VALTIR

SMT®

TRAILER MOUNTED ATTENUATOR

PRODUCT MANUAL

PN 626199

REVISION E | JANUARY 2025

SMT™

TRAILER MOUNTED ATTENUATOR

The SMT™ Truck Mounted Attenuator (“TMA”) has been tested pursuant to American Association of State Highway and Transportation Officials (“AASHTO”) Manual for Assessing Safety Hardware (“MASH”) specifications.

Product Manual

VALTIR

15601 Dallas Parkway

Suite 525

Addison, Texas 75001

The local highway authority, distributors, owners, contractors, lessors, and lessees are RESPONSIBLE for the assembly, maintenance, and repair of the SMT™ system. Failure to fulfill these RESPONSIBILITIES with respect to the assembly, maintenance, and repair of the SMT™ could result in serious injury or death.

These instructions are for standard assembly specified by the appropriate highway authority. In the event the specified system assembly, maintenance, or repair would require a deviation from standard assembly parameters, contact a Valtir representative.

This manual must be available to the worker(s) overseeing and/or assembling the product at all times. For additional copies, contact Valtir at (888) 323-6374 or visit www.Valtir.com.

The instructions contained in this manual supersede all previous information and manuals. All information, illustrations, and specifications in this manual are based on the latest SMT™ system information available to Valtir at the time of printing. We reserve the right to make changes at any time. Please contact Valtir to confirm that you are referring to the most current instructions.

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Customer Service Contacts

Valtir is committed to the highest level of customer service. Feedback regarding the SMT™ assembly procedures, supporting documentation, and performance is always welcome. Additional information can be obtained from the contact information below:

Valtir

Telephone:

(888) 323-6374 (USA)
+1 214 589 8140 (International)

Internet:

www.Valtir.com/contact

Important Introductory Notes

The performance of the SMT™ system as designed, and approved for reimbursement by the FHWA pursuant to its MASH standard, is dependent upon the proper assembly, deployment and future maintenance of the system. These instructions must be read in their entirety and understood before assembling the SMT™. These instructions are to be used only in conjunction with the assembly of the SMT™ and are for standard assemblies only as specified by the applicable highway authority.

In the event your system assembly requires or involves deviation from standard parameters, or during the assembly process a question arises, please contact Valtir customer service. No person should be permitted to assist in the assembly, maintenance, or repair of this system that does not possess the unique knowledge described herein. These instructions are intended for an individual who is qualified to both read and accurately interpret them as written. They are intended for the individual who is experienced and skilled in the assembly of highway products which are specified and selected by the highway authority.

If additional information is required, please contact Valtir Customer Service. If there are deviations, alterations, or departures from the assembly protocol specified in this manual, the SMT™ may not perform as tested and accepted.

It is the responsibility of the installer to maintain a safe work area including the use of standard work zone safety equipment & PPE: gloves, safetytoe shoes, and eye / ear protection.

DO NOT use any component part that has not been specifically specified and/or approved for this system during assembly or repair.

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Safety Symbols

This section describes safety symbols that may appear in this product manual. Read this manual for complete safety, assembly, operating, maintenance, repair, and service information. Failure to read and follow these warnings could result in serious injury or death in the event of a vehicle impact with the system.

Indicates Danger or Warning. Failure to read and follow this warning could result in serious injury or death to the workers and/or bystanders.

Indicates Caution or High Importance. Failure to follow this warning can result in improper performance, failure of operation, to serious injury or death in the event of a vehicle impact with the system.

Indicates Notifications or Reference. These denote important items but will not cause system damage or serious injury.

Indicates importance of reading instructions. Failure to follow all steps can result in improper performance, system failure, and/or serious injury or death in the event of a vehicle impact with the system.

Safety Rules for Assembly

*** Important Safety Instructions ***

This manual must be kept in a location where it is readily available to persons who assemble, maintain, or repair the SMT™. Additional copies of this manual are available from Valtir by calling (888) 323-6374 or at Valtir.com/Contact. Please contact Valtir if you have any questions concerning the information in this manual.

It is the responsibility of the installer to use proper safety precautions when operating power equipment, mixing chemicals, and when moving heavy equipment or SMT™ components. Hand, eye, foot, and back protection shall be used.

It is the responsibility of the installer to use all safety measures incorporating appropriate traffic control devices specified by the highway authority. These measures must be used to protect all personnel while the TMA is in use. The traffic control plan established by the highway authority must always be observed when utilizing this product.

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Limitations and Warnings

Valtir contracts with FHWA approved testing facilities to perform crash tests, evaluation of tests, and submit of the results to the FHWA for review.

The SMT™ was tested to meet the impact criteria, requirements and guidelines of MASH. These tests, specifically set forth by the FHWA, evaluate product performance by simulating those impacts outlined by MASH involving a typical range of vehicles on our roadways, from lightweight cars (approx. 2420 lb. [1100kg]) to full size pickup trucks (approx. 5000 lb. [2270 kg]) as specified by the FHWA. A product can be certified for multiple Test Levels. The SMT™ is certified to the Test Level(s) as shown below:

Test Level 3: 62 mph [100 kph]

These FHWA directed tests are not intended to represent the performance of systems when impacted by every vehicle type or every impact condition existing on the roadway. This system is tested to the test matrix criteria of MASH as approved by FHWA.

Valtir expressly disclaims any warranty or liability for injury or damage to persons or property resulting from any impact, collision or harmful contact with products, other vehicles, or nearby hazards or objects by any vehicle, object or person, whether or not the products were assembled in consultation with Valtir or by third parties.

The SMT™ is intended to be assembled, delineated, and maintained within specific state and federal guidelines. It is important for the highway authority specifying the use of a highway product to select the most appropriate product configuration for its site specifications. The customer should be careful to properly select, assemble, and maintain the product. Careful evaluation of the site lay out, vehicle population type; speed, traffic direction, and visibility are some of the elements that require evaluation in the selection of a highway product.

After an impact occurs, the debris from the impact should be removed from the area immediately and the product should be replaced as soon as possible. All components and assemblies should be inspected and any parts that are damaged should be replaced with original Valtir replacement parts. Contact the Customer Service Department prior to repair if you have any questions (p. 1).

It is the responsibility of the operator to ensure that the SMT™ and delineation used meet all federal, state, specifying agency, and local specifications.

It is the responsibility of the operator to ensure that your assembly meets all appropriate Manual on Uniform Traffic Control Devices (MUTCD) and local standards.

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SMT™ Trailer Description

The SMT™ trailer mounted attenuator has been shown to reduce the risk of injury to passengers of an errant vehicle and to the driver of the truck to which the system is attached when it is impacted within the applicable MASH criteria. The system mounts on the rear of a truck and may be used in stationary and mobile operations. SMT™ Trailer applications include shielding a work zone, striping, sweeping, plowing, etc.

The SMT™ consists of the following basic components: A collapsible frame assembly, two crushable cartridges, an impact face, pintle hitch assembly, intermediate frame suspension, wheels and tires (Figures 1 and 2).

Definitions:

The **BARRIER VEHICLE** is the truck on which a TMA is mounted, while positioned upstream (towards the direction that traffic is approaching) of a work zone.

The **SHADOW VEHICLE** is the truck on which a TMA is mounted, which is following behind a moving operation such as striping, spraying, etc. crushable cartridges, an impact face, pintle hitch assembly, intermediate frame suspension, wheels and tires (Figures 1 and 2).

