

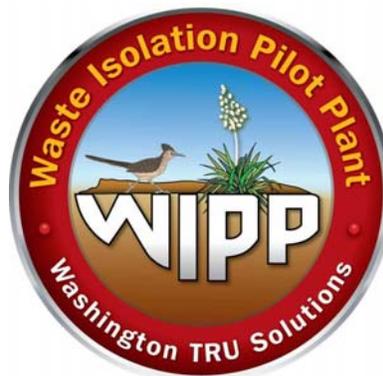
WP 08-PT.04
Revision 5

CH Packaging Trailer Operation and Maintenance Manual

Official Use Only

Cognizant Section: Packaging

Approved by: Todd Sellmer



CH Packaging Trailer Operation and Maintenance Manual
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1.0 INTRODUCTION

The Transuranic Package Transporter Fleet Air Ride Trailers (trailer) were built to carry up to three contact-handled (CH) packagings. The shipments between various U.S. Department of Energy (DOE) sites are within the 48 contiguous states.

This document is intended to provide guidance for operators of the CH Packaging Trailers and associated components. With the exception of Section 3.2, Loading the Trailer, this document pertains to the trucking contractors (Cast and Tri-State Motor Transit Co.) in its entirety. Sections pertaining to the general operation of the trailer, trailer loading, moving and parking, and tiedown assemblies are intended as guidance for waste handling operations (WHO). Individual operating procedures used by WHO may be used in place of this document, as long as the intent and requirements of this document are met, and providing that the Trailer Cognizant Engineer has approval over the trailer loading procedure for the Waste Isolation Pilot Plant (WIPP).

1.1 Description

The tractor/trailer combination (including CH Packages and payload) is designed to meet existing state and/or federal requirements. These requirements cover the length, width, and/or weight of the tractor/trailer combination. Also, the trailer has been designed to meet U.S. Department of Transportation (DOT) requirements in effect at the time of fabrication for over-the-road trailers.

The trailer has a full-size spare tire and wheel, spare tire holder, and tire changing tools. These are mounted over the gooseneck. Major components of the trailer include these items:

- Chassis
- Tiedown assembly
- Axles and suspension
- Tires and wheels
- Brake system
- Lights
- Landing gear
- Special tools and equipment

These components are briefly described in the following subsections.

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1.2 Trailer Chassis

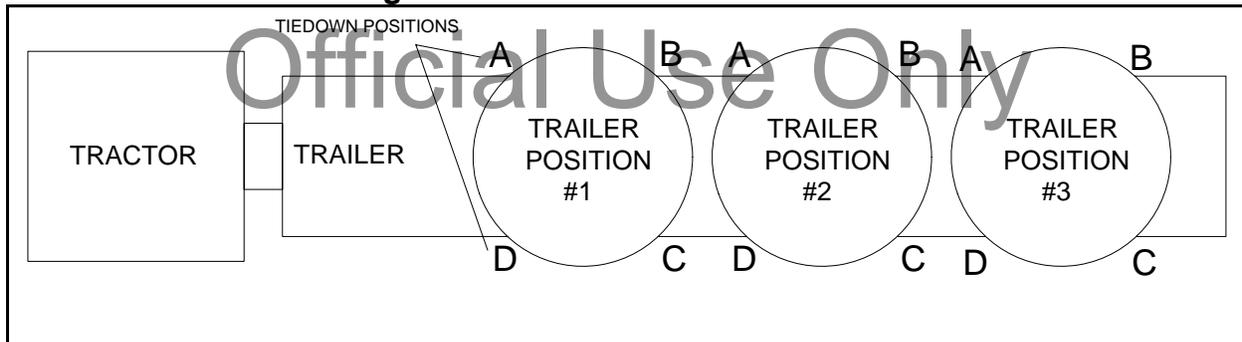
The trailer chassis is a specially equipped, drop-frame trailer design. The chassis can carry up to three CH Packages. The dual axle chassis is designed to support up to three packages under static and dynamic transportation loads for normal highway travel. The chassis gooseneck has a standard 2-in. diameter kingpin set 18-in. from the trailer front sill. The gooseneck design allows an 88-in. minimum tractor swing clearance.

Placard holders are installed on each rail side and on the front and rear sills. The placard assemblies have the identification symbols required by the DOT for transporting the CH Packages.

1.3 Tiedown Assemblies

The CH Packages are secured to the trailer by four tiedown assemblies per container. The physical location of the tiedowns on the trailer chassis is shown in Figure 1, Trailer Tiedown Locations. Subsections 8.2 through 8.4 give procedures for assembly/maintenance of the tiedowns.

Figure 1. Trailer Tiedown Locations



1.4 Axles and Suspension

The trailer has two axles. Each axle has a 77 ½-in. track, oil seals, motor wheel outboard centrifuge brake drums, 10-stud outboard cast steel hubs, and automatic slack adjusters.

