The following instructions provide a general description of the proper procedures which must be considered before starting operations with any of East Manufacturing Corporation's dump equipment.

Although the information in this manual was current on the date of issue, East Manufacturing Corporation reserves the right to effect changes as the need occurs without notice or liability.
How to Use This Manual

This manual provides operating and service instructions that apply to all models and configurations of East Manufacturing Corporation dump equipment. All personnel that own, operate, or service East dump equipment are advised to read and understand the instructions in this manual. Supporting equipment and components are provided to aid in the understanding of the information presented. The equipment and component views may not show the exact equipment or components used on your dump trailer. Disregard all instructions and procedures that do not apply to your equipment. Follow all instructions that do apply to your equipment, even if the exact equipment shown is different.

Important safety advisories including warnings, cautions, and notes are indicated as follows:

⚠️ WARNING

A WARNING indicates an instruction that must be followed exactly. Personal injury or death may occur if the warning statements are not followed.

⚠️ CAUTION

A CAUTION indicates an instruction that must be followed exactly. Equipment damage may occur if the caution statements are not followed.

NOTE

A NOTE indicates information that may be important to the user of this manual. (For example, some maintenance procedures require the use of special tools. Failure to use the special tools could require additional time to perform the task.)

FOR ALL MAINTENANCE REQUIREMENTS, USE ONLY GENUINE EAST MANUFACTURING PARTS
NHTSA INFORMATION

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), in addition to notifying East Manufacturing Corporation.

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

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Drum Out-of-Round  Heat distortion
Balance  Balance weight missing
           Drum balancing not specified
Variation in Diameter  Heat distortion
Eccentricity  Improper fit to pilot
           Improper seating on wheel or hub
Excessive Wear  Abrasive material or poor quality lining
Grease Stained Drums  Leaking oil seal or improper lubrication procedures
Polished Drum Surface  Non asbestos lining-normal condition
Glazed Drum Surface  Improperly cured brake lining
Fade or Diminished Braking  High system temperature due to excessive braking, improper adjustment, or inferior lining
Noise, Chatter, or Pulsating  Heat spotted drums, grease stained drum, or loose brake drum components

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           Improper tire alignment
           Loose bearing adjustment
           Loose or worn suspension bushings
           Low tire pressure
Broken Back Flange  Improper rim clamp overload
           Over or under torque rim clamp nut

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Jumping Out of Gear

Excessive torque on PTO gears
Gear worn by shifting out while loaded
Shifter poppet spring broken
Shifter poppet hole elongated
Shift rail poppet notch worn
Spring or loose shift fork
Air shift needs 70 to 140 psi for complete shift
Cable or lever linkage not allowing full shift

4-3 LANDING GEARS (2-SPEED)

Hard Turning Operation

Binding cross shaft; cross shaft bolts too tight
Support leg tubes bent or damaged
Legs misaligned—must be parallel
Legs and/or gear box need lubrication
Misaligned crankshaft/extension or holder connection
Internal nut and screw mechanism damage due to dropping trailer onto support legs
Binding of the through axle

4-4 BRAKE

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Mishandling

Cracked-Used

Heat checks progressing through drum section

Low Mileage-Wear

Improper shoe contact

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Normal condition

Heat Check-Heavy

Unbalanced brake systems

Dragging brakes

Driver abuse

Fine Grooves

Abrasive material or poor quality brake lining

Coincide with Riveted Holes

Loose rivets, bolts, or debris in rivet holes

Along Edges of Lining

Abrasive material collecting at edges of lining

Blue or Discolored Brake Surface

Excessive heat from dragging brakes
## 4-2 POWER TAKE-OFF UNIT

<table>
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<tr>
<th>Issue</th>
<th>Possible Cause</th>
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<tr>
<td>Rattles or Whines</td>
<td>Backlash should be from 0.006 in. to 0.012 in.</td>
</tr>
<tr>
<td>Clicking</td>
<td>Worn, nicked, or burred gear</td>
</tr>
<tr>
<td></td>
<td>Bearing damage due to improper installation</td>
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<tr>
<td>Grinding</td>
<td>Bearings contaminated with foreign materials</td>
</tr>
<tr>
<td>Noisy</td>
<td>Improper housing or gear for PTO needed</td>
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<tr>
<td></td>
<td>Drive line out of phase, at excess angle, bent, or worn</td>
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<tr>
<td>Overheating</td>
<td>PTO installed too tight; not enough backlash</td>
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<td></td>
<td>Low transmission oil level</td>
</tr>
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<td></td>
<td>Prolonged stationary use</td>
</tr>
<tr>
<td></td>
<td>PTO near exhaust or other heat source</td>
</tr>
<tr>
<td>Vibration</td>
<td>PTO loose on transmission</td>
</tr>
<tr>
<td></td>
<td>PTO drive line out of phase, at excess angle, bent or worn</td>
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<tr>
<td></td>
<td>Driven equipment loose</td>
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<tr>
<td>External Oil Leaks</td>
<td>Shaft seal</td>
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<td></td>
<td>Dirt; high temperature seal damage</td>
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<td></td>
<td>A-series end cap gasket improperly aligned</td>
</tr>
<tr>
<td></td>
<td>Porous or cracked housing</td>
</tr>
<tr>
<td></td>
<td>Mating surface to transmission</td>
</tr>
<tr>
<td></td>
<td>Broken or worn gasket</td>
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<td></td>
<td>6-bolt idler shaft with poor fit</td>
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<td></td>
<td>O-ring not sealing on two gear, 8-bolt idler shaft</td>
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<tr>
<td></td>
<td>Copper washers needed for hardware of 6-bolt</td>
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<td>Tight bend in shifter cable</td>
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<td>Gear in backwards</td>
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## 1 OPERATION

### 1-1 OVERVIEW

These operating procedures apply to all configurations of East Manufacturing Corporation dump equipment. Standard configurations of existing East dump equipment are shown in Figure 1-1. Each dump equipment configuration has different controls and components. Many of the operation and service instructions in this manual apply to all dump equipment configurations. When an instruction applies to a specific type of dump equipment, the equipment type is recognized at the start of the instruction.

Thoroughly read and understand the operation instructions that apply to your dump equipment configuration.
1-2 PRE-TRIP INSPECTION

\textbf{WARNING}

OPERATING HAZARDS. Can cause injury or death.

East dump trailers and dump bodies must be operated ONLY by properly trained and qualified professional drivers. Operation by untrained or inexperienced persons could result in serious injury, death, or damage to the equipment.

Driver pre-trip inspections must be made before the first trip of the day and should be made before each trip during the day. Each pre-trip inspection should include the following equipment checks. See Figure 1-2.

\textbf{Figure 1-2. Pre-Trip Checkpoints}

4-1 HOIST PUMP/VALVE

\begin{itemize}
\item \textbf{Pump Makes Noises:} Insufficient oil supply\newline Air leaks at inlet fittings\newline Restricted or collapsed inlet hose\newline Plugged reservoir air vent\newline Oil too thick\newline Cavitation (air bubbles in oil)
\item \textbf{Pump Overheating:} Insufficient oil supply\newline Loading with the PTO engaged\newline Internal leak due to wear\newline Oil too thick\newline Relief valve leaks
\item \textbf{Internal Pump Leaks:} Worn drive shaft due to abrasives in the oil\newline Worn shaft seal\newline Blown or pinched gasket seal\newline Worn or damaged spool seal
\item \textbf{Non Functioning Pump:} Insufficient oil supply\newline Blocked or collapsed suction line\newline Wrong (reversed) drive shaft rotation\newline Air leakage in the suction line prevents priming\newline Pump worn because of abrasive material in the oil
\item \textbf{Low System Pressure:} Pump not operating\newline Relief valve set too low\newline Relief valve leakage
\item \textbf{Failure to Hold Load:} Valve spool not in the neutral-hold position\newline Foreign material lodged in the holding check\newline Foreign material lodged in the relief valve seat
\end{itemize}
Pre-Trip Checkpoints

1. Check that all lights work.
2. Check that all reflectors are in place and not obscured.
3. Check that the tailgate latches open and close.
4. Make sure the tailgate latching linkage is properly adjusted. When latched, the locking cams must pass over center on both tailgate latches. Refer to paragraph 3-3 for adjustment.
5. Visually inspect all springs for broken leaves and equal arch.
6. Be sure the springs are secured within the hangers and equalizers.
7. Check that all air springs are inflated.
8. Check tire pressures. Tires should be inflated to tire manufacturer's specifications.
9. Check that the wheel lugs are tight and the rims are not slipping.
10. On wheels with see through hubs, check the oil level in the wheel hubs. Add oil as needed.

NOTE

Checkpoints 11 through 16 are not shown in Figure 1-2.

11. Make sure the spare tire is secure in the carrier and that the carrier is bolted to the chassis.
12. Visually check the brake pads for wear.
13. Set trailer parking brakes and rock the trailer back and forth to test the brakes.
14. Make sure there is sufficient hydraulic oil in the hydraulic tank.
15. Check for chafed hoses or cracked fittings.
16. Inspect for any apparent damage. Look for oil, water, or fuel leaks.
1-3 COUPLING

1. Prior to coupling the tractor to the dump trailer, chock the rear trailer tires.

2. Line up the fifth wheel of the tractor with the trailer kingpin.

3. Exit the cab and check the height of the fifth wheel, Figure 1-3. Verify that the nose of the trailer will make first contact with the fifth wheel just back of the fifth wheel center line. Adjust the landing gear to achieve the correct trailer height.

![Fifth Wheel Diagram]

*Figure 1-3. Trailer Height for Coupling*

**CAUTION**

If the nose of the trailer is too low, the ramming force needed to lift the trailer may damage the nose of the trailer. If the nose of the trailer is too high, the kingpin may override the jaws of the fifth wheel and result in fifth wheel damage or a "high hookup."

4. Back the tractor until the fifth wheel coupler jaws engage the kingpin. When the kingpin is engaged, pull the vehicle forward to check for a positive hookup.

3-14 DISC WHEELS

**WARNING**

Disc wheel failures can be hazardous. DO NOT weld aluminum wheels for any reason.

Do not use two piece cone lock nuts to mount wheels machined for use with ball seat cap nuts. Wheels machined to accept ball seat cap nuts will not have enough surface area to properly support a cone lock nut. Loss of torque, broken wheel studs, and cracked wheels may result from this mismatched component assembly.

DO NOT heat aluminum wheels to soften them for straightening or to repair damage from impacts or other causes. Heating the wheel will weaken the aluminum alloy structure.

**CAUTION**

Make sure all wheel cap nuts are properly tightened to the recommended dry torque (400 to 500 foot pounds). Cap nut torque should be checked regularly and often.

Do not apply lubricants to the cap nut seats or to the wheel. Cap nut seating surfaces must be clean and free of all lubricants and residue.

Whenever tires are changed, the condition of the cap nuts and studs should be checked. If the cap nuts require frequent tightening, or if the wheel studs break frequently, the wheel assembly and mounting practices should be reviewed to eliminate inappropriate service procedures.
3-13 SPOKE WHEELS

Torque

⚠️ CAUTION ⚠️

Do not overtighten the rim nuts. The recommended torque value is 200 to 250 foot pounds for 3/4 inch diameter wheel studs.

Check the rim nut torque values.

Runout

Check the wheel runout by placing a solid object near the wheel and rotating the wheel. If the runout exceeds 1/16 inch for the front wheels or 1/8 inch for the rear wheels, adjust the runout as follows:

1. Loosen the rim nuts on the side of the wheel having the greatest deviation and tighten the rim nuts on the opposite side.
2. Rotate the wheel and recheck the runout condition.
3. When the runout is within limits, tighten all the rim nuts to the manufacturer's recommended torque.

Rim Slippage

Check for rim slippage. If rim slippage has occurred, an under torque or over torque condition may have caused the problem. Since it is difficult to determine the extent of damage caused by an incorrect torquing procedure, the rim spacer should be replaced.

When replacing the rim spacer, check the mounting surfaces for excessive wear. If excessive wear exists, it may be necessary to replace the wheel. Examine the tires for (1) improper inflation, (2) unusual wear patterns indicating misalignment problems, and (3) for general wear conditions.

NOTE

For trailers with drop legs, you may have to back the rear tractor wheels onto wooden planks or similar shoring in order to pin the drop legs at the best height for coupling and uncoupling.

5. Exit the cab and attach air, hydraulics, and electrical connectors at the bulkhead.

6. Make sure the kingpin is locked in the fifth wheel coupler jaws and that the fifth wheel release handle is not pulled.

7. Enter the cab and charge the trailer brakes with air. To check the coupling, try to power the tractor/trailer forward and back. The brakes should stop motion in either direction.

⚠️ CAUTION ⚠️

After raising the support legs, fold and secure the crank handle. Leave the crank in low gear. If the gearbox is in neutral, or the handle is not properly secured, the support legs could drop during travel and cause serious damage to the vehicle.

8. Exit the cab, push the crank handle in to engage low gear, and raise the support legs, Figure 1-4. Stow the crank handle.

9. Prior to road travel, perform the pre-trip inspection in paragraph 1-2.

Figure 1-4. Raising the Support Legs
1. Set the trailer parking brakes and place chocks in front of the trailer wheels.

**NOTE**

Though automatic parking brakes are required by DOT, the continued use of chocks is recommended for operator safety.

2. Exit the cab and lower the support legs. Place the crank in high gear, Figure 1-5, and turn the handle clockwise until the support legs contact the ground.