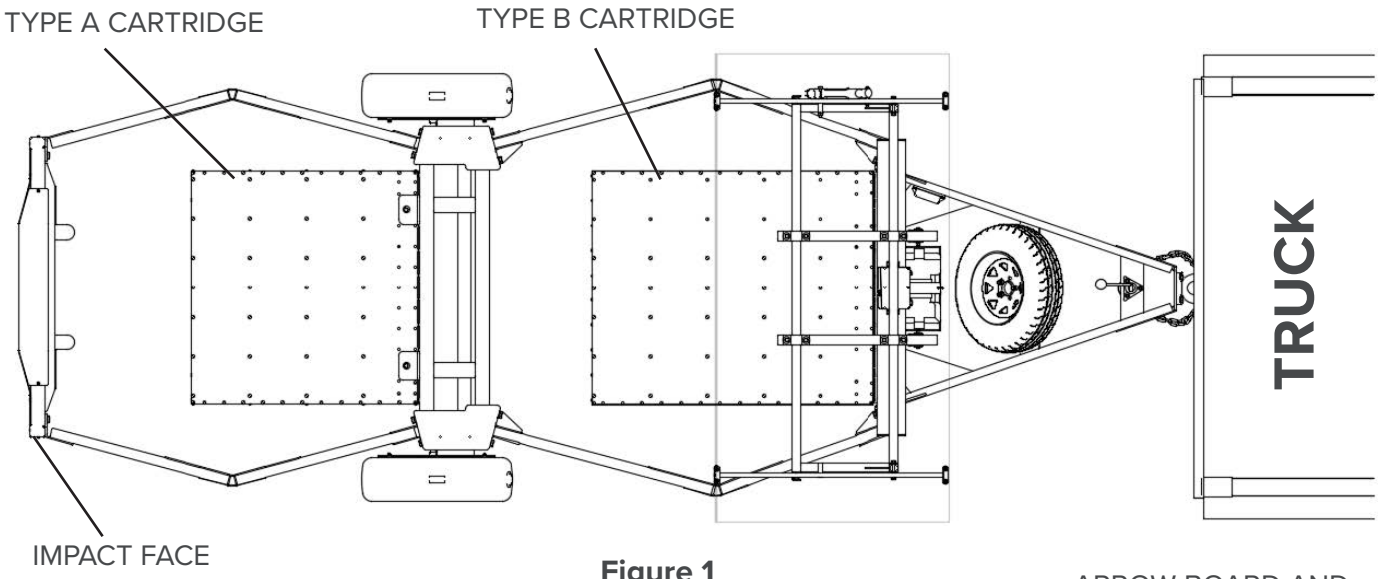

Figure 1

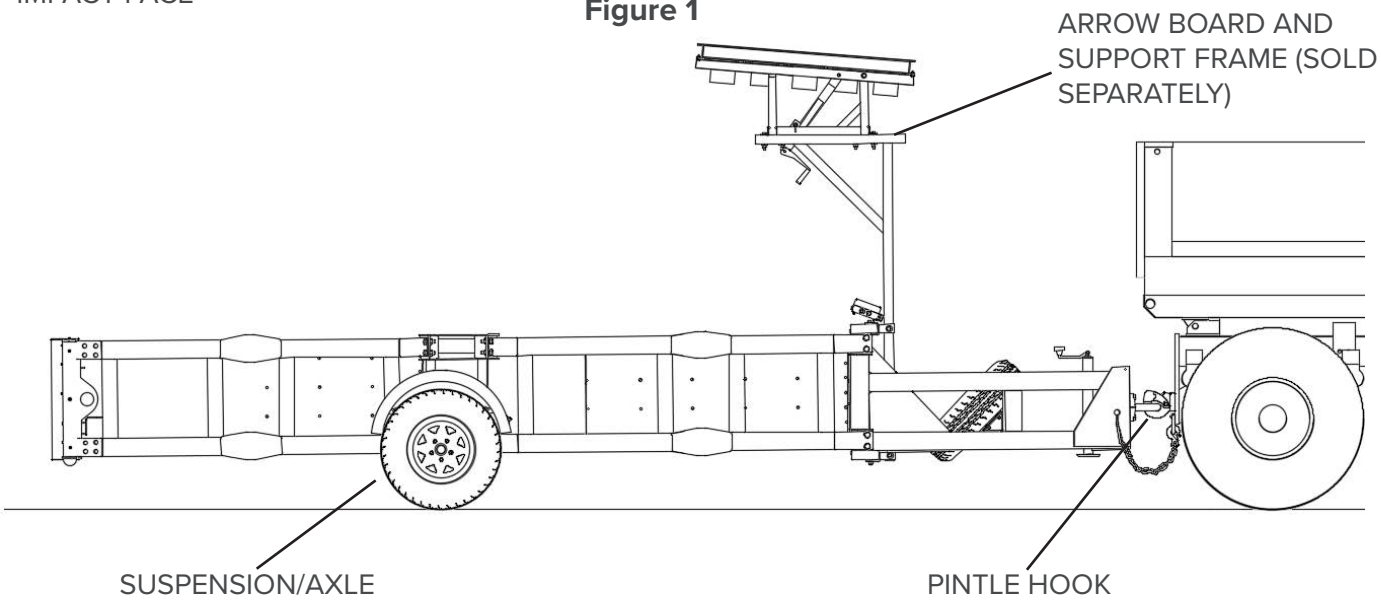

Figure 2

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Safety Instructions

It is the responsibility of the driver/operator to ensure that no one is near or behind the SMT™ when in operation.

Do not operate the SMT™ while wearing loose fitting clothing which may become entangled during operation.

Deploy appropriate traffic-control equipment.

1. The SMT™ requires a reinforced pintle hook trailer attachment (20 tons or greater) when it is in a work zone or being used for protection (Figure 3).

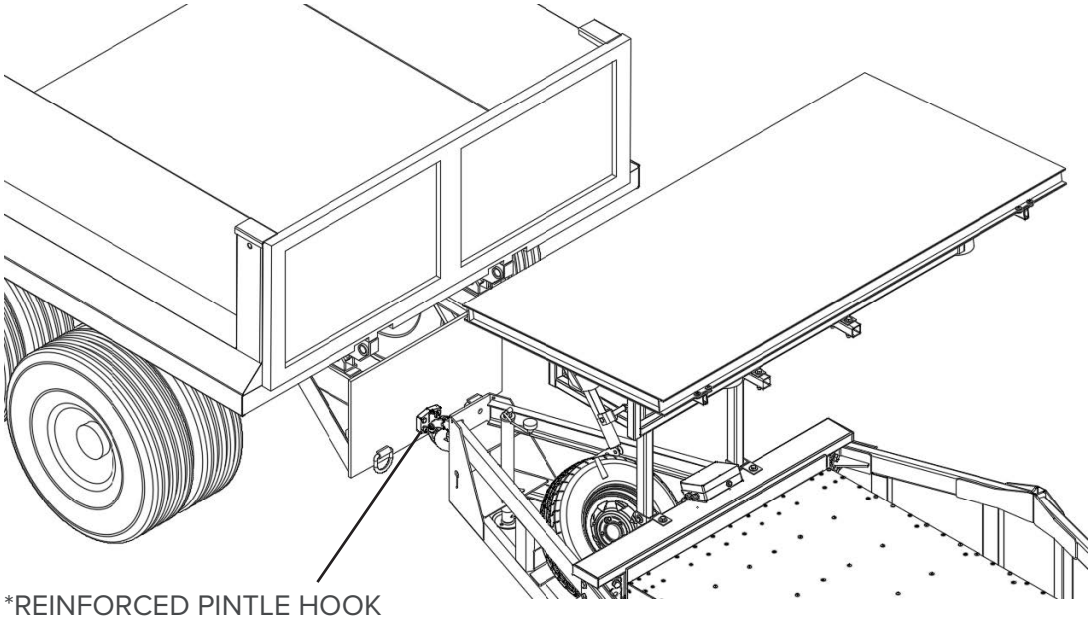

Figure 3

*Valtir requires the use of a pintle hook with a rating of 20 tons (40,000 lbs.) or greater.

Check for signs of wear at the Pintle Hook and Pintle Ring as part of normal vehicle maintenance procedures.

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2. The TMA should be securely fastened to the truck. On level ground, the bottom of the Impact Face should be 12” ± 1” [305mm ± 25mm] from the ground (Figure 4).

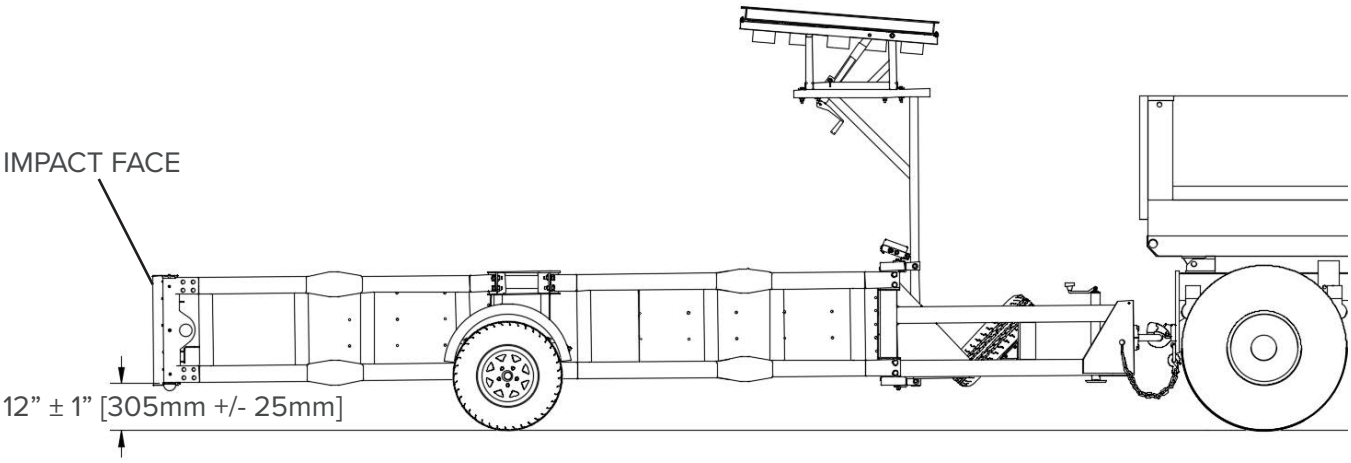

Figure 4

3. The SMT™ is designed to absorb the crash energy and to support its own weight if impacted within the applicable MASH criteria. Do not drag the TMA or place anything on its top: damage may result (Figures 5 and 6).