The axles are mounted to the chassis using the suspension manufacturer's procedures. The air suspension uses air supplied by the tractor/trailer air system. This pressurizes a separate reservoir for the air springs. An air control system adjusts the ride height and the air pressure needed for varying loads. This suspension provides a cushioned ride throughout the range of loads and an excellent side-to-side and axle-to-axle load equalization.

1.5 Tires and Wheels

The trailer has nine 22.5 x 8.25-15° drop-center aluminum wheels (eight mounted plus one spare) fitted with 255/70 R 22.5 tires. Standard 20 x 1572 (RH) wheel studs and standard outer lug nuts are used to mount the dual wheels. A hubodometer is installed on the curb side front axle.

1.6 Brake System

Spring brake air chambers operate the brakes. A two-line air system mechanically actuates the brakes. The braking system has an emergency relay valve. It also is fitted with reservoir hoses and standard color-coded "glad-hand" air hose couplings. The brake shoes have non-asbestos linings.

The trailer has an antilock braking system (ABS). The ABS works with the standard braking system. The ABS is an electronic, self-monitoring system that monitors and controls wheel speed during braking.

1.7 Lights

Each trailer's lights meet or exceed the requirements of state and federal regulations.

1.8 Landing Gear

Two manually actuated (crank handle), synchronized landing gear supports with standard sand shoes are under the trailer chassis. The landing gear is about 12-in. above the ground during transportation and has about 16-in. of travel. The landing gear can support the trailer for long periods while fully loaded.

The landing gear has two speeds of operation, low and high. The low speed is used for raising and lowering under heavy loads; the high speed is used for raising and lowering the landing gear under lighter loads.

1.9 Special Tools and Equipment

The basic trailer operates without special equipment or tools. However, one special tool, a Go/No-Go gauge (feeler gauge), is needed to verify that the trailer tiedown assemblies are exerting the correct preload on the packaging. The Go/No-Go gauge checks the gap between the compression plate and compression block on Cam Handle Tiedowns (see Figure 2), and between the compression plate and the top block on Screw Jack Tiedowns (see Figure 3). Refer to Subsection 3.4 for instructions on tiedown assembly gap setting.

For tool storage, a tool box has been installed on the trailer. The box is supplied with the following:

- Lug wrench with handle

- Hydraulic jack with handle (12-Ton)
- ¾-in. 6-point socket and ratchet, ½-in. drive
- ½-in. drive extension, 5 ½-in. long
- ¾-in. open end wrench
- 7/8-in. open end wrench
- Go/No-Go gauge
- Cam Handle operating bar
- Spare tiedown assembly
- Tape measure (indication only - not calibrated)
- Nickel bearing lubricant
- Multipurpose dry lubricant
- Low-chloride solvent

2.0 REFERENCES

- Title 49 *Code of Federal Regulations* (CFR) Part 392, "Driving of Commercial Vehicles"
- 49 CFR Part 396, "Inspection, Repair, and Maintenance"
- WTS Drawing No. 162-L-001-W2, TRUPACT-II Fleet Spread Axle Trailer Assembly
- WTS Drawing No. 162-L-001-W3, TRUPACT-II Fleet Spread Axle Trailer Frame and Structure
- WTS Drawing No. 162-L-002-W Series, TRUPACT-II Fleet Spread Axle Trailer Tie-Down Assembly
- WTS Drawing No. 162-L-005-W Series, CH Packaging Trailer Screw Jack Tie-Down Assembly

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3.0 GENERAL OPERATION

This manual addresses only the operation and maintenance of the trailer.

3.1 Pre-Trip Checks

WARNING

Failure to allow the system pressure to stabilize before moving the trailer can damage the trailer air suspension system, brake system, and tire treads.

Preoperational checks shall be performed by the carrier/driver (49 CFR §392.7, "Equipment, Inspection and Use," and 49 CFR §396.13, "Driver Inspection").^{1, 2}

Before using the trailer, the carrier/driver shall perform the basic driver vehicle inspection checks to include a review of the prior Post-Trip Inspection Report (49 CFR §396.11, "Driver Vehicle Inspection Reports").³ Also, operators shall perform the manufacturer's recommended equipment checks on brakes, lights and reflectors, suspension, landing gear, bearing lubrication levels, tires and wheels, and coupling devices. Operators shall correct any signs of low oil level, excessive wear, damage, and/or malfunction before using the unit. Also, the user shall perform a before-use visual inspection of structural members of the chassis, kingpin and tiedown attachment points for signs of weld cracks, corroded metal, deflections, deformations, or other unusual conditions. The user shall also inspect the joints between the primary and secondary structural members. The user shall report any deficiencies to the WIPP Transportation Scheduler before using the trailer.

Prior to moving the trailer, the user shall allow sufficient time (approximately two minutes) for the air pressure to stabilize after attaching the tractor air supply to the trailer. The air system should be fully charged and the air suspension fully inflated before picking up the trailer with a hydraulic fifth wheel, or cranking up the landing gear.

