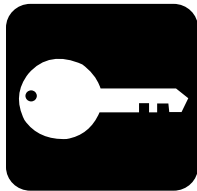


W12

Operator's Manual



Overview

Chapter Contents

Serial Numbers Location 2

Intended Use 2

Method of Operation 3

Equipment Modification 3

Major Components 5

Air Flow Diagram 7

Water Flow Diagram 8

- Winterization System 9

Operator Orientation 10

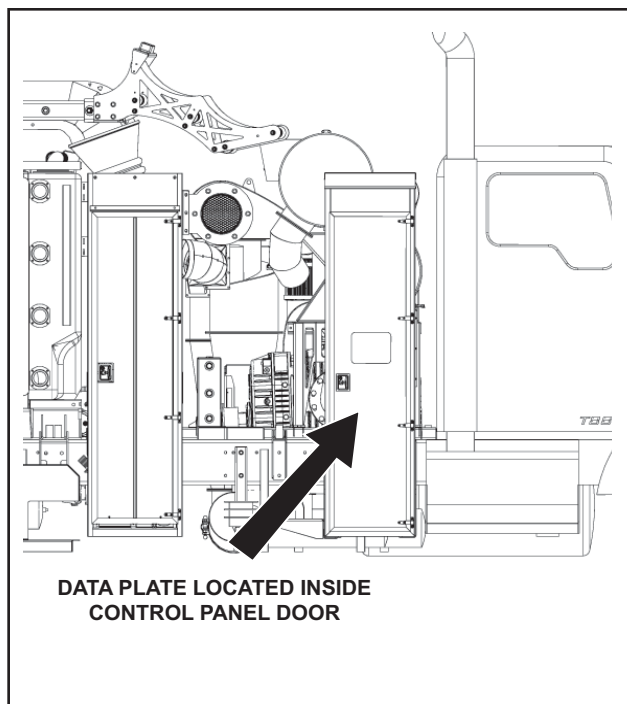
Operating Area 10

California Proposition 65

⚠ WARNING Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm www.P65warnings.ca.gov.

Serial Numbers Location

Record serial numbers and date of purchase in spaces provided. Serial numbers for the major components are on a data plate mounted on the inside of the control panel door, as shown.



TTW12-OV-003a

Item	
Build No.	
Date of purchase	

Intended Use

The W12 Hydrovac Truck is a vacuum excavation machine capable of vacuuming and transporting a wide variety of nonhazardous, non-flammable liquid and solid debris.

This machine is designed to perform efficient soft excavation, including exposing utilities for visual verification and potholing. The optional air system on the W12 can operate auxiliary pneumatic tools on low (100 psi/689 kPa) setting.

This machine is intended for operation only according to the instructions in this manual. Operate machine in ambient temperatures from 0° to 115°F (-18° to 46°C). Contact your Ditch Witch® dealer for provisions required for operating in extreme temperatures. Use in any other way is considered contrary to the intended use.

This machine should be operated, serviced, and repaired only by professionals familiar with its particular characteristics and acquainted with the relevant safety procedures.

Method of Operation

NOTICE: The vacuum system is designed for liquids, slurries, and damp materials. Dry or dusty materials must be wet down before vacuuming. This can be accomplished by connecting one of the water hose reels to the debris tank misting port.

The vacuum system has the capability of conveying material by two (2) modes. The first mode is “pure vacuum”. The second mode is “air conveying”.

1. Pure Vacuum

As a general rule, pure vacuum would be used for removing sludge from beneath liquid or for rapid liquid loading. In this mode, the vacuum tube is totally submersed in the liquid and only material (no air) transports through the line. Although this type of material transfer CAN be done with a Positive Displacement Blower, we need to understand that we are not actually creating “vacuum” where pressure is created. When plugging the line solid, the blower is pulling air from the tank and replacing it with product or the opening is obstructed. In this instance, we have a “vacuum” situation only while the dig tube is completely full of product. Once that seal is broken, air is now moving through the system as an “air conveyance.”

NOTICE: It should also be noted that the vacuum pump temperature should be closely monitored to avoid damage to the pump when attempting to load material in this fashion.

2. Air Conveyance

The second conveying method is “air conveyance” and requires enough air velocity going past the material to be picked up to capture such, and convey it through the suction tube to the body. This requires the vacuum pump be operating at a fast enough speed to produce the required airflow to capture the material. Vacuum tube lengths up to one thousand (1000) feet can be used and liquid loading rates up to five hundred (500) GPM through a six (6) inch line can be realized.

There are also applications where a vacuum fluidizing nozzle could be used. This combines the benefits of pure vacuum and air conveyance. The fluidizing nozzle has the ability to remove sludge from beneath liquids where the distance exceeds the limitation of pure vacuum.

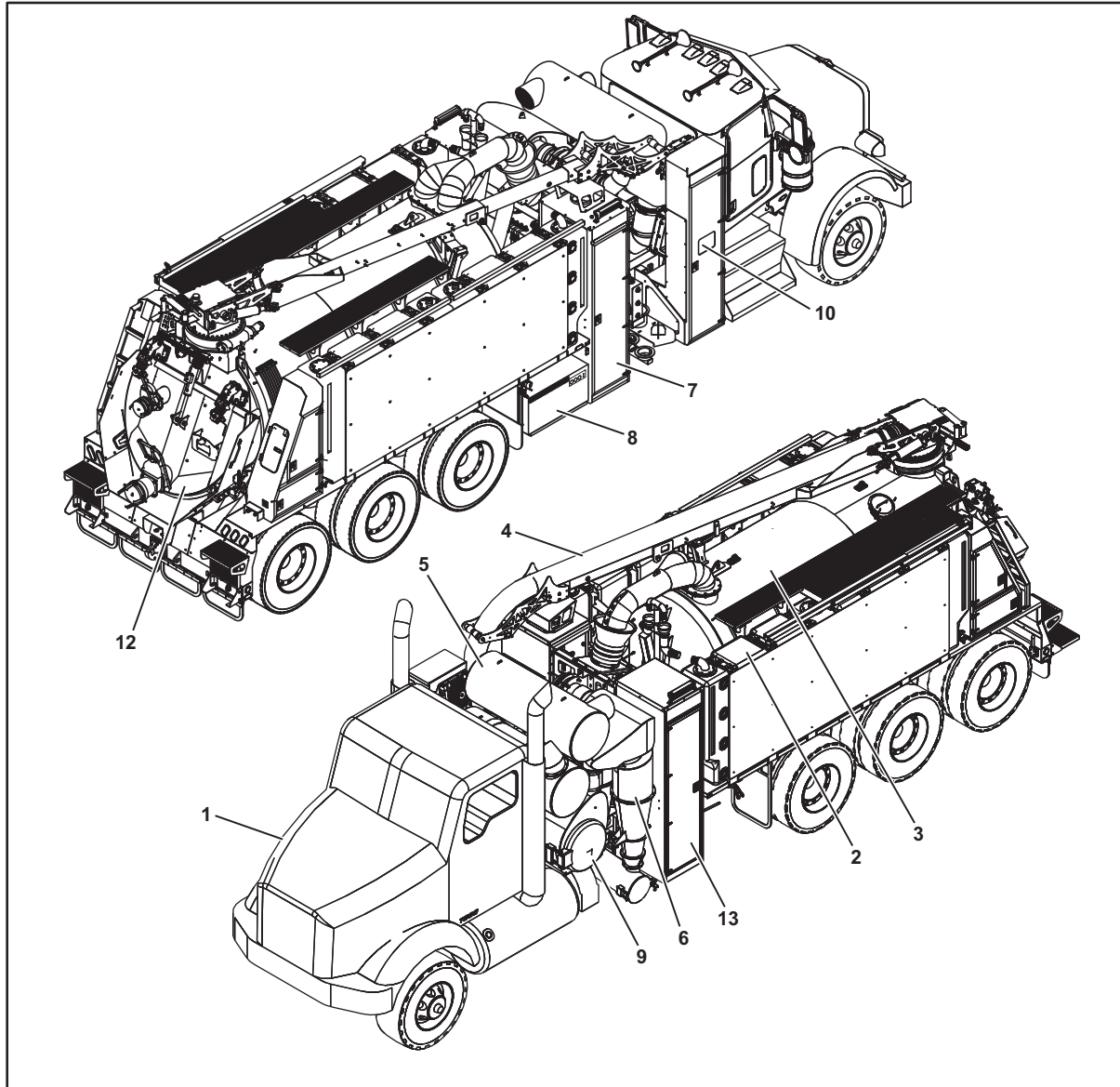
NOTICE: It should be noted that for maximum efficiency, all vacuum line connection points must be air tight. Any leaks or breaks in the system will automatically eliminate the ability to create “pure vacuum” and you are now back in an “air conveyance” situation. During air conveyance with “wet” materials, static buildup is minimal.

Equipment Modification

This equipment was designed and built in accordance with applicable standards and regulations. Modification of equipment could mean that it will no longer meet regulations and may not function properly or in accordance with the operating instructions. Modification of equipment should only be

made by competent personnel possessing knowledge of applicable standards, regulations, equipment design functionality/requirements and any required specialized training.

Major Components



TTW12-OV-005a

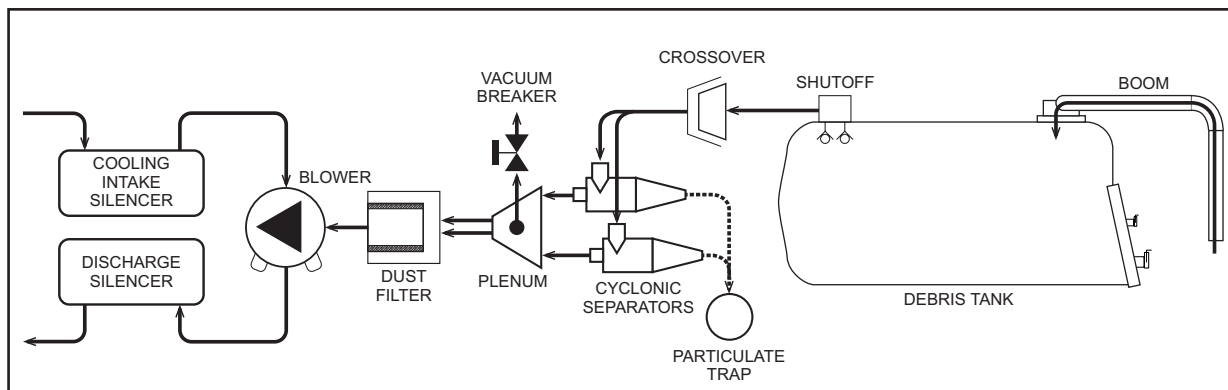
- | | |
|------------------------------|--------------------------------------|
| 1. Truck Chassis | 9. Dust Filter |
| 2. Water Tanks | 10. Control Panel and Remote Control |
| 3. Debris Tank | 11. Manual Control Levers |
| 4. Boom | 12. Rear Door |
| 5. Silencer | 13. Safety Equipment Storage Cabinet |
| 6. Cyclone | 14. Blower (not shown) |
| 7. Water Heater | 15. Transfer Case (not shown) |
| 8. Air Compressor (optional) | 16. Water Pump (not shown) |

Item	Description
1. Truck Chassis	Diesel truck chassis (see "Specifications" on page 128 for detailed information on the truck chassis).
2. Water Tanks	Four interconnected polyethylene tanks equipped with sight gauges and drain valves hold clean water for use during excavation operations. Total water capacity is 1,200 gallons.
3. Debris Tank	Water and debris is captured in the debris tank. The tank has a capacity of 12 cubic yards of material. It is also designed as a Tip-Tank style of debris tank, operating like a dump truck to facilitate the off-loading of debris. It is equipped with a hydraulically actuated dump door and locking system, as well as a vacuum boot connection system, that seals the vacuum duct when the tank is lowered down. The debris tank has a port in the top to visually check tank level or take samples. Two gate valves in the rear door can also be used to discharge water and debris. The door is equipped with dual safety locks to keep the door in the open position for cleaning and maintenance.
4. Boom	A hydraulically operated boom is used to vacuum dirt, water, and debris during excavation operations. The boom is controlled either manually or via a remote control. Multiple dig tubes are provided to extend the reach of the boom during excavation.
5. Silencer	Two silencers direct air flow to minimize environmental noise levels.
6. Cyclone	Two cyclonic separators direct the air flow in a circular path, where centrifugal force causes the airborne materials to be separated from the air stream and drop out.
7. Water Heater	The water heater provides hot water for excavation operations in cold weather. The water heater is fueled using diesel fuel from the truck fuel tank.
8. Air Compressor	(Optional) A high pressure air dig system, based on a hydraulically driven compressor system, is available. The air compressor provides pressurized air to the air lance.
9. Control Panel and Remote Control	The main control panel for the W12 is located in a cabinet on the curb side of the truck. This cabinet also stores the Remote Control (with charging cradle) and the truck scale.
10. Manual Controls	Manual control levers for the boom, debris tank lift, rear door, and other functions are located on the curb side near the rear of the truck.
11. Blower	The blower creates the primary air movement creating suction through the boom. The blower is driven by the transfer case.
12. Transfer Case	The transfer case is installed in a split-shaft configuration on the truck driveshaft. Outputs of the transfer case drive the hydraulics of the truck and the blower.

Item	Description
13. Water Pump	The pump provides pressurized water at up to 3,000 PSI for excavation operations. It is driven by a hydraulic motor mounted on the transfer case.

Air Flow Diagram

Suction is created by the flow of air through the system, driven by the blower. The twin lobe helix screw air blower is driven by the transfer case, which is in turn driven by the truck's drive shaft. The blower draws air (and water and debris) into the debris tank through the boom. The air is eventually exhausted back to the atmosphere. The following steps describe the air flow through the W12 truck in more detail. The figure below shows a simplified diagram of the air flow through the W12 truck.



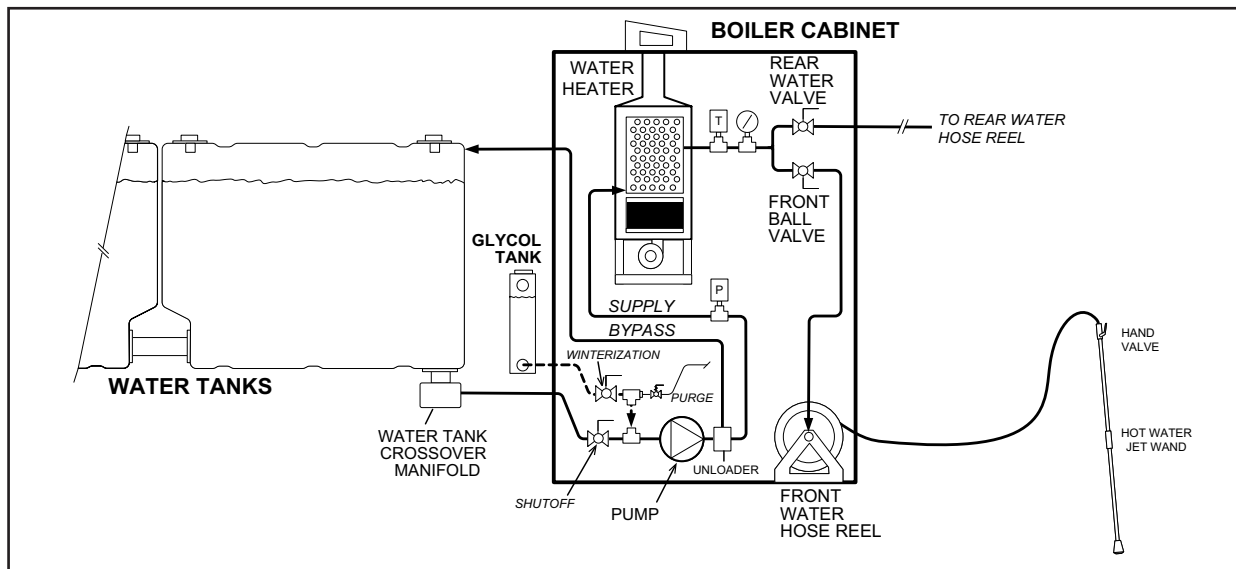
TTW12-OV-002b.ai

1. The operator uses a high pressure dig wand or compressed air lance to break up the soil. The blower draws air (and water and debris) into the debris tank through the boom which is eventually exhausted back to atmosphere through the discharge silencer. Material is picked by the end of the suction hose and the air stream moves it into the debris tank. The suction hose is supported by a boom which the operator can raise, lower, extend, retract, or rotate left or right.
2. The material travels through the boom and enters the debris tank, where liquids and large debris fall out of the air stream. A pair of shutoff float balls will cut off the air stream if the debris tank gets full.
3. The air stream then travels through the crossover and enters the two cyclonic separators. Centrifugal force causes the airborne materials to be separated from the air stream. These particles will fall into a particulate trap located at the bottom of the cyclonic filters. Clean air exits out the top of the separator and travels into the plenum.
4. From the plenum, the air enters a final dust filter. The dust filter is a pleated element capable of ten (10) micron filtration. It will capture any remaining dust. From the dust filter, the clean air travels back to the blower.
5. The ducting for the blower has two inlets. One draws in the air from the dust filter, while the other brings in cool air from the exterior of the truck via the cool air intake silencer.
6. Air exits the system through the a high efficiency discharge silencer.

7. In the event of a clog in the system that blocks or reduces suction, the vacuum breaker can be activated. This diverts the system intake from the boom and opens it to the atmosphere. This cuts off suction through the boom and debris tank, allowing the operator to clear the clog without the need to shut down the blower. The vacuum breaker is activated using the operator's remote control.

Water Flow Diagram

The W12 truck has four interconnected water tanks for clean water. This water is supplied to the high-pressure water wands that are used by the operators for excavating. The figure below shows a simplified diagram of the water flow through the W12 truck.



TTW12-OV-001a.ai

1. Clean water is stored in the water tanks, and feeds through the shutoff valve to the hydraulically-driven pump.
2. From the pump it passes through the unloader valve to the supply line for the water heater.
3. Hot water exits the water heater, passes through the temperature gauge and pressure gauge to a pair of control valves.
4. The front and rear water valves control flow to the corresponding hose reels. The operator can open one or both valves depending on the task.
5. To avoid pressure surges in the system, a bypass line returns water to the water tanks whenever the operators close the hand valves on the hot water wands. This reduces wear and tear on the pump.

Winterization System

There are two parts of the winterization system installed on the W12 truck. There is a crossover manifold below the clean water tanks. Hot water from the truck engine is routed through the manifold and heats the connection between the two front water tanks. For winterization of the water heater, hose reels, and hot water wands, the truck has a winterization fluid tank connected to the water system. Once operations are completed, the operators can close the shutoff valve upstream of the water pump, and open the winterization valve. This supplies the winterization fluid to the pump, which circulates it through the system. To purge the system of the winterization fluid, an air connection is provided. The operator closes the winterization valve and the shutoff valve, then holds the purge valve open until all the winterization fluid is purged out of the hot water wands.

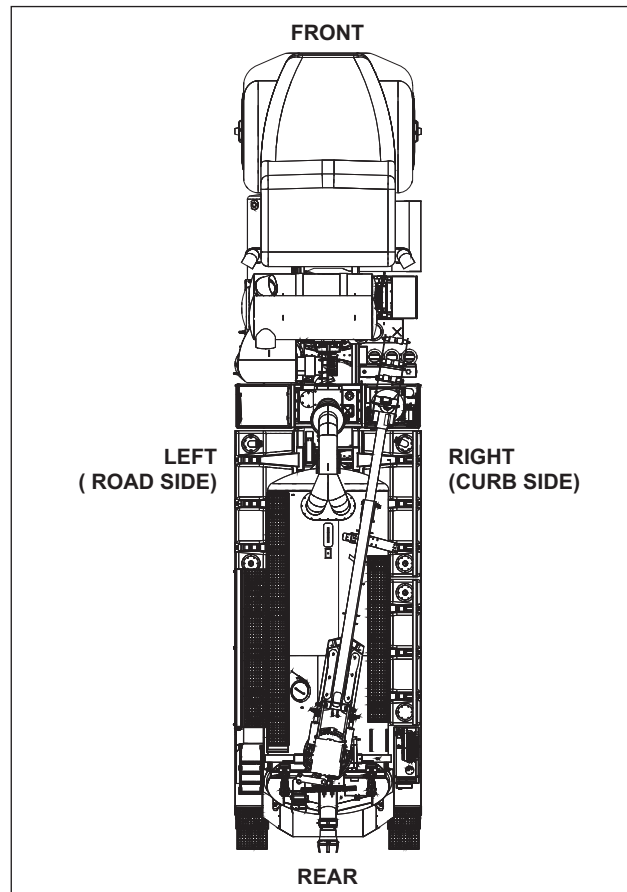
Operator Orientation

IMPORTANT: Top view of machine is shown.

1. Front
2. Right side (Curb side)
3. Rear
4. Left side (Road side)

Operating Area

Operate within easy access of controls and/or remote control.



TTW12-OV-004a.ai

About This Manual

This manual contains information for the proper use of this machine. Cross references such as “See page 50” will direct you to detailed procedures.

Bulleted Lists

Bulleted lists provide helpful or important information or contain procedures that do not have to be performed in a specific order.

Numbered Lists

Numbered lists contain illustration callouts or list steps that must be performed in order.

Foreword

This manual is an important part of your equipment. It provides safety information and operation instructions to help maintain your Ditch Witch® equipment.

Read this manual before using your equipment. Keep it with the equipment at all times for future reference. If you sell your equipment, be sure to give this manual to the new owner.

If you need a replacement copy, contact your Ditch Witch dealer. If you need assistance in locating a dealer, visit our website at www.ditchwitch.com or write to the following address:

The Charles Machine Works, Inc.
ATTN: Marketing Department
PO Box 66
Perry, OK 73077-0066
USA

The descriptions and specifications in this manual are subject to change without notice. The Charles Machine Works, Inc. reserves the right to improve equipment. Some product improvements may have taken place after this manual was published. For the latest information on Ditch Witch equipment, see your Ditch Witch dealer.

Thank you for buying and using Ditch Witch equipment.

Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying the Product Safety Manager at The Charles Machine Works, Inc.

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 any individual problems between you, your Ditch Witch dealer, or The Charles Machine Works, Inc.

To contact NHTSA you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to <http://www.safercar.gov>, or write to:

Administrator
NHTSA
1200 New Jersey Avenue S.E.
Washington, DC 20590

You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

**W12
Operator's Manual**

**Issue number 1.0/OM-2/2023 Part
number 053-10036**

**Copyright 2023
by The Charles Machine Works, Inc.**



and Ditch Witch are registered trademarks of The Charles Machine Works, Inc.


This product and its use may be covered by one or more patents at <http://patents.charlesmachine.works>.

Contents

Overview	1
Machine serial number, information about the type of work this machine is designed to perform, basic machine components, and how to use this manual	
Foreword	11
Part number, revision level, and publication date of this manual, and factory contact information	
Safety	14
Machine safety alerts and emergency procedures	
Prepare	27
Procedures for preparing jobsite, preparing operator, and preparing equipment	
Controls	36
Machine controls, gauges, and indicators and how to use them	
Vacuum and Pothole Operations	71
Procedures for removing debris and potholing utility locations	
Complete the Job	95
Procedures for restoring the jobsite and rinsing and storing equipment	
Maintenance	98
Maintenance intervals and instructions for this machine including lubrication, replacement of wear items, and basic maintenance	
Specifications	128
Machine specifications including weights, measurements, power ratings, and fluid capacities	
Support	130
The warranty policy for this machine and procedures for obtaining warranty consideration and training	

Safety

Chapter Contents

	For additional precautions, see "Prepare" chapter.
---	--

Safety Alert Classifications 15

Guidelines 16

Emergency Procedures 17

- Electric Strike Description17
- If an Electric Line is Damaged17
- If a Gas Line is Damaged18
- If a Fiber Optic Cable is Damaged18
- If Machine Catches on Fire18


Machine Safety Alerts 19


- Truck, Driver's Side19
- Debris Tank Door21
- Rear Control Panel22
- Air Compressor and Water Heater Cabinet23
- Control Panel Cabinet25


Safety Alert Classifications

These classifications and the icons defined on the following pages work together to alert you to situations which could be harmful to you, jobsite bystanders or your equipment. When you see these words and icons in the book or on the machine, carefully read and follow all instructions. YOUR SAFETY IS AT STAKE.

Watch for the three safety alert levels: **DANGER**, **WARNING** and **CAUTION**. Learn what each level means.

 **DANGER** indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

 **WARNING** indicates a hazardous situation that, if not avoided, could result in death or serious injury.

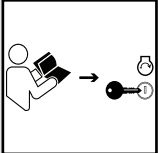

 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Watch for two other words: **NOTICE** and **IMPORTANT**.

NOTICE indicates information considered important, but not hazard-related (e.g., messages relating to property damage).

IMPORTANT can help you do a better job or make your job easier in some way.

Guidelines



WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. Know how to use all controls.

Follow these guidelines before operating any jobsite equipment:

- Complete proper training.
- Read and understand operator's manual before using equipment.
- Wear personal protective equipment including long pants, hard hat, eye protection, hearing protection, and protective footwear.
- Do not wear jewelry or loose clothing.
- Mark proposed path with white paint and have underground utilities located before working. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins. Safety videos are available from your Ditch Witch dealer or at www.ditchwitch.com/safety. Safety Data Sheets (SDS) are available at www.ditchwitch.com/support.
- Fully inspect equipment before operating. Repair or replace any worn or damaged parts. Replace missing or damaged safety shields and safety alert signs. Contact your Ditch Witch dealer for assistance.
- Follow instructions on all safety alert signs on machine.
- Use equipment carefully per the instructions in this manual. Stop operation and investigate anything that does not look or feel right.
- Do not operate machine where flammable gas may be present.
- Only operate equipment in well ventilated areas.
- Always tie down equipment and properly stow accessories, even if traveling short distances.
- Contact your Ditch Witch dealer if you have any questions about operation, maintenance, or equipment use.
- Complete the equipment checklist located at www.ditchwitch.com/safety.

Emergency Procedures

**⚠ WARNING**

Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

Before operating any equipment, review emergency procedures and check that all safety precautions have been taken.

EMERGENCY SHUTDOWN: Shut off truck by turning the ignition switch off, or press one of the emergency stop buttons. One is located on the main control panel and another is located on the rear of the truck. You can also press the red button on the remote control.

Electric Strike Description

When working near electric cables, remember the following:

- Electricity follows all paths to ground, not just path of least resistance.
- Pipes, hoses, and cables will conduct electricity back to all equipment.
- Low voltage current can injure or kill. Many work-related electrocutions result from contact with less than 440 volts.

Most electric strikes are not noticeable, but indications of a strike include:

- power outage
- smoke
- explosion
- popping noises
- arcing electricity

If any of these occur, assume an electric strike has occurred.

If an Electric Line is Damaged

If you suspect an electric line has been damaged, **DO NOT MOVE** and **DO NOT TOUCH ANY EQUIPMENT**. Take the following actions. The order and degree of action will depend on the situation.

- If you are **operating the machine**, immediately **RELEASE CONTROLS**.
- If you must leave the area, take small steps with feet close together to reduce the hazard of being shocked from one foot to the other.
- Warn people nearby that an electric strike has occurred. Instruct them to leave the area.

- Have someone contact electric company to shut off power.
- If you leave the area, do not return to jobsite or allow anyone into area until given permission by utility company.

If a Gas Line is Damaged

If you suspect a gas line has been damaged, take the following actions. The order and degree of action will depend on the situation.

- Immediately shut off engine(s), if this can be done safely and quickly.
- Remove any ignition source(s), if this can be done safely and quickly.
- Warn others that a gas line has been cut and that they should leave the area.
- After warning others to leave the area, leave jobsite as quickly as possible.
- Immediately call your local emergency phone number and utility company.
- If jobsite is along street, stop traffic from driving near jobsite.
- Do not return to jobsite until given permission by emergency personnel and utility company.

If a Fiber Optic Cable is Damaged

Do not look into cut ends of fiber optic or unidentified cable. Vision damage can occur. Contact utility company.

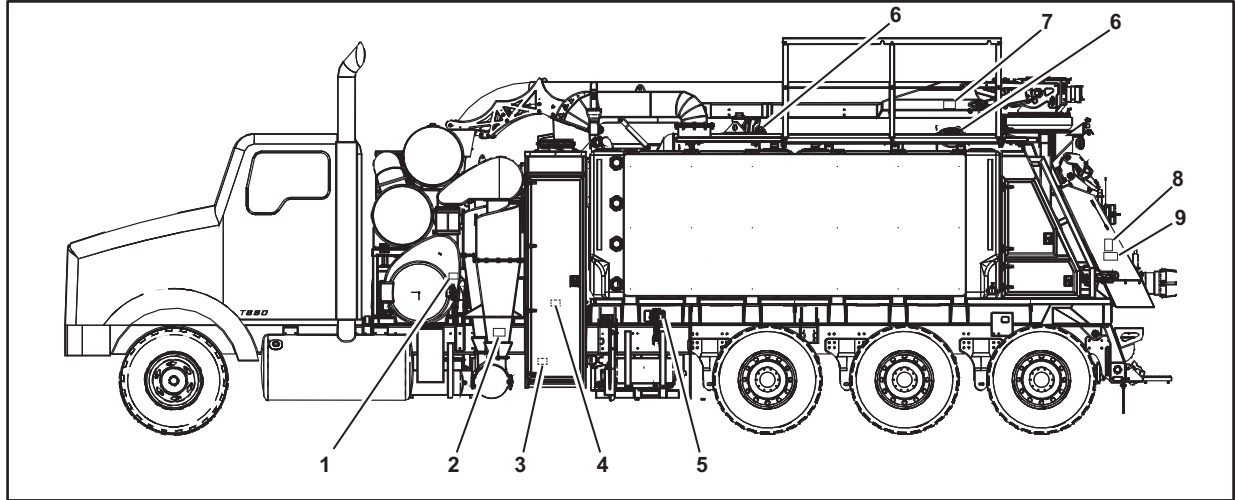
If Machine Catches on Fire

Perform emergency shutdown procedure and then take the following actions. The order and degree of action will depend on the situation.

