

# FX60

## Operator's Manual



CMW®

Issue 3.0



054- 086

# Overview



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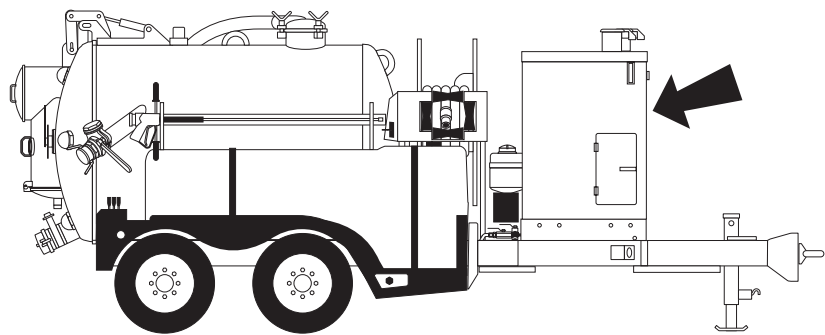
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# Serial Number Location

Record serial numbers and date of purchase in spaces provided. FX60 serial number is located as shown.



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|                            |  |
|----------------------------|--|
| Date of manufacture        |  |
| Date of purchase           |  |
| FX60 serial number (shown) |  |
| Engine serial number       |  |
| Blower serial number       |  |
| Water pump serial number   |  |
| Trailer serial number      |  |

## Intended Use

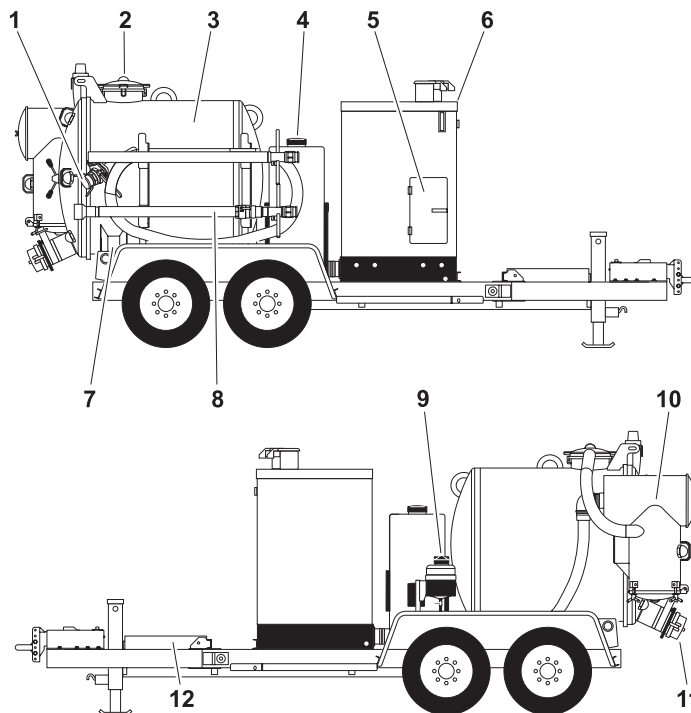


The FX60 is a self-contained vacuum excavation unit capable of vacuuming a wide variety of non-hazardous, non-flammable liquid and solid debris. It is designed to perform efficient soft excavation, including exposing utilities for visual verification and/or potholing, and is intended for operation in ambient temperatures from 0° to 115°F (-18° to 46°C). Use in any other way is considered contrary to the intended use.

The FX60 is available with 300-gal (1136-L), 800-gal (3028-L) or 1200-gal (4542-L) debris tanks. The unit should be operated, serviced, and repaired only by persons familiar with its particular characteristics and acquainted with the relevant safety procedures.

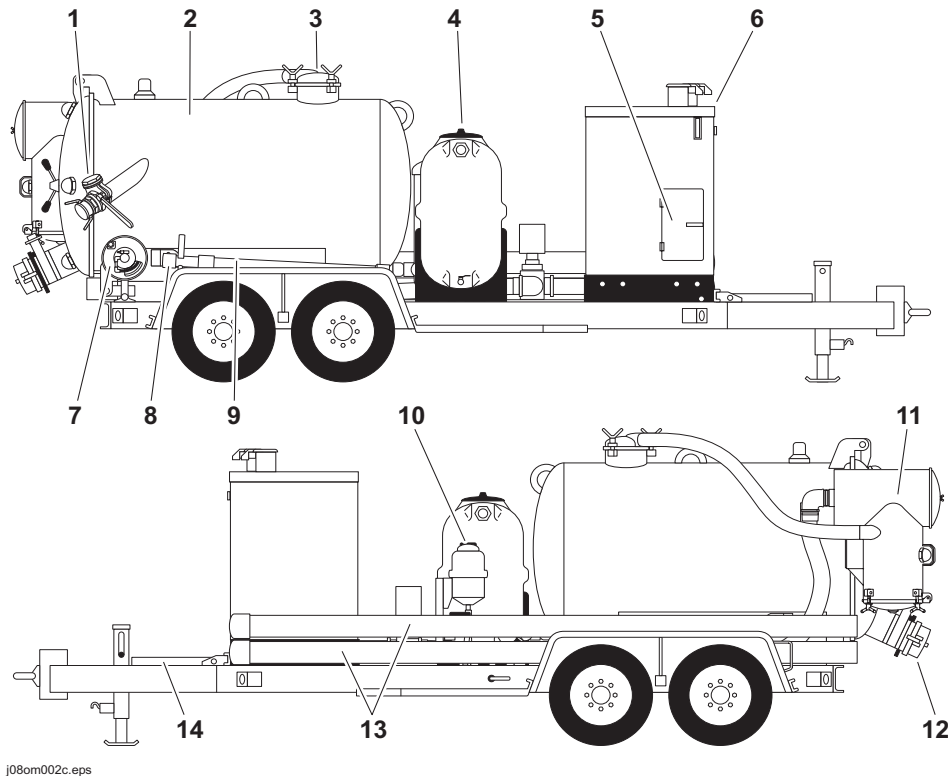
## Unit Components

### 300-Gal (1136-L) Tank



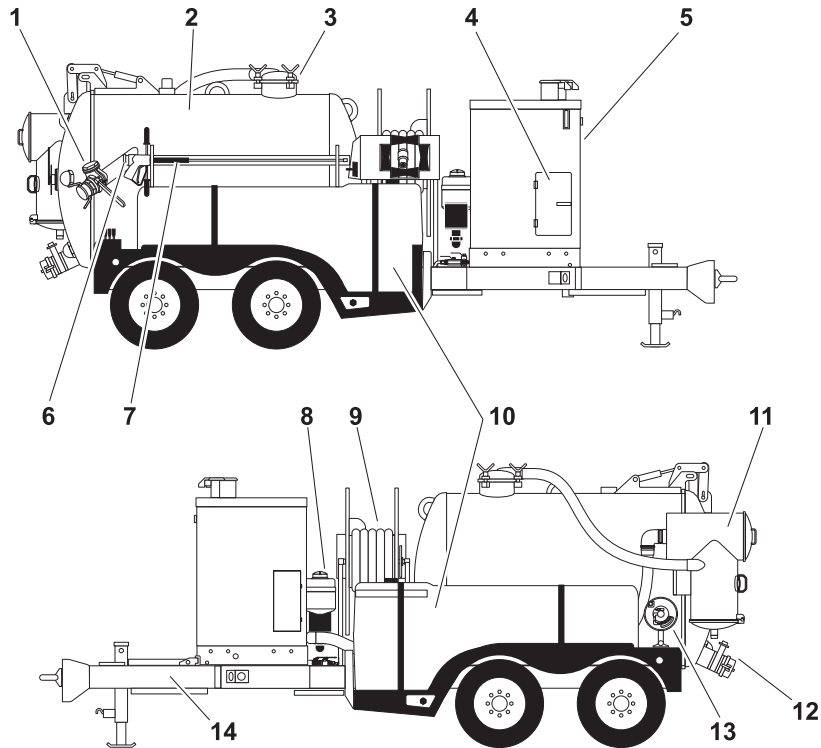
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- |                          |                                           |
|--------------------------|-------------------------------------------|
| 1. Inlet valve           | 7. Hose reel                              |
| 2. Primary shutoff valve | 8. Potholing tools                        |
| 3. Vacuum tank           | 9. Antifreeze tank                        |
| 4. Water tank            | 10. Vacuum filter/secondary shutoff valve |
| 5. Operator's station    | 11. Drain valve                           |
| 6. Power pack            | 12. Tool storage                          |

**800-Gal (3028-L) Tank**

- |                          |                                           |
|--------------------------|-------------------------------------------|
| 1. Inlet valve           | 8. Potholing tools                        |
| 2. Vacuum tank           | 9. Water lance                            |
| 3. Primary shutoff valve | 10. Antifreeze tank                       |
| 4. Water tank            | 11. Vacuum filter/secondary shutoff valve |
| 5. Operator's station    | 12. Drain valve                           |
| 6. Power pack            | 13. Hose storage tubes                    |
| 7. Hose reel             | 14. Tool storage                          |

## 1200-Gal (4542-L) Tank



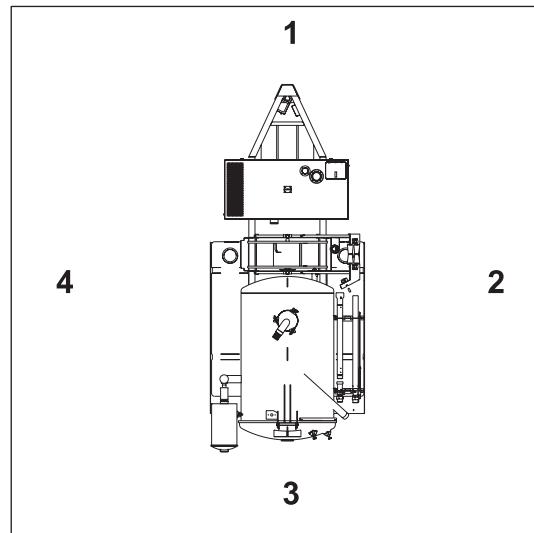
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- |                          |                                           |
|--------------------------|-------------------------------------------|
| 1. Inlet valve           | 8. Antifreeze tank                        |
| 2. Vacuum tank           | 9. Vacuum hose reel                       |
| 3. Primary shutoff valve | 10. Water tanks                           |
| 4. Operator's station    | 11. Vacuum filter/secondary shutoff valve |
| 5. Power pack            | 12. Drain valve                           |
| 6. Potholing tools       | 13. Hose reel                             |
| 7. Water lance           | 14. Tool storage                          |

## Operator Orientation

- |                  |                 |
|------------------|-----------------|
| 1. Front of unit | 3. Rear of unit |
| 2. Right of unit | 4. Left of unit |

Right and left sides of machine are determined by facing towing vehicle.



j08om013h.eps

## About This Manual

This manual contains information for the proper use of this machine. See **Operation Overview** for basic operating procedures. 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 you use and 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](http://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 Charles Machine Works, Inc, Attn: Product Safety Coordinator.

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 1-800-424-9393 (366-0123 in Washington, DC area) or write to:

NHTSA  
U.S. Department of Transportation  
400 7th Street SW (NSA-11)  
Washington, DC 20590

You can also obtain other information about motor vehicle safety from the Hotline.

## **FX60 Operator's Manual**

**Issue number 3.0/OM-7/06**

**Part number 054-086**

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U.S. patents pending.

# Contents



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|  | <b>Foreword</b><br>part number, revision level, and publication date of this manual, and factory contact information                                                                                 | <b>7</b>   |
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## **Service Record**

a record of major service performed on the machine

**129**

# Safety

## Chapter Contents



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- If Machine Catches on Fire . . . . .19

## Guidelines

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- Contact One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call. Have all underground pipes and cables located and marked before operating equipment. If you damage a utility, contact utility company.
- 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.
- Wear personal protective equipment.
- 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.
- Replace missing or damaged safety shields and safety signs.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.
- Do not operate unit where flammable gas is present.
- Contact your Ditch Witch dealer if you have any question about operation, maintenance, or equipment use.

## **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.



indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



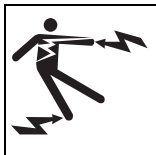
indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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

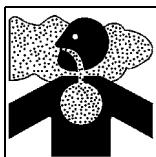
**NOTICE** can keep you from doing something that might damage the machine or someone's property. It can also alert you against unsafe practices.

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

## Safety Alerts

**⚠ DANGER**

Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.

**⚠ DANGER**

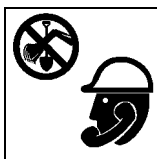
Deadly gases. Lack of oxygen or presence of gas will cause sickness or death. Provide ventilation.

**⚠ DANGER**

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

**⚠ DANGER**

Vacuum will suffocate. Maintain distance between face and vacuum inlets.

**⚠ WARNING**

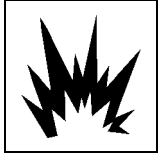
Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

**⚠ WARNING**

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

**⚠ WARNING**

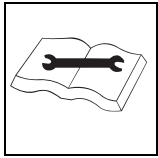
Moving parts could cut off hand or foot. Stay away.



**⚠ WARNING** Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.



**⚠ WARNING** Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.



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



**⚠ WARNING** Fire or explosion possible. Fumes could ignite and cause burns. No smoking, no flame, no spark.

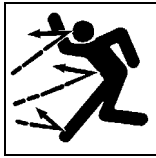


**⚠ WARNING** Moving traffic - hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.

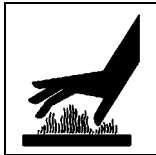




**⚠ WARNING** Hot pressurized cooling system fluid could cause serious burns. Allow to cool before servicing.



**⚠ CAUTION** Flying objects may cause injury. Wear hard hat and safety glasses.



**⚠ CAUTION** Hot parts may cause burns. Do not touch until cool.



**⚠ CAUTION** Exposure to high noise levels may cause hearing loss. Wear hearing protection.



**⚠ CAUTION** Fall possible. Slips or trips may result in injury. Keep area clean.



**⚠ CAUTION** Battery acid may cause burns. Avoid contact.



**⚠ CAUTION** Improper handling or use of chemicals may result in illness, injury, or equipment damage. Follow instructions on labels and in material safety data sheets (MSDS).

## **Emergency Procedures**

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

**EMERGENCY SHUTDOWN** - Turn ignition switch to stop position or push remote engine stop button (if equipped).



### **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. Almost one-third of 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 and you are **on truck or trailer**, DO NOT MOVE. Remain on truck or trailer and take the following actions. The order and degree of action will depend on the situation.

- Warn people nearby that an electric strike has occurred. Instruct them to leave the area and contact utility.
- Contact utility company to shut off power.
- Do not return to area or allow anyone into area until given permission by utility company.

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

- LEAVE AREA.
- Contact utility company to shut off power.
- Do not return to area 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.
- 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.

## **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) 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.



# Controls

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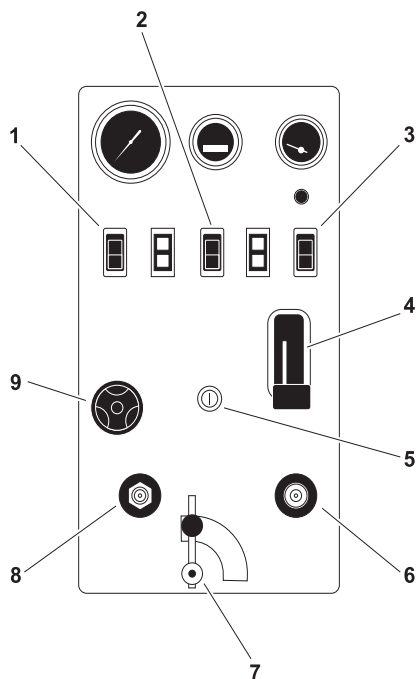
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# Power Pack

## Controls and Connectors



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1. Light switch

2. Cold start switch (optional)

3. Water pump switch

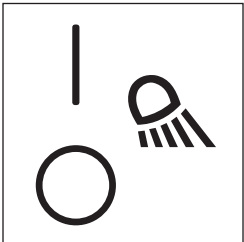
4. Throttle

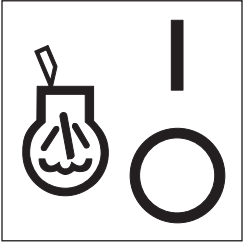
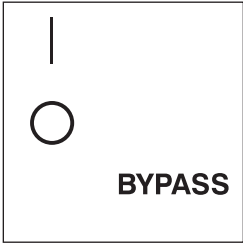
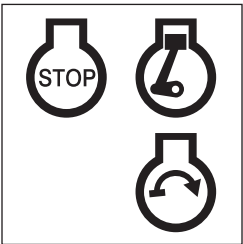
5. Ignition switch
6. Hydraulic return connector

7. Hydraulic flow control

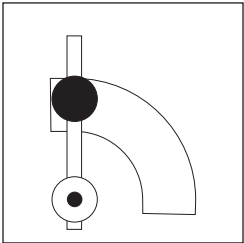
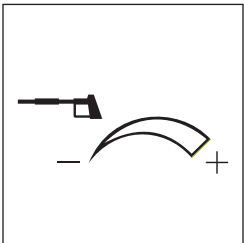
8. Hydraulic supply connector

9. Water pressure control

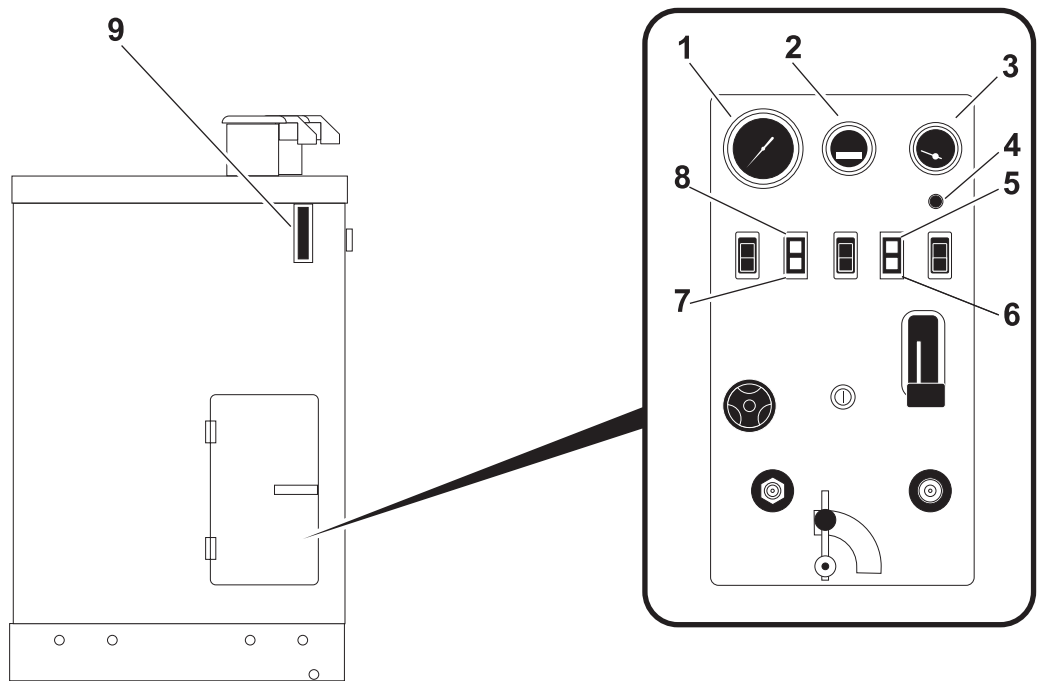
| Item                                                                                                                                               | Description                                                             | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------|
| <div>1. Light switch</div> <div></div> <div>c00ic025h.eps</div> | <div>To turn on, press top.</div> <div>To turn off, press bottom.</div> |       |

| Item                                                                                                                                             | Description                                                                                                                                                                                                           | Notes                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2. Cold start switch</b><br><br><small>c00ic064h.eps</small> | <p>To start cold engine when temperature is below 32°F (0°C):</p> <ul style="list-style-type: none"> <li>• Turn ignition switch to on position.</li> <li>• Press top and release.</li> <li>• Start engine.</li> </ul> | Optional                                                                                                                                                                                                        |
| <b>3. Water pump switch</b><br><br><small>c00ic134h.eps</small> | <p>To turn on water pump, press top.</p> <p>To turn off water pump, move to center position.</p> <p>To bypass low water indication, press bottom. Water pump will operate for 60 seconds.</p>                         | Use bypass to feed antifreeze into system when freshwater tank is empty. See "Add Antifreeze" on page 64.                                                                                                       |
| <b>4. Throttle</b><br><br><small>c00ic116h.eps</small>         | <p>To increase engine speed, push up.</p> <p>To decrease engine speed, pull down.</p>                                                                                                                                 |                                                                                                                                                                                                                 |
| <b>5. Ignition switch</b><br><br><small>c00ic065h.eps</small> | <p>To start engine, insert key and turn clockwise.</p> <p>To stop engine, turn key counterclockwise.</p>                                                                                                              | <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>• When engine is on, blower operates and vacuum is present at tank inlet.</li> <li>• All indicators should light briefly at startup.</li> </ul> |



| Item                                                                                                                                         | Description                                                                                                                                                         | Notes                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>6. Hydraulic return connector</b><br><br>c00ic135h.eps   | <p>To operate hydraulic power tools with power pack hydraulic system, connect hydraulic return hose to connector.</p>                                               | <p><b>IMPORTANT:</b> Connect return hose before connecting supply hose.</p>                                                                                                                                                                                      |
| <b>7. Hydraulic flow control</b><br><br>c00ic136h.eps       | <p>To increase hydraulic flow to tool, move handle toward horizontal position.</p> <p>To decrease hydraulic flow to tool, move handle toward vertical position.</p> | <p>Maximum output is 7.5 gpm (28 L/min) at 2000 psi (138 bar).</p> <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>Stop flow before connecting or disconnecting hydraulic tools.</li> <li>Leave flow at 0 unless hoses are connected.</li> </ul> |
| <b>8. Hydraulic supply connector</b><br><br>c00ic137h.eps | <p>To operate hydraulic power tools with power pack hydraulic system, connect hydraulic supply hose to connector.</p>                                               | <p><b>IMPORTANT:</b> Connect return hose before connecting supply hose.</p>                                                                                                                                                                                      |
| <b>9. Water pressure control</b><br><br>c00ic117h.eps     | <p>To increase water pressure, turn clockwise.</p> <p>To decrease water pressure, turn counterclockwise.</p>                                                        |                                                                                                                                                                                                                                                                  |

Gauges and Indicators



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1. Water pressure gauge

2. Hourmeter

3. Fuel gauge

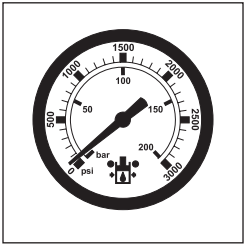
4. Low water indicator

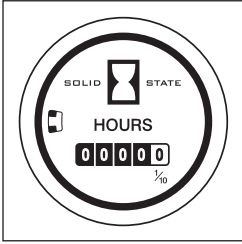
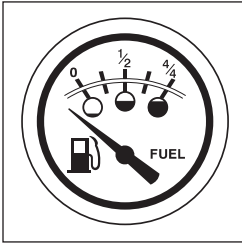
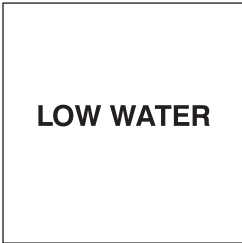
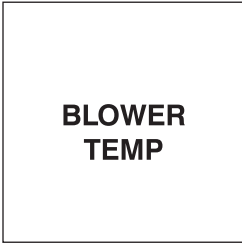
5. Blower temperature indicator
6. Hydraulic fluid temperature indicator

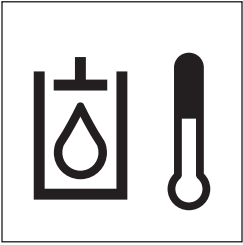
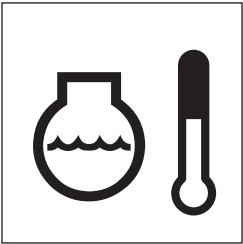
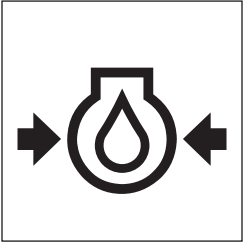
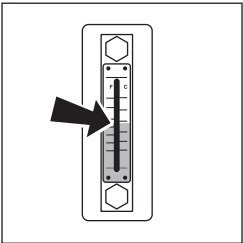
7. Engine temperature indicator

8. Engine oil pressure indicator

9. Hydraulic fluid temperature gauge/level indicator

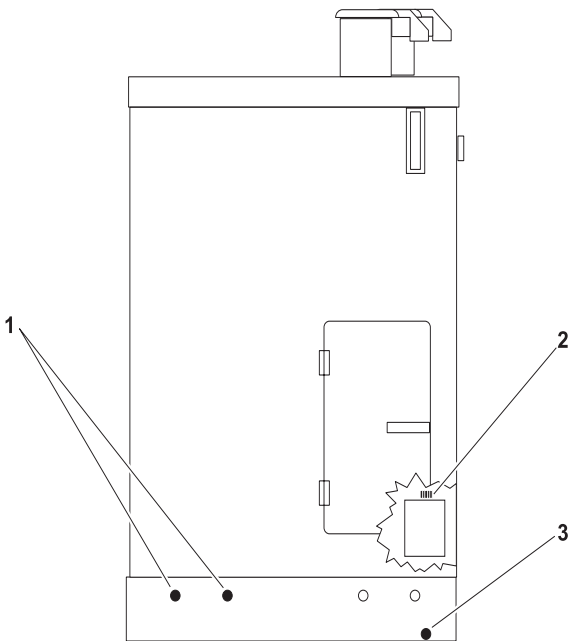
| Item                                                                                                                                                                | Description                                                                         | Notes |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|
| <div><div>1. Water pressure gauge</div><div></div><div>c00ic118h.eps</div></div> | Displays water pressure when water pressure switch is on and water lance is in use. |       |

| Item                                                                                                                                           | Description                                                    | Notes                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2. Hourmeter</b><br><br>c00ic019h.eps                      | Displays engine operating time.                                | <p>Hourmeter runs when ignition switch is on.</p> <p>Use these times to schedule service.</p>                                                                  |
| <b>3. Fuel gauge</b><br><br>c00ic018h.eps                     | Displays fuel level in tank.                                   | <p>Use only #2 diesel fuel.</p> <p>In temperatures below 40° F (4° C), use #1 diesel fuel.</p> <p>Tank holds 19 gal (72 L).</p>                                |
| <b>4. Low water indicator</b><br><br>c00ic138h.eps           | Indicates water level in freshwater tank is low.               | <p>Water pump will stop.</p> <p><b>IMPORTANT:</b> Indicator will remain on and pump will not run until water is added and water pump switch is turned off.</p> |
| <b>5. Blower temperature indicator</b><br><br>c00ic139h.eps | Indicates blower discharge temperature is above 315°F (157°C). | <p>Engine will stop.</p> <ol style="list-style-type: none"> <li>1. Check for air flow obstructions.</li> <li>2. Let blower cool before restarting.</li> </ol>  |

| Item                                                                                                                                                                               | Description                                                                              | Notes                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>6. Hydraulic fluid temperature indicator</b><br><br><small>c00ic023h.eps</small>               | Indicates hydraulic fluid temperature is above 215°F (102°C).                            | Engine will stop.<br><br>Check hydraulic fluid level.                                          |
| <b>7. Engine temperature indicator</b><br><br><small>c00ic120h.eps</small>                        | Indicates cooling system fluid is overheated.                                            | Engine will stop.<br><br>1. Let engine cool.<br><br>2. Check cooling system fluid level.       |
| <b>8. Engine oil pressure indicator</b><br><br><small>c00ic119h.eps</small>                     | Indicates engine oil pressure is low.<br><br>Also lights briefly when engine is started. | Engine will stop.<br><br>1. Check oil level.<br><br>2. Check for leaks before starting engine. |
| <b>9. Hydraulic fluid temperature gauge/level indicator</b><br><br><small>c00ic142h.eps</small> | Displays hydraulic fluid temperature and level.                                          |                                                                                                |



Miscellaneous



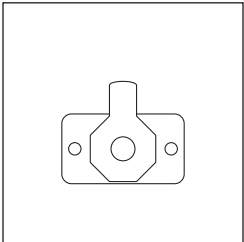
j08om011h.eps

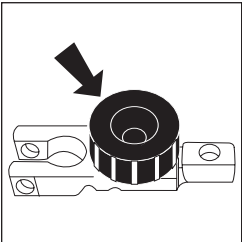
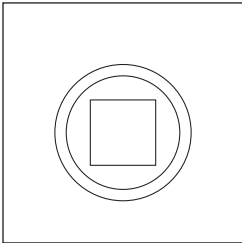
1.