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3.2 Loading the Trailer

NOTE

When loading CH Packagings onto the trailer, accurate placement of the packagings is important for proper tiedown operation. Improper packaging placement can result in movement of the packaging and loss of the required tiedown tension. When loading packaging onto a trailer, the forklift operator is required to use a spotter at all times. Packagings should be placed on the trailer so the packaging lugs are aligned with tiedown brackets on the trailer. The packaging should be adjusted such that, when installed, the tiedown bolt(s) are perpendicular to the top face of the trailer tiedown brackets (e.g., the deviation from perpendicular over the length of the tiedown bolt[s] in any direction should not exceed ¼-in.).

Before loading the CH Packages onto the trailer, determine and record the gross weight of each package. This data is needed for the loading arrangement process. The trailer is built to carry up to three CH Packages with a maximum gross unit package weight of 19,250 lb. The total weight of the tractor, trailer, and payload cannot exceed 80,000 lb. If the total weight of the tractor, trailer and payload is greater or equal to 77,500 lb, the shipment should be scaled to ensure that the 20,000 lb trailer axle weight limitation and 80,000 lb gross weight limitation are not exceeded. When loading CH Packages on a trailer, the options shown in Table 3.2, CH Package Trailer Loading Sequence, may be used.

When loading packages on trailer, or loading payload into packaging that is already on the trailer, the following apply:

- Packages having a gross weight difference (heaviest to lightest) of 1,000 lb or less can be considered equal and do not require a specific sequence for positioning on the trailer.
- Packages having a gross weight difference (heaviest to lightest), greater than 1,000 lb shall be positioned on the trailer as follows:

Table 3.2 CH Package Trailer Loading Sequence				
<i>TRAILER FRONT</i>	1. Heaviest	Medium	Lightest	<i>TRAILER REAR</i>
	2. Heaviest	Lightest	None	
	3. Heaviest	None	None	

3.3 Tiedown Types

There are two tiedown types: a screw jack tiedown and a cam handle tiedown. The different tiedown types are illustrated in Figure 2, Cam Handle Tiedown, and Figure 3, Screw Jack Tiedown. Each type has different operating instructions. The separate operating instructions are contained in Sections 4.0 and 5.0.

3.4 Go/No-Go Gauge Procedures

Go/No-Go gauges are used to check the gap between the compression plate and the compression block on Cam Handle Tiedowns (see Figure 2), and between the compression plate and the top block on Screw Jack Tiedowns (see Figure 3). When the tiedown is properly tensioned, the thin end of the gauge (0.07-in. thick) will slide between the compression plate and the compression block (cam handle) or top block (Screw Jack), as applicable, whereas the thick end (0.10-in. thick) will not. This verifies that the gap is the required distance, between 0.07-in. and 0.10-in. Note that an additional check is required to verify that the space between Screw Jack Tiedowns top and bottom blocks is between 3-in. and 3 ¼-in. This check is described in Subsection 5.2.6.

All measurements shall be conducted with the trailer on level ground using an approved gauge. All measurements shall be taken between the hex bolts or u-bolt legs. To measure the gap between the compression plate and the compression block, insert the 0.07-in. end of the gauge between the compression plate and the compression block near the center of the tiedown. On a screw jack tiedown the gauge will need to be inserted on either side of the compression plate guide pin. The gauge should move freely inward until the 0.10-in. section of the gauge reaches the compression plate, where it should stop. Rotate the gauge 180 degrees and attempt to insert the 0.10-in. end of the gauge between the compression plate and compression block near the center of the tiedown. DO NOT apply force to the gauge. If the 0.10-in. portion of the gauge can enter the gap, the tiedown is not properly tensioned. Gauges that are worn shall not be used. The Go/No-Go gauge shall not be altered from the requirements of the referenced drawings in any manner.