- Immediately move battery disconnect switch (if equipped and accessible) to disconnect position.
- If fire is small and fire extinguisher is available, attempt to extinguish fire.
- If fire cannot be extinguished, leave area as quickly as possible and contact emergency personnel.

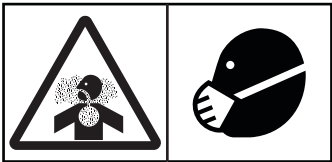
Machine Safety Alerts

Truck, Driver's Side



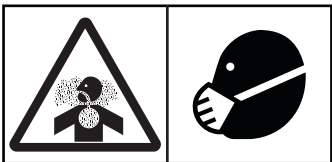
TTW12-SA-003a

1



⚠ WARNING Silica dust. Exposure can cause lung disease. Use breathing protection.

2



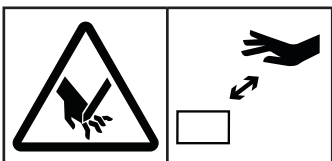
⚠ WARNING Silica dust. Exposure can cause lung disease. Use breathing protection.

3



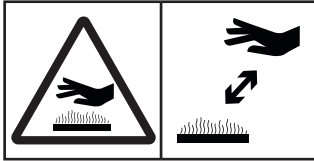
⚠ CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

4



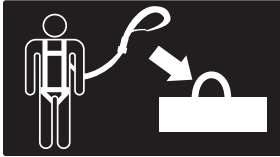
⚠ WARNING Moving parts. Contact can cause serious injury. Stay away.

5



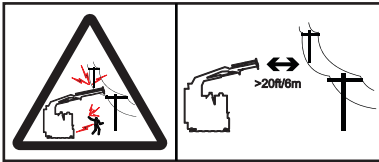
CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

6



Fall restraint anchor point. Attach restraint to anchor point when using maintenance platform.

7



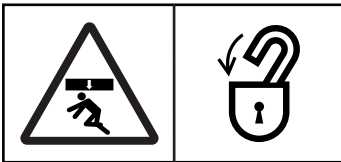
WARNING Do not get boom near power lines. Death or serious injury will occur. Keep required distance between boom and power lines. Use a spotter.

8



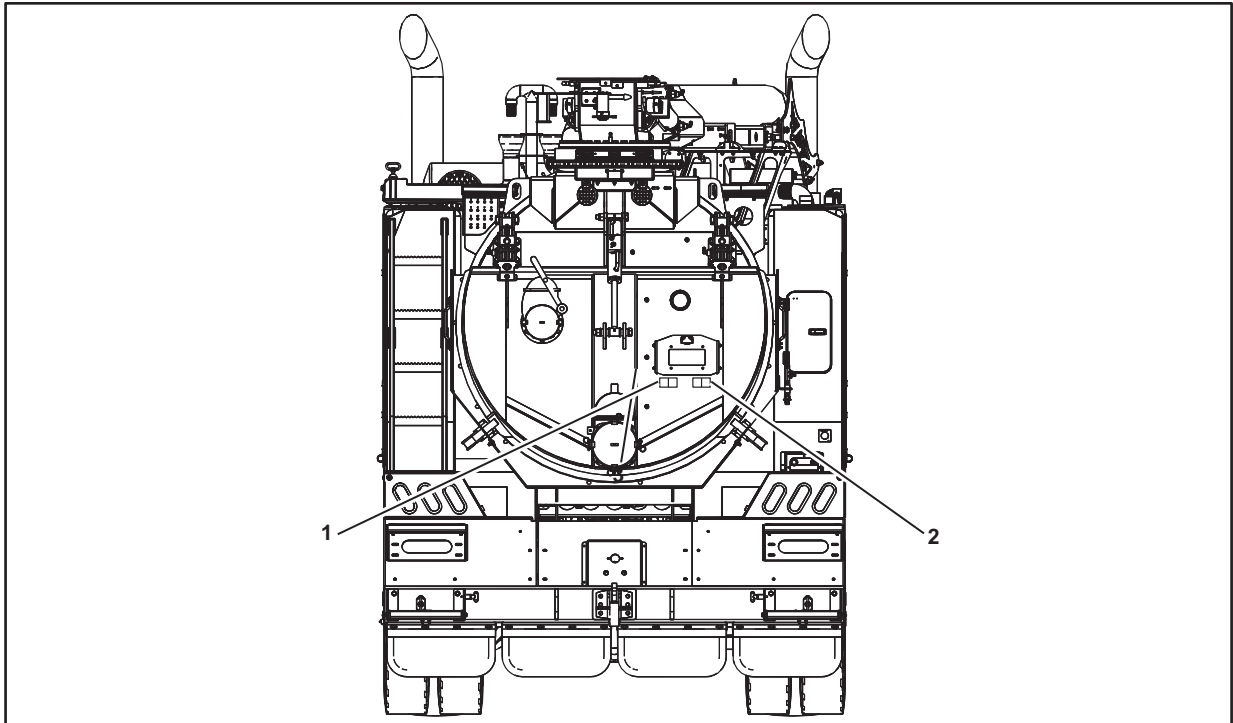
WARNING Moving parts. Contact can cause serious injury. Stay away.

9



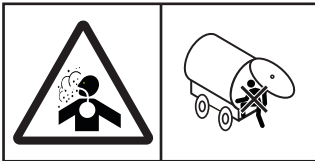
WARNING Crushing can cause death or serious injury. Secure raised part with locking device or stay away.

Debris Tank Door



TTW12-SA-005a

1



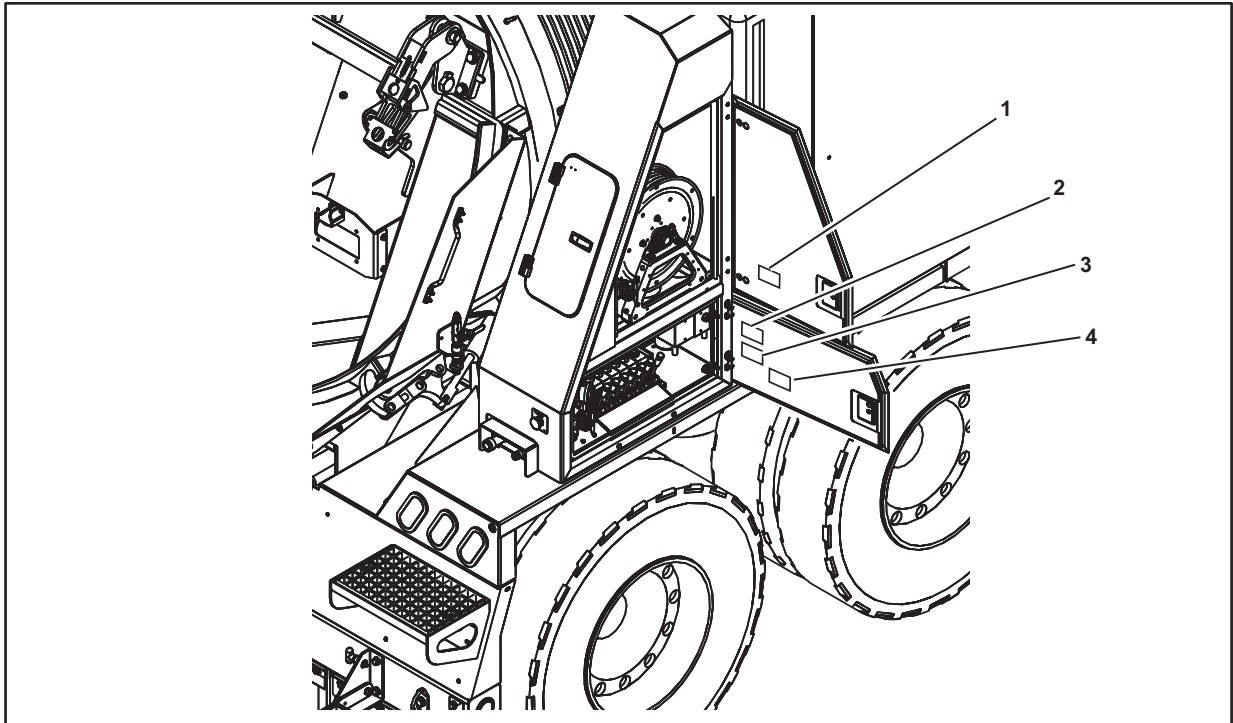
⚠ WARNING Confined space will cause suffocation. Use proper procedures for entering or stay away.

2



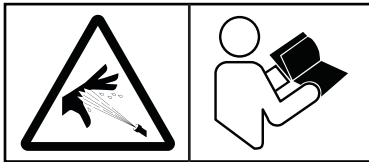
⚠ DANGER Static charge. Fire or explosion can cause death or serious injury. Never vacuum flammable or combustible substances.

Rear Control Panel



TTW12-SA-006a

1



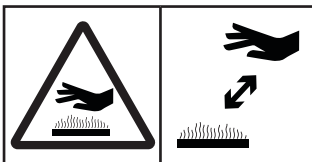
⚠ WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

2



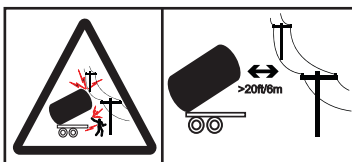
⚠ DANGER Incorrect boom procedures could result in serious injury or death. Lock boom before transporting or tilting.

3



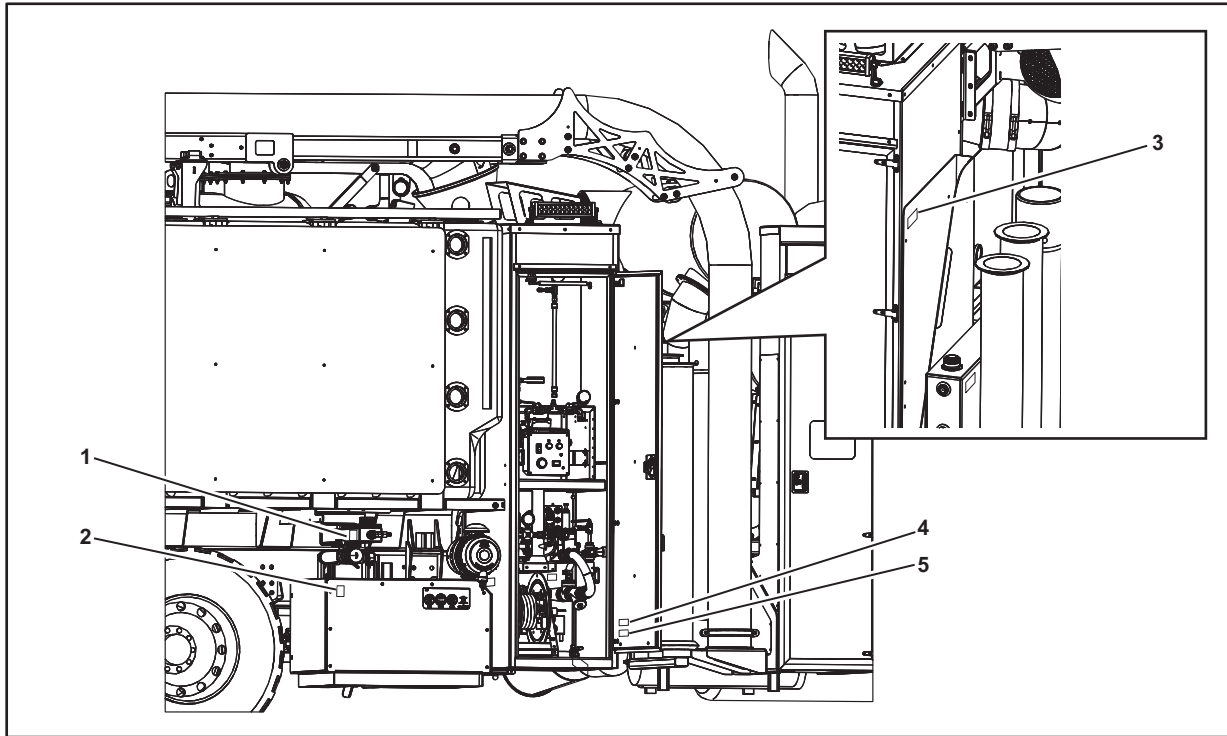
⚠ CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

4



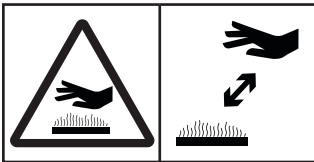
⚠ DANGER Do not get boom near power lines. Death or serious injury will occur. Keep required distance between boom and power lines. Use a spotter.

Air Compressor and Water Heater Cabinet



TTW12-SA-001a

1



CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

2



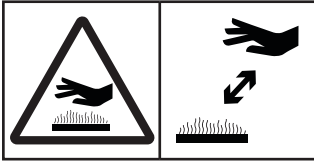
CAUTION Flying objects thrown by machine may strike people. Wear safety glasses and hard hat.

3



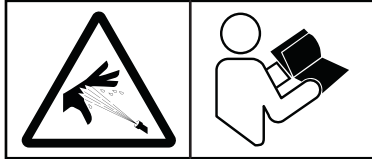
WARNING Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

4



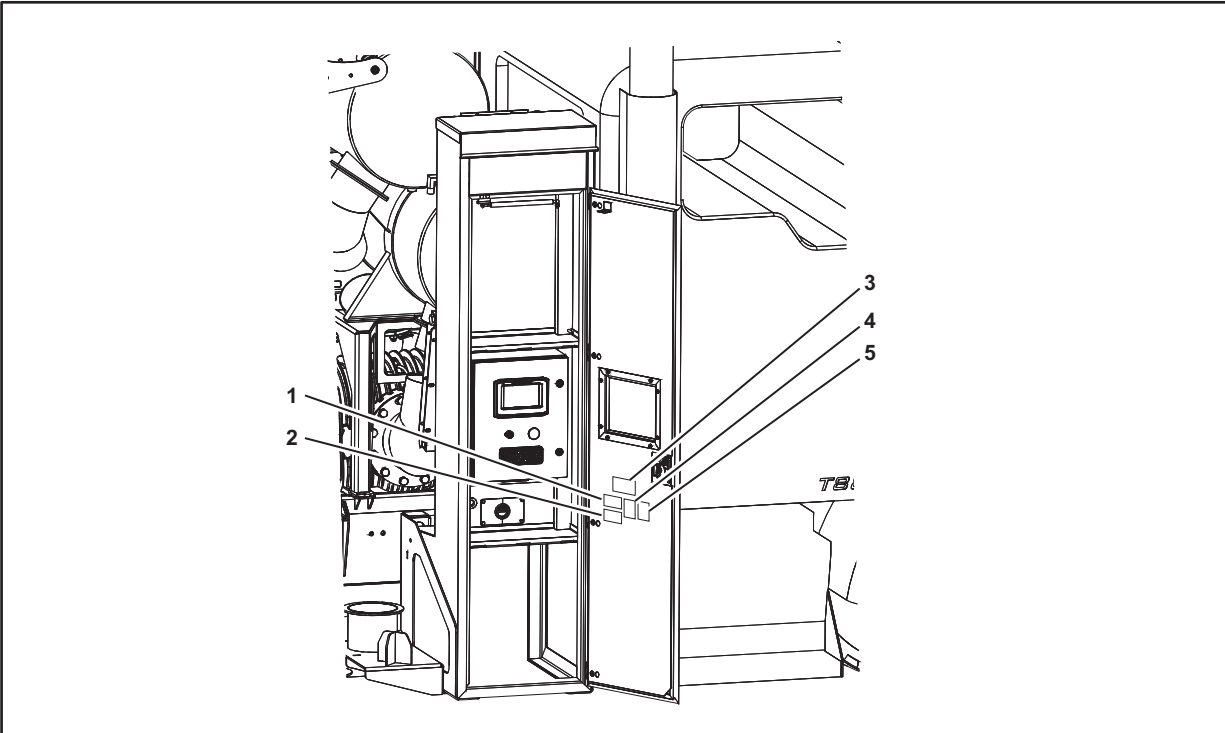
CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

5



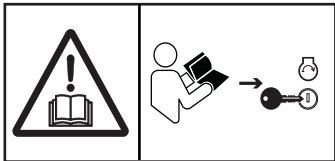
CAUTION Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

Control Panel Cabinet



TTW12-SA-002a

1



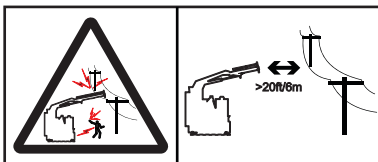
⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use.

2



⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. Know how to use all controls.

3



⚠ DANGER Do not get boom near power lines. Death or serious injury will occur. Keep required distance between boom and power lines. Use a spotter.

4



⚠ CAUTION Flying objects thrown by machine may strike people. Wear safety glasses and hard hat.


5





⚠ CAUTION High noise levels. Exposure can cause hearing loss. Wear hearing protection.

Prepare

Chapter Contents

	<p>See "Safety" for additional precautions.</p> <p>Wear proper personal protective equipment.</p>
---	---

Prepare Jobsite

		<p>⚠ WARNING Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.</p>
<p>To help avoid injury:</p> <ul style="list-style-type: none"> • Use appropriate equipment and procedures for exposing utility lines. • Classify jobsite and follow precautions based on classification. • Follow local regulations for digging near utilities. 		

Prepare Jobsite 27

- Review Job Plan28
- Select Start and End Points.28
- Identify Hazards.29
- Locate Utilities30
- Classify Jobsite.30
- Arrange for Traffic Control32
- Prepare Excavation Point32

Prepare Operator. 33

Prepare Equipment 34

- Check Supplies.34
- Check Equipment34

- Accessories35

Pre-Operational Checklist 35

A successful job begins before working. The first step in planning is reviewing information already available about the job and jobsite.

Review Job Plan

Review blueprints or other plans. Check for information about existing or planned structures, elevations, or proposed work that may be taking place at the same time.

Select Start and End Points

Select one end to use as a starting point. Consider the following when selecting a starting point:

Slope

Equipment should be parked on a level site. Consider how slope will affect setup and operation. Assess the risks on each slope to determine if factors affecting risks create an unsafe condition for working.

Space

Check that starting and ending points allow enough space for working.

Comfort

Consider shade, wind, fumes, and other site features.

Identify Hazards

Inspect jobsite before transporting equipment. Check for the following:

- overall grade or slope
- changes in elevation such as hills or open trenches
- obstacles such as buildings, railroad crossings, or streams
- signs of utilities
 - “buried utility” notices
 - gas or water meters
 - drop boxes
 - manhole covers
 - utility facilities without overhead lines
 - junction boxes
 - light poles
 - sunken ground
- traffic
- access
- soil type and condition
- water supply

Locate Utilities

Notify One-Call Services

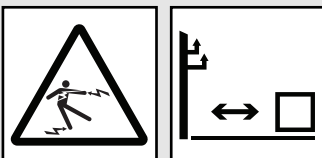
Mark proposed path with white paint and have underground utilities located before working.

- In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service.
- In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.

Verify Underground Utilities

Have an experienced locating equipment operator sweep area within 20' (6m) to each side of proposed excavation to verify previously marked line and cable locations. Mark locations of all buried utilities and obstructions.

Locate Overhead Lines



⚠ DANGER Overhead electrical lines. Contact will cause death or serious injury. Know location of lines. Stay away.

Note location and height of all overhead lines in jobsite and ensure that equipment maintains proper distance from live lines.

Classify Jobsite



Select a Classification

Jobsites are classified according to underground hazards present, not by line being installed. Jobsite may have more than one classification.

If working . . .	then classify jobsite as . . .
within 10' (3m) of a buried electric line	electric
within 10' (3m) of a natural gas line	natural gas
in concrete, sand, or granite which is capable of producing crystalline silica dust	crystalline silica dust
within 10' (3m) of any other hazard	other

Classify jobsite as electric if jobsite is in question or if the possibility of unmarked electric utilities exists.

Apply Precautions

		⚠ WARNING Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.
---	---	--

Once classified, precautions appropriate for jobsite must be taken. Follow US Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.

Electric Jobsite Precautions

Use one or both of these methods:

- Use appropriate equipment and procedures for exposing utility lines.
- Have service shut down while work is in progress. Have electric company test lines before returning them to service.

Natural Gas Jobsite Precautions

Position equipment upwind from gas lines and use one or both of these methods:

- Use appropriate equipment and procedures for exposing utility lines.
- Have service shut down while work is in progress. Have gas company test lines before returning them to service.

Crystalline Dust Jobsite Precautions

		⚠ WARNING Silica dust. Exposure can cause lung disease or cancer. Use breathing protection.
---	---	--

Crystalline silica dust is a naturally occurring substance found in soil, sand, concrete, granite, and quartz.

To reduce exposure when cutting, drilling, or working these materials:

- Use water spray or other means to control dust.
- Refer to US Occupational Safety and Health Administration (OSHA) guidelines or other applicable regulating guidelines for appropriate breathing protection or dust control methods.

Other Jobsite Precautions

You may need to use different methods to safely avoid other underground hazards. Talk with those knowledgeable about hazards present at each site to determine which precautions should be taken or if job should be attempted.

Clear objects such as landscaping fabric, cable, and wire from the work area. These objects may be underground or partially buried.

Arrange for Traffic Control

Vehicle and pedestrian traffic must be a safe distance from equipment. Evaluate jobsite and allow an appropriate buffer zone around equipment. If working near a road or other traffic area, contact local authorities about safety procedures and regulations.

Prepare Excavation Point

Clear the area to be excavated. Remove rocks or branches too large for vacuum hose.

Select a solid area to stand on while excavating.

Prepare Operator



WARNING Jobsite hazards. Exposure can cause death or serious injury. Use correct equipment and work methods. Use and maintain appropriate safety equipment.

To help avoid injury:

- Wear personal protective equipment including hard hat, safety eye wear, foot protection, hearing protection, and gloves (except when near rotating equipment).
- Remove jewelry.
- Wear close-fitting, high visibility clothing.
- Have other personal protective equipment, such as insulated boots and gloves, breathing protection, and face shield, etc. available for use depending on jobsite hazards or requirements.

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- Plan for emergency services. Have the telephone numbers for local emergency and medical facilities on hand. Check that you will have access to a telephone.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins. Safety videos are available from your Ditch Witch dealer or at www.ditchwitch.com/safety. Safety Data Sheets (SDS) are available at www.ditchwitch.com/support.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.

Any time jobsite is classified as electric, operator must wear boots and gloves meeting the following standards:

- Boots must have high tops and meet the electric hazard protection requirements of ASTM F2413 or ASTM F1117 when tested at 18,000 volts. Tuck legs of pants completely inside boots.
- Gloves must have 17,000 AC maximum use voltage, according to ASTM specification D120.
- If working around higher voltage, use gloves and boots with appropriately higher ratings.

Safety Accessories

The following safety accessories are provided in the storage cabinet directly behind the driver's side door:

- foam ear plugs for hearing protection
- eye wash station
- first aid kit

Prepare Equipment

Check Supplies

- PPE
- marking flags or paint
- notepad and pencil
- spare fuses
- lubricants

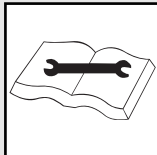
Check Equipment

Fluid Levels

- fuel
- engine oil
- hydraulic fluid
- engine coolant
- water tank

Condition and Function

- all controls



⚠ WARNING

Improper control function. Use can cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.

- hoses and valves
- washout gun and wash wand
- dig wand
- pumps and motors
- tires
- wheel chocks, stakes, flagging, signs, guards, and shields
- couplers and fittings
- water tank(s)
- filters (air, oil, hydraulic)

Accessories

Fire Extinguisher

A fire extinguisher is provided, and stored in the truck cab. If appropriate, place a fire extinguisher near the truck but away from possible points of ignition where shown. The fire extinguisher should always be classified for both oil and electric fires. It should meet legal and regulatory requirements.

Pre-Operational Checklist

- ensure debris tank door closed and sealed
- ensure debris tank door lock valve is closed
- check float level is free or sight glass is clear
- check rear decant valves
- ensure boom is securely in cradle
- ensure boom hose is strapped down or secure
- ensure all dig tubes and extensions are onboard
- check water pump filter
- check blower oil level
- test vacuum breaker operation
- dust filter screen - housing - door seals - clean
- cyclonic filter particulate trap clean
- wireless remote inspected and present
- control panel door seal - gauges - lights - switches

Controls

Chapter Contents

Emergency Stop Buttons 37

Truck Cab Controls 38

- Main Button Controls38
- Audible Alarm39
- Miscellaneous Controls40
- Light Bar Control Panel41

Control Panel Controls and Indicators 42

- Main Control Panel43
- Digital Control Panel47
- Remote Control48
- Scale Control Panel49

Water Heater Controls and Indicators 50

- Water Heater Control Panel Controls and Indicators51
- Water Heater System Controls and Indicators53
- Water Hose Reel Controls and Indicators55

Air Compressor Controls and Indicators 56

Manual Hydraulic Controls 57

Rear Controls 59

Debris Tank/Truck Rear 60

Digital Control Panel Functions 62

- Main Status Screen62

Remote Control Functions 65

- Turning Remote On65
- Turning Remote Off66
- Restoring Operation After Radio Stop66
- Remote Control Button Functions66
- Remote Control Safety Interlocks70

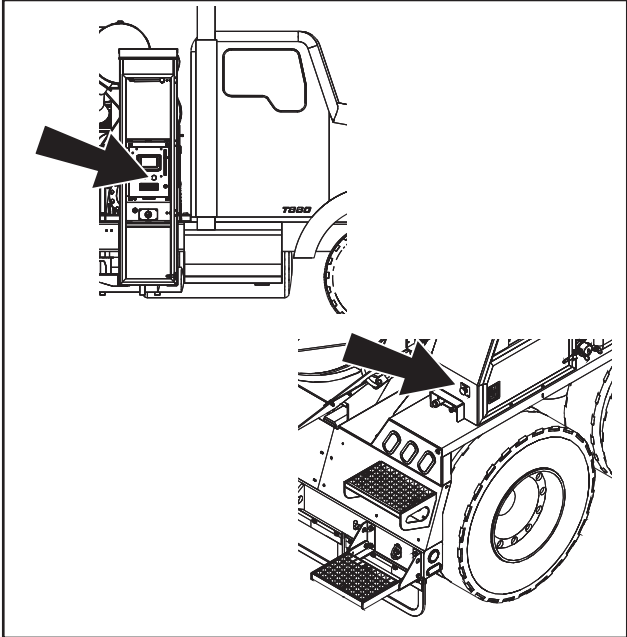
Emergency Stop Buttons

NOTICE: E-stop button must be pulled out to re-enable functions.

There are two emergency stop buttons located on the truck. One is located on the Main control panel, and the other is mounted on the curb side rear cabinet.

When the emergency stop button is pressed the following actions take place:

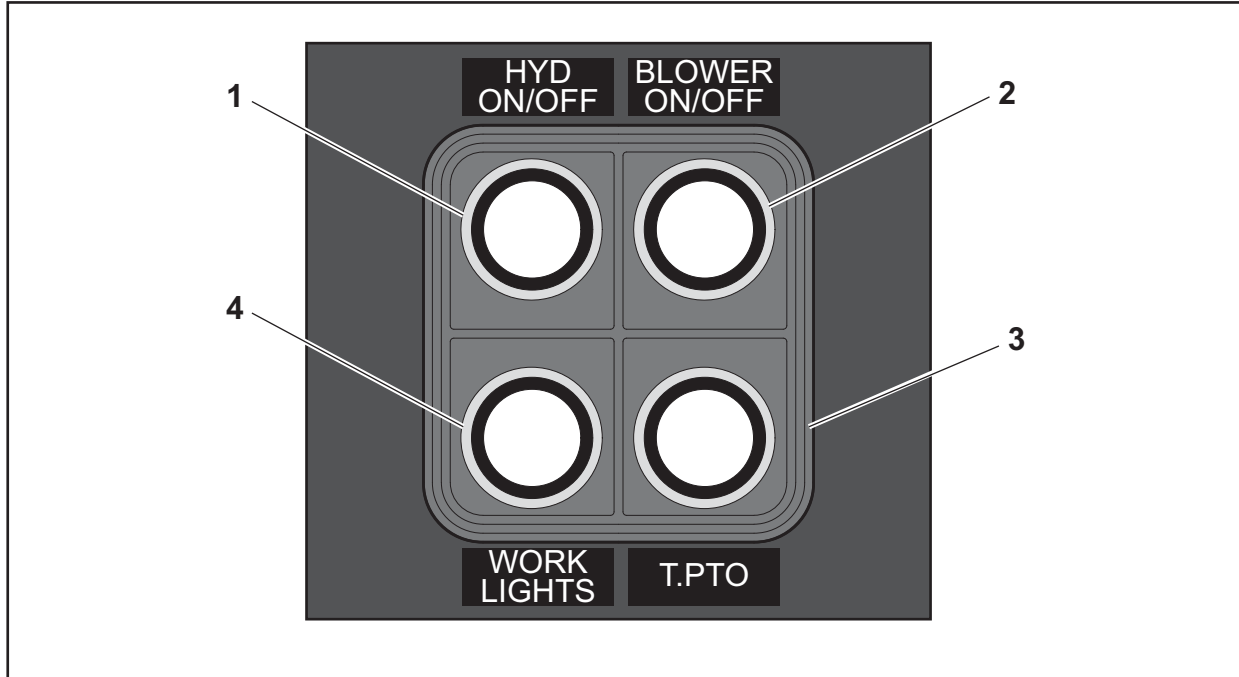
- Engine and blower idle down.
- Vacuum breaker opens to redirect suction.
- Water pump and air compressor (if equipped) are disabled.
- Remote controls are disabled with a warning displayed on the remote.
- E-stop warning splash screen is displayed on the digital control panel.
- The auxiliary hydraulic pump (that operates the boom and the debris tank door) slows down the engine and remote control of these functions is disabled.