![Figure 1-5: Lowering Support Legs](image)

3. Place the crank in low gear and crank the handle several turns to transfer the trailer weight to the support legs.

---

**Wheel Hub, Bearings, and Seal Installation**

(for vehicles without preset hubs)

Install a wheel hub, bearings, and seal assembly according to the following procedure.

1. Apply a thin layer of RTV sealant to the seal seating surface of the spindle.

2. Place the seal assembly on the spindle with the words "oil-bearing side" facing out.

3. Place the recommended seal seating tool over the spindle. Drive the seal assembly onto the spindle until it seats against the spindle shoulder.

4. Rotate the seating tool and tap it several times to fully seat the seal.

5. Wipe away all excess sealant.

6. Lubricate the inner bearing and place it on the spindle. No additional lubrication is required on the outer diameter of the wheel seal or in the hub. The wheel seals are lubricated at the factory.

7. Using a wheel dolly, carefully slide the wheel onto the spindle until it contacts the seal.

8. Dip the outer bearing in lubricating oil and slide it over the spindle and into the bearing cup.

9. Install the inner nut and tighten it to 50 foot pounds to load the bearings. Rotate the hub several turns.

10. Loosen the inner lock nut and retighten it in accordance with the bearing manufacturer's specifications.

11. Install the tabbed lock washer, seating the inner tab in the spindle square key slot.

12. Install and tighten the outer lock nut.

13. Install a hex nut in the face of the tabbed lock washer to keep the outer lock nut from turning.


15. Fill the hub cavity to the proper oil level.
3-12 WHEEL HUBS AND SEALS

During any wheel hub maintenance activity, check the hub bore and spindle for burrs or other damage. The entire wheel cavity should be thoroughly cleaned.

NOTE
East Manufacturing Corporation trailers manufactured after July, 1999, may be equipped with preset hubs. Preset hubs have a solid (windowless) hub cap. Preset hubs should not require maintenance. If damaged, replace the wheel hub according to the original equipment manufacturer’s instructions.

Wheel Bearing Lubrication and Check

It is recommended that the wheel bearing lubricant be checked for contamination every 50,000 miles or once a year. If foreign material is found in the lubricating oil, the bearings must be checked for wear or damage.

The bearing adjustment should be periodically checked with a dial indicator or with a pry bar under the wheel or tire. The end play should be within the range of 0.001 to 0.008 inch. If the bearings are found to be out of adjustment, they should be inspected for wear or damage.

Use the following procedure to check and lubricate the wheel bearings:

1. Remove the wheel assembly and bearing cones from the spindle.
2. Clean all old lubricants from the wheel hub, bearings, and hub caps. Use a commercial degreaser and a stiff nylon brush.
3. Wipe all cleaned parts and surfaces dry with clean, lint-free cleaning cloths.

⚠️ CAUTION
Do not use compressed air for cleaning or drying the wheel bearings. Compressed air can trap dirt and contaminants inside the bearings.

4. Inspect the bearing cups, cones, and the axle spindles for damage or wear. For prolonged bearing life, always replace worn bearing cups and cones as a set.
5. Reinstall the wheel assembly on the axle in accordance with the manufacturer’s installation procedures. Use a new wheel hub seal and wiper ring.

⚠️ CAUTION
Engage the fifth wheel coupler hooks before uncoupling the trailer.

Disengage the coupler hooks before raising the dump body.

Incorrect use of the fifth wheel coupler hooks will damage the draft arms.

NOTE
For trailers with drop legs, you can back the tractor onto wooden planks to raise the trailer to the desired height for pinning the drop legs.

NOTE
To uncouple a set of Michigan Train trailers, use the following steps to uncouple the rear trailer; then repeat the same steps to uncouple the front trailer. Prior to uncoupling, the rear trailer dolly should be locked in line.

4. Disconnect electrical connectors, hydraulic lines, and air lines at the bulkhead.
5. Pull and lock the fifth wheel release handle, Figure 1-3
6. Enter the cab and slowly move the tractor forward until clear of the trailer.

1-5 LOADING

The safest loading method is by hopper discharge, since the material flow into the dump body is steady. With slow movement of the vehicle, the load can be evenly distributed in the dump body. The most common method of loading a dump trailer is with a front end loader. Front-end loading has some disadvantages:

- The loader operator often cannot see inside the dump body and may load more of the material to one side or the other. Uneven loading can contribute to a roll-over on the highway or a tip-over during dumping operations.
- Front end loader buckets and lift arms often damage the trailer sideboards and top rail.
**CAUTION**

Overloading the dump body can apply excessive torque to the PTO output shaft and may pit or break gear teeth, destroy bearings, or fracture the housing. The PTO may fail immediately or over an extended period of time.

See Figure 1-6. The operator should always check the load placement. If necessary, redistribute the load to obtain a reasonably level load from side to side.

![Incorrect and Correct Loading](image)

**Figure 1-6. Incorrect and Correct Loading**

Loads with high centers of gravity require special safety precautions. A high center of gravity has a larger torque lever action. In turns, the larger torque lever action works to tip the load. In sudden stops, the torque lever pushes forward, and may overload the frame or truck tires. Hazard awareness and lower operating speeds will best compensate for a high center of gravity load.

Tarping is mandatory for dump trailers in many states. Tarping is recommended any time the load is near the top of the dump body. Proper tarping helps prevent material loss and damage to other vehicles on the roadway.

Loads hauled in a dump trailer can have many different characteristics. The following preparations are recommended for hauling various materials in a dump body:

- When hauling bricks, cement slabs, and rip rap, the body should have a cushioned floor and side walls to absorb impacts.
- Abrasive materials will wear away trailer floors. If extensive hauling of abrasive materials is anticipated, a cushioned floor is recommended.
- Sludge requires a water tight tailgate to contain the liquid.
- When hauling wet materials in freezing weather, the interior surfaces should be treated with a solution to prevent the material from freezing to the body.

---

**Automatic Slack Adjusters**

On installation, automatic slack adjusters must be manually adjusted as follows:

1. Rotate the adjusting nut until the lining contacts the drum surface, Figure 3-6.

![Slack Adjuster](image)

**Figure 3-6. Slack Adjusters**

2. Turn the adjusting nut in the opposite direction 1/2 turn.
3. Measure the distance from the clevis to the bottom of the chamber.
4. Use a pry bar to move the slack adjuster until the linings are against the drum. The difference between this measurement and the measurement in step 4 is the "free stroke."
5. Adjust the brake until the "free stroke" value is between 5/8 and 3/4 inch.
6. To check the adjustment, apply and hold braking pressure. With the brake pressure at 85 psi, measure the distance from the clevis to the bottom of the chamber.
7. The difference between this measurement and the measurement in step 4 is the chamber stroke. Adjust the brake as required to get the correct chamber stroke length (less than 2 inches).
Manual Slack Adjusters

NOTE
The wheel bearings should be checked for proper adjustment before attempting to adjust the slack adjusters.

The brakes should always be adjusted with the wheels off the surface. This is the only way to be assured the brake is in adjustment and the wheel is "free running."

Adjust the slack adjusters according to the following procedure.

1. Turn the adjusting nut until the brake lining touches the drum.
2. Turn Back off the adjusting nut until the brake lining just clears the drum.
3. Manually rotate the wheel to check for clearance between the drum and lining.
4. To adjust for lining wear, rotate the adjusting nut 1/4 turn clockwise. Each 1/4 turn causes the brake lining to move outward 0.0025 inch (0.06 mm).

1-6 UNLOADING

Safety Overview

Stockpiling (dumping the load in a pile) is the most common method for unloading materials from a dump trailer. When stockpiling, a solid, level dump site is required to minimize the risk of tip-over.

Before unloading into a hopper, remove excess spillage to maintain a level and uncluttered dumping surface.

The common practice of dumping asphalt into a paving machine hopper while on the go presents serious hazards to the dump operator:

- Overhead obstructions can cause a collision with the raised dump body.
- Overhead electrical wires can come in contact with the raised dump body.
- Soft or uneven shoulders on the roadside can cause a tip-over.
- Changes in the crown or slope of the road can cause the raised dump body to lean.

⚠️ WARNING

ELECTRICAL SHOCK. Will cause severe injury or death.
Aluminum or steel dump body will conduct electricity. Check for overhead clearance and power lines before raising dump body.

Moving a dump trailer with the dump body elevated is unsafe. Lower the dump body before moving a dump trailer for any reason.

TIP-OVER HAZARD. Can cause injury or death.
Do not keep a "hung load" elevated. Fully lower the dump body before trying to dislodge any material that is hanging up in the truck bed. Keep all persons away from trailer while dumping.

SWINGING GATE. Can cause injury or death.
A failed gate winder, hinge, hinge pin, or spreader chain may allow the tailgate to swing and/or the load to dump quickly.
Unloading Procedure

NOTE

Exit dump trailers and bodies must be operated ONLY by fully trained and qualified, professional drivers. All dump trailer owners and their drivers must read paragraph 1-7, Tip-over Conditions, and be fully aware of all tip-over conditions.

1. Pull or back the trailer to the dump site.

2. Before dumping, exit the cab and inspect the site and the dump equipment. Be assured of the following:
   - There are no high or gusting winds.
   - The ground is firm and level.
   - There are no electrical wires in the immediate area.
   - The area around the trailer is clear of personnel and equipment.
   - The tires are properly inflated all-around.
   - There are no broken or sagging suspension springs.
   - The payload is evenly distributed from side to side.
   - On fifth wheel rigs, all wheels must be in line, Figure 1-7.

Figure 1-7. Wheel Alignment for Dumping

3-11 BRAKES

A schedule for the periodic cleaning, inspection, adjustment, and lubrication of all trailer brake components should be established based on trailer operating hours.

The following checks should be performed and all damaged or worn parts replaced as needed. See Figure 3-5.

Figure 3-5. Checking Brake Components

1. Check the anchor pins for wear or misalignment. Check the brake shoes for wear at the anchor pin holes.

2. Check the cam shafts and cam shaft bearings (bushings) for wear.

3. Inspect the brake shoe linings for oil saturation, wear, loose rivets, and loose bolts. Return springs should be replaced whenever the brake linings are replaced.

4. Check the brake drum for cracks, scoring, or other damage.
Air Controls

Many types of air controls are available for use with your suspension. The most common system automatically regulates the trailer height by controlling the air pressure supplied to the air springs. When an air suspension is used in conjunction with other suspensions, such as leaf spring suspension, an operator controlled pressure regulator is often used. This allows the operator to select the appropriate amount of air pressure to equalize the axle loading.

If lift axles are installed, other special control circuits and components must be added to properly coordinate this independent suspension with the others. The air suspension system is also capable of changing the suspension height within a limited range.

All air suspensions on the trailer operate from its isolated compressed air supply.

The suspension design is established by the suspension manufacturer and recorded in the component manufacturer’s operating manual. The design height is the distance from the centerline of the axle to the underside of the chassis at the location where the height control valve is located. The suspension height control valve, Figure 3-4, responds to changes in the distance between the chassis and the axle. The valve adjust linkage setting controls the valve opening. Higher loading on the chassis causes the valve to open and the air springs to inflate, returning the chassis to its design height.

![Figure 3-4. Suspension Height Control Valve](image)

3. Remove the tarp and other accessories that might interfere with dumping.

4. Hang the rear mud flaps.

![WARNING]

**TIP-OVER HAZARD.** Can cause serious injury or death.

Raising the dump body with the air springs inflated may cause the load to lean. Always deflate trailer air springs prior to raising the dump body.

5. On trailers with an air ride suspension, deflate the air springs to lower the dump body onto the internal hard cushions, Figure 1-8. **DO NOT** try to dump the load with the air springs inflated.

![Figure 1-8. Air Springs Deflated for Dumping](image)

![WARNING]

**TAILGATE BREAKAWAY.** Can cause severe injury or death.

When unloading material from the coal chute, the gate winders must be clamped to prevent tailgate bowing and to avoid an accidental tailgate opening.

Loosening a gate winder when the tailgate is not locked can allow the tailgate to spring open. Before loosening a gate winder, verify that the tailgate locking linkage is locked “over center.”
6. Verify that the tailgate latching links are locked over center, Figure 1-9. The locking cam must be firmly clamped against the stop block.

\[ \text{STOP BLOCK} \]
\[ \text{TAILGATE} \]
\[ \text{LATCH} \]
\[ \text{LOCKING CAM AGAINST STOP BLOCK} \]
\[ \text{LATCH LINK} \]
\[ \text{LATCH PIN} \]

Figure 1-9. Checking the Tailgate Latcher

7. If not dumping through the coal chute, loosen and unhook each of the gate winders, Figure 1-10.

\[ \text{GATE WINDER} \]

Figure 1-10. Gate Winder

**WARNING**

The gate winder pictured above, also known as a safety winder, is typically either on the sides or on the bottom of the gate of all dump trailers. These winders, whether on the sides, bottom, or both, must be secure in place and tightened before transporting a loaded trailer at all times. These winders serve as a gate-sealing device when hauling sludge type loads or finer materials such as sand. Most importantly, the winders serve as an extra safety-latching device holding the tailgate closed in the event of an unwanted tailgate unlatching or improper tailgate latching.

---

**Dump Equipment**

1. Verify that torque arm mounting nuts are tightened to at least the minimum torque. A decal citing torque requirements is installed on every East Manufacturing Corporation chassis.