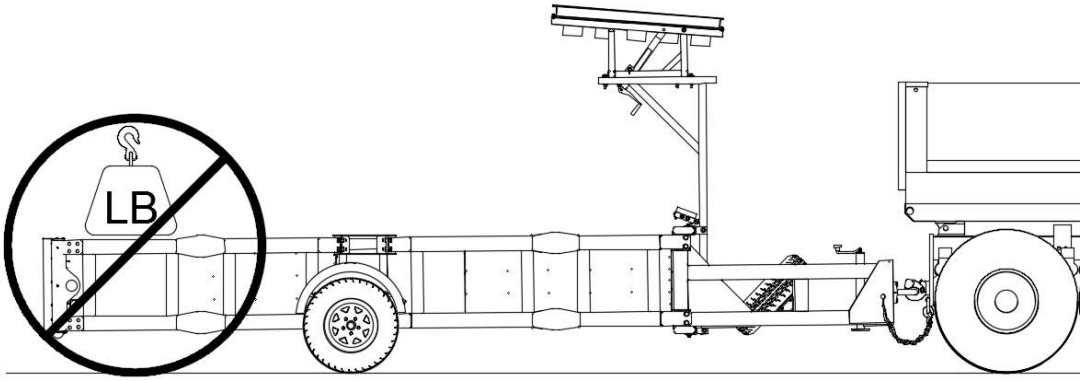

Figure 5

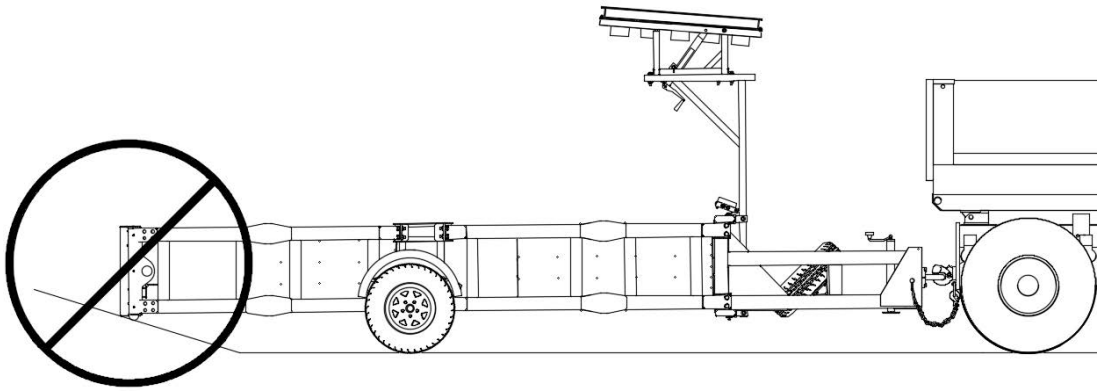

Figure 6

Do not sit, stand or lean on any part of the TMA.

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4. Ballast and other heavy objects MUST BE ADEQUATELY ANCHORED to the truck to prevent shifting during an impact. The force on the anchoring straps or chain could be 20 times the weight of the ballast (Figure 7).

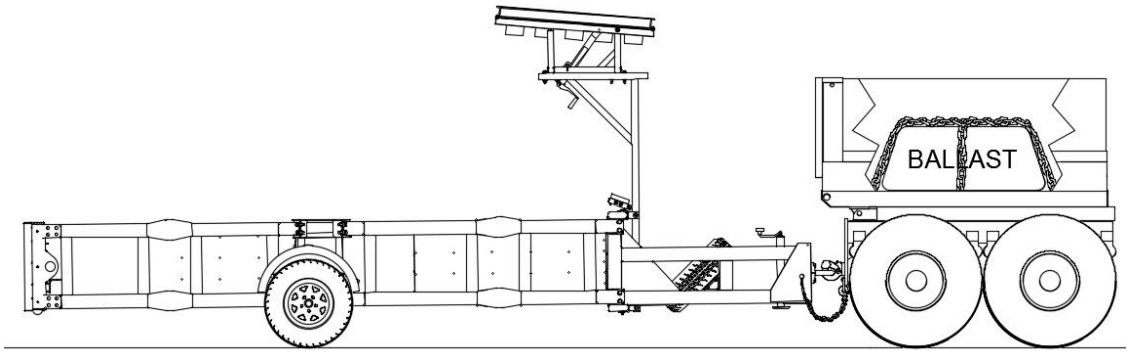

Figure 7

5. The agency or local highway authority responsible for the truck should inspect it for adequate operator safety equipment (e.g., seat belts, head rests, etc.).

6. Make certain that the applicable highway authority's current specifications for TMA reflectivity are evaluated and complied with. It is the operator's responsibility to ensure that all applicable reflectivity standards are met and the appropriate taping of indicators is placed on the TMA before highway use.

7. It is the operator's responsibility to ensure SMT™ performance and safety is not impaired by damage or corrosion.

Failure to comply with these instructions can result in improper TMA performance and possible personal injury. This TMA is intended to be used as an impact attenuator on the rear of trucks that meet specific requirements (p. 14).

8. It is the responsibility of the operator to perform regular maintenance on the SMT™ to ensure safe use. Refer to the Routine Maintenance section of this manual for additional information (p. 20).

9. This system is a crash cushion and is therefore used in high traffic areas as directed by the appropriate highway authority. Stay clear of traffic whenever possible. If an accident occurs, even during a MASH criteria impact, there may be fragments from the truck or impacting vehicle that could cause injury.

10. Do not use any part of the TMA for towing or hauling a load.

11. Ensure your truck is appropriate for attaching an SMT™ (p. 14).

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Operational Safety

Noncompliance with these instructions can lead to serious injury or death, damage of SMT™ components, or render the system unfit for deployment.

1. The Jack is used to support the TMA when it is detached from the truck. When the TMA is attached to the truck, the Jack must be fully retracted to the travel position.
2. The driver should be extra cautious while backing the truck with the SMT™ so that injury and/or damage will not result.
3. Periodically check and correct tire pressure to recommended pressure noted on the tire information decal located on the trailer tongue. NEVER exceed the maximum tire pressure listed on the tire sidewall.
4. Make sure the wheel lug nuts/bolts on the SMT™ are tightened to the correct torque as recommended in the Maintenance section (p. 21).
5. Be sure the pintle hook and pintle eye are connected and properly tightened and adjusted.
6. Make sure all lights are working correctly.
7. On a regular basis per maintenance schedule, verify that the breakaway brakes are functioning properly.
8. Avoid sudden stops and starts that can cause loss of vehicle control.
9. Avoid sudden steering maneuvers that might create sway or undue side force on the SMT™.
10. Slow down when traveling over bumpy roads, railroad crossings and ditches.
11. Make wider turns at curves and corners.
12. When uncoupling the SMT™, place blocks or wheel chocks at the front and rear of the trailer tires to ensure that the trailer does not roll away when the coupling is released.
13. Lightly coat all electrical terminal connections periodically with non-conducting (dielectric), light waterproof grease.
14. Periodically check axle bearings. Maintain per maintenance schedule (p. 20).
15. Always use safety chains when towing to prevent runaway trailer in case of system detachment.
16. Cross safety chains under coupling to prevent tongue from dropping to ground in case of connection failure.
17. Allow only enough slack for tight turns.
18. Do not let safety chains drag on the ground.
19. Twist safety chains equally from hook ends to take up slack.
20. The truck operator is responsible for monitoring the condition of the trailer components as they relate to safe highway transit of the truck and TMA.
21. It is the responsibility of the operator to ensure all wiring is properly connected, no touching the road, and loose enough to make turns without disconnecting or damaging the wires.

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Trailer towing can be hazardous, only properly trained individuals should tow the SMT™ trailer.

Do not modify or change the trailer in any way.

22. Never weld, bolt or modify anything on the trailer. Any additional weight could affect TMA impact performance.

23. Use a correctly rated pintle hook (20 tons or greater).

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Electric Brakes Safety Instruction

Noncompliance with these instructions can lead to serious injury or death, damage of SMT™ components, or render the system unfit for operation.

1. The SMT™ is equipped with a breakaway cable that activates electric brakes by pulling the breakaway pin mechanism in case of a connection failure.
2. It is the responsibility of the truck operator to set the attachment point of the breakaway cable on the truck so the trailer brakes do not activate during normal towing.
3. The breakaway mechanism will activate if the truck operator connects the breakaway cable too tightly to the truck.

Improper connection of the breakaway cable will result in damage to the trailer brakes and possibly the complete loss of tire and hub as bearings are destroyed due to overheating.

4. If equipped with a standalone solar panel charger for breakaway battery, the panel must be disconnected before connecting the trailer to the truck. The solar panel is used to maintain battery charge when the TMA is unhitched. Contact Valtir.com/Contact for more information about an optional solar panel charger kit.

Failure to disconnect the solar panel before use may cause panel damage.

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Tires & Axle

1. Periodically check and correct tire pressure. Inflate trailer tires to 35psi. NEVER exceed the maximum tire pressure listed on the tire sidewall.
2. All trailer tires have a maximum speed rating of 65 mph [105 kph].
3. Three to five years is the projected life of a normal trailer tire.
4. The mileage expectation of a trailer tire is 5,000 to 12,000 miles [8,050 to 19,300 km].

Incorrect tire pressure can cause loss of control resulting in injury and equipment damage.

5. Always replace trailer tires with (ST) Special Trailer tires.
6. Wheels and tires offset is the distance from the mounting surface to the centerline of the tire. The SMT™ axle bearing sets are designed for wheels with 0 to 1/2" [13mm] inset. Exceeding this offset will shorten bearing life and may lead to bearing failure.
7. Wheels and tires must be matched. The wheel will have a label stating its rim diameter, width and contour. The tire selected must be approved by the Tire and Rim Association for use on that particular size wheel.
8. When replacing tires, the tire capacity selected should not exceed the capacity rating of the wheel.
9. When replacing tires, the tire inflation pressure must not exceed the pressure rating of the wheel.

The use of tires that are not approved for use on a wheel could result in explosive separation of the tire from the wheel and cause a serious accident.

10. Make sure the wheel lug nuts are tightened to the correct torque.
11. Do not jack up the trailer on the suspension components because of potential for damage. Use the trailer frame when jacking up the trailer.
12. Never weld to the Torflex™ axle. The Torflex™ axle contains rubber cords to provide the suspension system and can be damaged by heat generated from welding on the bracket or tube.
13. Trailer wheels carry substantially more weight than truck wheels of the same size and more disc flexing can occur due to side loading stresses. It is necessary to re-torque the lug nuts several times until the wheels nut torque stabilizes.

Use only the recommended lug nut torque as specified for the wheel and fastener. It is possible to permanently damage a wheel that has been over torqued as doing so may cause the loss of that wheel from the trailer.

Never use oil or grease on studs or nuts for wheels. Assembling wheels without good metal to metal contact could cause loosening of the wheel nuts.