Auxiliary outlets
2.

Battery disconnect
3.

Pan drain

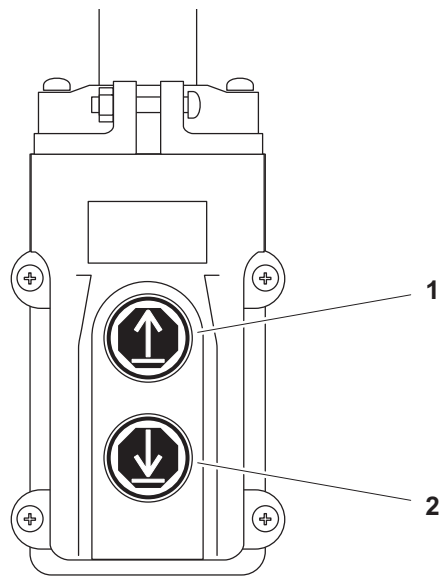
| Item                                                                                                                                                         | Description                                                               | Notes                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------|
| <div><div>1. Auxiliary outlets</div><div><p>c00ic140h.eps</p></div></div> | <div>To operate work lights or other 12V devices, plug into outlet.</div> | <div>Outlet has power only when ignition switch is on.</div> |

| Item                                                                                                                                                   | Description                                                                                                                                                   | Notes                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <div>2. Battery disconnect switch</div> <div><br/>c00ic143h.eps</div> | <p>To connect, turn clockwise.</p> <p>To disconnect, turn counterclockwise.</p>                                                                               | <p><b>IMPORTANT:</b> Use battery disconnect switch when servicing, welding, and during long-term storage.</p> |
| <div>3. Pan drain</div> <div><br/>c00ic141h.eps</div>                 | <p>To drain spilled fluid from power pack:</p> <ul style="list-style-type: none"><li>• Remove plug.</li><li>• Replace plug when drain pan is empty.</li></ul> |                                                                                                               |



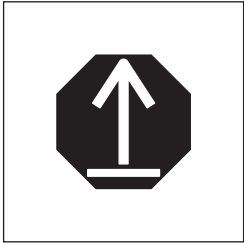
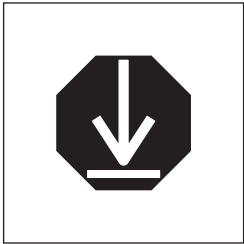
# 300 and 800 Tanks

## Tethered Controller

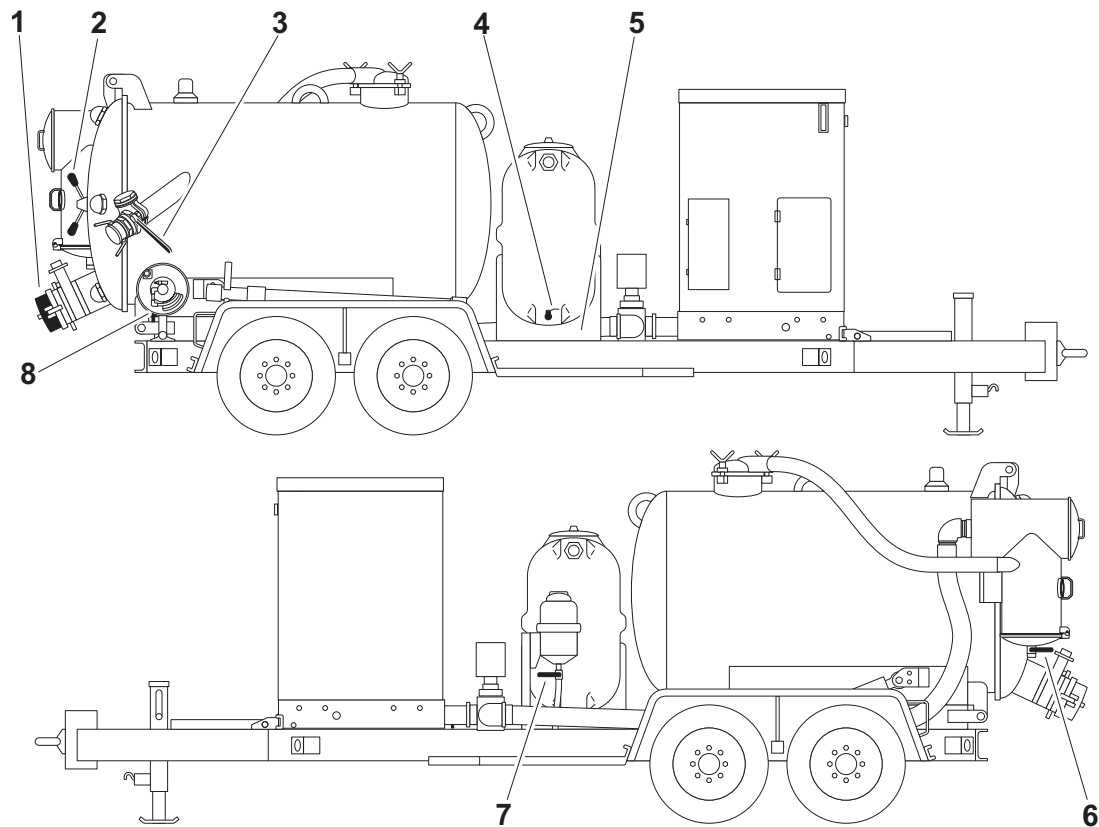


j08om082h.eps

1. Tank up
2. Tank down

| Item                                                                                                                                     | Description | Notes |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| <div>1. Tank up</div> <div><br/>c00ic174h.eps</div>   |             |       |
| <div>2. Tank down</div> <div><br/>c00ic175h.eps</div> |             |       |

Machine Controls



j08om081h.eps

1. Drain valve

2. Tank door handle

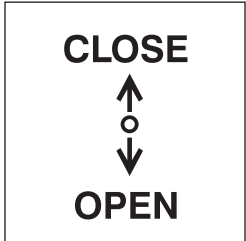
3. Inlet valve

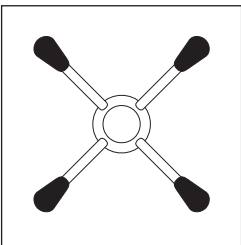
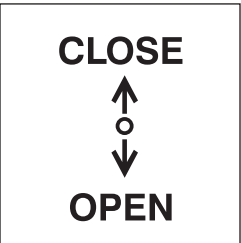
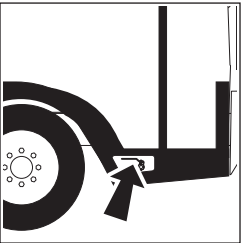
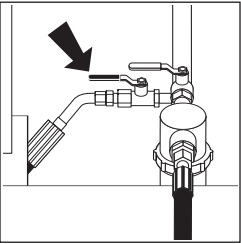
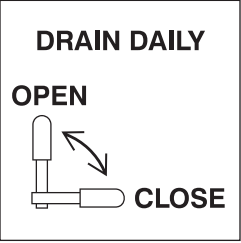
4. Water tank drain
5. Water tank supply valve

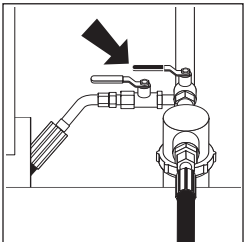
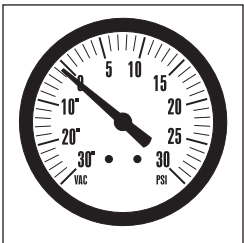
6. Vacuum filter drain

7. Antifreeze tank supply valve

8. Vacuum gauge

| Item                                                                                                                                              | Description                                                                  | Notes |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------|
| <div>1. Drain valve</div> <div></div> <div>c00ic127h.eps</div> | <div>To drain tank, rotate down.</div> <div>To close drain, rotate up.</div> |       |

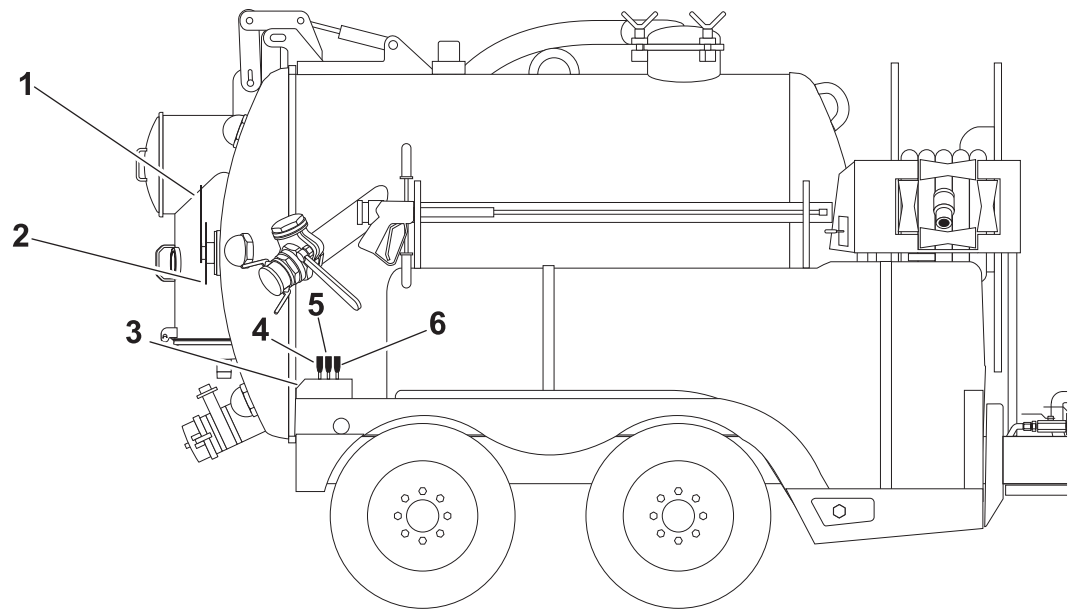
| Item                                                                                                                                                     | Description                                                                                                                                                                 | Notes                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2. Tank door handle</b><br><br><small>c00ic176h.eps</small>          | <p>To engage tank door, push and turn 90° clockwise.</p> <p>To disengage tank door, turn 90° counterclockwise and pull.</p>                                                 | <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>Tank door must be unlocked before tank door handle will work.</li> <li>Door handle must be horizontal to push/pull door handle.</li> </ul> |
| <b>3. Inlet valve</b><br><br><small>c00ic127h.eps</small>               | <p>To close valve (stop suction), rotate up.</p> <p>To open valve (start suction), rotate down.</p>                                                                         |                                                                                                                                                                                                            |
| <b>4. Water tank drain</b><br><br><small>c00ic132h.eps</small>         | <p>To drain tank, open valve.</p> <p>Close valve when tank is empty.</p>                                                                                                    |                                                                                                                                                                                                            |
| <b>5. Water tank supply valve</b><br><br><small>c00ic129h.eps</small> | <p>To open valve (send water from the water tank through the pump and water lance), rotate counterclockwise.</p> <p>To close valve (stop water flow), rotate clockwise.</p> | <p><b>IMPORTANT:</b> Water tank supply valve or antifreeze supply valve must be open when pump is running or pump will be damaged.</p>                                                                     |
| <b>6. Vacuum filter drain</b><br><br><small>c00ic133h.eps</small>     | <p>To drain vacuum filter canister, rotate up.</p> <p>To close drain, rotate down.</p>                                                                                      |                                                                                                                                                                                                            |

| Item                                                                                                                                                      | Description                                                                                                                                                   | Notes                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <div>7. Antifreeze tank supply valve</div> <div><br/>c00ic130h.eps</div> | <p>To open valve (send antifreeze through pump and water lance), rotate counterclockwise.</p> <p>To close valve (stop antifreeze flow), rotate clockwise.</p> | <p><b>IMPORTANT:</b> Water tank supply valve or antifreeze supply valve must be open when pump is running or pump will be damaged.</p> |
| <div>8. Vacuum gauge</div> <div><br/>c00ic131h.eps</div>                 | <p>Displays blower vacuum reading in inches of mercury. Vacuum relief valve opens when vacuum reaches 16" (406 mm).</p>                                       |                                                                                                                                        |



# 1200 Tank

## Tank Controls



j08om012h.eps

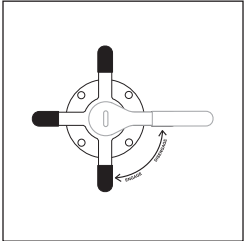
1. Tank door lock

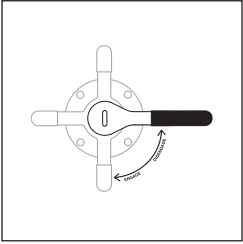
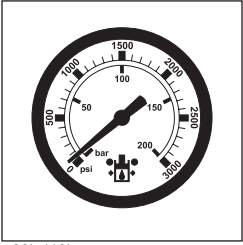
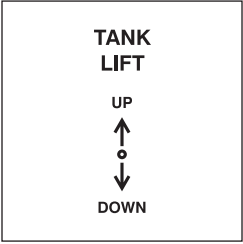
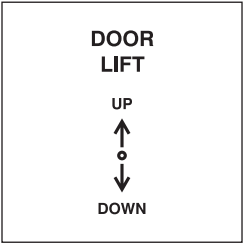
2. Tank door handle

3. Door seal pressure gauge
4. Tank lift control

5. Tank door lift control

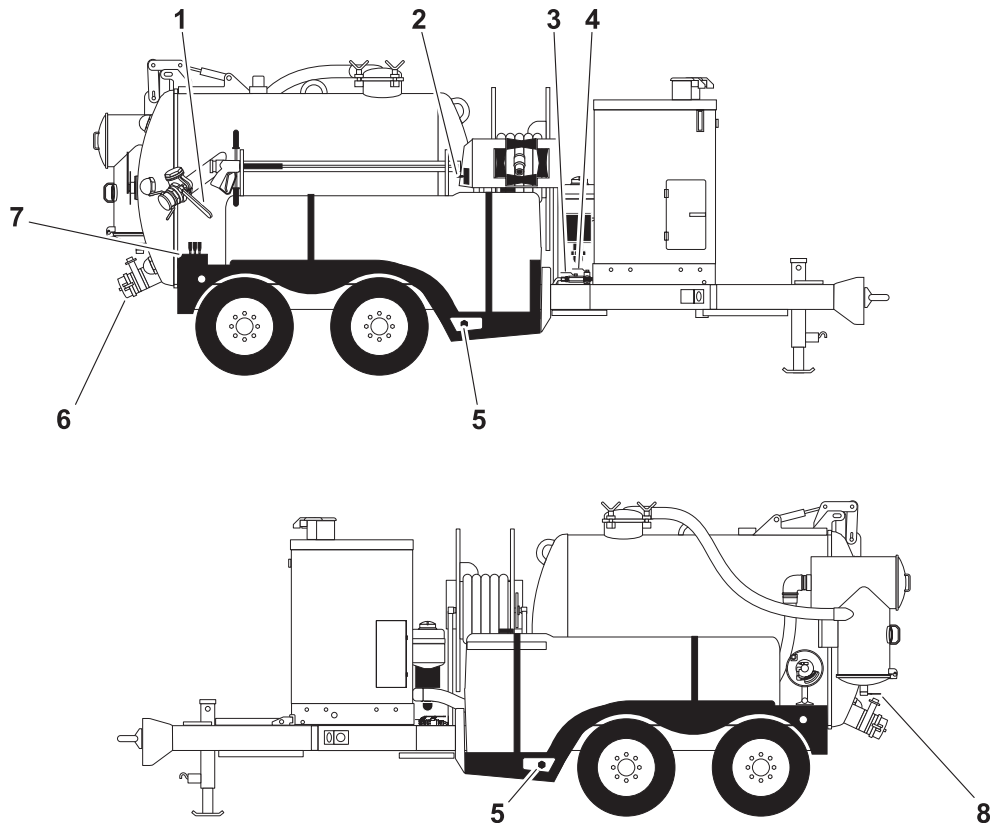
6. Door seal control

| Item                                                                                                                                                 | Description                                                                                                                   | Notes |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------|
| <div>1. Tank door lock</div> <div></div> <div>c00ic126h.eps</div> | <div>To lock vacuum tank door,<br/>turn clockwise until it stops.</div> <div>To unlock door, turn<br/>counterclockwise.</div> |       |

| Item                                                                                                                                             | Description                                                                                                                 | Notes                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>2. Tank door handle</b></p>  <p>c00ic125h.eps</p>         | <p>To engage tank door, push and turn 90° clockwise.</p> <p>To disengage tank door, turn 90° counterclockwise and pull.</p> | <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>Tank door must be unlocked before tank door handle will work.</li> <li>Door handle must be horizontal to push/pull door handle.</li> </ul> |
| <p><b>3. Door seal pressure gauge</b></p>  <p>c00ic118h.eps</p> | <p>Displays door seal pressure reading. Door is fully sealed when reading reaches 2400 psi (165 bar).</p>                   |                                                                                                                                                                                                            |
| <p><b>4. Tank lift control</b></p>  <p>c00ic122h.eps</p>       | <p>To raise vacuum tank, push up.</p> <p>To lower tank, pull down.</p>                                                      | <p><b>IMPORTANT:</b> Do not operate tank lift while trailer is unhitched.</p>                                                                                                                              |
| <p><b>5. Tank door lift control</b></p>  <p>c00ic123h.eps</p> | <p>To raise tank door, push up.</p> <p>To lower tank door, pull down.</p>                                                   |                                                                                                                                                                                                            |
| <p><b>6. Door seal control</b></p>  <p>c00ic124h.eps</p>      | <p>To seal tank door, push up.</p> <p>To unseal tank door, push down.</p>                                                   |                                                                                                                                                                                                            |

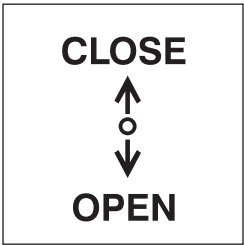


## Machine Controls

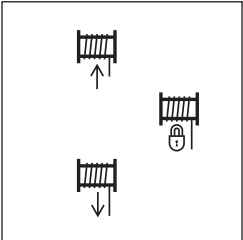
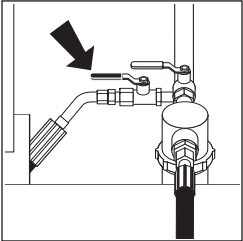
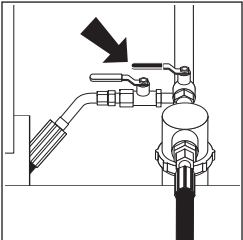
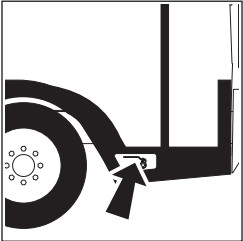


j08om067h.eps

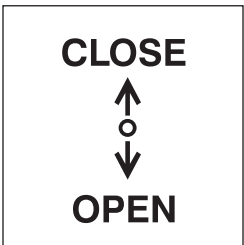
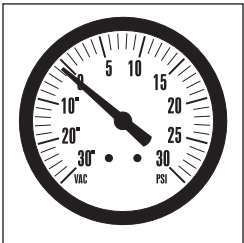
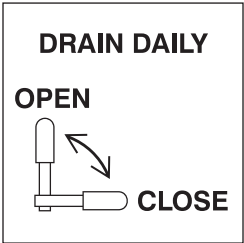
- |                                 |                        |
|---------------------------------|------------------------|
| 1. Inlet valve                  | 5. Water tank drain    |
| 2. Vacuum hose reel control     | 6. Drain valve         |
| 3. Water tank supply valve      | 7. Vacuum gauge        |
| 4. Antifreeze tank supply valve | 8. Vacuum filter drain |

| Item                                                                                                         | Description                                                                                  | Notes |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------|
| <b>1. Inlet valve</b><br> | To close valve (stop suction), rotate up.<br><br>To open valve (start suction), rotate down. |       |

c00ic127h.eps

| Item                                                                                                                                           | Description                                                                                                                                                                 | Notes |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>2. Vacuum hose reel control</b><br><br>c00ic128h.eps       | <p>To wind vacuum hose, push up.</p> <p>To unwind vacuum hose, pull down.</p>                                                                                               |       |
| <b>3. Water tank supply valve</b><br><br>c00ic129h.eps        | <p>To open valve (send water from the water tank through the pump and water lance), rotate counterclockwise.</p> <p>To close valve (stop water flow), rotate clockwise.</p> |       |
| <b>4. Antifreeze tank supply valve</b><br><br>c00ic130h.eps | <p>To open valve (send antifreeze through pump and water lance), rotate counterclockwise.</p> <p>To close valve (stop antifreeze flow), rotate clockwise.</p>               |       |
| <b>5. Water tank drain</b><br><br>c00ic132h.eps             | <p>To drain tank, open valve.</p> <p>Close valve when tank is empty.</p>                                                                                                    |       |



| Item                                                                                                                                 | Description                                                                                                             | Notes |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------|
| <b>6. Drain valve</b><br><br>c00ic127h.eps          | <p>To drain tank, rotate down.</p> <p>To close drain, rotate up.</p>                                                    |       |
| <b>7. Vacuum gauge</b><br><br>c00ic131h.eps         | <p>Displays blower vacuum reading in inches of mercury. Vacuum relief valve opens when vacuum reaches 16" (406 mm).</p> |       |
| <b>8. Vacuum filter drain</b><br><br>c00ic133h.eps | <p>To drain vacuum filter canister, rotate up.</p> <p>To close drain, rotate down.</p>                                  |       |

# Operation Overview

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Planning ..... 40

Setting Up at Jobsite ..... 40

Vacuuming ..... 40

Potholing ..... 41

Leaving Jobsite ..... 41

Storing Equipment ..... 41



## **Planning**

1. Gather information about jobsite (page 44).
2. Inspect jobsite (page 45).
3. Check supplies and prepare equipment (page 47).

## **Setting Up at Jobsite**

1. Prepare jobsite (page 46).
2. Position vacuum excavation unit.
3. Leave unit hitched to towing vehicle or properly stabilized.
4. Block trailer wheels.

## **Vacuuming**

1. Connect hoses (page 54).
2. Start unit (page 55).
3. Remove debris (page 56).
4. Disconnect hoses (page 65).
5. Drain tank (page 59).

## **Potholing**

1. Connect hoses (page 54).
2. Start unit (page 55).
3. Pothole (page 57).
4. Disconnect hoses (page 65).
5. Drain tank (page 59).

## **Leaving Jobsite**

1. Rinse unit and tools (page 65).
2. Stow tools (page 66).



## **Storing Equipment**

1. For cold weather storage, antifreeze vacuum excavation unit (page 64).
2. For long-term storage, disconnect battery disconnect switch (page 29).



# Prepare

## Chapter Contents

**Gather Information . . . . . 44**

- Arrange for Traffic Control . . . . .44
- Prepare for Working Near Existing Utilities . . . . .44
- Plan for Emergency Services . . . . .44

**Inspect Jobsite . . . . . 45**

**Prepare Jobsite . . . . . 46**

- Prepare Excavation Point . . . . .46

**Check Supplies and Prepare Equipment . . . . . 47**

- Assemble Accessories . . . . .47
- Check Supplies . . . . .47
- Prepare Equipment . . . . .48



## **Gather Information**

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

### **Arrange for Traffic Control**

If working near a road or other traffic area, contact local authorities about safety procedures and regulations.

### **Prepare for Working Near Existing Utilities**

If jobsite may contain electrical lines, wear protective boots and gloves meeting the following standards:

- Boots must have high tops and meet the electric hazard protection requirements of ANSI Z-41, 1991, when tested at 14,000 volts. Tuck legs of pants completely inside boots.
- Gloves must have 17,000 AC maximum use voltage, according to ASTM specification D120-87.

If working around higher voltage, use gloves and boots with appropriately higher ratings.

### **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.

## **Inspect Jobsite**

- Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.
- Contact One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call.
- Inspect jobsite and perimeter for evidence of underground hazards, such as:
  - “Buried utility” notices
  - Utility facilities without overhead lines
  - Gas or water meters
  - Junction boxes
  - Drop boxes
  - Light poles
  - Manhole covers
  - Sunken ground
- Mark location of all buried utilities and obstructions.



## Prepare Jobsite

**⚠ WARNING**

Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

**NOTICE:**

- If jobsite classification is in question or if the possibility of unmarked electric utilities exists, classify jobsite as electric.
- Cutting high voltage cable can cause electrocution. Expose lines by hand before digging.
- All vegetation near operator's station must be removed. Contact with trees, shrubs, or weeds during electrical strike could result in electrocution.

## Prepare Excavation Point

- Clear the area to be excavated. Remove rocks or branches too large for vacuum hose.
- If excavating fluids while drill string is moving, clear area of trees, shrubs, and weeds.
- Select a solid area to stand on while excavating.

## **Check Supplies and Prepare Equipment**

### **Assemble Accessories**

#### **Fire Extinguisher**

If required, mount a fire extinguisher near the power unit but away from possible points of ignition. The fire extinguisher should always be classified for both oil and electric fires. It should meet legal and regulatory requirements.

#### **Lighting Kit**

If you will need additional light, plug lighting kit into provided outlet. Contact your Ditch Witch dealer for further information.

### **Check Supplies**

- water and additional hoses
- fuel
- keys
- spray lubricant
- personal protective equipment, such as hard hat and safety glasses



## **Prepare Equipment**

### **Fluid Levels**

- fuel
- hydraulic fluid
- engine coolant
- battery charge
- engine oil
- blower oil

### **Condition and Function**

- filters (air, oil, hydraulic)
- belts
- hydraulic pump
- blower
- tires
- hoses and valves
- couplers and fittings
- water tanks

# Transport

## Chapter Contents

**Lift** ..... 50

- Points .....50
- Procedure .....50

**Haul** ..... 51

- Inspect Trailer .....51
- Hitch Trailer .....51
- Unhitch Trailer .....52



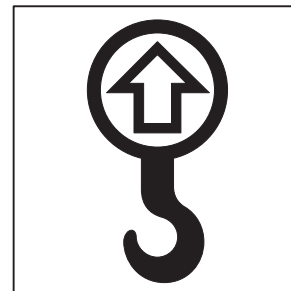
## Lift



**WARNING** Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

## Points

Lifting points are identified by lifting decals. Lifting at other points is unsafe and can damage machinery.

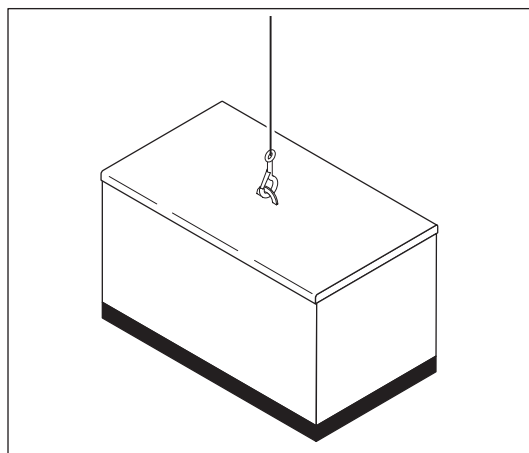


ic1319a.eps

## Procedure

### Power Pack

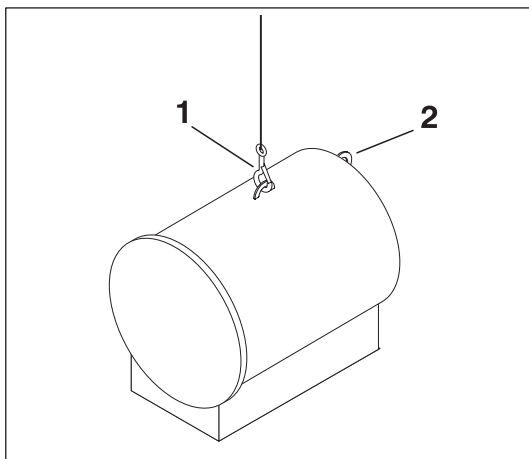
Use a crane capable of supporting the equipment's size and weight. See "Specifications" on page 113 or measure and weigh equipment before lifting. Use top lift point as shown.



j08om002h.eps

### Tank

Use crane capable of supporting the equipment's size and weight. See "Specifications" on page 205 or measure and weigh equipment before lifting. Use top lift point (1) as shown. Use end lift point (2) to drain tank if machine is disabled.



j08om004h.eps

## Haul



**⚠ WARNING**

Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

**NOTICE:** Do not haul or move trailer unless tank is fully lowered and horizontal. Damage to machine or injury to personnel could occur.

