

**DORSEY TRAILER LLC.****OPERATORS MANUAL****INTRODUCTION**

In order to assist you in the safe operation of the equipment and to help you in formulating your own Trailer Preventative Maintenance (TPM) program, we have developed this operator's manual.

It is important that every trailer owner or user set up and follow an organized Trailer Preventative Maintenance (TPM) program. The United States Department of Transportation requires, by law that maintenance records be kept on every commercial highway vehicle.

Maintenance schedules should begin as soon as the trailer is put into operation. It will be to your advantage if you can prove that regularly scheduled TPM inspections have been made on every piece of equipment you operate – not only from a resale-value standpoint, but also to protect your legal position in the event of an accident.



Should problems arise with your trailer, contact your nearest trailer distributor. Damaged or worn parts should always be replaced with trailer manufacturer recommended replacement parts. Always call the facility where trailer was purchased prior to having any warranty work performed. Warranty must be approved prior to being performed.



**General Operating Instructions****INSPECTIONS**

Safety and proper maintenance go hand in hand. Make sure that these inspections are included in your safety guide and preventative maintenance schedule.

**Pre-Trip Inspection and Safety Check List**

- ☐ Never allow anyone behind trailer or between tractor and trailer when coupling or uncoupling.
- ☐ Position trailer to proper height with landing gear.
- ☐ Back the tractor up to trailer so that fifth wheel touches the trailer pick-up plate.
- ☐ Connect air and electric lines and apply trailer brakes.
- ☐ Re-check trailer height and adjust if necessary. Then back tractor until fifth wheel engages king pin.
- ☐ After hook-up, keep the trailer brakes locked and tug on king pin to check for a proper lock.
- ☐ Make a visual check of king pin to ensure that it is securely locked.
- ☐ Retract landing gear completely before moving trailer.
- ☐ When uncoupling, lower trailer landing gear enough to lift the weight from tractor.
- ☐ Keep the fifth wheel plate surface lubricated.
- ☐ Check the tractor and trailer air and electrical connectors for cleanliness wear, chafing, proper seating and air leaks.
- ☐ Trailer brakes should apply immediately when air lines are disconnected.
- ☐ Inspect all reflectors and all lights, including stop lights and turn signals, for proper operation, cleanliness, and missing or damaged parts.
- ☐ Check the landing gear assembly for bent braces, loose bolts and proper operation of the legs.
- ☐ Retract gear to full UP position and secure handle.
- ☐ Inspect the sliding tandem for proper operation and engagement of locking pins.
- ☐ Lock the stop bar in the proper location.
- ☐ Check the hold-down clips.
- ☐ Drain the reservoirs and inspect the brake system for damage and air leaks.
- ☐ Check the brake linings for proper thickness.
- ☐ Adjust the brakes as necessary.
- ☐ Fully charge the air brake system, turn off the tractor engine, and apply the brakes for one minute. The pressure gauge should not fall more than 3 psi during the one-minute brake application.
- ☐ Use air gauge to check the tires for proper pressure.
- ☐ Check for tread depth, uneven tire wear and tire damage.
- ☐ Check for any leakage of the oil seals, and make sure that the oil is at the proper level indicated on the hub cap.
- ☐ Inspect the wheel studs for looseness.
- ☐ Check the wheels for cracks.
- ☐ While checking the wheels, look for damaged or broken springs and missing or loose U-bolts.
- ☐ Inspect the mud flaps and flap attachments.
- ☐ Check the load securing devices that are within working load limits and in good operating condition.
- ☐ Check for proper load distribution when trailer is loaded.
- ☐ Check trailer for over height, over width, overload.
- ☐ Close and secure all trailer doors.
- ☐ Check, if applicable, for proper place card and shipping papers.
- ☐ Inspect tire carrier prior to each trip. Replace or repair worn, cracked, damaged or missing frame members, retaining chain and hardware. Do not use Tire Carrier if inspection requirements are not satisfied.

 **WARNING**  Bodily injury or property damage can occur if tire is lost while in transit. Carry only one spare at a time. The safety chain must be tightly wrapped around the tire with the end clasp fastened back into the chain. Replace worn, damaged or missing parts (fasteners or chain) and repair any damaged brackets or members promptly. For tire diameter of 38" min. to 48" max. only.

 **WARNING**  **Anti-Lock Brake System WARNING!**

**Prevent Loss of Control**

ABS malfunction indicator lamp should turn on and off when electrical power is initially applied to antilock brake system. If lamp does not turn on, it may be defective and must be repaired. If lamp turns on and remains on while power is applied with trailer moving, system must be repaired by competent service facility.

Failure to heed this warning can result in property damage, serious injury, or death.

**OTHER:** Add other pre-trip inspections, which apply to your particular trailer model and/or items of optional equipment.

### Inspection at the End of the First 500 Miles

**Note:** If this trailer was delivered direct to you from the manufacturer, check axle alignment, tighten axle U-bolts, and retorque inner and outer cap nuts or wheel nuts on arrival.

- ☐ Conduct the pre-trip inspection.
- ☐ Check axle alignment.
- ☐ Tighten axle U-bolts.
- ☐ Adjust brakes.
- ☐ Retorque nuts on disc wheels. Follow the recommended procedures outlined elsewhere in this booklet.

### Monthly Inspection

- ☐ Conduct pre-trip inspection.
- ☐ Inspect brakes to ensure lining is not worn excessively. When lining is replaced, check drums for excessive wear, heat cracks, and grooving.
- ☐ Check travel of brake-chamber push rods, and adjust brakes as necessary.
- ☐ Check and retorque wheel nuts.
- ☐ Inspect tires for uneven wear.
- ☐ Check axle alignment.
- ☐ Check for loose or missing fasteners, and replace or tighten as necessary.
- ☐ Check and repair any cracked welds. Call manufacturer for recommended procedures.
- ☐ Inspect all areas where sealant is used. Reseal as necessary.
- ☐ Check under-construction finish, particularly in areas above trailer tires and tractor tires. Repaint as necessary.
- ☐ Check optional items in accordance with manufacturer's inspection guide. (This includes refrigeration and heating equipment.)
- ☐ Check other items or special type trailers or construction as outlined elsewhere in this booklet. (This includes FRP trailers, etc.)
- ☐ Lubricate trailer in accordance with lubrication guide.

### Semi-Annual Inspection

- ☐ Inspect brake linkage, cams, and shoes.
- ☐ Inspect and clean wheel-bearing. Refill to proper oil level.
- ☐ Inspect body parts, doors, ventilators, roof, floor, sides, and all body hardware. Replace or repair unserviceable parts.
- ☐ Inspect suspension parts, springs, U-bolts, landing gear, and tire carrier. Repair or replace worn or damaged parts as needed.
- ☐ Inspect kingpin for excessive wear.
- ☐ Inspect upper fifth-wheel plate for excessive wear and cracks.
- ☐ Inspect exterior and interior finishes. Replace as necessary.
- ☐ Lubricate in accordance with the lubrication guide.
- ☐ Replace or repair worn or damaged tire carrier parts as needed.

### Warning and Information Decals

Each trailer contains a series of decals, which provide important information and instructions on the safe operation, and maintenance of the equipment. Observe the information on these decals at all times and follow instructions in conjunction with the information contained in this booklet.

Decals, which become damaged or illegible should be replaced immediately. Replacement decals are available through your local distributor

### OTHER MANUALS

Our trailers are built with components produced by various manufacturers. Some of these items have separate instruction manuals. Where this may apply and no manual is provided contact us at (334) 855-4755 for additional manuals.

### SERIAL NUMBER/CERTIFICATION PLATE

The Serial Number/Certification Plate contains important information about your trailer, some of which you must know for sale and legal operation. Data required by the Department of Transportation is also on the plate: date of manufacture, gross vehicle weight rating (GVWR), gross axle weight rating (GAWR), and statement of certification per Federal Motor Vehicle Safety Standards, vehicle identification number (VIN) and vehicle type.

The plate states that your trailer was manufactured and gives the address of the plant at which it was produced.

Your Serial Number/Certification Plate should never be removed, unless necessary during repairs, after which it should be reinstalled in the same location on the trailer.

**Weight Ratings:** The Gross Axle Weight Rating (GAWR) on the serial plate indicates the structural capacity of the lowest rated item of the running gear assembly – which includes suspension, springs, wheels, hubs, drums, bearings, brakes, rims, tires or axle. Changes in any items in the running gear assembly may change the GAWR.

The Gross Vehicle Weight Rating (GVWR) denotes the structural capacity with a uniformly distributed load when the trailer is supported by its kingpin and axles.

To determine the total payload capacity of the trailer, subtract the empty weight of the trailer from the gross vehicle weight rating (GVWR). The load must be uniformly distributed and care should be taken not to exceed the GAWR on the running gear assembly.

One exception to the evenly distributed load requirements on a straight floor van is that a 27,000 lb. load may be distributed over any ten linear feet of the trailer. Contact your trailer manufacturer representative regarding concentrated load capacities for vans and other type trailers.

Your trailer was designed for operation with legal loads on improved road surfaces, within legal highway speed limits. Any operation of the trailer outside the guidelines provided in this manual (including any other restrictions placed on particular trailer) will absolve trailer of any responsibility for the result of such operation.

## WIND EFFECT

Strong wind blowing against trailer with high sides or loads and long length will place a drifting effect on the unit, which is very dangerous.

Do not operate these type trailers in high wind, as it may cause the trailer to drift from the proper lane of traffic. Extremely high wind and gusts could possibly overturn the unit.

If a drifting effect is experienced, reduce speed immediately and if necessary, stop the unit until the wind subsides.

**Weight Distribution:** Trailers are designed to carry loads equally distributed lengthwise between the front and rear and crosswise between the sides. Cargo should be properly loaded, braced and blocked to prevent load shifts – which can damage and possibly overturn the trailer.

You must comply with The Department of Transportation Federal Motor Carriers Safety Regulations, Subpart One (which covers protection against shifting or falling cargo) plus any revisions or additions to these regulations: General Rules for Protection Against Shifting or Falling Cargo (Section 393-100); Securement Systems (Section 393-102); Blocking and Bracing (Section 393-104); and Front End Structure (Section 393-106).

In addition to other requirements, these regulations impose an obligation on the driver to examine his cargo and its securement prior to commencing a trip. He is also required within 25 miles of a trip's starting point to check his load for stability and tighten, if necessary. The regulation also requires the driver to recheck his cargo whenever he changes his duty status, or after the vehicle has been driven three hours, or 150 miles, whichever comes first. Experienced drivers realize the necessity for these precautions as securing devices may become loosened by repositioning during movement or settling of loads.

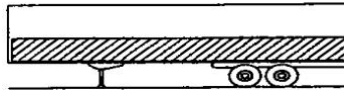
It should be noted that on a flatbed trailer the so-called "rub" rails do not ordinarily meet the minimum strength requirement for tire-downs. Use optional tie-downs installed at the factory, or tie through the stake pockets. It is the user's responsibility to provide a load securement system which develops the necessary capacity to meet regulations listed above without damaging trailer structure. Follow recommendations of load securement device manufacturer in the installation and use of load securement devices.

Section 393-106 also establishes equipment for the bulkhead on the flatbed. Adherence to these regulations is the responsibility of the user, particularly in cases of resistance to puncture, which depends on the cargo hauled. If a bulkhead is supplied with the flatbed, it will be identified as either meeting or not meeting these DOT requirements. If a bulkhead is supplied with the flatbed by the original equipment manufacturer, the bulkhead will be marked with a horizontal static load capacity. It is the user's responsibility to ensure that the bulkhead meets regulation pertaining to front end structure for the type cargo and weight of cargo being hauled.

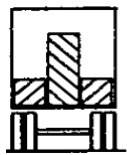
### Trailer Weight Distribution

<b>WARNING</b>
<p>A shifting load can result in failure, or to loss of control of the trailer, and can lead to death or serious injury. You must tie down all loads with properly sized and rated fasteners, ropes, straps, etc. to prevent the load from shifting while trailering.</p>

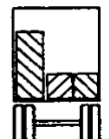
Distribute loads uniformly between front and rear of trailer.