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Controlling Skid Distance and Roll-Ahead

The use of a SMT™ Trailer on the back of a truck will not:

- Affect the skid (roll ahead) distance of an impacted truck. **KEEP WORK CREWS CLEAR!**

Controlling skid distance (roll ahead):

- Skid distance is significantly increased and is less predictable for lightweight barrier vehicles.
- Skid distance is reduced and is more consistent when heavier barrier vehicles are used.
- Required truck weight: 12,000 – 25,000 lbs. [5,445 and 11,340 kg]

Roll-Ahead Distance for Shadow Vehicles

Weight of Shadow Vehicle (Moving)	Prevailing Speed mph [kph]	Weight of Impacting Vehicle to be Contained*			
		4,500 lbs [2,040 kg]	10,000 lbs [4,536 kg]	15,000 lbs [6,804 kg]	24,000 lbs [10,886 kg]
10,000 lbs [4,536 kg]	60-65 [96-105]	100’ [30 m]	175’ [53 m]	225’ [69 m]	275’ [84 m]
	50-55 [80-88]	100’ [30 m]	150’ [46 m]	175’ [53 m]	200’ [60 m
	45 [72]	75’ [23 m]	100’ [30 m]	125’ [38 m]	150’ [46 m]
10,000 lbs [4,536 kg]	60-65 [96-105]	75’ [23 m]	150’ [46 m]	175’ [53 m]	225’ [69 m]
	50-55 [80-88]	75’ [23 m]	125’ [38 m]	150’ [46 m]	175’ [53 m]
	45 [72]	50’ [15 m]	100’ [30 m]	100’ [30 m]	100’ [30 m]
10,000 lbs [4,536 kg]	60-65 [96-105]	75’ [23 m]	100’ [30 m]	150’ [46 m]	175’ [53 m]
	50-55 [80-88]	50’ [15 m]	75’ [23 m]	100’ [30 m]	150’ [46 m]
	45 [72]	50’ [15 m]	75’ [23 m]	75’ [23 m]	100’ [30 m]]

Note: Distances are appropriate for shadow vehicle speeds up to 15 mph [25 kph].

Roll-Ahead Distance for Barrier Vehicles

Weight of Barrier Vehicle (Stationary)	Prevailing Speed mph [kph]	Weight of Impacting Vehicle to be Contained*			
		4,500 lbs [2,040 kg]	10,000 lbs [4,536 kg]	15,000 lbs [6,804 kg]	24,000 lbs [10,886 kg]
10,000 lbs [4,536 kg]	60-65 [96-105]	50’ [15 m]	100’ [30 m]	150’ [46 m]	200’ [60 m]
	50-55 [80-88]	25’ [8 m]	75’ [23 m]	100’ [30 m]	150’ [46 m]
	45 [72]	25’ [8 m]	50’ [15 m]	75’ [23 m]	100’ [30 m]
10,000 lbs [4,536 kg]	60-65 [96-105]	25’ [8 m]	75’ [23 m]	100’ [30 m]	150’ [46 m]
	50-55 [80-88]	25’ [8 m]	50’ [15 m]	75’ [23 m]	100’ [30 m]
	45 [72]	25’ [8 m]	25’ [8 m]	50’ [15 m]	75’ [23 m]
10,000 lbs [4,536 kg]	60-65 [96-105]	25’ [8 m]	50’ [15 m]	75’ [23 m]	100’ [30 m]
	50-55 [80-88]	25’ [8 m]	25’ [8 m]	50’ [15 m]	75’ [23 m]
	45 [72]	25’ [8 m]	25’ [8 m]	25’ [8 m]	50’ [15 m]

***Weights of Typical Vehicles:**

- Midsize automobile - 2,250 lbs [1,020 kg]
- Full-size automobile - 3,500 lbs [1,500 kg]
- Loaded 3/4-ton pickup truck - 6,000 lbs [2,750 kg]
- Loaded 1-ton cargo truck - 10,000 lbs [4,500 kg]
- Loaded 4-yard dump truck - 24,000 lbs [11,000 kg]
- Source: “Use of Truck Mounted Attenuators in Work Zones” by T. Darcy Sullivan, P.E and
- Jack B. Humphreys, P.E., University of Tennessee.

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Assembly

Read and understand all instructions before beginning assembly.

It is the operator's responsibility to ensure TMA truck weight meets tested performance specification of 12,000 – 25,000 lbs. [5,445 – 11,340 kg]

The system must be attached to the truck by a 20 ton or greater pintle hook. The truck frame must be suitable and accessible for mounting a TMA system. If there are any questions regarding the suitability, contact the Customer Service Department for assistance.

Shipping list

Check the shipping list against the actual parts received to make sure all items were received. Review the drawing package and familiarize yourself with the assembly and part numbers.

Recommended tools:

- Welding equipment (for 1/2" [13 mm] plate) GMAW or SMAW
- Cutting torch
- Tape measure
- 1/2" drive socket wrench with 6" extension
- 1/2" drive socket set (3/8" thru 3/4")
- Open end wrenches (3/8" thru 3/4")
- Floor jack
- Torque wrench – 150 ft-lb [200 N-m]
- Forklift
- Phillips Screw Driver #2

Note: The above list of tools is a general recommendation and should not be considered an extensive list. Depending on specific site conditions and the complexity of the assembly specified by the appropriate highway authority the required tools may vary. Decisions as to what tools are needed to perform the job are entirely the responsibility of the specifying highway authority and the authority's selected contractor performing the assembly of the system at the authority's specified assembly site.

Truck Preparation

If steel rebar is encountered while drilling an anchor bolt borehole, apply one of the following solutions:

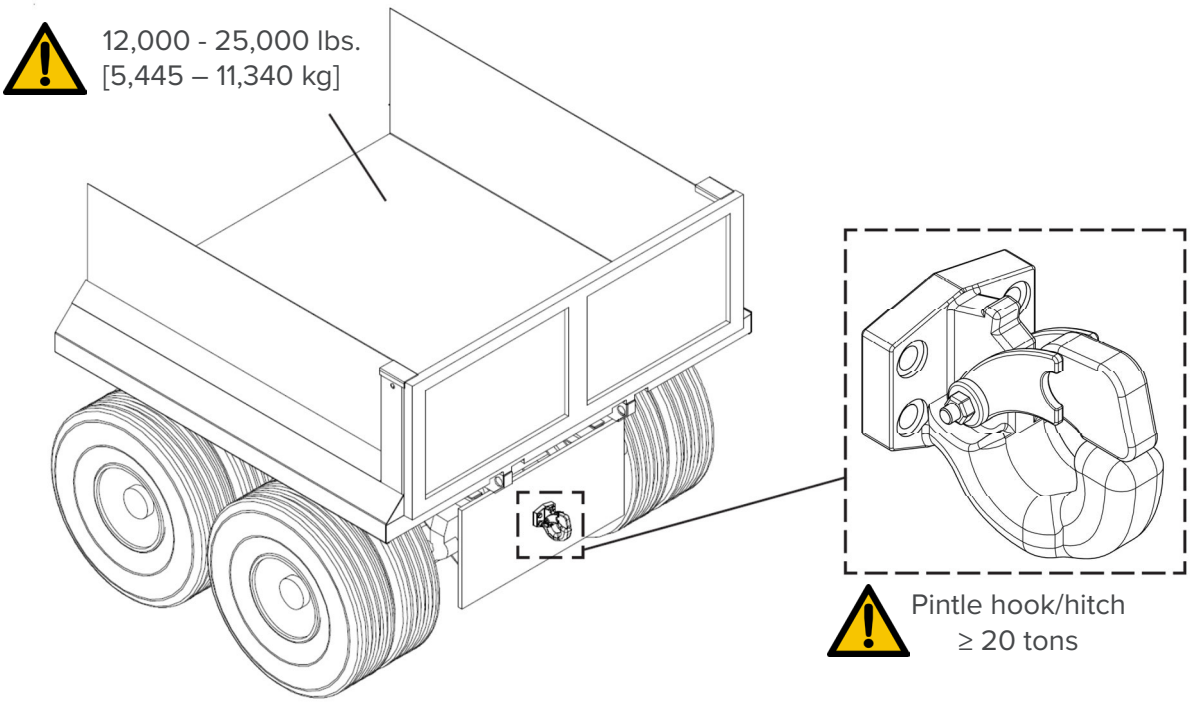


Figure 8

The truck frame must be structurally adequate for towing the SMT Trailer. Truck hitch and support structure must be capable of withstanding a 100,000 lb. [445 kN] impact force to the hitch. If there are any questions regarding truck suitability, contact the Valtir Customer Service Department (p. 3).

The truck should be as close to the final driving weight as possible. Ideally, ballast should not be used; but if it is, it must be anchored in a way to hold 20 times the ballast weight in order to keep it in place during an impact. The manufacturer's recommended center-of-gravity zone should be adhered to as well.

The Pintle centerline height above ground level must be in a range between 21" to 27" [533 to 686 mm].

Prepare the truck for the pintle hook/hitch. The truck frame typically is two C-channels spread 34" +/-1" apart. Most trucks have a 1/2" plate welded across the back frame members and a pintle hook/hitch. If not, start by making sure the frame is square by measuring back from the spring shackles. Cut the frame square first if needed. Once the frame is squared, the plate can be welded or bolted on.