## Inspect Trailer

- Check hitch for wear and cracks. Lubricate if needed.
- Check battery for 12 volt charge.
- Inspect lights for cleanliness and correct operation. Inspect reflectors and replace if needed.
- Check tire pressure. Check lug nut torque with a torque wrench. Adjust if needed.
- Ensure trailer brakes are adjusted to come on in synchronization with tow vehicle brakes.
- Check ramps (if equipped) and trailer bed for cracks.

## Hitch Trailer

1. Back tow vehicle to trailer.
2. Put manual transmission into first or reverse gear or automatic transmission into park. Turn off ignition. Set parking brake.
3. Connect trailer drawbar, lunette or coupler to tow vehicle hitch and lock in place with lock pin. If needed, adjust drawbar, lunette or coupler height to level load.
4. Connect safety chains to tow vehicle chain keepers (cross-shaped slots on bumper of tow vehicle). Attach left chain to right side of tow vehicle and vice versa to cradle hitch. Do not connect to pintle hook or hitch ball.
5. Connect breakaway switch cable to tow vehicle. Do not connect to pintle hook or hitch ball.
6. Plug trailer electrical connector into tow vehicle connector.
7. Use jack crank to raise jack base and stow.
8. Remove wheel blocks.



## **Unhitch Trailer**

1. Stop tow vehicle and trailer on level ground.
2. Put manual transmission into first or reverse gear or automatic transmission into park. Turn off ignition. Set parking brake.
3. Block trailer wheels.
4. To unhitch trailer from tow vehicle, reverse "Hitch Trailer" steps.

# Vacuum and Pothole

## Chapter Contents

**Connect Hoses . . . . . 54**

**Start Unit . . . . . 55**

- Standard Procedure . . . . .55
- Cold Start Procedure . . . . .55

**Remove Debris . . . . . 56**

- Procedure . . . . .56

**Pothole . . . . . 57**

**Drain Tank . . . . . 59**

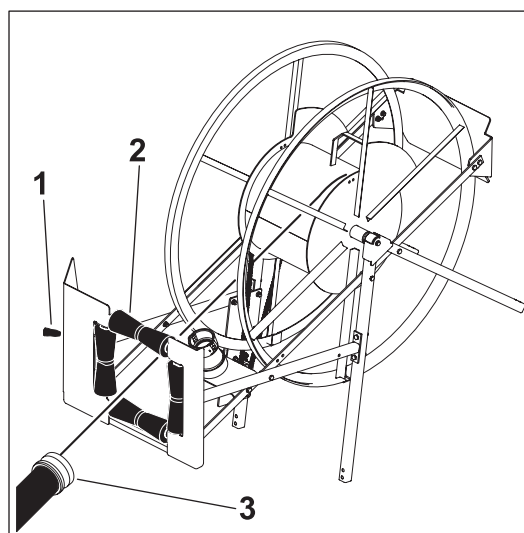


## Connect Hoses

1. Remove vacuum hoses from storage.

**If using 1200:**

- Disconnect hose end from hose catch.
- Insert hose through rollers (2).
- Pull vacuum hose reel control (1) down to unwind hose.
- Disconnect hose end (3) from hose reel.



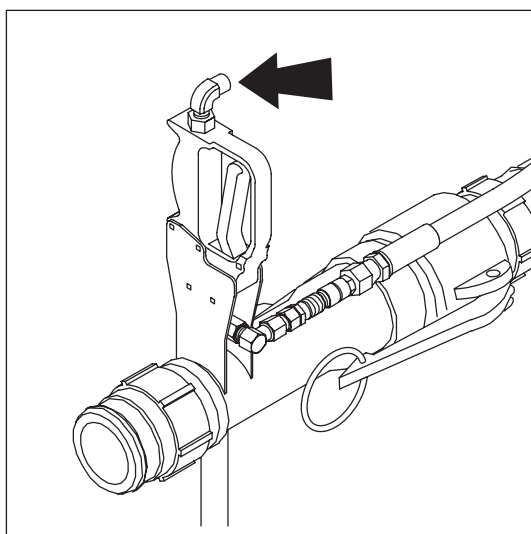
j08om005h.eps

2. If potholing, remove 2-in-1 potholing tool or basic potholing tool from storage.
3. Connect hoses. Secure all locking clamps.

**IMPORTANT:** Inlet valve can be open or closed before starting engine. If valve is closed, vacuum will build faster.

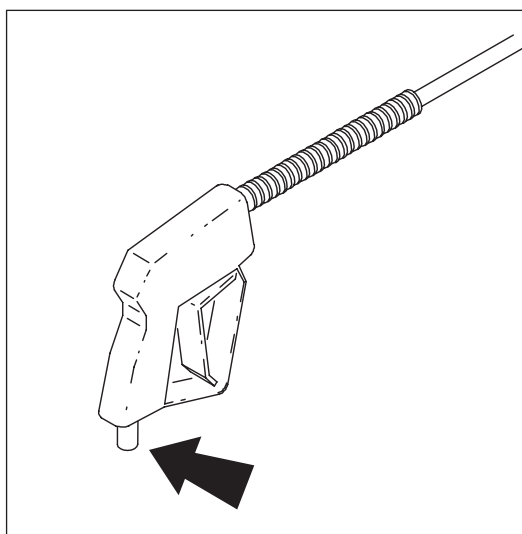
4. Ensure drain valve is closed.
5. If potholing, connect water pressure hose.

### 2-in-1 Tool



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### Basic Tool



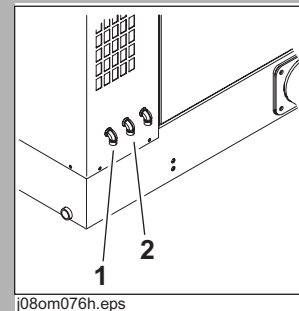
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## Start Unit

**EMERGENCY SHUTDOWN:** Turn ignition switch to STOP.

### Standard Procedure

**IMPORTANT:** If power pack is not connected to external tank control valves, connect a -08 hose with a minimum working pressure rating of 3000 psi (96 bar) from pressure (1) to power beyond (2) connections on power pack.



1. Insert key.
2. Turn key clockwise. See page 23 for more information.
3. Run engine at low throttle for 5 minutes.

### Cold Start Procedure

1. Insert key.
2. Press cold start button. See page 23 for more information.
3. Turn key clockwise. See page 23 for more information.
4. Run engine at low throttle for 5 minutes.



## Remove Debris

**EMERGENCY SHUTDOWN:** Turn ignition switch to STOP.

### Procedure

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



**⚠ DANGER**

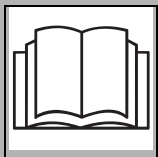
Vacuum will suffocate. Maintain distance between face and vacuum inlets.



**⚠ WARNING**

Fire or explosion possible. Do not vacuum flammable or combustible substances.

3. Open inlet valve if necessary to begin excavation.



**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**NOTICE:** Do not excavate hazardous or toxic materials. Unit is designed to excavate only soil cuttings, drilling fluids, and other non-toxic waste.

4. Use sight glasses to monitor debris level in tank. Vacuum will shut off when tank is full. Engine will remain running.

# Pothole

**EMERGENCY SHUTDOWN:** Turn ignition switch to STOP.

- 1. Start engine.



**⚠ DANGER**

Vacuum will suffocate. Maintain distance between face and vacuum inlets.



**⚠ WARNING**

Fire or explosion possible. Do not vacuum flammable or combustible substances.

- 2. Open water tank valve.
- 3. Move water pump switch to on.
- 4. Open inlet valve if necessary.
- 5. Position tool over area to be excavated and begin pothole.



**⚠ DANGER**

Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.

**NOTICE:** Do not direct water lance at overhead lines. Water conducts electricity.



| 2-in-1 Tool                                                                                                                                                                                                                                           | Basic Tool                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Squeeze water pressure lever to start water pressure.</li><li>• Work pressurized water in a rocking or circular motion to loosen and excavate soil until hole is at the desired diameter and depth.</li></ul> | <ul style="list-style-type: none"><li>• First use water lance to loosen soil.</li><li>• Work tool in a rocking or circular motion to excavate soil.</li><li>• Use water lance and tool alternately until hole is at the desired diameter and depth.</li></ul> |

6. Adjust water pressure as needed to match soil conditions and/or material of utility being exposed.

**WARNING**

Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

**NOTICE:** High pressure water can cut utility lines. Test water pressure on a sample of the material to be located. Adjust pressure until no damage occurs to the material.

7. Ensure that water sprays from nozzle in a fan pattern. If it does not, nozzle may be clogged and pump will not function properly. Clean or replace nozzle as necessary.
8. When freshwater tank is empty, stop operation and turn water pump switch to off.

**NOTICE:** Do **not** continue to operate with freshwater tank empty. Running water pump with no water will damage pump.

## Drain Tank

**EMERGENCY SHUTDOWN:** Turn ignition switch to STOP.

1. Ensure that unit is hitched to vehicle. See "Hitch Trailer" on page 51.
2. Haul unit to approved dumping area.



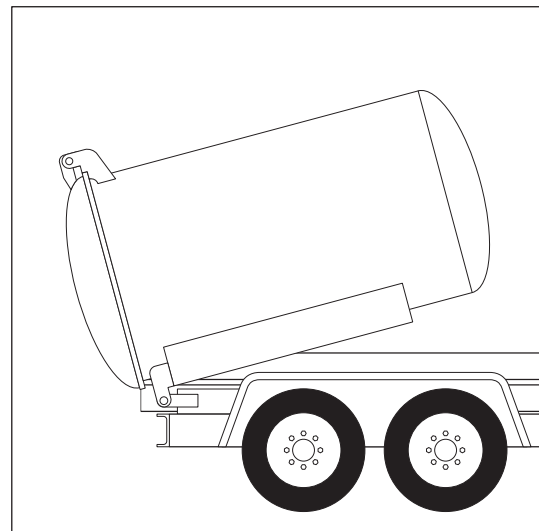
**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**NOTICE:**

- Do **not** unhitch unit from tow vehicle before or during dumping. A freestanding unit can become unstable when tilting tank.
- Do not unlatch door with tank tilted up.

3. Open drain valve and inlet valve.
4. Allow tank to drain in the horizontal position until tank is approximately half drained. Monitor sight glasses.
5. When tank is half drained, start engine and run at low idle.
6. Tilt tank up to help flush solids from tank.
7. Lower tank to the full horizontal position.
8. Close drain valve and inlet valve.



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9. If further draining is necessary, open tank door.

**If using 300 or 800:**

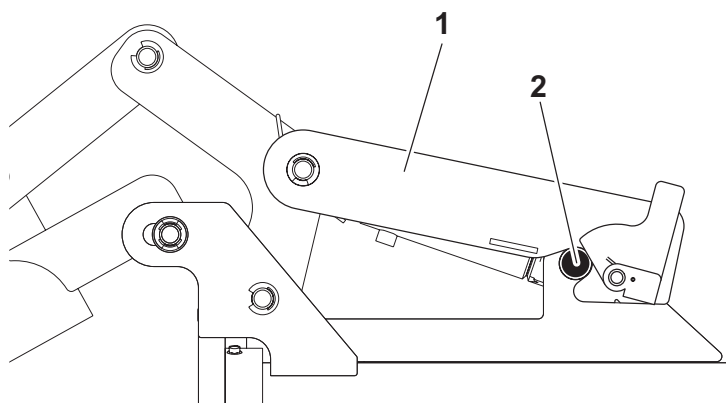
**NOTICE:** Do not raise tank with door held closed only by vacuum. Door may suddenly open and possibly injure someone.

- Turn tank door handle counterclockwise to loosen door.
- Turn off engine. Tank door will open when vacuum is relieved.

**If using 1200:**

**NOTICE:** Do not raise tank with door held closed only by vacuum. Door may suddenly open and possibly injure someone.

- Push door seal control to SEAL.
- Turn tank door lock counterclockwise.
- Pull door seal control to RELEASE.
- Turn door handle to DISENGAGE and pull out.
- Push door lift control to OPEN.
- Ensure door lift latch (1) engages properly. Door lift latch (1) should be fully seated on pin (2).



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**NOTICE:** If door latch is not fully seated on pin, door will close and possibly injure someone.

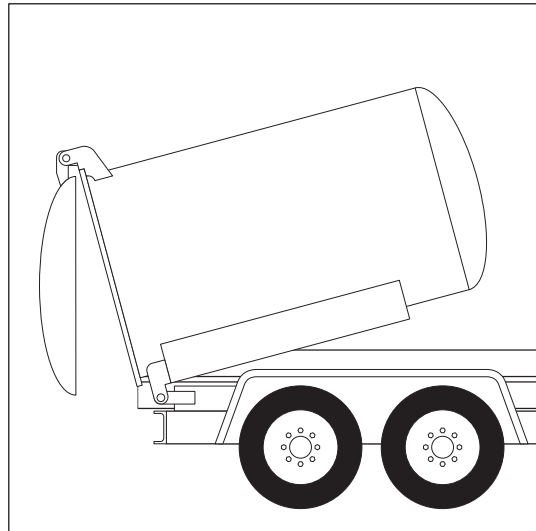
10. Tilt tank up. Allow tank to drain completely.
11. Connect water pressure hose to water lance.
12. Turn water pump switch on. Adjust water pressure.
13. Use water lance to thoroughly rinse inside of tank and around door seal.



**⚠ DANGER**

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

**NOTICE:** Enter tank only if necessary. Follow U.S. Department of Labor guidelines for entering confined spaces.



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14. Return tank to the fully lowered horizontal position.



15. If necessary, close tank door.

**If using 300 or 800:**

- Start engine. This will pull a vacuum and cause door to pull toward tank.
- Turn door handle clockwise 9-11 turns to tighten door against seal.

**If using 1200:**

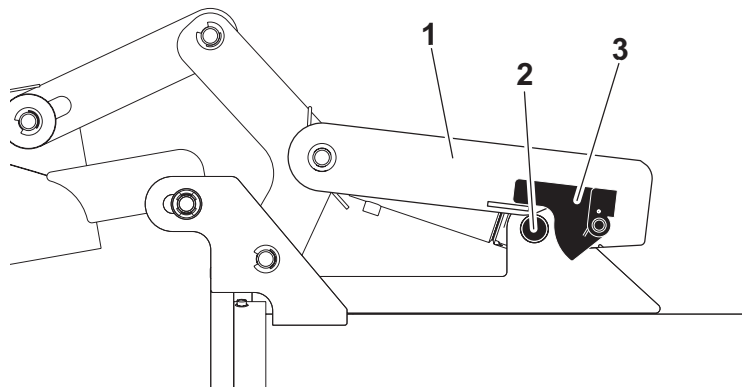


**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**NOTICE:** Do not use vacuum to close 1200-gal (4542-L) debris tank.

- Fully open door to disengage door lift latch (1) from pin (2). Latch cover (3) must be down for tank door to close.



om0664h.eps

- Pull door lift control to CLOSE.
- Turn door handle to DISENGAGE, push in and turn to ENGAGE.
- Push door seal control to SEAL.
- Turn tank door lock clockwise until it stops to lock.
- Pull door seal control to RELEASE.

# Complete the Job



## Chapter Contents

**Antifreeze Fluid Excavation Unit . . . . . 64**

- Add Antifreeze . . . . . 64
- Reclaim Antifreeze . . . . . 64

**Rinse Equipment . . . . . 65**

**Disconnect . . . . . 65**

**Stow Tools . . . . . 66**

## **Antifreeze Fluid Excavation Unit**

### **Add Antifreeze**

Follow these steps for overnight or long-term storage of unit during cold weather.

1. Fill antifreeze tank with a propylene-glycol based antifreeze.
2. Ensure that water tank valve is closed.
3. Open antifreeze tank valve.
4. Connect water pressure hose to water lance.
5. Start engine.
6. Move water pump switch to on. If freshwater tank is empty, move to bypass.
7. Squeeze water lance handle and run until antifreeze runs through the water lance.
8. Move water pump switch to off.
9. Close antifreeze tank supply valve.
10. Turn ignition switch to off.
11. Drain water tank completely.

### **Reclaim Antifreeze**

1. Turn water pressure down.
2. Move water pump switch to on.
3. Put end of water lance in antifreeze tank.
4. Squeeze water lance handle and run until water comes out of lance.
5. Move water pump switch to off.

## Rinse Equipment

Spray water onto equipment to remove dirt and mud. Use water lance. Thoroughly rinse inside of tank and around door seal.



**⚠ DANGER**

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

**NOTICE:**

- Enter tank only if necessary. Follow U.S. Department of Labor guidelines for entering confined spaces.
- Do not spray water onto operator's console. Electrical components could be damaged. Wipe down instead.

## Disconnect

Disconnect and store the following hoses and cables (if used):

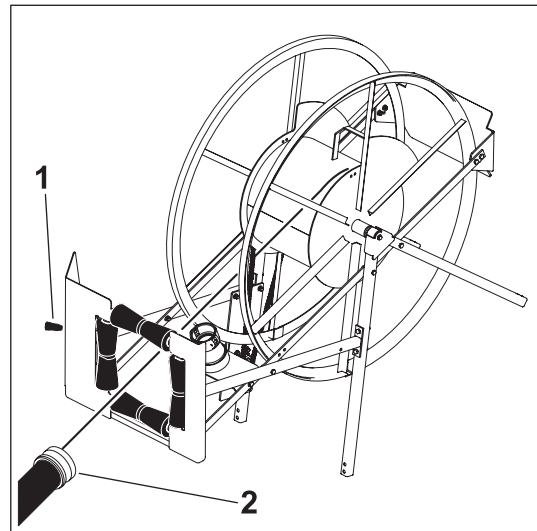
- vacuum hoses

**If using 1200:**

- Connect hose end (2) to hose reel.
- Push vacuum hose reel control (1) up to wind hose.

**IMPORTANT:** Ensure control returns to neutral when released. If it doesn't, have it repaired.

- Connect hose end to hose catch.
- water pressure hose



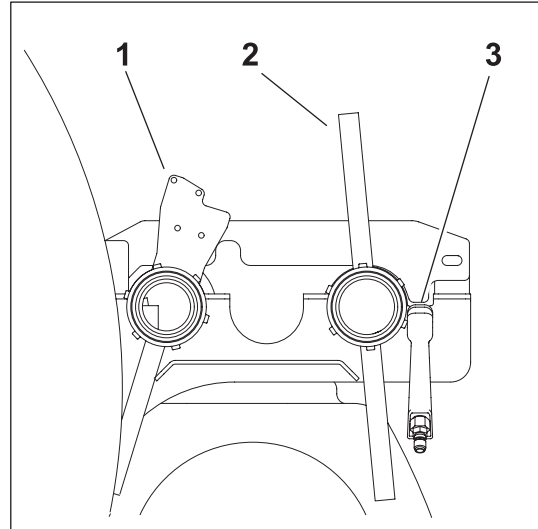
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## Stow Tools

Make sure potholing tools, water lance, and other tools are properly stowed.

**If using 1200**, failure to stow tools as indicated could result in damage to water tank.

1. 2-in-1 potholing tool
2. Basic potholing tool
3. Water lance



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# Service

## Chapter Contents

Precautions ..... 68

Recommended Lubricants/Service Key ..... 69

Each Use ..... 71

10 Hour ..... 74

25 Hour ..... 85

50 Hour ..... 86

100 Hour ..... 91

250 Hour ..... 93

500 Hour ..... 94

1000 Hour ..... 96

2000 Hour ..... 97

200 Mile ..... 99

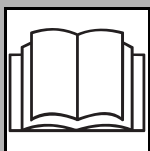
3000 Mile ..... 101

12,000 Mile ..... 103

As Needed ..... 105



## Precautions

**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**NOTICES:**

- Unless otherwise instructed, all service should be performed with engine off.
- Refer to engine manufacturer's manual for engine maintenance instructions.

**IMPORTANT:** Service illustrations show unit configured with 1200-gal (4542-L) tank unless indicated otherwise.

## Working Under Raised Debris Tank

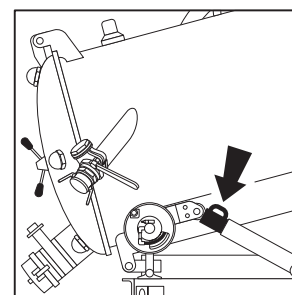
**⚠ WARNING**

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

**NOTICE:** Use tools (provided with unit) if hydraulic system must be serviced with tank tilted up.

**If using 300 or 800:**

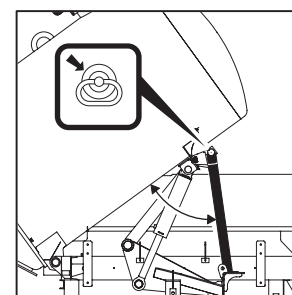
1. Raise vacuum tank.
2. Remove cylinder lockout tool and place over extended cylinder rod.
3. Lower vacuum tank until load is supported by cylinder lockout tool.



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**300/800****If using 1200:**

1. Raise vacuum tank.
2. Pull spring-loaded pin and rotate tank support leg down until pin clicks into hole.
3. Lower vacuum tank until load is supported by tank support leg.



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**1200**

## Recommended Lubricants/Service Key

| Item                                                                                   | Description                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  DEO  | Diesel engine oil meeting or exceeding CH-4 per the API service classification or E5 per the European Automobile Manufacturer's Association (ACEA) and SAE viscosity recommended by engine manufacturer (SAE 15W40) |
|  DEAC | Diesel engine antifreeze/coolant meeting ASTM D5345 (prediluted) or D4985 (concentrate)                                                                                                                             |
|  HTG  | NGLI #2 premium grade, petroleum-based grease with high temperature resistance and good mechanical stability                                                                                                        |
|  NDO  | SAE30 non-detergent oil                                                                                                                                                                                             |
|  SGL  | Synthetic gear oil, ISO 100, p/n 256-044. See blower manual for more information.                                                                                                                                   |
|  MPL  | Multipurpose gear oil meeting API service classification GL-5 (SAE 80W90)                                                                                                                                           |
|  THF  | Tractor hydraulic fluid, similar to Phillips 66 HG, Mobilfluid 423, Chevron Tractor Hydraulic Fluid, Texaco TDH Oil, or equivalent                                                                                  |
|  MPG | Multipurpose grease meeting ASTM D217 and NLGI 5                                                                                                                                                                    |
| DOT                                                                                    | DOT 3 or 4 brake fluid                                                                                                                                                                                              |
|     | Check level of fluid or lubricant                                                                                                                                                                                   |
|     | Check condition                                                                                                                                                                                                     |
|     | Filter                                                                                                                                                                                                              |
|     | Change, replace, adjust, service or test                                                                                                                                                                            |

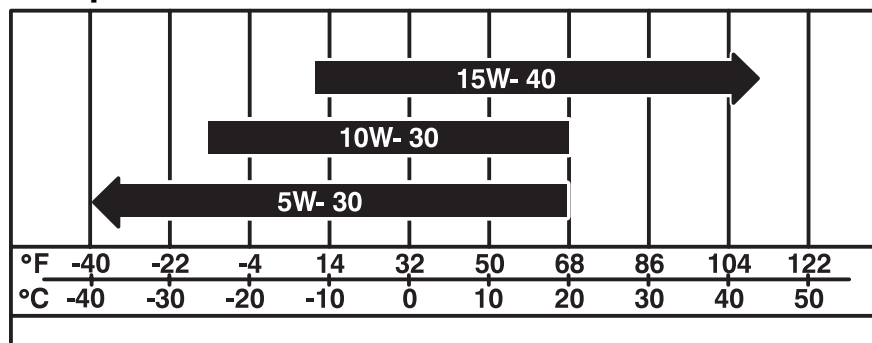
Proper lubrication and maintenance protects Ditch Witch equipment from damage and failure. Service intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants. Fill to capacities listed in "Specifications" on page 113.

For more information on engine lubrication and maintenance, see your engine manual.

### NOTICE:

- Use only genuine Ditch Witch parts, filters, approved lubricants, TJC, and approved coolants to maintain warranty.
- Use the "Service Record" on page 129 to record all required service to your machine.



**Engine Oil Temperature Chart**

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Temperature range anticipated before next oil change

See Cummins® B3.3 engine manual for more information about oil viscosity and operation in arctic conditions.

**Approved Coolant**

This unit was filled with John Deere Cool-Gard coolant before shipment from factory. Add only John Deere Cool-Gard (p/n 255-006) or any fully-formulated, ethylene glycol based, low-silicate, heavy-duty diesel engine coolant meeting ASTM specification D5345 (prediluted) or D4985 (concentrate).

**NOTICE:** Do not use water or high-silicate automotive-type coolant. This will lead to engine damage or premature engine failure.

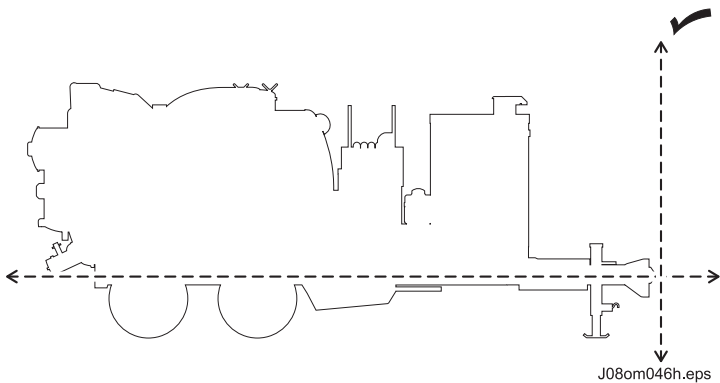
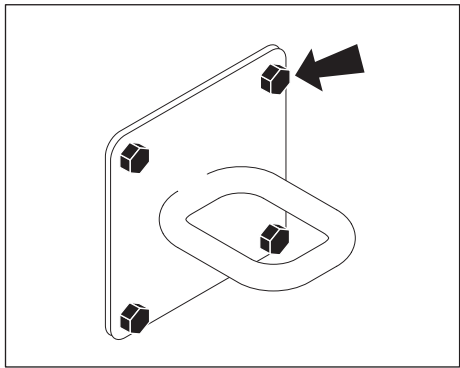
Each Use

| Location | Task                                   | Notes                   |
|----------|----------------------------------------|-------------------------|
| Trailer  | Check torque of hitch bolts            | 271 ft•lb (271 N•m)     |
|          | Check hydraulic brake actuator bolts   | If equipped             |
|          | Check hydraulic brake fluid level      | If equipped; DOT 3 or 4 |
|          | Check trailer battery                  |                         |
|          | Check tire pressure and lug nut torque |                         |
|          | Check lights and reflectors            |                         |

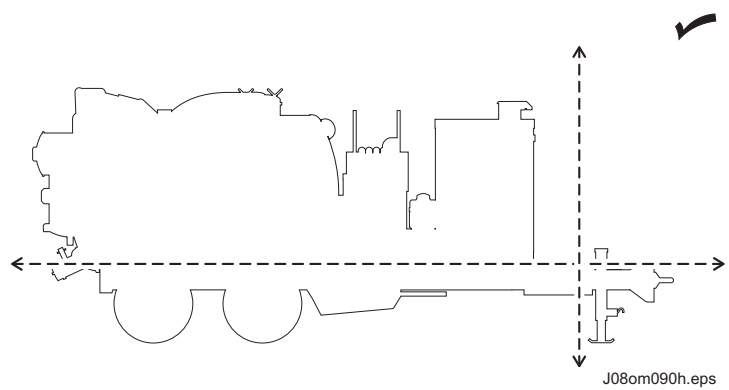
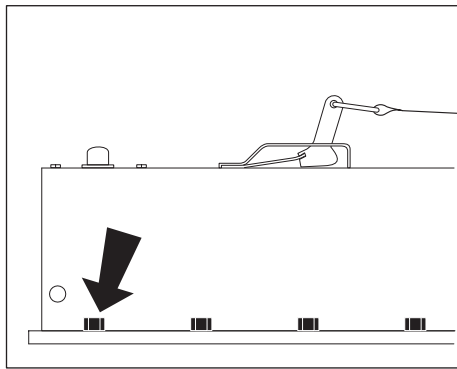


Trailer

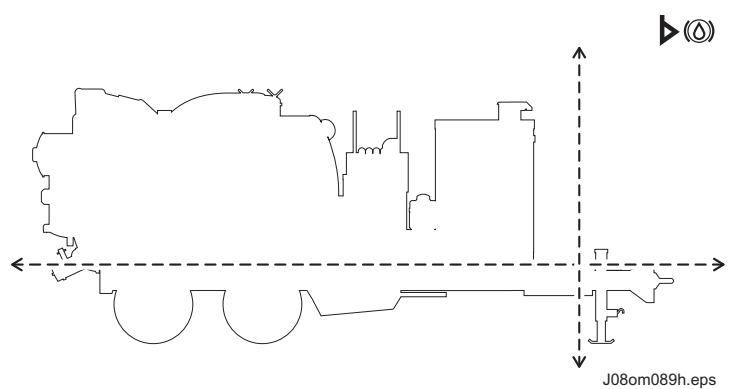
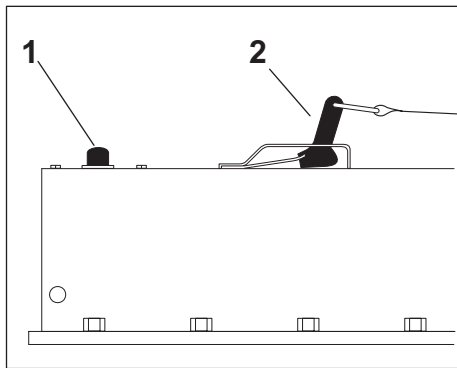
Check Torque of Hitch Bolts



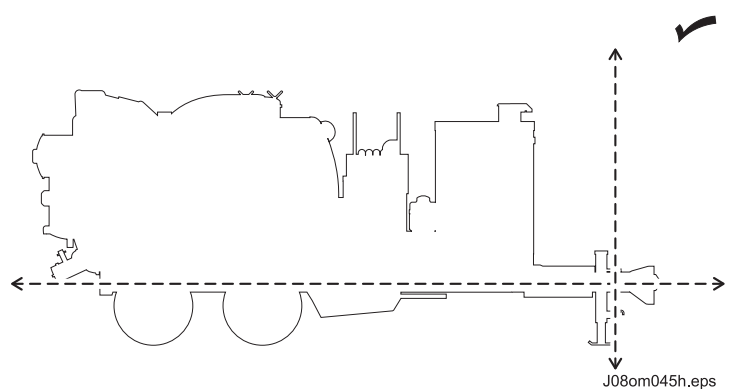
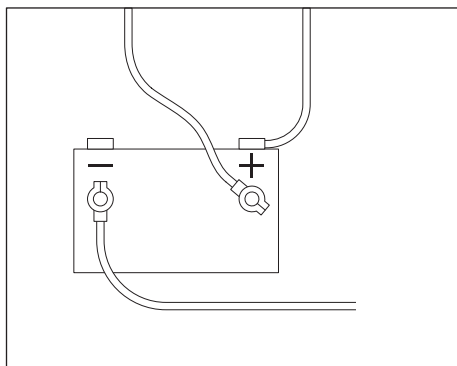
Check torque of hitch bolts. Tighten bolts to 271 ft•lb (271 N•m).