Distribute loads crosswise avoiding heavy side loads that can overload and damage one side of the running gear assembly components and cause frame twisting. Ensure that loads are properly braced to prevent lateral movement.



Right



Wrong



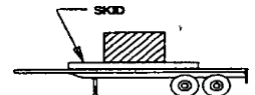
Wrong



Wrong



Right



Right

### Examples of Concentrated Loads Not Occupying Full Trailer Floor Area

When concentrated loads cannot be separated, use a skid of adequate length to distribute weight from front to rear.

## AXLE ALIGNMENT

Axle alignment should be checked at the time of delivery if the unit is received direct from the factory. If delivery comes from a trailer distributor, alignment should be checked after the first 500 miles, then semi-annually thereafter. The recommended procedure for axle alignment is as follows:

**Fixed Axles:** When aligning axles, suspension should be in a natural, relaxed state, free of any "binds". Before taking measurements (and to achieve this relaxed condition) make sure the vehicle is unloaded. Then roll it back and forth on a level surface. Avoid brake application (including parking brake). Vehicle must be level from side to side as well as front to rear.

Use screw-on axle end extenders or remove outer wheels and anything else that may obstruct the measuring tape from achieving a straight line from the kingpin to the axle ends.

Tools needed for axle alignment inspection are:

- Spring-loaded kingpin extender with bubble level.
- Screw-on axle end extenders.
- 50 ft. steel tape.
- Adjustable tram.

Refer to the Drawing below. Measure distances A and B from the kingpin to the front axle. Their lengths must be equal to within  $\frac{1}{8}$  inch of each other.

Measure distances C and D between axles. These must measure equal to within  $\frac{1}{16}$  inch of each other. Distance E should not exceed  $\frac{1}{4}$  inch for either axle.

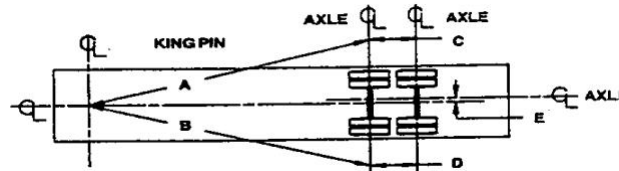
## Precautions:

- Always measure to the front axle ends for accurate alignment.
- Avoid measuring to the rims, suspension brackets, hub cap vent holes, brake drums and the like. This can result in improper alignment.
- If difficulty is encountered in obtaining true alignment, check and repair, or replace problem suspension parts.

**Sliding Axles:** When the trailer is in position to be aligned, set the brakes and pull up on trailer, this will take out the usual movement in the slider and will put it into the correct position for moving down the road. Then align the axles as indicated above.

## Axle Alignment Measurements

B = A  
C = D



## BRAKE SYSTEM

Satisfactory operation of the brake system requires proper maintenance and a clean, dry air supply from the tractor. Trailer brakes should be inspected and adjusted frequently as part of a Trailer Preventative Maintenance Program.

Out-of-adjustment brakes can increase stopping distance, shorten brake component life and cause the trailer to jackknife. When brakes are fully applied, push-rod travel should never be over 2". Air tanks should be drained daily, especially during cold weather, to remove moisture and other contaminants. Under no circumstances should any liquid such as antifreeze or alcohol be poured into the air system. This will deteriorate the valve seals resulting in valve malfunction. Airline antifreeze (methyl alcohol) should be used only in an alcohol injector mounted on the tractor. The brake system should be checked periodically for air leaks by fully charging the system and with the engine off listening for leaks.

When the engine is turned off, the tractor pressure-gauge reading should not fall more than 3 psi in one minute with the brakes fully applied. During operation, check the tractor pressure gauge for unusual drops in pressure or extended periods of pressure build-up. Check the spring brakes to see that they apply when the emergency (supply) airline pressure is vented and release when the airline is repressurized. **Do not** operate the trailer with parking brakes caged or disabled in any way as this renders the emergency and parking brakes inoperable. **Do not** attempt to disassemble the spring brake component without first caging the spring. This could result in mortal injury.



Inspect brake linings monthly to ensure the lining is not worn excessively. Linings should be replaced before they are worn down to 1/4" thickness to prevent damaging the drum with the rivet or bolt heads that attach the lining. When linings are replaced, the drum should be inspected for excessive wear, heat cracks and grooving.

To maintain proper brake balance, replacement linings should have the same friction ratings as original equipment.

**PARKING BRAKES:** Trailers that are equipped with air/spring actuators. Each actuator is separated into two units. The base unit applies the service brakes. The top unit contains a coil spring that must be compressed by air within the chamber to release the parking brakes. Loss of air pressure in the supply line to the brake chamber will automatically apply parking and/or emergency braking.

**CAUTION!** Actuator plugs must remain in place when not being serviced. Plugs prevent contaminants from entering brake chamber.

A manual release tool is provided on each actuator to allow release of the spring brake when sufficient air pressure is not available.

## To manually release parking brake actuators:

- Always position wheel chocks at both front and rear of tires before manually releasing parking brakes.
- A parking brake release tool is stored in a pocket on the side of the brake chamber.
- Insert the detachable release both through hole in head. Turn the release bolt clockwise until it stops and locks, then pull the release bolt out as far as possible, and run the nut down, holding the bolt in place.

Using a hand wrench, turn the release bolt nut clockwise until the bolt extends about three inches. Make sure the release bolt is locked properly in the piston. The parking brake coil spring is now caged.



**WARNING**

## OPERATION

Do not operate trailer with the spring brake caged (disabled) as this eliminates the emergency breakaway feature of the system and the parking brake.

## REPAIR

Do not disassemble spring brake unless spring is securely caged (disabled), otherwise serious injury may result.

## NOTICE

If the ABS Indicator lamp comes on and stays on when you apply the brakes to a moving vehicle, the trailer ABS is not working properly. The ABS must be serviced as soon as possible upon completion of your trip to ensure full anti-lock braking capability.



### **Bendix TABS-6 Trailer ABS**

1 <sup>st</sup> Blink Code		2 <sup>nd</sup> Blink Code	
Code	Location	Code	Description
1	All	1	No faults
2	Sensor SL	1	Sensor signal valid – large air gap
3	Sensor SR	2	Sensor signal valid – loss of signal
4	Sensor SAL	3	Sensor signal valid – noisy
5	Sensor SAR	4	Sensor shorted or open
		5	Tire diameter out of range
		6	Sensor configuration error
6	Power	1	Over – voltage
		2	Low – voltage
		3	Excessive power line resistance
7	Valve MOD1	1	Hold solenoid (AUX) shorted or open
8	Valve MOD2	2	Release solenoid (AUX) shorted or open
9	Valve MOD3	3	ABS modulator dynamic error
		4	Valve configuration error
10	Common	1	Valve MOD1/2 low – side switch shorted to ground
		2	Valve MOD3 (AUX) low – side switch shorted to ground
		3	ABS modulator dynamic error – all valves
		4	Excessive ABS activity
11	ECU	1	ECU internal error
		2	ECU configuration error
12	Indicator Lamp	1	ABS lamp (AUX7) shorted or open
13	Diagnostics	1	J1587 diagnostics (AUX6) shorted or open

#### **To Read/Clear Diagnostic Troubleshooting Codes (DTC's):**

1. Apply constant power to the trailer (ignition switch).
2. Within 15 seconds, apply/release the brake pedal at 1 second intervals:
  - a. 3 times for Active DTC's.
  - b. 4 times for Inactive DTC's.
  - c. 5 times for clearing Active DTC's.
3. After a 5 second delay, the blink codes will be activated.
4. Observe the trailer – mounted ABS indicator lamp and record blink code(s).
5. Refer to blink code chart for description.
6. After making repairs and clearing DTC's, verify lamp is no longer illuminated.

**For assistance: 1 – 800 – AIR – BRAKE**

### **DOORS**

**All Doors:** Open all doors with caution. Shifted trailer loads may exert pressure on the door, causing it to snap open. Injury could result from the door opening or from objects falling out of the trailer. Do not operate trailer with rear doors open.

**Swing Doors:** Inspect swing doors frequently at the rear, side for proper operation. Make sure that all door holdbacks are operational.

### **ELECTRICAL SYSTEM**

The lighting systems on your trailer meet or exceed all Federal requirements. For proper performance and long life of the system, clean all lights and reflectors when dirty. Replace burned-out bulbs with equivalent bulbs of equal candle power. For safety, cargo must be kept away from dome lights; which should be turned off for over-the-road operation. Inspect the wiring system periodically for frays or corrosion. If needed, add more dielectric grease to connectors to prevent corrosion.

The electrical cable between tractor and trailer must be clean and long enough to permit jackknife turns. The electrical cable should be properly supported to prevent pinching or becoming tangled between the upper and lower couplers. Keep the seven-way plug on the cable and the seven-way connector on the trailer free of corrosion and other foreign matter.

Use only 12-volt D.C. batteries to check lights. Never replace fuses or breakers with metal foil or other devices.

#### **Trouble Shooting The System**

Problem	Possible Cause	Recommendation for Repair
Wrong lights on	Poor or nor ground connection.	Check for corrosion, clean and retighten.
	Tractor or trailer improperly wired.	Change to wiring standard shown for 7-way connector.
Lights burn dim	Dirty tractor plug	Remove plug, clean & reinsert.
	Loose connection in 7-way connector.	Remove and insert plug, making sure it is tight.
	Corrosion of front or rear 7-way connector terminals.	Remove connector from trailer and inspect all contacts. Clean off all corrosion and retighten terminals on back.

Light does not burn	Dirty tractor plug.	Remove plug, clean & reinsert.
	Bulb burned out.	Install new bulb of same type.
	Broken wire.	Splice and tape.
	Poor ground connection on light.	Check for corrosion, clean and retighten.
	Contact in base of socket bent, loose, or corroded.	Clean and make sure contact in base of socket will contact bulb. Replace socket if necessary.
Lights out or burn intermittently.	Defective circuit breaker.	Install new circuit breaker make sure contacts are tight and clean.

**CAUTION!** Connector center pin is wired to provide constant power for antilock system.

## FIFTH WHEEL AND KINGPIN

The kingpin and its bottom-locking flange should be checked at regular intervals for any chips, cracks, and undue wear. When checking the kingpin, always inspect the load bearing plate, which surrounds the pin for any gaulding, cracking, and other abnormal wear.

Check for loose and missing fasteners in the lower rail where the fifth wheel structure attaches.



## LANDING GEAR SYSTEM

Protect your landing gear system and other parts of your trailer before coupling by ensuring that the upper fifth wheel is raised to the proper height for accepting the tractor fifth wheel.

Raise the landing gear to full UP position before moving the trailer, and lower the gear to the ground before disconnecting the tractor from the trailer.

Landing gear sand shoes and/or wheels have a tendency to sink in soil and soft asphalt. Use a plank under the pads or wheels when uncoupling on these type surfaces to prevent trailer from sinking and destabilizing.

Check the gear retaining-bolts periodically for tightness. Also check the landing gear bracket and all bracing for damage or any cracked welds.

Gears that do not contain grease fittings do not require internal lubrication.