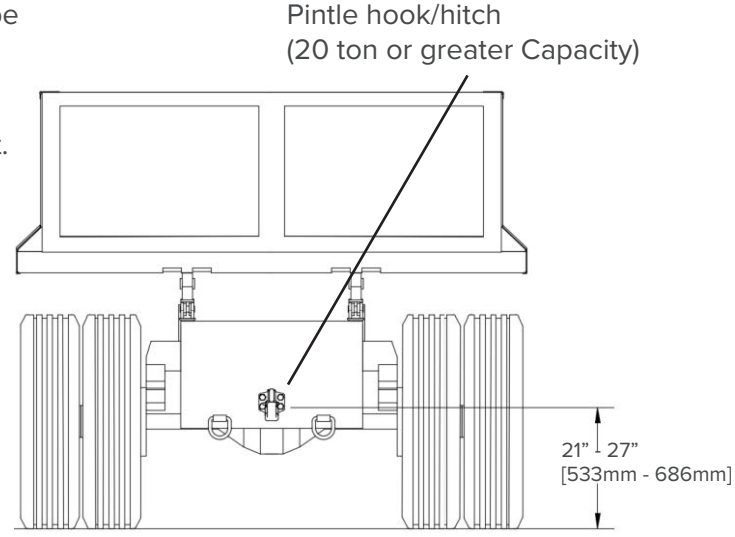


Figure 9

Welding Procedures:

1. Start by grinding chamfers on the inside and outside of the frame ends to prepare for the weld (Figure 10).
2. The plate needs to be a minimum of 1/2” thick and wider than 36” (Figure 10).
3. Grind the plate in the locations where the frame is to be welded to remove any paint or rust.
4. Tack the plate into position and make sure that the rear plate is positioned correctly.
5. Continue welding the inside and outside frame to the plate.
6. Incorporate a 3/4” x 5” or taller reinforcement bar to make the 1/2” plate capable of withstanding a 100,000 lb [445 kN] centered impact force.
7. If the pintle hook and plate extend below the truck frame, add 4” x 4” x 1/2” or larger angle gussets (Figure 11).
8. Weld the 3/4” x 5” reinforcement bar in a horizontal position as shown in Figure 11 to the Rear Plate using 3/8” fillet with 3” skip welds, 6” on center, top and bottom.
9. Weld the 4” x 4” x 1/2” angle gussets to truck frame with 3/8”, 3-6 skip-welds, followed by welding to the 3/4” x 5” reinforcement bar and the back of the 1/2” plate.
10. Bolt or weld pintle hook to rear plate, centering it vertically on the 3/4” x 5” reinforcement bar
11. Prime and Paint all welded areas

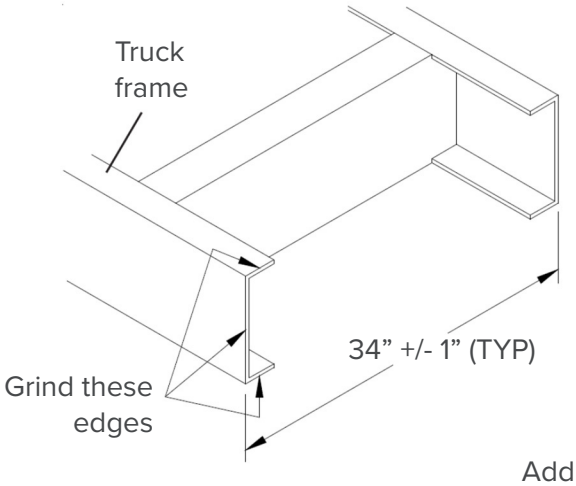
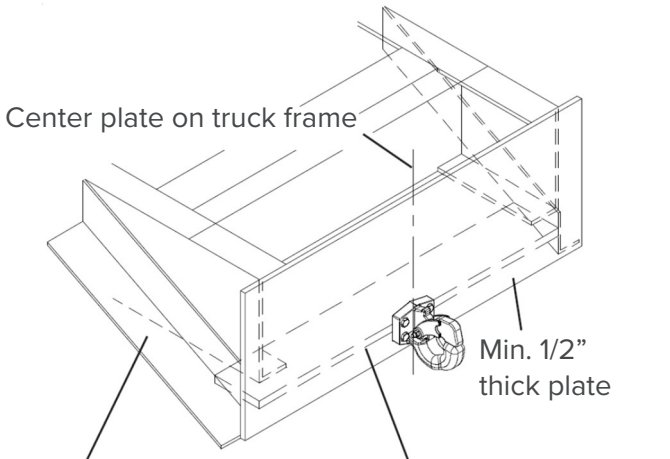


Figure 10



Add 4” x 4” x 1/2” angle gusset if pintle hook and plate extend below truck frame.
Note: Angles may be turned inward or outward

3/4” x 5” reinforcement bar welded to back of 1/2” plate engaging side angles as well per Step 9.
Note: Bar to be centered behind pintle hook. Ensure position prior to welding!

Figure 11

All welding must be performed by a professional or certified welder.

The truck frame is high carbon steel. To avoid cracking, do not weld or apply excessive heat to bottom flange forward of rear-most leaf spring hangers.

1. Attaching TMA to Truck

With the truck at its actual driving weight and parked on a level surface, attach the pintle ring of the trailer to the pintle hook of the truck such that the bottom of the trailer frame is 12” ± 1” [305 ± 25mm] above the ground at the rear of the impact face (Figure 12). If the pintle eye of the trailer needs to be relocated to the upper position on the tongue then relocate it and torque the bolts to 150 ft-lbf [203 N-m].

Note: The initial height of the trailer should be on the high side of the tolerance. Within the first couple of months, the Torflex™ suspension will settle down approximately 1” to 1 1/2” [25 mm to 38 mm].

The truck’s springs may settle with the weight of the TMA. Adjust the height to compensate for anticipated settling.

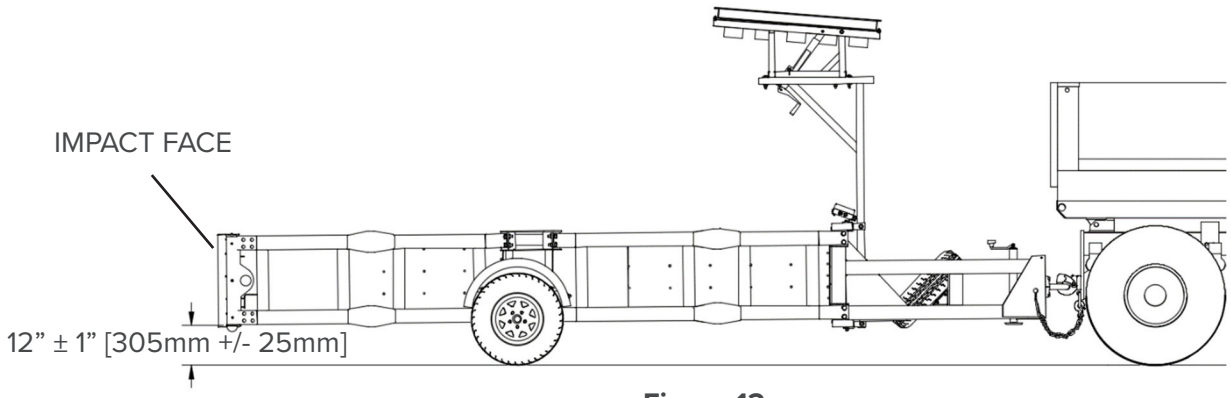


Figure 12
Trailer Attachment to Support Truck

2. Disconnect Solar Panel (if applicable) (p. 11)

It is the responsibility of the operator to ensure the solar panel is disconnected from the battery before connecting the lights. Locate and unplug the SAE power connector on the solar panel.

3. Connect the Lights

Locate the female TMA socket connector in a convenient location on the truck. Make sure that the electrical cord on the TMA can reach this location (View A-A).

The Truck battery must be of the proper voltage. The SMT™ is available in 12 volt and 24 volt systems. Ensure the trailer pins match the truck pins as shown below:

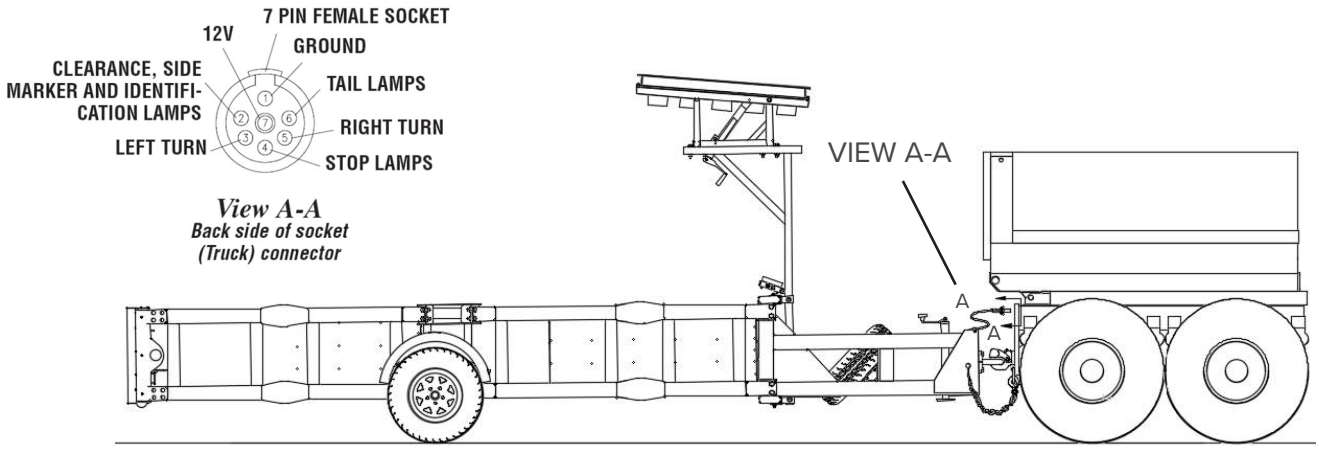


Figure 13

4. Connect the Safety Chains

Always use safety chains when towing to prevent a runaway trailer if system detaches. **Step 1)** Cross safety chains under coupling to prevent tongue from dropping to ground in case of connection failure. **Step 2)** Allow only enough slack for tight turns. **Step 3)** Don't let safety chains drag on the ground. **Step 4)** Twist safety chains equally from hook ends to take upslack.