TTW12-CI-009a.ai

Truck Cab Controls

Main Button Controls



TTW12-CI-014a.ai

NOTICE: For trucks not equipped with air compressor the “T.PTO” button will be non-functional.

- 1. Hydraulic ON/OFF Button
- 2. Blower ON/OFF Button
- 3. T. PTO Button
- 4. Work Lights Button

Item	Description	IMPORTANT
Hydraulic ON/OFF Button	Used to toggle the hydraulic system on/off.	ON engages the lower section of the transfer case, also known as “Pump Mode”. This section of the transfer case is responsible for running the primary and secondary hydraulic pumps as well as providing feedback to the truck to engage PTO mode.

Item	Description	IMPORTANT
Blower ON/OFF Button	Used to toggle the blower system on/off.	NOTE: Blower can only be operated in conjunction with hydraulic system. Engages/disengages the upper section of the transfer case, responsible for the Blower operations.
Transmission PTO ON/OFF Button	Used to toggle the transmission-mounted Power Take Off (PTO) on/off, which drives the air compressor.	When equipped with the air compressor system, the truck will have a third hydraulic pump solely responsible for powering the compressor This function engages/disengages the hydraulic pump.
Work Lights ON/OFF Button	Used to toggle the work lights on/off.	Works in parallel with the main control panel work light switch to operate the exterior lights found around the truck. These lights are located on top of the main cabinets, at the back of the tank, and along the boom arm.

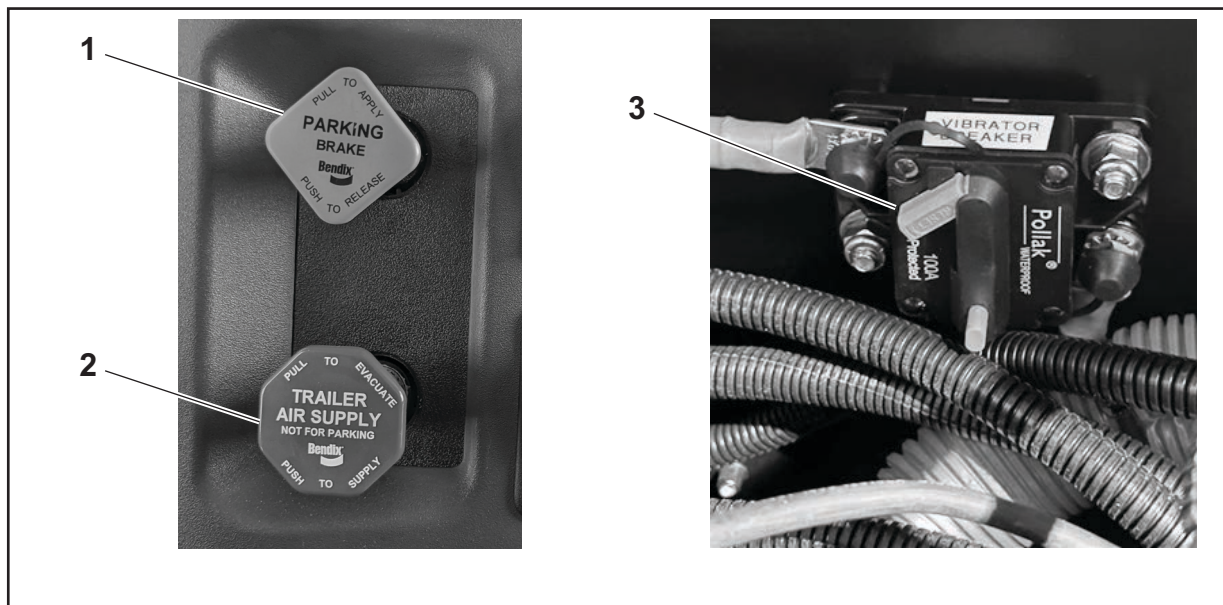
Keypad Color Indications	Description
Amber	Not engaged, boom in storage cradle, road worthy
Purple	Not engaged, boom in dump cradle
Dark Blue	Not engaged, boom lifted off cradle
Green	Transfer case shifted, shaft not spinning, boom in cradle
Light Blue	Transfer case shifted, shaft not spinning, boom not in cradle
Red	Shaft spinning, do not engage or disengage
Flashing	Flashing button indicates a fault was detected.

Audible Alarm

There is an audible buzzer installed behind the key switch in the dash. This buzzer is a warning to the driver of a potentially dangerous condition and the truck should not be driven until corrected. Conditions where the buzzer will sound:

- Tank is lifted out of the cradle AND the park brake is released
- Boom is not in the inner cradle (road mode) AND the parking brake is released

Miscellaneous Controls



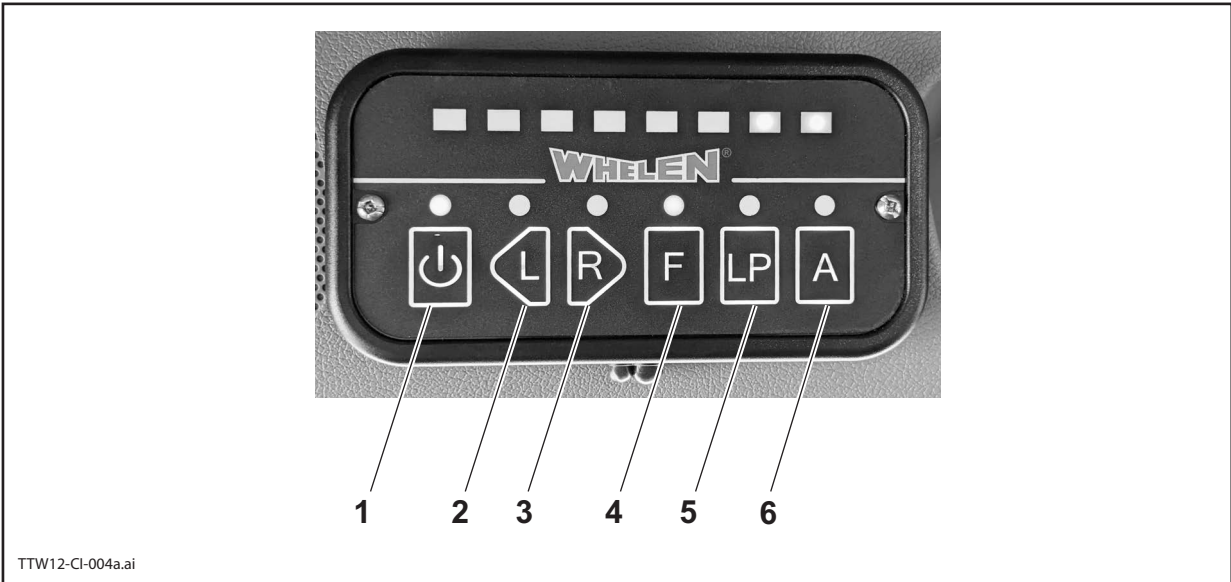
TTW12-CI-015a.ai

- 1. Parking Brake Control
- 2. Trailer Air Supply Control
- 3. Main Battery Circuit Breakers

Item	Description	IMPORTANT
Parking Brake Control	Push to apply parking brake. Pull to release parking brake.	
Trailer Air Supply Control	Pull to evacuate air system. Push to supply air system.	
Main Battery Circuit Breakers	Manually resettable switches controlling power to control panel, water heater, and vibrator.	Located in the battery box.

Light Bar Control Panel

The light bar control panel operates the lightbar located on the back of the tank. The controller is powered by the beacon switch in the cab. In order to activate the light bar, the beacon switch on the dash must be turned on first.



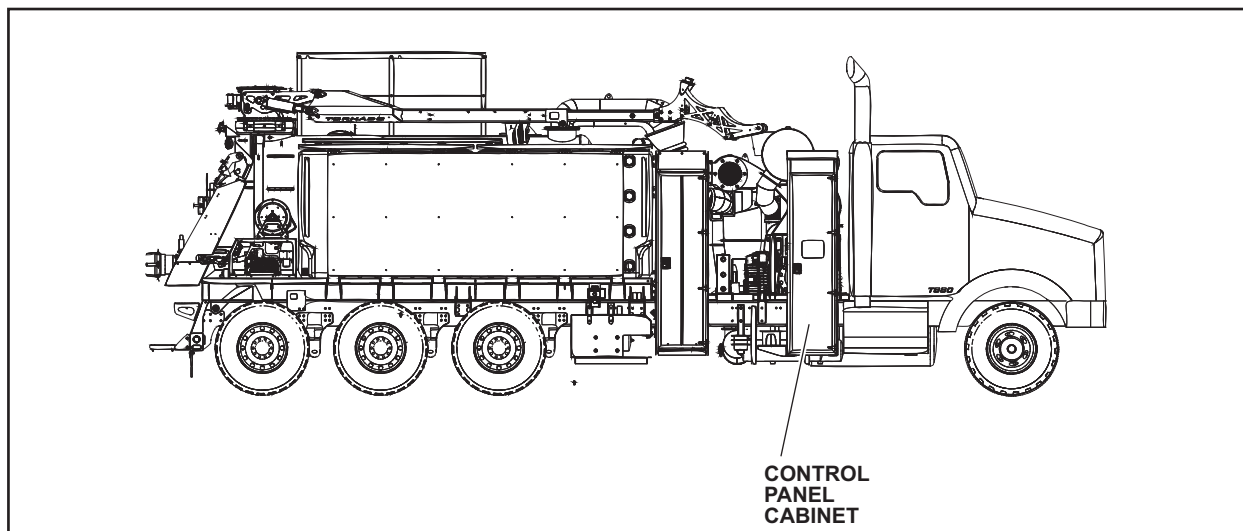
- | | |
|------------------------|--------------|
| 1. Power ON/OFF Button | 4. F Button |
| 2. Left Button | 5. LP Button |
| 3. Right Button | 6. A Button |

Item	Description	IMPORTANT
1. Power ON/OFF Pushbutton	Toggles light bar power on/off.	Beacon toggle switch must be turned ON for light bar to operate.
2. Left (L) Button	Illuminates light bar LEDs in a right-to-left repeating pattern.	
3. Right (R) Button	Illuminates light bar LEDs in a left to right repeating pattern.	
4. Flashing (F) Button	Flashes all LEDs.	
5. LP Button	Places the light bar in low power mode	
6. A Button	(not used)	

Control Panel Controls and Indicators

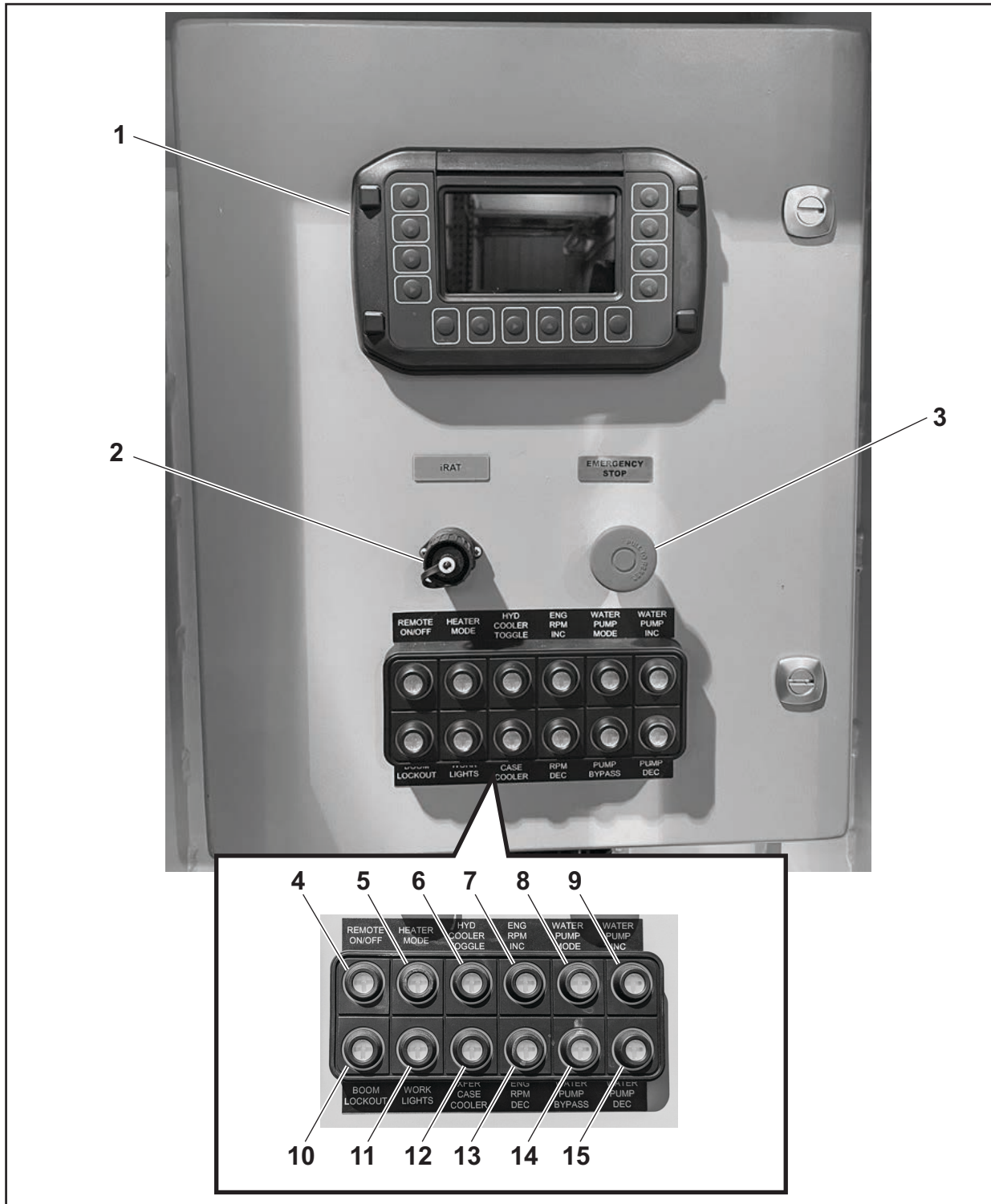
The Main Control Panel for the W12 is located in a cabinet on the passenger side, just behind the cab. The following components are contained in the cabinet:

1. Main Control Panel (which houses the Digital Control Panel)
2. Sigalarm AC Voltage Field Detection Device (if equipped)
3. Right Weigh scale
4. Remote Control (with charging cradle)



TTW12-CI-000a.ai

Main Control Panel



Item	Description	IMPORTANT
1. Digital Control Panel	See "Digital Control Panel Functions" on page 62 for details	
2. iRAT Port	Data port	Used by factory service personnel.
3. Emergency Stop Button	Press to stop all operations in event of an emergency.	After being activated, must be pulled out to resume operations.
4. Remote On/Off Button	Toggles to enable/disable the Remote Control (see "Remote Control" on page 48 for details) Blue = ON	
5. Heater Mode Button	Selects the fan speed for all heaters: Off/Low speed/High speed Orange = Low Speed Green = High Speed	
6. Hyd Cooler Toggle Button	Overrides the automatic controls and manually engages the hydraulic cooler fan. The cooler fan will turn on automatically at: 140°F (60°C).	<ul style="list-style-type: none"> • Display screen will show warning messages: Warning - temperature is high Critical - temperature is critically high • Cooler will activate automatically when hydraulic fluid reaches maximum temperature.
7. Eng RPM Inc Button	Press and hold to increase engine RPM Green while pressed	

Item	Description	IMPORTANT
<p>8. Water Pump Mode Button</p>	<p>Cycles through the following modes: OFF/MANUAL/REMOTE/AIRDIG</p> <ul style="list-style-type: none"> • Manual allows the pump speed to be controlled on the panel Button shows GREEN • REMOTE allows the pump speed to be controlled on the remote Button shows BLUE • AIRDIG = activates air compressor (if equipped) Button shows PURPLE 	
<p>9. Water Pump Inc Button</p>	<p>When the WATER PUMP MODE is set to Manual, increases "Water Pump %" (Pump Speed). Hold button to ramp up</p>	
<p>10. Boom Lockout Button</p>	<p>Toggles to enable/disable electrical control of the boom with the remote control. Red=ON/Disabled</p>	<p>NOTICE: Does not disable manual boom controls at hydraulic control panel.</p>
<p>11. Work Lights Button</p>	<p>Toggles work lights on/off. Blue=ON</p>	
<p>12. XFer Case Cooler Button</p>	<p>Toggles the transfer case cooler on/off.</p>	<p>Cooler will activate automatically when transfer case fluid reaches maximum temperature.</p>
<p>13. Eng RPM Dec Button</p>	<p>Decreases the engine speed (RPM). Hold button to ramp down Green while pressed</p>	<p>NOTICE: When the E-stop is pressed, engine RPM will decrease showing green on Eng RPM Dec</p>
<p>14. Water Pump Bypass</p>	<p>Manually turn on water pump when WATER PUMP MODE is set to "Manual" or "Air Dig" Green=ON</p>	

Item	Description	IMPORTANT
15. Water Pump Dec Button	When the WATER PUMP MODE is set to Manual, increases "Water Pump %" (Pump Speed) Hold button to ramp down	

Digital Control Panel

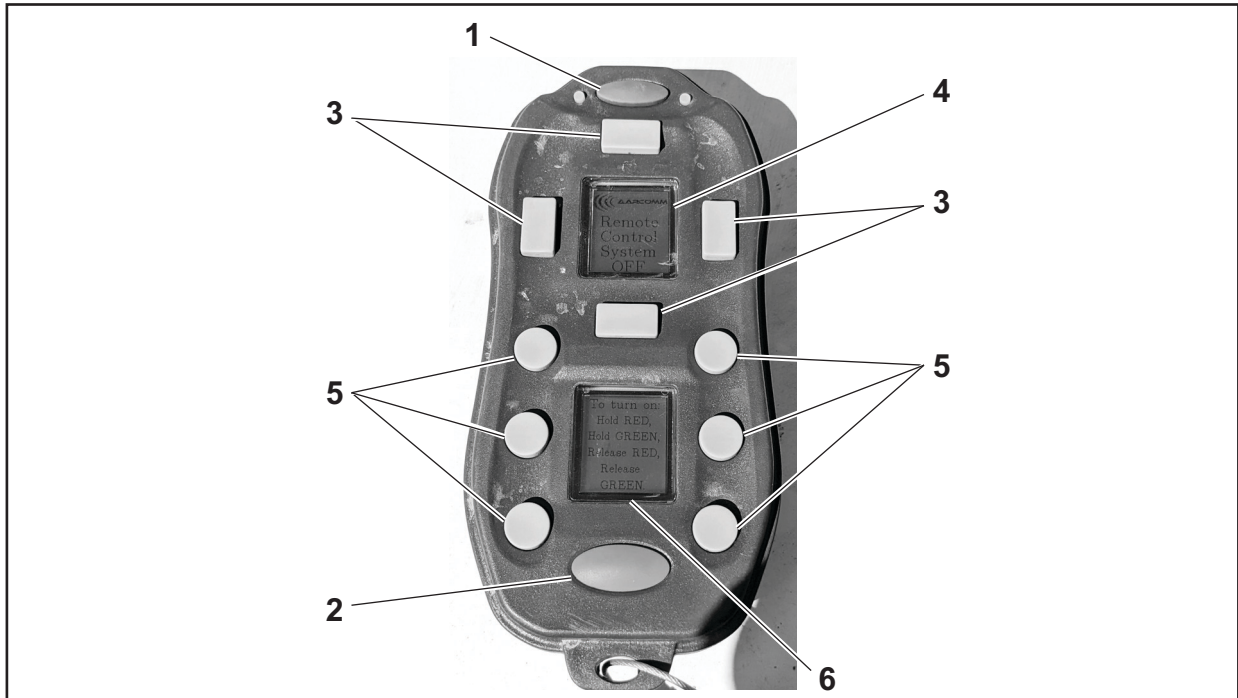


TTW12-CI-016a

NOTICE: Refer to “Digital Control Panel Functions” on page 62 for more information

Item	Description	IMPORTANT
1. Left Side Button	Press to select from options shown	
2. Right Side Button	Press to select from options shown	
3. Navigation Button	Press to navigate through menus	
4. ESC Button	Returns to previous screen/ main menu	
5. OK Button	Selects options shown on main screen	

Remote Control



TTW12-CI-007a.ai

NOTICE: Refer to “Remote Control Functions” on page 65 for more information.

Item	Description	IMPORTANT
1. Green Power Button	Used with the Red Power button to turn the remote control on.	
2. Red Power Button	Turns the remote control off. Also functions as a system stop button.	
3. Upper Navigation Soft Keys	Display depends on operational mode and status.	
4. Upper LCD Display	Information displayed depends on operational mode and status.	
5. Lower Navigation Soft Keys	Function depends on operational mode and status.	
6. Lower LCD Display	Display depends on operational mode and status.	

Scale Control Panel



TTW12-CI-009a

NOTICE: Refer to the Right Weigh 201-RTS OEM documentation for full operating instructions.

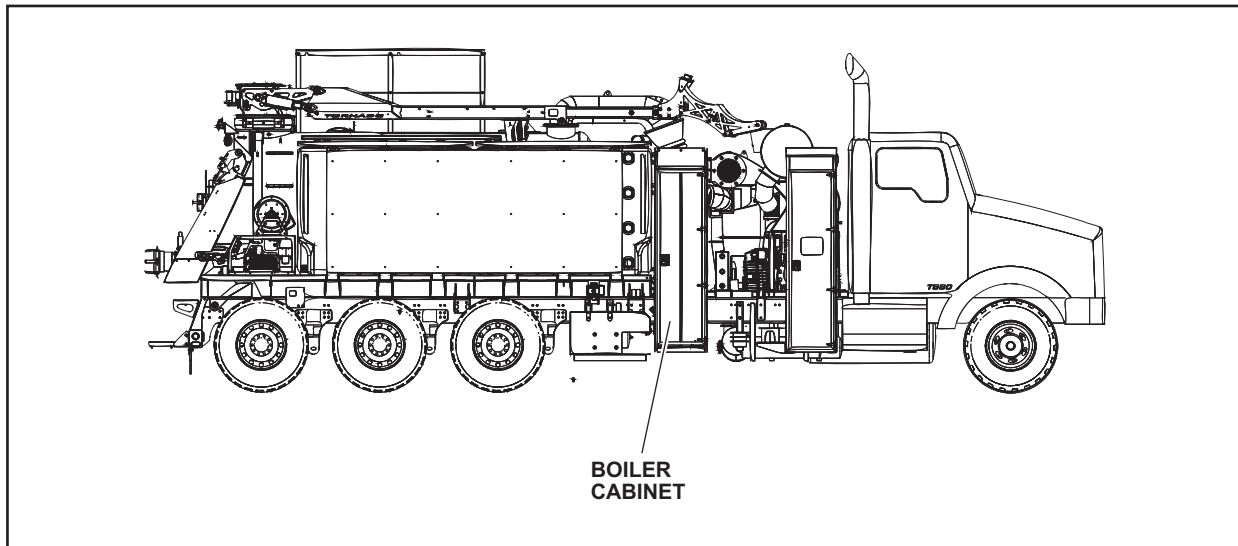
Item	Description	IMPORTANT
1. Power ON/OFF Button	While holding the Up and Down buttons, press to power on the scale.	
2. Digital Display	Displays weight of the truck and prompts during setup and calibration.	
3. Menu/Enter Button	Used during setup and calibration to move through options and display menu items.	
4. 1/Calibrate High Button	Used to enter PIN number and set options during calibration.	
5. 2/Calibrate Low Button	Used to enter PIN number and set options during calibration.	

Item	Description	IMPORTANT
6. 3/Down Button	Used to enter PIN number and set options during calibration.	
7. 4/Up Button	Used to enter PIN number and set options during calibration.	

Water Heater Controls and Indicators

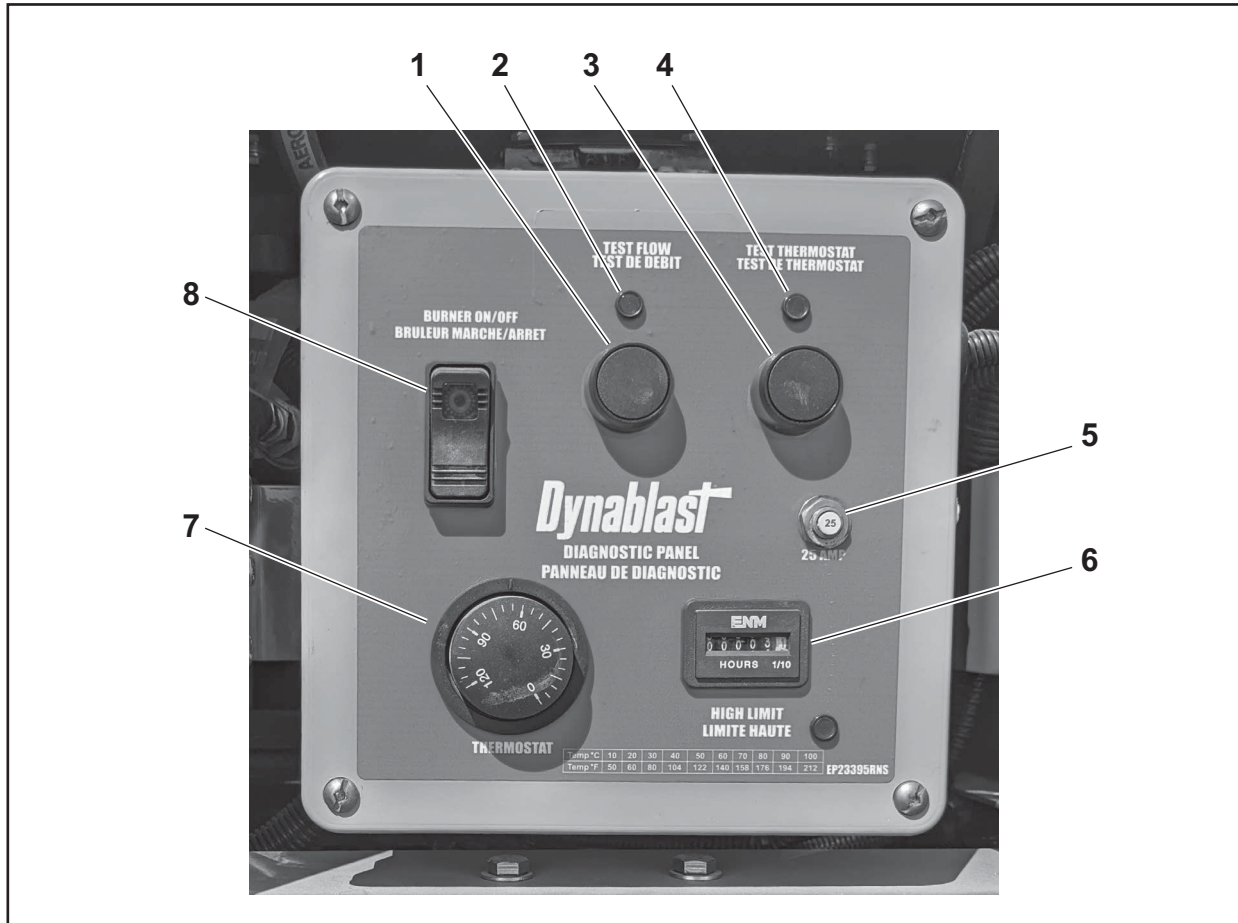
The Water Heater Controls for the W12 is located in a cabinet on the passenger side, just behind the boom storage. The following components are contained in the cabinet:

1. Water Heater Control Panel (which houses the Digital Control Panel)
2. Water Heater System
3. Water Hose Reel



TTW12-CI-011a

Water Heater Control Panel Controls and Indicators



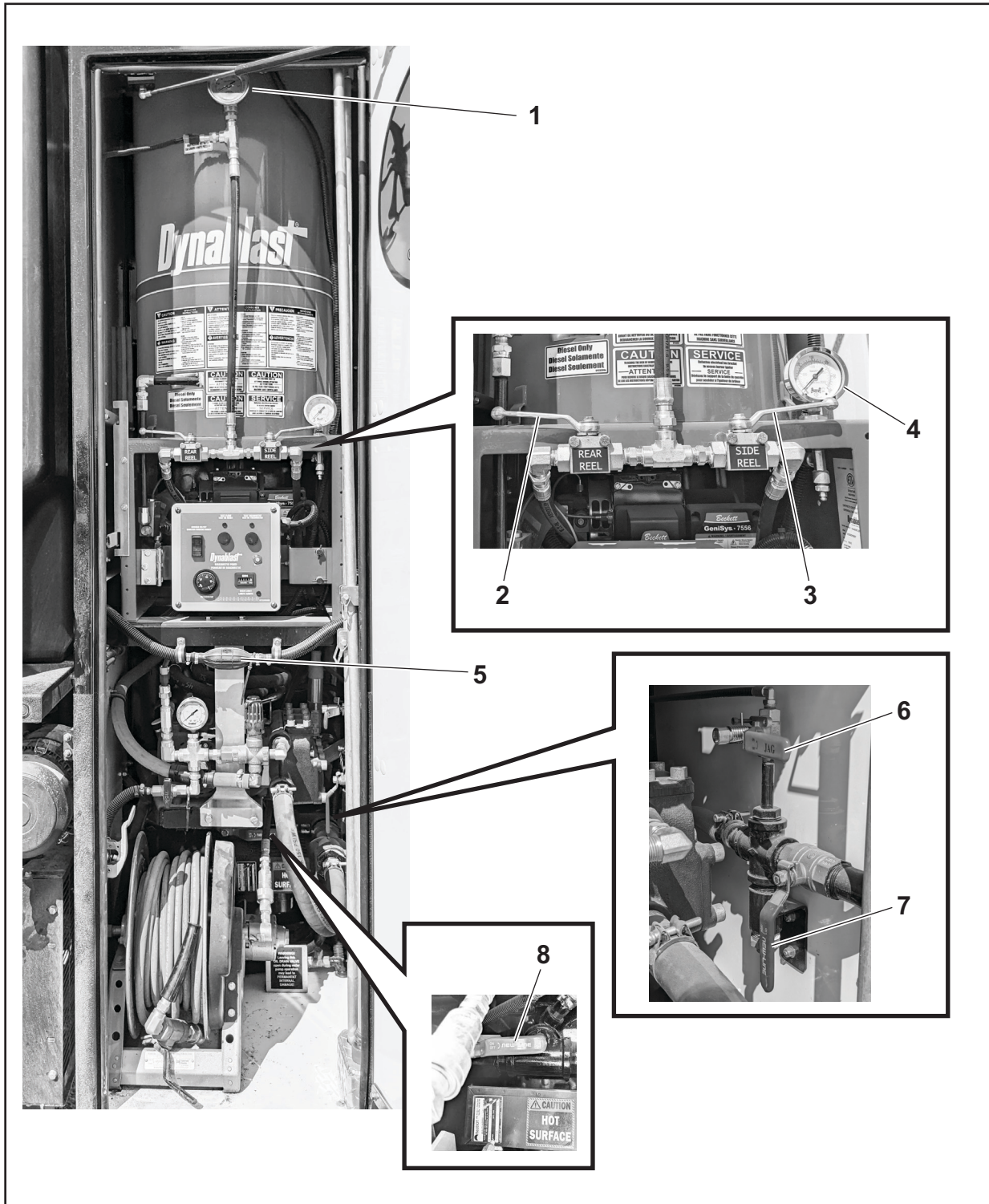
TTW12-CI-001a

- | | |
|------------------------------|-------------------------|
| 1. Test Flow Button | 5. Circuit Breaker |
| 2. Test Flow Indicator | 6. Hourmeter |
| 3. Test Thermostat Button | 7. Thermostat Dial |
| 4. Test Thermostat Indicator | 8. Burner ON/OFF Switch |

Item	Description	IMPORTANT
1. Test Flow Button	Momentary button that tests water flow through the water heater.	
2. Test Flow Indicator	LED that illuminates if test passes successfully.	
3. Test Thermostat Button	Momentary button that tests thermostat functionality.	