## LUBRICATION

Lubrication is an essential part of your regular preventative maintenance program. It will keep your trailer and its accessories operating properly and increase their life span. Lubrication recommendations are as follows:

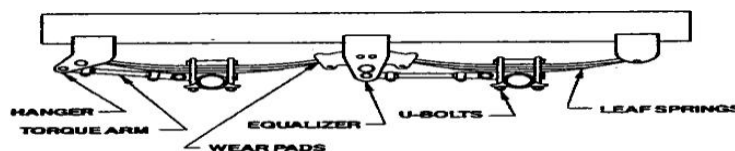
ITEM	CHECK OR SERVICE	FREQUENCY	LUBRICANT OR EQUIVALENT
Hydraulic Dovetail	Lubricate	3 Months	NLGI No. 2 EP Grease
Detachable Neck	Lubricate	3 Months	NLGI No. 2 EP Grease
Brake Camshaft Support Bearings	Lubricate	3 Months	NLGI No. 2 EP Grease
Brake Slack Adjuster	Lubricate	3 Months	NLGI No. 2 EP Grease
Electrical Connections	Add to Void Areas	3 Months	Dielectric Grease
Fifth Wheel Base & Ramps	Lubricate	Weekly	Waterproof General Purpose Grease
Landing Gear with Grease Fittings	Lubricate	6 Months	NLGI No. 2 EP Grease
Wheel Bearings: Oil Type	Fill to Full level	Daily	SAE 90 Wt. Oil (API-GL-5)
Wheel Bearings: Grease Type	Clean and Repack	6 Months	NLGI No. 2 Wheel Bearing Grease
Sliding Suspension: Linkages of Locking Mechanism	Lubricate	3 Months	SAE 20 Wt. Oil
Others: Door & Ventilator Hinge Pins	Lubricate	3 Months	SAE 20 Wt. Oil
Door Hinge Linkage	Lubricate	3 Months	SAE 20 Wt. Oil
Roll Up Door Rollers	Lubricate	3 Months	SAE 20 Wt. Oil
Door Lock Rod Retaining Points with Grease Fittings	Lubricate	3 Months	NLGI No. 2 EP Grease
Other Misc. Moving Parts & Linkages	Lubricate	3 Months or When Void of Lubricant	SAE 20 Wt. Oil

**NOTE:** 1. Lubricate special options or accessories with moving parts according to the manufacture's specification. Any needed assistance will be provided by trailer manufacturer on request.

2. Trailers operating in extreme temperatures above 110 degrees F. or below -20 degrees F. may require other lubricants. Contact trailer manufacturer for recommendations.

## SPRING SUSPENSIONS

Axle shifts are dangerous and can cause accidents. Check closely for broken springs and missing or loose bolts that may lead to this condition. Correct any deficiencies immediately.



## Hutch 9600-9700 Series

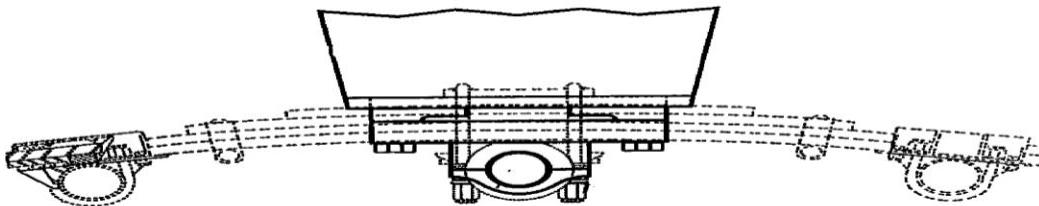
After an initial break in period, approximately 1000 miles, and at least every 4 months periodically thereafter, ALL bolts and nuts should be checked to insure that recommended torque values are being maintained.

Oiled torque values listed are for new fasteners with lubricated threads. It is recommended that new installations be performed with oiled fasteners. For dry threads, which have been in service, use the higher torque values which are noted below. Insure that equalizer oscillation is not restricted. Replace hanger wear-pads if worn thin, to prevent hanger and spring damage. Check all welds periodically for the beginning of cracks

	OILED	DRY
1 1/8-7 (9600 / 9700 Rocker Bolt)	590 lb-ft	790 lb-ft
1-14 or 1-8 (9700 Radius Rod Bolt)	540 lb-ft	720 lb-ft
7/8- 14 (Axle U-Bolts & 9600 Radius Rod Bolt)	350 lb-ft	470 lb-ft
3/4 -16 (Axles U-Bolts)	310 lb-ft	420 lb-ft
3/8 - 18 (Radius Rod Clamp Bolt)	130 lb-ft	170 lb-ft
5/8 - 18 (Spring Retainer Bolt)	35 lb-ft	50 lb-ft

**⚠ WARNING ⚠ SAFETY ALERT! (1) FOLLOW ALL TORQUE REQUIREMENTS. (2) DO NOT USE ANY COMPONENT WITH VISIBLY WORN OR DAMAGED THREADS. FAILURE TO FOLLOW THESE SAFETY ALERTS CAN LEAD TO LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE, SERIOUS PERSONAL INJURY OR DEATH.**

Watson Model #



Torque Requirements Next Page

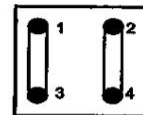
## RETORQUE AFTER EACH OF THE FOLLOWING INCREMENTS



**FIRST 5 DAYS OF SERVICE  
FIRST 30 DAYS OF SERVICE**

**FIRST 60 DAYS OF SERVICE  
EVERY 6 MONTHS THEREAFTER**

Bolts must be tightened and torqued using a cross pattern sequence. Tighten #1 & #4 to partial torque then partial torque #2 & #3. Using the same sequence fully torque U-Bolts Nuts.



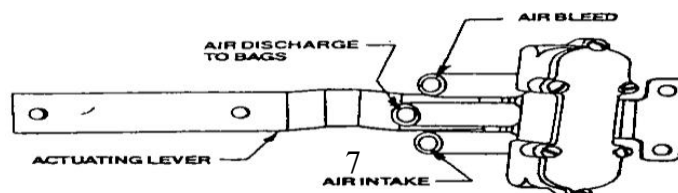
## TORQUE REQUIREMENTS (non Plated) CLEAN LUBRICATED THREADS

(UNF - Grade 8)	Size -	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"
<b>U-BOLT MIN</b>	FOOT LBS	15	40	120	200	400	650	800
<b>U-BOLT MAX</b>	FOOT LBS	20	60	150	250	450	750	900
<b>Capscrew - Bolts</b>	Size -	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"
<b>TORQUE MIN</b>	FOOT LBS	25	50	150	300	500	700	900
<b>TORQUE MAX</b>	FOOT LBS	35	75	200	350	550	800	1000

Torque Values DO NOT apply to air springs, or low grade fasteners.  
**Watson & Challin Mfg. Co., McKinney, TX**

## AIR SUSPENSIONS

The height-control valve maintains a constant trailer height by pressurizing or exhausting air in the air springs.



## HEIGHT CONTROL VALVE

Air pressure must be maintained above 65 psi while operating the trailer. With less than 65 psi, the suspension's air protection valve will not operate. This valve automatically maintains a safe air-brake pressure in the event of an air loss due to an air spring failure.

Completely deflate the system when air spring failure occurs. Then temporarily operate the unit on the internal rubber bumpers while moving the trailer to a repair facility.

Deflate and cut off pressure to the air springs by disconnecting the height control valve actuating levers from their link assemblies and rotate to the vertical down position.

If tires should contact the underside of the floor or sills with the air springs deflated, jack up the trailer to give ample tire clearance, and put wood blocks between the top of the axle and the trailer suspension subframe to allow the trailer to be cautiously moved to a shop.

Air suspensions also incorporate valving that allows the suspensions' air pressure to be manually exhausted (dumped) for loading, unloading, or when the trailer is parked for a prolonged period of time. The following steps describe a typical sequence of operations involving the use of a pneumatically or electrically controlled exhaust (dump valve):

### **To Exhaust:**

1. Pull the trailer forward past the loading dock.
2. Activate the exhaust valve using either the pneumatic or electric switch provided by the installer.
3. Back the trailer to the dock area, allowing the suspensions to exhaust as you move rearward.
4. Apply the trailer's parking brakes after the air pressure has completely exhausted, chock the trailer wheels and load/unload as your normally would. **Note:** Lower the trailer support legs (landing gear) after applying the parking brakes if the tractor is to be uncoupled.

### **To Inflate:**

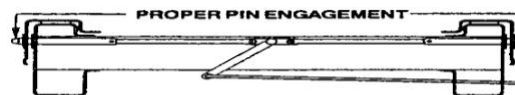
1. Couple the tractor and trailer.
2. Raise the support legs prior to inflating the suspension's air springs.
3. Unchock the wheels, release the parking brakes and pull away from the dock.
4. Activate the exhaust (dump) valve using the pneumatic or electric switch.

The steps listed above will prevent the trailer from "walking" away from the dock during loading or unloading. To accomplish this, and to avoid damaging the trailer and suspension components, the following conditions must be met:

- The suspensions air pressure must be exhausted BEFORE the brakes are applied.
- ALL of the trailer air suspensions must be exhausted.
- The suspensions must be properly inflated BEFORE the trailer is driven away.

Following the steps listed above will satisfy these conditions and ensure the safe operation of the trailer air suspensions.

## SLIDING SUSPENSION



Trailers with sliding suspension should be visually inspected before operation to ensure that all four locking pins have properly penetrated the upper slide rails.



Sliders are equipped with a positioning/stop bar. Lock this bar in place immediately behind the slider whenever the trailer is in operation. (This does not apply to platform trailers when slider is in extreme rear-most position.)

Many sliding running gear assemblies are equipped with spring-loaded Qwik Release device to retract the pins locking the slider frame to the upper rails.



Make sure that all hold down clips are fastened in place and properly located to prevent separation of the lower slide assembly. Hold down clips on some vans and platform trailers are located on the inboard side of the slider rail.

### **Sliding Instructions:**

1. If your trailer has a sliding undercarriage, visually inspect to see that all four locking pins have fully penetrated the web of the main beam and locked before moving the trailer. Anytime the body of a locking pin does not protrude past the outside surface of its mating hole, retract and release the pins until they do. Sometimes rocking the trailer back and forth will free a binding condition between the slider and the trailer, allowing the pins to work freely.
2. Always check the condition of the holes in the main beam. Holes that are badly worn or elongated will result in undue clack in the slider unit, causing excessive wear and suspension misalignment.

- Always check to see that the hold-down brackets are in good repair and have not been damaged. Trailers should not be operated if any of these brackets are not in proper position.
- Check the pin cage assembly bolts for tightness after each year of service.

#### To Change Suspension Location:

- Insert the positioning/stop bar in the desired upper-slider-rail hole.
- Release locking pins by pulling the operating handle and locking it into position in the keyhole slot.
- Apply the trailer brakes. Pull the tractor and trailer forward to move suspension backward. Back the tractor and trailer to move the suspension forward.
- Release the operating handle and rock the trailer to fully engage locking pins.
- When the locking pins are fully engaged, make certain the positioning/stop bar is locked into place immediately behind the slider before operating the trailer.

### TIRES

A good tire inspection and maintenance program will pay off in increased mileage and reduced cost. Some of the items that should be included in your program are as follows:

- Check daily for proper inflation with an accurate gauge when tires are cold. Always inflate tires according to the inflation pressure molded on the tire by the tire manufacturer. Both under inflating and over inflating tires will reduce their life and create dangerous conditions.
- Examine tires to ensure that there are no breaks, bulges, separations, or other defects. Also check for erratic tire wear.
- Pressure increases of up to 20 pounds can occur when tires become heated. Never relieve this built-up pressure by bleeding the air. Excessive pressure build-up may be caused by poor load distribution, under inflation, high speeds, or any combination of these. Should excessive pressure be experienced, determine the cause and correct it at once.
- Mismatch duals will cause the large tire to be overloaded and over heat. Never mix different tire sizes or tires of different construction on the same axle. Tires must be matched with proper rims for safe operation.
- Overloaded tires create dangerous and unsafe conditions. Immediate correction is required.
- Replace any tires with fabric exposure and/or tread depths of less than 2-32".
- Use extreme caution when handling tires. At all times follow industry regulations and safety standards.

#### **WARNING** **TO PREVENT SERIOUS EYE INJURY, ALWAYS WEAR SAFE EYE PROTECTION WHEN YOU PERFORM VEHICLE MAINTENANCE OR SERVICE.**

Follow the instructions below when installing tire inflation system hoses. Note that improperly tightened hoses can leak and may cause the trailer tires to deflate when the trailer is parked.

- Hand-tighten the hose to the tire valve stem.
- Use a 7/16-inch wrench to tighten the hose an additional half turn.
- Hand – tighten the hose fitting at the hub cap tee (Do Not Use Pliers)
- Apply soapy water at the connections to test for leaks.
- If a leak is found, disconnect the hose and reinstall per the instructions above and retest.
- If the connection continues to leak, replace the hose seal or the entire hose.