5. Raise the Jack

The Jack is provided to facilitate the attachment and removal of the SMT™ from the truck. To prevent inadvertent damage to the jack make sure the Jack and Drop Leg is raised to the uppermost position when the SMT™ is connected to the truck. To raise the Drop Leg to its fully raised position, remove the retaining clip at the bottom of the jack, raise the leg and then reinsert the retaining clip.

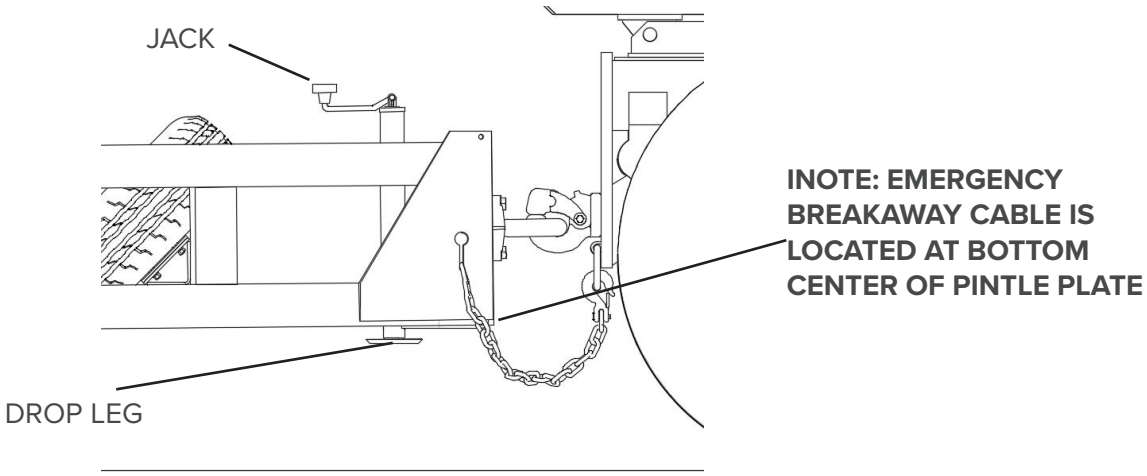


Figure 14

6. Braking System Review

Check breakaway brakes for proper operation. Activate the electric brakes by pulling the breakaway cable located below the pintle ring (Figure 14). Jack the wheels off the ground and rotate the wheels. The trailer brakes will engage after 1/4 to 1 full rotation.

7. Final Assessment

Double check the height at the rear face of the TMA (Figure 12).

8. Ready to Use

Before operating the SMT™, thoroughly read and understand these instructions and the safety section of this manual. Verify that the system is properly assembled and in working order. For proper impact performance, the TMA must be equipped with (1) Type A Cartridge and (1) Type B Cartridge, in their proper positions as shown in Figure 1 on page 6.

For proper system performance, do not mount anything to the mid-frame. The added weight could cause the SMT™ to not perform as designed. Attach Arrowboard, spare tire, and auxiliary battery tray (if applicable) to the TMA tongue in their designated areas. Contact Valtir Customer Service Department with any mounting or TMA questions (p. 3).

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Trailer Operations

Backing up the SMT™

It is the responsibility of the operator to ensure the area behind the system is clear of all objects before proceeding. Under no circumstances should anyone be allowed behind the system during reversing maneuvers.

Attaching the SMT™

1. Connect the trailer to the TMA pintle hook. This may require moving the SMT™ closer to the truck and raising or lowering the trailer using its Jack.
2. Raise the Jack and Drop Leg to the fully raised travel position.
3. Cross-connect Safety Chains to the truck.
4. Connect the Breakaway Cable to the truck.
5. If applicable, disconnect standalone solar panel charger from breakaway battery (p. 11).
6. Connect the electrical light plug to the truck's 7-pin receptacle.

Operational Checklist

1. Pintle hook and eye connection
2. 2. Tire pressure and wear
3. 3. Breakaway brakes are operational
4. 4. Trailer height: 12" ± 1" [305 mm ± 25 mm]
5. 5. All lights on the TMA are functioning properly

Detaching the SMT™

1. Disconnect electrical light plug.
2. Disconnect the Breakaway Cable.
3. Lower Drop Leg and crank Jack until it takes the TMA load off the pintle hook.
4. Disconnect Safety Chains.
5. Release pintle hook and detach TMA from truck.
6. If applicable, reconnect standalone solar panel charger to the breakaway battery using the SAE mating connector.

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Item	Inspection Invervals	First Use	Each Use	1 Month	3 Month	6 Month	1 Year	5 Year
TMA	Check cartridges for damage	•	•					
	System height at impact face 12" ± 1" (305 mm± 51 mm)	•	•					
	Check fasteners for tightness	•			•			
Tires	Check tire pressure (35 psi)	•	•					
	Check tires for wear				•			
	Check tires for tread and sidewall damage		•					
	Replace tires							•
Wheels & Axle	Check and repack wheel bearings						•	
	Check seals for damage/leakage						•	
	Inspect hub/drum for abnormal wear/scoring*						•	
	Check trailer brakes wiring for damage	•				•		
	Check trailer brakes for operation	•	•					
	Check Breakaway system (battery charge & switch)	•	•					
	Check brake lining for wear or contamination*						•	
	Check brake magnets for wear and current draw*					•		
	Check lug nut torque	•			•			
	Check axle hangers (inspect welds)						•	
	Check brake adjustment*				•			
Trailer	Check pintle eye for wear			•				
	Check pintle hook for wear	•	•					
	Check condition of Jack			•				
	Lubrication (grease fittings for Bearing Buddy®)	•			•			
	Inspect suspension parts for damage					•		
Electrical	Check and replace lights as required	•	•					
	Check and clean electrical connections				•			
	Coat electrical terminal with dielectric grease					•		
	Check condition of wiring harness					•		

*** Note: If electric brakes are only used for emergency braking situations then actual maintenance intervals may vary.**

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Truck Preparation

Service Brakes as required per axle manufacturer service manual:

Dexter Light Duty 600-8k Service Manual (LIT-001-00)

Electrical

1. Make sure connector-plug prongs and receptacles, light bulb sockets, and ground connections are clean and shielded from moisture. Lightly coat all connections with nonconducting (dielectric), light waterproof grease.

Tires & Wheels

1. Always replace trailer tires with ST (Special Trailer) tires.
2. Inflate trailer tires to 35 psi.
3. Inspect tires for damage.
4. Check inflation pressure before each use to ensure the maximum tire life and tread wear.

Wheel Attachment

1. Proper procedure for attaching wheels:
    a. Start all bolts or nuts by hand to prevent cross threading.
    b. Tighten bolts or nuts in the sequence shown (Figure 15).
    c. Torque the nuts in the following stages:
    d. 1st stage: 20 to 25 ft-lbf [27 to 34 N-m]
    e. 2nd stage: 50 - 60 LB-FT [68 to 81 N-m]
    f. 3rd stage: 100 - 120 LB-FT [135 to 163 N-m]

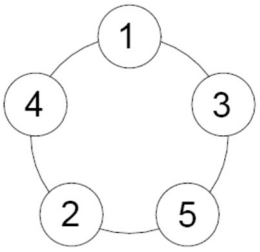

Figure 15

2. Maintain proper lug nut torque.
3. Wheel nuts should be torqued after each wheel removal, re-torque after 50 miles [80 km] and approximately 3,000 mile [4,830 km] frequency thereafter.
4. The SMT™ tire size is ST215/75D14. The bias ply tire provides stiffer side walls and more resistance to sway. ST rated radial tires are acceptable for use.
5. Replace tires every three to five years, whether they look like they are worn out or not. Trailer tires lose about 1/3 of their strength in 3 to 5 years.
6. Ensure necessary adjustments are made and any damaged or worn parts are replaced.

Tire Wear Diagnostic Chart

Wear Pattern	Cause	Action	Wear Pattern	Cause	Action
 Center Wear	Over inflation	Adjust pressure to particular load per tire catalog	 Toe Wear	Incorrect toe-in	Align at alignment shop
 Edge Wear	Under inflation	Adjust pressure to particular load per tire catalog	 Cupping	Out of balance	Check bearing adjustment and balance tires
 Side Wear	Loss of camber or overloading	Align at alignment shop	 Flat Spots	Wheel lockup and tire skidding	Avoid sudden stops when possible and adjust brakes

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Axle

Never weld to the Torflex™ axle. The Torflex™ axle contains rubber cords to provide the suspension system and can be damaged by heat generated from welding on the bracket or tube.

1. Inspect, Clean, Remove & Replace Bearings / Seals per axle manufacturers service manual: Dexter Light Duty 600-8k service manual (LIT-001-00)
2. Grease can be added to the Bearing Buddy™ through an easily accessible grease fitting located in the center of the piston. Lubricant level can be checked quickly by pressing on the edge of the moveable piston. If you can rock or move the piston, the hub is properly filled.
3. The Bearing Buddy™ should be filled with grease until the grease forces the Bearing Buddy™ piston outward about 1/8" [3 mm].
4. The Bearing Buddy™ has an automatic pressure relief feature that prevents overfilling and over pressurization. Without this feature, the inner seal will be damaged.
5. When adding grease, always use a hand grease gun. An automatic grease gun will destroy the hub's inner seal.
6. Bearing Buddy™ recommends inspecting your bearings once every five years, provided they are properly maintained with grease in the hubs.

