspection of the inside of dump trailer is imperative. It is known that sand and gravel, as well as other abrasive materials, will, over time, wear out a steel floor and walls. Wear rate is greatest on the rear 1/3 of the trailer floor or walls.

Routine inspection will bring attention to the time when repair or replacement will be necessary.

	<h1>CAUTION</h1>
<p>THE FLOOR OF ALL SUPERIOR DUMP TRAILERS IS AN INTREGAL PART OF THE TRAILER STRUCTURE AND MUST BE KEPT IN GOOD REPAIR. HAVING THE PROPER FLOOR/WALL THICKNESS TO MATCH THE MATERIAL BEING LOADED WILL INCREASE THE LIFE OF THE UNIT.</p>	

SECTION 11

11.1 AXLE MAINTENANCE

The axle and its attached parts—bearings, hubs oil seals, brakes, cam shaft and slack adjusters—are all assembled and are engaged in mechanical motion and require frequent maintenance. Preventative maintenance on the axle can save on repair bills and prolong trailer life.

For information from axle manufacturers, see the links below:

ArvinMeritor Axles [LINK TO VENDOR FILE](#)

11.1.1 WHEEL BEARING/SPINDLE NUT ADJUSTMENT

To correctly check and adjust wheel bearings, the axle must be supported so wheels are clear of the front and free to roll.

As standard equipment, SUPERIOR employs the use of a one-piece spindle nut. Procedures for installation and wheel bearing adjustment may be found by clicking on the links below.

Stemco Spindle Nut Installation [LINK TO VENDOR FILE](#)

Stemco Wheel Bearing Removal and Installation [LINK TO VENDOR FILE](#)

DANGER

IMPROPER BEARING MAINTENANCE AND ADJUSTMENT CAN RESULT IN OVERHEATING, WHEEL LOCK-UP, AND LOSS OF ENTIRE WHEEL ASSEMBLY CAUSING A CRASH AND POSSIBLE LOSS OF LIFE.

11.1.2 WHEEL BEARING CAUTIONS

11.1.3.1 INSPECTIONS

- 11.1.3.1.1 Inspect condition of sight glass on hubcap; it should be clear and not discolored. Change in color could indicate excessive heat. If cap is hot to the touch, lube level in sight glass at proper level if oil is used.
- 11.1.3.1.2 For grease with solid metal cap, remove access cap and inspect for presence of grease.

11.1.3.1.3 Look for leaks on inside of wheels or hub, or as swirls on tire.

11.1.3.1.4 Check for abnormal tire wear.

11.1.3.2 During operation, bearing failure can result in:

- Wheel vibration
- Wheel wobble
- Wheel noise
- Smoke from wheel end
- Wheel lock-up and skidding

11.1.3 OIL SEALS

Check Oil level on plastic hubcap window. Do not overfill. Check oil level before each trip and inspect for oil leaks. It is recommended that any time the hub is removed, that the complete oil seal be replaced. Use gear type oil, SAE 80WE-90. Change oil, inspect bearings, and clean all parts in hub at 50,000-mile intervals.

NOTE: When replacing oil with grease, consult seal manufacturer for proper seal and hubcap that is compatible with the selected grease.

Procedures for seal installation may be found by clicking on the links below.

Stemco Guardian Oil Seal Installation

[LINK TO VENDOR FILE](#)

Stemco Grit Guard Oil Seal Installation

[LINK TO VENDOR FILE](#)

SECTION 12

12.1 SUPPLIER SECTION

The following names, addresses and phone numbers will provide a second source when there are questions:

AXLES:

ArvinMeritor
2135 West Maple Road
Troy, MI 48084
Phone: (800)-535-5560
www.arvinmeritor.com

Dana Corporation
PO Box 4013
Kalamazoo, MI 49003
Phone: (800)-826-4357
www.roadranger.com

BRAKE COMPONENTS:

Arvin Meritor (Auto Slacks)
2135 West Maple Road
Troy, MI 48084
Phone: (800)-535-5560
www.arvinmeritor.com

Haldex Brake Products Corp.
10930 North Pomona Avenue
Kansas City, MO 64153
Phone: (816)-891-2470
www.haldex.com

Bendix Commercial Vehicle Systems
901 Cleveland Street
Elyria, Ohio 44035
Phone: (800)-AIRBRAKE
www.bendix.com

Meritor Wabco
2135 West Maple Road
Troy, MI 48084
Phone: (800)-535-5560
www.meritorwabco.com

Crewson Industries
1800 Broadway
Buffalo, New York 14212
Phone: (716)-894-1044
www.crewsonindustries.com

MGM Brakes
8530 Cliff Cameron Drive
Charlotte, NC, 28269-9786
Phone: (800)-527-1534
www.mgmbrakes.com

DI-PRO, Inc.
1550 N Peach
Fresno, California, USA 93727
Phone: (800)-286-3643
www.di-pro.com