For Additional Information See Meritor Tire Inflation Maintenance Manual or call (888) 725 – 9355 / (800) 535 – 5560

TIRE SIZE	PLY RATING	WHEEL SIZE	CAPACITY@COLD PSI
215/75R17.5	H	17.5 X 6.75	4540 @ 125 PSI DUAL
235/75R17.5	H	17.5 X 6.75	5675 @ 125 PSI DUAL
255/70R22.5	H	22.5 X 8.25	5070 @ 120 PSI DUAL
275/70R22.5		22.5 X 8.25	6175 @ 125 PSI DUAL
295/75R22.5	G	22.5 X 8.25	5675 @ 100 PSI DUAL
11R22.5	G	22.5 X 8.25	5750 @ 105 PSI DUAL
285/75R24.5	G	24.5 X 8.25	5675 @ 100 PSI DUAL
11R24.5	G	24.5 X 8.25	6000 @ 105 PSI DUAL
425/65R22.5	L	22.5 X 12.25	11350 @ 120 PSI SINGLE

### WHEELS

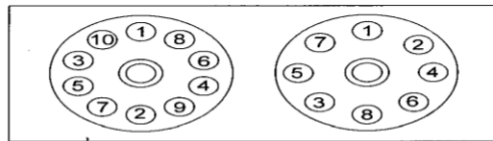
#### Disc Wheel Installation Procedure – Hub Piloted Disc Wheel System

- Check all parts for damage including wheels and rings. Ensure that studs, nuts pilots and mounting faces of hubs, drums and wheels are free of dirt and grease. The hub or drum mounting face must be cleaned and kept flat. Clean hub or drum surface and piloted with a wire brush if rust or debris is present. Make sure the wheels are hub piloted wheels with bolt holes drilled straight through without ball seats. Stud piloted wheels must not be used as substitutes for hub piloted wheels under any circumstance. Never try to use a hub piloted wheel with stud piloted hub or stud piloted nuts. The result could be loss of torque, a cracked wheel, or possible wheel loss.  
Note the condition of the hub and the hub pilots. Replace the hub if worn or cracked bolt holes or a worn hub face are evident, or if the pilots are worn or broken. Check the hub for damage and flatness. Replace if the original flat area is reduced in diameter by wear.
- Wire brush the base of each stud as well as the threads to remove any rust or foreign material which could bind up the wheel nuts.
- Ensure the brake drum is positioned on the raised step of the pilots, and is seated fully against the hub.
- Check for damaged studs and stripped stud threads as evidenced by shiny threads. Also look for worn or damaged mounting faces by using a straight edge. Replace any parts, which exhibit wear or damage. Ensure replacement studs are the proper ones for the system used. Stud breakage can occur if the wrong studs are used.



If a stud is broken, replace it and the stud on each side of the broken one. If 2 or more studs are broken, replace them all. Use a press to install studs and be sure the hub flange is supported. Aluminum hubs require different stud installation procedures. Consult the manufacturer for recommendations. Stud heads can be bent from hammer blows which will prevent the stud from seating properly and can result in stud failure.

5. Make sure the center hole of the wheel is clean so it will fit easily on the hub pilots.
6. Use correct nuts. Nuts used for stud piloted systems cannot be used in hub piloted systems. Hub piloted wheels use flange nuts for both the single and dual wheel applications. No inner cap nuts are required.
7. Check the wheel nuts. Ensure that multi-piece nuts turn smoothly on their flanges. Discard all nuts with damaged threads.
8. Apply two drops of oil to a point between the nuts and flange and two drops to the last 2 or 3 threads at the end of each stud. Also lightly lubricate the pilots on the hub to ease wheel installation and removal. Do not get lubricant on the mounting face of the drum or wheel.
9. Rotate the hub so that one pilot is at the 12 o'clock position. Place single wheel or inner dual wheel onto the hub being careful not to damage stud threads. Make sure the wheel is fully seated against the drum.
10. For dual wheels, place the outer wheel onto the hub making sure the hand holds are lined up for easy access to the tire valves. Make sure the outer wheel is pushed fully up against the inner wheel. Install nuts finger-tight at the 12 o'clock and 6 o'clock positions, and then apply nuts finger-tight on the remaining studs. Snug the nuts to about 50 ft. lbs. following a crisscross sequence as shown (**See Figure**) Finally, tighten all the nuts to the recommended torque (**See Table**) using the same crisscross sequence.
11. After the wheels are installed, check to see that both wheels are still seated on to the pilots and are flat against the drum. This can be done by inspecting the seating of the wheels on all four pilots and by turning the wheels and checking for irregularity of the wheel assembly.
12. After a wheel assembly has been installed, recheck the torque level between 50 and 100 miles of operation and retighten if necessary, to the recommended torque using the proper sequence. It is recommended that a torque check be made as part of a vehicle's scheduled maintenance program or at 10,000-mile intervals, whichever comes first. Individual fleet experience may dictate shorter intervals or allow longer intervals.
13. If air wrenches are used, they must be periodically calibrated for proper torque output. Use a torque wrench to check the air wrench output. If output is not correct, take the necessary steps to adjust output.



RECOMMENDED MOUNTING TORQUE FOR DISC WHEELS

Mounting Type	Nut Thread	Torque Level Ft.-Lb (Oiled*)
Hub Piloted with flange nut	$1\frac{1}{16}$ " – 16	300 – 400 Most Common

#### NOTES:

1. If using specialty fasteners, consult the manufacturer for recommended torque levels.
2. Tightening wheel nuts to their specified torque levels is extremely important. Under tightening which results in loose wheels can damage wheels, studs and hubs and can result in wheel loss. Over tightening can damage studs, nuts and wheels and result in loose wheels as well.
3. Regardless of the torque method used, all torque wrenches; air wrenches and any other tools should be calibrated periodically to ensure the proper torque is applied.

#### OIL AND GREASE SEALS



Always replace the oil seals or grease seals each time a wheel is removed. Replacement should be done in accordance with manufacturer's specifications. Refer to the guide for proper lubrication.

#### STAINLESS STEEL MAINTENANCE

If your trailer has stainless steel components, keep them looking new by thoroughly washing and rinsing the surfaces monthly, making sure that all road and atmosphere contaminants are removed.

**Mirror-Finish Stainless Steel Sheets** that have become contaminated with spots, stains, and other minor discolorations may be cleaned with general household cleaners. Use only as directed by the instructions on the package. Do not use abrasive cleaners on mirror-finish stainless steel.

**Type 304 Semi-Polished Stainless-Steel Members** may also be cleaned of spots, stains, and other minor discolorations with general household cleaners.

Major discolorations resulting from heavy contact with foreign materials such as carbon steel can be manually removed with polishing pads or commercial liquid cleaning chemicals.

Deep gouges, scratches, etc. can be mechanically removed using a "flap wheel type" finishing disc. The disc should be moved in smooth, straight strokes to achieve the desired finish.

#### Guide for Cleaning Stainless Steel:

1. Never use steel wool or steel brushes unless they are made of stainless steel; otherwise contamination will occur, resulting in rust deposits forming on the stainless.
2. Use the mildest cleaning procedures necessary to do the job efficiently and effectively.
3. Always rub in the direction of polish lines for maximum effectiveness and to avoid marring the surface.
4. Use only soft cloths, sponges, fibrous brushes, plastic or stainless-steel pads for cleaning and scouring.
5. Rinse thoroughly with fresh water after every cleaning operation.
6. Polishing continuously in one spot will make that area brighter than the surrounding material.



**Recommended Maintenance Procedure for Semi-Polished Stainless-Steel Parts:**

1. To maintain the original finish, thoroughly wash and rinse the surface at least once monthly. Contaminants such as road salts must be removed.
2. Minor discolorations resulting from road conditions or foreign contaminants can be removed by general household type powdered cleaners and a damp cloth.
3. Major discolorations resulting from heavy contact with foreign material such as carbon steel can be manually removed with plastic or stainless-steel pads or commercial liquid cleaning chemicals.
4. Deep Gouges, scratches, etc., can be mechanically removed using a “flap wheel type” finishing disc. The disc should be moved in smooth, straight strokes.
5. Any “rust” discoloration is caused by external contaminants and can be removed with proper cleaning techniques.

The above procedures will restore the solid stainless steel to its original finish.

**PROPER USE OF STEPS AND HANDHOLDS**

Use all steps and handholds with extreme caution. Such components are subject to wear, damage, and environmental conditions. Make sure these components are firmly attached and properly maintained. If you suspect that they are not, do not use them. If steps are wet, iced, or for some reason seem to be slippery, they must not be used.

Steps and handholds are provided on the front wall corners as part of optional vent door packages. They should only be used for access to the vent door. They must not be used to start, inspect, or maintain any heating or cooling unit installed on the front wall of the vehicle.

**Climbing Practices:**

1. Store clipboards and all other objects prior to climbing. Hands must be free.
2. Face inward (toward the trailer) at all times while ascending and descending.
3. Maintain a three-point contact at all times.
4. Wear slip-resistant footwear.

**Access From The Ground**

Use the front wall steps only when the trailer is properly supported by extended support legs. You must use a step ladder, or other structure specifically designed for the purpose of ascent and descent, of an adequate height to safely reach the bottom most step.

**Access From The Trailer**

If the tractor is not equipped with adequate steps, handholds and slip-resistant deck plate to the rear of the cab, Do Not Attempt Access To The Trailer Steps From the Tractor. Use “Access From The Ground” method. If the tractor is properly equipped with steps, handholds, and a deck plate and the tractor is coupled and lock to the trailer, it is most important that the tractor be in a partial “jackknife” orientation. The tractor must be positioned such that the deck plate is directly beneath the lowest step.

**WARNING**

1. DO NOT climb on steps not firmly attached and properly maintained.
2. DO NOT climb on steps with any item in your hands.
3. DO NOT use a tractor not equipped with a safe, adequate climbing system to access the trailer’s front wall steps.
4. DO NOT step on tires, fenders, tractor frames, or mud flap supports.
5. DO NOT step over air and electrical lines between the tractor and the trailer. Disconnect and properly store if necessary.
6. DO NOT use any portion of the tractor in conjunction with any portion of the trailer simultaneously in a “spread-eagle” hold or stance for support.
7. DO NOT use an access system if wet, iced, or for any reason seems to be slippery.
8. DO NOT use a trailer’s front wall access system to start, inspect, or maintain any heating or cooling unit.
9. DO NOT climb higher than necessary to open, secure or close the vent door.
10. DO NOT remain on trailer’s access system while the trailer is being coupled to or uncoupled from a tractor.
11. DO NOT jump from the trailer to the ground.

**DOUBLE TRAILERS**

**Loading Instructions:** When loading or unloading a short single-axle trailer, which is not coupled to a tractor, take precautions to prevent the trailer from tipping over or nose-diving. If the trailer has an anti-nose-dive leg it should be lowered to rest firmly on the ground and locked in place. If the trailer has no leg, a sturdy jack-stand or sawhorse should be used to support the front of the trailer. The load should be distributed as uniformly as possible between the front and rear of the trailer and from side to side. The load should be shored as necessary to prevent shifting.

**Pintle Hook:** The Pintle hook/dolly connection is critical. They should be properly mated and inspected daily. The air-shock less pintle hook is factory adjusted so the plunger will contact a 1<sup>5</sup>/<sub>8</sub>” draw-bar eye when air pressure is applied. Each combination should be rechecked for contact and adjusted if necessary. Make sure safety chains are properly hooked, air lines are connected and glad-hand cutoff valves are in the proper operating position.

**Pintle Hook Adjustment:** When properly adjusted, the plunger should contact the drawbar eye with the air pressure applied.

**WARNING**

DO NOT load with front of trailer unsupported.

**WARNING**

Vehicle may be overloaded with some commodities before reaching volumetric capacity.