Item	Description	IMPORTANT
4. Test Thermostat Indicator	LED that illuminates if test passes successfully.	
5. Circuit Breaker	25 Amp circuit breaker. Press to reset.	<ul style="list-style-type: none">• Tripped circuit breaker may be an indication of faults in the water heater.
6. Hourmeter	Digital indicator of cumulative hours of water heater operation.	
7. Thermostat Dial	Rotary dial that allows the operator to set the water temperature (° F).	
8. Burner ON/OFF Switch	Two-position rocker switch that toggles the burner on/off. LED in switch illuminates if burner is ON.	

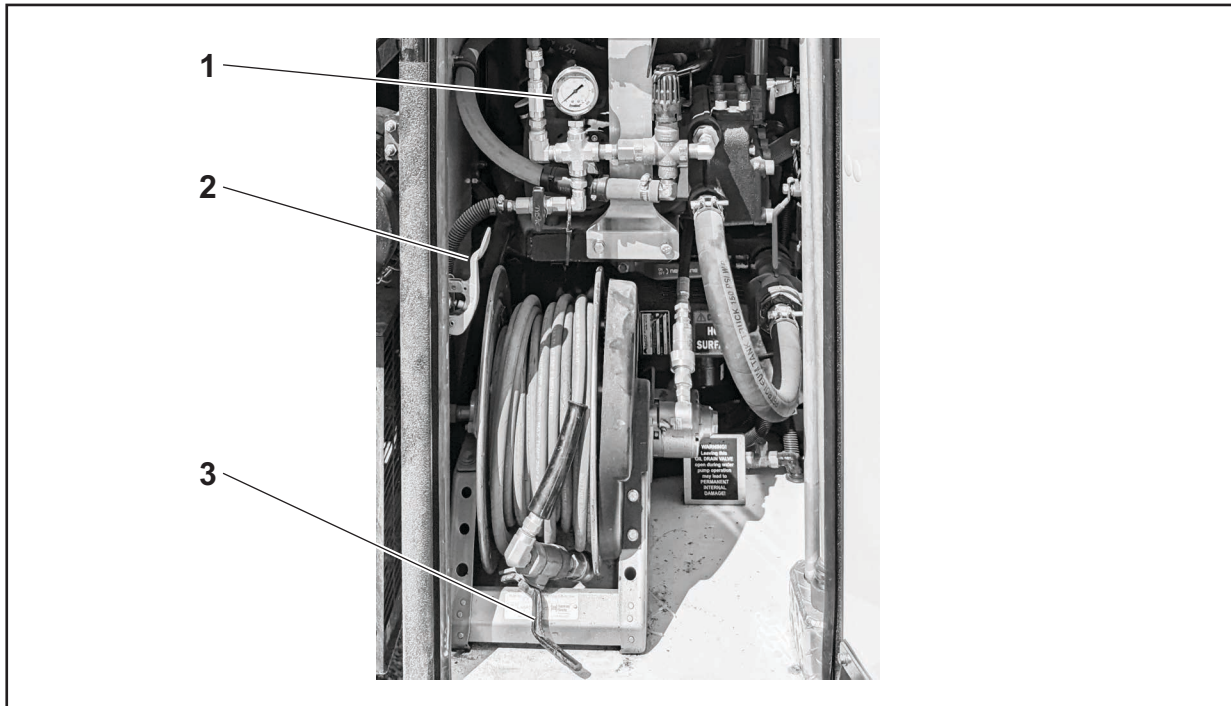
Water Heater System Controls and Indicators



- | | |
|--|---------------------------------|
| 1. Hot Water Temperature Gauge | 5. Priming Squeeze Bulb |
| 2. Rear Reel Water Control Valve | 6. Water System Purge Valve |
| 3. Right Side Reel Water Control Valve | 7. Winterization Solution Valve |
| 4. Hot Water Pressure Gauge | 8. Water Pump Inlet Valve |

Item	Description	IMPORTANT
1. Hot Water Temperature Gauge	Shows water temperature (° F)	
2. Rear Reel Water Control Valve	Ball valve that controls water flow to the rear hose reel.	
3. Right Side Reel Water Control Valve	Ball valve that controls water flow to right side hose reel.	
4. Hot Water Pressure Gauge	Shows hot water pressure (PSI)	
5. Priming Squeeze Bulb	To prime the water heater, squeeze the bulb to introduce diesel fuel into the combustion chamber	IMPORTANT: If you have to prime the water heater frequently, this may indicate an air leak in the fuel lines.
6. Water System Purge Valve	Momentary ball valve that applies high pressure air from the truck to purge water from the system.	
7. Winterizing Solution Valve	Ball valve that is opened to fill the water system with winterizing solution.	
8. Water Pump Inlet Control Valve	Ball valve that controls flow of water to the water pump.	

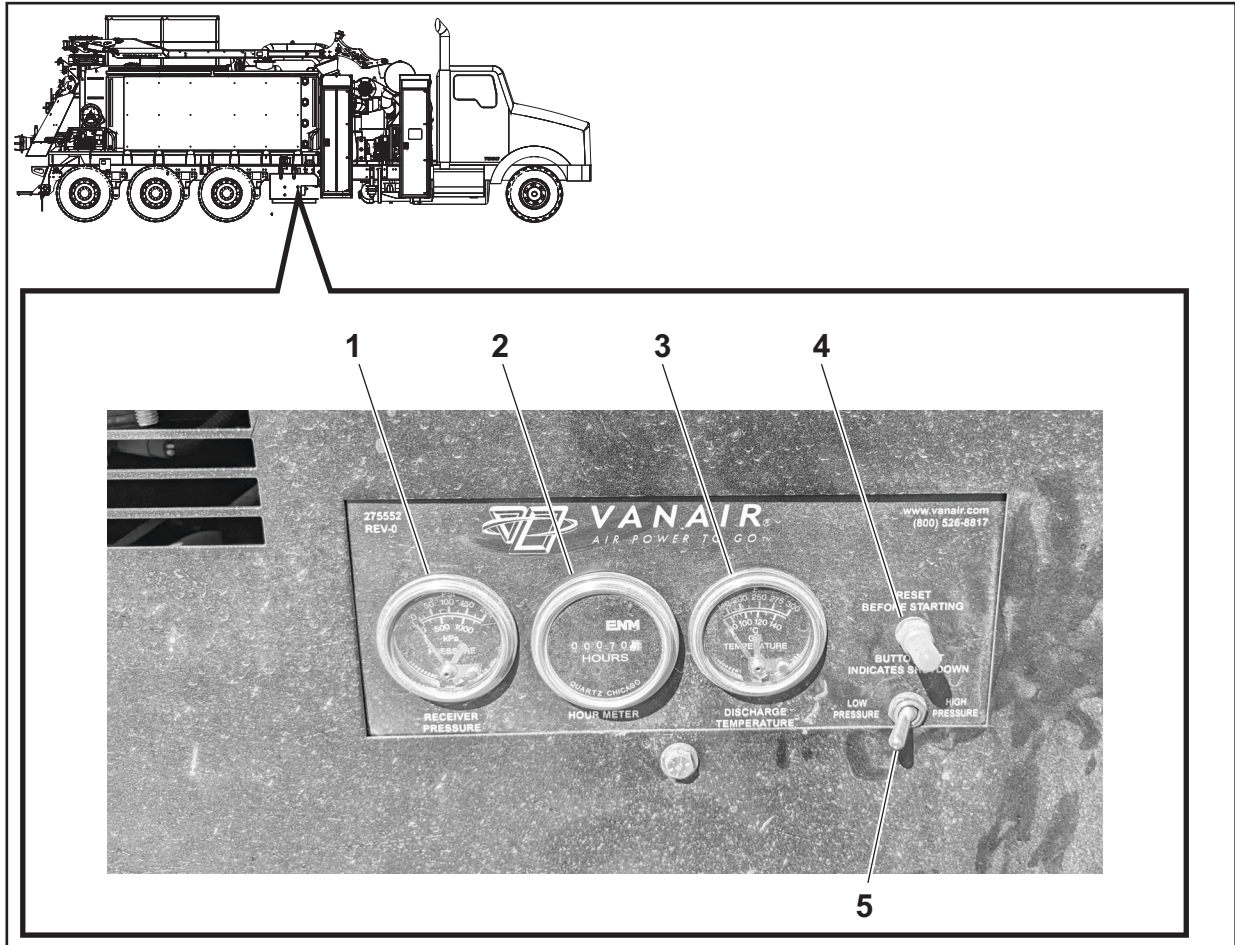
Water Hose Reel Controls and Indicators



TTW12-CI-002a.ai

Item	Description	IMPORTANT
1. Water Pressure Gauge	Analog gauge indicates water pressure at water pump.	
2. Reel Retract Lever	Press lever to retract hose onto reel.	
3. Water Control Valve	1/4-turn ball valve that controls the flow of water to the dig lance.	

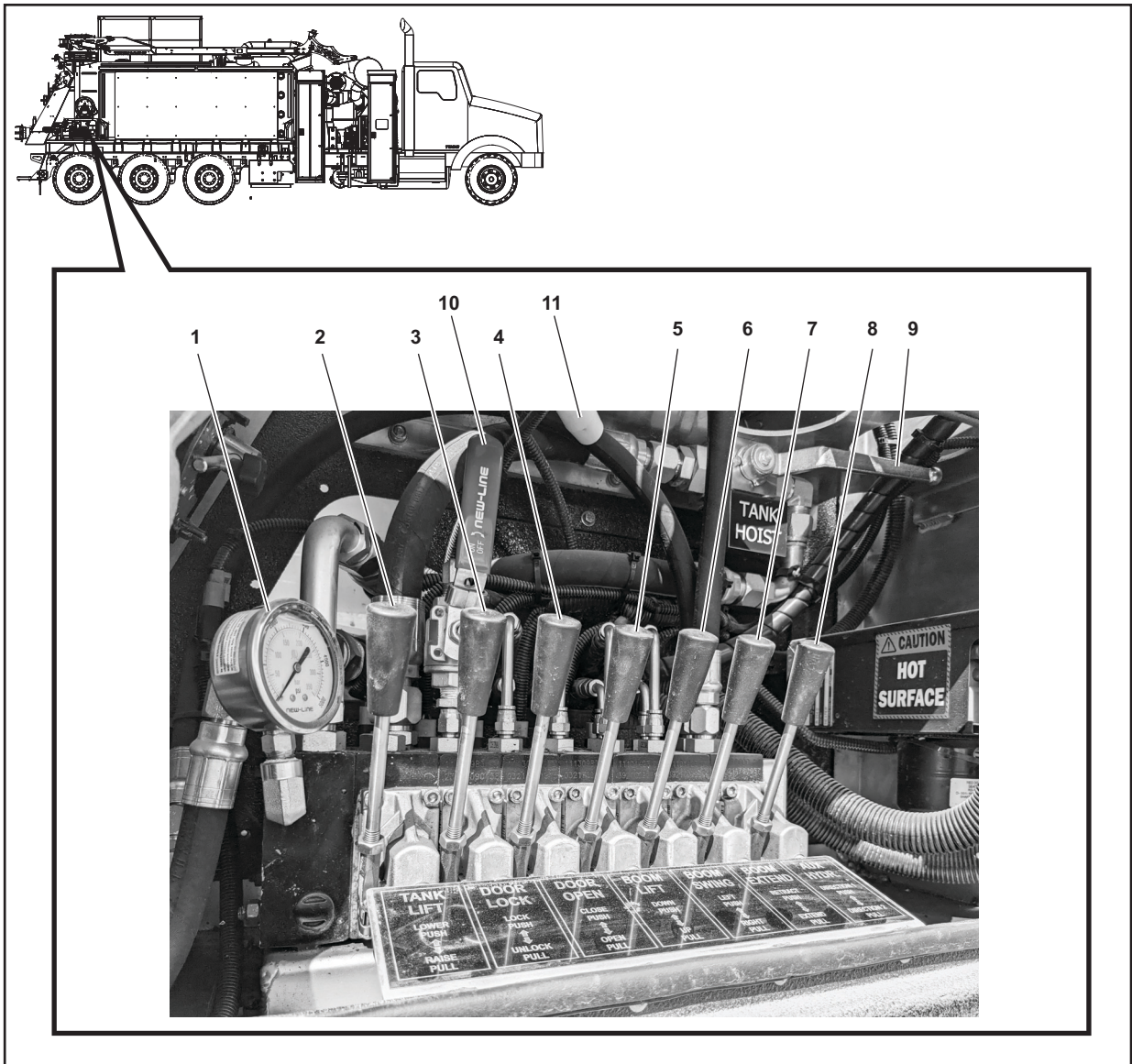
Air Compressor Controls and Indicators



TTW12-CI-010a

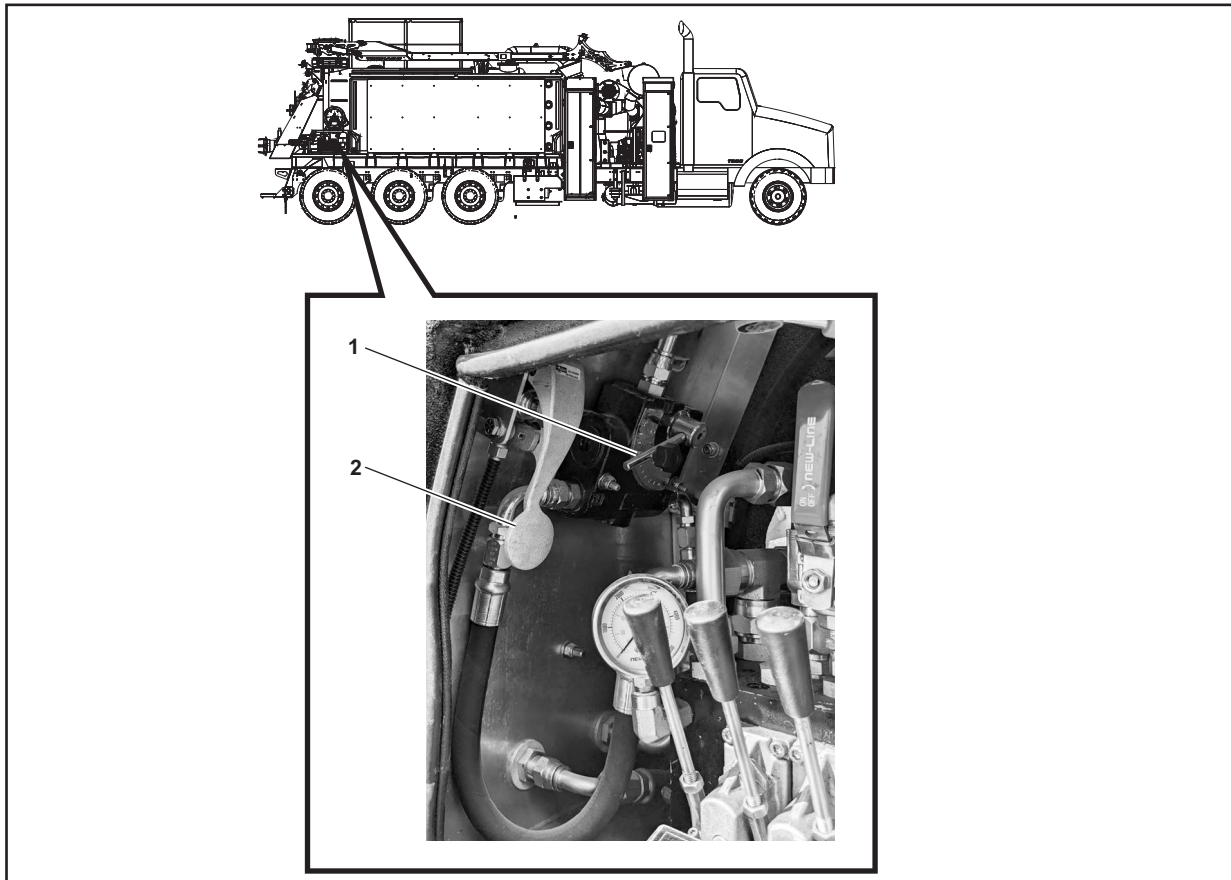
Item	Description	IMPORTANT
1. Receiver Pressure Gauge	Displays the air pressure available to the air lance (PSI).	
2. Hourmeter	Digital display of cumulative operating hours.	
3. Discharge Temperature Gauge	Displays the air temperature at the discharge of the compressor (° F).	
4. Reset Button	Button used to reset the compressor before startup.	
5. Low/High Pressure Toggle Switch	Toggles air compressor output between high and low pressure modes.	IMPORTANT: High pressure - 150 psi Low pressure - 100 psi

Manual Hydraulic Controls



Item	Description	IMPORTANT
1. Hydraulic Pressure Gauge	Indicates hydraulic pressure at manifold.	IMPORTANT: Never adjust pressure relief settings. This will void your truck's warranty.
2. Tank Lift Lever	Push to lower the tank lift. Pull to raise the tank lift.	IMPORTANT: Do not operate when door is closed.
3. Door Lock Lever	Push to lock the tank door. Pull to unlock the tank door.	
4. Door Open Lever	Push to close the tank door. Pull to open the tank door.	IMPORTANT: Do not operate unless door is unlocked.
5. Boom Lift Lever	Push to lower the boom. Pull to raise the boom.	
6. Boom Swing Lever	Push to move the boom left. Pull to move the boom right.	
7. Boom Extend Lever	Push to retract the boom. Pull to extend the boom.	
8. Aux. Hydraulic Lever	Used to operate any auxiliary device connected to the auxiliary hydraulic connectors on the rear of the truck.	NOTICE: This is a detent valve and will NOT automatically return to the OFF position.
9. Tank Hoist Valve	Ball valve that locks the tank in the raised position for maintenance purposes when closed.	
10. Door Lockout Valve	Ball valve that locks out the tank door locks when closed for safety purposes.	
11. Safety Post Air Valve	Three position air valve that moves the safety post: Off / Engage Post / Disengage Post	IMPORTANT: Safety post MUST be engaged any time work is being performed in or under the debris tank.

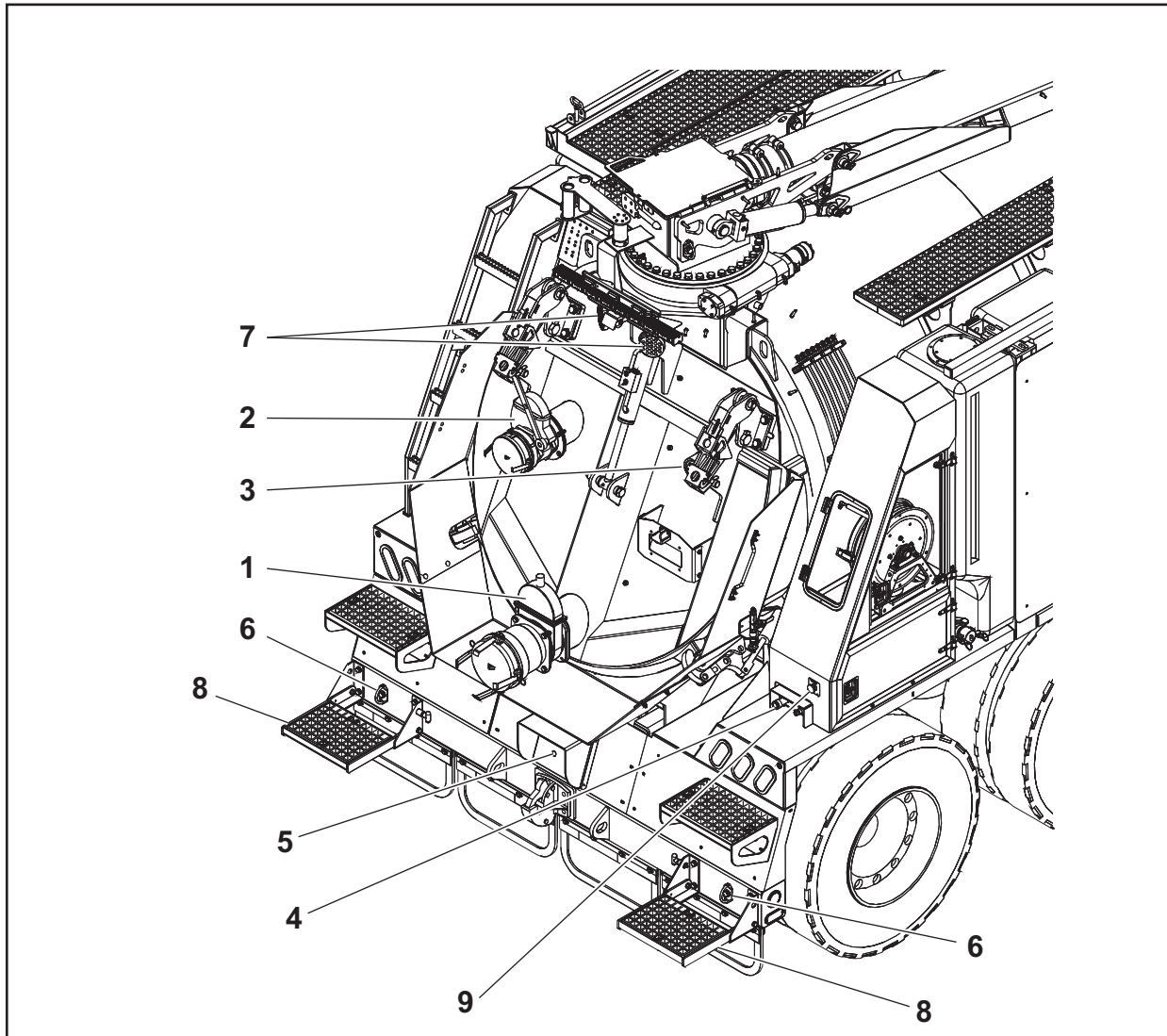
Rear Controls



TTW12-CI-013a

Item	Description	IMPORTANT
<p>1. Auxiliary Hydraulic Speed Control</p>	<p>Adjusts the operation of the auxiliary hydraulic accessories.</p>	
<p>2. Reel Retract Lever</p>	<p>Press lever to retract water hose onto reel.</p>	

Debris Tank/Truck Rear



TTW12-CI-018A

Item	Description	IMPORTANT
1. Main Gate Valve	Open to discharge waste from debris tank	
2. Decant Gate Valve	Open to drain liquid waste from top of debris tank	
3. Sight Glass	Visual indicator of tank level.	
4. Auxiliary Hydraulic Connections	Allows connection of other hydraulic equipment.	

Item	Description	IMPORTANT
5. Glad Hands	Coupling used to connect the service and emergency air lines from the truck to a trailer.	
6. Safety Tie-off	Can be used to secure a safety harness to the truck when working near a severe slope or open hole.	
7. Work Light	Controlled by a switch in the cab, provides light for the area at the rear of the truck.	
8. Rear Steps	Can be lowered to provide safe access to the higher parts of the truck.	
9. E-Stop Button	Used to shut down the system in event of an emergency.	

Digital Control Panel Functions

Main Status Screen



TTW12-CI-020a

Item	Description	IMPORTANT
1. Water Temperature Indicator	Displays current temperature of water exiting the water heater	
2. Water Pressure Indicator	Displays current water pressure	
3. Blower Temperature Indicator	Displays current temperature of sump oil at bottom of blower	
4. Hydraulic Fluid Temperature Indicator	Displays the current temperature of hydraulic oil entering the hydraulic cooler	
5. ESC Button	Used to return to previous screen or open menu	
6. Transfer Case Temperature Indicator	Displays the current temperature of transfer case oil entering the transfer case cooler	
7. Engine Hour Meter	Hour meter for engine.	
8. Blower Hour Meter	Hour meter for blower.	
9. Water Pump Hour Meter	Hour meter for water pump.	

Item	Description	IMPORTANT
10. OK Button	Used to select options	

Main Status Screen (Cont.)

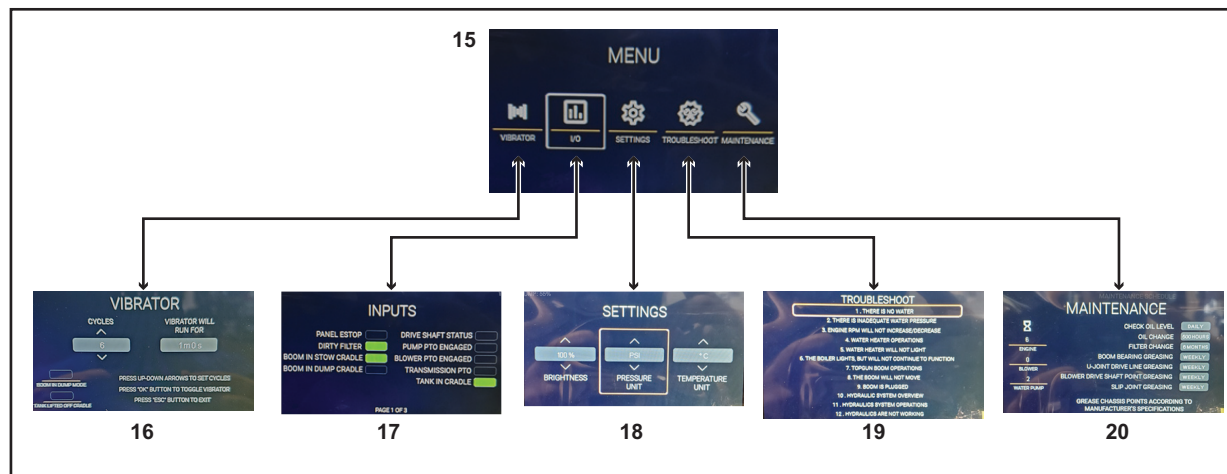


TTW12-CI-021a

Item	Description	IMPORTANT
11. Water Pressure Preset Buttons	Eight buttons allow operator to select preset water pressure settings.	<ul style="list-style-type: none"> The pre-sets will only be "active" when the water pump mode is set to REMOTE (blue on control panel keypad). When the water pump is turned on via the remote, the control system will maintain the pre-set pressure.
12. Information Bar	Displays current messages, errors, or alarms	
13. Status Icon	Displays current operating mode.	<ul style="list-style-type: none"> OFF - No mode is selected MANUAL - Water pump is manually controlled from the main control panel BYPASS - When in manual mode, bypass means the water pump is active REMOTE - Water pump is controlled from the remote AIRDIG - Air compressor (if equipped) mode is active

Item	Description	IMPORTANT
14. Water Pump %	Water pump setpoint ranging from 0-100%	Can only be changed when water pump mode is set to MANUAL

Main Status Screen (Cont.)



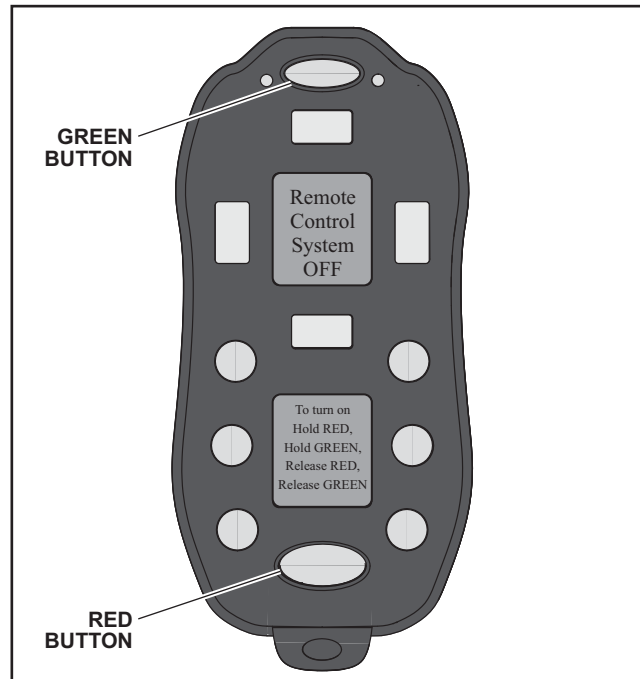
TTW12-CI-022a

NOTICE: Additional information on the various sub-menu functions is available in Appendix A.