**Check Hydraulic Brake Actuator Bolts**

Check hydraulic brake actuator bolts. Tighten if loose.

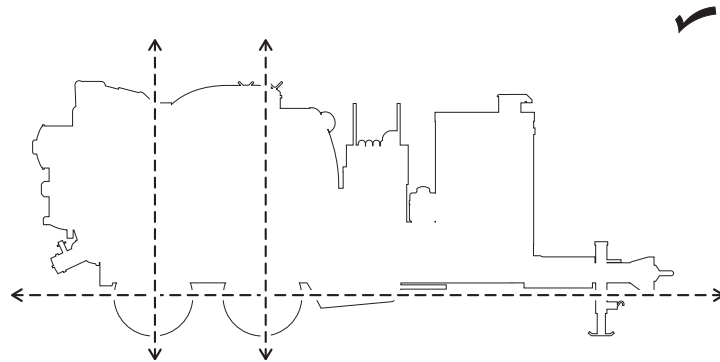
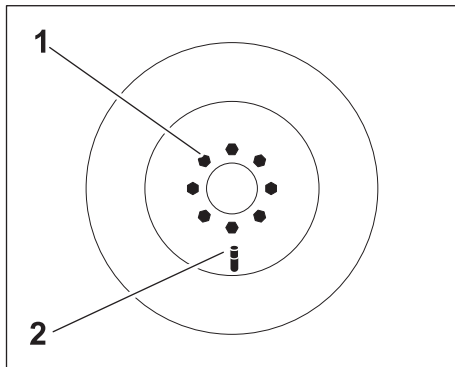
**Check Hydraulic Brake Fluid Level**

Check hydraulic brake fluid level at master cylinder each use. Fluid should be visible a top of master cylinder. Add DOT 3 or DOT 4 brake fluid and bleed brakes as needed. See page 111.

**Check Trailer Battery**

Check battery connections for wear or corrosion. Keep connections clean and tight. Batteries supplied by factory are maintenance-free. Service replacement batteries according to manufacturer's instructions.

## Check Tire Pressure and Lug Nut Torque



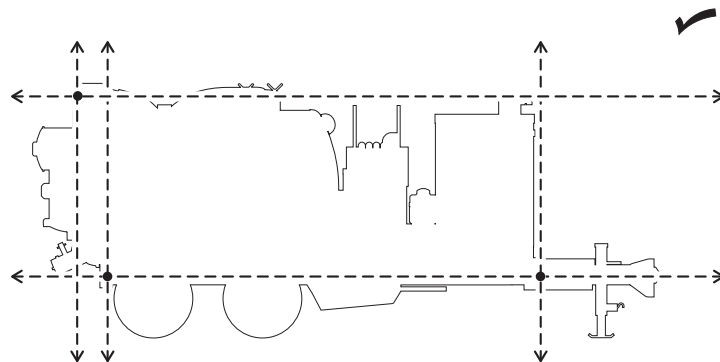
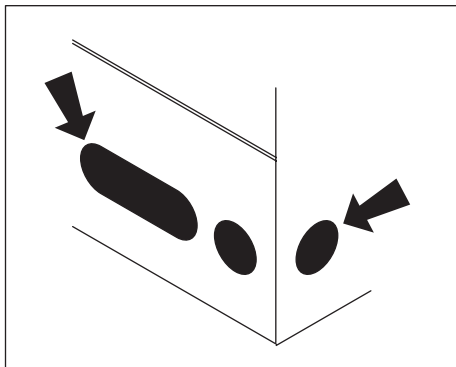
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Check tire pressure (2) and lug nut (1) torque. See below for correct pressure and torque.

| Tank              | Pressure          | Torque              |
|-------------------|-------------------|---------------------|
| 300 gal (1136 L)  | 80 psi (5.5 bar)  | 95 ft•lb (129 N•m)  |
| 800 gal (3028 L)  | 125 psi (8.6 bar) | 300 ft•lb (407 N•m) |
| 1200 gal (4542 L) | 110 psi (7.6 bar) | 271 ft•lb (271 N•m) |

## Check Lights and Reflectors



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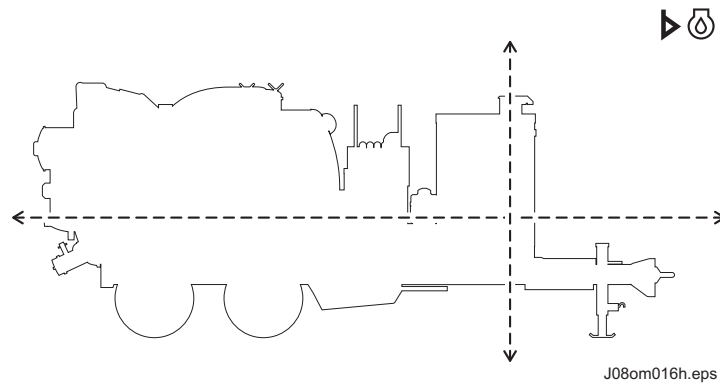
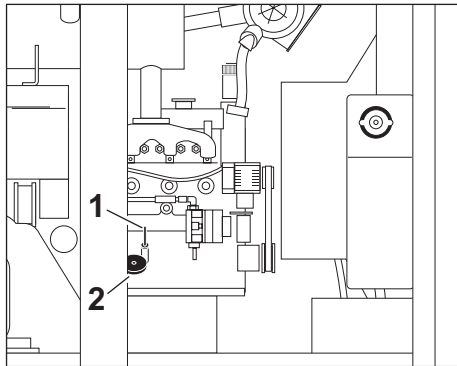
Check lights and reflectors for correct operation and cleanliness.

## 10 Hour

| Location             | Task                                       | Notes |
|----------------------|--------------------------------------------|-------|
| <b>Vacuum System</b> | Check engine oil                           |       |
|                      | Drain fuel/water separator                 |       |
|                      | Inspect belts (water pump, blower and fan) |       |
|                      | Check coolant level                        |       |
|                      | Check air filter service indicator         |       |
|                      | Check hydraulic oil                        | THF   |
|                      | Check hydraulic hoses                      |       |
|                      | Check blower oil                           | SGL   |
|                      | Check blower                               |       |
|                      | Check water pump oil level                 |       |
|                      | Check water pump                           | NDO   |
|                      | Check water pump regulator                 |       |
|                      | Clean water pump filter                    |       |
|                      | Clean vacuum air filter                    |       |
|                      | Drain vacuum air filter canister           |       |
|                      | Check spray nozzle                         |       |
| <b>Debris Tank</b>   | Check vacuum tank hoses                    |       |
|                      | Check strobe light                         |       |
|                      | Check vacuum tank door seals/fittings      |       |

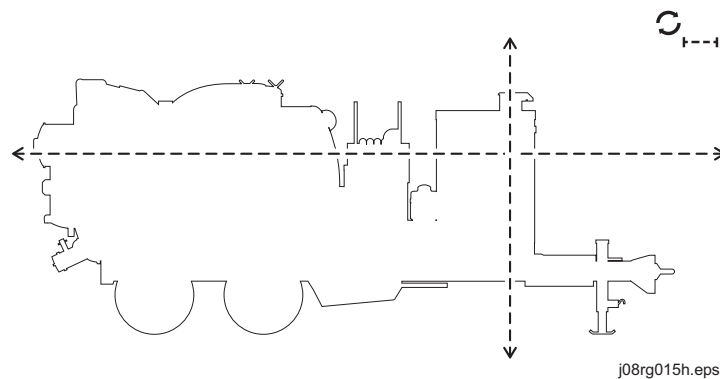
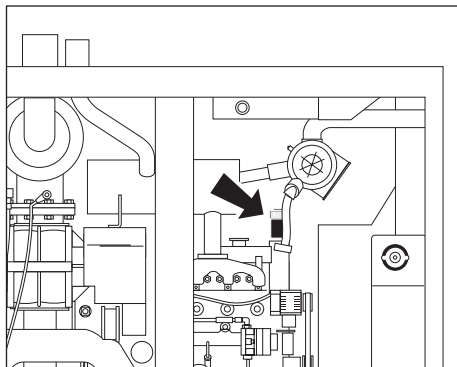
## Vacuum System

### Check Engine Oil

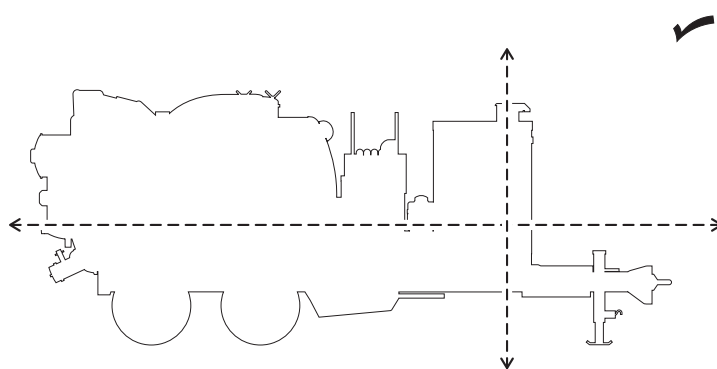
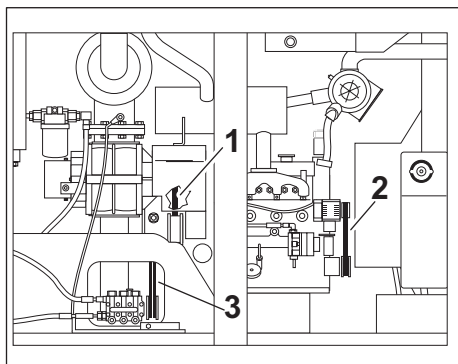


Check engine oil at dipstick (1) before operation and every 10 hours thereafter. Check with unit on level surface and at least 15 minutes after stopping engine. Add DEO at fill (2) as necessary to keep oil level at highest line on dipstick.

### Drain Fuel/Water Separator

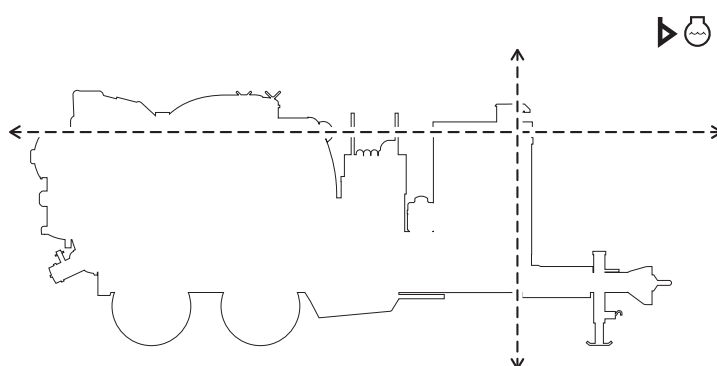
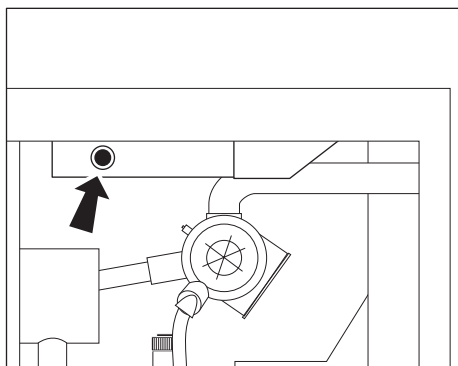


Drain water out of filter every 10 hours. To drain, place loose end of drain hose into approved container. Turn valve on bottom of filter counterclockwise 4 turns until water flows out of drain hose. When fuel comes out, turn valve clockwise to close.

**Inspect Belts**

J08om017h.eps

Check fan (2), blower (1), and water pump (3) belts every 10 hours for damage or wear.

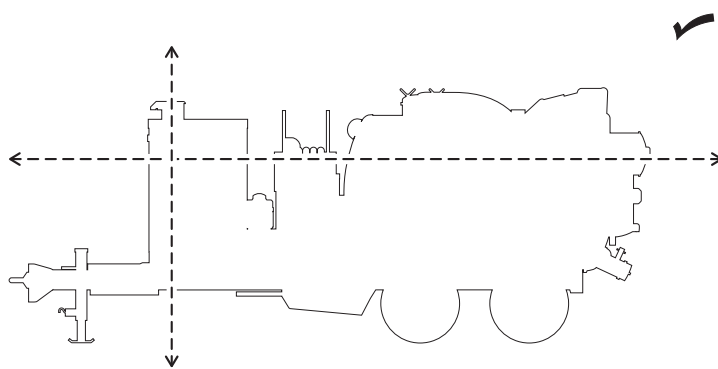
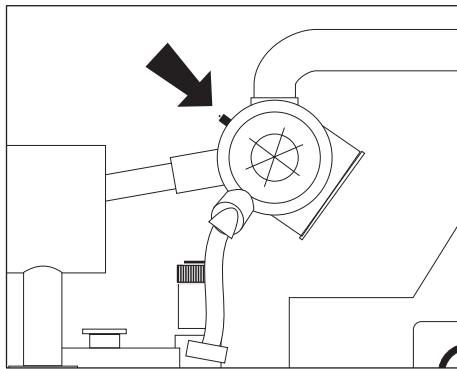
**Check Coolant Level**

J08om087h.eps

Check coolant level, with engine cool, at sight glass every 10 hours. Maintain coolant level at middle of sight glass. If low, add approved coolant.

**IMPORTANT:** See "Approved Coolant" on page 70 for information on approved coolants.

## Check Engine Air Filter Service Indicator

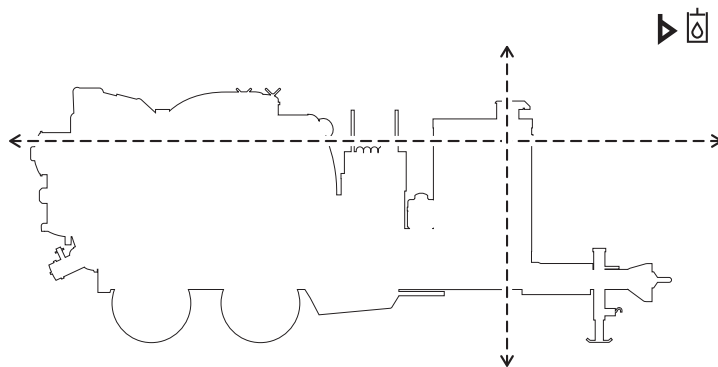
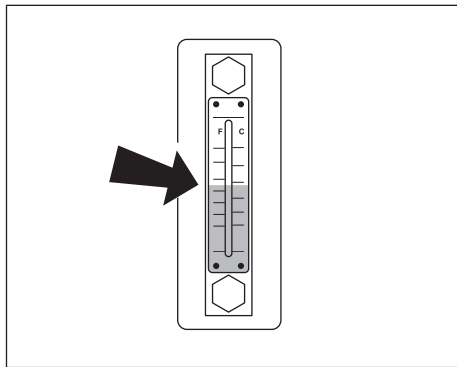


J08om032h.eps



Check air filter service indicator every 10 hours. Change filter element when red flag pops up. Reset air filter service indicator after changing filter.

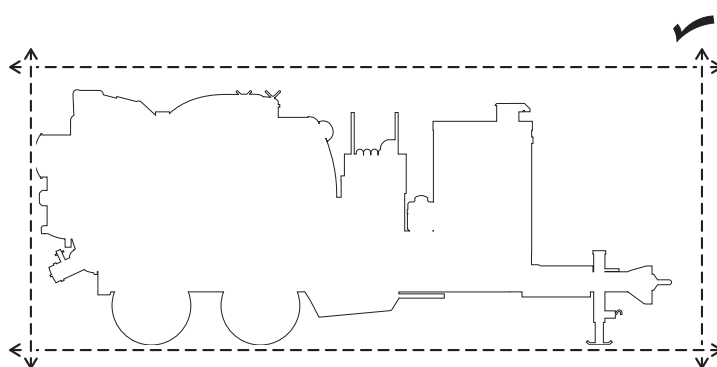
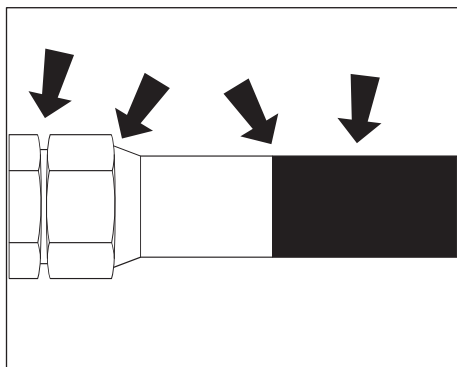
## Check Hydraulic Oil



J08om019h.eps

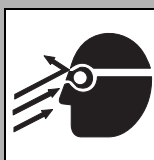
With frame level, check oil at indicator every 10 hours. Add THF at fill as necessary. Clean dust from cap by blowing with low-pressure air.

**IMPORTANT:** Use a ladder or other means to access hydraulic oil fill.

**Check Hydraulic Hoses**

J08om020h.eps

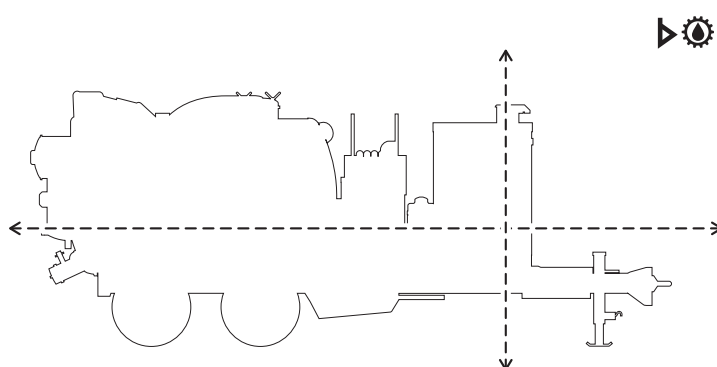
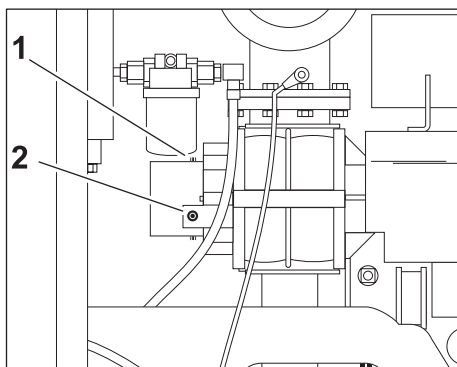
Check hoses every 10 hours for wear or damage. Replace as needed.

**⚠ WARNING**

Fluid or air pressure could pierce skin and cause injury or death. Stay away.

**NOTICE:**

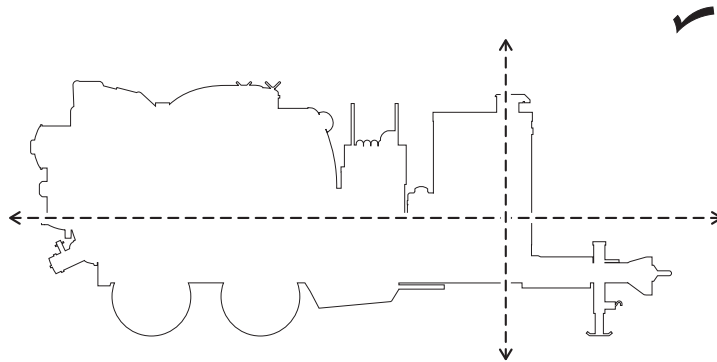
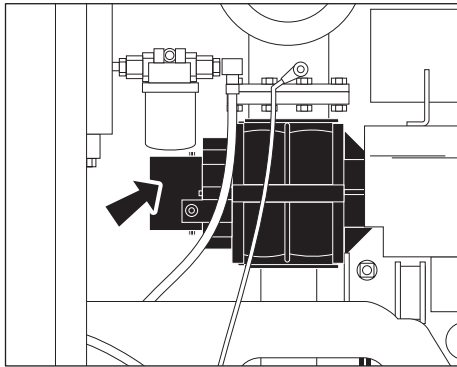
- Before disconnecting a hydraulic line, turn engine off and operate all controls to relieve pressure. Lower, block, or support any raised component with a hoist. Cover connection with heavy cloth and loosen connector nut slightly to relieve residual pressure. Catch all fluid in a container.
- Before using system, check that all connections are tight and all lines are undamaged.
- Fluid leaks can be hard to detect. Use a piece of cardboard or wood, rather than hands, to search for leaks.
- Wear protective clothing, including gloves and eye protection.
- If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.

**Check Blower Oil**

J08om021h.eps

With frame level, check blower oil at sight glass (2) every 10 hours. Add SGL at breather (1) as necessary to maintain oil level at halfway point on sight glass (2). Do not overfill.

## Check Blower



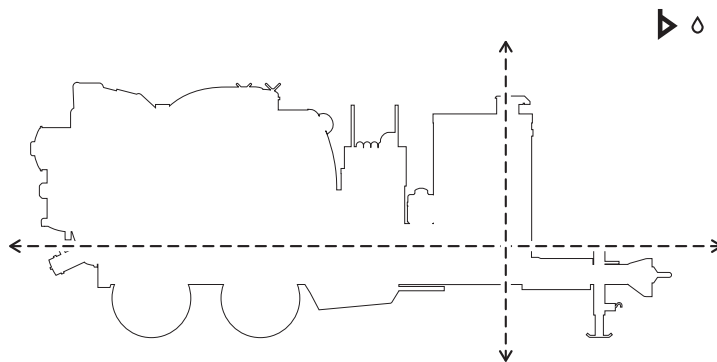
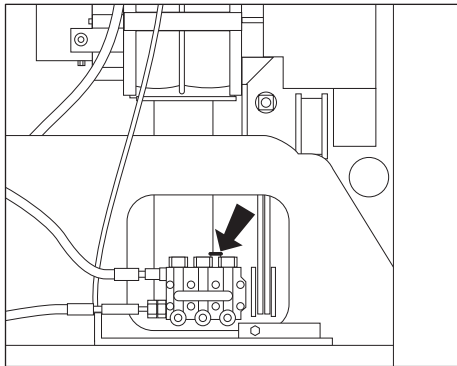
J08om023h.eps



Check blower every 10 hours for unusual noise or vibration. If malfunction is detected:

1. Stop engine.
2. Consult blower repair manual.

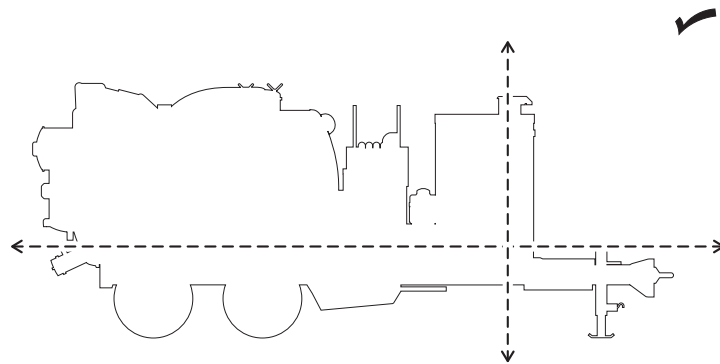
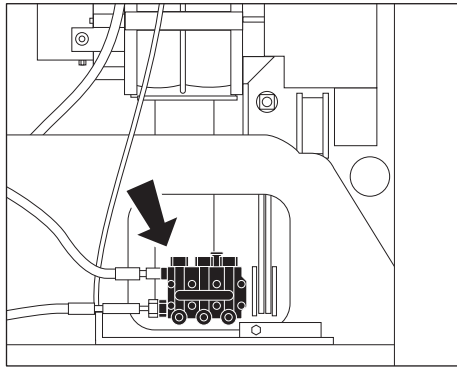
## Check Water Pump Oil



J08om024h.eps

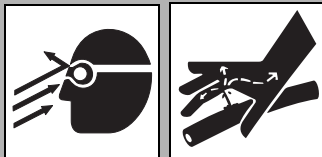
With frame level, check water pump oil at dipstick every 10 hours. Oil should be at full mark on dipstick. Add NDO at fill as necessary to keep oil at full mark on dipstick.

## Check Water Pump



J08om025h.eps

Check water pump unit every 10 hours for leaks, loose fittings, unusual noise or vibration. Repair if necessary.

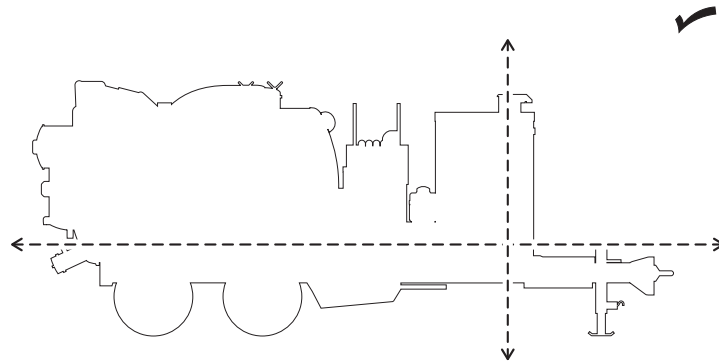
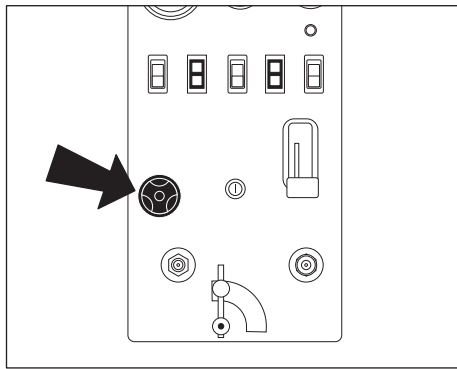
**⚠ WARNING**

Fluid or air pressure could pierce skin and cause injury or death. Stay away.