## TIPPER VANS & MOVING FLOOR VANS

**! WARNING !** Vehicle may be overloaded with some commodities before reaching volumetric capacity.

### **! WARNING !**

Never transport people on your trailer. Besides putting their lives at risk, the transport of people may be illegal.

## OPEN TOP VAN TRAILERS

Open tops must be tarped over.

## PLATFORM TRAILERS

### **! WARNING !**

A shifting load can result in failure, or to loss of control of the trailer, and can lead to death or serious injury. You must tie down all loads with properly sized and rated fasteners, ropes, straps, etc. to prevent the load from shifting while trailering.

#### **INSTALLED LOAD SECUREMENT DEVICES HAVE A WORKING LOAD OF:**

RUB BAND, WINCH TRACK, WINCHES	4,000 LBS(1810KG)
PIPE SPOOLS, POCKETS	5,400 LBS(2450KG)
CHAIN SLEEVES RECESSED IN FLOOR	5,400 LBS(2450KG)
"D" - RINGS RECESSED IN FLOOR	6,600 LBS(2990KG)

\*BASED ON BREAKING STRENGTH TO WORKING LOAD RATIO OF 3 TO 1

### **! WARNING !**

**DO NOT ATTACH PORTABLE WINCH TO LOWER FLANGE OF BODY BORDER** A-10409

### **Procedure for Extending and Closing Extendable Trailers**

To extend the trailer follow these steps:

1. Lock the brake system.
2. Turn value 108° to release locking chamber.
3. Turn value handle back to 90° to hold pins in release position.
4. Pull tractor ahead until the locking pins are just short of the desired locking hole.
5. Release locking pin chamber.
6. Pull tractor forward until pins engage locking holes. Make visual check to be sure both pins are clearly through the inner beams.

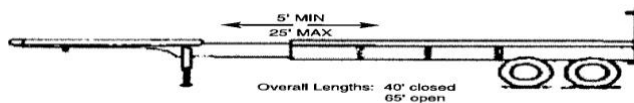
#### **To close the trailer:**

Repeat the above steps except change steps 4 and 6 as follows:

1. Back tractor until locking pins are just short of the desired locking hole.
6. Back tractor until pins engage locking holes. Make visual check to be sure both pins are clearly through inner beams.

**WARNING!** Stay clear of open area while extending and closing.

**Caution!** Failure to securely install locking pins could cause separation of the two trailer halves resulting in an accident!



**WARNING!** DO NOT load with front of trailer unsupported.

### Main Frame Warning

DO NOT weld, burn, or drill on flanges of main rails.

## LOWBED TRAILERS AND TAG-A-LONG TRAILERS

**! WARNING !** TRAILER MUST BE ATTACHED TO TRUCK BEFORE LOADING OR OFF-LOADING.

**! WARNING !** Trailer Not Properly Coupled to the Hitch

It is critical that the trailer be securely coupled to the hitch, and that the safety chains and emergency breakaway brake lanyard (for electric brake trailers) are correctly attached. Uncoupling may result in death or serious injury to you and to other.

### **Proper Use of Safety Chains**

If your trailer comes loose from the hitch for any reason, we have provided safety chains so that control of the trailer can still be maintained.

**⚠ WARNING ⚠** Improper rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury, if the trailer uncouples from the tow vehicle.

- Fasten chains to frame of tow vehicle. Do not fasten chains to any part of the hitch unless the hitch has holes or loops specifically for that purpose.
- Cross chains underneath the hitch and coupler with enough slack to permit turning and to hold tongue up if the trailer comes loose.

**CAUTION: BEFORE LOADING OR OFF-LOADING EXHAUST AIR SPRINGS TO PREVENT STRUCTURAL DAMAGE TO SUSPENSION.**

**⚠ WARNING ⚠ REMOVE OUTRIGGER BOARDS WHEN NOT LOADED.**



BEFORE OPERATING THIS TRAILER, READ AND UNDERSTAND THE TRAILER OPERATION MANUAL

### DETACH INSTRUCTIONS

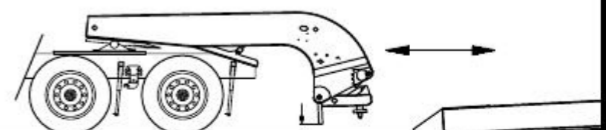
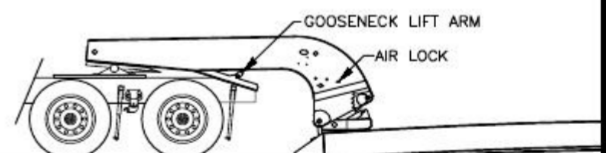
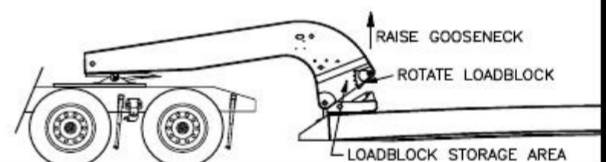
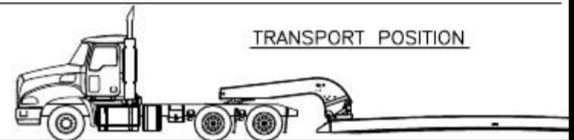
1. PARK TRUCK & TRAILER IN A STRAIGHT LINE AND ON AS LEVEL GROUND AS POSSIBLE
2. START HYDRAULIC SYSTEM
3. DETACH AIR & ELECTRICAL LINES, ROLL UP AND PUT THEM IN THEIR STORAGE AREA.
4. RAISE GOOSENECK UNTIL LOADBLOCKS CAN BE ROTATED INTO THE LOAD BLOCK STORAGE AREA.
5. LOCK LOADBLOCKS IN THE UP POSITION, LOWER THE GOOSENECK TO THE GROUND.
6. LOWER GOOSENECK UNTIL THERE IS APPROXIMATELY 1/4" GAP BELOW LOADPIN AND LOADPLATE.
7. LOWER GOOSENECK LIFTING ARM TO TRUCK FRAME.
8. PUSH AIR LOCK TO RELEASE LOCKPIN
9. DRIVE FORWARD, ADJUST LIFT ARM ACCORDINGLY.

### HOOK-UP INSTRUCTIONS

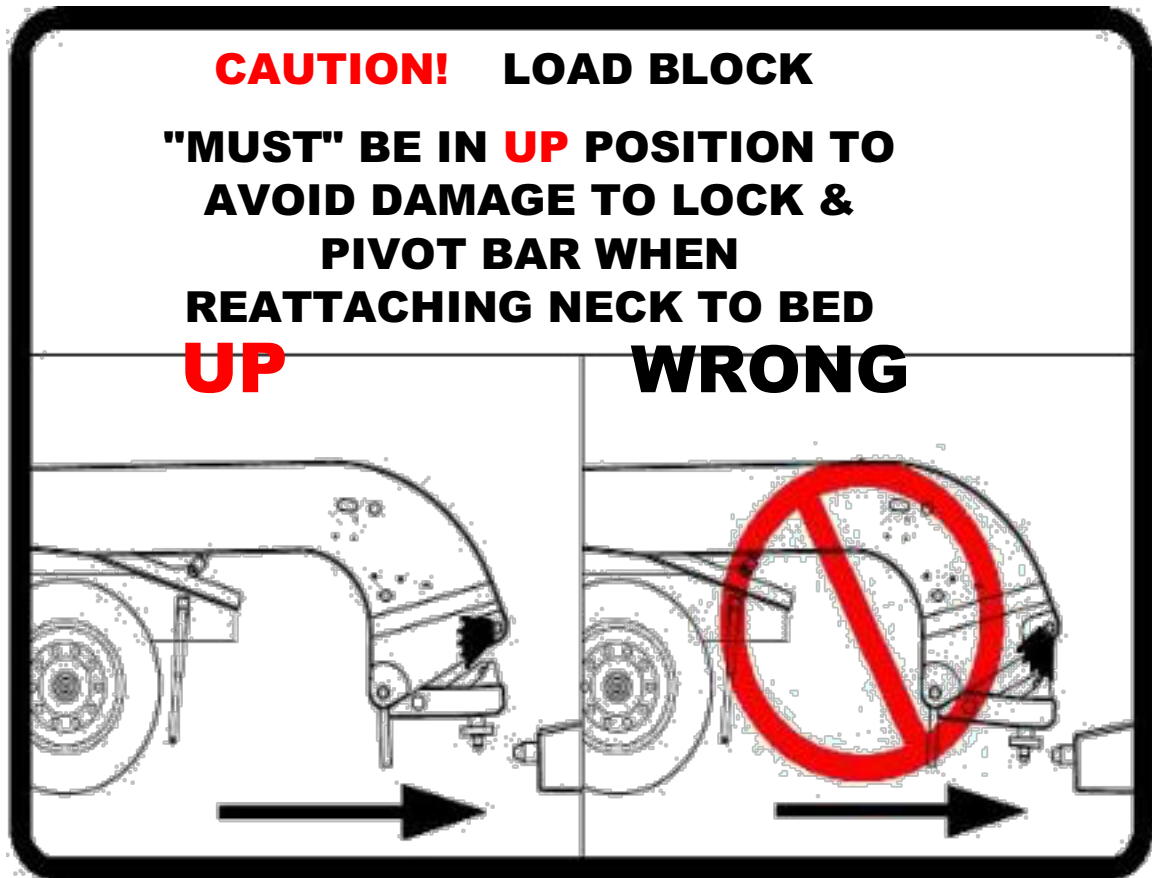
**NOTE: LOAD BLOCK SHOULD BE LOCKED IN LOADBLOCK STORAGE AREA POSITION BEFORE CONTINUING TO FOLLOW STEPS**

1. PULL AIR LOCK TO ENGAGE LOCKPIN INTO SPRING LOAD SELF LOCKING POSITION
2. ADJUST GOOSENECK HEIGHT, (SHOULD BE 1.50" UNDER LOAD PLATE TO GROUND).
3. ADJUST UNDERCARRIAGE (LOAD PLATE SHOULD BE VERTICAL).
4. BACK UP TO TRAILER FRAME SLOWLY.
5. UNDERCARRIAGE WILL SELF ALIGN WITH TRAILER. (IF NOT, PULL AHEAD AND ADJUST ACCORDINGLY).
6. RAISE GOOSENECK/DECK UNTIL LOADBLOCKS CAN BE ROTATED DOWN.
7. LOWER GOOSENECK ONTO LOAD BLOCK TO TRANSPORT POSITION.
8. RAISE GOOSENECK LIFT ARM
9. CONNECT AIR AND ELECTRICAL LINES.

### TRANSPORT POSITION



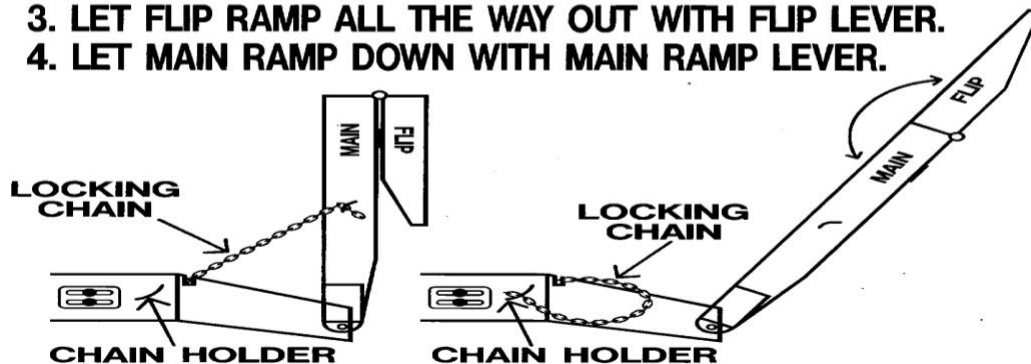
**NOTE: BEFORE BACKING UP, ADJUST GOOSENECK LIFT ARM (1-1/2" GROUND CLEARANCE)**



# WARNING

**STAY CLEAR 20'!**

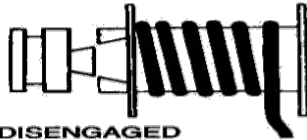
1. LIFT UP MAIN RAMP WITH CONTROL LEVER.
2. REMOVE LOCKING CHAINS AND PLACE IN CHAIN HOLDERS.
3. LET FLIP RAMP ALL THE WAY OUT WITH FLIP LEVER.
4. LET MAIN RAMP DOWN WITH MAIN RAMP LEVER.