Item	Description	IMPORTANT
15. Main Menu	Used to navigate to sub-menu options.	
16. Vibrator Sub-Menu	Accesses operating selections for the vibrator.	
17. Inputs/Output Sub-Menu	Accesses status displays of various input and output variables.	
18. Settings Sub-Menu	Accesses controls for display screen parameters.	
19. Troubleshooting Sub-Menu	Accesses troubleshooting information.	
20. Maintenance Sub-Menu	Accesses recommended maintenance information.	

Remote Control Functions

The remote control allows the operator to control a number of operating functions wirelessly via a handheld controller. This controller communicates with the receiver located in the control panel cabinet, above the water hose reel.



TTW12-EX-003a

Turning Remote On

1. Power on the receiver:
 - Press the "REMOTE ON/OFF" button on the main control panel.
 - The button will change to Blue
 - The rear beacon will begin flashing white as a warning to others that the system is powered on
2. Link the remote (handheld) to the receiver:
 - Press and hold the Red button
 - Press and hold the Green button
 - Release the Red button
 - Release the Green button
 - When successful the green light on the handheld will flash briefly, then change to solid green once successfully linked

Turning Remote Off

Press and release the red button.

IMPORTANT: Unlinking the remote will trigger a "soft stop" condition indicated by a yellow "RADIO STOP" splash screen on the digital control panel. The splash screen can be cleared by pressing the "ESC" button. However, clearing the "RADIO STOP" splash screen from the digital control panel display will not remove the soft e-stop condition. See below for more information.




Restoring Operation After Radio Stop








The soft stop condition is functionally similar to pressing one of the E-stop buttons on the truck. To restore normal operations after a soft stop is triggered, re-link the handheld remote or turn off the "REMOTE ON/OFF" button at the main control panel.

Remote Control Button Functions

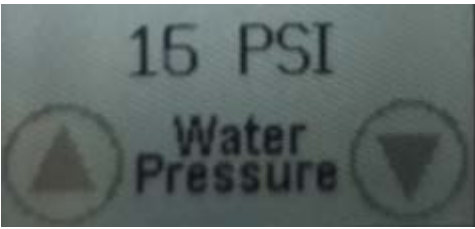
When a button is pressed, the LED on the bottom of the receiver will change from green to light blue. When the button is released the LED will return to green. The table below shows the remote control screen icons and the associated function.

NOTICE: Options may be grayed out when not available. Photos shown represent the tank lifted, boom in dump mode.

ICON	FUNCTION
NORMAL FUNCTIONS	
	BOOM RAISE
	BOOM LOWER
	BOOM LEFT/COUNTERCLOCK-WISE

	BOOM RIGHT/CLOCKWISE
	BOOM RETRACT
	BOOM EXTEND
	VACUUM ON
	VACUUM OFF
	WATER ON
	WATER OFF

ALTERNATE FUNCTIONS	
When the green button at the top of the remote is held, the icons on the display and the corresponding button function will change as listed below.	
	DOOR LOCK
	DOOR UNLOCK
	DOOR OPEN
	DOOR CLOSE
	TANK LOWER/TANK RAISE
	RPM INCREASE
	RPM DECREASE

	<p>WATER PRESSURE INCREASE/WATER PRESSURE DECREASE</p>
	<p>*Current water pressure displayed</p>

Remote Control Safety Interlocks

It is important to understand the safety controls in place for the remote system. A function may work with the manual hydraulic handles but may appear not to function with the remote control. These functions will appear grayed out on the remote.

Some examples:

- The boom cannot be extended or retract while it is stored in the cradle, this is to prevent accidental damage by inadvertently extending the boom into the side of the cabinet.
- The tank cannot be raised while the boom is in operation.

The interlocks are listed in the table below:

Function	Boom in road mode	Boom in dump mode	Boom operation mode
Raise	Enabled	Enabled	Enabled
Lower	Disabled	Disabled	Enabled
Left	Disabled	Disabled	Enabled
Right	Disabled	Disabled	Enabled
Extend	Disabled	Disabled	Enabled
Retract	Disabled	Disabled	Enabled
Vacuum ON	Enabled	Enabled	Enabled
Vacuum OFF	Enabled	Enabled	Enabled
Water ON	Enabled	Enabled	Enabled
Water OFF	Enabled	Enabled	Enabled
Door Lock	Disabled	Enabled	Disabled
Door Unlock	Disabled	Enabled	Disabled
Door Open	Disabled	Enabled	Disabled
Door Close	Disabled	Enabled	Disabled
Tank Raise	Disabled	Enabled	Disabled
Tank Lower	Disabled	Enabled	Disabled
RPM Increase	Enabled	Enabled	Enabled
RPM Decrease	Enabled	Enabled	Enabled
Pressure Increase	Enabled	Enabled	Enabled
Pressure Decrease	Enabled	Enabled	Enabled

Vacuum and Pothole Operations

Chapter Contents



For additional precautions, see "Safety" and "Prepare" chapters.

IMPORTANT: For more information on how to operate controls, see "Controls" chapter.

Set Up 72

- Monitor Debris Tank and Truck Weight72
- Startup73
- Engage Hydraulics Only.73
- Engage Blower.73
- Engaging Air Compressor (if equipped)74
- Monitoring Interlocks75
- Start Water Heater76
- Remote Control.77

Boom Operation 78

- Precautions near Electrical Power Lines78
- Procedure.79

Remove Debris 80

Pothole 81

- Pothole with Air.82
- Pothole With Water84

Empty Debris Tank. 86

Use Auxiliary Hydraulic Tools 90

Shut Down 91

- Blower Diesel Flush91
- System Shutdown92

- Check Air Filter93
- Clean Out Particulate Trap94

Set Up

1. Refer to “Prepare” on page 27 and ensure that all preparation work has been completed.
2. Ensure parking brakes are set and wheels are chocked.
3. Prepare dig tubes that will be required.
4. Connect dig wand(s) and air lance to hoses. Secure all locking clamps.

Monitor Debris Tank and Truck Weight

As you work, monitor the level of the debris tank and the truck weight to avoid exceeding weight limits. Working truck weight can be determined by using scale or determining tank fill level.

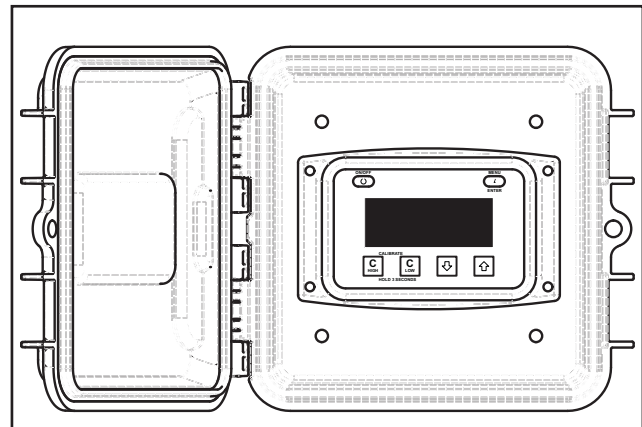
Tank Fill Level

Monitor the debris tank fill level as you work. The fill level can be checked using the sight glass on the tank rear door or using the scale.

NOTICE: Exceeding the maximum fill level will cause the vacuum system to shut down when the floats cut off the airstream.

Scale

Use the scale to monitor the weight of truck and as the debris tank is filled.



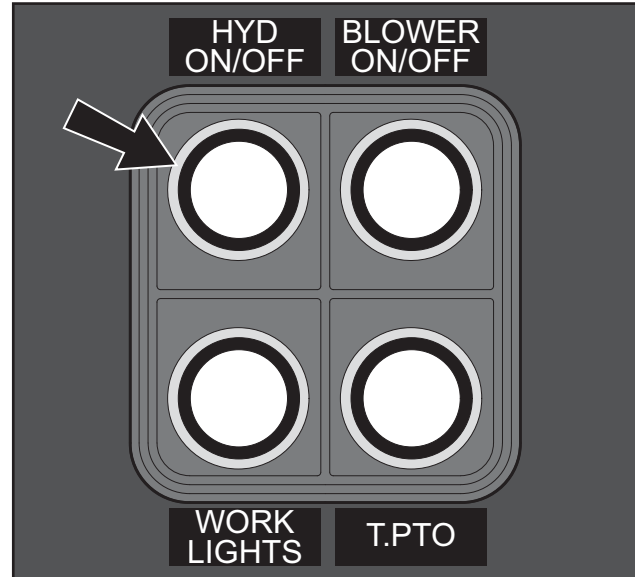
TTW12-EX-001a

Startup

With the truck engine running, start the system as follows:

Engage Hydraulics Only

1. Disengage clutch.
2. Press and hold "HYD ON/OFF" button for approximately 3 seconds.
3. Wait for the keypad to turn green. (Flashing yellow means there is a fault)
4. Place transmission in direct drive and engage clutch.
5. The keypad will change to red, indicating that the shaft is spinning.
6. Set operating RPM with control panel or remote.

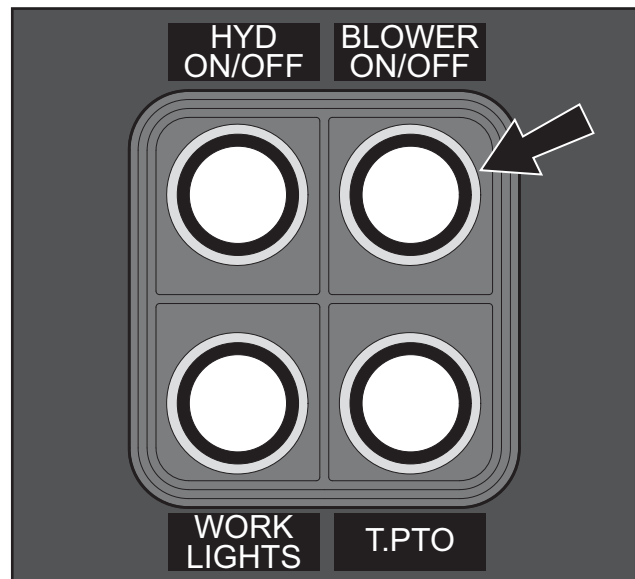


TTW12-VP-001a

Engage Blower

NOTICE: Never operate the blower without the filter in place. Operating the blower without the filter can cause major damage to the internal components of the blower.

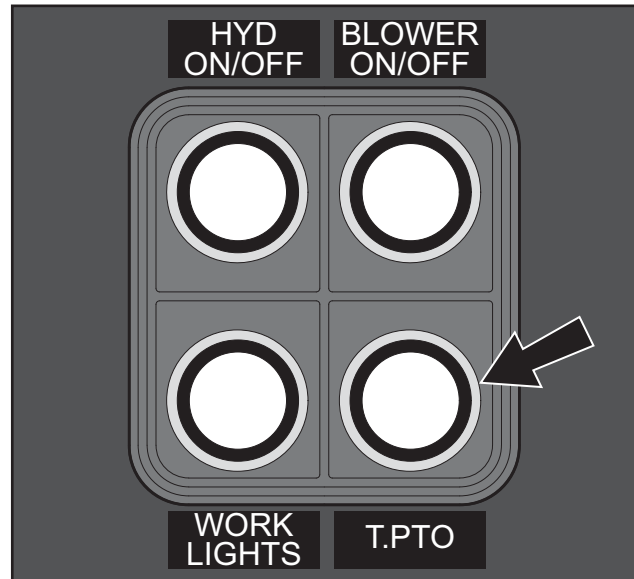
1. Ensure parking brake is set.
1. Disengage clutch.
2. Press and hold "BLOWER ON/OFF" button. (Hydraulics will engage automatically if not already engaged)
3. Wait for the keypad to turn green. (Flashing yellow means there is a fault)
4. Place transmission in direct drive and engage clutch.
5. The keypad will change to red, indicating that the shaft is spinning.
6. Set operating RPM with the control panel or remote.



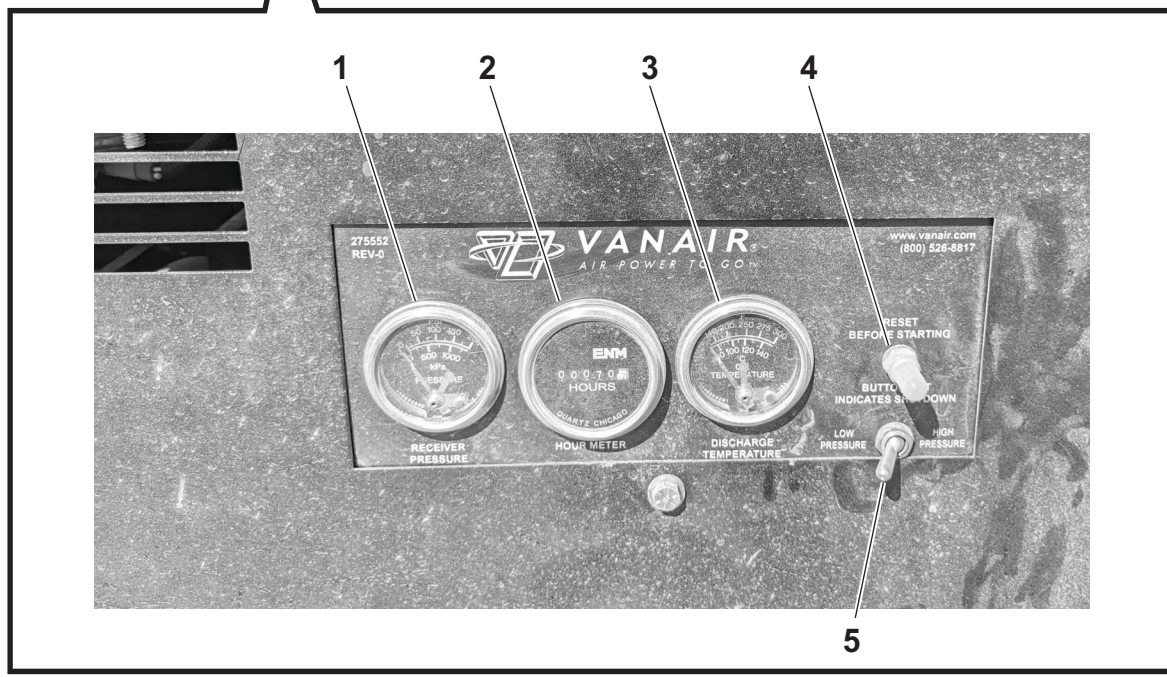
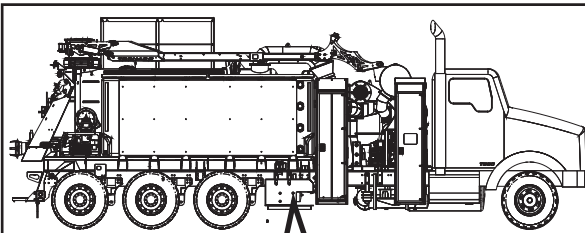
TTW12-VP-002a

Engaging Air Compressor (if equipped)

1. Disengage clutch.
2. Press and hold "T. PTO" button. (Hydraulics will engage automatically if not already engaged)
3. Wait for the keypad to turn green.
4. Place transmission in direct drive and engage the clutch.
5. The keypad will change to red, indicating that the shaft is spinning.
6. Set operating RPM with the control panel and remote.



TTW12-VP-006a



TTW12-CI-010a

7. Select LOW PRESSURE or HIGH PRESSURE using the toggle switch (5).
8. Check RESET BEFORE STARTING button (4) and ensure that it is latched in.
 - If not, press it to latch in.
 - If the "Reset" button does not latch in, observe gauges (1) and (3). If an over pressure or over temperature condition exists, you must clear these conditions first.
9. On the main control panel:
 - Change "WATER PUMP MODE" to purple. Digital control panel will display "AIRDIG".
 - Press "WATER PUMP BYPASS" to engage the system.

Over Pressure or Over Temperature condition

On the local air compressor control panel there are gauges for Receiver Pressure (1) (175psi) and Discharge Temperature (3) (240°F). The gauges have a built-in limit switch. When either the temperature or pressure reach the factory-preset limit, the RESET BEFORE STARTING button (4) will pop out and the air compressor will shut down. When the air compressor shutdown occurs the WATER PUMP BYPASS button on the main control panel will be disengaged, and a warning splash screen will appear on the digital control panel indicating the condition. WATER PUMP BYPASS button cannot be re-engaged until the condition has been cleared and the RESET BEFORE STARTING button is pressed in.

IMPORTANT: Make sure the pressure has been reduced below 10psi before re-starting.

Monitoring Interlocks

The dash keypad has two interlocks to ensure the proper equipment engagement.

Hydraulics and Blower

If the "BLOWER ON/OFF" button is pressed first without the hydraulics being engaged, the truck will engage both hydraulics and the blower at the same time. The blower cannot operate without hydraulics engaged first.

Hydraulics and Air Compressor

If the "T. PTO" button is pressed first without the hydraulics being engaged, the truck will engage both hydraulics and the transmission PTO at the same time. The air compressor can not be operated without hydraulics engaged first.

Start Water Heater

1. Set water heater switch to ON.
2. Set water temperature.

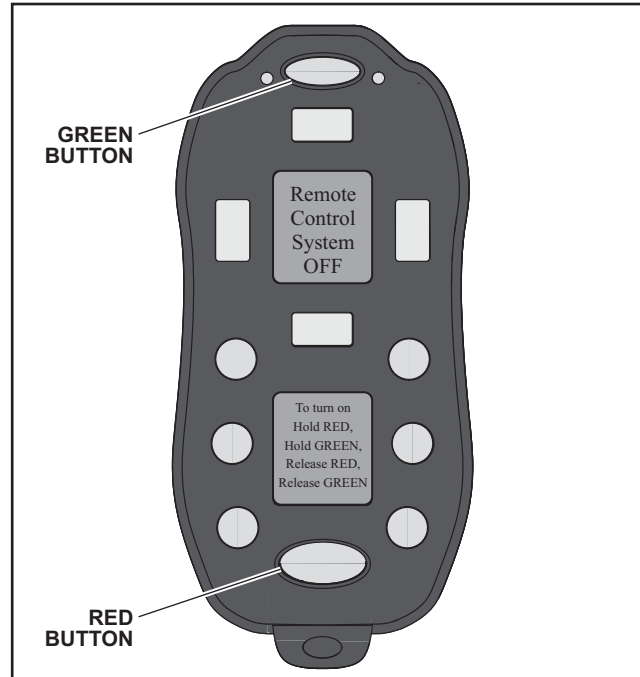


TTW12-VP-003a

Remote Control

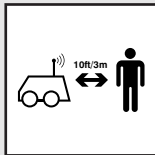
Remove the remote control from the charging cradle and check battery charge level before operations. If remote battery is not charged, operation must be controlled using the control panel.

Refer to "Remote Control Functions" on page 65 for a full description of functions available using the remote control.



TTW12-EX-003a

EMERGENCY STOP: Press red stop button on remote control.



CAUTION Remote-controlled equipment. Impact can cause death or serious injury. Stay away.

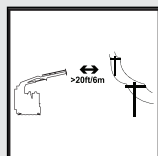
To help avoid injury:

- Keep truck in sight at all times when using remote control.
- Keep a safe distance away from truck when operating remote control.
- Remove strap from around neck when using remote control near moving parts.

NOTICE: Place remote control in charging cradle after use. The remote control does not charge when the truck is turned off. Typically the battery will charge sufficiently when driving to and from the jobsite.

Boom Operation

Precautions near Electrical Power Lines



⚠ WARNING Overhead electric lines. Exposure will cause death or serious injury. Keep boom away from electric lines. Use a spotter.

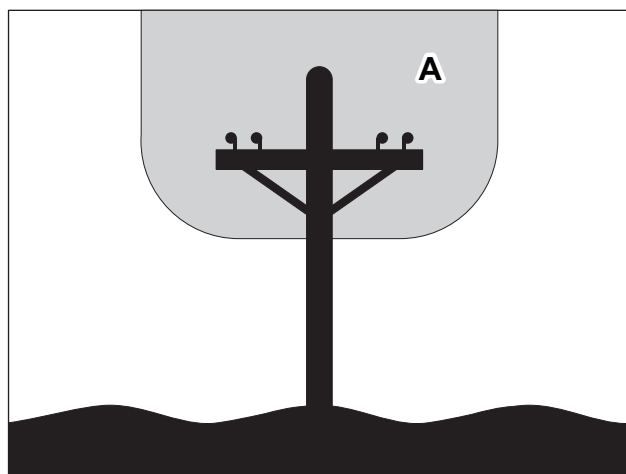
To help avoid injury:

- Follow US Occupational Safety and Health Administration (OSHA) or other applicable regulating guidelines for working around power lines.
- Observe minimum clearance requirements.

Normal Voltage (Phase to Phase)	Minimum Operating Clearance Required	Normal Voltage (Phase to Phase)	Minimum Transporting Clearance Required
up to 50kV	10' (3m)	up to 0.75kV	4' (1.2m)
51-200kV	15' (4.6m)	0.76-200kV	6' (1.8m)
201-350kV	20' (6m)	201-345kV	10' (3.8m)
351-500kV	25' (7.6m)	346-750kV	16' (4.9m)
501-750kV	35' (10.7m)	751-1000kV	20' (6.1m)
751-1000kV	45' (13.7m)	unknown	20' (6.1m)

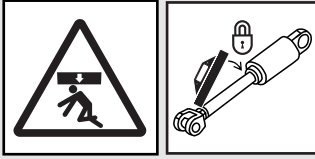
Never enter the danger zone (A), unless one of the following conditions is met:

- An appointed person has confirmed that electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work.
- Insulating barriers (not a part of the boom) have been erected to prevent physical contact with electrical lines.



t590m114w.eps

Procedure

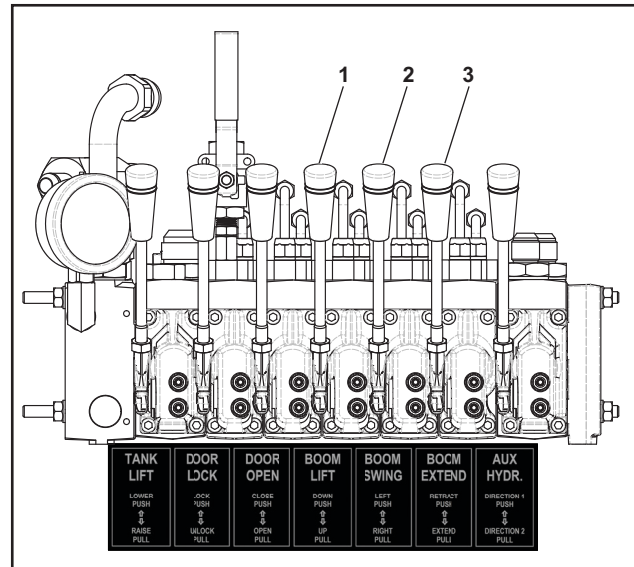


⚠ WARNING Raised component. Crushing can cause death or serious injury. Stay away or secure raised component with locking device. Use correct equipment and procedures.

To help avoid injury:

- Never move truck without boom secured in its rest
- Secure boom in dump position before lifting tank. [NEED DRAWING SHOW DUMP POSITION]
- Never move boom when tank is tilted up.
- Always check boom path before moving boom.
- If machine is parked on a slope, control boom so it does not swing freely when released.
- Never use boom to lift or move objects.

1. Ensure hydraulics are engaged (“Engage Hydraulics Only” on page 73).
2. Use either the manual controls or the remote control to position the boom over the excavation point:
 - Boom Lift (1)
 - Boom Swing (2)
 - Boom extend (3)

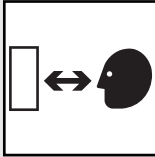


TTW12-EX-005a.ai

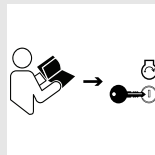
Remove Debris

EMERGENCY SHUTDOWN:

- Use the emergency stop button (on the control panel, on rear panel, and on remote control) to shut down operations.
- Turn ignition switch off.



⚠ DANGER Suction. Suffocation will cause death. Keep hose end away from face.



⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. Know how to use all controls.

To help avoid injury:

- Never excavate hazardous or toxic materials. Machine is designed to excavate only soil cuttings, drilling fluids, and other non-toxic waste.
- Never lift an object using vacuum hose.



⚠ WARNING Static charge. Fire or explosion can cause death or serious injury. Never vacuum flammable or combustible substances.

To help avoid injury:

- Use proper equipment to monitor inlet air to ensure it is outside of flammability limits.
- Use proper grounding equipment.
- See "Set Up" on page 72.

NOTICE: Use the vacuum breaker to break suction if hose or tool gets stuck on the ground or to what is being vacuumed.

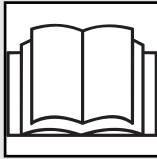
1. Start engine.
2. Position vacuum hose in area to be excavated.

3. Engage blower ("Engage Blower" on page 73).
4. Ensure vacuum breaker is closed to begin suction.
5. Use sight glass and/or weight scale to monitor debris level in tank.

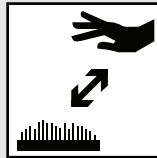
Pothole

EMERGENCY SHUTDOWN:

- Use the emergency stop button (on the control panel, on rear panel, and on remote control) to shut down operations.
- Turn ignition switch off.



⚠ WARNING High pressure. Impact can cause death or serious injury. Refer to air tool manual to ensure proper pressures are used.



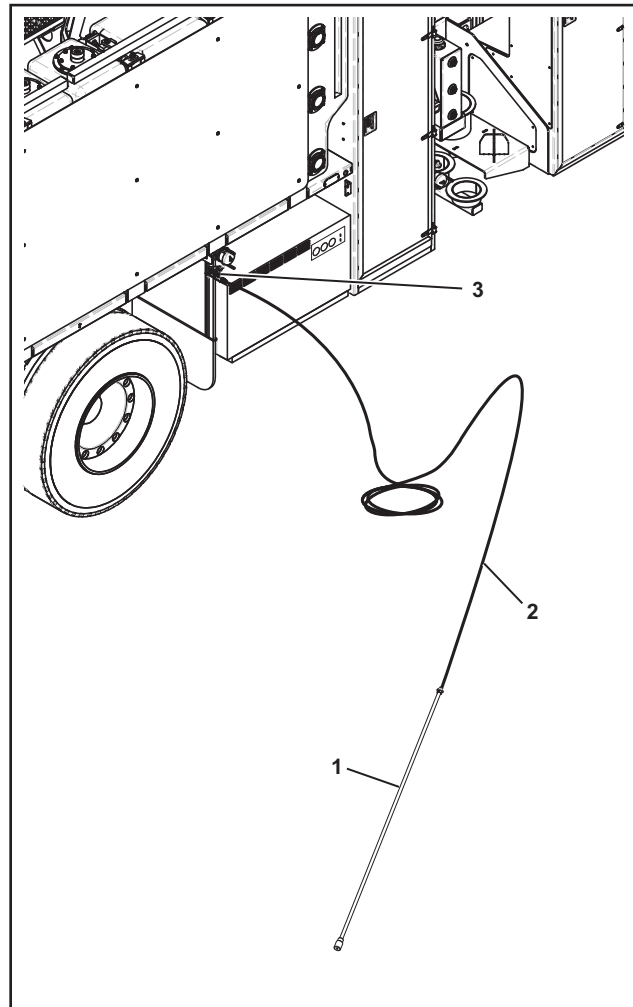
⚠ CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

⚠ CAUTION If an unsecured pressurized air hose breaks or disconnects, it can whip or flail in an uncontrolled manner and potentially cause injury. Always use whip checks when connecting the air hose.

Pothole with Air

Set Up

1. Remove air lance (1) from storage.
2. Attach air hose (2) to air valve (3).
3. Connect air lance (1) to air hose (2).
4. Secure whip checks to each end of air hose (2).
5. Slowly open air valve (3).



TTW12-EX-006a

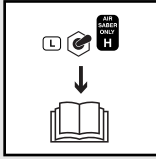
Operate



⚠ WARNING Pressurized fluid or air. contact can cause death or serious injury. Refer to operator's manual for correct use.

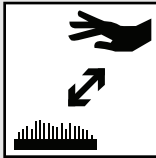
To help avoid injury:

- Wear protective eyewear, face shield, and gloves when operating air lance.
- Never point or aim nozzle at yourself or anyone else.
- Keep nozzle low to the ground but never allow tip to touch ground or utility.
- Check all connections and lines for leakage before using and check nozzle for damage.



⚠ WARNING High pressure. Impact can cause death or serious injury. Refer to air tool manual to ensure proper pressures are used.

To help avoid injury: High pressure setting is for air lance only.



⚠ CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

To help avoid injury: Remember that air generates heat. Connections could be hot during and after operation.

1. Locate utility with a locating receiver.
2. Ensure compressor system is activated (“Engaging Air Compressor (if equipped)” on page 74).
3. Set air pressure toggle switch to high or low setting as desired.
4. Open compressor valve.
5. Start breaking the soil at the location of the utility. Do not touch the tip of the air lance to anything.
6. Once the hole has been started, vacuum loose soil and begin to work on exposing sides of the utility next.
7. Vacuum loose soil as needed to expose utility.