**NOTICE:** Escaping pressurized fluid can cause injury or pierce skin and poison.

- Before using system, check that all connections are tight and all lines are undamaged.
- Fluid leaks can be hard to detect. Use a piece of cardboard or wood, rather than hands, to search for leaks.
- Wear protective clothing, including gloves and eye protection.

## Check Water Pump Regulator



J08om026h.eps



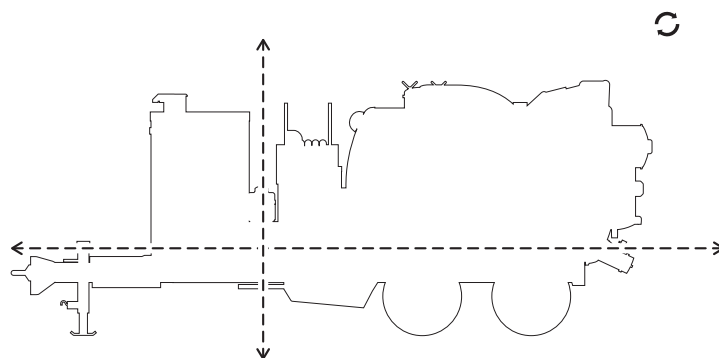
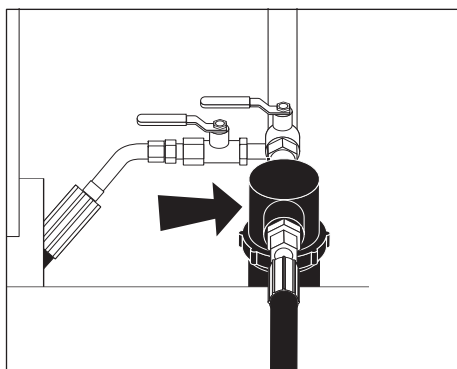
Check for proper operation of regulator every 10 hours.

### To check:

1. Start engine.
2. Connect water pressure hose to water lance.
3. Move water pressure switch to on.
4. Squeeze water lance handle. Water pump should engage.
5. Release water lance handle. Water pump should disengage.

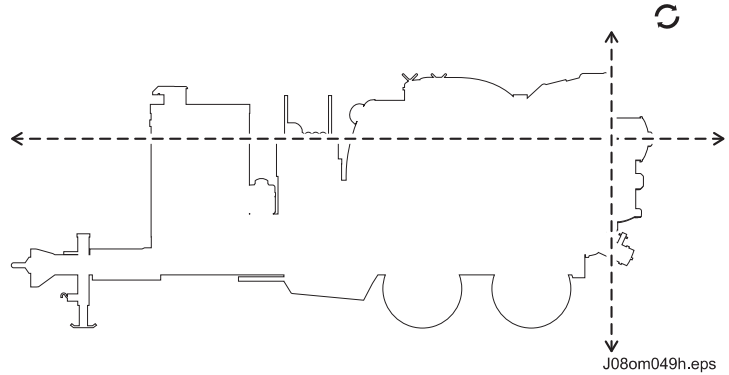
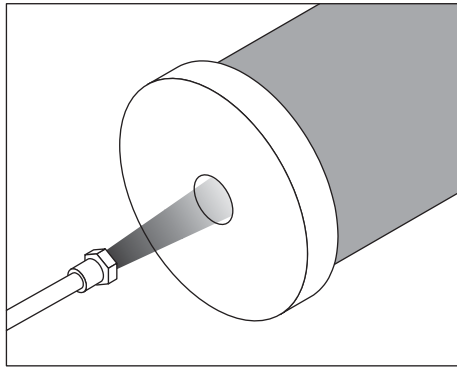
If pump does not engage and disengage with movement of water lance handle, water pump control system is not functioning properly. See water pump manual for more information.

## Clean Water Pump Filter



J08om073h.eps

1. Open filter housing.
2. Remove element and rinse housing thoroughly with water.
3. Replace element and close filter housing.

**Clean Vacuum Air Filter**

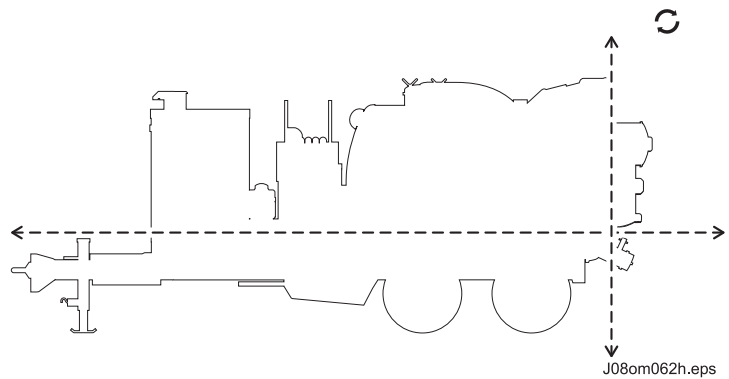
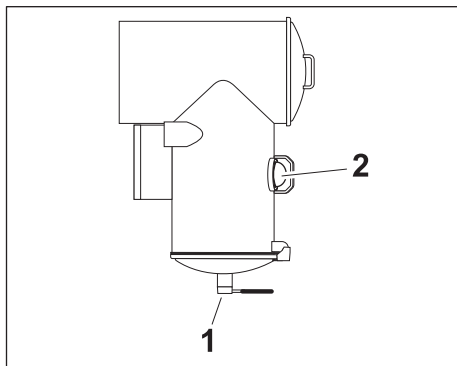
Clean filter every 10 hours or as needed.

**To clean filter:**

1. Remove filter from canister.
2. Run low pressure water into inside of filter.

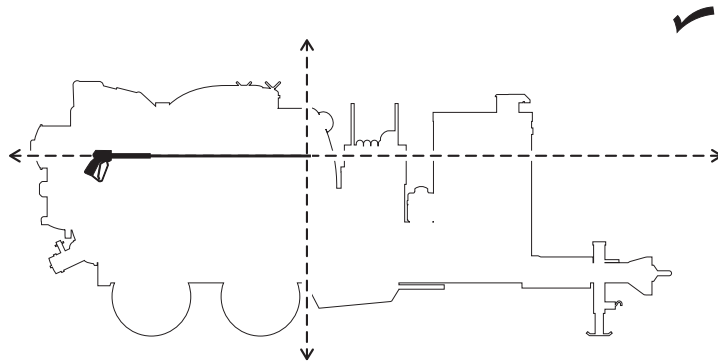
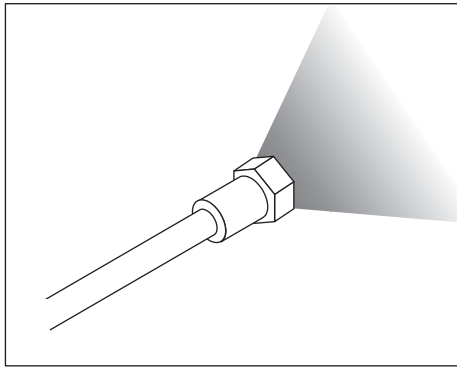
**NOTICE:** Do not use high pressure water to clean filter. Filter will be damaged.

3. Allow filter to dry completely before returning to canister.

**Drain Vacuum Air Filter Canister**

Drain filter canister at drain every 10 hours or as needed. Drain when water is visible in sight glass.

## Check Spray Nozzle



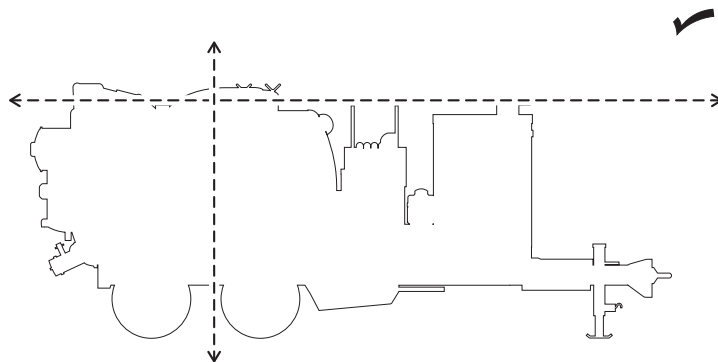
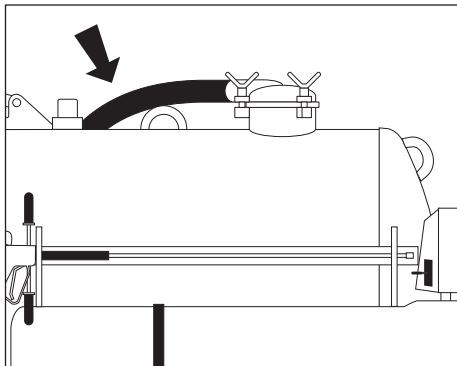
J08om050h.eps



Check spray nozzle every 10 hours. Ensure that water sprays from nozzle in a fan pattern. Clean or replace nozzle as necessary.

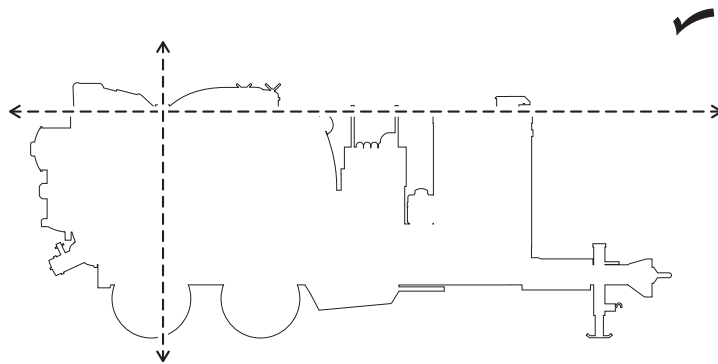
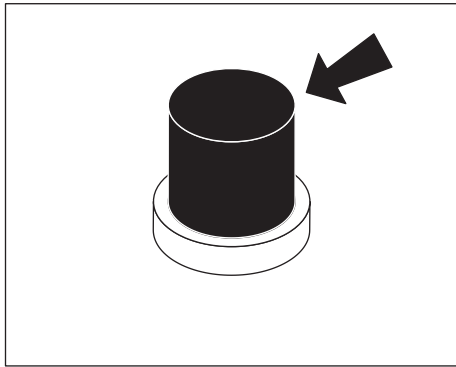
## Debris Tank

### Check Vacuum Tank Hoses



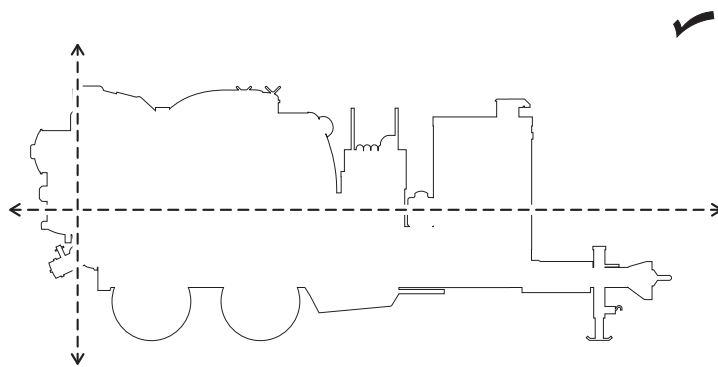
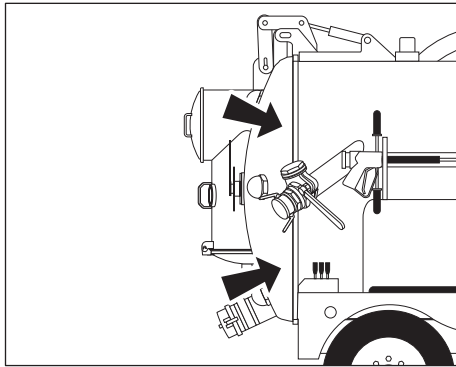
J08om059h.eps

Check hoses every 10 hours for wear or damage. Replace as needed.

**Check Strobe Light**

J08om051h.eps

Check strobe light for proper function every 10 hours. When ignition is on, strobe light should be flashing. Repair if necessary.

**Check Vacuum Tank Door Seals and Fittings**

J08om052h.eps

Check door seal every 10 hours for wear or damage. Repair if necessary. Check for leaks and loose fittings every 10 hours. Repair or replace if necessary.

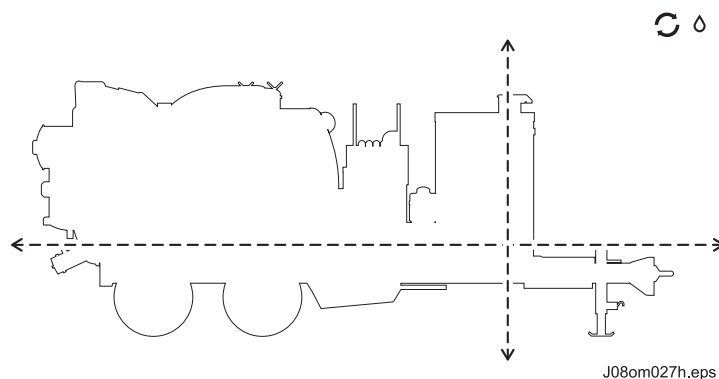
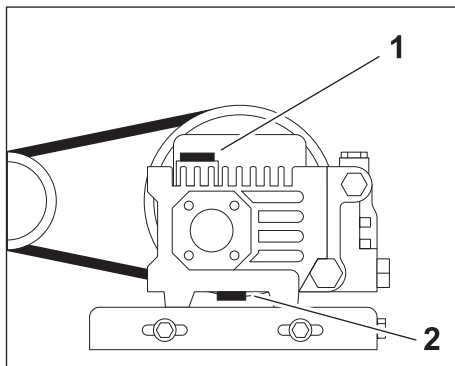
## 25 Hour

| Location      | Task                  | Notes                |
|---------------|-----------------------|----------------------|
| Vacuum System | Change water pump oil | Initial service, NDO |



### Vacuum System

#### Change Water Pump Oil



J08om027h.eps

Change oil after the first 25 hours of operation and every 100 hours thereafter. Change oil more frequently if working in dusty conditions.

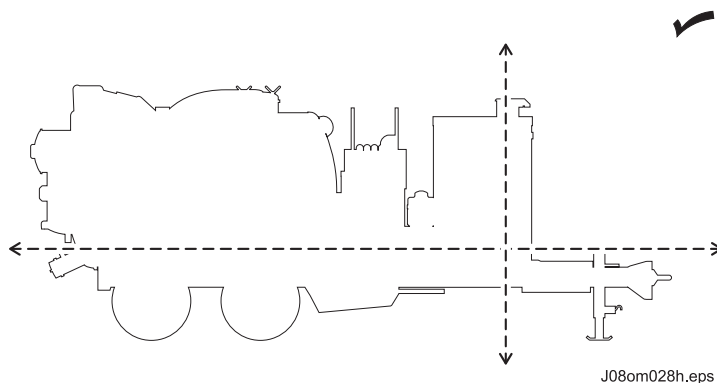
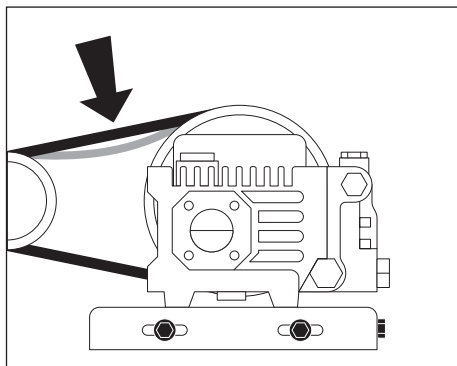
- Drain at drain plug (2) while oil is warm.
- Refill with NDO at fill (1) until oil is at full mark on dipstick.

## 50 Hour

| Location             | Task                              | Notes             |
|----------------------|-----------------------------------|-------------------|
| <b>Vacuum System</b> | Check water pump belt tension     |                   |
|                      | Check blower belt tension         |                   |
|                      | Inspect cooling fan               |                   |
|                      | Check radiator                    |                   |
|                      | Check blower relief valve         |                   |
|                      | Check water pressure hoses        |                   |
|                      | Check vacuum air filter and hoses |                   |
| <b>Debris Tank</b>   | Lube door lock screw              | 1200 tank         |
|                      | Lube door handle screw            | 300 and 800 tanks |
|                      | Lube tank pivot pins              | 300 and 800 tanks |

### Vacuum System

#### Check Water Pump Belt Tension

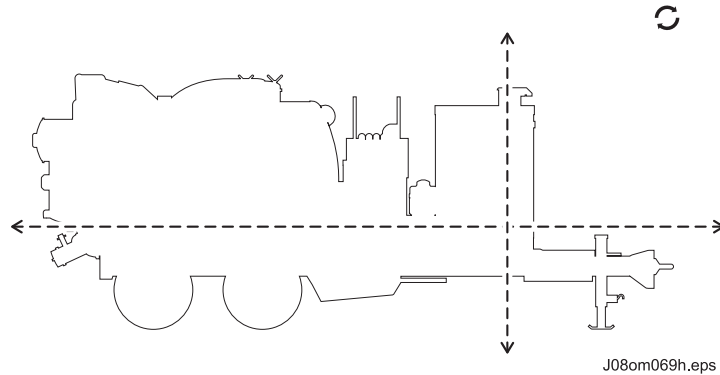
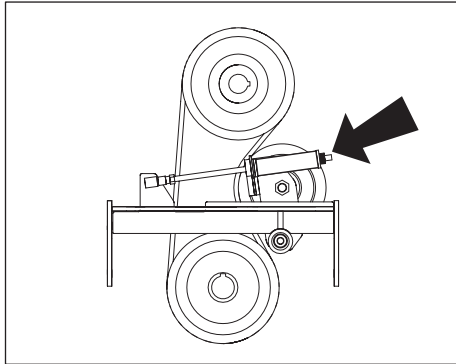


Check belt every 10 hours for correct tension, damage or wear. Replace worn belt. Tighten as needed. See "Adjust Water Pump Belt Tension" on page 106.

#### To check

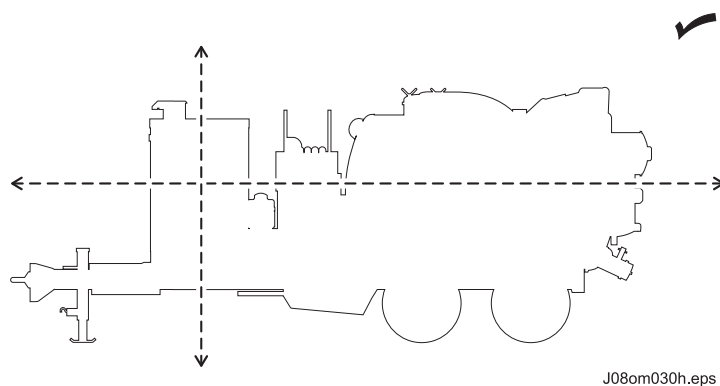
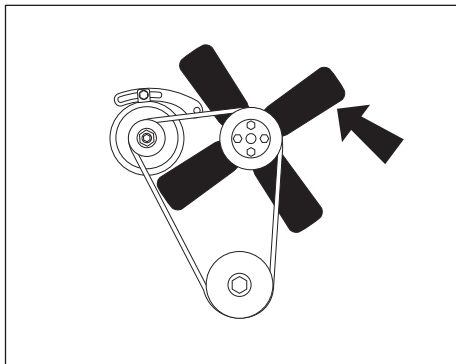
1. Turn ignition to STOP and remove key.
2. Apply moderate thumb pressure to belt between pulleys.
3. Belt is properly tensioned when deflection is about .2-.3" (5-8 mm).

## Check Blower Belt Tension

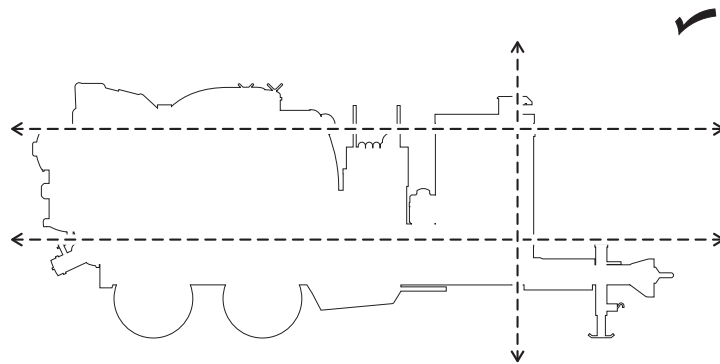
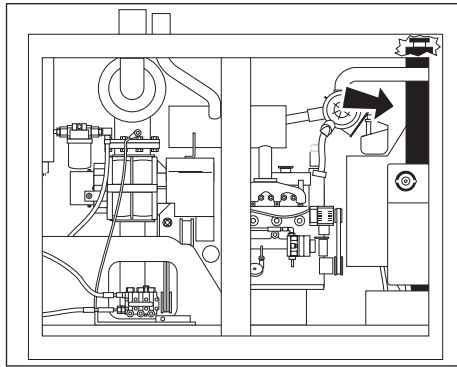


Check belt every 10 hours for correct tension, damage or wear. Replace worn belt. Both ends of tube must touch spring caps for belt to be correctly tensioned. Tighten as needed. See “Adjust Blower Belt Tension” on page 107.

## Inspect Cooling Fan

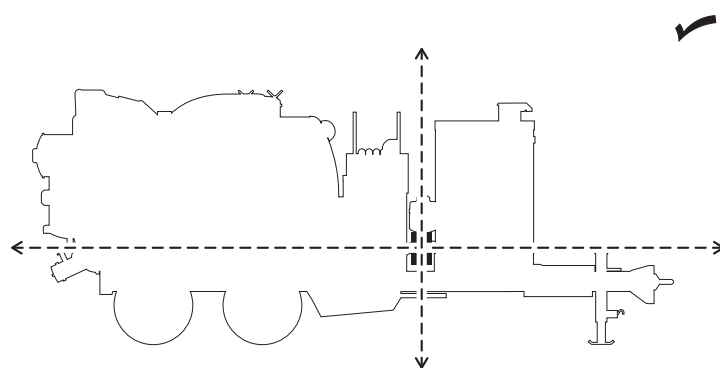
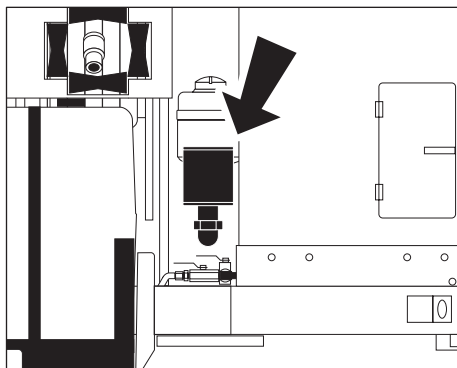


Check for cracks, loose rivets, and bent or loose blades. Check mounting screws and tighten if needed.

**Check Radiator**

J08om083h.eps

Check radiator for dirt, grass, and other foreign matter every 50 hours. Clean out with compressed air or spray wash if required. Be careful not to damage fins with high-pressure air or water. Check more often if operating in dusty or grassy conditions.

**Check Blower Relief Valve**

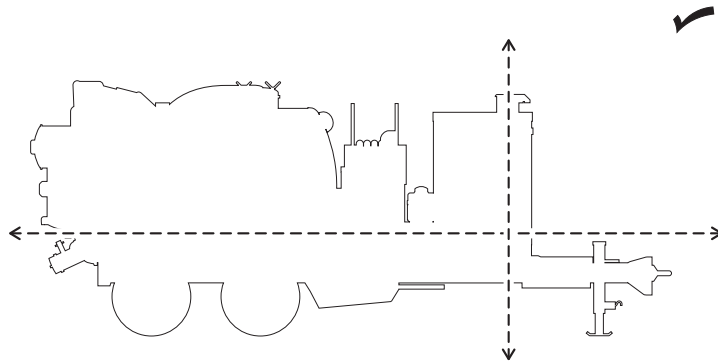
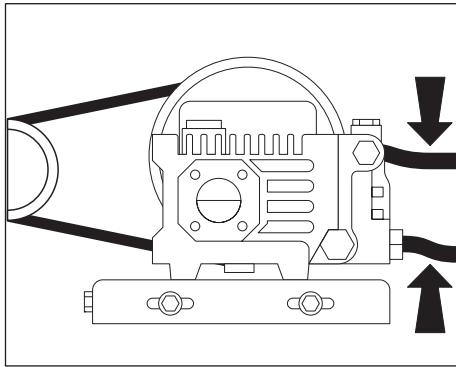
J08om072h.eps

Check relief valve for proper operation every 50 hours.

**To check:**

1. Ensure that vacuum inlet valve and drain valve are both closed.
2. Start engine. Vacuum will start to build.
3. When vacuum goes over relief, check for suction at the bottom of the relief air filter.
4. If suction is not present, stop engine and check relief valve.

## Check Water Pressure Hoses

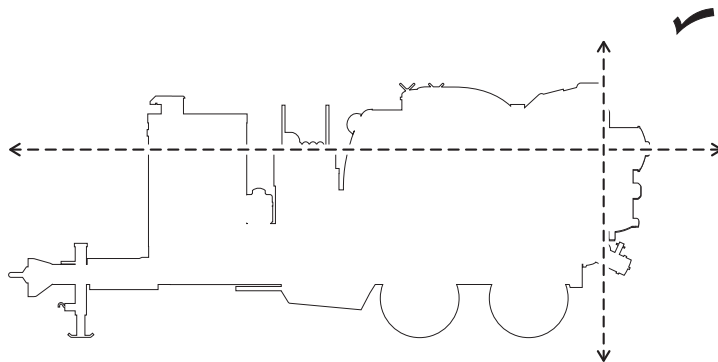
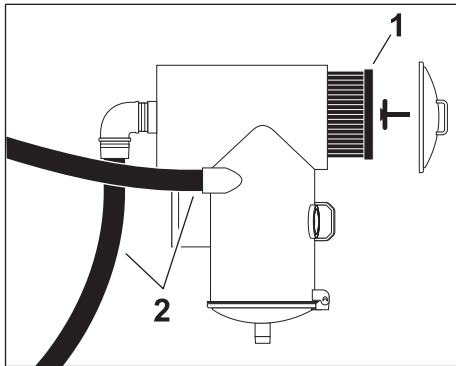


J08om064h.eps



Check hoses every 50 hours for wear or damage. Replace as needed.

## Check Vacuum Air Filter and Hoses

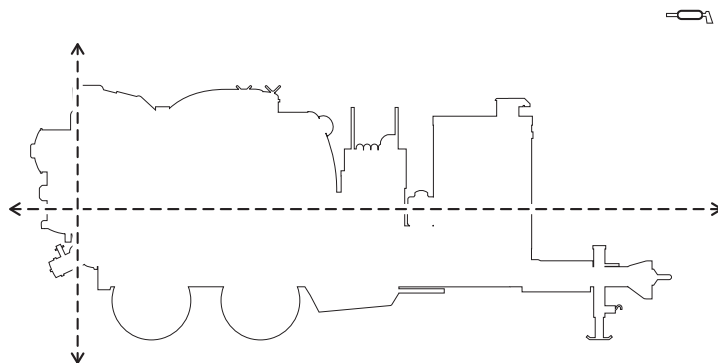
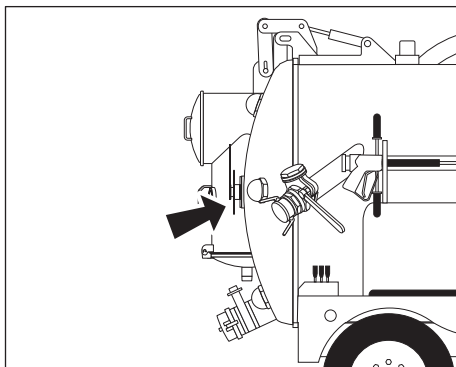


J08om061h.eps

Check filter (1) and suction hose (2) every 50 hours for wear or holes. Check more often if working in dusty conditions. Clean or replace filter if necessary.