## WINCH DRUM CLUTCH CONTROL

### ! WARNING



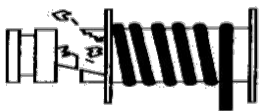
DISENGAGED

• **DO NOT** move the load or the winch platform, or operate the winch before making certain the drum clutch is set to "engage" and the clutch is fully engaged.



ENGAGED

A load on the winch line may prevent a partially-engaged clutch from disengaging, but any change in the load may allow the clutch to disengage unexpectedly. This could result in loss of load control, property damage, injury, or death.



• **DO NOT** attempt to engage drum clutch while cable drum is rotating.

• **DO NOT** attempt to disengage drum clutch with a load applied to the winch cable.

Engaging or disengaging the drum clutch while the cable drum is rotating or under load may result in damage to drum clutch components. Damaged drum clutch components may disengage under load, which could result in loss of load control, property damage, injury, or death.

Refer to the appropriate BRADEN maintenance publication for more information.

Install this label near winch controls.



PN 100600

### ! WARNING !

**LOADING EQUIPMENT** is Always Hazardous. To minimize the chance of equipment falling off during loading the following is important:

1. Trailer must be attached to truck before loading or off-loading
2. **CHOCK** the tractor and trailer tires to be certain the trailer does not move during loading.
3. Load on the most level ground available. The greater the angle of any slope the greater the likelihood of an accident.
4. Always stand clear of loading ramps.
5. Line the equipment up straight with the ramps and trailer. Keep the equipment straight with the ramps and trailer throughout the loading process. Use a spotter if possible, for this purpose. If a spotter is unavailable use some fixed object to assure correct alignment.
6. If your equipment has Roll Over Protection System (ROPS) always wear a seat belt while loading. If equipment should fall off **DO NOT** attempt to unbuckle the seat belt and jump. With ROPS you are safer belted on the equipment in the event of a fall. Please recognize that the chances of a serious injury or death is increased if the equipment does not have a ROPS.
7. Never Load or off load from the sides of a trailer.
8. Remember loading equipment is dangerous. Proceed slowly and cautiously at all times. Wet weather and especially icy conditions will increase the danger.
9. **DO NOT** load if the light is not sufficient to allow you to observe your position on the ramp or the trailer at all times during the loading process.
10. Secure the load with chains or straps.
11. **DO NOT** exceed the Gross Vehicle Weight (GRW) of trailer.
12. Always stand clear when vehicle is being loaded.

## Lowbed and Heavy Duty Platform Trailer Definitions of Various Load Types

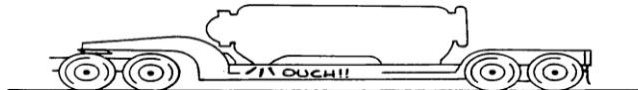
Note: The follow load descriptions and recommendations are intended for general information only. Specific loadings must always be in compliance with the trailer manufacturers rating.

### Concentrated Load

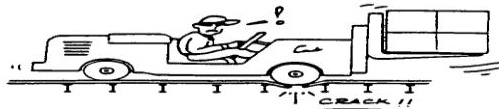
A concentrated load is one that is localized over a shorter than normal distance. For example, 20,000 pounds within two feet. A concentrated load may be the entire payload. A single load of 45,000 pounds within eight feet would be an example of this:



Or, a concentrated load may be only a portion of a greater load; for example, a load which imparts 25,000 pounds over six feet on one end and 19,000 pounds over only one foot on the other end. In this case, the 19,000 pounds may be more damaging than the 25,000 pounds since it is localized in a smaller distance.



Trailers vary in their capability to withstand concentrated loads. Heavily-loaded life trucks loading or unloading vans or platforms can experience problems with flooring breakage since the small wheels on lift trucks concentrate loads in areas shorter than crossmember spacing.



Lowbed trailers may have similar flooring problems when sheepfoot-type roller or grouser-tracked equipment is loaded.

Trailer frame members are also subject to damage or yielding when subjected to concentrated loads beyond their capability. Generally, you must avoid “knife-edge” interfaces between the load and the trailer frame, since this is the harshest and potentially most damaging circumstance. Load-spreading devices such as timbers or steel beams are recommended when this type interface exists.

Any load, regardless of type, which has a very short contact area on the trailer and is of considerable weight, should be approved by the trailer manufacturer.



### Two Concentrated Loads

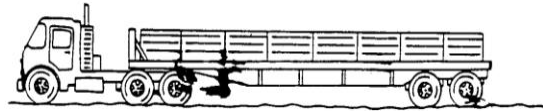
Note: Common Center of gravity location can be used to calculate weight distribution on trailer.





## Distributed Load

A distributed load is one, which bears continuously along its length of engagement with the trailer. The most recognizable examples of distributed loads are: bricks, bags of anything such as cement, reinforcing bars, and palletized loads. These types of loads are, in general, not as demanding as concentrated loads, but depending on their magnitude and area in which they deposit themselves, they can sometimes be just as critical.



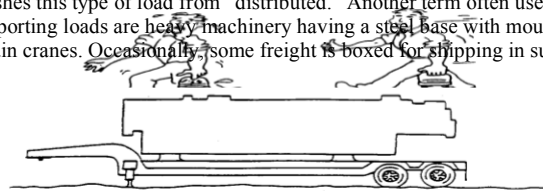
Distributed loads are of two types: uniformly distributed and distributed with loading increasing at center or at one end. An example of a uniformly-distributed load would be a load of concrete blocks stacked to a uniform height throughout the length of the loading area. An example of a distributed load increasing at center is the same block stacked in the shape of a pyramid. This latter load type is of course more restrictive causing higher stresses in the trailer frame.

Distributed loads may be full length of the trailer platform or only a portion of it. Most platform and van trailers are designed to withstand loads uniformly distributed along the entire loading area and many permit more concentrated loads. Lowbed trailers generally will withstand distributed loads within the bed, however, this type load is not the primary consideration in lowbeds, which more often see self-supporting and concentrated loads.



## Self-Supporting Loads

The term “self-supporting” distinguishes this type of load from “distributed.” Another term often used interchangeably with “self-supporting” is “rigid load” or “rigid base load.” Examples of self-supporting loads are heavy machinery having a steel base with mounting feet, construction machinery such as rubber-tired front-end loaders, scrapers, and rough-terrain cranes. Occasionally, some freight is boxed for shipping in such a way as to give a rigid base of considerable length and this type load falls into this category.



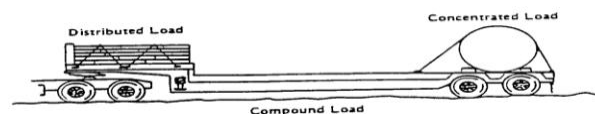
Generally, a rigid base load will remain rigid while the trailer frame will deflect slightly away from the center of the load resulting in two concentrated loads (one at either end of the load) rather than a distributed load. Some loads may be constructed in such a way as to provide more than two load interface points, for example, a forty-foot-long carton may have bearing pads at each end and at every 10 feet. This will, if the trailer frame is rigid enough, be seen as five concentrated loads by the trailer. If the load is heavy enough to cause the trailer frame to deflect appreciably, the center bearing pads may not be in contact with the trailer unless shimming is done.

Self-supporting loads are generally less restrictive than distributed and concentrated loads, but the primary considerations governing their advisability are magnitude of load vs. length of load base and concentration of end reactions.

Concentration has been discussed earlier and the same considerations listed there apply here.

## Compound Loads

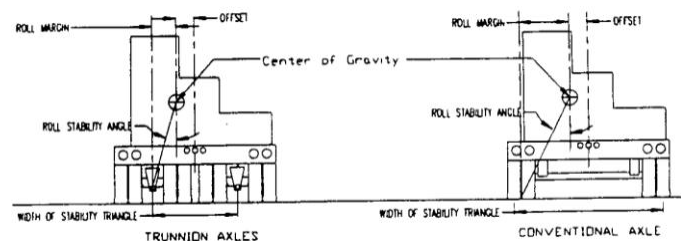
Occasionally the complete loading for a trailer may be made up of several of the previously mentioned load types. For example, a platform trailer may be loaded with a distributed load over the front end and have a concentrated load over the rear. Certain equipment-carrying trailers may have many concentrated loads throughout the length. Since these variations are too numerous and arbitrary to discuss here, it is suggested that extreme or questionable cases be verified with trailer manufacturer.



## Eccentric Loads

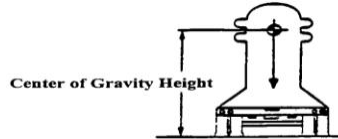
When a load has its center of gravity positioned off to one side, it is known as an eccentric load. The degree of off-set is the critical factor here. For example, while center of gravity off-set of six inches is usually not prohibitive, one of 24 inches usually is. Problems that arise in these instances vary from leaning of the trailer, to severe leaning, instability, and/or damage or yielding of the trailer frame. Eccentricity is not as prohibitive for less than capacity loads. However, as the full rated capacity is approached, less eccentricity is allowable.

Most trailers are constructed with two main beams meant to share the load equally. When the load center is off to one side significantly, one beam takes more and more of the load and eventually the safety factor in the beam is gone and beam failure can occur. Tires may become overloaded in this situation. Eccentric loads can be very dangerous on public thoroughfares when they approach the beam safety factor and, more importantly, stability limits. An off center load may be stable when on level roads, but highways may have banked turns and other grade and slope changes that can contribute to rollover.



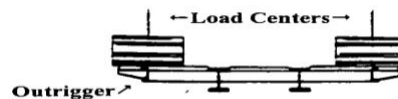
## High Center of Gravity Loads

Loads with very high centers of gravity require extra consideration. Stability of the vehicle is always of concern and a high center of gravity is one of the greatest factors contributing to instability. If we consider the mechanism of rollover, we see that the center of gravity acts upon its height as a lever, the higher it is, the longer the lever and moment generated. Speed control is one factor, which can assist in compensation for higher center of gravity loads. Remember that the vehicle may have to stop suddenly and the center of gravity's long "lever" works forward and rearward as well as sideways. The sudden stop may overload frame members, truck tires, or tie-downs, if a high center of gravity situation exists.



## Outrigger Loads

Lowbed trailers usually have swing-out or removable width-increasing brackets known as outriggers. They are capable of carrying loads via a plank placed longitudinally over the brackets. Since the outriggers are spaced apart a considerable distance, no concentrated loads are permitted on them. In fact, the basic outrigger concept is for some of the load to bear on the trailer bed itself and only part of the load on the outriggers. (There are exceptions). Normal designs will allow for a capacity load to be supported by several outriggers acting together. The trailer crossmembers must be considered when outrigger loads approach maximum limits since the cantilever load on the crossmember may induce severe stress in the crossmember.



## Load Distribution

### Load Center of Gravity

Load distribution is one of the most important factors in the successful use of a trailer. However, in the real world of everyday hauling, it is more often neglected than not especially where the kind of load changes often. The purpose of this chapter is to help the trailer user understand how to distribute his payload properly; thus, making his work easier and safer, his equipment last longer, and his axle loads legal.

When a load is evenly distributed over the length of the trailer such as sand or gravel in a dump trailer or steel reinforcing bars or pipe on a platform trailer, the center of gravity of the load is predetermined for us. It is at the center of the load and generally results in 50% to 55% of the load's weight being distributed to the trailer undercarriage. Most loads, however, are not evenly distributed and it falls to the user to locate the load(s) to meet State and Federal highway legal axle load limits and to provide the best operational advantage (stability, tracking, wind effect, visibility, etc.) for his equipment.