Disconnect

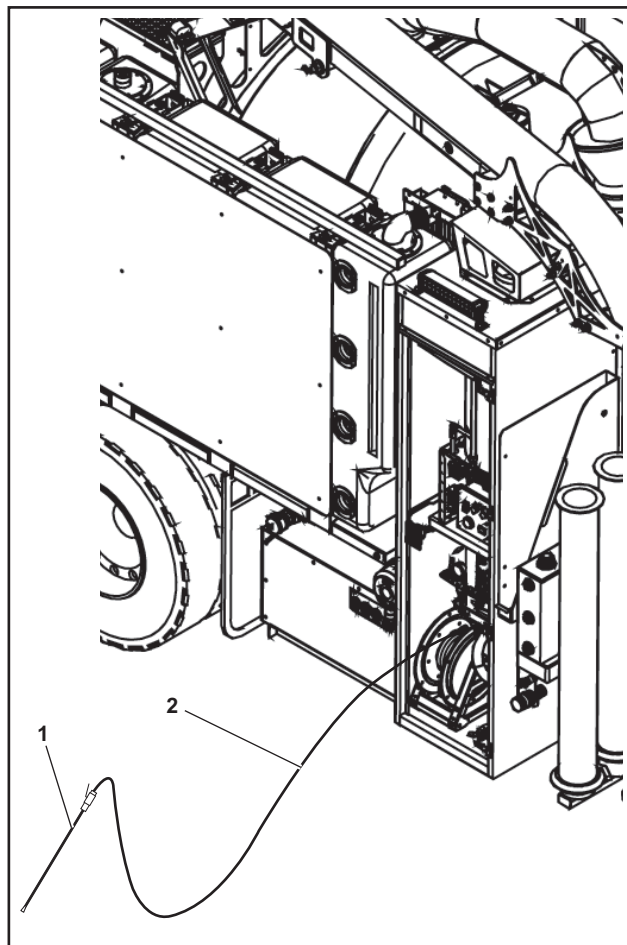
1. Close air valve (3).
2. Disconnect whip checks from each end of air hose (2).
3. Disconnect air lance (1) from air hose (2).
4. Stow air lance (1) and air hose (2).

Pothole With Water

NOTICE: Two dig wands can be used simultaneously, with one attached to the water hose in the water heater cabinet and another attached to the water hose at the rear of the truck.

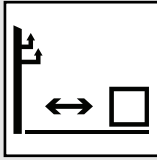
Set Up

1. Remove dig wand (1) from storage.
2. Pull appropriate length of water hose (2) off hose reel.
3. Connect dig wand(s).



TTW12-EX-007a

Operate



⚠ DANGER Overhead electrical lines. Contact will cause death or serious injury. Know location of lines. Stay away.

To help avoid injury: Never direct water at overhead lines.



⚠ WARNING Pressurized fluid or air. Contact can cause death or serious injury. Refer to operator's manual for correct use.

To help avoid injury:

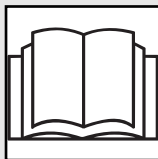
- When exposing utilities, only use rotating nozzle.
- Never point or aim nozzle at yourself or anyone else.
- Keep nozzle low to the ground but never allow tip to touch ground or utility.
- Keep tool moving over area to be potholed. Never point nozzle at utility continuously.
- Test water pressure on a sample of utility line material to be exposed. Adjust pressure until no damage occurs to the material. High pressure water can cut utility lines.

1. Ensure winterization valve is closed.
2. Open water pump inlet valve.
3. Open purge valve on outlet of pump. Only after this valve is open can you turn on the pump.
4. Ensure hydraulic system is activated (see "Engage Hydraulics Only" on page 73).
5. Change "WATER PUMP MODE" to green (manual).
6. Change "WATER PUMP BYPASS" to green to turn on water pump.
7. Prime water pump ONLY at the minimum speed. Watch for a steady/smooth stream of water to come from the outlet purge valve before closing.
8. Use "WATER PUMP MODE" to cycle to remote mode if desired.
9. Depending on water pump mode selected, use the control panel or remote to increase water pump speed.
10. Optionally, turn on water heater (see "Water Heater System Controls and Indicators" on page 53).
11. Open side reel valve, rear reel valve, or both as required "Water Heater System Controls and Indicators" on page 53.
12. Position tool over area to be excavated.
13. Open dig wand valve to start digging.
14. Work pressurized water in side-to-side or circular motion to loosen and excavate soil until hole is at desired diameter and depth.

15. Adjust water pressure as needed to match soil conditions and/or material of utility being exposed.
16. Ensure water sprays from nozzle. If it does not, nozzle may be clogged and pump will not function properly. Clean or replace nozzle as needed.
17. Monitor freshwater tank level. Best practice is to stop operation when water level is at bottom sight glass. When water level is low, stop operation and turn off water pump.

NOTICE: Never operate with freshwater tank empty to avoid damage to water pump.

Empty Debris Tank

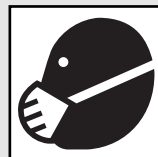
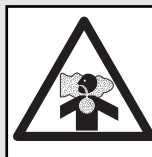


⚠ WARNING

Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. Know how to use all controls.

To help avoid injury:

- Only unlatch door with tank fully lowered.
- Do not lift tank is debris door is closed.
- Stay clear of debris door when lifting tank.



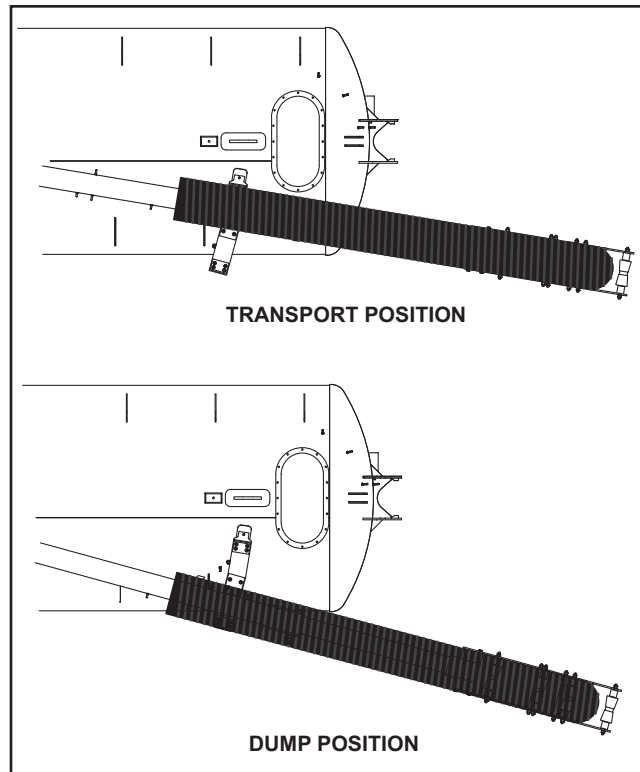
⚠ WARNING

Silica dust. Exposure can cause lung disease. Use breathing protection.

To help avoid injury:

- Use water spray or other means to control dust.
- Follow US Occupational Safety and Health Administration (OSHA) or other applicable regulating guidelines for appropriate breathing protection or dust control methods.

1. Ensure boom is in transport position and haul to approved dumping area.

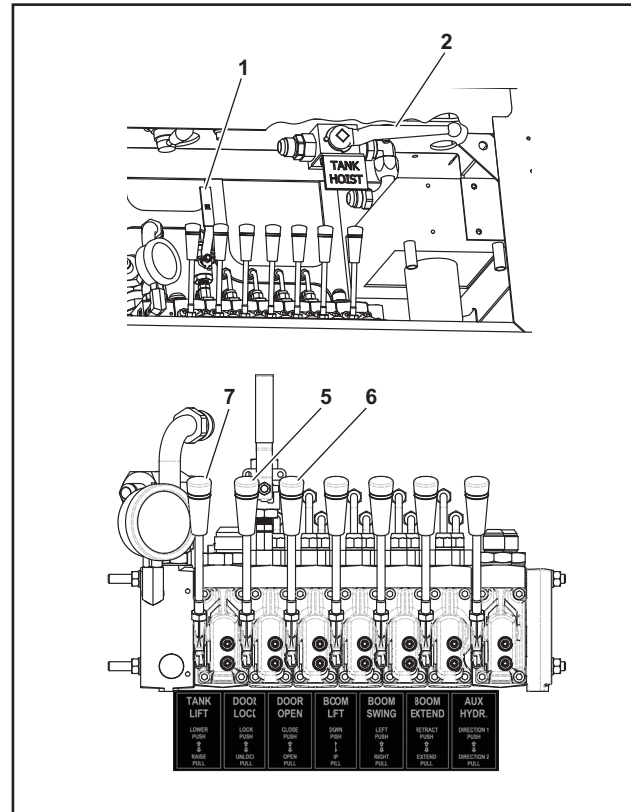


TTW12-VP-007A

NOTICE: Never drive with debris tank or tank door raised.

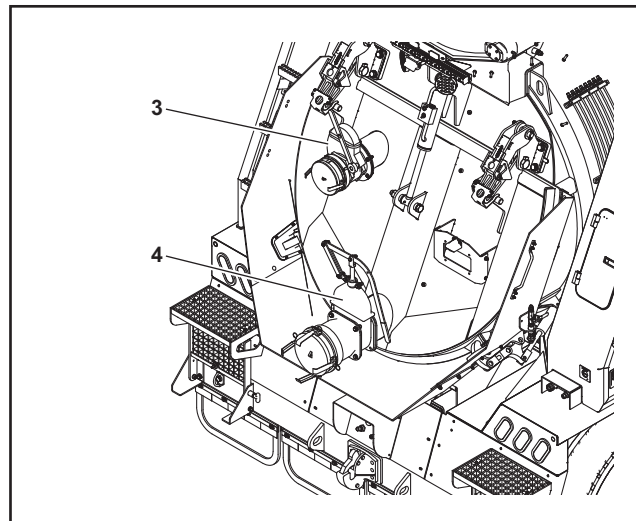
2. Move boom to dump position
3. Engage hydraulics (“Engage Hydraulics Only” on page 73).

- Open door lockout valve (1) and tank hoist lockout hydraulic valve (2) on manual control panel.


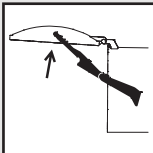


TTW12-EX-009a.ai

- Optionally, open bottom tank gate valve (3) and/or decant gate valve (4) to partially drain fluid from debris tank.
- Pull Door Lock lever (5) to unlock debris door.
- Pull Door Open lever (6) and open debris door until door safety latches engage, then slightly lower door rests on safety latches.

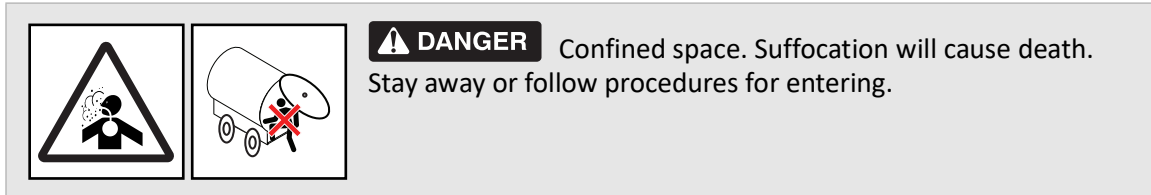


TTW12-EX-010a

⚠ WARNING
 Raised component. Crushing can cause death or serious injury. Ensure door has opened and locked into place before working beneath open door.

8. Pull Tank Lift lever (7) to raise debris tank up and drain solids from tank.

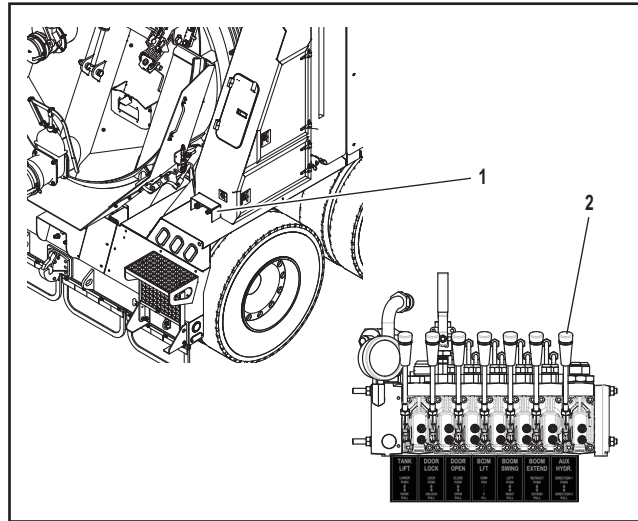


9. If necessary, engage tank vibrator using digital control panel (“Digital Control Panel Functions” on page 62).
1. Remove washout gun from storage, pull appropriate length of water hose (2) from hose reel, and connect washout gun.
2. Turn water pump switch on. Adjust water pressure.
3. Use washout gun to thoroughly rinse inside of tank and around door seal.
4. Push Tank Lift lever (7) to lower debris tank to full horizontal position.
5. Pull Door Open lever (6) briefly to fully raise tank door to disengage door safety latches and then push Door Open lever to close tank door.
6. Close door lockout valve (1) and tank hoist lockout hydraulic valve (2) on manual control panel.
7. Move boom to transport position.

Use Auxiliary Hydraulic Tools

Operate hydraulic power tools with power pack hydraulics.

1. Connect auxiliary tool to rear hydraulic ports (1).
2. Adjust flow control to appropriate speed for auxiliary tool.
3. Use auxiliary hydraulic lever (2) to operate auxiliary tool.



TTW12-EX-011a

NOTICE: Lever action is detented for operation of auxiliary tool. Lever does not automatically return to off position when released.

4. When operation is complete, set auxiliary hydraulic lever to closed position.
5. Disconnect hydraulic hoses from rear hydraulic ports and stow equipment.

Shut Down

Blower Diesel Flush



CAUTION Hot parts. Fire can cause injury. Follow procedures to lubricate blower.

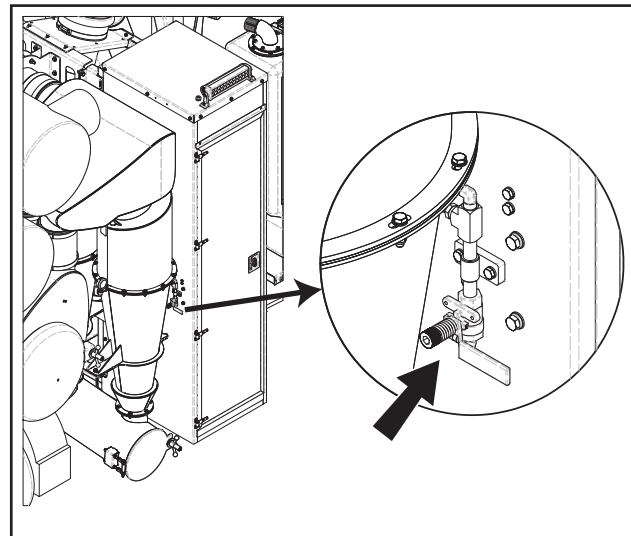
To help avoid injury:

- Never lubricate a hot blower.
- Blower will be hot after deadheading.
- Allow to operate with free air flow for 10 minutes to cool the blower before performing diesel flush operation.
- Lubricating the blower when it is hot may cause the diesel to ignite material in the silencers.

NOTICE:

- Failure to lube the blower can lead to premature seal failure and increased blower lobe wear.
- In cold climates, failure to lubricate the blower could result in the blower lobes freezing in place causing damage to the drive components when starting the blower.
- Do not flush for more than 10 seconds. Excessive diesel can damage the dust filter and degrade performance.

The blower requires lubrication when moisture has built up on the blower impeller lobes. Before shutting down the truck it is recommended that the blower be flushed with diesel. This will prevent corrosion and reduce the possibility of freezing in cold climates.



TTW12-EX-008a

IMPORTANT: Perform diesel flush with blower operating.

1. Run the blower at operating rpm with no load for approximately 10mins to allow the blower to cool.
2. With vacuum breaker open, restrict boom hose opening.

IMPORTANT: The diesel flush valve has a spring return. If this valve becomes defective and does not fully close when released it must be replaced immediately.

3. CLOSE vacuum breaker and immediately hold open diesel flush valve for 10 seconds.

NOTICE: Do not flush for more than 10 seconds. Excessive diesel can damage the dust filter and degrade performance.

4. Release and close the diesel flush valve.
5. Open vacuum breaker.

System Shutdown

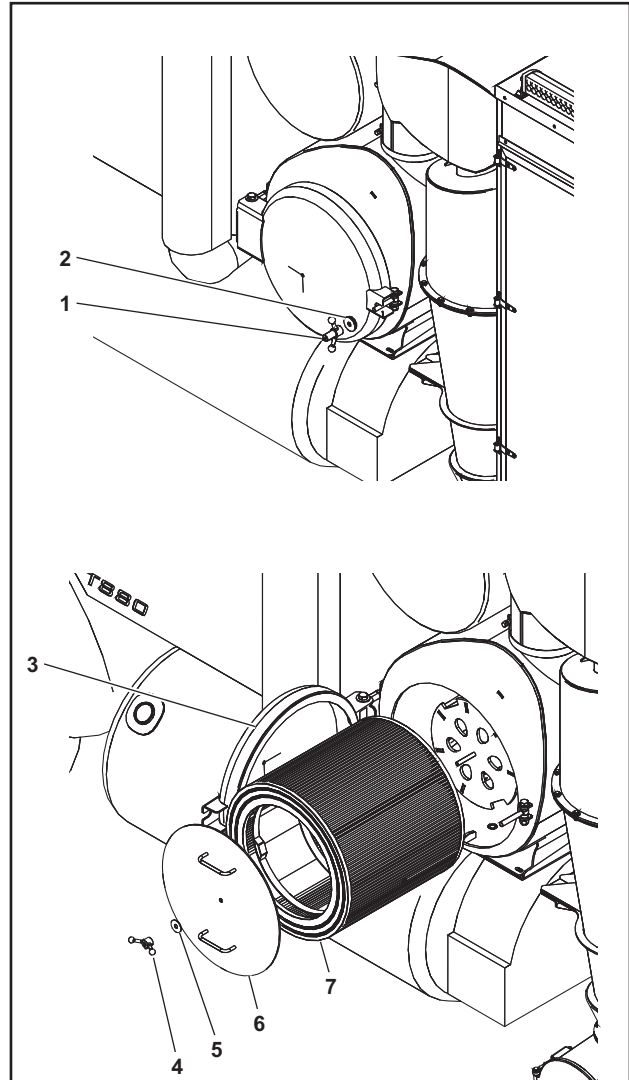
1. Return all controls to neutral.
2. Reduce engine RPM.
3. Turn off water heater.
4. Turn off air compressor system.
5. Disengage blower.
6. Disengage hydraulics.
7. Run engine at low throttle with no load for at least five minutes to cool.
8. Shut off truck.
9. If leaving machine unattended, remove key.

Check Air Filter

1. Unscrew and remove door wingnut (1) and remove washer (2), then swing door (3) open.
2. Unscrew and remove wingnut (4), washer (5), and retaining plate (6).
3. Grasp filter element (7) and remove from filter housing.
4. Clean filter element (7) using low pressure water.

IMPORTANT: Filter element should always be completely dry before operation. Recommended practice is to have two filters on hand and alternate filters so that a dry filter is always available.

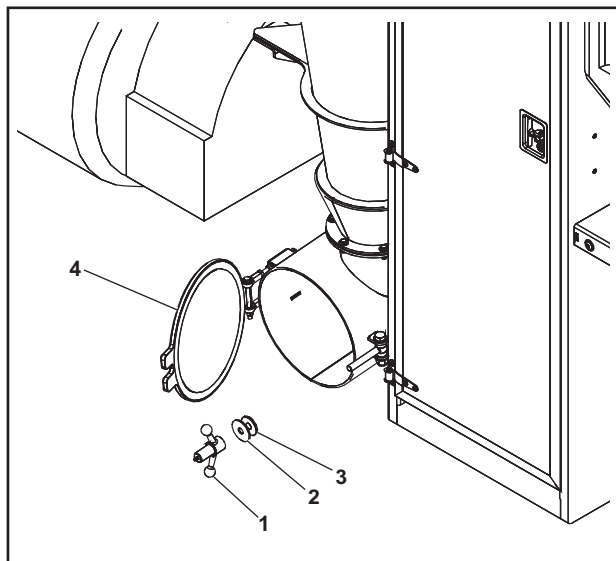
5. Install retaining plate (6) and secure with washer (5) and wingnut (4).
6. Swing door (3) closed and secure with washer (2) and retaining wingnut (1)



TTW12-MP-031a

Clean Out Particulate Trap

1. Unscrew and remove wingnut (1), washer (2), and rubber washer (3).
2. Swing door (4) open.
3. Rake out particulates from particulate trap.
4. Using low pressure water clean out particulate trap.
5. Close door (4) and secure with rubber washer (3), washer (2), and wingnut (1).



TTW12-MP-032a

Complete the Job

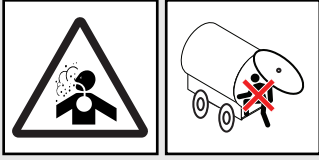
Chapter Contents



For additional precautions, see "Safety" and "Prepare" chapters.


Rinse Equipment	96
Disconnect	97
Stow Tools	97
Stow Boom	97
Store Long-Term	97
Decommission Machine	97

Rinse Equipment



⚠ DANGER Confined space. Suffocation will cause death. Stay away or follow procedures for entering.

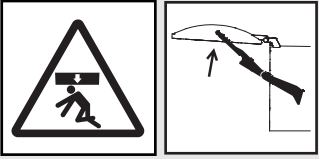
To help avoid injury: Enter tank only if necessary. Follow US Department of Labor guidelines for entering confined spaces.



⚠ WARNING Pressurized fluid or air. Contact can cause death or serious injury. Refer to operator's manual for correct use.

To help avoid injury:

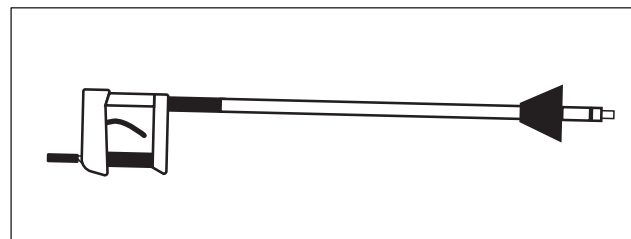
- Never use high flow when using wash wand.
- Never point or aim wand at yourself or anyone else. Keep nozzle low to the ground.



⚠ WARNING Raised component. Crushing can cause death or serious injury. Ensure door is opened and locked into place before working beneath open door.

NOTICE: Do not spray water onto operator console or electrical center in control panel cabinet. Water can damage electrical components. Wipe down instead.

1. Connect washout gun (shown) to water hose reel(s) to spray water on exterior of equipment to remove dirt and mud.
2. Open debris door and raise tank (see "Empty Debris Tank" on page 86).
3. Thoroughly rinse inside of tank and around door seal mating surfaces.



washWand.ai

Disconnect

Disconnect and store all hoses.

Stow Tools

Ensure hoses and tools are properly stowed.

Stow Boom

1. Close debris door and lower tank.
2. Return boom to transport position.

Store Long-Term

To store machine for periods of time exceeding two months:

- Lubricate blower using diesel flush (see "Blower Diesel Flush" on page 91)
- Drain any fluid from silencers by removing drain plugs. Reinstall drain plugs when drained.
- Ensure exposed parts are treated with anti-rust agent.
- Touch up paint as needed to prevent rusting.
- Lubricate machine and apply grease to unpainted surfaces.
- Cover exhaust pipe.
- Inflate tires to recommended tire pressure.

Decommission Machine

Before decommissioning machine, follow local regulations for disposing of hazardous substances. For more information on draining fluids, see Maintenance chapter or contact your Ditch Witch dealer.

Maintenance

Chapter Contents



For additional precautions, see "Safety" and "Prepare" chapters.

Maintenance Precautions 100

- Washing Precaution100
- Welding Precaution101
- Working on Debris Tank101
- Working under Raised Debris Tank103
- Working under Raised Tank Door104

Truck Chassis Maintenance Interval Chart 105

- Change and Sample Engine Oil107
- Change and Sample Transfer Case Fluid107
- Change and Sample Hydraulic Fluid107
- Change and Sample Transmission Fluid107
- Check Air Conditioner107
- Check Brakes108
- Check Cab Components108
- Check Cabin Air Filters108
- Check Chassis Electrical Components108
- Check Chassis Exterior Components109
- Check Chassis Lights109
- Check Drive Axle109
- Check Drive Line109
- Check Engine Air Filter109
- Check Engine Compartment Components109
- Check Fuel System Components109
- Check Gearboxes110
- Check Hydraulic System110

- Check Miscellaneous Items110
- Check Steering Components110
- Check Strobe Light.110
- Check Suspension and Frame.110
- Check Tires and Wheels110
- Lubricate Chassis Components.111

Hydrovac Maintenance Interval Chart 112

Recommended Lubricants 114

- Engine Lubricants and Fluids114
- Diesel Exhaust Fluid (DEF)114

Hydrovac System Maintenance 115

- Change Hydrovac Air Filter115
- Check Water Heater Cabinet Components (Weekly Checks)116
- Check Water Heater Cabinet Components (Monthly Checks)118
- Check Fluid Levels (Weekly Checks).118
- Inspect Rear Debris Door119
- Lubricate Grease Manifold120
- Inspect Debris Tank.121
- Check Boom (Weekly Checks)122
- Check Boom (Monthly Checks)123
- Check Blower (Weekly Checks)124
- Check Blower (Monthly Checks)124

Hydraulic System Maintenance 125

- Checking Fluid Level.125
- Replace Hydraulic Charge Filters126
- Boom, Mounting Bolts127

Maintenance Precautions



⚠ WARNING Jobsite hazards. Exposure can cause death or serious injury. Use correct equipment and work methods. Use and maintain appropriate safety equipment.

To help avoid injury:

- Wear personal protective equipment including hard hat, safety eye wear, foot protection, hearing protection, and gloves (except when near rotating equipment).
- Remove jewelry.
- Wear close-fitting, high visibility clothing.
- Have other personal protective equipment, such as insulated boots and gloves, breathing protection, and face shield, etc. available for use depending on jobsite hazards or requirements.



⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. Know how to use all controls.

To help avoid injury:

- Unless otherwise instructed, all maintenance should be performed with the engine off and cool.
- Lower unsecured, raised components before servicing equipment.
- Unless otherwise instructed, all maintenance should be performed with machine parked on level surface.
- Refer to US Occupational Safety and Health Administration (OSHA) guidelines for appropriate lockout-tagout procedures.

Washing Precaution

NOTICE: Water can damage electronics. When cleaning equipment, do not spray electrical components with water.

Welding Precaution

NOTICE: Welding can damage electronics.

- Welding currents can damage electronic components. Always disconnect the Digital Control Panel ground connection from the frame and other electronic components prior to welding on machine or attachments.
- Connect welder ground close to welding point and make sure no electronic components are in the ground path.
- Refer to the truck manufacturer's manual for additional cautions related to welding.

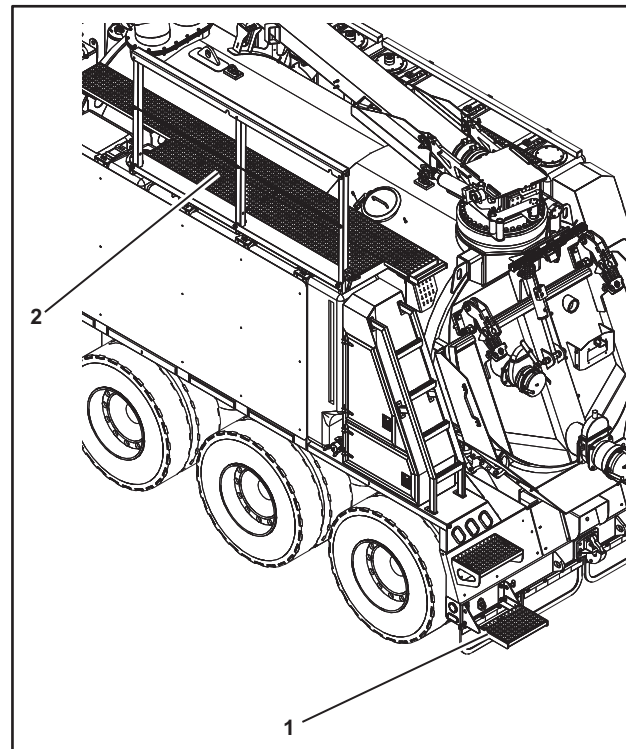
Working on Debris Tank

NOTICE: Maximum load capacity of the maintenance platform is 300 lbs.

The rear of the truck has two steps (1) that can be lowered for access to components on the rear of the debris tank or to access the top of the debris tank.

Maintenance Platform

A maintenance platform (2) is available for access to top of the debris tank. Shut down the truck before using platform. Attach fall restraint to anchor point when using maintenance platform. Do not use maintenance platform while truck is in operation or moving.



TTW12-MP-002a

Handrail

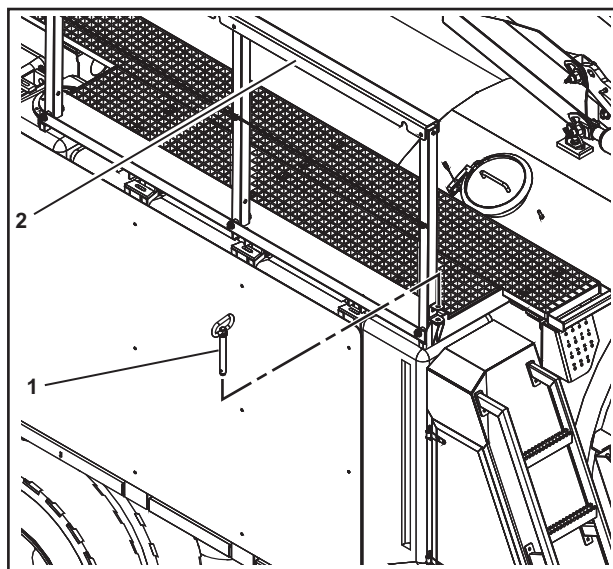
The maintenance platform has a safety handrail that should be raised any time personnel are working on the maintenance platform.