4.0 CAM HANDLE Tiedown OPERATION

4.1 Cam Handle Tiedown Installation on Packaging

4.1.1 Raise the U-bolt and rotate it inward over the packaging tiedown lug.

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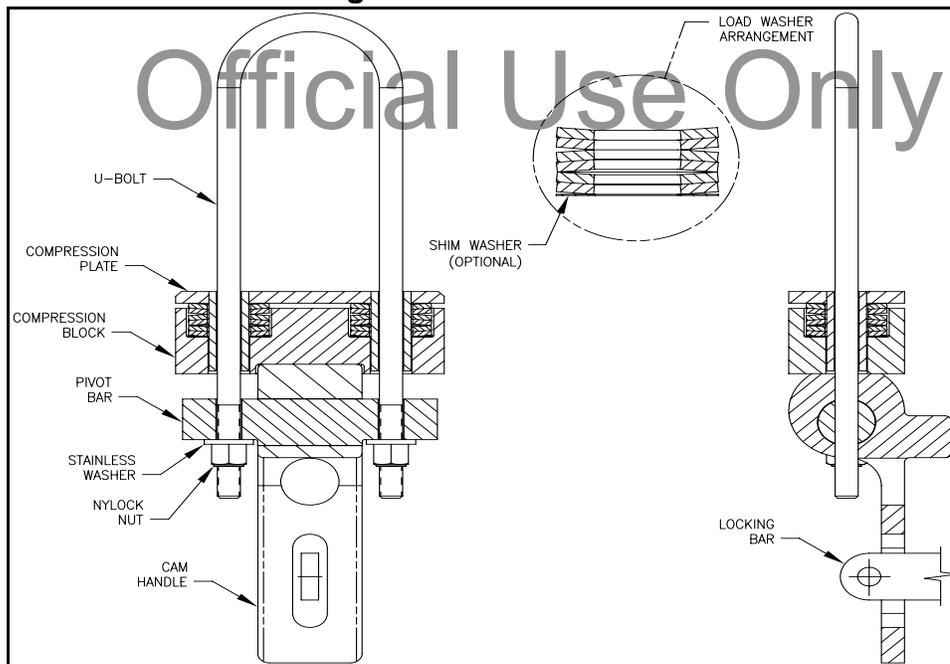
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NOTE

Installation of the spring pin, padlock, or other device used to secure the Cam Handle to the trailer locking tab, may take place at any point after performing Subsection 4.1.2.

- 4.1.2 Rotate the Cam Handle to the DOWN position.
- 4.1.3 Verify that the packaging is properly positioned on the trailer, with tiedown bolts perpendicular to trailer tiedown brackets.
- 4.1.4 Adjust position of the packaging if necessary.
- 4.1.5 Check the gap between the compression block and the compression plate using the Go/No-Go gauge (see Subsection 3.4).
- 4.1.6 Tighten the adjusting nuts until the gap is between 0.07-in. and 0.10-in. (the U-bolt thread pitch gives 0.077-in. per revolution).

Figure 2. Cam Handle



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- 4.1.7 If not already performed, install the spring pin, padlock, or other device to secure the Cam Handle to the trailer locking tab.

4.2 Cam Handle Tiedown Removal from Packaging

NOTE

Subsection 4.2.1 and 4.2.2 are interchangeable.

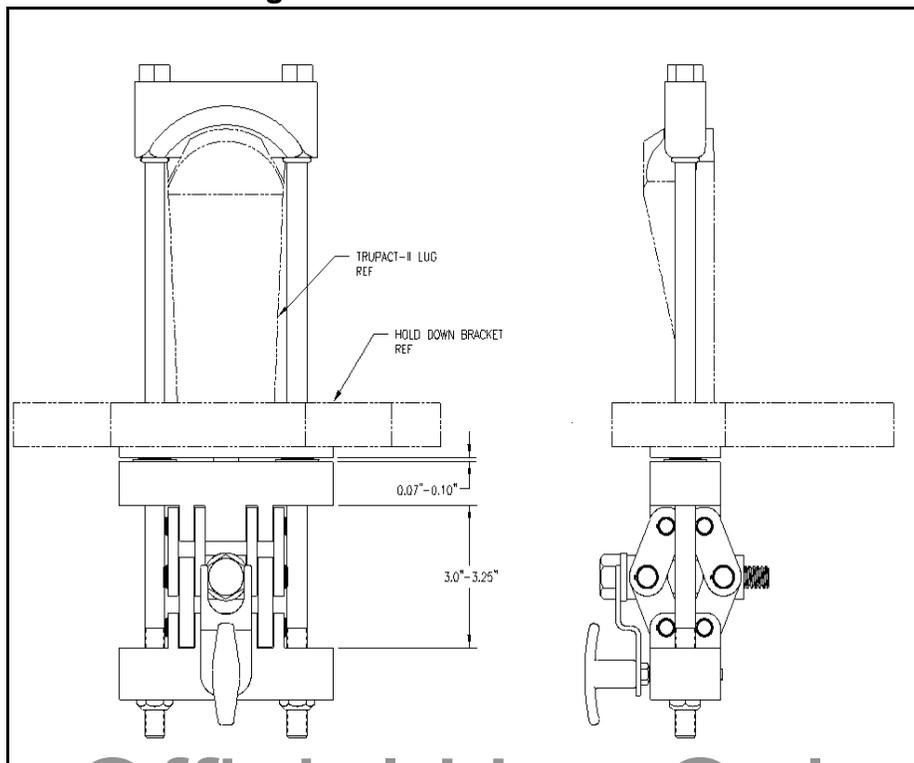
- 4.2.1 Remove the spring pin, padlock, or other device used to secure the Cam Handle to the trailer locking tab.
- 4.2.2 Loosen the adjusting nuts.
- 4.2.3 Rotate the Cam Handle to the UP position.
- 4.2.4 Raise the U-bolt and rotate it outward from over the packaging tiedown lug.