One problem facing the heavy hauler operator is uncertainty as to the true location of the load's center of gravity. Quite often he must use a trial and error method of positioning and re-positioning the load until it "weights out" properly. This is a costly and time-consuming method. Furthermore, fines at highway scales face the hauler who guesses the wrong way. If the center of gravity could be known or determined by some very simple calculations made by the knowledgeable heavy hauler, these problems could be avoided. We will discuss in this chapter some simple steps that can greatly enhance the already considerable skills of the heavy hauler operator.

Many times, the consignor knows where the load's center of gravity is or can help locate it; you have only to ask for the information. If this does not bring results, you can be guided by the placement of lifting points on the load. These generally are at the balance points, which will define the center of gravity. In some instances, you could ask the person loading your trailer to set the piece on a small timber laterally placed under the load and then move it until the balance point is found. This is the center of gravity location. Once the center of gravity is known (or estimated), some basic math gives the needed weight distribution. In the following paragraphs we will discuss this procedure.

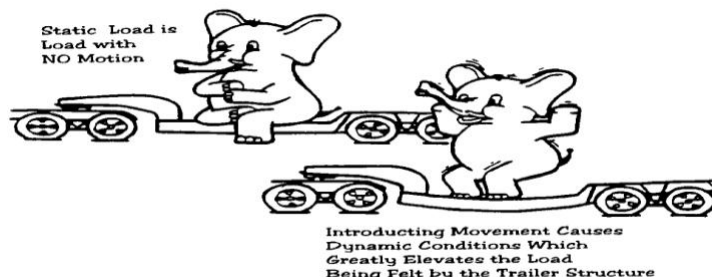
## Design Criteria

### Safety Factors

The safety factor in lowbed and flatbed trailer designs is a greatly misunderstood subject. Manufacturers discuss design safety factors, which are used to influence users on the design strength of the trailer structure. It is the purpose of this chapter to help the trailer user understand how safety factors are considered in the structural design of a trailer.

Various types of steel used in the manufacturing of trailer structures have various minimum yield properties. Therefore, as a practical limitation, the minimum yield strength is usually considered to be the maximum stress level that can be tolerated without fear of the onset of permanent deformation.

Simply defined the safety factor is a ratio between the design stress imposed by the load sitting static on the trailer and the minimum yield stress of the steel used in construction of that trailer structure. For example, if the structure is built using 100,000 psi minimum yield strength steel and the load sitting on it causes a stress level of 50,000 psi, then a 2:1 safety factor would exist. **This safety factor does not mean that the structure can then be used to carry twice the rated load.** Under dynamic conditions, or as the trailer moves and encounters shocks, vibrations, twists, and other normal operating conditions, stress levels are elevated far beyond those seen in the static situation.





Dorsey Trailer LLC

## Certificate of Warranty

### New Truck Trailers

Dorsey Trailer ("Dorsey") warrants to the first purchaser ("the Purchaser") of a new truck trailer (hereinafter referred to as "trailer") manufactured by Dorsey that each such new trailer will be free from defects in material and workmanship, provided that the trailer (i) is operated for normal commercial use, (ii) is periodically serviced in accordance with ordinary commercial standards, (iii) is used to carry loads not exceeding the manufacturer's rated capacity, and (iv) is loaded with the weight equally distributed. The foregoing warranty is effective from the date of purchase for the period of: (i) limited three years for van models, (ii) limited five years platform models, (iii) one year for chip van models, (iv) one year for extendable models, (v) one year for custom models, and (vi) six months on hydraulic and solenoid components.

**THE FOREGOING WARRANTY IS MADE SOLELY TO THE FIRST PURCHASER OF A NEW TRUCK TRAILER FROM DORSEY OR DORSEY'S AUTHORIZED DEALER AND IS MADE IN LIEU OF OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED BY LAW OR OTHERWISE. NO EXPRESS OR IMPLIED WARRANTY OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OTHER THAN AS SET FORTH ABOVE IS MADE BY DORSEY FOR EACH SUCH NEW TRUCK TRAILER.**

"Normal commercial use" means use of the trailer (i) for commercial use, (ii) in the manner and for the purpose for which it was designed and purchased, (iii) within gross vehicle rating (GVWR) and gross axle rating (GAWR) as specified on the trailer's vehicle identification plate, and (iv) with commercial loads properly attached and not causing any strains on the trailer greater than those experienced on well-maintained public roads while operated lawfully. "Normal commercial use", shall NOT include use with loads that are chemically incompatible with any of the materials of which the trailer is constructed.

Main Frame – Limited Five Year - - - Tail Roller/Pop Up Roller – 1 Year Warranty - - - Suspension –See Manf. Warranty - - - Paint – 1 Year - - - Alignment – 30 Days

**ALL WARRANTIES MUST BE PRE-APPROVED BEFORE ATTEMPTING ANY REPAIRS OR VOIDS WARRANTY CLAIM. OVERLOADING, NEGLIGENCE, MISUSE, UNAUTHORIZED REPAIR, ALTERATIONS, OR FAILURE TO PROVIDE NORMAL MAINTENANCE SHALL VOID WARRANTY.**

Dorsey neither expresses nor implies any warranty at all with respect to:

- (1) any trailer no longer owned by the Purchaser;
- (2) any trailer sold which, after its purchase from Dorsey, or Dorsey authorized dealer, is repaired or altered outside of Dorsey's factory or branch in any manner not **approved in writing**, or which has been subject to misuse, neglect, or accident;
- (3) any used trailer sold by Dorsey or any other person;
- (4) any parts or materials used by Dorsey in manufacturing a new trailer which wear out and require replacement within the warranty period specified above. Such parts or materials include (but are not limited to) brake drums, brake linings, brake actuation components, oil and oil seals, bearings, paint, tires, wood floors, and electrical components, light bulbs, electrical receptacle, paint and coatings, return springs, equalizer, torque rod and camshaft bushings, camshafts, slack adjusters, springs, slider pads, wheel bearings, rim clamps and studs, gaskets and sealers, and all types of interior lining, floors, and the like also;
- (5) parts and accessories may carry warranties of their respective manufacturers. At the Purchaser's written request, Dorsey will supply the Purchaser with any information it possesses concerning the warranties on parts and accessories and the identity and location of their respective manufacturers or of any other person with respect to the parts and accessories;
- (6) customer furnished used parts for installation in new trailers;

By Dorsey's delivery of this warranty and Purchaser's acceptance hereof in connection with the purchase of a new trailer,

Dorsey and the Purchaser agree as follows:

- (1) that Dorsey shall not be liable for damage to cargo or for any consequential damages arising from or alleged to arise from the purchase covered by this Warranty or from the Warranty itself, whether arising from or alleged to arise from Purchaser's inability to use trailer commercially, from interruption of Purchaser's business, or otherwise for loss of use of capital or revenue, cost of money, claim of customers, non-operation or increased expense or operation cost of purchase or replacement equipment, loss of anticipated profits, transportation expenses due to repairs, or for any special, incidental or consequential loss or damage of any nature arising at any time or from any cause whatsoever.
- (2) that Dorsey's sole responsibility under this warranty is to repair or replace (at Dorsey's discretion, but only within the Warranty period) any defective trailer manufactured by Dorsey, provided that Dorsey is obliged to perform such repair or replacement only if such defective trailer is returned to Dorsey or a repair facility designated by Dorsey, at Purchaser's expense immediately upon request by Dorsey;
- (3) the labor cost involved in replacing the warranted parts will be reimbursed for a period of one year, and a period of six months on hydraulic components and solenoids, at a rate not exceeding their predetermined factory schedule for such labor and labor cost, providing the prior approval of Dorsey Trailer for any such labor and labor cost has been obtained. The necessity of replacement of any such parts under this warranty shall solely be determined by Dorsey Trailer, who reserves the right to require any and all parts for which replacement is claimed, to be returned freight paid to its factory for inspection. On all component parts not manufactured by Dorsey Trailer, their warranty is to the extent that the manufacturers of such parts warrant them to Dorsey Trailer, and
- (4) that such repair or replacement is the Purchaser's exclusive and sole remedy in connection with any defective trailer sold new to the Purchaser by Dorsey, whether such remedy is sought pursuant to this Warranty, or otherwise.
- (5) the provisions of this warranty shall be interpreted and governed pursuant to the laws of the state of Alabama.
- (6) axle and/or suspension alignment: Dorsey Trailer or authorized dealership must be called within 30 days after delivery of any alignment problem.

Any communications with respect to the New Truck Trailer Warranty are to be in writing and addressed to **Dorsey Trailer, Warranty Claims Department, 1315 Hickman Avenue, Elba, AL 36323**

Serial Number: \_\_\_\_\_ Date of Purchase: \_\_\_\_\_



## WARRANTY CLAIM FORM

### How to File a Claim

1. Notify Dorsey's Warranty Administrator at 334-897-2525 ext. 233 or Fax 334-897-2526, or email [steven@dorseytrailer.net](mailto:steven@dorseytrailer.net) immediately upon discovery of a defect.
2. Provide the following information:
  - a. Serial number of the equipment
  - b. Name of company submitting claim
  - c. A complete description of the problem
  - d. Photographs of problem area, where applicable.
  - e. Name of two proposed repair shops and copies of their repair estimates
  - f. Location of equipment so it can be inspected
3. If the claim is approved under the terms of this warranty, Dorsey will issue a claim number which must appear on all invoices submitted.
4. Dorsey may require that the equipment, or certain parts or components, be returned to Elba, Alabama office or a designated service shop at purchaser's expense. Replacement parts will be furnished, conditions permitting, if Dorsey or the parts manufacturer determines part to be defective.
5. All warranty work must be performed at the location designated or approved by the Dorsey Warranty Administrator. Warranty coverage is limited to work specifically authorized.
6. Any unauthorized work or parts appearing on an invoice filed in connection with a warranty claim will not be paid by Dorsey and may delay processing the remainder of the claim. Work performed without prior authorization of the warranty administrator will not be paid under any circumstances.
7. Labor time will be determined from the shop manual, not to exceed \$60.00 per hour.
8. Return Parts to: DORSEY TRAILER 1315 Hickman Avenue, Elba, AL 36323, Attn: Warranty Administrator at Phone 334-897-2525 ext. 233 or Fax 334-897-2526.

**\*\*\*PLEASE CALL WARRANTY ADMINISTRATOR BEFORE ATTEMPTING ANY REPAIRS.\*\*\***

Trailer Serial Number: \_\_\_\_\_

Date Trailer Sold: \_\_\_\_\_

Date of Claim: \_\_\_\_\_

Owners Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_

Zip Code: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Repair Facility: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_

Zip Code: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Part Number	Part Description	Quantity	Unit Cost	Total Cost

Labor Hours: \_\_\_\_\_ Labor Rate: \_\_\_\_\_ Total Materials Cost: \_\_\_\_\_

Total Labor Cost: \_\_\_\_\_ Total Cost of Claim: \_\_\_\_\_

Claim Number: \_\_\_\_\_



C0602



## WARNING

Z-RAIL SINGLE SLIDER

*Always refer to service manual for specific inspection & maintenance requirements*

### 1. SAFETY CONCERNS

Park trailer & empty trailer on level/smooth ground.

**CAUTION!** Do not have trailer suspension air dumped before operation of the slider.

Tractor operator to be the one to operate the slider repositioning.

Operator to apply tractor parking brakes before exiting vehicle.

Everyone to be away from tractor & trailer.

### 2. OPERATOR TO GO TO SLIDER TO BE REPOSITIONED

If Cush Air Pin Style, may need to only operate the slider pin valve.

If EZ-Pull handle style, operate a Brake Lock & Air Spring Inflate valve and then retract pins with handle.

Valve will operate trailer to a raised position. Brake on slider axle will lock and isolate from the rest of the braking system.

Air Springs are to inflate to 100psi max to raise the trailer.

Visually inspect that the trailer is raised so the tires will clear the trailer as it is repositioned.

If needed, use a manual stop bar to locate in the trailer frame the position for your slider on the trailer.

### 3. OPERATOR RETURN TO TRACTOR

Release tractor & trailer parking brakes, except slider emergency brakes will be engaged.