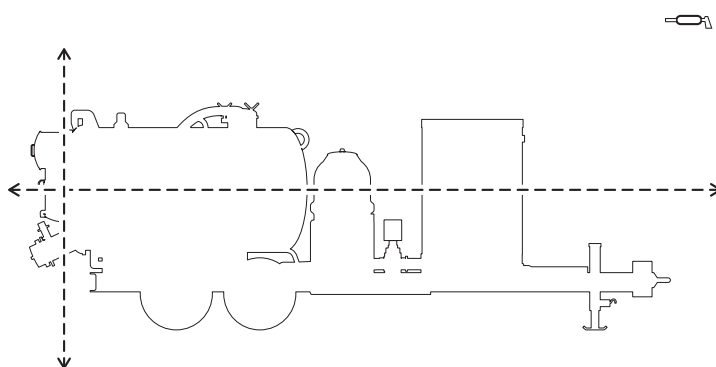
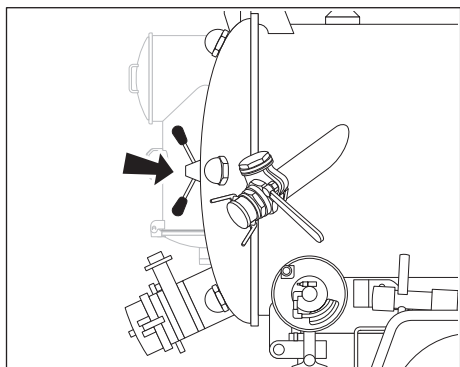
## Debris Tank

### Lube Door Lock Screw (1200 tank)



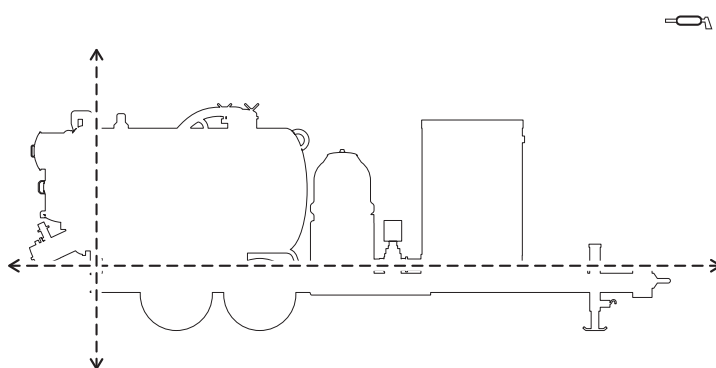
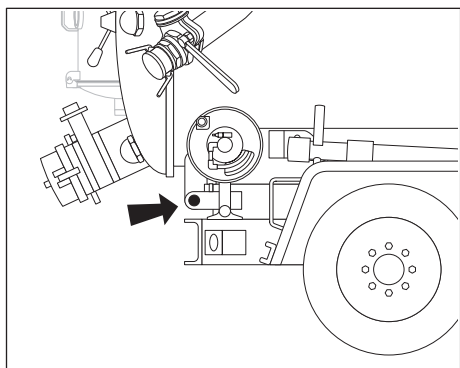
J08om053h.eps

Lube every 50 hours with MPG.

**Lube Door Lock Screw (300 and 800 tanks)**

J08om084h.eps

Lube every 50 hours with MPG.

**Lube Tank Pivot Pins (300 and 800 tanks)**

J08om085h.eps

Lube two pins every 50 hours with MPG.

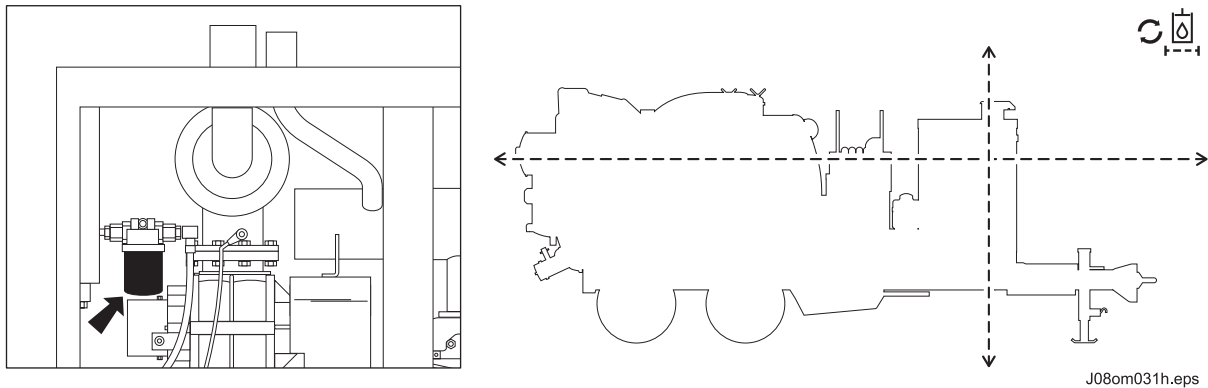
## 100 Hour

| Location             | Task                        | Notes           |
|----------------------|-----------------------------|-----------------|
| <b>Vacuum System</b> | Change hydraulic oil filter | Initial service |
|                      | Change water pump oil       | NDO             |
| <b>Debris Tank</b>   | Check tank deflector        |                 |

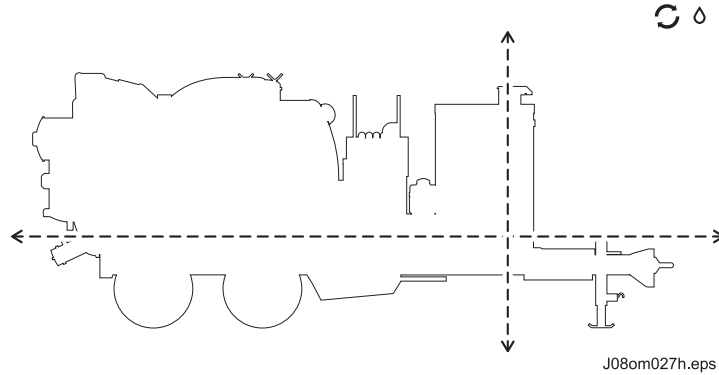
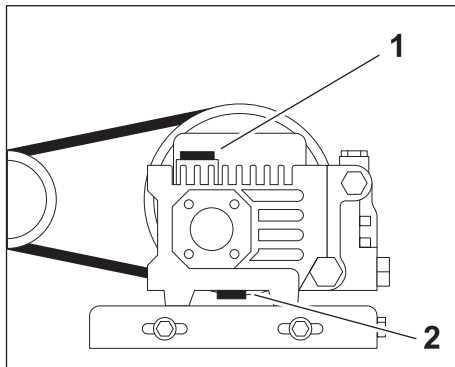


### Vacuum System

#### Change Hydraulic Oil Filter (Initial Service)

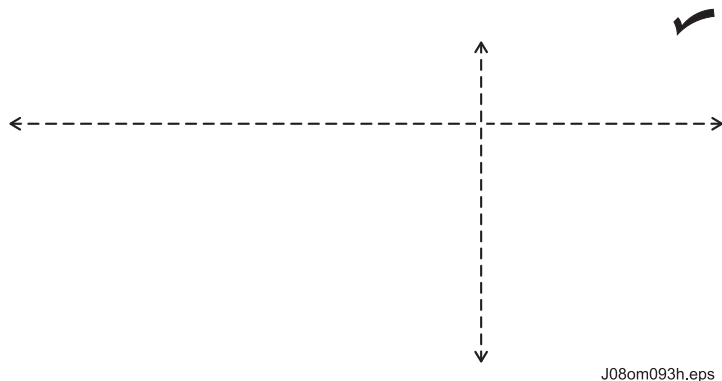
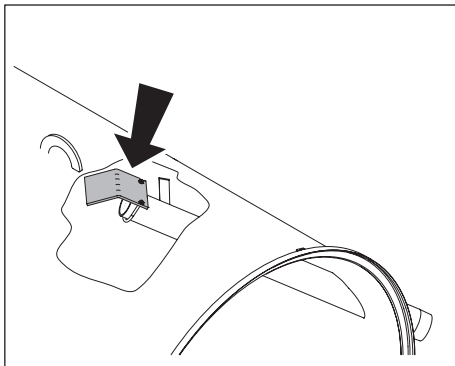


Change hydraulic oil filter after first 100 hours. Replace filters every 1000 hours thereafter.

**Change Water Pump Oil**

Change oil after the first 25 hours of operation and every 100 hours thereafter. Change oil more frequently if working in dusty conditions.

- Drain at drain plug (2) while oil is warm.
- Refill with NDO at fill (1) until oil is at halfway mark on dipstick.

**Debris Tank****Check Tank Deflector**

Check tank deflector every 100 hours for wear or damage. Replace as needed.

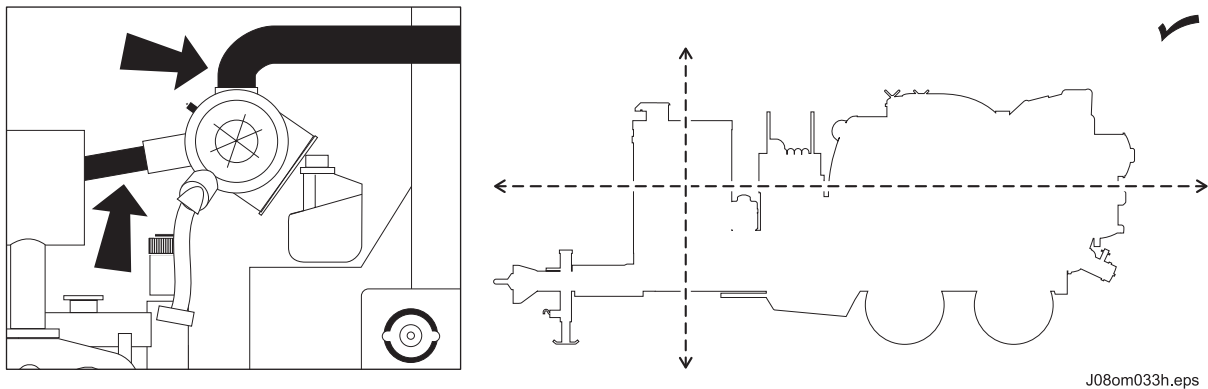
250 Hour

| Location      | Task                      | Notes |
|---------------|---------------------------|-------|
| Vacuum System | Inspect air intake system |       |



Vacuum System

Inspect Air Intake System



J08om033h.eps

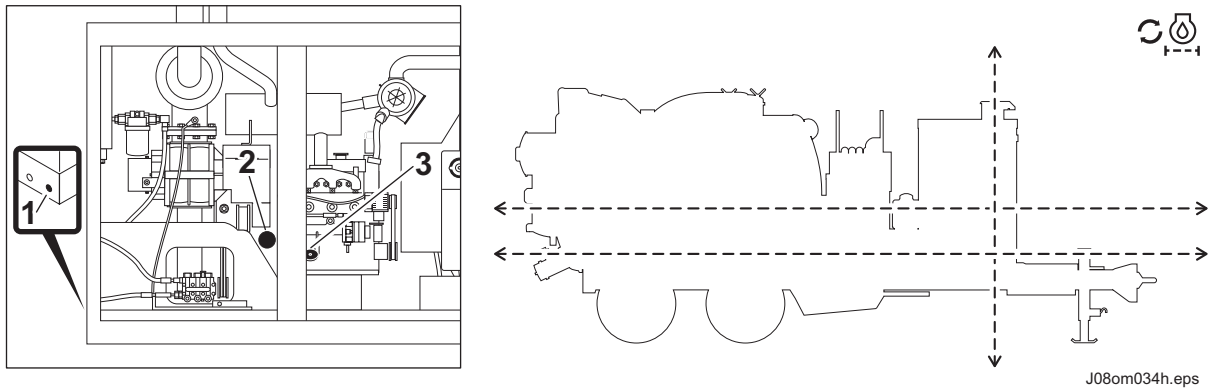
Inspect intake piping for cracked hoses, loose clamps, or punctures. Tighten or replace parts as necessary.

## 500 Hour

| Location             | Task                         | Notes |
|----------------------|------------------------------|-------|
| <b>Vacuum System</b> | Change engine oil and filter | DEO   |
|                      | Change fuel filter           |       |
|                      | Lube blower bearings         | MPG   |

### Vacuum System

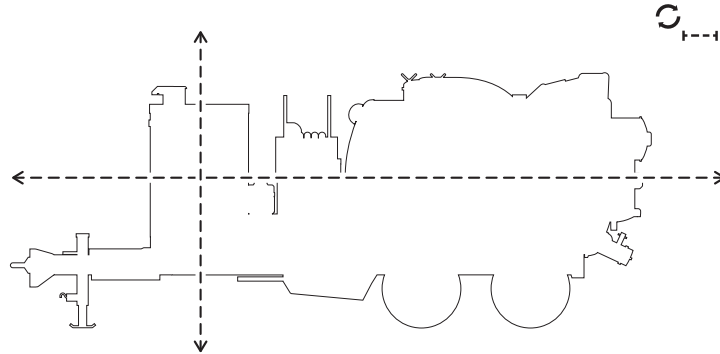
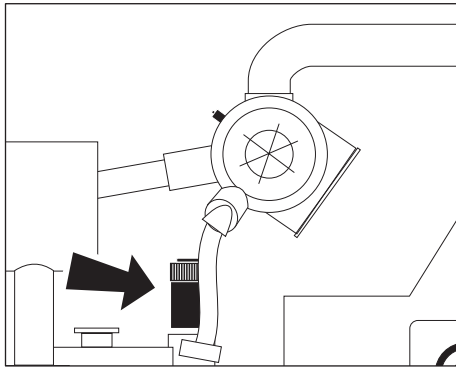
#### Change Engine Oil and Filter



Change oil and filter after first 50 hours of operation and every 500 hours thereafter. Change oil more frequently if working in dusty conditions.

1. Drain crankcase through drain (1) while oil is warm.
2. Replace filter (2) each time oil is changed.
3. Refill with DEO at fill neck (3).

## Change Fuel Filter

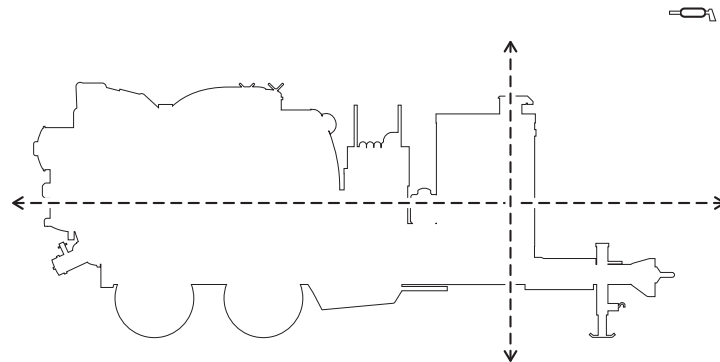
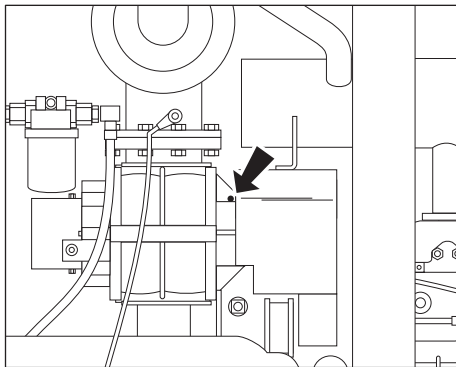


J08om035h.eps



Replace fuel filter every 500 hours for normal service. If you refuel from cans, replace filter more often. See parts manual or contact your Ditch Witch dealer for correct replacement filter.

## Lube Blower Bearings



J08om037h.eps

Wipe two zerks clean and lube every 500 hours with MPG. Inject grease into zerk until clean grease comes out of relief fittings.

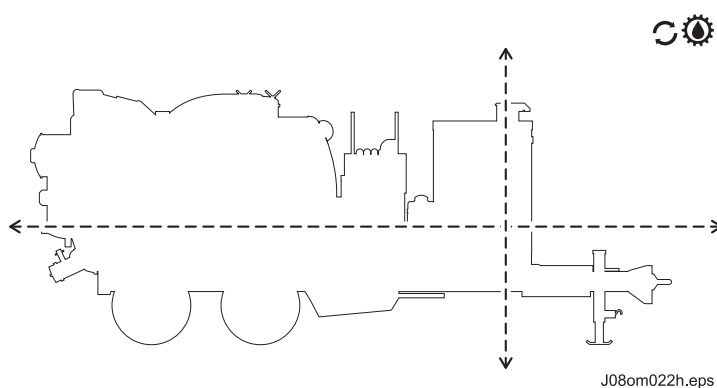
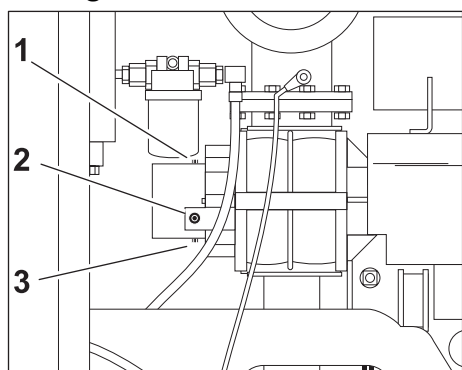
**NOTICE:** Do not inject grease too quickly. Drive shaft seal damage could occur.

## 1000 Hour

| Location             | Task                 | Notes |
|----------------------|----------------------|-------|
| <b>Vacuum System</b> | Change blower oil    | SGL   |
|                      | Change hydraulic oil | THF   |

### Vacuum System

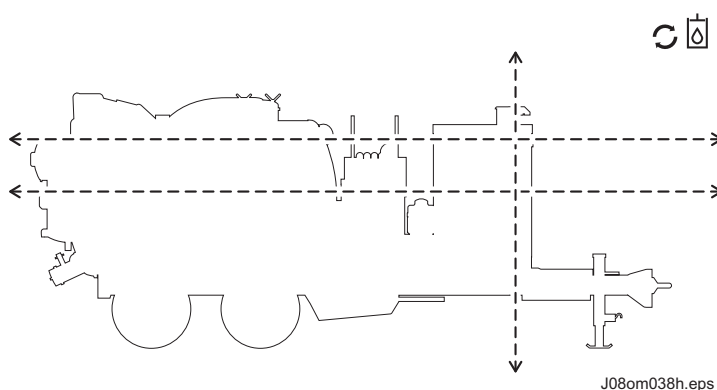
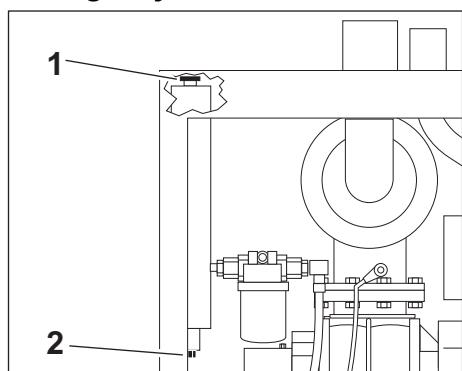
#### Change Blower Oil



Change oil every 1000 hours. Change oil more frequently if working in dusty conditions.

- Drain at drain plug (3) while oil is warm.
- Refill with SGL at breather (1) until oil is at halfway point on sight glass (2).

#### Change Hydraulic Oil



Drain hydraulic oil (2) and refill (1) with THF every 1000 hours. Change oil every 500 hours if jobsite temperature exceeds 100°F (38°C) more than 50% of the time.

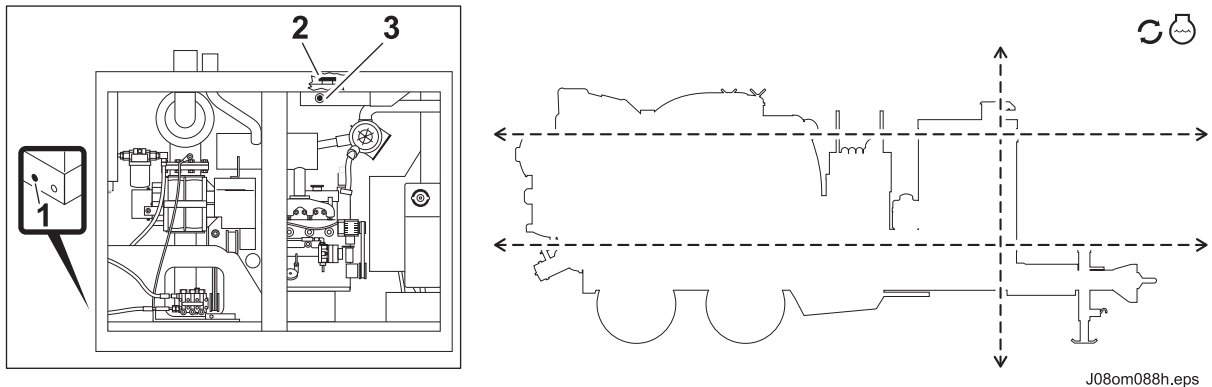
## 2000 Hour

| Location             | Task                    | Notes |
|----------------------|-------------------------|-------|
| <b>Vacuum System</b> | Change coolant          | DEAC  |
|                      | Replace water pump belt |       |
|                      | Replace blower belt     |       |
|                      | Replace fan belt        |       |



### Vacuum System

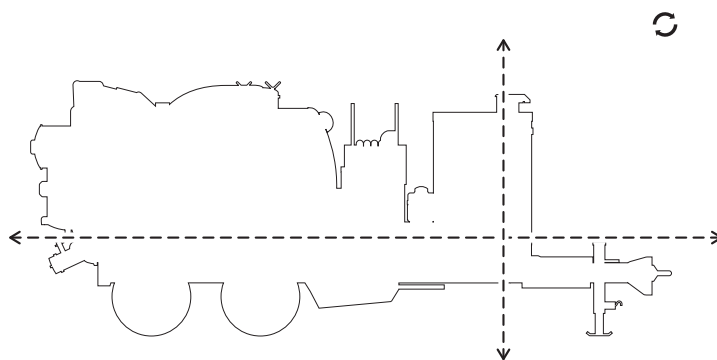
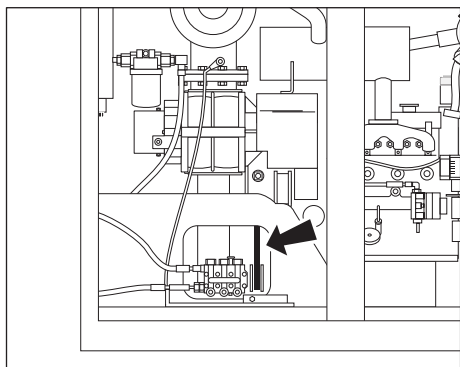
#### Change Coolant



Drain cooling system at drain (1) every two years or 2000 hours. Refill at pressure tank (2) with approved coolant.

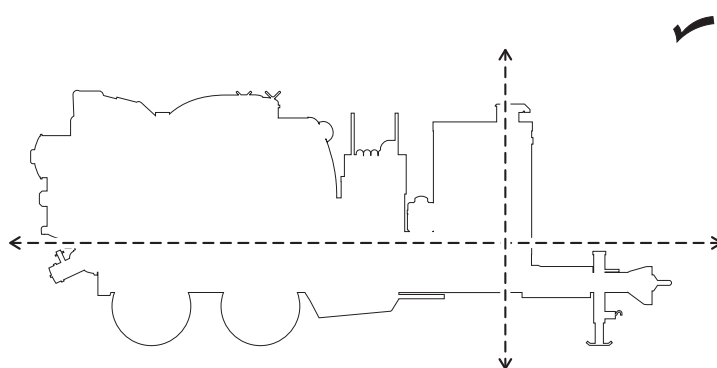
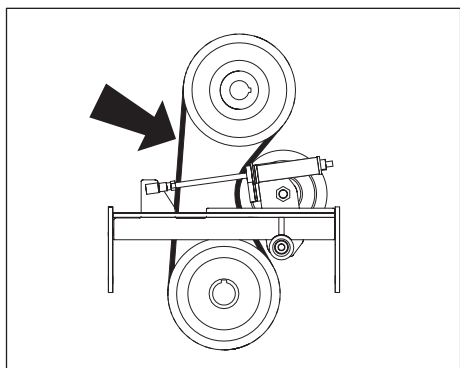
#### NOTICE:

- The use of non-approved coolant may lead to engine damage or premature engine failure and will void engine warranty.
- See “Approved Coolant” on page 70 for list of approved coolants.

**Replace Water Pump Belt**

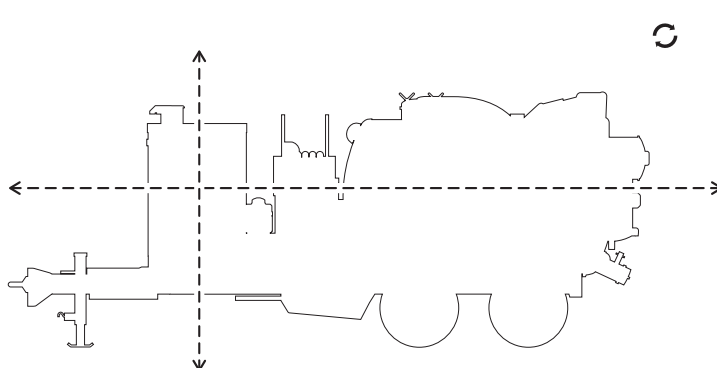
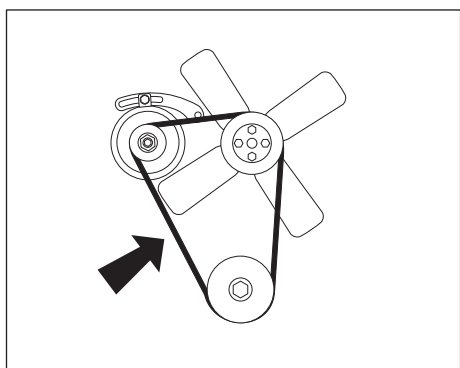
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Replace belt every 2000 hours.

**Replace Blower Belt**

J08om068h.eps

Replace belt every 2000 hours.

**Replace Fan Belt**

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Replace belt every 2000 hours.

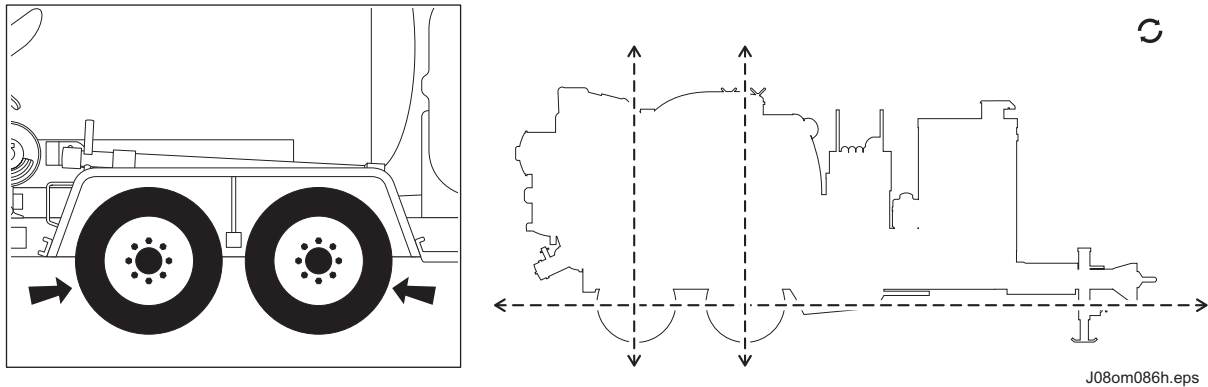
200 Mile

| Location | Task                    | Notes   |
|----------|-------------------------|---------|
| Trailer  | Adjust electric brakes  | Initial |
|          | Adjust hydraulic brakes | Initial |



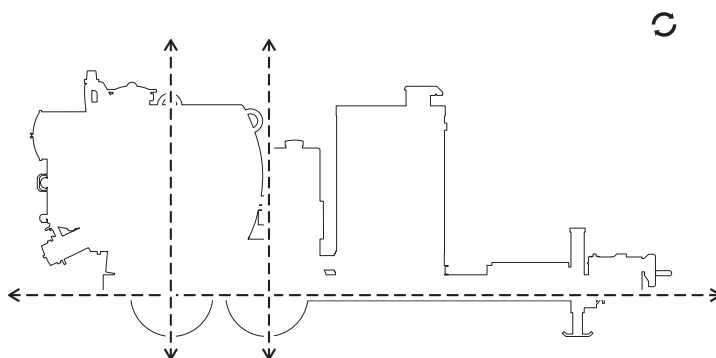
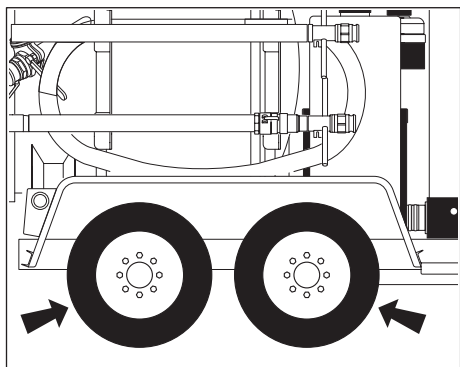
Trailer

Adjust Electric Brakes (Initial)



Adjust brakes after 200 miles (500 km).