2. Verify that the U-bolt mounting nuts are tightened to at least the minimum specified torque.

3. Inspect torque arm bushings for looseness or wear.

4. Check all hanger mounting bolts to verify a tight fit of the hanger to the frame.

5. Check the fit of the springs within the hangers and equalizers.

6. Perform the axle alignment inspection and adjustment procedures in paragraph 3-9.

---

**Air Ride Suspensions**

Air springs will rupture and fail if rubbed, scuffed, or punctured. If an air spring fails, the dump body will settle down on internal hard rubber cushions, allowing the vehicle to be taken to the next convenient service facility. To avoid repeated air spring failures, always determine and correct the cause of the rupture.

To replace an air spring, raise the vehicle and support the frame with jack stands at the rear corners. Exhaust the air from the air springs, and unbolt the damaged air spring and the connecting air lines. Install the replacement air spring in the reverse order.

**CAUTION**

Do not lift the trailer from the suspension with shock absorbers removed. The air springs may be over-extended and damaged if the shock absorbers are removed.

Shock absorbers absorb energy to prevent suspension oscillation. They also limit air spring extension in most air suspensions. Air springs can be pulled apart if not constrained by a shock absorber or some other device. In many operations, the air suspension functions very well without shock absorbers. Unless operating problems are detected, the immediate replacement of worn shock absorbers may not be necessary.

Replacement shock absorbers must be secured with the correct size and grade of bolts and lock nuts. Because your suspension may have unique travel requirements, the specific model of shock absorber used will probably have special characteristics. Replacement shock absorbers should match the original specifications for performance range and comply with the recommendations of the suspension manufacturer.
4. If the axles are not parallel within 1/16 inch, replace all worn or damaged parts and repeat the measurements before making any adjustments to the axles alignment. Refer to the original equipment manufacturer’s service manual for the applicable alignment procedure.

3-10 SUSPENSIONS

On initial trailer delivery, check the trailer for a level ride condition; verify that the trailer is at the specified height. Verify that all welds are of acceptable quality and that all hardware is securely in place. Check the suspension members to verify that no shipping fixtures will interfere with component motions.

Over-the-road operations require periodic suspension checks to assure continued trouble-free performance.

The following suspension component checks are recommended on trailer delivery and after the first 1000 miles of trailer operation. See Figure 3-3.

8. Open the tailgate (or coal chute, if dumping into a hopper).
9. When operating a frameless dump trailer, perform the following tasks prior to dumping:
   a. Unhook the fifth wheel coupler hooks, Figure 1-11.

   Figure 1-11. Fifth Wheel Coupler Hooks

   □ WARNING

   TIP-OVER HAZARD. Can cause serious injury or death.

   The trailer or tractor brakes must be released when raising the dump bed on a frameless dump trailer. Failure to release one set of brakes will damage the hoist or draft arms and could lead to a tip-over.

   The tractor brakes can be applied and the trailer brakes released, but the ground over which the trailer wheels will travel must be firm, level, and uncluttered. Failure to ensure good surface conditions for trailer movement prior to dumping may lead to a tip-over.

   b. Apply the trailer parking brakes and release the tractor brakes. The draft arms will pull the tractor back as the dump bed rises.

   c. Verify that all tractor and trailer tires are in line. DO NOT attempt to raise the dump trailer if the tractor and trailer wheels are not in line.
10. Engage the PTO (power take-off).

**WARNING**

TIP-OVER HAZARD. Can cause serious injury or death.

Do not leave the controls while the dump body is raised. Keep the raised end in view at all times. Be prepared to lower the body quickly if it starts to lean.

Do not fully extend the hoist cylinder. Raising the load to its upper limit will jar the load and could cause the hoist cylinder to fail. Over-extending the hoist cylinder or jarring the raised load could cause the load to fall or tip.

11. Shift the hoist control into the “lift” position. Raise the dump body to the lowest height for dumping. DO NOT raise the load to the lifting limit of the hoist cylinder.

12. When the dump body is raised, shift the hoist control into the “hold” position until the load is dumped or material flow stops.

**WARNING**

COLLISION HAZARD. Can cause injury or death.

Failure to disengage the PTO can allow the dump body to raise and collide with overhead obstructions or electrical wires. Disengage the PTO before leaving the dump site.

13. Disengage the PTO and move the hoist control to the “down” position. Allow the hoist cylinder to fully retract before moving the truck.

**CAUTION**

Do not travel with the hoist raised even slightly. Using the hydraulic cylinder as a shock absorber can damage the piston seals and cylinder mounting structures.

14. When the dump body is fully lowered, pull the unit forward to clear the load.

3. Measure the “A” and “B” distances from the kingpin to the ends of the front axle as shown in Figure 3-2. These measurements must be the same within 1/8 inch to avoid dog tracking.

![Figure 3-2. Checking Alignment of Axles](image)

4. If alignment is required, replace all worn or damaged components and repeat the measurements before making any adjustments to the alignment of the axles. Refer to the original equipment manufacturer’s service manual for the applicable alignment procedure.

5. Install all wheel components removed in step 2.

**Parallel Axle Alignment**

1. Roll the vehicle back and forth over a level floor a few times to permit the connecting linkage to properly position itself and to center the front and rear wheel tracks. The final movement should be in the forward direction with a brake application to shift the springs into the running position.

2. Level the trailer across its transverse axis and along its longitudinal axis.

3. Measure the “C” and “D” distances between the front and rear axle centers, Figure 3-2. The dimensions must be within 1/16 inch of each other.

**NOTE**

The gage shown in Figure 3-2 simplifies the “C” and “D” measurements. The materials used to make the gage are not important as long as the parts are rigid and true. The pointer arms should be parallel and held in the same plane.

The axle alignment limits are recognized by most suspension manufacturers and have been cited in the recommendations of The Maintenance Council.
Inspection

Perform the following inspections before performing any work on the trailer suspension.

1. Check the tires. The tire diameters of the dual wheel tires, when equally inflated, must measure the same within 1/4 inch diameter (or 3/4 inch in circumference) under load conditions.

2. Check the brake drums and linings. Both wheels of each axle must have the same types of brake drums and linings.

3. Check the thickness of the brake linings. The thickness of the brake linings must be approximately the same on each shoe of the brake and on each side of the axle. Brake linings should be replaced as sets.

4. Check the brake system. Apply the brakes and check for air leaks at the brake chambers, air tanks, valves, and hoses. When the brakes are applied, the brake shoes must move quickly and the linings must contact the drum. When the brakes are released, the brake shoes must fully retract.

5. Check for oil leaks at the wheel ends. Oil leakage is a condition caused by worn or damaged wheel seals, using the wrong seals, or improper seal installation.

6. Perform the suspension system checks in paragraph 3-10 before proceeding with the alignment process.

Centering the Front Axle with the Kingpin

Use the following procedure to properly align and center the front trailer axle with the kingpin.

1. Park the trailer on a level floor surface.

2. Jack up the vehicle and remove all wheel components that will interfere with a straight line between the kingpin and the ends of the front axle. (As an alternative to removing wheel parts, secure an axle extension piece to the axle ends during each measurement in step 3.)

NOTE

To make the kingpin to axle measurements, it is recommended that a small rigid hook, in the shape of a question mark (?) be made of 1/8 inch bar stock. The hook should be sized to grip the kingpin and designed to secure the free end of a measuring tape.

Operation

NOTE

Dump bodies longer than 25 feet will not completely dump because the stockpile slams the material. To complete the dump, the body should be fully lowered and the truck moved forward. After the truck is moved forward, the dump body can be raised again to complete the dump operation.

15. After dumping, check for material in the dump body. Remove excess material.

16. Lock the tailgate. DO NOT operate the trailer on the highway with the tailgate open.

17. Check the trailer for loose debris. Remove all loose material before leaving the dump site. DO NOT allow loose material to fall off during highway travel.

18. Unhook the rear mud flaps.

19. Check and secure all accessories before leaving the dump site.

1-7 TIP-OVER CONDITIONS

To avoid a tip-over, the rear portion of the trailer must remain level from side-to-side. If the body leans to one side at the start of the lift, it will lean more as the body rises. The top of the load gets more off center causing the tipping force to increase as the dump body rises.

The hoist cylinder is not strong enough to resist a tip-over. If the rising nose of the dump body starts to move sideways because the trailer is leaning, the hoist will not stop the sideways movement.

A number of factors can lead to a tip-over, but the more common and serious situation is caused by two or more factors combined. In order to avoid a tip-over, any condition that causes the rising dump body to lean or quickly shift position must be avoided. Some of these conditions are as follows.

Tire Problems

A blown tire or a tire that is severely under-inflated can cause the rising dump body to lean sideward. Prior to dumping, the tires should always be checked for proper inflation. The tires must be properly inflated.
Broken Springs

A broken or weak spring will cause the dump trailer to become unstable while dumping. Overloading will accelerate the problem. Good preventive maintenance inspections are recommended to monitor the condition of spring suspensions. When replacing a broken or damaged spring, also replace the opposite spring to achieve equal deflection under load.

Overloading

Overloads often damage tires and springs. Excess overloading can deform the axle beam and wheel spindles, resulting in more rapid tire wear. An overloaded trailer has a high center of gravity. A high center of gravity contributes to roll-over on the highway, as well as tip-over during dumping.

Jackknife Position

When the dump trailer is not in line with the tractor, it is difficult to see if the dump body leans. When raising the load, stay as close to the center of the unit as possible, and watch the nose of the dump body rise. If you see the nose start to lean, lower the dump body immediately.

Unbalanced Loads

While dumping, materials that hang up in the dump body will cause the trailer to be off balance. If a large amount of material sticks to one side of the dump body, the out-of-balance condition may contribute to a tip-over. Extra precautions must be taken when dumping in freezing weather or when dumping materials such as wet clay. An observer in a safe location should monitor how the load discharges from the dump body. If a problem arises, the driver can be warned.

Movement

Many accidents occur because the dump trailer is moved with the dump body raised. A raised dump body will sway any time the vehicle is moved making a tip-over more likely to happen. Accidental contact with overhead electrical wires or telephone lines is also more likely. Avoid moving the truck with the dump body raised.

Slopes

Never raise the dump body when the trailer is on uneven ground. Even a ground surface that looks flat can have enough slope to cause a raised dump trailer to lean. Road paving projects require extreme caution. The crown of the road together with a changing slope can quickly cause a raised dump body to lean and tip over.

3-8 TWO-SPEED LANDING GEAR

Although the landing gear is adequately greased and packed with high quality lubricants at the factory, periodic lubrication may be necessary to maintain satisfactory performance. This is especially true when the landing gear is raised and lowered often.

Lubricate both support legs at least two times a year or more often, if needed. Refer to the manufacturer's service manual for lubricating instructions.

3-9 TRAILER AXLE ALIGNMENT

If a trailer is properly aligned and the alignment torques are maintained, realignment should only be required if suspension components are damaged, worn, or replaced. For instance, when new torque arm bushings are installed, the axle alignment should be checked after a brief period of service.

Axle misalignment will cause excessive and uneven tire wear and vehicle "dog-tracking." Misalignment is often blamed for tire wear caused by incorrect tire inflation. Vehicles that dog-track are more difficult to maneuver because the tracking characteristics of a right turn will differ from those of a left turn. In addition to handling problems, a dog-tracking trailer is less safe to operate because the wheels are off track. Off track trailer wheels could reach the shoulder of the road before the wheels of the tractor.

⚠️ CAUTION ⚠️

On observing a dog-tracking condition, the driver should promptly report the problem to those responsible for vehicle maintenance.

When the tires are known to be properly inflated, dog-tracking is most often caused by trailer axles that are out of parallel with each other. A less common condition that can cause dog-tracking is the kingpin being offset from the axle centers.
Manual Bleeder

**WARNING**

Do not attempt to bleed the hoist cylinder when the trailer is loaded.

When bleeding a hoist equipped with a manual bleed, do not stand inside or position yourself under the body when it moves upward or downward.

Carefully raise the dump body to the top of the hoist cylinder stroke and lower it to within six or eight inches of the frame. Open the bleeder valve to allow the entrapped air to escape. Repeat this procedure until all air is removed from the system.

3-7 HYDRAULIC PUMPS/VALVES

The pump/valve is designed to provide trouble-free operation at pressures not to exceed 2000 psi.

**WARNING**

Hydraulic operating pressures must not be set above 2000 psi unless specific approval is requested from and provided by the component manufacturer's technical service department.

The hydraulic system must be equipped with a lockable operating lever to prevent accidental control actuation during travel. Failure to install a safety control lever may allow the dump body to rise during travel causing serious injury, death, or equipment damage.

The most common cause of pump failure is dirty hydraulic oil. Hydraulic components have close tolerances for high pressure performance. Contaminants, no matter how small, will cause internal wear and reduce the service life of the pump. If pump parts must be replaced, make sure all components are thoroughly cleaned. All maintenance activities must be performed in ways that will keep the hydraulic system clean.

**Soft Ground**

Many dump sites require dumping of the load while on soft ground. Fresh fill often settles unevenly, causing the ground to be "spongy." Dumping while on soft ground or fresh fill should be avoided.

**Wind Conditions**

Gusty wind conditions or adverse crosswinds coupled with any of the other tip-over factors can result in a tip-over. Dumping operations should be suspended while high winds persist.

**Humping**

**WARNING**

TIP-OVER HAZARD. Can cause serious injury or death.

The driver should observe the hoist cylinder for proper operation. When any stage of the hoist does not extend smoothly or fails to extend in the correct sequence, the hoist should be replaced. Continued operation of a dump body with a faulty hoist is hazardous and could result in a tip-over.