Storage

1. Storage:
   a. Ideal short-term storage is in a cool, dark garage with the tires at maximum inflation.
   b. For longer term storage, place trailer on jack stands to take the weight off the tires, lower the air pressure and cover tires from direct sunlight.
2. Storage Preparation:
   a. If the trailer is to be stored for an extended period of time or over the winter, it is important that the trailer be prepared properly.
   b. Remove the emergency breakaway battery and store inside, out of the weather. Charge the battery at least every 90 days.
   c. Jack the trailer and place Jack stands under the trailer frame so that the weight will be off the tires.
3. After Prolonged Storage:
   a. Remove all wheels and brake drums.
   b. Inspect brakes and hubs.
   c. Lubricate all moving brake parts.
   d. Remove any rust from braking surface.
   e. Reassemble brake drums and wheels.
   f. Reassemble emergency breakaway battery.
   g. Remove the Jack stands.
4. Solar Charger Storage (if applicable) (p. 11)
   a. Connect the solar panel to the breakaway battery to maintain a charge during storage.
   b. Contact Valtir for any solar panel questions (p. 3).

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Technical Specifications

Weight

Type A Cartridge	130 lbs	59 kg
Type B Cartridge	190 lbs	87 kg
Frame Components	2298 lbs	1042 kg
Total	2618 lbs	1188 kg
Tongue Weight*	629 lbs	285 kg

*Included in Total Weight and assumes a mounted Arrowboard

Dimensions

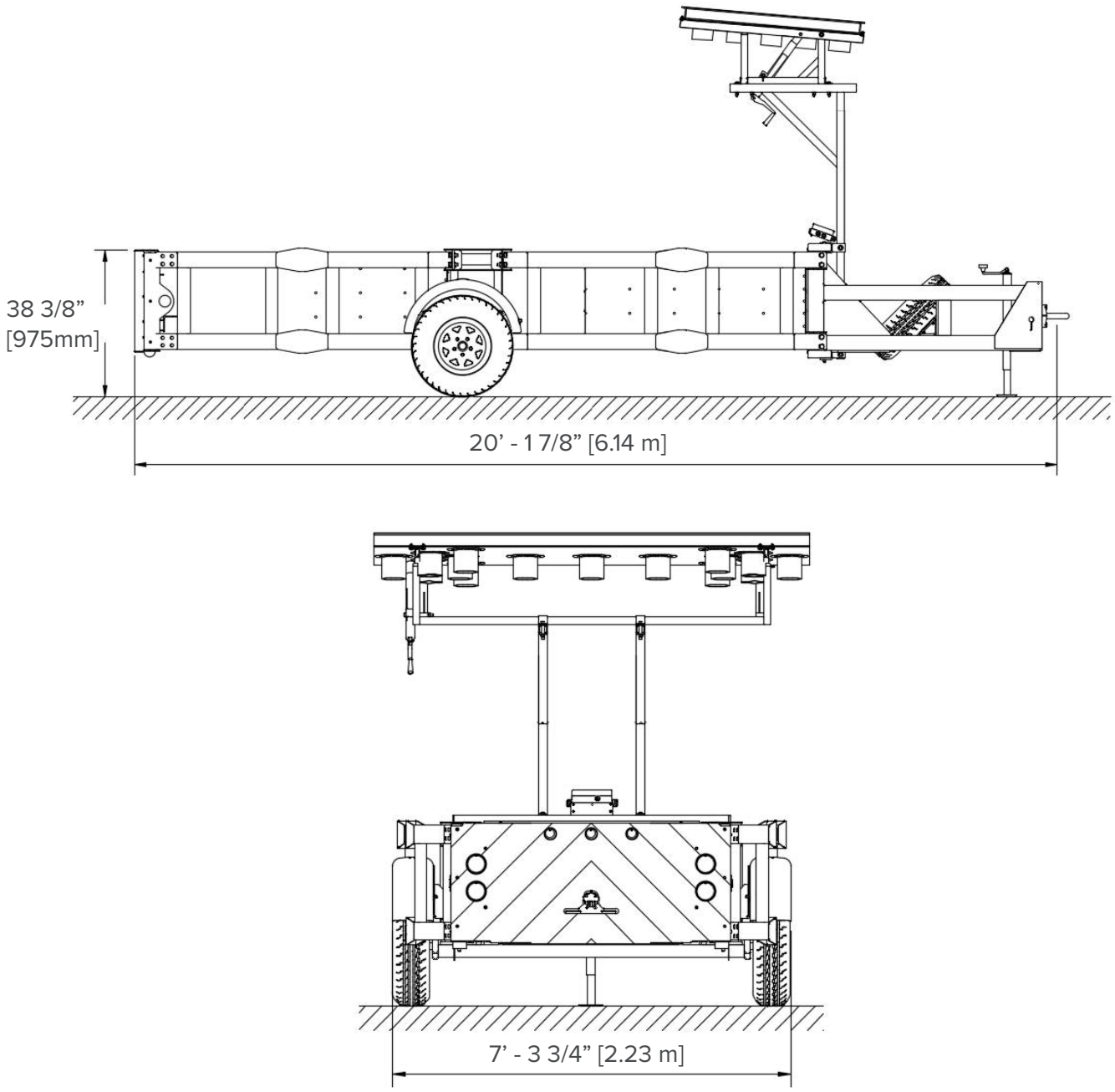

Figure 16

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Part(s) Ordering

Items that most likely need replacement after an impact are as follows:

- Type A Cartridge — Part # 626604
- Type B Cartridge — Part # 626610
- Impact Striping — Plate Part # 626614
- License Plate Light — Part # 611204
- Fender Assembly, Right — Part # 608223
- Fender Assembly, Left — Part # 608222
- Frame, Arm, Tongue — Part # 626666
- Frame, Arm, Impact — Part # 625186

Other items that could become damaged, wear out or become lost over time are as follows:

- Axle — Part # 119371
- Jack Drop Leg — Part # 119373
- Pintle Eye — Part # 119374
- Tire/Wheel — Part # 118151
- Trailer Breakaway Kit — Part # 117814
- Fender Bracket, Right — Part # 626669
- Fender Bracket, Left — Part # 626668

Valtir makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the local highway authority and its engineers to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

Repair Instructions

Post Impact

1. Inspect the frame for damaged parts.

   Replace any frame members that have been damaged. Do not attempt to weld or straighten parts. Refer to the system drawings at the back of this manual for part numbers and descriptions.

2. Inspect bolts for damage.

   Replace all bolts that have been damaged. Refer to the system drawings for the part numbers and descriptions of the parts.

3. Remove crushed Cartridges from system.

Valtir makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the local highway authority and its engineers to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

4. Replace Frame Arm Weldments

   Using a forklift and sling, place Arm(s) in position and secure using hardware provided as shown in drawing 626667 (pp. 30-33). Torque hardware as shown on drawing.

5. Replace Axle and Wheels

   Inspect axle and wheels for damage and replace as required per drawing 626667 (pp. 30-33).

6. Re-route and/or replace all damaged electrical cables as required per drawing 626684 (pp. 38-42).

Cable locations and ties should be free of abrasion and pinch points.

7. Attach Cartridges

Using a forklift and sling, place Cartridge B in position and secure it using the flat washers, lock washers and nuts provided. Torque the nuts to 90 ± 5 ft-lbf [120 N-m ± 7].

Using a forklift and sling, place Cartridge A in position between the flanges and secure it using flat washers and 1/2” G5 bolts. Medium grade threadlocker is required to maintain hardware in place. Torque the bolts to 55 ± 5 ft-lbf [75 N-m ± 7] (Figure 17).