1. Remove locking pin (1) from storage bracket.
2. Lift handrail (2) into vertical position.



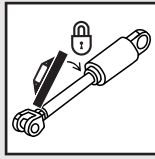
WARNING Pinch hazard. Contact can cause serious injury. Keep hands and limbs away from moving parts.

3. Insert locking pin (1) vertically into bracket to secure handrail (2) is locked in position.



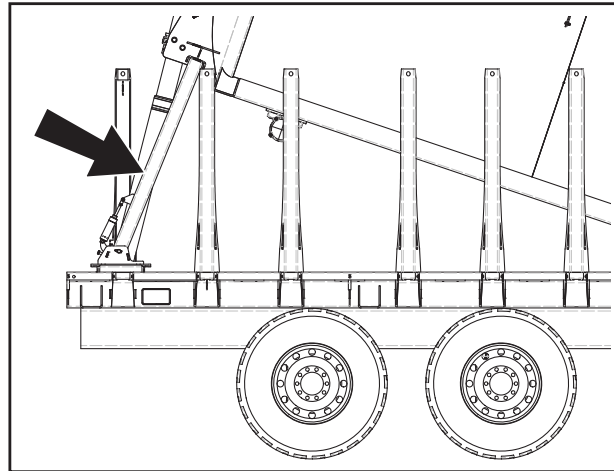
TTW12-MP-003a

Working under Raised Debris Tank



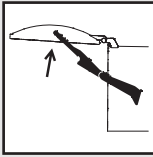
⚠ WARNING Raised component. Crushing can cause death or serious injury. Stay away or secure raised component with locking device. Use correct equipment and procedures.

1. Using the manual hydraulic controls, raise the debris tank.
2. Secure debris tank in the raised position by using the safety post. The safety post is pneumatically operated using a lever located in the manual control panel (see "Manual Hydraulic Controls" on page 57).
3. Lower debris tank until load is supported by safety post.



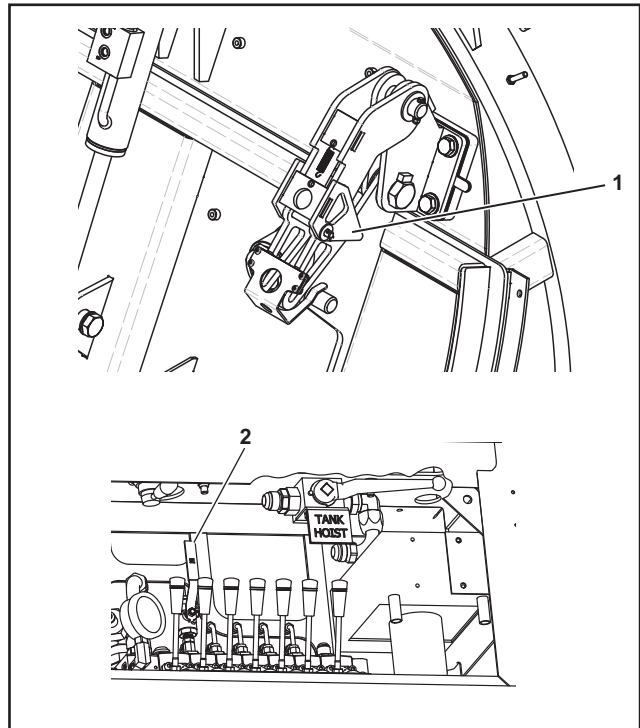
TTW12-MP-008a

Working under Raised Tank Door



⚠ WARNING Raised component. Crushing can cause death or serious injury. Ensure door is opened and locked into place before working beneath open door.

1. Open tank door until safety locks (1) are engaged.
2. Slightly lower tank door to ensure that safety locks (1) are engaged.
3. Close the Door Lock valve (2) located in the manual control panel to secure the tank door in the raised position









TTW12-MP-022a

Truck Chassis Maintenance Interval Chart

IMPORTANT: Chart indicates first instance of repeated maintenance procedures. See detailed information below.

IMPORTANT: This section does not cover the air system, auxiliary tools, or the components of the hydrovac system.

 Adjust, service, or test	 Change, initial	 Lube, initial
 Check	 Change	 Lube

Service	400 Hours	800 Hours	1200 Hours
Chassis			
Lights/ Electrical: head, tail, turn, backup, marker, work, dome, dash, control panel power, backup alarm	▲	▲	
Lights/ Electrical: wire harnesses, batteries (cover, tie down, fluid cable ends, posts, clean, box)		▲	
Cab: glass, seat belt, safety equipment, window cranks, shift lever/switch, horn, low air light and buzzer, gauges	▲		
Cab: turn signal switch, steering wheel, emergency brake, gear box protection unit, warning/ safety decals		▲	
Tires/Wheels: sidewalls, cuts, air pressure, damage uneven wear, separations, studs, nuts, cracked rims, bent rims, axle cap seals	▲		
Tires/ Wheels: tread depth, DOT date, brand, size, sidewalls, cuts, air pressure, uneven wear, separations, alignment, studs, nuts, cracked rims, bent rims, rim offset, axle cap seals, axle cap nuts/ bolts			▲
Suspension/ Frame: springs, bushings, anti-sway bars, mounts, walking beam bushings, hangers, frame fractures, bent frame, cab and body anchors		▲	
Steering: tie rod ends, tie rods, idler arms/ bushings, power steering	▲		
Steering: Steering: king pins, tie rod ends, tie rods, idler arms/ bushings, power steering cylinders/ mount, axle, pitman arm, shocks		▲	

Service	400 Hours	800 Hours	1200 Hours
Brakes: adjustment, shoe wear, air service lines, maxi-brake adjustment, slack adjusters, s- cams, auto-adjusters, brake shoes (oil, dirt), dust guards	▽	▽	
Hydraulic System: tank, control valves, pressure/return lines, bypass valve, pressure regulator, cooling unit	▲		
Drive Line: jack shaft slip joint, universal joints, slip joints, carrier bearings, bent drive lines, front and rear differential input and out put shaft/seals, yokes, front and rear differential oil level, mounts, vents, wheel seals, torque arms/ends, alignment		▲ ●	
Drive Axle: Change and sample oil - Front Change and sample oil - Rear		●	
Cab AC filter element, change as required		▲	
Misc: Secure all air hoses, fuel lines, hydraulic lines, wires and cables to harnesses and / or support brackets. Install all missing or absent safety/ warning labels, reflective tape Install all missing or absent anti-slip material		▲	
Chassis exterior: Bumpers, hood, cab, fenders, fuel tanks, air tanks, air dryer, paint, grille, doors, door handles, grab bars, mirrors/ brackets, warning/safety decals, tow hooks		▲	
Gear Boxes: transmission and transfer case mounts, sensors, shift cylinders, supply lines, vents, seals, input and out put shafts, gear box protection unit, shift lever, PTO, PTO shift cylinder/ linkage			▲
Transmission oil / filter change and sample			■
Transfer case oil change and sample			■
Hydraulic - Change oil / filter and sample			■
Engine Compartment			
Crankcase vent, blow by tube, belt tensioner, Amot valve operation, hood hinges, safety cable, latches, radiator, fluid levels, intake filter housing, intake, air lines, clamps and gauges	▲		
Fuel System: supply lines (chaffing, rubbing), change filter(s), leaks	▲		

Service	400 Hours	800 Hours	1200 Hours
Engine: crankcase vent, blow by tube, belt tensioner, Amot valve operation	▲		
Air Filter: Inspect and/or change only if needed	▲		
Engine oil - change oil / filter and sample	●		
Air conditioning compressor, belt, condenser, blowing cold	▲		
Grease all points on chassis and hydrovac system	●		
Radiator, mounts, clean, leaks, hoses, heater hoses, fluid level, anti-freeze, filler cap/ reservoir, fan shroud, pressure test cooling system		▲	
Intake: Intake air lines, clamps		▲	

Change and Sample Engine Oil

Refer to engine manufacturer's documentation for details on sampling and changing engine oil.

Change and Sample Transfer Case Fluid

Refer to transfer case manufacturer's documentation for details on sampling and changing transfer case fluid.

Change and Sample Hydraulic Fluid

Refer to hydraulic pump manufacturer's documentation for details on sampling and changing hydraulic fluid.

Change and Sample Transmission Fluid

Refer to transmission manufacturer's documentation for details on sampling and changing transmission fluid.

Check Air Conditioner

IMPORTANT: Repairs to the air conditioning system should be performed only by a qualified HVAC technician.

Check that air conditioner is blowing cold air. Inspect compressor and condenser for signs of damage or leaks. Inspect belt for wear, cuts, chafing of other damage. Repair or replace defective components as required.

Check Brakes

Check brakes for proper adjustment. Inspect air service lines, maxi-brake adjustment, slack adjusters, s-cams, auto-adjusters, brake shoes (oil, dirt), and dust guards for loose or missing components, damage, excessive corrosion, leakage or other defects that might impair proper operation. Repair or replace defective components as required.

Check Cab Components

Inspect the following items for proper operation:

- windshield and side window glass
- windshield wipers
- window operation
- seat belts
- horn
- dash switches and gauges
- turn signal switch
- 4-way hazard flasher switch
- steering wheel
- air brake system leak check
- emergency brake
- warning/ safety decals

Repair or replace defective components as required.

Check Cabin Air Filters

Refer to vehicle's owners manual for details on checking and changing cabin air filter.

Check Chassis Electrical Components

Inspect wire harnesses, engine batteries (including cable ends, posts, and box) for signs of corrosion, overheating, cracks, or other damage that would impair proper operation. Clean any corrosion using a commercial corrosion cleaner or a baking soda and water solution. Replace damaged components as necessary.

Check Chassis Exterior Components

Inspect bumpers, hood, cab, fenders, fuel tanks, air tanks, air dryer, paint, grille, doors, door handles, grab bars, mirrors/ brackets, warning/safety decals, safety tie downs, and tow hooks for loose or missing components, severe rust or corrosion, or other signs of damage that might compromise functionality and integrity of suspension system. Repair or replace defective components as required.

Check Chassis Lights

Check that all headlights, tail lights, turn signal lights, backup lights, marker lights, work lights, dome light, dash light, and control panel light illuminate when turned on. Replace bulbs as necessary. If lights still don't illuminate check wiring and fuses.

Check Drive Axle

Refer to front and rear axle manufacturer's documentation for details on sampling and changing oil.

Check Drive Line

Inspect jack shaft slip joint, universal joints, slip joints, carrier bearings, bent drive lines, front and rear differential input and out put shaft/seals, yokes, front and rear differential oil level, mounts, vents, wheel seals, and torque arms/ends for loose or missing components, damage, excessive corrosion, leakage or other defects that might impair proper operation. Repair or replace defective components as required.

Check Engine Air Filter

Inspect and/or change only if needed.

Check Engine Compartment Components

Check hood hinges, safety cable, and latches for loose or missing components, severe rust or corrosion, or other signs of damage that might compromise functionality. Repair or replace defective components as required. Inspect and clean radiator. Inspect engine air filter. Check crankcase vent, blow by tube, belt tensioner, Amot valve operation, radiator, fluid levels, intake filter housing, intake, air lines, clamps and gauges. Clean radiator cooling fins as required.

Check Fuel System Components

Inspect fuel System supply lines for leaks or signs of chaffing and rubbing. Change filter(s). Repair or replace defective components as required.

Check Gearboxes

Inspect transmission and transfer case mounts, sensors, shift cylinders, supply lines, vents, seals, input and output shafts, gear box protection unit, shift lever, PTO, PTO shift cylinder/linkage for loose or missing components, leaks, severe rust or corrosion, or other signs of damage that might compromise functionality and integrity of gearbox. Repair or replace defective components as required.

Check Hydraulic System

Inspect hydraulic fluid level. Check hydraulic fluid for contamination or signs of excessive moisture. Inspect tank, control valves, pressure/return lines, bypass valve, pressure regulator, and cooling unit for loose or missing components, damage, excessive corrosion, leakage or other defects that might impair proper operation. Repair or replace defective components as required.

Check Miscellaneous Items

Secure all air hoses, fuel lines, hydraulic lines, wires and cables to harnesses and support brackets. Replace all missing, obscured, or absent safety/warning labels, reflective tape. Install all missing or absent anti-slip material on steps.

Check Steering Components

Inspect tie rod ends, tie rods, idler arms/bushings, king pins, power steering cylinders/mount, axle, pitman arm, and shocks for loose or missing components, damage, excessive corrosion, leakage or other defects that might impair proper operation. Repair or replace defective components as required.

Check Strobe Light

Check every 10 hours. Strobe light should flash. Change as needed.

Check Suspension and Frame

Inspect all suspension components, including springs, bushings, anti-sway bars, mounts, walking beam bushings, hangers, frame fractures, bent frame, and cab and body anchors for loose or missing components, severe rust or corrosion, or other signs of damage that might compromise functionality and integrity of suspension system. Repair or replace defective components as required.

Check Tires and Wheels

Check tires for proper inflation as indicated on truck chassis door frame decal. Inspect front and rear tire (including sidewalls) for cuts, air pressure damage, uneven wear, separations, or other damage that might cause a flat tire. Check tread depth and DOT date. Repair or replace tires as required.

Inspect wheels for cracked rims, bent rims, axle cap seals, damaged wheel studs, loose or missing lug nuts. Repair or replace wheels as required.







Lubricate Chassis Components

Grease all grease fittings on truck chassis.

Hydrovac Maintenance Interval Chart

IMPORTANT: Chart indicates first instance of repeated maintenance procedures. See detailed information below.

IMPORTANT: This section does not cover the air system, auxiliary pneumatic tools, or the truck. Please see manufacturer's manuals for maintaining those products.

 Adjust, service, or test	 Change, initial	 Lube, initial
 Check	 Change	 Lube

Service	Weekly	Monthly
Lubricants and Fluids		
Check Blower Oil Level	▲	
Check Hydraulic Fluid Level	▲	
Check Pump Oil Level	▲	
Grease all Points on Boom	●	
Grease all Points on Rear Debris Door	●	
Grease all Points on Blower Drive Line	●	
Change Blower Oil		■
Change Hydraulic Fluid and Filters		■
Change Pump Oil		■
Water Heater Cabinet		
Inspect/Clean Inline Water Filter	▲	
Check Pump Operation	▲	
Check Burner Operation	▲	
Inspect all Hoses and Connections	▲	
Inspect Washout Gun and Wash Wand	▲	
Inspect all Dig Wands	▲	
Drive Motor Coupling (motor to wash pump)		▲
Check Pump Pressure and Record		▲
Inspect Brackets and Pump Mounting		▲

Service	Weekly	Monthly
Rear Debris Door		
Inspect Seal	▲	
Inspect Door Surface (inside/outside)	▲	
Inspect Lock Pins/Hinges	▲	
Check Hydraulic Cylinders and Hoses	▲	
Decals/Warning Labels		▲
Debris Tank		
Check Tank for General Damage	▲	
Check Decant Valves	▲	
Inspect Shutoff Float Ball Assembly and Gasket		▲
Inspect Debris Float Assembly or Sight Glass		▲
Decals/Warning Labels		▲
Boom		
Inspect Boom Operation w/Remote (all functions)	▲	
Check Hydraulic Cylinders and Hoses	▲	
Check Boom Lockout Operation	▲	
Inspect Manual Boom Control Operation	▲	
Inspect Rockhead and Deflector Plate	▲	
Check all Bolts and Pivot Pins		▲
Inspect Boom Slewing Bearing		▲
Inspect Bearing to Tank Seal		▲
Inspect Boom Mounting Bolts		▲
Decals/Warning Labels		▲
Blower		
Blower Diesel Flush Operation	▲	
Blower Driveline - Safety Cover - Grease	▲	
Test Vacuum Release Operation	▲	
Final Filter Screen - Housing - Door Seals - Clean	▲	

Service	Weekly	Monthly
Cyclone Clean and Inspected	▲	
Change and Sample Blower Oils (as required)		■
Inspect Blower Mounting Bolts		▲
Inspect Silencer Mounting Bolts		▲
Blower Run Test - Record Vacuum		▲
Test Vacuum Breaker Operation		▲
Final Filter Screen - Housing - Door Seals - Clean		▲
Cyclone Clean and Inspected		▲
Decals/Warning Labels		▲

Recommended Lubricants

Item	Description
Hydraulic Fluid	Chevron Clarity AW32
Water Pump Lubricant	ISO220 Mineral Based OR Synthetic Oil
Transfer Case Lubricant	SHC 75W-90 or equivalent
Blower Lubricant	Synthetic Oil EP/ISO 150

Proper lubrication and maintenance protects Ditch Witch equipment from damage and failure. Maintenance intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only genuine Ditch Witch parts, filters, approved lubricants, TJC, and approved coolants to maintain warranty. Fill to capacities listed in "Specifications" on page 128.

Engine Lubricants and Fluids

Refer to the truck chassis owner's manual for information on diesel engine fuel, lubricants, coolant, and other fluids.

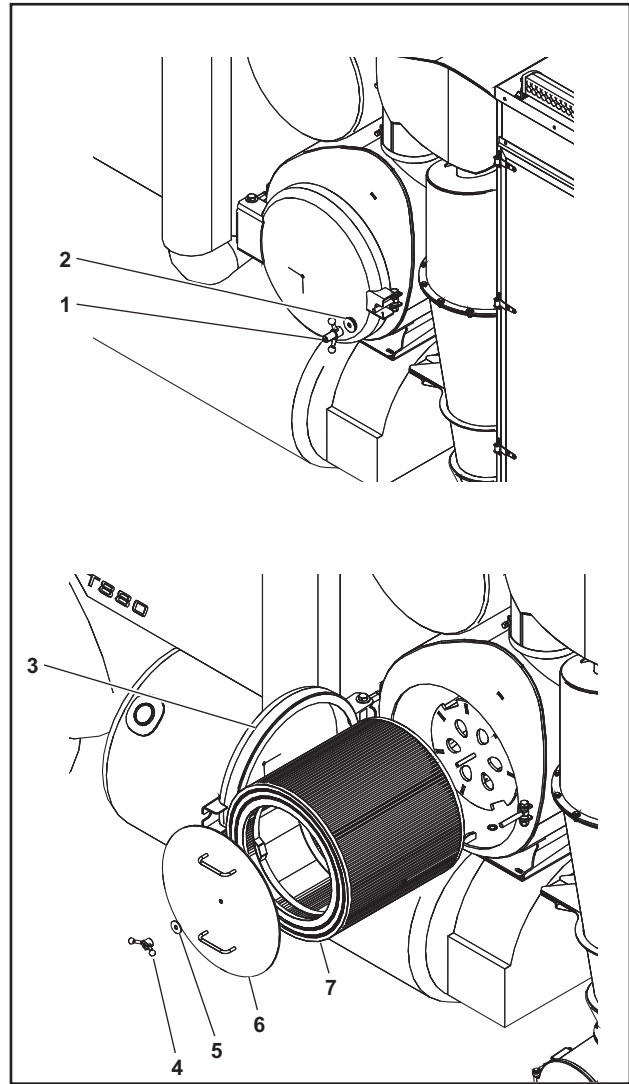
Diesel Exhaust Fluid (DEF)

Refer to the truck chassis owner's manual for information on diesel exhaust fluid (DEF) and maintenance requirements for the diesel engine exhaust system.

Hydrovac System Maintenance

Change Hydrovac Air Filter

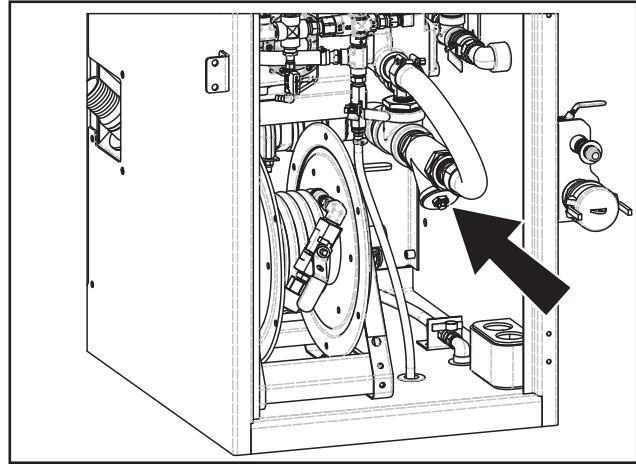
1. Unscrew and remove door wingnut (1) and remove washer (2), then swing door (3) open.
2. Unscrew and remove wingnut (4), washer (5), and retaining plate (6).
3. Grasp filter element (7) and remove from filter housing.
4. Install new filter element (7).
5. Install retaining plate (6) and secure with washer (5) and wingnut (4).
6. Swing door (3) closed and secure with washer (2) and retaining wingnut (1)



TTW12-MP-031a

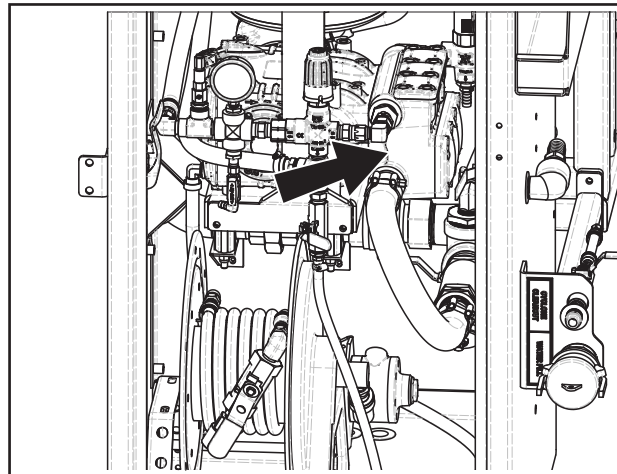
Check Water Heater Cabinet Components (Weekly Checks)

1. Check inline water filter. Flush dirt, debris and contaminants with clean water. Replace filter if required.



TTW12-MP-009a

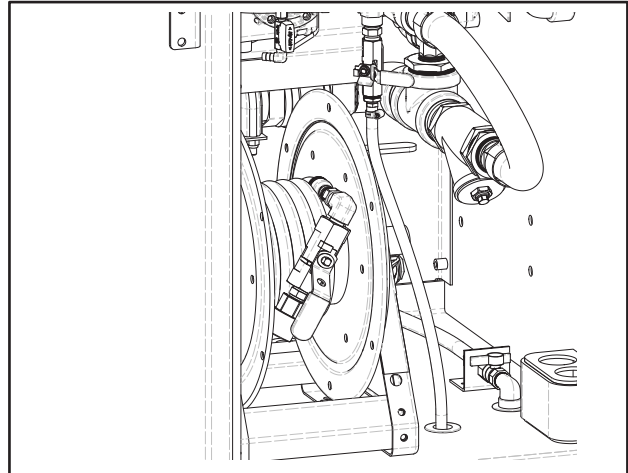
2. Verify that pump operates with no vibration, leaks, or excessive noise. Verify that pump is capable of supplying water pressure of 2800 PSI. Repair or replace defective components as required.



TTW12-MP-010a

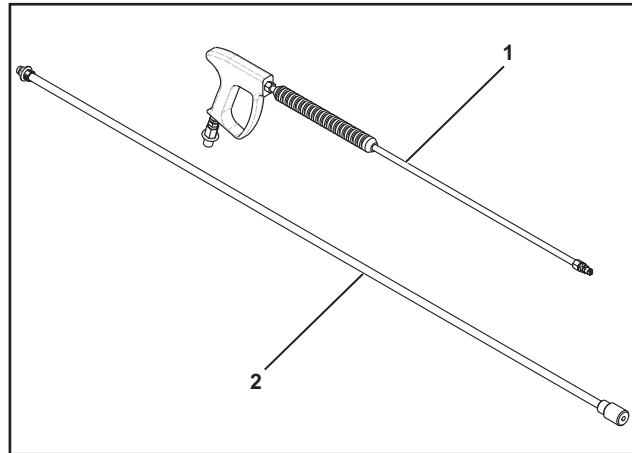
3. Verify that burner operates properly. Verify that burner is capable of supplying water temperatures of 120 °F (49 °C). Repair or replace defective components as required.

4. Inspect air hose and water hoses for leaks, cracks, chafing, or other damage that might impair proper operation. Repair or replace defective components.



TTW12-MP-023a

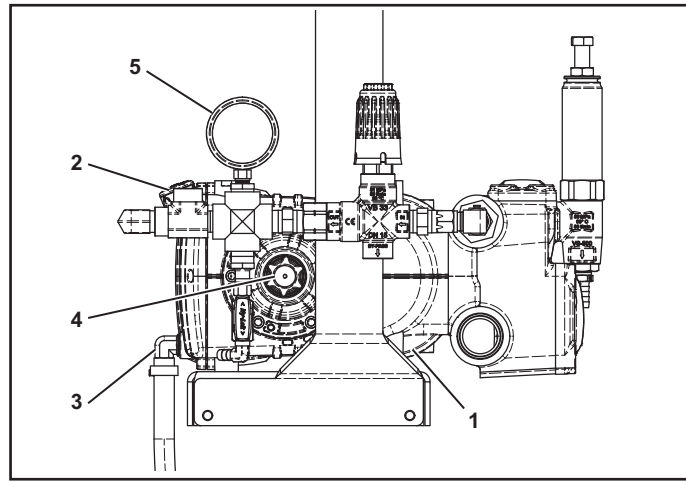
5. Inspect washout gun (1) and dig wand (2) for leaks, cracks, or other damage that might impair proper operation. Inspect quick disconnects, valves and hand levers for proper operation. Repair or replace defective components.



TTW12-MP-011a

Check Water Heater Cabinet Components (Monthly Checks)

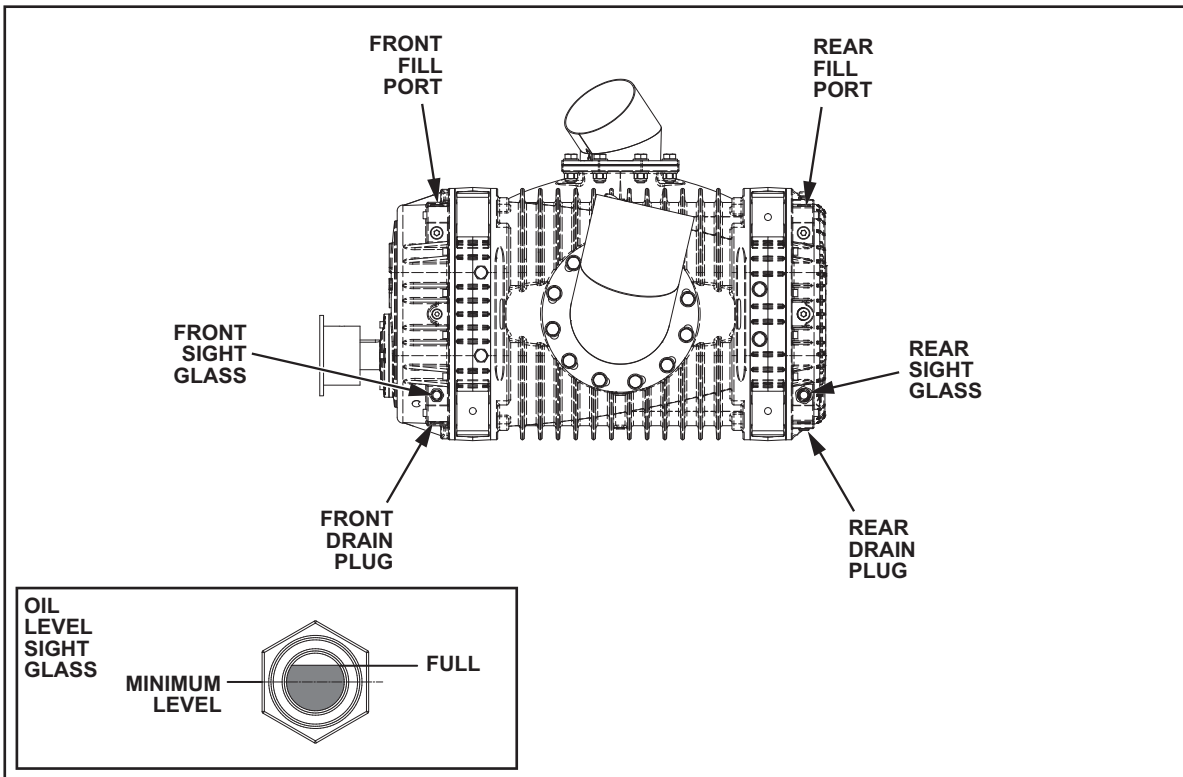
1. Change water pump oil (1) in accordance with manufacturer's procedures.
 - Drain port (3)
 - Fill port (2)
 - Sight glass (4)
2. Check pump pressure using gauge (5).
3. Inspect pump mounting hardware and brackets for signs of wear, damage, corrosion or other defects that might impair operation. Repair or replace defective components as required.



TTW12-MP-012a

Check Fluid Levels (Weekly Checks)

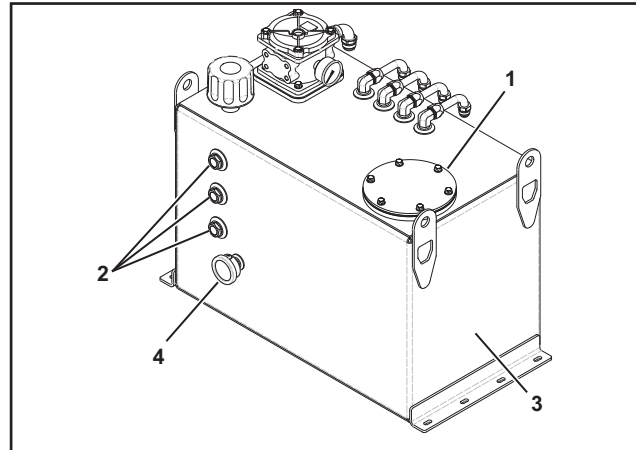
1. Check blower oil level and add oil as necessary.