Do not raise the dump body with a faulty hoist.

This procedure is unacceptable and must be avoided. Trying to dislodge material by quickly moving the truck forward or backward, then braking hard can cause a tip-over, particularly if a hung load is off balance. In addition to being a dangerous practice, the forces generated can cause severe damage to an extended hydraulic hoist.

Humping is a slang term used in the dump trailer transportation industry that describes a method to dislodge a stuck load in a dump trailer. The event has typically been defined one of two ways. They are: (1) Lowering the dump body via the hoist control valve and engaging the valve to the hold position causing a sudden stop thereby attempting to jar the load loose. (2) Moving the truck forward or backward with the dump body raised, then braking hard to dislodge the load. Either one of these actions can cause a tip-over, particularly if the hung load is off balance.

Either one of these events induces extreme spike loading hydraulic pressures to the hoist that can cause catastrophic cylinder failure resulting in the dump body suddenly and violently falling. This action along with the failure of the hoist can cause severe injury or death and must be strictly avoided.
Hydraulic Oil Viscosity

The viscosity of hydraulic oil is designated in units of Saybolt Universal Seconds (SUS). The recommended viscosity for various operating temperatures is as follows:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Viscosity (SUS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum operating</td>
<td>50 SUS</td>
</tr>
<tr>
<td>Starting temperature</td>
<td>7500 SUS</td>
</tr>
<tr>
<td>100°F or 38°C</td>
<td>140 to 225 SUS</td>
</tr>
<tr>
<td>210°F or 99°C</td>
<td>44 to 48 SUS</td>
</tr>
</tbody>
</table>

The recommended oils and their approximate SUS designations for East Manufacturing Corporation dump trailer hydraulic systems are:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Viscosity (SUS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110°F (38°C)</td>
<td>150 SUS</td>
</tr>
<tr>
<td>210°F (99°C)</td>
<td>43 SUS</td>
</tr>
<tr>
<td>SAE 10</td>
<td>330 SUS</td>
</tr>
<tr>
<td>SAE 20</td>
<td>51 SUS</td>
</tr>
</tbody>
</table>

An alternate specification to the recommended SAE 10 and SAE 20 oils is the Viscosity Index. The value for the Viscosity Index should not be less than 90.

Recommended Additives

- Foam Depressant
- Rust and Oxidation Inhibitors

Use of Alternate Oils

Automatic Transmission Fluid (ATF) is satisfactory for use in dump trailer hydraulic systems, but is expensive due to the large quantity of oil needed.

Diesel Fuel or Kerosene is sometimes used as a dilutor during cold weather operations. But as they are not sufficiently refined, we do not recommend using Diesel Fuel or Kerosene for this purpose.

⚠️ CAUTION

Do not use any fire resistant fluids or non-petroleum base oils in the hydraulic system without consulting the component manufacturers' service manuals.

Fire resistant fluids include a number of different types. Only the inverted emulsion type may be used without changing to special seals, packing, gaskets, and hose. Their use may reduce pump service life. The use of fire resistant fluids can be destructive unless specific precautions are followed.

PREVENTIVE MAINTENANCE

Preventive maintenance inspections must be performed regularly by the equipment operator and trained maintenance personnel. Equipment maintenance and repairs must be performed only by trained and qualified mechanics according to the following instructions and those provided in the component manufacturers’ instruction manuals.

2-1 PREPARATION FOR SERVICE

⚠️ WARNING

FALLING DUMP BODY. Can cause severe injury or death.

Leaky or failed hoist cylinder may allow dump body to fall. Always block up raised dump body for under-body inspection or maintenance.

Never block up a loaded or partly loaded dump body.

Use the following procedure to raise and block a framed dump body for trailer inspection or service.

1. Verify that the dump body is empty. Never raise a loaded dump body for service or inspection.

2. Check for overhead clearance and raise the dump body to the desired height.

3. Place a 6 x 6 hardwood timber or other crush-proof member over both chassis beams. Slide the blocking timbers rearward to contact both bottom rails of the dump body.
4. Slowly lower the dump body onto the blocking timbers, Figure 2-1.

5. Place the hydraulic hoist control in the "hold" position.

Figure 2-1. Blocking Up the Dump Body

9. Close the tailgate latches to check the adjustment. As the tailgate latches close, an impact should be heard as the pivot cams snap against the stop blocks. If the latch link is too short, the locking cam will not go over center.

10. When the proper adjustment is achieved, open the tailgate latches and tighten the lock nut.

3-4 GENERAL HYDRAULICS

A good quality hydraulic oil of the recommended grade is essential to satisfactory performance and extended service life of any hydraulic system.

Flush the hydraulic system and change the hydraulic oil regularly, in accordance with the manufacturer's recommendations.

Oil poured into the reservoir should pass through a 100 mesh screen. Use only clean oil from clean containers when refilling the reservoir. A 100-mesh screen may be used in the suction line leading to the pump. However, the suction line filter should be able to handle twice the flow capability of the pump. All line filters must be cleaned and checked regularly to eliminate contamination and obstruction to oil flow.

Reservoir capacity should be equal to the fluid volume of the cylinder(s) plus 20 gallons or 150% of the liquid capacity of the extended cylinders.

The normal temperature range (the air temperature) is 0°F (-18°C) to 100°F (38°C). The normal system operating temperature range (the oil temperature) is 100°F (38°C) to 180°F (82°C). Be sure the oil used is recommended for the temperatures expected.

Oil temperature in the reservoir must not exceed 200°F (93°C) with a maximum temperature of 180°F (82°C) recommended. Higher temperatures will result in rapid oil deterioration.

Cold Weather Operations

Oils for use in cold weather should have a viscosity not exceeding 7500 SUS at the lowest startup temperature. A pour point of at least 20°F lower than the lowest expected startup temperature is recommended. Startup procedures should allow for gradual warming until the oil reaches the recommended operating temperature.
3-3 TAILGATE LATCHES

Open and close the tailgate latches to check both latches for proper operation. The tailgate latch pins should be clamped firmly and the small end of each locking cam, Figure 3-1, must snap into position against the cam stop block. If either latch pin is not tightly clamped, or the locking cam does not lock above center, adjust the tailgate latch according to the following procedure.

![Figure 3-1. Tailgate Latch Adjustment](image)

1. With the tailgate closed, measure the air gap between the latch and the latch pin, and between the latch pin and the pin hook. The total thickness of the two air gaps is the amount of latch link adjustment needed.

2. Open the tailgate latches.

3. Loosen the latch link lock nut.

4. Remove the cotter pin and flat washer from the locking cam end of the latch link.

5. Remove the latch link from the locking cam.

6. Thread the latch link in one turn for every 1/16 inch of adjustment needed.

7. Install latch link in the locking cam.

8. Install the flat washer and a new cotter pin.

---

2-2 WEEKLY INSPECTION AND SERVICE

Body

1. Inspect the dump body for any damage.

2. Use the following procedure to check the hinge pin and dump shoe bushings for wear.

   a. Raise the dump body to the typical dump height.

   b. See Figure 2-2. Measure how far the dump shoe hinge boss extends below the hinge pin flange.

   c. Lower the dump body and jack up the rear corners of the bed.

   d. Measure how far the dump shoe hinge boss extends above the hinge pin flange. If the total wear measured in step b. and step d. is greater than 3/8 inch, replace the hinge pin and dump shoe bushings.

![Figure 2-2. Hinge Pin and Bushing Wear Measurement](image)

3. Grease the dump shoes.

4. Check the electrical system for chafed wires, missing clips, and good grounding.

5. Check all lights for proper operation.

6. Verify that all reflectors are in place and not obscured.
Tailgate

1. Verify that the tailgate latches open and close properly.

2. Check the tailgate lock adjustment, Figure 2-3. The tailgate latches should be clamped firmly and the small end of each locking cam must snap into position against the cam stop block. If needed, adjust the tailgate locks according to the instructions in paragraph 3-3.

![Figure 2-3. Tailgate Locking Mechanism](image)

3. Check the tailgate for alignment and for complete closure to avoid any material leakage.

4. Inspect the tailgate sealing faces for excessive wear.

5. Grease the tailgate latches, the coal chute linkage, and the top corner hinges. Use the grease fittings provided.

**NOTE**

*Lubrication of the overhang hinges should be performed from inside the dump body.*

Hoist/Hydraulics

1. Check the oil level in the hydraulic tank. Add fresh, filtered hydraulic oil, as needed. See paragraph 3-4 for recommended hydraulic oils.
2. Check for chafed hoses or cracked fittings.

3. Inspect all high pressure hydraulic lines for leakage.

4. Raise the dump body and inspect the hoist cylinder stages for oil leakage. If needed, tighten the hoist cylinder packing nuts to reduce leakage. Do not overtighten the packing nuts, Figure 2-4.

**NOTE**

*Oil leakage from the hoist cylinder stages will be more noticeable when raising a loaded dump body.*

5. Check the A-frame mounting hardware for tightness.

*Figure 2-4. Hoist Cylinder Hardware*
6. Verify that the upper hoist pin is secure.
7. Grease the upper hoist pin.
8. Inspect the lower base assembly for cracks and verify that the bottom hoist pin is secure.
9. Grease the bottom hoist pin.

**NOTE**
*Freedom of movement between the hinge pin and the bushing surfaces of the lower base assembly is necessary for safe hoist operation. The normal clearance between the lower hoist pin and the bushings is 3/8 inch.*

10. Bleed the hoist cylinder according to the applicable service procedure in paragraph 3-6. The hoist cylinder may be equipped with a manual/automatic bleed valve.

**NOTE**
*Most hydraulic hoists are equipped with an automatic bleeder that discharges air each time the hoist is used. It is normal for a small amount of hydraulic oil to leak during automatic bleeder operation.*

**Chassis**

1. Inspect the chassis for visible damage.
2. Check the fifth wheel and the kingpin for cracks and unusual or excessive wear. Grease the fifth wheel.
3. Inspect the support leg mounting plates and the bracing for cracks. Tighten any loose fasteners.
4. Grease the support legs according to the original equipment manufacturer’s instructions.

**Suspensions**

1. Visually inspect all suspension springs for broken leaves and equal arch.
2. Be sure the springs are positioned within the hangers and equalizers.
3. Visually inspect all air springs for cuts or leaks.

**Dump Equipment**

**Brakes**

1. Check the brake valves and the tailgate latch valve for leaks and proper operation.
2. Check all air lines and hoses for chafing.
3. Adjust the slack adjusters and lubricate the brake cams according to the service instructions in paragraph 3-11.
4. Remove dirt and other foreign material from the brake drums.
5. Drain condensation from the trailer air reservoirs.

**Wheels, Rims, and Tires**

1. Check tire pressures. Inflate the tires according to the tire manufacturer’s specifications.
2. Check that the wheel lugs are tight and the rims are not slipping.
3. On wheels with see through hubs, check the oil level in the wheel hubs. Add oil as needed.

**2-3 MONTHLY INSPECTION AND SERVICE**

Perform the weekly inspection and service procedures and include the following tasks.

**General Inspection**

Check all welds for cracks.

**Suspension**

1. Inspect the suspension system bushings for the recommended mounting torque, excessive wear, and freedom of movement. Remove and replace worn bushings.
2. Check and adjust axle alignment according to the instructions in paragraph 3-9.

**Wheels, Rims, and Tires**

Check and adjust the end play of the wheel bearings according to the applicable instructions in paragraph 3-12.
6. Verify that the upper hoist pin is secure.
7. Grease the upper hoist pin.
8. Inspect the lower base assembly for cracks and verify that the bottom hoist pin is secure.
9. Grease the bottom hoist pin.

NOTE
Freedom of movement between the hinge pin and the bushing surfaces of the lower base assembly is necessary for safe hoist operation. The normal clearance between the lower hoist pin and the bushings is 1/8 inch.

10. Bleed the hoist cylinder according to the applicable service procedure in paragraph 3-6. The hoist cylinder may be equipped with a manual/automatic bleed valve.

NOTE
Most hydraulic hoists are equipped with an automatic bleeder that discharges air each time the hoist is used. It is normal for a small amount of hydraulic oil to leak during automatic bleeder operation.

**Chassis**

1. Inspect the chassis for visible damage.
2. Check the fifth wheel and the kingpin for cracks and unusual or excessive wear. Grease the fifth wheel.
3. Inspect the support leg mounting plates and the bracing for cracks. Tighten any loose fasteners.
4. Grease the support legs according to the original equipment manufacturer's instructions.

**Suspensions**

1. Visually inspect all suspension springs for broken leaves and equal arch.
2. Be sure the springs are positioned within the hangers and equalizers.
3. Visually inspect all air springs for cuts or leaks.

**Brakes**

1. Check the brake valves and the tailgate latch valve for leaks and proper operation.
2. Check all air lines and hoses for chafing.
3. Adjust the slack adjusters and lubricate the brake cams according to the service instructions in paragraph 3-11.
4. Remove dirt and other foreign material from the brake drums.
5. Drain condensation from the trailer air reservoirs.

**Wheels, Rims, and Tires**

1. Check tire pressures. Inflate the tires according to the tire manufacturer's specifications.
2. Check that the wheel lugs are tight and the rims are not slipping.
3. On wheels with see through hubs, check the oil level in the wheel hubs. Add oil as needed.

**2-3 MONTHLY INSPECTION AND SERVICE**

Perform the weekly inspection and service procedures and include the following tasks.

**General Inspection**

Check all welds for cracks.