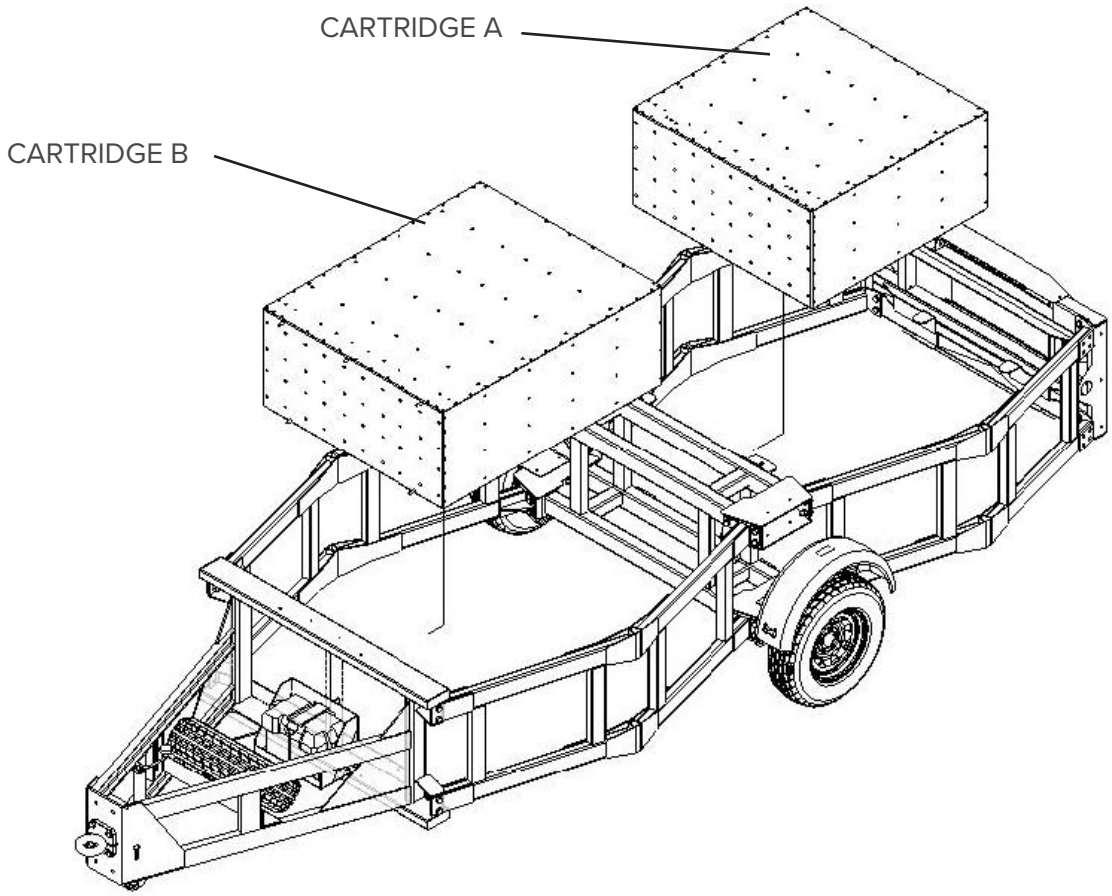
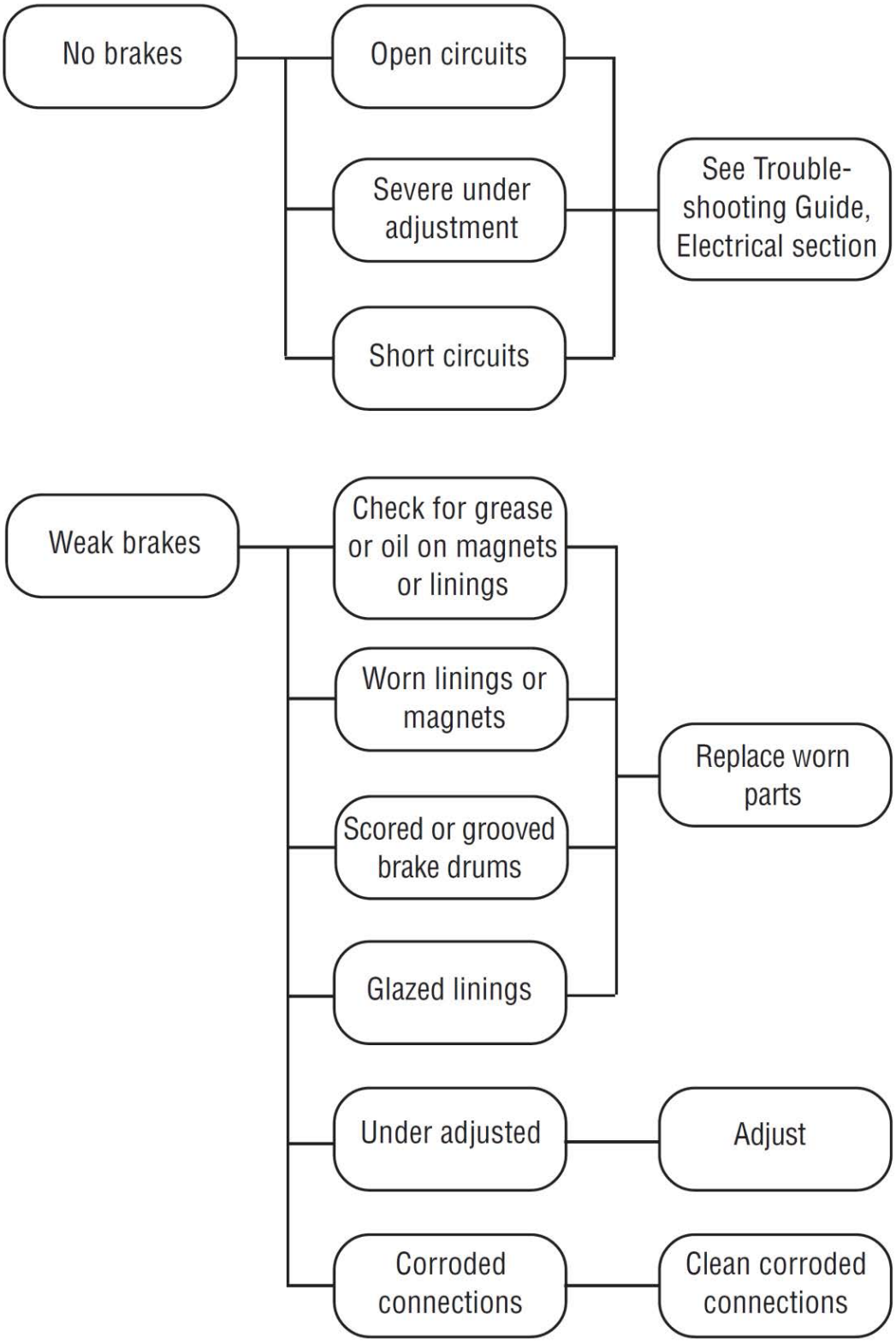


Figure 17

8. All system lights are operational.

   Confirm all lights are working properly and troubleshoot or replace lights that are not working.

9. The system is now ready for use.



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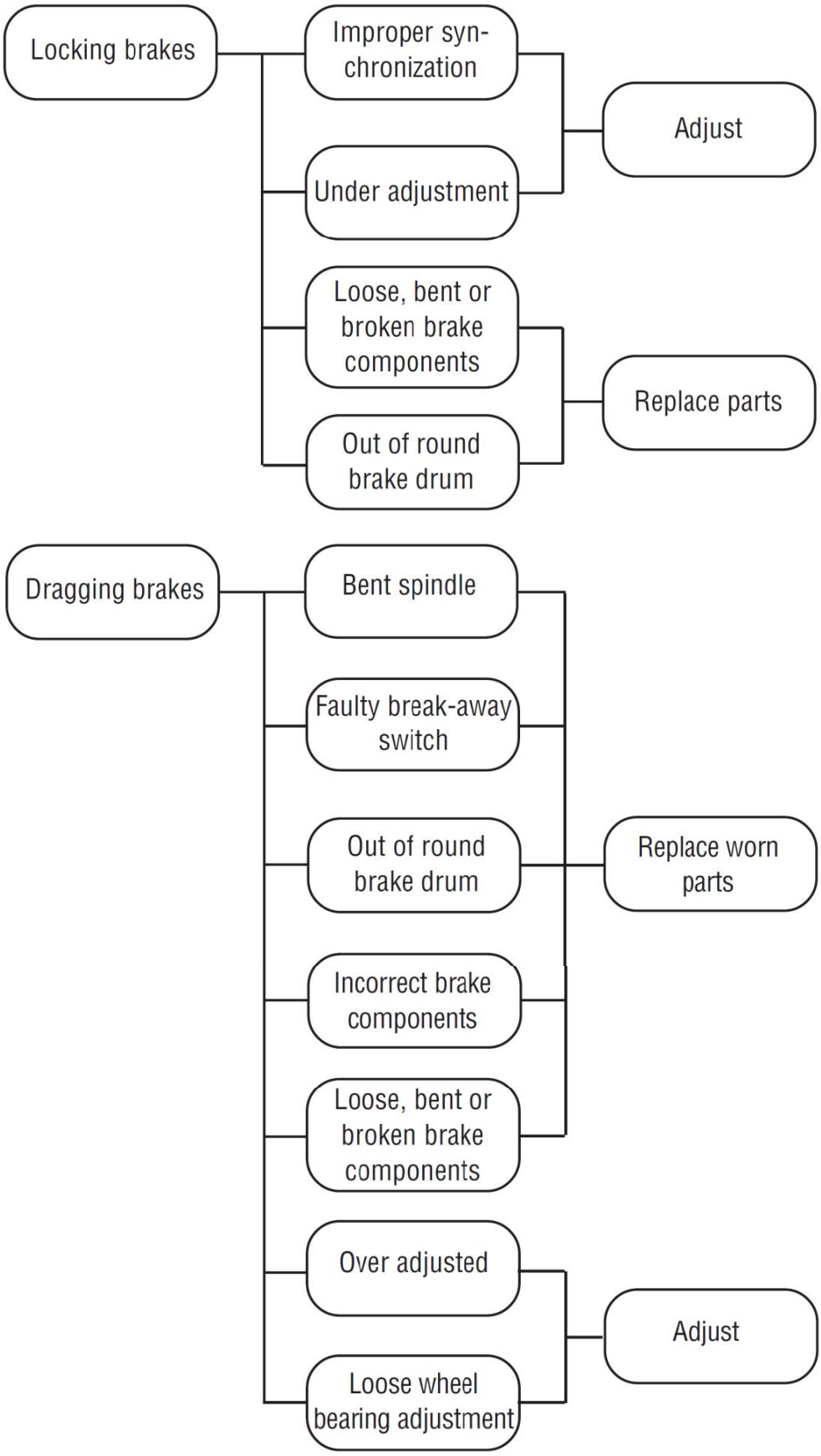
Locking brakes
Improper synchronization
Under adjustment
Adjust
Loose, bent or broken brake components
Out of round brake drum
Replace parts
Dragging brakes
Bent spindle
Faulty break-away switch
Out of round brake drum
Incorrect brake components
Loose, bent or broken brake components
Replace worn parts
Over adjusted
Loose wheel bearing adjustment
Adjust

Inspection Log

Location: _____

System Serial Number: _____

Date	Inspector	Condition	Maintenance Actions

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Notes:

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SMT™ TRAILER MOUNTED ATTENUATOR PRODUCT MANUAL

Revision History

Revision Level	Effective Date	ECO #	Description of Changes	Approved by:
E	01/08/2025	9664	Transfered Word Doc to Indesign. Changes to Wheel Attachment section.	RB

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