5.0 SCREW JACK Tiedown OPERATION

5.1 Screw Jack Tiedown Installation on Trailer

- 5.1.1 Loosen the ACME bolt to spread the front and back ACME bolt blocks apart.
- 5.1.2 Remove the two ½-in. Nylock™ lock nuts from the tiedown hex bolts.
- 5.1.3 Place the tiedown upright on a flat surface as shown in Figure 3.

Figure 3. Screw Jack Tiedown



- 5.1.4 Unscrew the tiedown hex bolts from the bottom block **AND** remove the top bracket and the tiedown hex bolts being careful not to lose the load washers.
- 5.1.5 Hold the tiedown assembly under the trailer tiedown plate with the lock handle assembly to the outside of the trailer and slide the hex bolts through the tiedown plate, compression plate, load washers, and top block.
- 5.1.6 Thread the bolts into the bottom block.
- 5.1.7 Verify both tiedown hex bolts have approximately the same amount of thread protruding through the bottom of the bottom block.
- 5.1.8 Install the Nylock™ nuts to lock the bolts in place.

5.2 Screw Jack Tiedown Installation on Packaging

- 5.2.1 Before installing the Screw Jack Tiedown on the packaging, perform the following:
- Ensure snap rings are in place on each end of each linkage pin.
 - Ensure parts move freely.

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- Clean parts as needed in accordance with Subsection 8.2.
- Lubricate moving parts as needed in accordance with Subsection 8.2.

WARNING

When tensioning Screw Jack Tiedowns: **Fingers and objects must be kept clear of the Screw Jack Tiedown linkage.** Parts should move freely. If binding of moving parts occurs, investigate the cause and correct. Tensioning the tiedown **MUST NOT** continue until the problem is corrected.

NOTE

Some variations exist in the flatness of packaging bottom surfaces, and the distance between the bottom of the packaging and the top of the tiedown lug. These instructions do not compensate for such variations, and some adjustments to the tiedowns may be necessary as different packagings are placed on different trailer positions.

-
- 5.2.2 Loosen the ACME bolt enough for the top bracket to clear the packaging tiedown lug.
- 5.2.3 Raise the top bracket and rotate it inward over the packaging tiedown lug. Be sure the curved part of the top bracket contact area is captured in the radiused groove of the packaging tiedown lug.
- 5.2.4 Adjust the ACME bolt until the distance between the top block and the bottom block is at least 3-in., but not more than 3 1/8-in. It may be necessary to adjust the hex bolts counter-clockwise to achieve this step. This sets the tiedown at the low end of the operating range. The ACME bolt now has full travel to compress the load washers. A tape measure or other uncalibrated measuring device may be used for this measurement.
- 5.2.5 Adjust the two hex bolts evenly until the top side of the compression plate begins to contact the bottom side of the trailer tiedown plate. Do not use the ACME bolt to eliminate gap between compression plate and trailer tiedown plate, as this will eliminate the travel required to compress the load washers. Do not use hex bolts to achieve Go/No-Go gap between compression plate and compression block.

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NOTE

The ACME bolt travels through a 7/8-in. long spacer designed to prevent the distance between the top and bottom blocks from exceeding 3 ¼-in. Tightening of the ACME bolt **MUST NOT** continue once the front and back blocks contact the ACME spacer.

- 5.2.6 Tighten the ACME bolt until space between top and bottom tiedown blocks is at least 3-in. **AND** not greater than 3 ¼-in. while the gap between the compression plate and the top block is between 0.07-in. and 0.10-in. (see Go/No-Go Gauge Procedures, Subsection 3.4).
-

NOTE

If adjustments to the tiedown hex bolts are necessary to achieve the tiedown dimensional requirements, it is recommended the pressure be released from the tiedown hex bolts by loosening the ACME bolt. To maintain equal loading on the top bracket, it is important that both of the tiedown hex bolts be adjusted equally.

The distance of travel between no load on the load washer assembly and full load on the load washer assembly is 0.144-in. (slightly more than 1/8-in.).

One and one-half turns of the tiedown hex bolts give slightly less than 1/8-in. of travel.

- 5.2.7 Ensure that the Nylock™ nuts are fully seated against the bottom block, and that each hex bolt has approximately the same number of threads protruding through the locknut. At a minimum, the bottom of the tiedown hex bolts must be flush with the bottom of the locknut to prevent inadvertent loosening of the locknut.
- 5.2.8 Adjust the ACME bolt so the flat sides of the head are vertical.
- 5.2.9 Pull the lock handle assembly and rotate it over the ACME bolt head. This step also applies to trailer positions without TRUPACT-IIs or HalfPACTs.