TTW12-MP-005a

2. Check hydraulic fluid level and add fluid as necessary

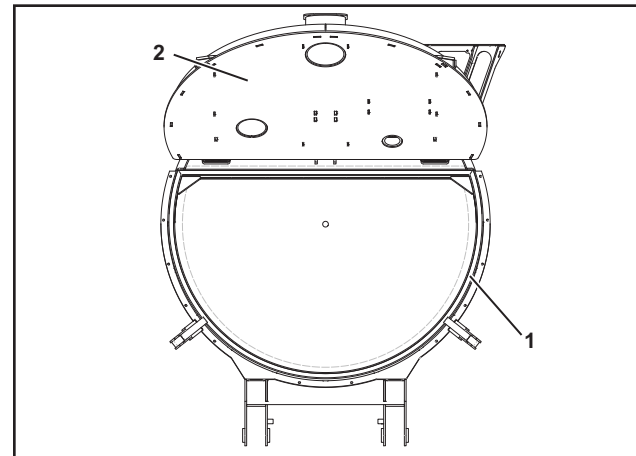
- Fill port (1)
- Sight glass (2)
- Reservoir (3)
- Temperature gauge (4)



TTW12-MP-013a

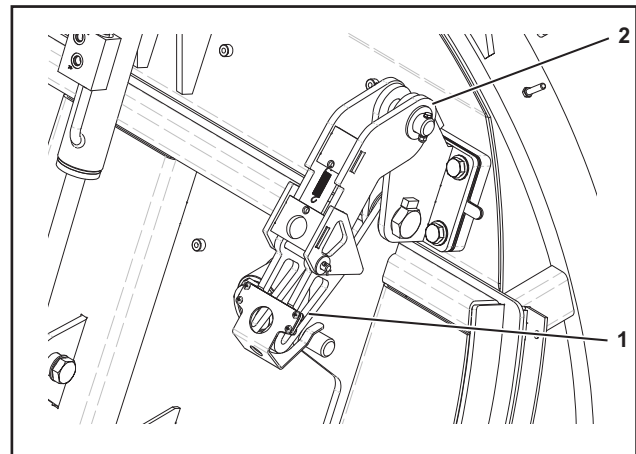
Inspect Rear Debris Door

1. Inspect rear debris door seal (1) for signs of wear, damage, corrosion or other defects that might impair operation. Repair or replace defective components as required.
2. Inspect rear debris door surface (2) (inside and outside) for damage. Repair or replace as required.



TTW12-MP-014a

3. Inspect door safety latches (1) and hinges (2) for signs of wear, damage, corrosion or other defects that might impair operation. Repair or replace defective components as required.



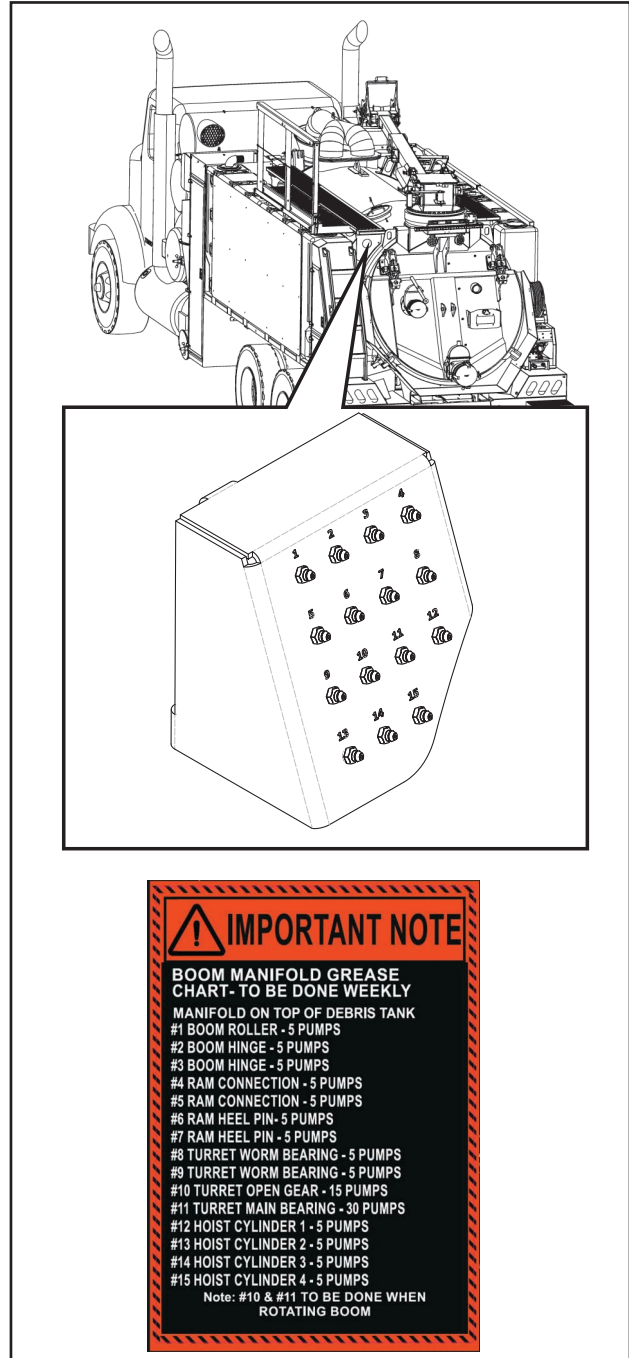
TTW12-MP-015a

4. Check hydraulic cylinders and hoses for leaks, abrasions, loose or missing components, or other defects that might impair operation. Repair or replace defective components.

- 1) tank lift cylinder (located under front end of debris tank)
- 2) boom lift cylinders (qty. 2, located on either side of base of boom)
- 3) Boom extension cylinder (located inside the boom)
- 4) door open cylinder (located in the center of the debris door)
- 5) Door lock cylinders (qty. 2, located on either side of the bottom of the debris door)

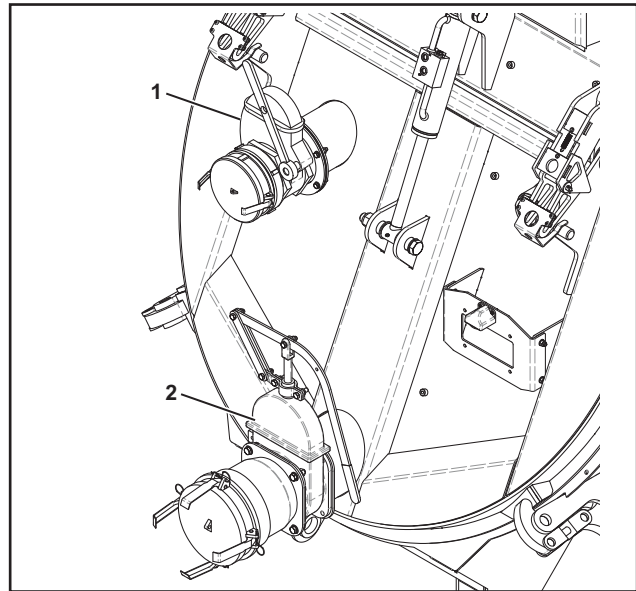
Lubricate Grease Manifold

Apply grease to the fittings on the grease manifold in accordance with the instructions on the decal.



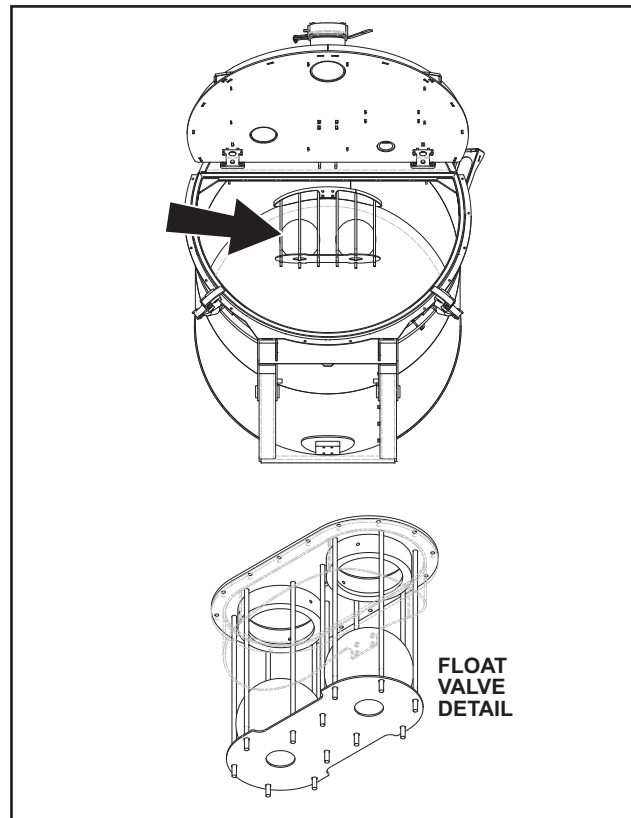
Inspect Debris Tank

1. Inspect exterior of debris tank for signs of wear, damage, corrosion or other defects that might impair operation. Repair or replace defective components as required.
2. Inspect debris door decant gate valve (1) and main gate valve (2) for signs of leakage, loose or missing hardware, and proper operation of valve levers. Repair or replace defective components as necessary.



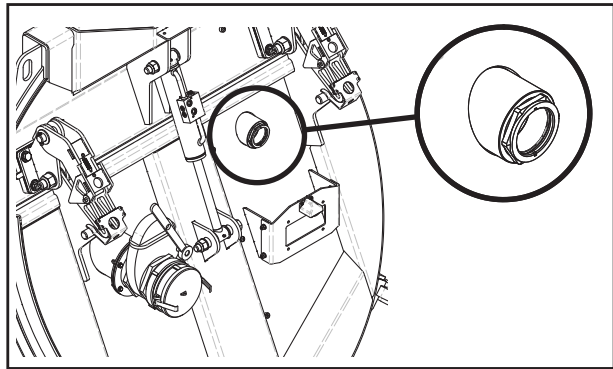
TTW12-MP-016a

3. Inspect shutoff float ball assembly for signs of wear, damage, corrosion or other defects that might impair operation. Inspect gasket for wear or damage that might result in leaks. Repair or replace defective components as required.



TTW12-MP-017a

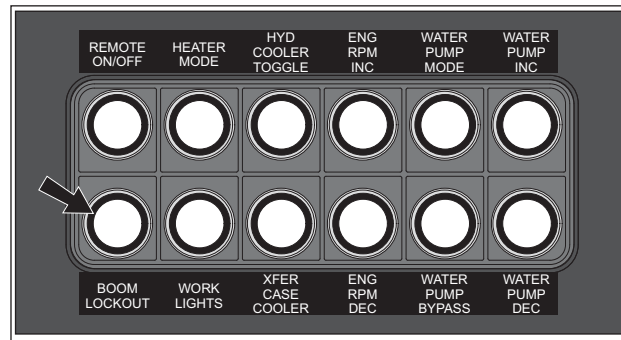
4. Inspect debris tank sight glass for damage or leaks. Repair or replace as necessary.
5. Inspect safety post for proper operation. Repair or replace as necessary.



TTW12-MP-029a

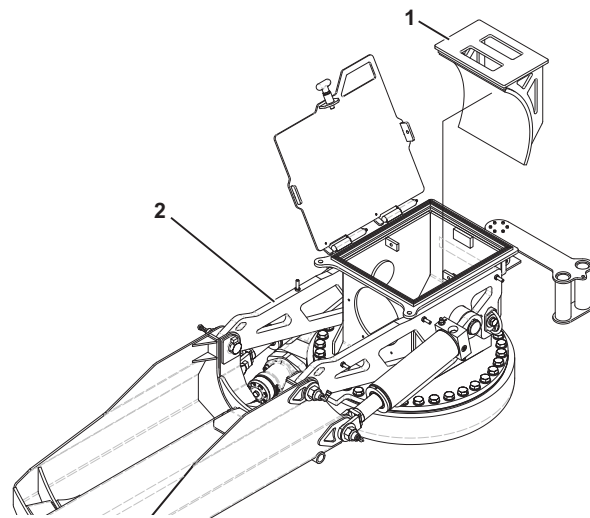
Check Boom (Weekly Checks)

1. Verify boom operation with remote control. Exercise all functions and movements of boom. If any operation is not functioning properly notify maintenance staff for troubleshooting and repair.
2. Check boom lockout operation. All boom relate remote control functions should be disabled when boom lockout switch in control panel is activated. To test this, activate lockout switch and then test that all boom functions on remote are disabled.



TTW12-MP-030a

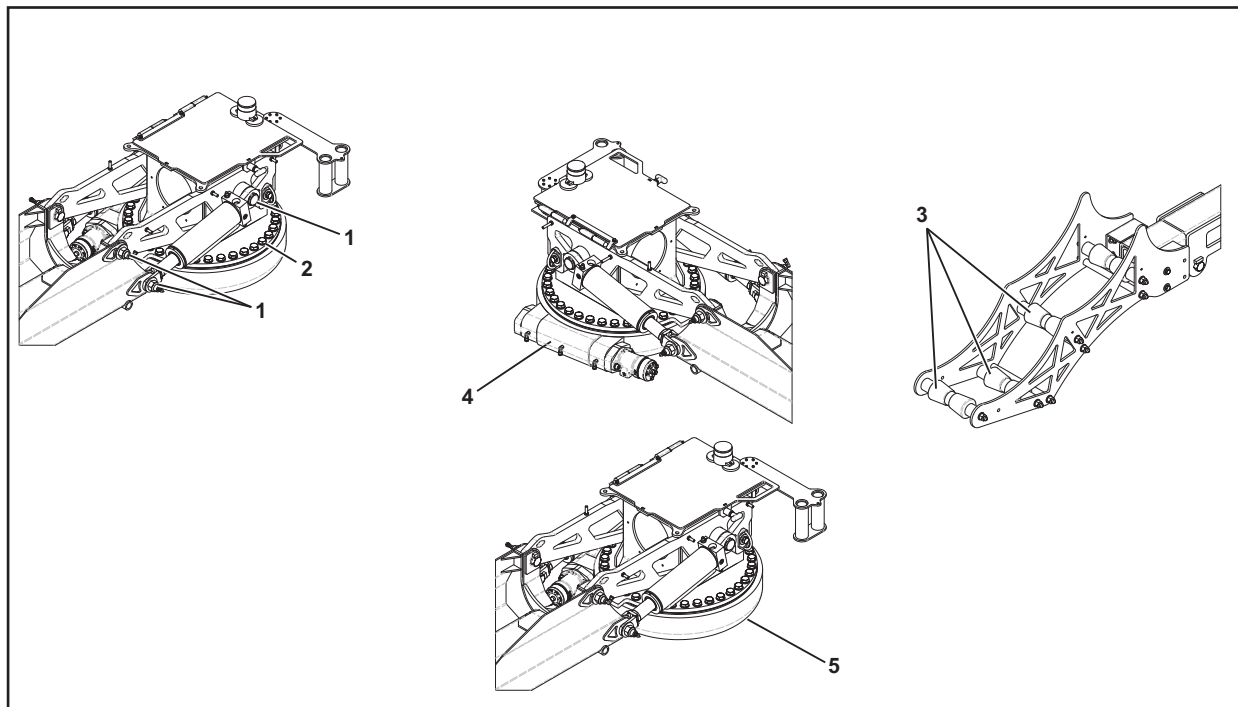
3. Inspect deflector plate (1) for loose or missing hardware, corrosion, other defects that might impair operation.
4. Inspect rockhead assembly (2) for excessive damage. Repair or replace as required.



TTW12-MP-019a

Check Boom (Monthly Checks)

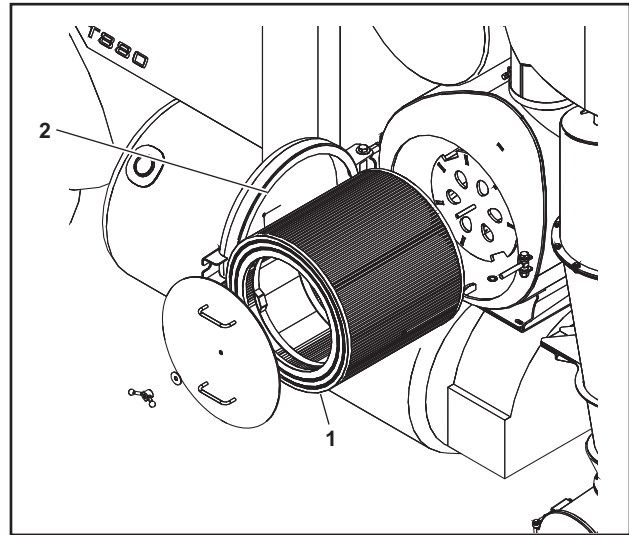
1. Check all pivot pins (1), bolts (2), and rollers (3) for loose or missing hardware, corrosion, other defects that might impair operation. Repair or replace defective components as required.
2. Inspect boom slewing bearing (4) for signs of wear or damage. Repair or replace as required.
3. Inspect bearing-to-tank seal (5) for signs of wear or damage. Repair or replace as required.



TTW12-MP-020a

Check Blower (Weekly Checks)

1. Lubricate blower drive line.
2. Test vacuum release operation using the remote control. Ensure linkage and vacuum breaker function properly. Check components for loose or missing hardware, excessive corrosion, or other damage that might impair operation. Repair or replace defective components as required.
3. Open final filter door and clean final filter screen (1), filter housing, and door seals (2). Inspect seals for cuts, wear, or other damage that might affect the integrity of the seal. Repair or replace as required.
4. Inspect cyclones for loose or missing hardware, leaks, or other damage that might impair proper operation. Repair or replace damaged components as required.



Check Blower (Monthly Checks)

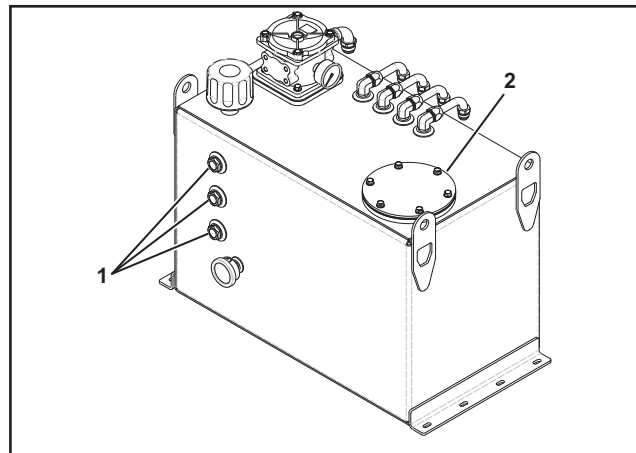
1. Inspect blower mounting bolts for loose or missing hardware. Tighten or replace as required.
2. Inspect silencer mounting bolts for loose or missing hardware. Tighten or replace as required. Check blower function:
 - Turn on blower.
 - Open vacuum breaker.
 - Block boom hose.
 - Close vacuum breaker.
 - Check vacuum gauge reading. Vacuum reading should increase to at least 25 in hg.
3. Change and Sample Blower Oil

Refer to blower manufacturer's documentation for details on sampling and changing blower oil.

Hydraulic System Maintenance

Checking Fluid Level.

Use the three sight glasses (1) in the hydraulic tank to monitor fluid level. Check the fluid as prescribed in "Hydrovac Maintenance Interval Chart" on page 112. Add fluid as necessary via fill port (2).



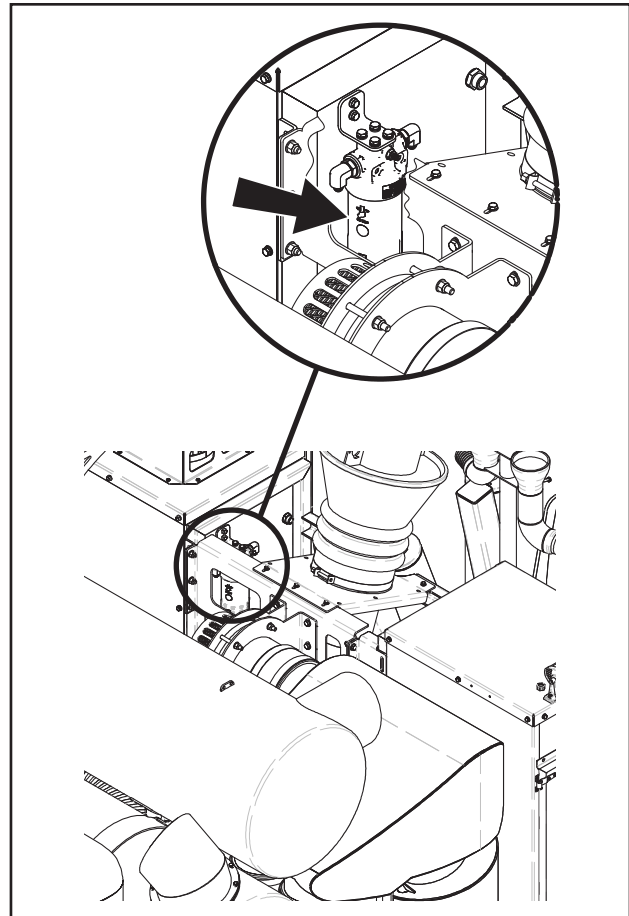
TTW12-MP-025a

Replace Hydraulic Charge Filters

Replace hydraulic filters any time hydraulic fluid is changed.

NOTICE: There is one filter mounted in the top of the hydraulic reservoir, and one or two charge filters mounted to the back of the water heater cabinet, above the hydraulic tank. If your truck is not equipped with an air compressor, the corresponding charge filter will not be installed.

1. Unscrew filter element from housing.
2. Screw new filter element into housing.
3. Dispose of filter in accordance with local regulations.



TTW12-MP-034a

Boom, Mounting Bolts

Check top (shown) and bottom bolts every 100 hours. Adjust as needed.

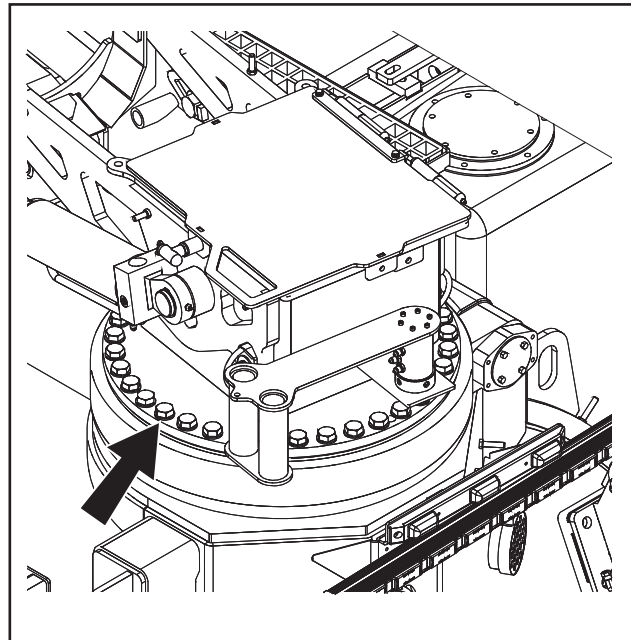
NOTICE: Bottom bolts are accessed from inside tank.

1. Ensure both sets of bolts are tightened to 285 ft•lb (385 N•m).

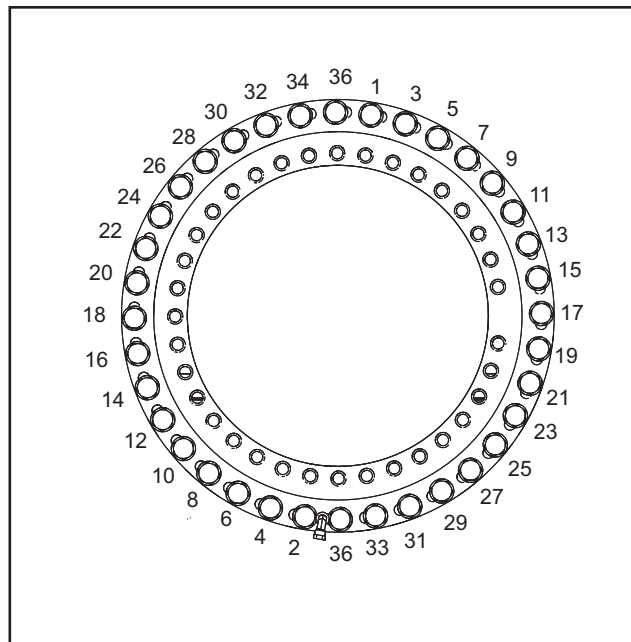
NOTICE:

- Tighten bolts in star pattern (1-16).
- Tighten one set of bolts (top or bottom) entirely before starting the other set.
- Use Loctite® 242 on threads.

2. If any bolt is excessively loose, change bolt and washer.



TTW12-MP-026a



TTW12-MP-027a

Specifications

Specifications are called out according to SAE recommended practices. Specifications are general and subject to change without notice. If exact measurements are required, equipment should be weighed and measured. Due to selected options, delivered equipment may not match that shown.

Truck Chassis	
Manufacturer	Peterbilt
Model	567
Engine	Cummins X15 525 HP Diesel in-line 6 cylinder
Transmission	Eaton RTLO18918B 18-Speed manual
Front Axle	Paccar FX-20 Steer Axle 20,000 lbs.
Rear Axle	Dana Spicer T69-172 69,000 Lbs. Tri-Drive
Front Suspension	Taper leaf springs/shocks 20,000 lbs.
Rear Suspension	Bendix Air suspension
Tires, Front	445/65R22.5 20-Ply
Tires, Rear	11R24.5 M799 16-Ply
Brakes, Front	Bendix Air Cam 16.5X6
Brakes, Rear	Bendix Air Cam 16.5X7
Fuel Tank Capacity	120 gal (450 liters)

Dimensions		US	Metric
H	Height	142.4 in	361.7 cm
L	Length	436.6 in	1,109 cm
W	Width	102.0 in	259 cm
	Wheelbase	342 in	868.7 cm

Debris Tank		US	Metric
Capacity		12 cu yd	9.17 m ³
Diameter		66 in	167.6 cm

Debris Tank	US	Metric
Drain valve size	6 in diameter and 8 in diameter on door	15.42 cm and 20.32 cm on door
Dump angle	36°	36°

Water System	US	Metric
Tank capacity	1,200 gal	4542 l
Hose reel length	Side: 100 ft Rear: 80 ft	Side: 33.33 m Rear: 26.678 m

Operation	US	Metric
Weight*	47,597 lb	21,590 kg
Weight, with debris tank full (water)*	66,711 lb	30,260 kg
Weight, with water tank full, debris tank empty*	56,592 lb	25,670 kg

*Approximate weights shown. Actual weights will vary from truck to truck. Actual weights should be verified with actual scale tickets prior to registering the truck or any other activity required actual weights.

Support

Registration

If your equipment was purchased through a Ditch Witch dealer, it is already registered. If you purchased from any other source, please email productsupportwarrantyadmin@ditchwitch.com or fill out the registration card located in the back of the parts manual. Registration enables you to receive updates on this equipment as well as information on new products of interest.

Procedure

Notify your dealer immediately of any malfunction or failure of Ditch Witch equipment.

Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase.

Return damaged parts to dealer for inspection and warranty consideration if in warranty time frame.

Order genuine Ditch Witch replacement or repair parts from your authorized Ditch Witch dealer. Use of another manufacturer's parts may void warranty consideration.

Resources

Publications

Contact your Ditch Witch dealer for publications and videos covering safety, operation, maintenance, and repair of your equipment.

Ditch Witch Training

For information about on-site individualized training, contact your Ditch Witch dealer.

Warranty

Ditch Witch Equipment and Replacement Parts Limited Warranty Policy

Subject to the limitation and exclusions herein, free replacement parts will be provided at any authorized Ditch Witch dealership for any Ditch Witch equipment or parts manufactured by the Ditch Witch factory that fail due to a defect in material or workmanship within one (1) year of first commercial use. Free labor will be provided at any authorized Ditch Witch dealership for installation of parts under this warranty during the first year following "initial commercial" use of the serial-numbered Ditch Witch equipment on which it is installed. The customer is responsible for transporting their equipment to an authorized Ditch Witch dealership for all warranty work.

Exclusions from Product Warranty

- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse (including, but not limited to, rollover), abuse, improper installation, alteration, neglect, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All engines and engine accessories (these are covered by original manufacturer's warranty).
- Tires, belts, and other parts which may be subject to another manufacturer's warranty (such warranty will be available to purchaser).
- ALL IMPLIED WARRANTIES NOT EXPRESSLY STATED HEREIN, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.

IF THE PRODUCTS ARE PURCHASED FOR COMMERCIAL PURPOSES, AS DEFINED BY THE UNIFORM COMMERCIAL CODE, THEN THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF AND THERE ARE NO IMPLIED WARRANTIES OF ANY KIND WHICH EXTEND TO A COMMERCIAL BUYER. ALL OTHER PROVISIONS OF THIS LIMITED WARRANTY APPLY INCLUDING THE DUTIES IMPOSED.

Ditch Witch products have been tested to deliver acceptable performance in most conditions. This does not imply they will deliver acceptable performance in all conditions. Therefore, to assure suitability, products should be operated under anticipated working conditions prior to purchase.

Defects will be determined by an inspection within thirty (30) days of the date of failure of the product or part by Ditch Witch Product Support (DWPS) or its authorized dealer. DWPS will provide the location of its inspection facilities or its nearest authorized dealer upon inquiry. DWPS reserves the right to supply remanufactured replacement parts under this warranty as it deems appropriate.

Extended warranties are available upon request from your local Ditch Witch dealer or the Ditch Witch factory.

Some states do not allow exclusion or limitation of incidental or consequential damages, so above limitation of exclusion may not apply. Further, some states do not allow exclusion of or limitation of how long an implied warranty lasts, so the above limitation may not apply. This limited warranty gives product owner specific legal rights and the product owner may also have other rights which vary from state to state.

For information regarding this limited warranty, contact the DWPS department, P.O. Box 66, Perry, OK 73077-0066, or contact your local dealer.