**Suspension**

1. Inspect the suspension system bushings for the recommended mounting torque, excessive wear, and freedom of movement. Remove and replace worn bushings.
2. Check and adjust axle alignment according to the instructions in paragraph 3-9.

**Wheels, Rims, and Tires**

Check and adjust the end play of the wheel bearings according to the applicable instructions in paragraph 3-12.
Tailgate

1. Verify that the tailgate latches open and close properly.

2. Check the tailgate lock adjustment, Figure 2-3. The tailgate latches should be clamped firmly and the small end of each locking cam must snap into position against the cam stop block. If needed, adjust the tailgate locks according to the instructions in paragraph 3-3.

![Diagram of Tailgate Locking Mechanism]

Figure 2-3. Tailgate Locking Mechanism

3. Check the tailgate for alignment and for complete closure to avoid any material leakage.

4. Inspect the tailgate sealing faces for excessive wear.

5. Grease the tailgate latches, the coal chute linkage, and the top corner hinges. Use the grease fittings provided.

NOTE

Lubrication of the overslung hinges should be performed from inside the dump body.

Hoist/Hydraulics

1. Check the oil level in the hydraulic tank. Add fresh, filtered hydraulic oil, as needed. See paragraph 3-4 for recommended hydraulic oils.

3 MAINTENANCE AND SERVICE

3-1 GENERAL INSTRUCTIONS

East Manufacturing Corporation uses high quality components produced by reliable original equipment manufacturers in all of our custom-built trailers. Always refer to the original equipment manufacturer’s service manuals for specific instructions on servicing their products.

The benefits of good and timely maintenance actions will be realized by those who properly service and maintain their equipment.

Maintaining vehicle appearance includes cleaning, brightening, and polishing. Many chemical firms provide products for this purpose, along with instructions for obtaining the best results. It is important to understand and follow the product manufacturer’s instructions.

3-2 OPTIONAL IN-CAB TAILGATE SWITCH

Open and close the air supply valves to supply air from the tractor reservoirs or the trailer reservoirs, not both. Both air supply valves should be closed before opening one or the other.

Units manufactured after June 1, 1989, are equipped with a system that automatically isolates the proper air supply when tractor air is connected or disconnected at the trailer bulkhead.
3-3 TAILGATE LATCHES

Open and close the tailgate latches to check both latches for proper operation. The tailgate latch pins should be clamped firmly and the small end of each locking cam, Figure 3-1, must snap into position against the cam stop block. If either latch pin is not tightly clamped, or the locking cam does not lock above center, adjust the tailgate latch according to the following procedure.

Figure 3-1. Tailgate Latch Adjustment

1. With the tailgate closed, measure the air gap between the latch and the latch pin, and between the latch pin and the pin hook. The total thickness of the two air gaps is the amount of latch link adjustment needed.
2. Open the tailgate latches.
3. Loosen the latch link lock nut.
4. Remove the cotter pin and flat washer from the locking cam end of the latch link.
5. Remove the latch link from the locking cam.
6. Thread the latch link in one turn for every 1/16 inch of adjustment needed.
7. Install latch link in the locking cam.
8. Install the flat washer and a new cotter pin.

2-2 WEEKLY INSPECTION AND SERVICE

Body

1. Inspect the dump body for any damage.
2. Use the following procedure to check the hinge pin and dump shoe bushings for wear.
   a. Raise the dump body to the typical dump height.
   b. See Figure 2-2. Measure how far the dump shoe hinge boss extends below the hinge pin flange.
   c. Lower the dump body and jack up the rear corners of the bed.
   d. Measure how far the dump shoe hinge boss extends above the hinge pin flange. If the total wear measured in step b. and step d. is greater than 3/8 inch, replace the hinge pin and dump shoe bushings.

Figure 2-2. Hinge Pin and Bushing Wear Measurement

3. Grease the dump shoes.
4. Check the electrical system for chafed wires, missing clips, and good grounding.
5. Check all lights for proper operation.
6. Verify that all reflectors are in place and not obscured.
4. Slowly lower the dump body onto the blocking timbers, Figure 2-1.

5. Place the hydraulic hoist control in the "hold" position.

![Blocking Timbers](image)

**Figure 2-1. Blocking Up the Dump Body**

9. Close the tailgate latches to check the adjustment. As the tailgate latches close, an impact should be heard as the pivot cams snap against the stop blocks. If the latch link is too short, the locking cam will not go over center.

10. When the proper adjustment is achieved, open the tailgate latches and tighten the lock nut.

3-4 **GENERAL HYDRAULICS**

A good quality hydraulic oil of the recommended grade is essential to satisfactory performance and extended service life of any hydraulic system.

Flush the hydraulic system and change the hydraulic oil regularly, in accordance with the manufacturer's recommendations.

Oil poured into the reservoir should pass through a 100 mesh screen. Use only clean oil from clean containers when refilling the reservoir. A 100-mesh screen may be used in the suction line leading to the pump. However, the suction line filter should be able to handle twice the flow capability of the pump. All line filters must be cleaned and checked regularly to eliminate contamination and obstruction to oil flow.

Reservoir capacity should be equal to the fluid volume of the cylinder(s) plus 20 gallons or 150% of the liquid capacity of the extended cylinders.

The normal temperature range (the air temperature) is 0°F (-18°C) to 100°F (38°C). The normal system operating temperature range (the oil temperature) is 100°F (38°C) to 180°F (82°C). Be sure the oil used is recommended for the temperatures expected.

Oil temperature in the reservoir must not exceed 200°F (93°C) with a maximum temperature of 180°F (82°C) recommended. Higher temperatures will result in rapid oil deterioration.

**Cold Weather Operations**

Oils for use in cold weather should have a viscosity not exceeding 7500 SUS at the lowest startup temperature. A pour point of at least 20°F lower than the lowest expected startup temperature is recommended. Startup procedures should allow for gradual warming until the oil reaches the recommended operating temperature.
Hydraulic Oil Viscosity

The viscosity of hydraulic oil is designated in units of Saybolt Universal Seconds (SUS). The recommended viscosity for various operating temperatures is as follows:

- At minimum operating temperature: 50 SUS
- At starting temperature: 7500 SUS
- At 100°F or 38°C: 140 to 225 SUS
- At 210°F or 99°C: 44 to 48 SUS

The recommended oils and their approximate SUS designations for East Manufacturing Corporation dump trailer hydraulic systems are:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>SAE 10</th>
<th>SAE 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>110°F (38°C)</td>
<td>150 SUS</td>
<td>330 SUS</td>
</tr>
<tr>
<td>210°F (99°C)</td>
<td>43 SUS</td>
<td>51 SUS</td>
</tr>
</tbody>
</table>

An alternate specification to the recommended SAE 10 and SAE 20 oils is the Viscosity Index. The value for the Viscosity Index should not be less than 90.

Recommended Additives

- Foam Depressant
- Rust and Oxidation Inhibitors

Use of Alternate Oils

Automatic Transmission Fluid (ATF) is satisfactory for use in dump trailer hydraulic systems, but is expensive due to the large quantity of oil needed.

Diesel Fuel or Kerosene is sometimes used as a dilutor during cold weather operations. But as they are not sufficiently refined, we do not recommend using Diesel Fuel or Kerosene for this purpose.

CAUTION

Do not use any fire resistant fluids or non-petroleum base oils in the hydraulic system without consulting the component manufacturers' service manuals.

Fire resistant fluids include a number of different types. Only the inverted emulsion type may be used without changing to special seals, packing, gaskets, and hose. Their use may reduce pump service life. The use of fire resistant fluids can be destructive unless specific precautions are followed.

PREVENTIVE MAINTENANCE

Preventive maintenance inspections must be performed regularly by the equipment operator and by trained maintenance personnel. Equipment maintenance and repairs must be performed only by trained and qualified mechanics according to the following instructions and those provided in the component manufacturers' instruction manuals.

2-1 PREPARATION FOR SERVICE

WARNING

FALLING DUMP BODY. Can cause severe injury or death.

Leaky or failed hoist cylinder may allow dump body to fall. Always block up raised dump body for under-body inspection or maintenance.

Never block up a loaded or partly loaded dump body.

Use the following procedure to raise and block a framed dump body for trailer inspection or service.

1. Verify that the dump body is empty. Never raise a loaded dump body for service or inspection.
2. Check for overhead clearance and raise the dump body to the desired height.
3. Place a 6 x 6 hardwood timber or other crush-proof member over both chassis beams. Slide the blocking timbers rearward to contact both bottom rails of the dump body.
3-5 HYDRAULIC HOIST

The hydraulic hoist must extend without side loading. Side loading can be caused by misalignment of the top or bottom mountings and may cause scoring of the plungers, leaking, or improper sequencing. Overly tight mounting pins can apply side loads that may damage the hoist.

Set the relief valves in the range of 1500 to 2000 psi.

Limit field service repairs to replacement of packings, bushings, or wipers, and adjustment of the packing nuts to reduce leakage or eliminate binding which may contribute to improper sequencing.

During normal operations, a thin film of oil should be apparent on the plungers. If excess leakage occurs after adjustment, the plungers should be inspected for surface damage. If a plunger is scored or scratched, the marks can be removed with a fine stone or emery cloth.

If a cylinder problem cannot be corrected by minor field repair, return it to the original manufacturer or a factory authorized repairman.

3-6 HOIST BLEEDERS

Automatic Bleeder

An automatic bleeder valve is used on most hoist cylinders. Turn the bleeder valve cap counterclockwise for automatic bleeding of the cylinder. The valve will bleed trapped air from the cylinder each time the hydraulic system is pressurized. A small amount of oil loss through the bleeder valve is normal and can be expected each time the dump body is raised.

A small particle of sand or dirt in the automatic bleeder can cause it to stay open and allow a stream of hydraulic oil to escape. To correct the problem, remove, clean, and reinstall the bleeder valve. A bleeder valve cleaning solution is recommended by the manufacturer.
Manual Bleeder

⚠️ WARNING

Do not attempt to bleed the hoist cylinder when the trailer is loaded.

When bleeding a hoist equipped with a manual bleed, do not stand inside or position yourself under the body when it moves upward or downward.

Carefully raise the dump body to the top of the hoist cylinder stroke and lower it to within six or eight inches of the frame. Open the bleeder valve to allow the entrapped air to escape. Repeat this procedure until all air is removed from the system.

3-7 HYDRAULIC PUMPS/VALVES

The pump/valve is designed to provide trouble-free operation at pressures not to exceed 2000 psi.

⚠️ WARNING

Hydraulic operating pressures must not be set above 2000 psi unless specific approval is requested of and provided by the component manufacturer’s technical service department.

The hydraulic system must be equipped with a lockable operating lever to prevent accidental control actuation during travel. Failure to install a safety control lever may allow the dump body to rise during travel causing serious injury, death, or equipment damage.

The most common cause of pump failure is dirty hydraulic oil. Hydraulic components have close tolerances for high pressure performance. Contaminants, no matter how small, will cause internal wear and reduce the service life of the pump. If pump parts must be replaced, make sure all components are thoroughly cleaned. All maintenance activities must be performed in ways that will keep the hydraulic system clean.

Soft Ground

Many dump sites require dumping of the load while on soft ground. Fresh fill often settles unevenly, causing the ground to be "spongy." Dumping while on soft ground or fresh fill should be avoided.

Wind Conditions

Gusty wind conditions or adverse crosswinds coupled with any of the other tip-over factors can result in a tip-over. Dumping operations should be suspended while high winds persist.

Humping

⚠️ WARNING

TIP-OVER HAZARD. Can cause serious injury or death.

The driver should observe the hoist cylinder for proper operation. When any stage of the hoist does not extend smoothly or fails to extend in the correct sequence, the hoist should be replaced. Continued operation of a dump body with a faulty hoist is hazardous and could result in a tip-over.

Do not raise the dump body with a faulty hoist.

This procedure is unacceptable and must be avoided. Trying to dislodge material by quickly moving the truck forward or backward, then braking hard can cause a tip-over, particularly if the hung load is off balance. In addition to being a dangerous practice, the forces generated can cause severe damage to an extended hydraulic hoist.

Humping is a slang term used in the dump trailer transportation industry that describes a method to dislodge a stuck load in a dump trailer. The event has typically been defined one of two ways. They are: (1) Lowering the dump body via the hoist control valve and engaging the valve to the hold position causing a sudden stop thereby attempting to jar the load loose. (2) Moving the truck forward or backward with the dump body raised, then braking hard to dislodge the load. Either one of these actions can cause a tip-over, particularly if the hung load is off balance.

Either one of these events induces extreme spike loading hydraulic pressures to the hoist that can cause catastrophic cylinder failure resulting in the dump body suddenly and violently falling. This action along with the failure of the hoist can cause severe injury or death and must be strictly avoided.
Operation

Broken Springs

A broken or weak spring will cause the dump trailer to become unstable while dumping. Overloading will accelerate the problem. Good preventive maintenance inspections are recommended to monitor the condition of spring suspensions. When replacing a broken or damaged spring, also replace the opposite spring to achieve equal deflection under load.

Overloading

Overloads often damage tires and springs. Excess overloading can deform the axle beam and wheel spindles, resulting in more rapid tire wear. An overloaded trailer has a high center of gravity. A high center of gravity contributes to roll-over on the highway, as well as tip-over during dumping.

Jackknife Position

When the dump trailer is not in line with the tractor, it is difficult to see if the dump body leans. When raising the load, stay as close to the center of the unit as possible, and watch the nose of the dump body rise. If you see the nose start to lean, lower the dump body immediately.