Sealco Commercial Vehicle Products
215 East Watkins St.
Phoenix, AZ 85004
Phone: (602)-253-1007
www.sealcocvp.com

Gunite Corporation
302 Peoples Ave.
Rockford, IL 61104-7092
Phone: (800)-677-3786
www.gunite.com

CYLINDERS:

HYVA Corporation
1070 Thorndale Avenue
Bensenville, IL 60106

<http://www.alphatippingsolutions.com/>

Hyco International
218 Arad Thompson Road
Arab, AL 35016
Phone: (256)-586-8152
www.hycoweb.com

Parker Hydraulics (Commercial) Mobile
Cylinder Div.
P.O. Box 239
Youngstown, OH 44501-0239
Phone: (330)-740-8670
www.commercialhydraulics.com

HARNESSES/LIGHTING:

Peterson Manufacturing Co.
4200 E. 135th Street
Grandview, MO 64030
Phone: (816)-765-2000
www.pmlights.com

Truck-lite Company, Inc.
310 E. Elmwood Ave.
Falconer, NY 14733
Phone: (800)-888-7095
www.truck-lite.com

Sealco CVP (Harnesses)
215 East Watkins St.
Phoenix, AZ 85004
Phone: (602)-253-1007
www.sealcocvp.com

USA Harness
1201 East Coke Road
Winnsboro, TX 75494
Phone: (903)-342-3767
www.usaharness.com

KINGPINS:

The Holland Group, Inc.
PO Box 2099
Holland, Michigan 49422-2099
Phone: (616)-396-6501
www.thehollandgroupinc.com

LANDING GEAR:

The Holland Group, Inc. (Binkley)
101 S Elm
PO Box 370
Warrenton, MO 63383-0370
Phone: (636)-456-3455
www.thehollandgroupinc.com

Jost International
1770 Hayes
Grand Haven, MI 49417
Phone: (800)-253-5105
www.jostinternational.com

SUSPENSIONS:

Hendrickson Trailer
Suspension Systems
2070 Industrial Place SE
Canton, OH 44707-2641
Phone: (866)-743-3247
www.hendrickson-intl.com

Watson & Chalin Mfg., Inc.
P.O. Box 843774
Dallas, TX 75284-3774
www.watsonsusensions.com

Hutchens Industries
215 N. Patterson Ave.
P.O. Box 1427
Springfield, MO 65801-1427
Phone: (800)-654-8824
www.hutch-susp.com

Ridewell Corporation
3715 E Farm Road 94
P.O. Box 4586
Springfield, MO 65808
Phone: (877)-434-8088
www.ridewellcorp.com

WHEEL END COMPONENTS:

Accuride Corporation
7140 Office Circle
P.O. Box 15600
Evansville, IN 44716-0600
Phone: (888)-770-7282
www.accuridewheels.com

Alcoa Inc. Wheel Products
1600 Harvard Avenue
Cleveland, OH 44105
Phone: (800)-242-9898
www.alcoa.com/alcoawheels

Consolidated Metco
P.O. Box 83201
Portland, OR 97283
Phone: (800)-547-9473
www.conmet.com

Federal Mogul Corporation
26555 Northwestern Highway
Southfield, MI 48034
Phone: (248)-354-7700
www.federal-mogul.com/national

Hayes-Lemmerz International
428 Sieberling St.
Akron, OH 44306-3282
Phone: (800)-337-0457
www.hayes-lemmerz.com

KIC Group
3800 NW Fruit Valley Road
Vancouver, WA 98660
Phone: (800)-488-5422
www.kic-group.com

MacLean Vehicle Systems
1000 Allanson Road
Mundelein, IL 60060
Phone: (800) 323-4536
www.mfmvs.com

Stemco LP
300 Industrial Blvd.
P.O. Box 1989
Longview, Texas 75606-1989
Phone: (800) 527-8492
www.stemco.com

VNC Bearing, Inc.
P.O. Box 73455
Cleveland, OH 44193
Phone: (800)-862-3211
www.vncbearing.com

Walther EMC
3501 Shotwell Drive
Franklin, OH 45005
Phone: (937)-743-8125
www.waltheremc.com

Webb Wheel Products, Inc.
9840 W. State Rt. 66
Tell City, IN 47586
Phone: (812) 548-0477
www.webbwheel.com

LAWS, REGULATIONS AND INDUSTRY STANDARDS

Dept. of Transportation, National Highway Traffic Safety Administration

Federal Motor Vehicle Safety Standards

FMVSS	108	Lights
FMVSS	115	V.I.N.
FMVSS	121	Brakes
FMVSS	223	Rear Impact Guard
FMVSS	224	Rear Impact Guard

Recommended practices and tech bulletin:

Truck Trailer Manufacturers Association
Alexandria, VA
703-549-3010
www.ttmanet.org

American Trucking Association
The Maintenance Council
Washington D.C.
703-838-1763
www.truckline.com