5.3 Screw Jack Tiedown Removal from Packaging

- 5.3.1 Pull the lock handle assembly and rotate it off the ACME bolt head.
- 5.3.2 Loosen the ACME bolt enough for the top bracket to clear the packaging tiedown lug.
- 5.3.3 Raise the top bracket and rotate it outward over the packaging tiedown lug.

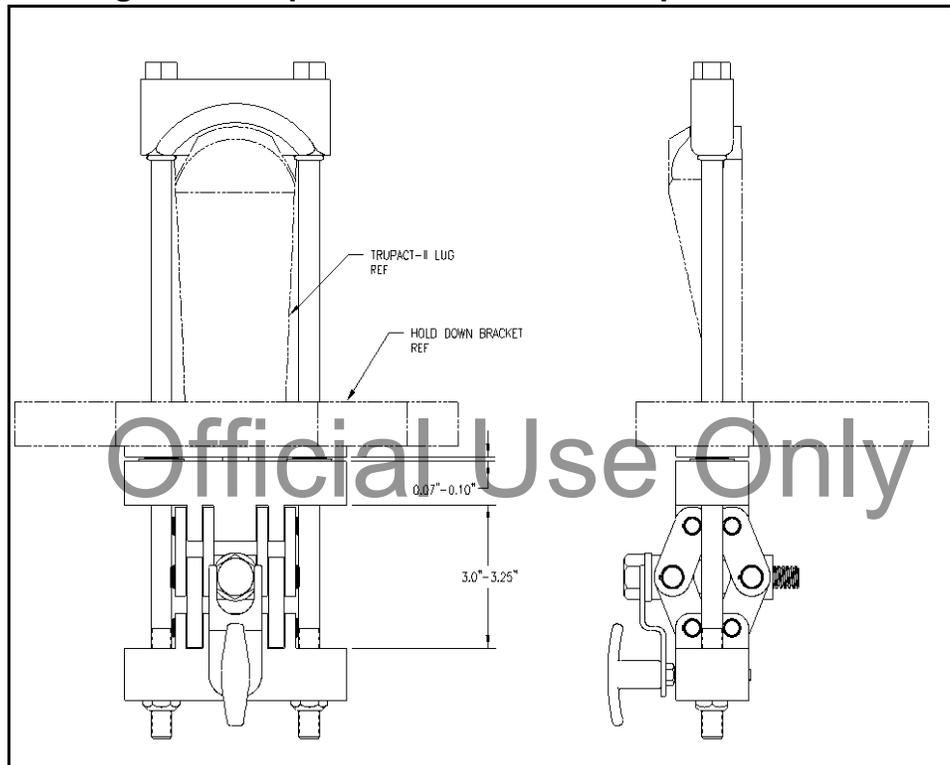
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- 5.3.4 Set the top bracket onto the trailer bracket below the package tiedown lug. Locate tiedown as far to outer side of trailer as possible to allow maximum access when placing packaging back on trailer.

6.0 OVER-THE-ROAD OPERATION

Operation of the combined tractor/trailer should be done with approved procedures for using over-the-road vehicles (49 CFR §396.7, "Unsafe Operations Forbidden").⁴

Figure 4. Required Dimension for Proper Installation



When TRUPACT-II packages are in place, the trailer has a high profile. Therefore, it should not be towed when load and road conditions might cause a rollover.

The trailer has an 88-in. gooseneck clearance. To get the best braking and handling capabilities of the tractor/trailer and reduce equipment damage, **DO NOT** operate the trailer with the fifth wheel positioned further than 12-in. forward of the centerline of the tandem axles.

7.0 POST-TRIP CHECKS

When the trailer is in use, the carrier/driver shall complete a post-trip inspection for the items discussed in Subsection 3.1 at the end of each day. Inspection and reporting shall be according to 49 CFR §396.11.³

8.0 PREVENTIVE MAINTENANCE

This section supplements the manufacturer's maintenance manuals but does not replace them. It describes the preventive maintenance that shall be done by a trucking contractor, a trailer service center, or automotive maintenance personnel. More information may be found in the service manuals for each component.

8.1 Chassis

The trailer chassis does not need routine maintenance. However, the frame shall be inspected for weld cracks, evidence of corrosion, and/or damage on a regular basis (Subsection 3.1 and Section 7.0). The user shall report any evidence of weld cracks or other abnormalities to the WIPP Transportation Scheduler before using the trailer. If areas on the chassis show signs of significant corrosion and/or paint chipping, these shall be re-primed and repainted.

Belting material ("Fabreeka" or approved equivalent) is to be tightly bound to the trailer chassis, and should show no signs of wear or separation. If the belting material shows signs of separation, it shall be reattached to the chassis with an approved rubberized contact cement. Belting material showing signs of excessive wear shall be replaced.