1. Place adequate jack stands under frame rails and remove wheels.
2. Remove cover from adjusting slot on bottom of backing plate.
3. Rotate adjuster starwheel with screwdriver or brake spoon to expand brake shoes. Adjust until drum is very difficult to turn by hand.
4. Rotate starwheel the other direction until drum turns with slight drag.
5. Replace adjusting slot cover and replace wheel.
6. Repeat procedure for all remaining brakes.
7. Remove jack stands and lower wheels to ground.

**Adjust Hydraulic Brakes (Initial)**

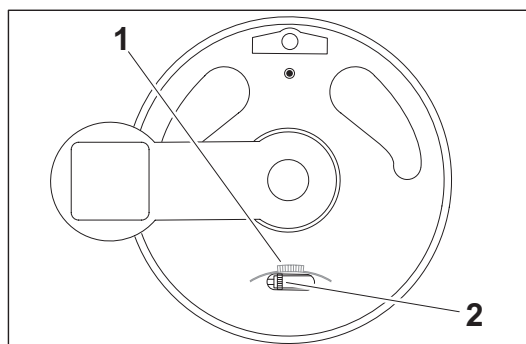
J08om091h.eps

Adjust hydraulic brakes after 200 miles (320 km).

**WARNING**

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

1. Use a jack and suitable jack stands to raise wheels so that wheels can be rotated by hand.
2. Rotate wheel forward by hand to reposition free backing primary brake shoe.
3. Remove adjusting plug from backing plate at wheel.
4. Use a slender screwdriver or similar tool to push the adjuster screw spring (1) away from the adjuster assembly.
5. At the same time, use a brake adjusting tool to tighten adjuster assembly (2). Adjust until brake linings become tight enough that wheel cannot be turned by hand, then back off 11 clicks for brakes that have not been used, and 15 clicks for brakes already burnished in.
6. Rotate wheel forward by hand. Wheel should rotate freely.
7. Replace adjusting plug in backing plate.
8. Repeat adjustment procedure at each wheel. To ensure even braking, make sure that all wheels have approximately the same amount of drag.



a08004c.eps

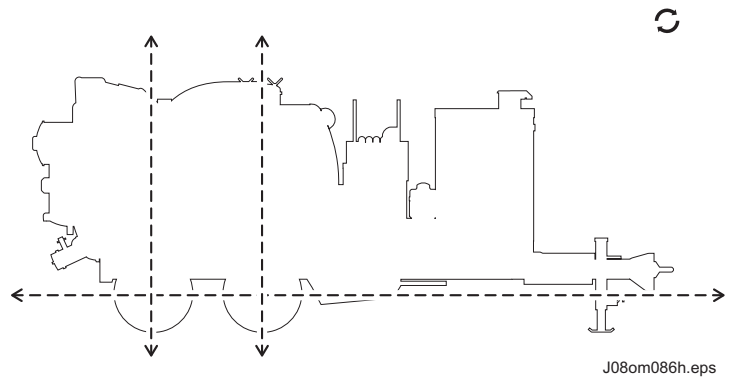
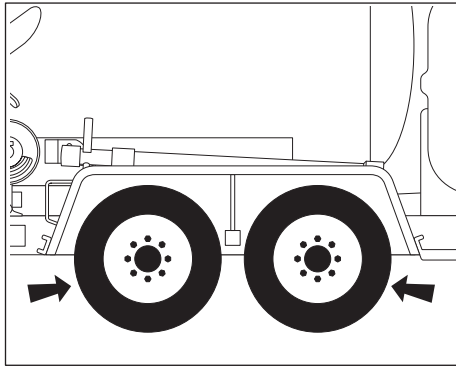
## 3000 Mile

| Location | Task                    | Notes |
|----------|-------------------------|-------|
| Trailer  | Adjust electric brakes  |       |
|          | Adjust hydraulic brakes |       |



### Trailer

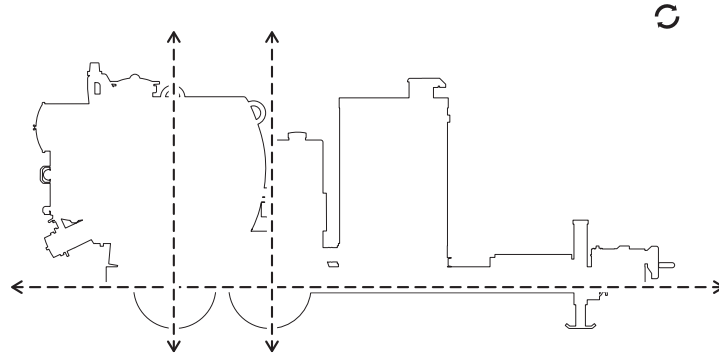
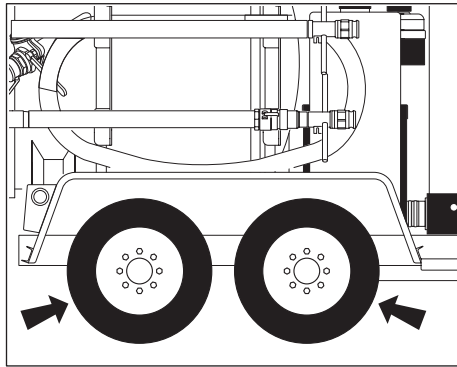
#### Adjust Electric Brakes



J08om086h.eps

Adjust brakes every 3000 miles (5000 km).

1. Place adequate jack stands under frame rails and remove wheels.
2. Remove cover from adjusting slot on bottom of backing plate.
3. Rotate adjuster starwheel with screwdriver or brake spoon to expand brake shoes. Adjust until drum is very difficult to turn by hand.
4. Rotate starwheel the other direction until drum turns with slight drag.
5. Replace adjusting slot cover and replace wheel.
6. Repeat procedure for all remaining brakes.
7. Remove jack stands and lower wheels to ground.

**Adjust Hydraulic Brakes**

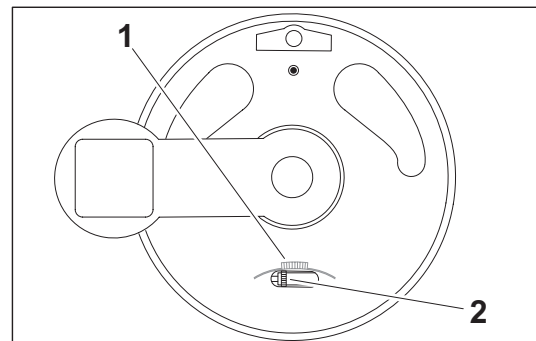
J08om091h.eps

Adjust hydraulic brakes every 3000 miles (5000 km).

**WARNING**

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

1. Use a jack and suitable jack stands to raise wheels so that wheels can be rotated by hand.
2. Rotate wheel forward by hand to reposition free backing primary brake shoe.
3. Remove adjusting plug from backing plate at wheel.
4. Use a slender screwdriver or similar tool to push the adjuster screw spring (1) away from the adjuster assembly.
5. At the same time, use a brake adjusting tool to tighten adjuster assembly (2). Adjust until brake linings become tight enough that wheel cannot be turned by hand, then back off 11 clicks for brakes that have not been used, and 15 clicks for brakes already burnished in.
6. Rotate wheel forward by hand. Wheel should rotate freely.
7. Replace adjusting plug in backing plate.
8. Repeat adjustment procedure at each wheel. To ensure even braking, make sure that all wheels have approximately the same amount of drag.



a08004c.eps

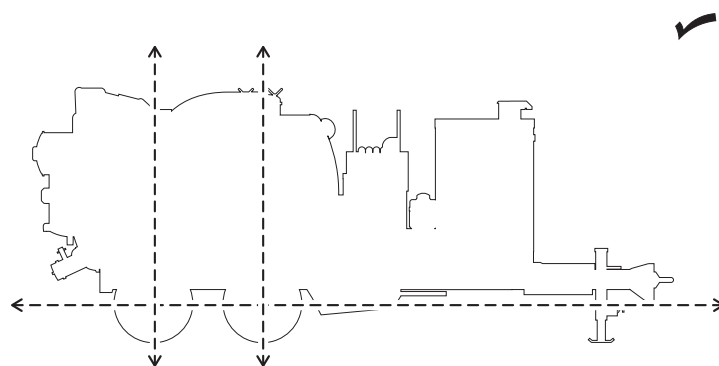
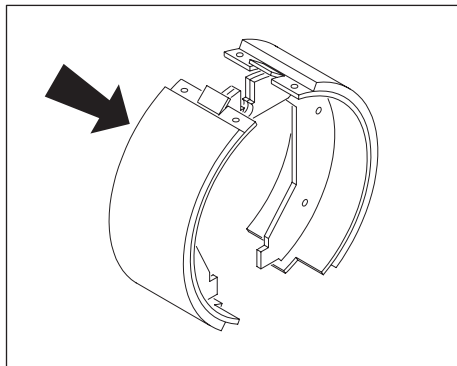
## 12,000 Mile

| Location | Task                            | Notes |
|----------|---------------------------------|-------|
| Trailer  | Inspect brake shoes and linings |       |
|          | Adjust and lubricate bearings   |       |



### Trailer

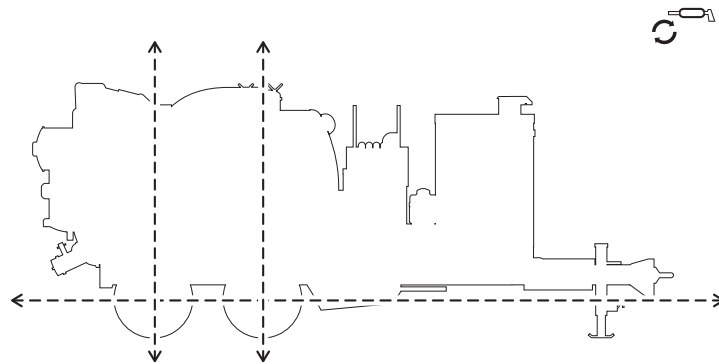
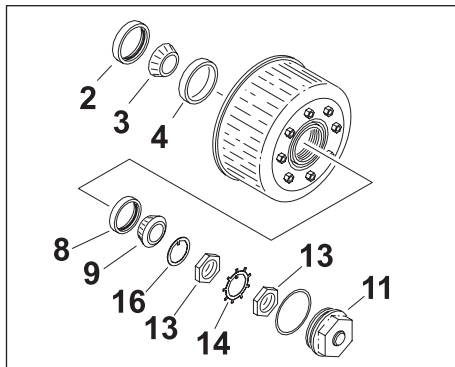
#### Inspect brake shoes and linings



J08om054h.eps

Inspect shoes and linings every 12 months or 12,000 miles (20 000 km) for wear. When lining is worn to 1/16" (2 mm) or less, replace linings. Replace shoe and lining if contaminated by oil.

## Adjust and Lubricate Bearings



J08om055h.eps

1. Place adequate jack stands under frame rails and remove wheels.
2. Unscrew grease cap (11) while holding the hub stationary.
3. Bend locking tang (14) down from outer spindle nut (13) and remove spindle nut (3).
4. Remove tang washer, unscrew inner spindle nut and remove spindle washer (16).
5. Remove hub from spindle. Do not drop outer bearing cone.
6. Pry seal (2) from hub and remove inner bearing cone (3).
7. Inspect brake drum for excessive wear or heavy scoring.

| Condition                                                          | Recommended Action     |
|--------------------------------------------------------------------|------------------------|
| Brake drum worn more than .020" (5 mm).                            | Remachine drum surface |
| Brake drum worn out of round more than .015" (.39 mm).             |                        |
| Brake drum has scoring and other wear greater than .090" (2.29 mm) | Replace drum           |

8. Clean all grease from bearing cups (4,8), cones (9,3), hardware, and hub bore using suitable solvent. Dry components with lint free cloth.
9. Inspect bearing cups and cones for pitting, spalling, and corrosion. Replace if damaged.
10. Pack all cones using an extreme pressure, water resistant lithium complex grease. Apply light coating of grease to bearing cones.
11. Install the bearing and washer into the hub. Thread on the inner nut, rotate the hub, and tighten the nut until the hub will not rotate. This requires a minimum of 100 ft•lb (136 N•m) of torque.
12. Loosen the nut to remove preload torque.
13. Hand tighten the nut and back it off 1/4 to 3/4 of a turn.
14. Place tang washer on spindle and bend one tang inward over the nut. This will keep the inner nut from turning while torque is applied to the outer nut.
15. Install the outer nut and torque to 225-250 ft•lb (305-309 N•m). Ensure that inner nut does not turn. Bend two tangs from the tang washer over the outer flats to secure.
16. Install cap with o-ring and plug installed. Rotate the hub and check bearing adjustment. Allowable end play is .001-.010" (.025-.25 mm).

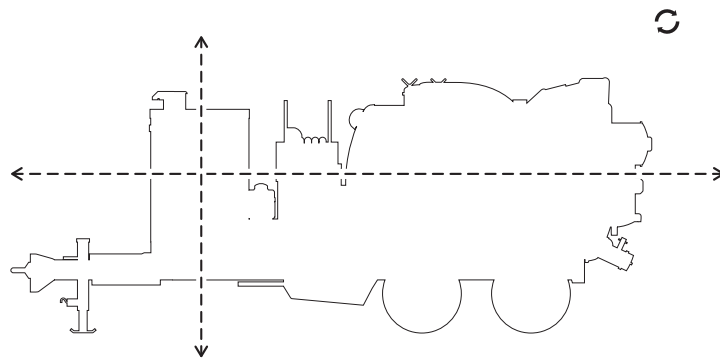
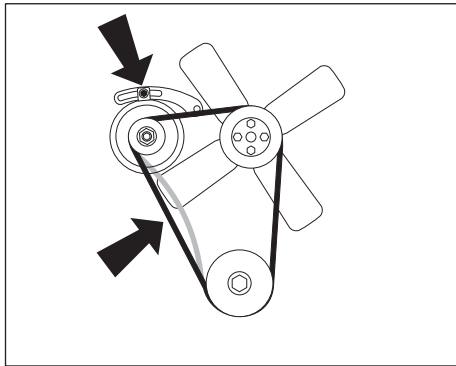
## As Needed

| Location             | Task                             | Notes      |
|----------------------|----------------------------------|------------|
| <b>Vacuum System</b> | Adjust fan belt tension          |            |
|                      | Adjust water pump belt tension   |            |
|                      | Change water pump filter         |            |
|                      | Adjust blower belt tension       |            |
|                      | Lube blower for longterm storage |            |
|                      | Change blower relief air filter  |            |
| <b>Debris Tank</b>   | Clean primary shutoff valve      |            |
|                      | Clean secondary shutoff valve    |            |
| <b>Trailer</b>       | Add surge brake fluid            | DOT 3 or 4 |



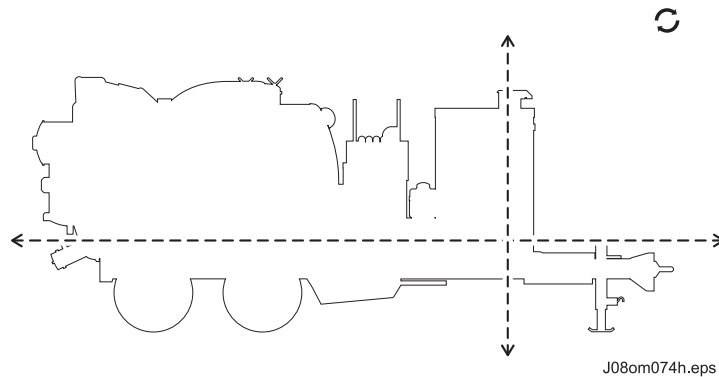
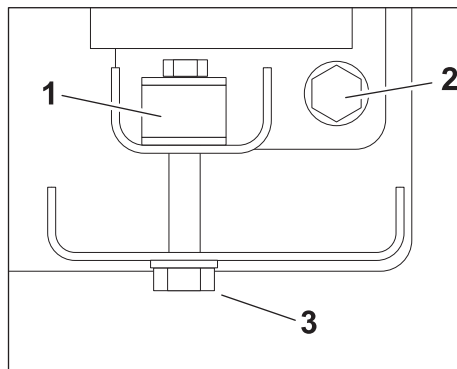
## Vacuum System

### Adjust Fan Belt Tension



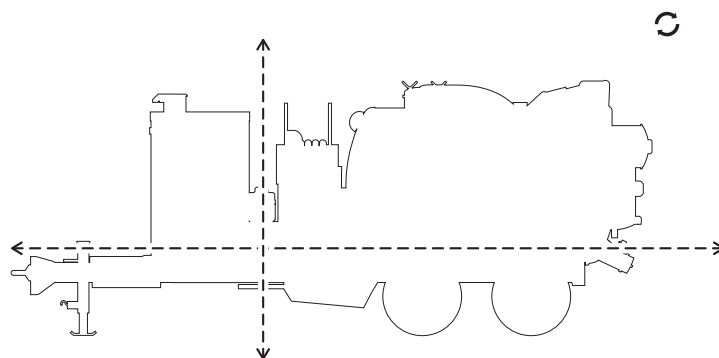
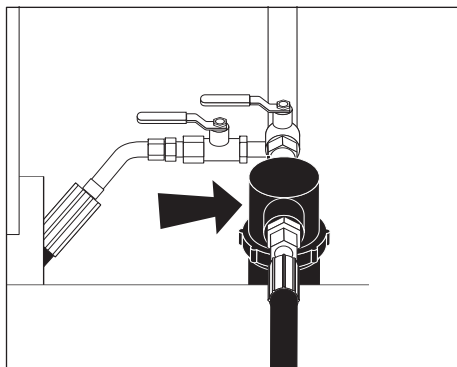
J08om042h.eps

1. Turn off engine and remove key.
2. Apply moderate thumb pressure to belt between pulleys, as shown.
3. Belt is properly tensioned when deflection is about 0.28-0.35" (7-9 mm).
4. If needed, loosen alternator bolts and pull alternator out until correct tension is reached.
5. Tighten alternator bolts.

**Adjust Water Pump Belt Tension**

J08om074h.eps

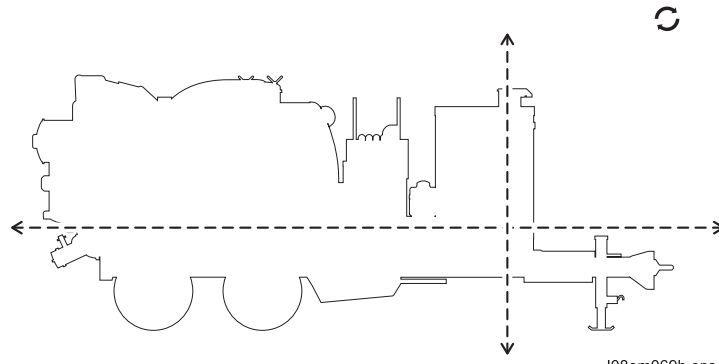
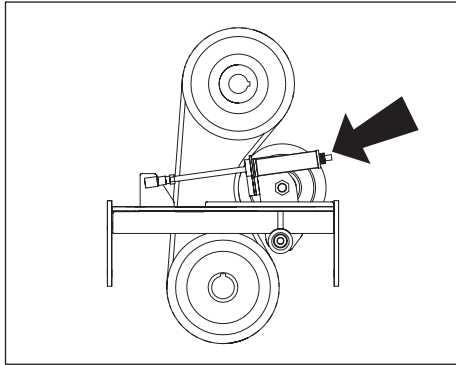
1. Turn off engine and remove key.
2. Apply moderate thumb pressure to belt between pulleys.
3. Belt is properly tensioned when deflection is about .2-.3" (5-8 mm).
4. If needed, loosen four bolts (2) and turn adjustment screw (3) clockwise or counterclockwise until tube (1) touches bracket.
5. Tighten four bolts.

**Change Water Pump Filter**

J08om073h.eps

1. Open filter housing.
2. Remove element and rinse housing thoroughly with water.
3. Replace element and close filter housing.

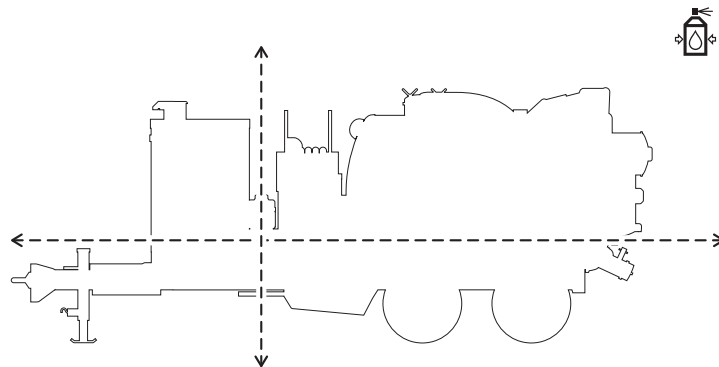
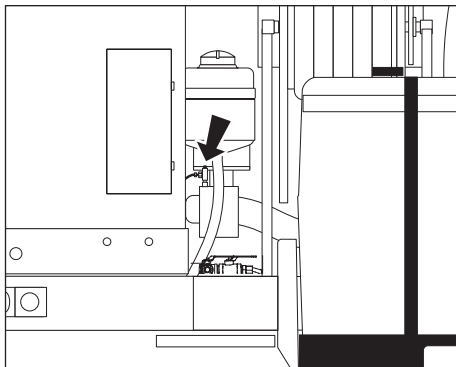
## Adjust Blower Belt Tension



1. Turn off engine and remove key.
2. Loosen adjustment nut (shown) until tube is loose.
3. Tighten adjustment nut until tube contacts both spring caps.
4. Continue tightening until flat corner of nut is up.
5. Turn nut 4 more times to tighten used belt and 5 more times to tighten new belt.

**NOTICE:** Over-tightening blower drive belts may result in premature blower shaft or engine bearing failure. Follow recommended procedure to ensure maximum component life.

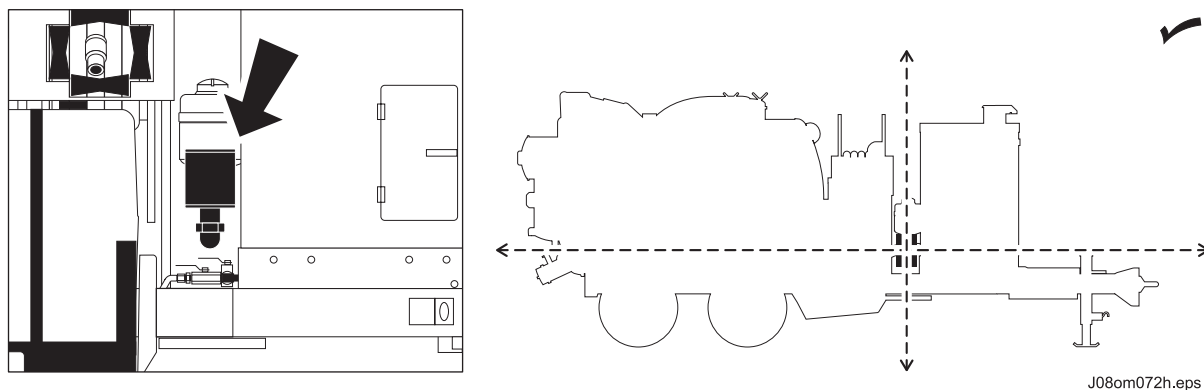
## Lube Blower for Long-term Storage



J08om065h.eps

Lubricate blower before long-term storage to help prevent rust and lockup.

1. Remove plug from fitting at filter.
2. Start engine.
3. Spray light oil into port and run unit for 1-2 minutes.
4. Turn off engine.

**Change Blower Relief Air Filter**

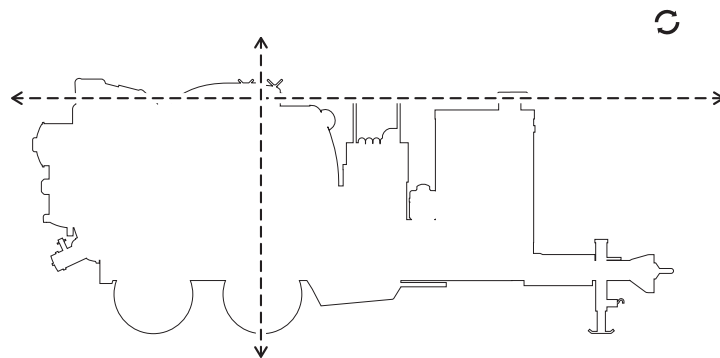
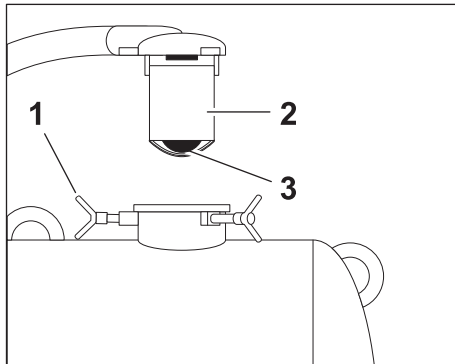
Check air filter whenever vacuum gauge goes over 16" (406 mm) of mercury. Change as needed.

**NOTICE:** Operating system above 16" (406 mm) of mercury may result in blower damage.

1. Remove clamp.
2. Remove filter and discard.
3. Install new filter.
4. Replace clamp.

## Debris Tank

### Clean Primary Shutoff Valve



J08om044h.eps



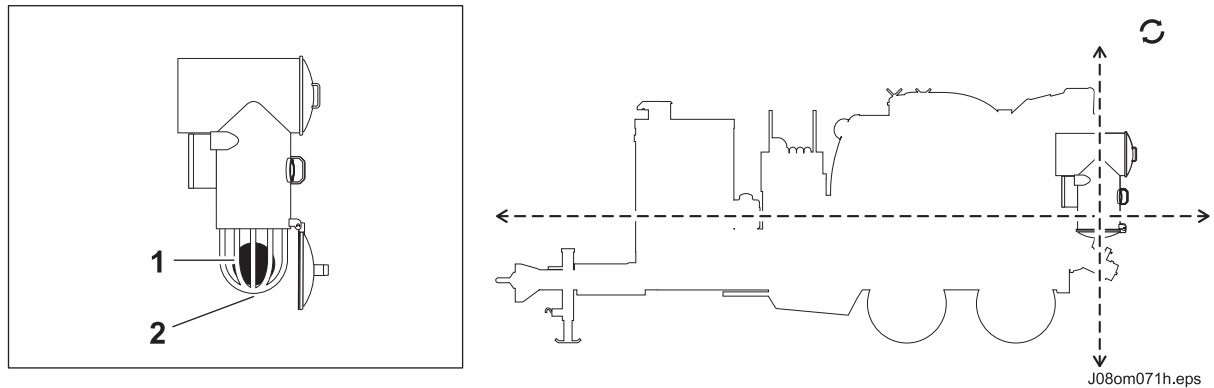
Clean primary shutoff valve as needed. Replace primary shutoff valve as needed.

#### To clean:

1. Open tank door. See “Drain Tank” on page 59.
2. Spray valve housing inside vacuum tank with high-pressure water.
3. Store water pressure hose.
4. Close tank door. See “Drain Tank” on page 59.

#### To remove:

1. Loosen three wingnuts (1) and pull out valve housing (2).
2. Remove ball (3).
3. Clean ball and housing with high-pressure water.
4. Replace ball and housing.
5. Tighten wingnuts.

**Clean Secondary Shutoff Valve**

Clean secondary shutoff valve as needed. Replace secondary shutoff valve as needed.