Unbalanced Loads

While dumping, materials that hang up in the dump body will cause the trailer to be off balance. If a large amount of material sticks to one side of the dump body, the out-of-balance condition may contribute to a tip-over. Extra precautions must be taken when dumping in freezing weather or when dumping materials such as wet clay. An observer in a safe location should monitor how the load discharges from the dump body. If a problem arises, the driver can be warned.

Movement

Many accidents occur because the dump trailer is moved with the dump body raised. A raised dump body will sway any time the vehicle is moved making a tip-over more likely to happen. Accidental contact with overhead electrical wires or telephone lines is also more likely. Avoid moving the truck with the dump body raised.

Slopes

Never raise the dump body when the trailer is on uneven ground. Even a ground surface that looks flat can have enough slope to cause a raised dump trailer to lean. Road paving projects require extreme caution. The crown of the road together with a changing slope can quickly cause a raised dump body to lean and tip over.

Dump Equipment

3-8 TWO-SPEED LANDING GEAR

Although the landing gear is adequately greased and packed with high quality lubricants at the factory, periodic lubrication may be necessary to maintain satisfactory performance. This is especially true when the landing gear is raised and lowered often.

Lubricate both support legs at least two times a year or more often, if needed. Refer to the manufacturer’s service manual for lubricating instructions.

3-9 TRAILER AXLE ALIGNMENT

If a trailer is properly aligned and the alignment torques are maintained, realignment should only be required if suspension components are damaged, worn, or replaced. For instance, when new torque arm bushings are installed, the axle alignment should be checked after a brief period of service.

Axle misalignment will cause excessive and uneven tire wear and vehicle “dog-tracking.” Misalignment is often blamed for tire wear caused by incorrect tire inflation. Vehicles that dog-track are more difficult to maneuver because the tracking characteristics of a right turn will differ from those of a left turn. In addition to handling problems, a dog-tracking trailer is less safe to operate because the wheels are off track. Off track trailer wheels could reach the shoulder of the road before the wheels of the tractor.

⚠️ CAUTION ⚠️

On observing a dog-tracking condition, the driver should promptly report the problem to those responsible for vehicle maintenance.

When the tires are known to be properly inflated, dog-tracking is most often caused by trailer axles that are out of parallel with each other. A less common condition that can cause dog-tracking is the kingpin being offset from the axle centers.

Maintenance and Service

3-7
**Inspection**

Perform the following inspections before performing any work on the trailer suspension.

1. Check the tires. The tire diameters of the dual wheel tires, when equally inflated, must measure the same within 1/4 inch diameter (or 3/4 inch in circumference) under load conditions.

2. Check the brake drums and linings. Both wheels of each axle must have the same types of brake drums and linings.

3. Check the thickness of the brake linings. The thickness of the brake linings must be approximately the same on each shoe of the brake and on each side of the axle. Brake linings should be replaced as sets.

4. Check the brake system. Apply the brakes and check for air leaks at the brake chambers, air tanks, valves, and hoses. When the brakes are applied, the brake shoes must move quickly and the linings must contact the drum. When the brakes are released, the brake shoes must fully retract.

5. Check for oil leaks at the wheel ends. Oil leakage is a condition caused by worn or damaged wheel seals, using the wrong seals, or improper seal installation.

6. Perform the suspension system checks in paragraph 3-10 before proceeding with the alignment process.

**Centering the Front Axle with the Kingpin**

Use the following procedure to properly align and center the front trailer axle with the kingpin.

1. Park the trailer on a level floor surface.

2. Jack up the vehicle and remove all wheel components that will interfere with a straight line between the kingpin and the ends of the front axle. (As an alternative to removing wheel parts, secure an axle extension piece to the axle ends during each measurement in step 3.)

**NOTE**

To make the kingpin to axle measurements, it is recommended that a small rigid hook, in the shape of a question mark (?) be made of 1/4 inch bar stock. The hook should be sized to grip the kingpin and designed to secure the free end of a measuring tape.

15. After dumping, check for material in the dump body. Remove excess material.

16. Lock the tailgate. DO NOT operate the trailer on the highway with the tailgate open.

17. Check the trailer for loose debris. Remove all loose material before leaving the dump site. DO NOT allow loose material to fall off during highway travel.

18. Unhook the rear mud flaps.

19. Check and secure all accessories before leaving the dump site.

**1-7 TIP-OVER CONDITIONS**

To avoid a tip-over, the rear portion of the trailer must remain level from side-to-side. If the body leans to one side at the start of the lift, it will lean more as the body rises. The top of the load gets more off center causing the tipping force to increase as the dump body rises.

The hoist cylinder is not strong enough to resist a tip-over. If the rising nose of the dump body starts to move sideways because the trailer is leaning, the hoist will not stop the sideways movement.

A number of factors can lead to a tip-over, but the more common and serious situation is caused by two or more factors combined. In order to avoid a tip-over, any condition that causes the rising dump body to lean or quickly shift position must be avoided. Some of these conditions are as follows.

**Tire Problems**

A blown tire or a tire that is severely under-inflated can cause the rising dump body to lean sideward. Prior to dumping, the tires should always be checked for proper inflation. The tires must be properly inflated.
10. Engage the PTO (power take-off).

**WARNING**

TIP-OVER HAZARD. Can cause serious injury or death.

Do not leave the controls while the dump body is raised. Keep the raised end in view at all times. Be prepared to lower the body quickly if it starts to lean.

Do not fully extend the hoist cylinder. Raising the load to its upper limit will jar the load and could cause the hoist cylinder to fail. Over-extending the hoist cylinder or jarring the raised load could cause the load to fall or tip.

11. Shift the hoist control into the “lift” position. Raise the dump body to the lowest height for dumping. **DO NOT** raise the load to the lifting limit of the hoist cylinder.

12. When the dump body is raised, shift the hoist control into the “hold” position until the load is dumped or material flow stops.

**WARNING**

COLLISION HAZARD. Can cause injury or death.

Failure to disengage the PTO can allow the dump body to raise and collide with overhead obstructions or electrical wires. Disengage the PTO before leaving the dump site.

13. Disengage the PTO and move the hoist control to the “down” position. Allow the hoist cylinder to fully retract before moving the truck.

**CAUTION**

Do not travel with the hoist raised even slightly. Using the hydraulic cylinder as a shock absorber can damage the piston seals and cylinder mounting structures.

14. When the dump body is fully lowered, pull the unit forward to clear the load.

3. Measure the “A” and “B” distances from the kingpin to the ends of the front axle as shown in Figure 3-2. These measurements must be the same within 1/8 inch to avoid dog tracking.

![Figure 3-2. Checking Alignment of Axles](image)

4. If alignment is required, replace all worn or damaged components and repeat the measurements before making any adjustments to the alignment of the axles. Refer to the original equipment manufacturer’s service manual for the applicable alignment procedure.

5. Install all wheel components removed in step 2.

**Parallel Axle Alignment**

1. Roll the vehicle back and forth over a level floor a few times to permit the connecting linkage to properly position itself and to center the front and rear wheel tracks. The final movement should be in the forward direction with a brake application to shift the springs into the running position.

2. Level the trailer across its transverse axis and along its longitudinal axis.

3. Measure the “C” and “D” distances between the front and rear axle centers, Figure 3-2. The dimensions must be within 1/16 inch of each other.

**NOTE**

The gage shown in Figure 3-2 simplifies the “C” and “D” measurements. The materials used to make the gage are not important as long as the parts are rigid and true. The pointer arms should be parallel and held in the same plane.

The axle alignment limits are recognized by most suspension manufacturers and have been cited in the recommendations of The Maintenance Council.
3-10 SUSPENSIONS

On initial trailer delivery, check the trailer for a level ride condition; verify that the trailer is at the specified height. Verify that all welds are of acceptable quality and that all hardware is securely in place. Check the suspension members to verify that no shipping fixtures will interfere with component motions.

Over-the-road operations require periodic suspension checks to assure continued trouble-free performance.

The following suspension component checks are recommended on trailer delivery and after the first 1000 miles of trailer operation. See Figure 3-3.

---

8. Open the tailgate (or coal chute, if dumping into a hopper).
9. When operating a frameless dump trailer, perform the following tasks prior to dumping:
   a. Unhook the fifth wheel coupler hooks, Figure 1-11.

---

Figure 1-11. Fifth Wheel Coupler Hooks

WARNING

TIP-OVER HAZARD. Can cause serious injury or death.

The trailer or tractor brakes must be released when raising the dump bed on a frameless dump trailer. Failure to release one set of brakes will damage the hoist or draft arms and could lead to a tip-over.

The tractor brakes can be applied and the trailer brakes released, but the ground over which the trailer wheels will travel must be firm, level, and uncluttered. Failure to ensure good surface conditions for trailer movement prior to dumping may lead to a tip-over.

b. Apply the trailer parking brakes and release the tractor brakes. The draft arms will pull the tractor back as the dump bed rises.

c. Verify that all tractor and trailer tires are in line. DO NOT attempt to raise the dump trailer if the tractor and trailer wheels are not in line.
6. Verify that the tailgate latching links are locked over center, Figure 1-9. The locking cam must be firmly clamped against the stop block.

![Figure 1-9. Checking the Tailgate Latcher](image)

7. If not dumping through the coal chute, loosen and unhook each of the gate winders, Figure 1-10.

![Figure 1-10. Gate Winder](image)

**WARNING**

The gate winder pictured above, also known as a safety winder, is typically either on the sides or on the bottom of the gate of all dump trailers. These winders, whether on the sides, bottom, or both, must be secure in place and tightened before transporting a loaded trailer at all times. These winders serve as a gate-sealing device when hauling sludge type loads or finer materials such as sand. Most importantly, the winders serve as an extra safety-latching device holding the tailgate closed in the event of an unwanted tailgate unlatching or improper tailgate latching.

**Air Ride Suspensions**

Air springs will rupture and fail if rubbed, scuffed, or punctured. If an air spring fails, the dump body will settle down on internal hard rubber cushions, allowing the vehicle to be taken to the next convenient service facility. To avoid repeated air spring failures, always determine and correct the cause of the rupture.

To replace an air spring, raise the vehicle and support the frame with jack stands at the rear corners. Exhaust the air from the air springs, and unbolt the damaged air spring and the connecting air lines. Install the replacement air spring in the reverse order.

**CAUTION**

Do not lift the trailer from the suspension with shock absorbers removed. The air springs may be over-extended and damaged if the shock absorbers are removed.

Shock absorbers absorb energy to prevent suspension oscillation. They also limit air spring extension in most air suspensions. Air springs can be pulled apart if not constrained by a shock absorber or some other device. In many operations, the air suspension functions very well without shock absorbers. Unless operating problems are detected, the immediate replacement of worn shock absorbers may not be necessary.

Replacement shock absorbers must be secured with the correct size and grade of bolts and lock nuts. Because your suspension may have unique travel requirements, the specific model of shock absorber used will probably have special characteristics. Replacement shock absorbers should match the original specifications for performance range and comply with the recommendations of the suspension manufacturer.
Air Controls

Many types of air controls are available for use with your suspension. The most common system automatically regulates the trailer height by controlling the air pressure supplied to the air springs. When an air suspension is used in conjunction with other suspensions, such as leaf spring suspension, an operator controlled pressure regulator is often used. This allows the operator to select the appropriate amount of air pressure to equalize the axle loading.

If lift axles are installed, other special control circuits and components must be added to properly coordinate this independent suspension with the others. The air suspension system is also capable of changing the suspension height within a limited range.

All air suspensions on the trailer operate from its isolated compressed air supply.

The suspension design is established by the suspension manufacturer and recorded in the component manufacturer's operating manual. The design height is the distance from the centerline of the axle to the underside of the chassis at the location where the height control valve is located. The suspension height control valve, Figure 3-4, responds to changes in the distance between the chassis and the axle. The valve adjust linkage setting controls the valve opening. Higher loading on the chassis causes the valve to open and the air springs to inflate, returning the chassis to its design height.

![Height Control Valve](image)

Figure 3-4. Suspension Height Control Valve

3. Remove the tarp and other accessories that might interfere with dumping.

4. Hang the rear mud flaps.

**WARNING**

**TIP-OVER HAZARD.** Can cause serious injury or death.

Raising the dump body with the air springs inflated may cause the load to lean. Always deflate trailer air springs prior to raising the dump body.

5. On trailers with an air ride suspension, deflate the air springs to lower the dump body onto the internal hard cushions, Figure 1-8. **DO NOT** try to dump the load with the air springs inflated.

![Air Springs Deflated for Dumping](image)

Figure 1-8. Air Springs Deflated for Dumping

**WARNING**

**TAILGATE BREAKAWAY.** Can cause severe injury or death.

When unloading material from the coal chute, the gate winders must be clamped to prevent tailgate bowing and to avoid an accidental tailgate opening.

Loosening a gate winder when the tailgate is not locked can allow the tailgate to spring open. Before loosening a gate winder, verify that the tailgate locking linkage is locked "over center."
**Unloading Procedure**

**NOTE**

*All dump trailers and bodies must be operated ONLY by fully trained and qualified, professional drivers. All dump trailer owners and their drivers must read paragraph 1-7, Tip-over Conditions, and be fully aware of all tip-over conditions.*

1. Pull or back the trailer to the dump site.
2. Before dumping, exit the cab and inspect the site and the dump equipment. Be assured of the following:
   - There are no high or gusting winds.
   - The ground is firm and level.
   - There are no electrical wires in the immediate area.
   - The area around the trailer is clear of personnel and equipment.
   - The tires are properly inflated all-around.
   - There are no broken or sagging suspension springs.
   - The payload is evenly distributed from side to side.
   - On fifth wheel rigs, all wheels must be in line, Figure 1-7.