8.2 Tiedown Assemblies - General

Inspect and service the tiedowns for safe and reliable operation. If tiedown components need repair or replacement, verify the new parts have been approved by Washington TRU Solutions LLC (WTS) Quality Assurance before use. Perform the following as needed to service the tiedowns:

- Disassemble the unit.
- Inspect the parts visually.
- Remove foreign material. (Use a low chloride solvent.)
- Inspect the bolts visually for defects (i.e., cracks, plastic deformation).
- Replace damaged bolts.
- Lubricate tiedown assemblies as follows:
 - Cam Handle Tiedown - lubricate threaded areas of tiedown Cam Handles, directly above locknuts, with nickel bearing lubricant. **DO NOT** lubricate the stainless steel load washers.
 - Screw Jack Tiedown - lubricate all moving parts with multipurpose dry lubricant. **DO NOT** lubricate the stainless steel load washers.

8.3 Cam Handle Tiedown Assembly

Perform the following:

- 8.3.1 Position the compression block counterbore side up.
- 8.3.2 Install six disk springs in each counterbore in the sequence below (see Figure 2):
- 2 up
 - 2 down
 - 2 up
- 8.3.3 Install the compression plate spring guides through both stacks of the disk springs.
- 8.3.4 Place the pivot shaft into the Cam Handle.
- 8.3.5 Slide a U-bolt through the two slots in the trailer tiedown bracket assembly.
- 8.3.6 Place the compression block assembly over the U-bolt ends and into position.
- 8.3.7 Place the Cam Handle and pivot shaft assembly over the U-bolt ends. The pivot shaft flat surfaces should face **DOWN** and the square protrusion of the Cam Handle should face the bracket.
- 8.3.8 Slide a ½-in. diameter stainless steel washer on each U-bolt end.
- 8.3.9 Thread a Nylock™ nut onto each U-bolt end finger-tight.

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NOTE

The following steps are for adjusting the nominal gap between the compression plate and the compression block with no load on the tiedown. This exercise is intended to be performed by the carrier at the applicable trucking terminal, and not during transit.

- 8.3.10 Using a dial caliper or equivalent measuring device, measure the gap between the compression plate and the compression block. The nominal gap is 0.126-in. Verify gap is 0.126-in. \pm 0.010-in. If the gap is not within this tolerance, then it will be necessary to adjust the gap as described below:
- If the gap is between 0.116-in. and 0.136-in. (or greater than 0.136-in. due to inconsistencies in material tolerances from the manufacturer), no adjustment is necessary.
 - If the gap is between 0.100-in. and 0.115-in., disassemble the tiedown and install one 0.015-in. load washer shim to the bottom of each stack of disk springs in the compression block (see Figure 2) as needed to achieve the gap dimension of 0.126-in. \pm 0.010-in.
 - If the gap is between 0.086-in. and 0.099-in., install two 0.015-in. load washer shims to the bottom of each stack of disk springs in the compression block (see Figure 2) as needed to achieve the gap dimension of 0.126-in. \pm 0.010-in.

8.3.11 Reassemble tiedown and verify gap is 0.126-in. \pm 0.010-in.

8.4 Screw Jack Tiedown Assembly

Perform the following:

- 8.4.1 Place all six linkages on the **FRONT** block in the sequence below:
- Slide two $\frac{1}{4}$ -in. thick linkages onto the block (one on each side).
 - Slide two $\frac{3}{8}$ -in. thick linkages onto the block (one on each side).
 - Slide two $\frac{1}{4}$ -in. thick linkages onto the block (one on each side).
 - Attach retaining rings on each end of the block.

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- 8.4.2 Place all six linkages on the **BACK** block in the sequence below:
- Slide two ¼-in. thick linkages onto the block (one on each side).
 - Slide two ⅜-in. thick linkages onto the block (one on each side).
 - Slide two ¼-in. thick linkages onto the block (one on each side).
 - Attach retaining rings on each end of the block.
- 8.4.3 Place four ⅜-in. thick linkages into the bottom block.
- 8.4.4 Slide two ⅜-in. round linkage pins through the bottom block.
- 8.4.5 Attach retaining rings on both ends of each linkage pin.
- 8.4.6 Place eight ¼-in. thick linkages into the top block.
- 8.4.7 Slide two ⅜-in. round linkage pins through the top block.
- 8.4.8 Attach retaining rings on both ends of each linkage pin.
- 8.4.9 Put a bronze flat washer on the ACME thread bolt.
- 8.4.10 Slide the ACME thread bolt through the front block, then the spacer tube, and thread it into the back block.
- 8.4.11 Install the six disk springs in each top block counterbore in the sequence below (see Figure 3):
- 1 down
 - 1 up
 - 1 down
 - 1 up
 - 1 down
 - 1 up
- 8.4.12 Install the tiedown bolts and top bracket in the sequence below:
- Slide the bolts through the top bracket.
 - Place an O-ring on the bolts.

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- Insert the bolts through the compression plate.
- Insert the bolts through the disk springs.
- Insert the bolts through the top block.
- Thread the bolts into the bottom block.
- Install the ½-in. Nylock™ nuts to lock the bolts in place.