Society of Automotive Engineers
Warrendale, PA
724-776-4841
www.sae.org

American Society for Testing and Materials (ASTM)
West Conshohocken, PA
610-832-9585
www.astm.org



NEW DUMP TRAILER 2 YEAR LIMITED WARRANTY

SUPERIOR MANUFACTURING INC. ("SUPERIOR") warrants to the original Purchaser of the trailer, subject to and upon the conditions herein stated, that the trailer shall be upon delivery free from defects in materials and workmanship. In the event the trailer proves defective in materials or workmanship within two (2) years, it shall be repaired or replaced, at SUPERIOR's option, free of charge, F.O.B. SUPERIOR's Plant, or other designated place of repair or replacement, as the case may be. It shall be Purchaser's obligation to deliver the trailer to SUPERIOR's designated branch or plant, or in the alternative, any other place specifically designated by SUPERIOR, for replacement or repair. Repair or replacement by SUPERIOR shall not extend the warranty period. SUPERIOR will have no liability under this Warranty unless SUPERIOR's Warranty Administrator, 11333 Elberfeld Road, Elberfeld, IN 47613, receives written notice from Purchaser of the defect within ten (10) days after the discovery of the defect or the date the defect should have been discovered, whichever is earlier; provided, however, SUPERIOR's Warranty Administrator may, if desired, waive the requirement of written notice and accept oral notice of a timely reported defect. SUPERIOR shall not be liable under this Warranty if the trailer, or any part thereof, was involved in an accident, or subjected to abuse, alteration, misuse, or extraordinary use of any kind (including, but not limited to, (i) operation at a speed exceeding State Laws, (ii) loading a trailer beyond the rated load established by State Laws, (iii) loading a trailer in excess of the gross vehicle weight rating (GVWR) set forth on the vehicle identification plate attached to a new trailer, (iv) loading a trailer such that the axle weights exceed the gross axle weight rating (GAWR) also listed on said vehicle identification plate, or (v) operation or use of a trailer in a manner other than specifically permitted by the Owner's Manual issued by SUPERIOR), or if the trailer, or any part thereof, was improperly used, stored, installed, maintained, repaired or operated. Repair or replacement, at the sole option of SUPERIOR, of the trailer, or any part thereof, shall fulfill all obligations of SUPERIOR.

With respect to component parts, materials or accessories manufactured; furnished or supplied by individuals or entities other than SUPERIOR (including, but not limited to tires, tubes, suspensions, axle assemblies, wheels, bearings, landing gears, brakes, anti-lock components, spring brakes, air brake valves, lights and hydraulic components, or any non-standard features or items specified by the purchaser), and with respect to parts which may wear out (including, but not limited to, overhead doors, floors, brake linings, brake drums, oil seals, bearings, paint, lights and lamp bulbs, tarps, tires, and the like) SUPERIOR extends no warranties of its own, specifically disclaiming any such warranties by SUPERIOR, express or implied, as to such component parts, materials accessories or expendable parts. Provided, however, SUPERIOR agrees that any warranty which is given to SUPERIOR on such component parts, materials, accessories or expendable parts by the manufacturer thereof, except for tires, shall be extended to the Purchaser.

THE WARRANTIES AND REMEDIES SET FORTH HEREIN ARE, AND ARE HEREBY EXPRESSLY AGREED TO BE, EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES OF ANY KIND WHATSOEVER WITH RESPECT TO DEFECTS IN THE NEW TRAILER, WHETHER IN CONTRACT, IN TORT, STATUTORY, EXPRESS OR IMPLIED. WITHOUT LIMITATION TO THE GENERALITY OF THE FOREGOING, ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM COURSE OF DEALING OR USAGE OF TRADE HAVE BEEN, AND HEREBY ARE, DISCLAIMED AND EXCLUDED BY SUPERIOR. PURCHASER FURTHER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS CONCERNING THE TRAILER HAVE BEEN MADE AND THAT NO REPRESENTATIVE OF SUPERIOR HAS ANY AUTHORITY, ACTUAL OR APPARENT, TO MAKE ANY REPRESENTATIONS CONCERNING THE TRAILER OTHER THAN THOSE SET FORTH HEREIN.

PURCHASER AGREES THAT SUPERIOR WILL NOT BE LIABLE TO ANY PERSON OR ENTITY, INCLUDING SUCH PURCHASER, FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES OR ECONOMIC LOSS FOR ANY REASON WHATSOEVER, INCLUDING, WITHOUT LIMITATION, DAMAGES RESULTING FROM THE NON-OPERATION OF THE TRAILER, LOSS OF PRODUCT OR PRODUCTION OR LOST PROFITS.

The provisions of this Warranty shall be interpreted and governed in accordance with the laws of the State of Indiana.

This Warranty is extended only to the purchaser of new trailers from SUPERIOR, and may not be transferred.





**SUPERIOR MFG INC
11333 ELBERFELD ROAD
ELBERFELD, IN 47613**

Revised 3/2021