![Correct Wheel Alignment](image)

**Figure 1-7. Wheel Alignment for Dumping**

---

**3-11 BRAKES**

A schedule for the periodic cleaning, inspection, adjustment, and lubrication of all trailer brake components should be established based on trailer operating hours.

The following checks should be performed and all damaged or worn parts replaced as needed. See Figure 3-5.

![Brake Component Diagram](image)

**Figure 3-5. Checking Brake Components**

1. Check the anchor pins for wear or misalignment. Check the brake shoes for wear at the anchor pin holes.
2. Check the cam shafts and cam shaft bearings (bushings) for wear.
3. Inspect the brake shoe linings for oil saturation, wear, loose rivets, and loose bolts. Return springs should be replaced whenever the brake linings are replaced.
4. Check the brake drum for cracks, scoring, or other damage.
Manual Slack Adjusters

NOTE

The wheel bearings should be checked for proper adjustment before attempting to adjust the slack adjusters.

The brakes should always be adjusted with the wheels off the surface. This is the only way to be assured the brake is in adjustment and the wheel is "free running."

Adjust the slack adjusters according to the following procedure.

1. Turn the adjusting nut until the brake lining touches the drum.

2. Turn Back off the adjusting nut until the brake lining just clears the drum.

3. Manually rotate the wheel to check for clearance between the drum and lining.

4. To adjust for lining wear, rotate the adjusting nut 1/4 turn clockwise. Each 1/4 turn causes the brake lining to move outward 0.0025 inch (0.06 mm).

1-6 UNLOADING

Safety Overview

Stockpiling (dumping the load in a pile) is the most common method for unloading materials from a dump trailer. When stockpiling, a solid, level dump site is required to minimize the risk of tip-over.

Before unloading into a hopper, remove excess spillage to maintain a level and uncluttered dumping surface.

The common practice of dumping asphalt into a paving machine hopper while on the go presents serious hazards to the dump operator:

- Overhead obstructions can cause a collision with the raised dump body.
- Overhead electrical wires can come in contact with the raised dump body.
- Soft or uneven shoulders on the roadside can cause a tip-over.
- Changes in the crown or slope of the road can cause the raised dump body to lean.

WARNING

ELECTRICAL SHOCK. Will cause severe injury or death.

Aluminum or steel dump body will conduct electricity. Check for overhead clearance and power lines before raising dump body.

Moving a dump trailer with the dump body elevated is unsafe. Lower the dump body before moving a dump trailer for any reason.

TIP-OVER HAZARD. Can cause injury or death.

Do not keep a "hung load" elevated. Fully lower the dump body before trying to dislodge any material that is hanging up in the truck bed. Keep all persons away from trailer while dumping.

SWINGING GATE. Can cause injury or death.

A failed gate winder, hinge, hinge pin, or spreader chain may allow the tailgate to swing and/or the load to dump quickly.
CAUTION

Overloading the dump body can apply excessive torque to the PTO output shaft and may pit or break gear teeth, destroy bearings, or fracture the housing. The PTO may fail immediately or over an extended period of time.

See Figure 1-6. The operator should always check the load placement. If necessary, redistribute the load to obtain a reasonably level load from side to side.

![Incorrect and Correct Loading](image)

Figure 1-6. Incorrect and Correct Loading

Loads with high centers of gravity require special safety precautions. A high center of gravity has a larger torque lever action. In turns, the larger torque lever action works to tip the load. In sudden stops, the torque lever pushes forward, and may overload the frame or truck tires. Hazard awareness and lower operating speeds will best compensate for a high center of gravity load.

Tarping is mandatory for dump trailers in many states. Tarping is recommended any time the load is near the top of the dump body. Proper tarping helps prevent material loss and damage to other vehicles on the roadway.

Loads hauled in a dump trailer can have many different characteristics. The following preparations are recommended for hauling various materials in a dump body:

- When hauling bricks, cement slabs, and rip rap, the body should have a cushioned floor and side walls to absorb impacts.
- Abrasive materials will wear away trailer floors. If extensive hauling of abrasive materials is anticipated, a cushioned floor is recommended.
- Sludge requires a water tight tailgate to contain the liquid.
- When hauling wet materials in freezing weather, the interior surfaces should be treated with a solution to prevent the material from freezing to the body.

Automatic Slack Adjusters

On installation, automatic slack adjusters must be manually adjusted as follows:

1. **Rotate the adjusting nut until the lining contacts the drum surface, Figure 3-6.**

   ![Slack Adjuster Diagram](image)

   Figure 3-6. Slack Adjusters

2. **Turn the adjusting nut in the opposite direction 1/2 turn.**

3. **Measure the distance from the clevis to the bottom of the chamber.**

4. **Use a pry bar to move the slack adjuster until the linings are against the drum. The difference between this measurement and the measurement in step 4 is the "free stroke."**

5. **Adjust the brake until the "free stroke" value is between 5/8 and 3/4 inch.**

6. **To check the adjustment, apply and hold braking pressure. With the brake pressure at 85 psi, measure the distance from the clevis to the bottom of the chamber.**

7. **The difference between this measurement and the measurement in step 4 is the chamber stroke. Adjust the brake as required to get the correct chamber stroke length (less than 2 inches).**
3-12 WHEEL HUBS AND SEALS

During any wheel hub maintenance activity, check the hub bore and spindle for burrs or other damage. The entire wheel cavity should be thoroughly cleaned.

NOTE

East Manufacturing Corporation trailers manufactured after July, 1999, may be equipped with preset hubs. Preset hubs have a solid (windowless) hub cap. Preset hubs should not require maintenance. If damaged, replace the wheel hub according to the original equipment manufacturer's instructions.

Wheel Bearing Lubrication and Check

It is recommended that the wheel bearing lubricant be checked for contamination every 50,000 miles or once a year. If foreign material is found in the lubricating oil, the bearings must be checked for wear or damage.

The bearing adjustment should be periodically checked with a dial indicator or with a pry bar under the wheel or tire. The end play should be within the range of 0.001 to 0.008 inch. If the bearings are found to be out of adjustment, they should be inspected for wear or damage.

Use the following procedure to check and lubricate the wheel bearings:

1. Remove the wheel assembly and bearing cones from the spindle.
2. Clean all old lubricants from the wheel hub, bearings, and hub caps. Use a commercial degreaser and a stiff nylon brush.
3. Wipe all cleaned parts and surfaces dry with clean, lint-free cleaning cloths.

NOTE

For trailers with drop legs, you can back the tractor onto wooden planks to raise the trailer to the desired height for pinning the drop legs.

CAUTION

Disengage the coupler hooks before raising the dump body.

Incorrect use of the fifth wheel coupler hooks will damage the draft arms.

To uncouple a set of Michigan Train trailers, use the following steps to uncouple the rear trailer, then repeat the same steps to uncouple the front trailer. Prior to uncoupling, the rear trailer dolly should be locked in line.

4. Disconnect electrical connectors, hydraulic lines, and air lines at the bulkhead.
5. Pull and lock the fifth wheel release handle, Figure 1-3
6. Enter the cab and slowly move the tractor forward until clear of the trailer.

1-5 LOADING

The safest loading method is by hopper discharge, since the material flow into the dump body is steady. With slow movement of the vehicle, the load can be evenly distributed in the dump body. The most common method of loading a dump trailer is with a front end loader. Front-end loading has some disadvantages:

- The loader operator often cannot see inside the dump body and may load more of the material to one side or the other. Uneven loading can contribute to a roll-over on the highway or a tip-over during dumping operations.
- Front end loader buckets and lift arms often damage the trailer sideboards and top rail.
1-4 UNCOUPLING

1. Set the trailer parking brakes and place chocks in front of the trailer wheels.

   NOTE
   Though automatic parking brakes are required by DOT, the continued use of chocks is recommended for operator safety.

2. Exit the cab and lower the support legs. Place the crank in high gear, Figure 1-5, and turn the handle clockwise until the support legs contact the ground.

   Figure 1-5. Lowering Support Legs

3. Place the crank in low gear and crank the handle several turns to transfer the trailer weight to the support legs.

Wheel Hub, Bearings, and Seal Installation
(for vehicles without preset hubs)

Install a wheel hub, bearings, and seal assembly according to the following procedure.

1. Apply a thin layer of RTV sealant to the seal seating surface of the spindle.

2. Place the seal assembly on the spindle with the words "oil-bearing side" facing out.

3. Place the recommended seal seating tool over the spindle. Drive the seal assembly onto the spindle until it seats against the spindle shoulder.

4. Rotate the seating tool and tap it several times to fully seat the seal.

5. Wipe away all excess sealant.

6. Lubricate the inner bearing and place it on the spindle. No additional lubrication is required on the outer diameter of the wheel seal or in the hub. The wheel seals are lubricated at the factory.

7. Using a wheel dolly, carefully slide the wheel onto the spindle until it contacts the seal.

8. Dip the outer bearing in lubricating oil and slide it over the spindle and into the bearing cup.

9. Install the inner nut and tighten it to 50 foot pounds to load the bearings. Rotate the hub several turns.

10. Loosen the inner lock nut and retighten it in accordance with the bearing manufacturer's specifications.

11. Install the tabbed lock washer, seating the inner tab in the spindle square key slot.

12. Install and tighten the outer lock nut.

13. Install a hex nut in the face of the tabbed lock washer to keep the outer lock nut from turning.


15. Fill the hub cavity to the proper oil level.
3-13 SPOKE WHEELS

Torque

⚠️ CAUTION ⚠️
Do not overtighten the rim nuts. The recommended torque value is 200 to 250 foot pounds for 3/4 inch diameter wheel studs.

Check the rim nut torque values.

Runout

Check the wheel runout by placing a solid object near the wheel and rotating the wheel. If the runout exceeds 1/16 inch for the front wheels or 1/8 inch for the rear wheels, adjust the runout as follows:

1. Loosen the rim nuts on the side of the wheel having the greatest deviation and tighten the rim nuts on the opposite side.
2. Rotate the wheel and recheck the runout condition.
3. When the runout is within limits, tighten all the rim nuts to the manufacturer's recommended torque.

Rim Slippage

Check for rim slippage. If rim slippage has occurred, an under torque or over torque condition may have caused the problem. Since it is difficult to determine the extent of damage caused by an incorrect torquing procedure, the rim spacer should be replaced.

When replacing the rim spacer, check the mounting surfaces for excessive wear. If excessive wear exists, it may be necessary to replace the wheel. Examine the tires for (1) improper inflation, (2) unusual wear patterns indicating misalignment problems, and (3) for general wear conditions.

NOTE
For trailers with drop legs, you may have to back the rear tractor wheels onto wooden planks or similar shoring in order to pin the drop legs at the best height for coupling and uncoupling.

5. Exit the cab and attach air, hydraulics, and electrical connectors at the bulkhead.
6. Make sure the kingpin is locked in the fifth wheel coupler jaws and that the fifth wheel release handle is not pulled.
7. Enter the cab and charge the trailer brakes with air. To check the coupling, try to power the tractor/trailer forward and back. The brakes should stop motion in either direction.

⚠️ CAUTION ⚠️
After raising the support legs, fold and secure the crank handle. Leave the crank in low gear. If the gearbox is in neutral, or the handle is not properly secured, the support legs could drop during travel and cause serious damage to the vehicle.

8. Exit the cab, push the crank handle in to engage low gear, and raise the support legs, Figure 1-4. Stow the crank handle.
9. Prior to road travel, perform the pre-trip inspection in paragraph 1-2.

Figure 1-4. Raising the Support Legs
1-3 COUPLING

1. Prior to coupling the tractor to the dump trailer, chock the rear trailer tires.

2. Line up the fifth wheel of the tractor with the trailer kingpin.

3. Exit the cab and check the height of the fifth wheel, Figure 1-3. Verify that the nose of the trailer will make first contact with the fifth wheel just back of the fifth wheel center line. Adjust the landing gear to achieve the correct trailer height.

4. Back the tractor until the fifth wheel coupler jaws engage the kingpin. When the kingpin is engaged, pull the vehicle forward to check for a positive hookup.

---

3-14 DISC WHEELS

**WARNING**

Disc wheel failures can be hazardous. DO NOT weld aluminum wheels for any reason.

Do not use two piece cone lock nuts to mount wheels machined for use with ball seat cap nuts. Wheels machined to accept ball seat cap nuts will not have enough surface area to properly support a cone lock nut. Loss of torque, broken wheel studs, and cracked wheels may result from this mismatched component assembly.

DO NOT heat aluminum wheels to soften them for straightening or to repair damage from impacts or other causes. Heating the wheel will weaken the aluminum alloy structure.

**CAUTION**

Make sure all wheel cap nuts are properly tightened to the recommended dry torque (400 to 500 foot pounds). Cap nut torque should be checked regularly and often.

Do not apply lubricants to the cap nut seats or to the wheel. Cap nut seating surfaces must be clean and free of all lubricants and residue.

Whenever tires are changed, the condition of the cap nuts and studs should be checked. If the cap nuts require frequent tightening, or if the wheel studs break frequently, the wheel assembly and mounting practices should be reviewed to eliminate inappropriate service procedures.
1-2 PRE-TRIP INSPECTION

WARNING

OPERATING HAZARDS. Can cause injury or death.