8.5 Axles/Brakes

Comply with the service instructions carefully when working on the axles and brakes.

The trailer's axle/brake assemblies are standard commercial components. Comply with the manufacturer's recommended procedure for maintaining these components. A schedule for the periodic adjustment, cleaning, inspection, and lubrication of the axle and brake equipment shall be prepared based on experience and the type of operation. Brakes shall be adjusted as often as needed for correct operation and safety. Brake adjustments shall give correct clearance between the lining and drum, correct push rod travel, and balance between the brakes. Brakes shall be cleaned, inspected, lubricated, and adjusted each time the wheel hubs are removed (49 CFR §396.25, "Qualifications of Brake Inspectors").⁵

Debris entering the brake system air lines can clog the relay valves. To prevent debris from entering the brake system air lines when a trailer is disconnected from the tractor, "glad-hand" covers shall be used on all trailers that are equipped with them.

8.6 Suspension

WARNING

If the trailer is to be raised with jacks, work under the trailer **MUST NOT** take place if supported by jacks only. Jacks can fail and cause death, or tip over and cause serious personal injury. The trailer **MUST** be properly supported with appropriately rated blocking or jack stands prior to beginning work under a raised trailer.

The suspension has a specific ride height. The height is controlled by a height control valve. This maintains an even trailer height. Perform a maintenance check by inspecting the unit. Verify the suspension is fully operational daily (or before each trip).

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NOTE

Grease is not to be applied to the height control valves. No external lubrication is required.

The height control valve on each side controls all air springs on its respective side. The height control valves shall be inspected regularly. Look for proper clearance around, or damage to, the valve control arms or adjusting blocks.

Drain the air tank periodically to remove water from the air system tank.

8.7 Tires/Wheels

Routine tire maintenance is to verify the cold air pressure is at the manufacturer's recommended pressure. The tires shall be routinely checked for excessive wear, bulges, cracks, cuts, or penetrations.

Clean the wheels often with a high-pressure washer and a mild detergent. Check the metal surfaces of the wheels thoroughly for excessive corrosion buildup, metal cracks, bent or broken flanges, etc. This includes the areas between the dual wheels. Report abnormalities to the WIPP Transportation Scheduler before using the trailer.

8.8 Landing Gear

Check the landing gear routinely for bolt tightness and for lubrication. The specific maintenance items are listed in the manufacturer's service manual.

Any repair of the attachment welds to the chassis shall be performed by authorized personnel listed in Section 9.0.

9.0 SPECIALIZED MAINTENANCE

Due to the design of the trailer, some maintenance activities must be done by authorized service representatives. This section lists the responsibility for maintenance of trailer components.

9.1 Chassis

The chassis main-rails are made of heat-treated steel. This material shall **NOT** be welded or drilled by unauthorized personnel. If welding or drilling is needed to repair/replace a part or repair a weld, the chassis shall be sent to a DOE-approved maintenance facility.

9.2 Tiedown Assemblies

If tiedown components need repair or replacement, verify the new parts have been approved by WTS Quality Assurance before use.

10.0 CHECKS

In the trailer preventive maintenance program, regularly scheduled checks shall be performed. These checks are needed to comply with DOT requirements.

10.1 Interval Checks

In addition to pre-trip and post-trip checks, trailer inspections are required, at a minimum, annually, as stated in Subsection 10.2. The carrier's contractual agreement and/or regulatory agencies may require more frequent and/or additional checks to those stated in Section 3.0.

10.2 Annual Checks

10.2.1 DOT Requirements

To comply with the DOT requirements, the trailer shall be inspected annually. This annual inspection includes (at a minimum) all points covered in the vehicle inspection report (49 CFR §396.11). It also requires an inspection of the critical weld areas. Carry proof of a satisfactory inspection either in the vehicle, or on an affixed decal (49 CFR §396.17, "Periodic Inspection").^{3,6}

10.2.2 Annual Maintenance Screw Jack Tiedown Assemblies

When a trailer equipped with Screw Jack Tiedown assemblies is due for annual inspection, the top bracket shall be inspected, deburred and smoothed, as applicable. Each tiedown assembly shall be thoroughly cleaned and lubricated, as needed.

10.3 Recordkeeping

Reports shall be prepared and kept by the carrier using the recordkeeping requirements of 49 CFR Part 396, and in accordance with the individual carrier's contractual agreement:

- Pre-trip inspection
- Post-trip inspection
- [Annual inspection](#) ⁷ (49 CFR §396.21, "Periodic Inspection Recordkeeping Requirements")

11.0 EXTENDED STORAGE

If a trailer is to be idle for a long time (e.g., six months or more), raise the axles and place them on supports. This prevents damage to the tires. The recommendation applies whether the trailer is stored inside or outside.

[Checks and maintenance according to 49 CFR §392.7, shall be done before using a trailer from storage.](#)¹