**To clean:**

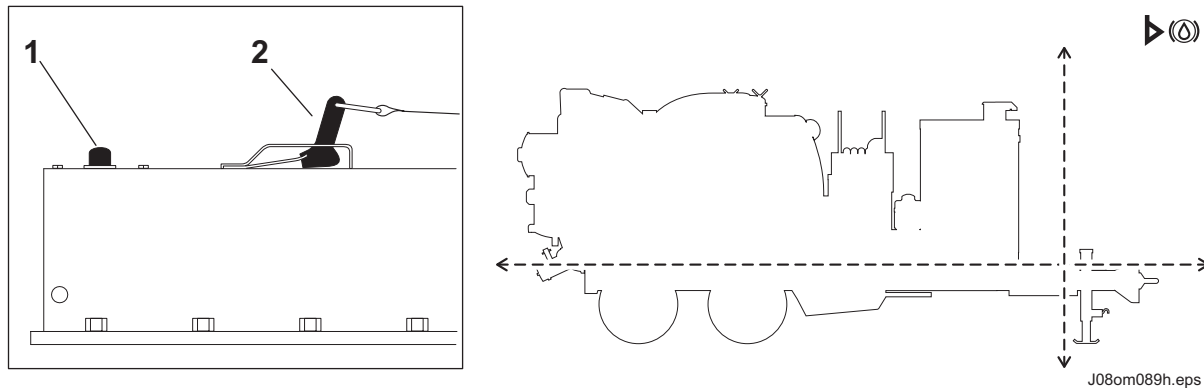
1. Loosen wingnuts and open water trap door.
2. Remove filter canister lid and remove filter element.
3. Drain water from element housing.
4. Spray valve housing and rubber seat inside water trap housing with high-pressure water.
5. Disconnect water pressure hose and store properly.
6. Replace water filter canister lid and close water trap door.
7. Tighten wingnuts.

**To remove:**

1. Open hinged water trap door.
2. Remove three fasteners inside water trap to remove ball housing.
3. Clean ball and housing with high pressure water.
4. Replace ball and housing.
5. Close water trap door and tighten wingnuts.

## Trailer

### Add Surge Brake Fluid



Add surge brake fluid at cap (1) as needed and bleed brakes.

1. Remove lever guide and flat emergency lever spring by removing two 5/16" hex head bolts and lock washers.
2. Using short strokes, pull forward on emergency lever (2) until brake fluid in master cylinder stops bubbling.
3. Attach bleeder hose to bleeder valve on one wheel and submerge other end of hose into a transparent container partially filled with brake fluid.
4. Loosen bleeder valve one turn and use emergency lever to pump master cylinder. Continue to pump the lever until bubbles no longer appear in brake fluid in container.

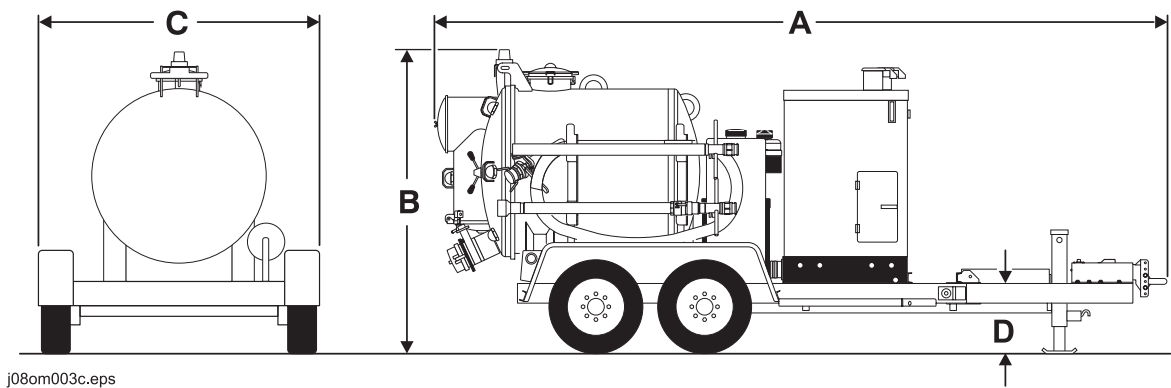
**NOTICE:** Check fluid level in master cylinder every 4-5 strokes and add fluid as necessary to keep master cylinder at least half full while bleeding brakes.

5. When bubbles stop, close bleeder valve and repeat process on remaining wheels.
6. After all wheels have been bled, fill master cylinder and attach cap securely.
7. Install emergency lever spring and lever guide using hex head bolts and lock washers.
8. Test brakes.
  - Pull emergency lever forward until it locks into its second notch.
  - Attempt to rotate all wheels in forward direction.
  - If any wheel rotates, adjust brakes.



Specifications

300



| Dimensions                     |        | U.S.      | Metric  |
|--------------------------------|--------|-----------|---------|
| A                              | Length | 201 in    | 5.1 m   |
| B                              | Height | 91 in     | 2.3 m   |
| C                              | Width  | 97.5 in   | 2.5 m   |
| Dry weight                     |        | 7150 lb   | 3243 kg |
| Weight with full tanks (water) |        | 10,350 lb | 4695 kg |

| Tank             | U.S.    | Metric |
|------------------|---------|--------|
| Capacity         | 300 gal | 1136 L |
| Length           | 66 in   | 1.7 m  |
| Diameter         | 50 in   | 1.3 m  |
| Drain valve size | 6 in    | 152 mm |
| Inlet valve size | 4 in    | 102 mm |

| Engine                                                   |                     | U.S.                | Metric   |
|----------------------------------------------------------|---------------------|---------------------|----------|
| Cummins B3.3, diesel                                     |                     |                     |          |
|                                                          | Cooling medium      | liquid              |          |
|                                                          | Injection           | direct              |          |
|                                                          | Number of cylinders | 4                   |          |
|                                                          | Displacement        | 199 in <sup>3</sup> | 3.3 L    |
|                                                          | Bore                | 3.74 in             | 95 mm    |
|                                                          | Stroke              | 4.53 in             | 115 mm   |
| Engine manufacturer's gross power rating (per SAE J1995) |                     | 60 hp               | 45 kW    |
| Estimated net power rating (per SAE 1349)                |                     | 56 hp               | 42 kW    |
| Rated engine speed                                       |                     | 2200 rpm            | 2200 rpm |

\* Exceeding these operating angles will cause engine damage. This DOES NOT IMPLY machine is stable to maximum angle of safe engine operation.

| Hydraulic system                |  | U.S.       | Metric  |
|---------------------------------|--|------------|---------|
| Pressure                        |  | 2500 psi   | 172 bar |
| Drive type                      |  | gear       |         |
| Tank lift cylinder size (2)     |  | 3 in       | 76 mm   |
| Maximum tilt angle              |  | 45°        | 45°     |
| Time to tilt fully up (empty)   |  | 10 seconds |         |
| Time to tilt fully down (empty) |  | 12 seconds |         |

| Battery                                                       |
|---------------------------------------------------------------|
| SAE res. cap. 110 min; SAE cold crank @ 0°F (-18°C) 800A, 12V |

| Noise levels                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| Operator 82 dBA sound pressure per ISO 6394, at operator ear 10 ft (3 m) behind vacuum tank.<br>Exterior 108 dBA sound power per ISO 6393. |

| <b>Vacuum system</b>        | <b>U.S.</b>         | <b>Metric</b>            |
|-----------------------------|---------------------|--------------------------|
| Drive type                  | belt                |                          |
| Displacement                | 900 cfm             | 25.5 m <sup>3</sup> /min |
| Maximum vacuum              | 16 in Hg            | 405 mm Hg                |
| Vacuum tank door diameter   | 52 in               | 1.3 m                    |
| Drain valve size            | 6 in                | 152 mm                   |
| Inlet valve size            | 4 in                | 102 mm                   |
| Primary shutoff valve size  | 12 in               | 305 mm                   |
| Filter type                 | washable polyester  |                          |
| Filter area                 | 130 ft <sup>2</sup> | 12 m <sup>2</sup>        |
| Water trap capacity         | 8 gal               | 30.3 L                   |
| Suction hose size           | 4 in                | 102 mm                   |
| Suction hose length (total) | 50 ft               | 15.2 m                   |



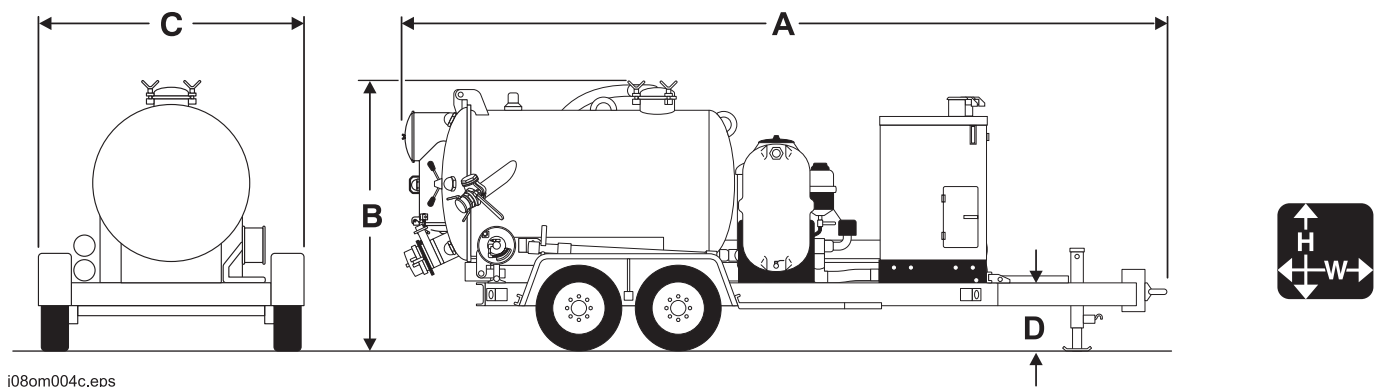
| <b>Water pump system</b>            | <b>U.S.</b>                  | <b>Metric</b> |
|-------------------------------------|------------------------------|---------------|
| Maximum pressure                    | 3500 psi                     | 241 bar       |
| Flow                                | 5.2 gpm                      | 24 L/min      |
| Hose reel capacity with water lance | 50 ft                        | 15.2 m        |
| Antifreeze                          | 50/50 water/antifreeze mix   |               |
| Clutch type                         | electric with auto de-clutch |               |

| <b>Fluid capacities</b> | <b>U.S.</b> | <b>Metric</b> |
|-------------------------|-------------|---------------|
| Engine oil with filter  | 9 qt        | 8.5 L         |
| Fuel tank               | 19 gal      | 72 L          |
| Vacuum pump             | 1.5 qt      | 1.4 L         |
| Hydraulic reservoir     | 15 gal      | 57 L          |
| Water pump              | 41 oz       | 1.2 L         |
| Water tank              | 80 gal      | 303 L         |

| Trailer     |                                    | U.S.                        | Metric         |
|-------------|------------------------------------|-----------------------------|----------------|
| Dimensions  |                                    |                             |                |
|             | Clearance (at jack foot pad)       | 12 in                       | 305 mm         |
|             | Adj. coupler height                | 18-24 in                    | 457-610 mm     |
|             | Width between fenders              | 76 in                       | 1.9 m          |
|             | Width outside fenders              | 96 in                       | 2.4 m          |
| General     |                                    |                             |                |
|             | Number of axles                    | 2                           |                |
|             | Coupler (square mount drawbar)     | 3 in or 2.5 in              | 76 mm or 64 mm |
|             | Type of brakes                     | electric or hydraulic surge |                |
|             | Lug nut torque                     | 95 ft•lb                    | 129 N•m        |
|             | Hitch bolt torque                  | 200 ft•lb                   | 271 N•m        |
|             | Electrical system                  | 12V DC                      |                |
| Tire        |                                    |                             |                |
|             | LT215/85R16 load range E           | 80 psi                      | 5.5 bar        |
| Load rating |                                    |                             |                |
|             | Tongue weight (empty)              | 1200 lb                     | 544 kg         |
|             | Tongue weight (full water)         | 1125 lb                     | 510 kg         |
|             | Max tongue load                    | 1500 lb                     | 680 kg         |
|             | GVWR (gross vehicle weight rating) | 9950 lb                     | 4513 kg        |
|             | GAWR (gross axle weight rating)    | 9000 lb                     | 4082 kg        |

Load ratings for speeds up to 65 mph (104 km/h).

800



| Dimensions                     |        | U.S.      | Metric  |
|--------------------------------|--------|-----------|---------|
| A                              | Length | 263 in    | 6.7 m   |
| B                              | Height | 92 in     | 2.3 m   |
| C                              | Width  | 97.5 in   | 2.5 m   |
| Dry weight                     |        | 8510 lb   | 3860 kg |
| Weight with full tanks (water) |        | 16,850 lb | 7643 kg |

| Tank             | U.S.    | Metric |
|------------------|---------|--------|
| Capacity         | 800 gal | 3028 L |
| Length           | 98 in   | 2.5 m  |
| Diameter         | 50 in   | 1.3 m  |
| Drain valve size | 6 in    | 152 mm |
| Inlet valve size | 4 in    | 102 mm |

| Engine                                                   |                     | U.S.                | Metric   |
|----------------------------------------------------------|---------------------|---------------------|----------|
| Cummins B3.3, diesel                                     |                     |                     |          |
|                                                          | Cooling medium      | liquid              |          |
|                                                          | Injection           | direct              |          |
|                                                          | Number of cylinders | 4                   |          |
|                                                          | Displacement        | 199 in <sup>3</sup> | 3.3 L    |
|                                                          | Bore                | 3.74 in             | 95 mm    |
|                                                          | Stroke              | 4.53 in             | 115 mm   |
| Engine manufacturer's gross power rating (per SAE J1995) |                     | 60 hp               | 45 kW    |
| Estimated net power rating (per SAE 1349)                |                     | 56 hp               | 42 kW    |
| Rated engine speed                                       |                     | 2200 rpm            | 2200 rpm |

\* Exceeding these operating angles will cause engine damage. This DOES NOT IMPLY machine is stable to maximum angle of safe engine operation.

| Hydraulic system                |  | U.S.       | Metric  |
|---------------------------------|--|------------|---------|
| Pressure                        |  | 2500 psi   | 172 bar |
| Drive type                      |  | gear       |         |
| Tank lift cylinder size (1)     |  | 3 in       | 76 mm   |
| Maximum tilt angle              |  | 45°        | 45°     |
| Time to tilt fully up (empty)   |  | 10 seconds |         |
| Time to tilt fully down (empty) |  | 12 seconds |         |

| Battery                                                       |
|---------------------------------------------------------------|
| SAE res. cap. 110 min; SAE cold crank @ 0°F (-18°C) 800A, 12V |

| Noise levels                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| Operator 82 dBA sound pressure per ISO 6394, at operator ear 10 ft (3 m) behind vacuum tank.<br>Exterior 108 dBA sound power per ISO 6393. |

| <b>Vacuum system</b>        | <b>U.S.</b>         | <b>Metric</b>            |
|-----------------------------|---------------------|--------------------------|
| Drive type                  | belt                |                          |
| Displacement                | 900 cfm             | 25.5 m <sup>3</sup> /min |
| Maximum vacuum              | 16 in Hg            | 405 mm Hg                |
| Vacuum tank door diameter   | 52 in               | 1.3 m                    |
| Drain valve size            | 6 in                | 152 mm                   |
| Inlet valve size            | 4 in                | 102 mm                   |
| Primary shutoff valve size  | 12 in               | 305 mm                   |
| Filter type                 | washable polyester  |                          |
| Filter area                 | 130 ft <sup>2</sup> | 12 m <sup>2</sup>        |
| Water trap capacity         | 8 gal               | 30.3 L                   |
| Suction hose size           | 4 in                | 102 mm                   |
| Suction hose length (total) | 50 ft               | 15.2 m                   |



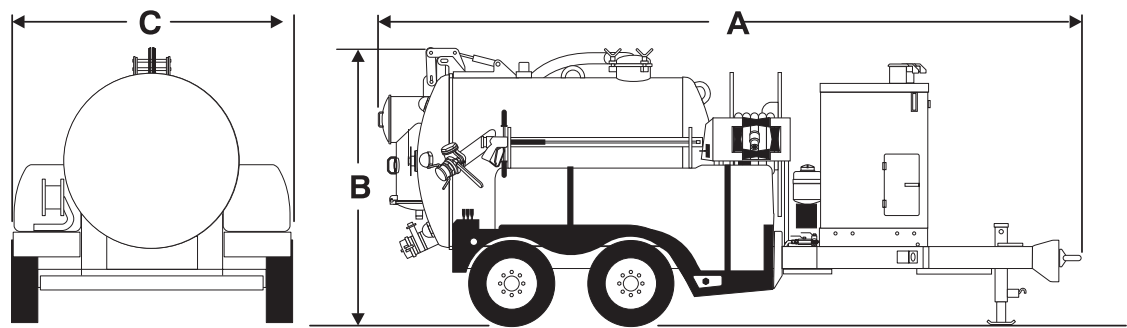
| <b>Water pump system</b>            | <b>U.S.</b>                  | <b>Metric</b> |
|-------------------------------------|------------------------------|---------------|
| Maximum pressure                    | 3500 psi                     | 241 bar       |
| Flow                                | 5.2 gpm                      | 24 L/min      |
| Hose reel capacity with water lance | 50 ft                        | 15.2 m        |
| Antifreeze                          | 50/50 water/antifreeze mix   |               |
| Clutch type                         | electric with auto de-clutch |               |

| <b>Fluid capacities</b> | <b>U.S.</b> | <b>Metric</b> |
|-------------------------|-------------|---------------|
| Engine oil with filter  | 9 qt        | 8.5 L         |
| Fuel tank               | 19 gal      | 72 L          |
| Vacuum pump             | 1.5 qt      | 1.4 L         |
| Hydraulic reservoir     | 15 gal      | 57 L          |
| Water pump              | 41 oz       | 1.2 L         |
| Water tank              | 200 gal     | 757 L         |

| Trailer     |                                    | U.S.           | Metric         |
|-------------|------------------------------------|----------------|----------------|
| Dimensions  |                                    |                |                |
|             | Clearance (at jack foot pad)       | 12 in          | 305 mm         |
|             | Adj. coupler height                | 17-26 in       | 432-660 mm     |
|             | Width between fenders              | 80.5 in        | 2 m            |
|             | Width outside fenders              | 100.5 in       | 2.6 m          |
| General     |                                    |                |                |
|             | Number of axles                    | 2              |                |
|             | Coupler (square mount drawbar)     | 3 in or 2.5 in | 76 mm or 64 mm |
|             | Type of brakes                     | electric       |                |
|             | Lug nut torque                     | 300 ft•lb      | 407 N•m        |
|             | Hitch bolt torque                  | 200 ft•lb      | 271 N•m        |
|             | Electrical system                  | 12V DC         |                |
| Tire        |                                    |                |                |
|             | LT215/75R17.5 load range H         | 125 psi        | 8.6 bar        |
| Load rating |                                    |                |                |
|             | Tongue weight (empty)              | 2240 lb        | 1016 kg        |
|             | Tongue weight (full water)         | 2280 lb        | 1034 kg        |
|             | Max tongue load                    | 2700 lb        | 1225 kg        |
|             | GVWR (gross vehicle weight rating) | 18,000 lb      | 8165 kg        |
|             | GAWR (gross axle weight rating)    | 16,000 lb      | 7257 kg        |

Load ratings for speeds up to 65 mph (104 km/h).

1200



j08om014h.eps

| Dimensions                     |        | U.S.      | Metric    |
|--------------------------------|--------|-----------|-----------|
| A                              | Length | 245 in    | 6.2 m     |
| B                              | Height | 99 in     | 2.5 m     |
| C                              | Width  | 100.5 in  | 2.55 m    |
| Dry weight                     |        | 11,230 lb | 5094 kg   |
| Weight with full tanks (water) |        | 24,480 lb | 11 104 kg |

| Tank             | U.S.     | Metric |
|------------------|----------|--------|
| Capacity         | 1200 gal | 4542 L |
| Length           | 106 in   | 2.7 m  |
| Diameter         | 60 in    | 1.5 m  |
| Drain valve size | 6 in     | 152 mm |
| Inlet valve size | 4 in     | 102 mm |

| Engine                                                   |                     | U.S.                | Metric   |
|----------------------------------------------------------|---------------------|---------------------|----------|
| Cummins B3.3, diesel                                     |                     |                     |          |
|                                                          | Cooling medium      | liquid              |          |
|                                                          | Injection           | direct              |          |
|                                                          | Number of cylinders | 4                   |          |
|                                                          | Displacement        | 199 in <sup>3</sup> | 3.3 L    |
|                                                          | Bore                | 3.74 in             | 95 mm    |
|                                                          | Stroke              | 4.53 in             | 115 mm   |
| Engine manufacturer's gross power rating (per SAE J1995) |                     | 60 hp               | 45 kW    |
| Estimated net power rating (per SAE 1349)                |                     | 56 hp               | 42 kW    |
| Rated engine speed                                       |                     | 2200 rpm            | 2200 rpm |

\* Exceeding these operating angles will cause engine damage. This DOES NOT IMPLY machine is stable to maximum angle of safe engine operation.

| Hydraulic system                |  | U.S.       | Metric  |
|---------------------------------|--|------------|---------|
| Pressure                        |  | 2500 psi   | 172 bar |
| Drive type                      |  | gear       |         |
| Tank lift cylinder size (1)     |  | 4 in       | 102 mm  |
| Maximum tilt angle              |  | 50°        | 50°     |
| Time to tilt fully up (empty)   |  | 19 seconds |         |
| Time to tilt fully down (empty) |  | 26 seconds |         |

| Battery                                                       |
|---------------------------------------------------------------|
| SAE res. cap. 110 min; SAE cold crank @ 0°F (-18°C) 800A, 12V |

| Noise levels                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------|
| Operator 82 dBA sound pressure per ISO 6394, at operator ear 10 ft (3 m) behind vacuum tank.<br>Exterior 108 dBA sound power per ISO 6393. |

| <b>Vacuum system</b>        | <b>U.S.</b>         | <b>Metric</b>            |
|-----------------------------|---------------------|--------------------------|
| Drive type                  | belt                |                          |
| Displacement                | 900 cfm             | 25.5 m <sup>3</sup> /min |
| Maximum vacuum              | 16 in Hg            | 405 mm Hg                |
| Vacuum tank door diameter   | 60 in               | 1.5 m                    |
| Drain valve size            | 6 in                | 152 mm                   |
| Inlet valve size            | 4 in                | 102 mm                   |
| Primary shutoff valve size  | 12 in               | 305 mm                   |
| Filter type                 | washable polyester  |                          |
| Filter area                 | 130 ft <sup>2</sup> | 12 m <sup>2</sup>        |
| Water trap capacity         | 8 gal               | 30.3 L                   |
| Suction hose size           | 4 in                | 102 mm                   |
| Suction hose length (total) | 100 ft              | 30.5 m                   |



| <b>Water pump system</b>            | <b>U.S.</b>                  | <b>Metric</b> |
|-------------------------------------|------------------------------|---------------|
| Maximum pressure                    | 3500 psi                     | 241 bar       |
| Flow                                | 5.2 gpm                      | 24 L/min      |
| Hose reel capacity with water lance | 100 ft                       | 30.5 m        |
| Antifreeze                          | 50/50 water/antifreeze mix   |               |
| Clutch type                         | electric with auto de-clutch |               |

| <b>Fluid capacities</b>               | <b>U.S.</b> | <b>Metric</b> |
|---------------------------------------|-------------|---------------|
| Engine oil with filter                | 9 qt        | 8.5 L         |
| Fuel tank                             | 19 gal      | 72 L          |
| Vacuum pump                           | 1.5 qt      | 1.4 L         |
| Hydraulic reservoir                   | 15 gal      | 57 L          |
| Water pump                            | 41 oz       | 1.2 L         |
| Water tanks (2 @ 250 gal [946L] each) | 500 gal     | 1893 L        |

| Trailer     |                                    | U.S.           | Metric         |
|-------------|------------------------------------|----------------|----------------|
| Dimensions  |                                    |                |                |
|             | Clearance (at jack foot pad)       | 12 in          | 305 mm         |
|             | Adj. coupler height                | 18-27 in       | 457-686 mm     |
|             | Width between fenders              | 50 in          | 1.3 m          |
|             | Width outside fenders              | 100.5 in       | 2.6 m          |
| General     |                                    |                |                |
|             | Number of axles                    | 2              |                |
|             | Coupler (square mount drawbar)     | 3 in or 2.5 in | 76 mm or 64 mm |
|             | Type of brakes                     | electric       |                |
|             | Lug nut torque                     | 200 ft•lb      | 271 N•m        |
|             | Hitch bolt torque                  | 200 ft•lb      | 271 N•m        |
|             | Electrical system                  | 12V DC         |                |
| Tire        |                                    |                |                |
|             | LT235/85R16 load range G           | 110 psi        | 7.6 bar        |
| Load rating |                                    |                |                |
|             | Tongue weight (empty)              | 2450 lb        | 1111 kg        |
|             | Tongue weight (full water)         | 3100 lb        | 1406 kg        |
|             | Max tongue load                    | 3500 lb        | 1588 kg        |
|             | GVWR (gross vehicle weight rating) | 26,000 lb      | 11 793 kg      |
|             | GAWR (gross axle weight rating)    | 23,400 lb      | 10 614 kg      |

Load ratings for speeds up to 65 mph (104 km/h).

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.

# Support

## 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, service, and repair of your equipment.

### Ditch Witch Training

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

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# Warranty

## Ditch Witch Equipment and Parts Limited Warranty Policy

Subject to the limitations 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 Charles Machine Works, Inc. (CMW) that fail due to a defect in material or workmanship within one (1) year of first commercial use (Exception: 2 years for all SK attachments). 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.

### Exclusions from Product Warranty

- Wear-related failure of parts subject to ground contact including, but not limited to, digging teeth, digging chains, sprockets, backhoe buckets, plow blades, drill pipe, drill bits, backreamers, and swivels.
- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse, 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 CMW or its authorized dealer. CMW will provide the location of its inspection facilities or its nearest authorized dealer upon inquiry. CMW 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 CMW.

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 CMW's Product Support department, P.O. Box 66, Perry, OK 73077-0066, or contact your local Ditch Witch dealer.

First version: 1/91; Latest version: 1/03

**A Note To  
Ditch Witch  
Equipment Owners:**

If your equipment was purchased through a Ditch Witch dealer, there is no need to read further.

However, if you purchased from any other source, please fill out the form on the reverse side and return it to us.

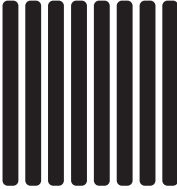
This will enable you to receive updates on this equipment as well as information on new products of interest.

Thanks for using Ditch Witch equipment.

(Please Fold Along This Line And Seal At Bottom With Tape)



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**  
FIRST CLASS      PERMIT NO 23      PERRY OKLAHOMA

POSTAGE WILL BE PAID BY

**The Charles Machine Works, Inc.  
P.O. Box 66  
Perry, Oklahoma 73077-9989**



**A Note To  
Ditch Witch  
Equipment Owners:**

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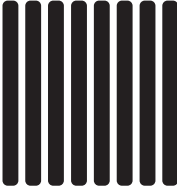
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NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**  
FIRST CLASS      PERMIT NO 23      PERRY OKLAHOMA

POSTAGE WILL BE PAID BY

**The Charles Machine Works, Inc.  
P.O. Box 66  
Perry, Oklahoma 73077-9989**



**Ditch Witch® Registration Card**

Please Type or Print All Information

|                                |                |        |
|--------------------------------|----------------|--------|
| Purchaser's Company Name       |                |        |
| Attention                      |                |        |
| Street Address or P.O. Box     |                |        |
| City                           | County         |        |
| State                          | Zip            | Nation |
| (       )                      |                |        |
| Phone Number With Area Code    |                |        |
| Model                          | Serial Number  |        |
| Attachments/Accessories        | Serial Numbers |        |
| Attachments/Accessories        | Serial Numbers |        |
| Attachments/Accessories        | Serial Numbers |        |
| Name of Ditch Witch Dealership |                |        |
| Your Signature                 |                |        |

**Ditch Witch® Registration Card**

Please Type or Print All Information

|                                |                |        |
|--------------------------------|----------------|--------|
| Purchaser's Company Name       |                |        |
| Attention                      |                |        |
| Street Address or P.O. Box     |                |        |
| City                           | County         |        |
| State                          | Zip            | Nation |
| (       )                      |                |        |
| Phone Number With Area Code    |                |        |
| Model                          | Serial Number  |        |
| Attachments/Accessories        | Serial Numbers |        |
| Attachments/Accessories        | Serial Numbers |        |
| Attachments/Accessories        | Serial Numbers |        |
| Name of Ditch Witch Dealership |                |        |
| Your Signature                 |                |        |

## Service Record

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