East dump trailers and dump bodies must be operated ONLY by properly trained and qualified professional drivers. Operation by untrained or inexperienced persons could result in serious injury, death, or damage to the equipment.

Driver pre-trip inspections must be made before the first trip of the day and should be made before each trip during the day. Each pre-trip inspection should include the following equipment checks. See Figure 1-2.

![Pre-Trip Checkpoints Diagram](image)

Figure 1-2. Pre-Trip Checkpoints

4-1 HOIST PUMP/VALVE

- **Pump Makes Noises**
  - Insufficient oil supply
  - Air leaks at inlet fittings
  - Restricted or collapsed inlet hose
  - Plugged reservoir air vent
  - Oil too thick
  - Cavitation (air bubbles in oil)

- **Pump Overheating**
  - Insufficient oil supply
  - Loading with the PTO engaged
  - Internal leak due to wear
  - Oil too thick
  - Relief valve leaks

- **Internal Pump Leaks**
  - Worn drive shaft due to abrasives in the oil
  - Worn shaft seal
  - Blown or pinched gasket seal
  - Worn or damaged spool seal

- **Non Functioning Pump**
  - Insufficient oil supply
  - Blocked or collapsed suction line
  - Wrong (reversed) drive shaft rotation
  - Air leakage in the suction line prevents priming
  - Pump worn because of abrasive material in the oil

- **Low System Pressure**
  - Pump not operating
  - Relief valve set too low
  - Relief valve leakage

- **Failure to Hold Load**
  - Valve spool not in the neutral-hold position
  - Foreign material lodged in the holding check
  - Foreign material lodged in the relief valve seat
## 4-2 POWER TAKE-OFF UNIT

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rattles or Whines</td>
<td>Backlash should be from 0.006 in. to 0.012 in.</td>
</tr>
<tr>
<td>Clicking</td>
<td>Worn, nicked, or burred gear</td>
</tr>
<tr>
<td></td>
<td>Bearing damage due to improper installation</td>
</tr>
<tr>
<td>Grinding</td>
<td>Bearings contaminated with foreign materials</td>
</tr>
<tr>
<td>Noisy</td>
<td>Improper housing or gear for PTO needed</td>
</tr>
<tr>
<td></td>
<td>Drive line out of phase, at excess angle, bent, or worn</td>
</tr>
<tr>
<td>Overheating</td>
<td>PTO installed too tight; not enough backlash</td>
</tr>
<tr>
<td></td>
<td>Low transmission oil level</td>
</tr>
<tr>
<td></td>
<td>Prolonged stationary use</td>
</tr>
<tr>
<td></td>
<td>PTO near exhaust or other heat source</td>
</tr>
<tr>
<td>Vibration</td>
<td>PTO loose on transmission</td>
</tr>
<tr>
<td></td>
<td>PTO drive line out of phase, at excess angle, bent, or worn</td>
</tr>
<tr>
<td></td>
<td>Driven equipment loose</td>
</tr>
<tr>
<td>External Oil Leaks</td>
<td>Shaft seal</td>
</tr>
<tr>
<td></td>
<td>Dirt; high temperature seal damage (above 250°F)</td>
</tr>
<tr>
<td></td>
<td>A-series end cap gasket improperly aligned</td>
</tr>
<tr>
<td></td>
<td>Porous or cracked housing</td>
</tr>
<tr>
<td></td>
<td>Mating surface to transmission</td>
</tr>
<tr>
<td></td>
<td>Broken or worn gasket</td>
</tr>
<tr>
<td></td>
<td>6-bolt idler shaft with poor fit</td>
</tr>
<tr>
<td></td>
<td>O-ring not sealing on two gear, 8-bolt idler shaft</td>
</tr>
<tr>
<td></td>
<td>Copper washers needed for hardware of 6-bolt PTO</td>
</tr>
<tr>
<td></td>
<td>Lock washers needed on 8-bolt PTO (mounting holes through the transmission housing)</td>
</tr>
<tr>
<td></td>
<td>O-ring problem on shifter post</td>
</tr>
<tr>
<td>Hard Shifting</td>
<td>PTO mounted too tight</td>
</tr>
<tr>
<td></td>
<td>Tight bend in shifter cable</td>
</tr>
<tr>
<td></td>
<td>Gear in backwards</td>
</tr>
<tr>
<td></td>
<td>Loose fit on internal spline of sliding gear</td>
</tr>
<tr>
<td></td>
<td>Lever linkage design—small mechanical advantage</td>
</tr>
</tbody>
</table>

### 1-1 OVERVIEW

These operating procedures apply to all configurations of East Manufacturing Corporation dump equipment. Standard configurations of existing East dump equipment are shown in Figure 1-1. Each dump equipment configuration has different controls and components. Many of the operation and service instructions in this manual apply to all dump equipment configurations. When an instruction applies to a specific type of dump equipment, the equipment type is recognized at the start of the instruction.

Thoroughly read and understand the operation instructions that apply to your dump equipment configuration.
4-2 POWER TAKE-OFF UNIT (Cont)

Jumping Out of Gear
- Excessive torque on PTO gears
- Gear worn by shifting out while loaded
- Shifter poppet spring broken
- Shifter poppet hole elongated
- Shift rail poppet notch worn
- Spring or loose shift fork
- Air shift needs 70 to 140 psi for complete shift
- Cable or lever linkage not allowing full shift

4-3 LANDING GEARS (2-SPEED)

Hard Turning Operation
- Binding cross shaft; cross shaft bolts too tight
- Support leg tubes bent or damaged
- Legs misaligned—must be parallel
- Legs and/or gear box need lubrication
- Misaligned crankshaft/extension or holder connection
- Internal nut and screw mechanism damage due to dropping trailer onto support legs
- Binding of the through axle

4-4 BRAKE

Cracked-New
- Mishandling

Cracked-Used
- Heat checks progressing through drum section

Low Mileage-Wear
- Improper shoe contact

Heat Check-Light
- Normal condition

Heat Check-Heavy
- Unbalanced brake systems
- Dragging brakes
- Driver abuse

Fine Grooves
- Abrasive material or poor quality brake lining

Coincide with Riveted Holes
- Loose rivets, bolts, or debris in rivet holes

Along Edges of Lining
- Abrasive material collecting at edges of lining

Blue or Discolored Brake Surface
- Excessive heat from dragging brakes
## Troubleshooting

### 4-4 BRAKE (CONT)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Spotted or Hard Spots on Drum</td>
<td>High localized heating and cooling cycles</td>
</tr>
<tr>
<td>Drum Out-of-Round</td>
<td>Heat distortion</td>
</tr>
<tr>
<td>Balance</td>
<td>Balance weight missing, Drum balancing not specified</td>
</tr>
<tr>
<td>Variation in Diameter</td>
<td>Heat distortion</td>
</tr>
<tr>
<td>Eccentricity</td>
<td>Improper fit to pilot, Improper seating on wheel or hub</td>
</tr>
<tr>
<td>Excessive Wear</td>
<td>Abrasive material or poor quality lining</td>
</tr>
<tr>
<td>Grease Stained Drums</td>
<td>Leaking oil seal or improper lubrication procedures</td>
</tr>
<tr>
<td>Polished Drum Surface</td>
<td>Non asbestos lining—normal condition</td>
</tr>
<tr>
<td>Glazed Drum Surface</td>
<td>Improperly cured brake lining</td>
</tr>
<tr>
<td>Fade or Diminished Braking</td>
<td>High system temperature due to excessive braking, improper adjustment, or inferior lining</td>
</tr>
<tr>
<td>Noise, Chatter, or Pulsating</td>
<td>Heat spotted drums, grease stained drum, or loose brake drum components</td>
</tr>
</tbody>
</table>

### 4-5 SPOKE WHEELS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven Tire Wear</td>
<td>Misaligned axles, Improper tire alignment, Loose bearing adjustment, Loose or worn suspension bushings, Low tire pressure</td>
</tr>
<tr>
<td>Broken Back Flange</td>
<td>Improper rim clamp overload, Over or under torque rim clamp nut</td>
</tr>
</tbody>
</table>

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4-6 RIMS

Rim Slippage
Improper rim clamp torque
Collapsed rim spacer
Incorrect rim space width and/or incorrect rim clamps

4-7 TEN STUD HUB

Broken Studs
Loose cap nut
Overtightening

Stripped Threads on Studs or Cap Nut
Excess torque

Damaged Inner or Outer Cap Nut
Loose wheel assembly

4-1 Hoist Pump/Valve
4-2 Power Take-Off Unit
4-3 Landing Gears (2-speed)
4-4 Brake
4-5 Spoke Wheels
4-6 Rims
4-7 Ten Stud Hub
NHTSA INFORMATION

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), in addition to notifying East Manufacturing Corporation.

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20506. You can also obtain other information about motor vehicle safety from the Hotline.
The following instructions provide a general description of the proper procedures which must be considered before starting operations with any of East Manufacturing Corporation’s dump equipment.

Although the information in this manual was current on the date of issue, East Manufacturing Corporation reserves the right to effect changes as the need occurs without notice or liability.
How to Use This Manual

This manual provides operating and service instructions that apply to all models and configurations of East Manufacturing Corporation dump equipment. All personnel that own, operate, or service East dump equipment are advised to read and understand the instructions in this manual. Supporting equipment and components are provided to aid in the understanding of the information presented. The equipment and component views may not show the exact equipment or components used on your dump trailer. Disregard all instructions and procedures that do not apply to your equipment. Follow all instructions that do apply to your equipment, even if the exact equipment shown is different.

Important safety advisories including warnings, cautions, and notes are indicated as follows:

⚠️ WARNING

A WARNING indicates an instruction that must be followed exactly. Personal injury or death may occur if the warning statements are not followed.

⚠️ CAUTION

A CAUTION indicates an instruction that must be followed exactly. Equipment damage may occur if the caution statements are not followed.

NOTE

A NOTE indicates information that may be important to the user of this manual. (For example, some maintenance procedures require the use of special tools. Failure to use the special tools could require additional time to perform the task.)

FOR ALL MAINTENANCE REQUIREMENTS, USE ONLY GENUINE EAST MANUFACTURING PARTS.
Warranty and Limitation of Liability

East Manufacturing Corporation warrants each new trailer or body manufactured (hereinafter referred to as the equipment) by us to be free from defects in materials and workmanship, provided that the equipment warranted hereunder is operated by the purchaser in accordance with generally approved practices, with loads not exceeding the manufacturer's rated capacity and with loads that are not abrasive or corrosive in nature.

BODY and FRAME parts of the equipment found to be defective within the warranty period shall be repaired or replaced (at East's sole option), as set forth below, at East's factory location or authorized service facility provided, however, the purchaser notifies East or an authorized distributor as soon as any defect becomes apparent. The period of the warranty is for five years from the date of delivery of the equipment, and East shall bear that portion of the cost of repairing or replacing defective parts of the equipment on the following basis:

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All warranties, if any, extended to East by the makers and suppliers of component parts, accessories or other goods included in the manufacture of East's equipment will be assigned, if contractually permitted, to the purchaser. Specific component warranty details will be provided to the purchaser upon request. Tire warranties are expressly excluded from East's warranty herein.

This warranty does not expand, enlarge upon, or alter in any way, the warranties provided by the manufacturers and suppliers of component parts and accessories.

The purchaser agrees to return the defective equipment or parts to East's factory location or authorized service facility, freight prepaid, within fifteen days after the defective condition is discovered.

This warranty also excludes the following: normal wear, tear, and deterioration of the equipment; maintenance items including, but not limited to, light bulbs, paint, brake lining, oil seals and bearings; used equipment sold "as is"; equipment that has been repaired, replaced or altered by someone other than East or one of its authorized service facilities unless, however, East in its sole opinion determines that the defective condition of the equipment was in no way caused or was attributable to said repairs, replacements or alterations.

EAST AND THE PURCHASER AGREE THAT IN CONSIDERATION OF THE ABOVE EXPRESSED WARRANTY, ALL OTHER WARRANTIES OTHER THAN TITLE, EITHER EXPRESSED OR IMPLIED, WHETHER ARISING UNDER LAW OR EQUITY INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED FROM THIS CONTRACT; FURTHER, THE FOREGOING WARRANTY IS MADE SOLELY TO THE FIRST PURCHASER FROM EAST OR FROM AN AUTHORIZED DISTRIBUTOR.

The sole liability of East and the exclusive remedy of the purchaser arising out of the manufacture, sale or use of the equipment provided hereunder, on warranties or otherwise, shall be limited to the cost of repair or replacement of defective parts as herein specified. Further, East's maximum liability hereunder arising from any cause whatsoever, including but not limited to, breach of contract or tort (including negligence), shall not exceed the contract price of the equipment furnished hereunder. Further, East shall not be responsible for work done, equipment or parts furnished or parts or repairs made by others unless the work is specifically ordered by East or an authorized distributor for the fulfillment of this warranty. In no event shall East be liable for removing defective parts or for reinstalling said parts when repaired or replaced by anyone other than East or an authorized service facility or for any costs incurred with such removal or reinstallation.

CONSEQUENTIAL DAMAGES

Notwithstanding any other provision of this agreement, in no event shall East be liable, whether arising under contract, tort (including negligence) or otherwise, for loss of anticipated profits, damage to loads or contents of the equipment, transportation expenses due to repairs, nonoperation or increased expense of operation cost of purchased or replacement equipment, claim of customers, cost of money, loss of use of capital or revenue, or for any special incidental or consequential loss or damage of any nature arising at any time or from any cause whatsoever.