**CAUTIOUSLY** Move tractor & trailer fore & aft. Slider will remain stationary, allowing it to be moved on the trailer.

After moving the trailer to position, apply all parking brakes. Thus, allowing the operator to exit tractor.

### 4. OPERATOR RETURN TO REPOSITIONED SLIDER

Check new position of slider. Inspect that slider pins can engage holes of web of trailer I-beam. Repeat step 5 if necessary.

If positioned correctly, re-engage slider pins. Slider pins should extend through the holes of the I-beam.

Inspect each slider pin. Ensure that each pin has fully extended through the hold in the web of the trailer I-beam.

If pull handle, operate Brake Lock & Air Spring Inflate valve to normal position. All air springs will start deflating back to normal ride height. The parking brakes are reintegrated with the rest of the braking system, allowing them to be released in the next step.

### 5. OPERATOR RETURN TO TRACTOR

Release all parking brakes. Brakes on tractor and all trailer axles are released, allowing normal tractor & trailer operation.

Move tractor & trailer fore and aft to ensure that slide moves with trailer properly.

**CAUTIOUSLY** Apply vehicle service brakes to ensure that slide stops with trailer.

www.cushcorp.com

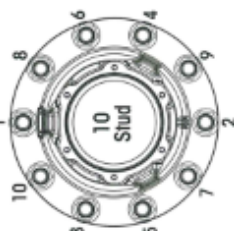
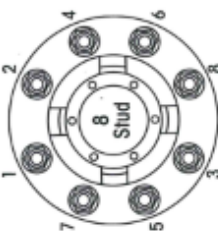
(877) 786-6247



**H HENDRICKSON**

866-RIDEAIR (743-3247)

www.hendrickson-intl.com



## WHEEL ASSEMBLY PROCEDURE

This vehicle is equipped with hub-piloted disc wheels, flange nuts and M22 x 1.5 studs.

1. Clean all mating surfaces on hub, drum, wheels and nuts.
2. Rotate hub so a pilot boss is at the top (12 o'clock) position.
3. Mount brake drum on hub so it seats on drum pilot and against hub face.

4. Mount wheel(s) on hub. Wheel nuts can be started in order to hold wheel and drum into position.
5. If reusing two-piece flange nut, apply one drop of SAE 30W motor oil on the first two or three threads of the stud and apply two drops between the flange and the nut.
6. Snug top (12 o'clock) and bottom (6 o'clock) wheel nuts and apply 50 ft. lbs. (68 Nm) of torque to draw wheel and brake drum fully against the hub.

7. Inspect to ensure proper assembly with wheel and brake drum positioned on pilot bosses before installing remaining wheel nuts.
8. Using sequence shown on left, tighten all wheel nuts to 50 ft. lbs. (68 Nm) of torque.
9. Repeating sequence, retighten all wheel nuts to a final torque of 475±25 ft. lbs. (680±30 Nm).
10. Check seating of wheel and brake drum at the pilot bosses. Rotate wheel and check for any rotational irregularity.

## WARNING

Read and follow the outlined instructions when installing or servicing the hub. Improper installation could result in property damage, injury, or death.

## CAUTION

Re-torque all wheel nuts after 50 to 100 miles of service on the initial "In-service" following any installation of the wheel to hub assembly.

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Revised 10-16-13 Technical Drawings & Assembly



## ⚠ WARNING

**SAFETY ALERT! (1) FOLLOW ALL TORQUE REQUIREMENTS. (2) DO NOT USE ANY COMPONENT WITH VISIBLY WORN OR DAMAGED THREADS. FAILURE TO FOLLOW THESE SAFETY ALERTS CAN LEAD TO LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE, SERIOUS PERSONAL INJURY OR DEATH.**

### Hutchens Suspension Torque Requirements 9600-9700 Series ( Decal Part Number 16086-01 Rev. J )

After an initial break in period, approximately 1000 miles, and at least every 4 months periodically thereafter, ALL bolts and nuts should be checked to insure that recommended torque values are being maintained.

Oiled torque values listed are for new fasteners with lubricated threads. It is recommended that new installations be performed with oiled fasteners. For dry threads which have been in service, use the higher torque values which are noted below.

	OILED	DRY
1 1/8-7 ( 9600 / 9700 Rocker Bolt ) .....	590 lb-ft	790 lb-ft
1-14 or 1-8 ( 9700 Radius Rod Bolt ) .....	540 lb-ft	720 lb-ft
7/8-14 ( Axle U-Bolts & 9600 Radius Rod Bolt ) .....	350 lb-ft	470 lb-ft
3/4-16 ( Axle U-Bolts ) .....	310 lb-ft	420 lb-ft
5/8-18 ( Radius Rod Clamp Bolt ) .....	130 lb-ft	170 lb-ft
5/8-18 ( Spring Retainer Bolt ) .....	35 lb-ft	50 lb-ft



Hutchens Industries, Inc., P.O. Box 1427, Springfield, Missouri 65801-1427 Toll Free 1 (800) 654-8824

## INTRAAX® SUSPENSION SAFETY

### ⚠ CAUTION

IMPROPER AIR SPRING PRESSURE CAN CAUSE DAMAGE TO THE VEHICLE OR SUSPENSION OR SEVERE PERSONAL INJURY. **DO NOT OPERATE THE VEHICLE WITHOUT AIR PRESSURE IN AIR SPRINGS.** Lower trailer onto internal air spring bumpers if it is supported by the landing gear legs and parked with a payload for any length of time. Lower the trailer onto internal air spring bumpers for safe loading and unloading.

### INTRAAX SUSPENSION INSPECTIONS

Inspect the following items during regular vehicle maintenance:

- Vehicle frame, suspension beams, brackets and other structural components for cracks or other damage
- All fasteners for proper torque or damage
- All welds for cracks or other damage
- Air springs for chafing, rubbing or damage
- Shock absorbers/ZMD® down-stops for leaks and/or damage
- Suspension ride height



### INTRAAX TORQUE SPECIFICATIONS

**QUIK-ALIGN® Pivot Bolt: 550±45 ft. lbs. (750±50 Nm)**

**Shock Bolt (Upper and Lower): 225±10 ft. lbs. (300±10 Nm)**

Do not reuse bolts. For more torque specifications, refer to Hendrickson publication B31. For pivot connection fastener information, refer to Hendrickson publication B92. All Hendrickson publications can be found online at [www.hendrickson-intl.com](http://www.hendrickson-intl.com).

### ⚠ CAUTION

**DO NOT APPLY anti-seize compound or additional lubricant to pivot connection hardware. This can lead to overtightened fasteners, unpredictable pivot connection clamp loads and unreliable axle alignments. Reference L579.**

Trailer Commercial Vehicle Systems  
2070 Industrial Place SE  
Canton, OH 44707-2641 USA  
888.8IDEAS® (743.3247)  
330.489.0045  
FAX 800.696.4416



[www.hendrickson-intl.com](http://www.hendrickson-intl.com)

Hendrickson Canada  
250 Chrysler Drive, Unit #3  
Brampton, ON Canada L6S 6B6  
905.789.1000  
FAX 905.789.1033

L975 Rev D 06-16 EON 25449

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# WARNING

*Always refer to service manual for specific inspection & maintenance requirements*

FAILURE to dump air pressure during loading & unloading is UNSAFE. It could cause DAMAGE or PERSONAL INJURY and void the warranty of the suspension. Likewise, FAILURE to reinflate air pressure for operation is UNSAFE. Trailer walk can occur due to loading, unloading, or loss of air spring. Do not tow or pull vehicle by suspension components. Fasteners should never be reused, overtorqued, or lubricated. Torque value is given for clean, dry fasteners. Torque should be verified with a wrench of known accuracy. Failure can occur due to over-tightening of fasteners. Fastener systems are considered "LOOSE" anytime the torque is found to be below spec values. Retorque at 30 days & every 6 months. Do not operate vehicle suspension with conditions such as: broken welds, loose, broken, or missing parts, or loss of air pressure in system.

## CUSH TORQUE SPECIFICATIONS

Suspension Fastener Description	Size	Grade	(Ft*Lbs)		(N*m)	
			Min.	Max.	Min	Max.
Air Spring Mount	3/8	5/B	15	20	20	27
Air Spring Mount	1/2	5/B	25	35	34	47
Air Spring Mount	3/4	5/B	40	50	54	68
Brake Chamber Mounting	5/8	5/B	100	110	136	149
Beam Tower for Air Spring Mount	3/8	5/B	30	45	41	61
Shock Eye Mount	3/4	5/B	210	235	285	319
U-Bolt Nut	7/8	8/C	475	525	644	712
Pivot Nut (as supplied)	7/8	8/C	550	600	746	813
Pivot Nut (Wet_Oily_Anti-seize)	1-1/8	8/C	800	1100	1085	1356



## INSPECTION

Vehicle should be properly supported and securely parked on a level surface prior to any inspection and maintenance activity. With new vehicle, inspections should be done at 30 & 90 days and thereafter at regular maintenance intervals and after every brake lining change:

**Fasteners** - Not loose, broken, missing

**Bushings** - Not torn, worn, missing

**Shocks** - Not leaking or damaged

**Airsprings** - Not Leaking, worn, damaged  
**Air Control** - Trailer maintains ride height. No leaking or damaged components

**Suspension** - Components and welds should be visually inspected for excessive wear, deformation, and structural soundness (not worn, cracked, bent, or damaged)  
**Axle Alignment** - No pivot bolt movement or inappropriate tire wear. Ensure axles track properly.

**Trailer** - Not leaning, frame sound, no cracked welds

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# WARNING

*Always refer to service manual for specific inspection & maintenance requirements*

FAILURE to dump air pressure during loading & unloading is UNSAFE. It could cause DAMAGE or PERSONAL INJURY and void the warranty of the suspension. Likewise, FAILURE to reinflate air pressure for operation is UNSAFE. Trailer walk can occur due to loading, unloading, or loss of air spring. Do not tow or pull vehicle by suspension components. Fasteners should never be reused, overtorqued, or lubricated. Torque value is given for clean, dry fasteners. Torque should be verified with a wrench of known accuracy. Failure can occur due to over-tightening of fasteners. Fastener systems are considered "LOOSE" anytime the torque is found to be below spec values. Retorque at 30 days & every 6 months. Do not operate vehicle suspension with conditions such as: broken welds, loose, broken, or missing parts, or loss of air pressure in system.

## CUSH TORQUE SPECIFICATIONS

Suspension Fastener Description	Size	Grade	(Ft*Lbs)		(N*m)	
			Min.	Max.	Min	Max.
Air Spring Mount	3/8	5/B	15	20	20	27
Air Spring Mount	1/2	5/B	25	35	34	47
Air Spring Mount	3/4	5/B	40	50	54	68
Brake Chamber Mounting	5/8	5/B	100	110	136	149
Beam Tower for Air Spring Mount	3/8	5/B	30	45	41	61
Shock Eye Mount	3/4	5/B	210	235	285	319
U-Bolt Nut	7/8	8/C	475	525	644	712
Pivot Nut (as supplied)	7/8	8/C	550	600	746	813
Pivot Nut (Wet_Oily_Anti-seize)	1-1/8	8/C	800	1100	1085	1356



## INSPECTION

Vehicle should be properly supported and securely parked on a level surface prior to any inspection and maintenance activity. With new vehicle, inspections should be done at 30 & 90 days and thereafter at regular maintenance intervals and after every brake lining change:

- Fasteners** - Not loose, broken, missing
- Bushings** - Not torn, worn, missing
- Shocks** - Not leaking or damaged
- Airsprings** - Not Leaking, worn, damaged
- Air Control** - Trailer maintains ride height. No leaking or damaged components
- Suspension** - Components and welds should be visually inspected for excessive wear, deformation, and structural soundness (not worn, cracked, bent, or damaged)
- Axle Alignment** - No pivot bolt movement or inappropriate tire wear. Ensure axles track properly.
- Trailer** - Not leaning, frame sound, no cracked welds

