

# 2018 TANKER



Freightliner/US Tanker Company

# Specifications

- Engine - 450HP 12.8L Detroit Diesel DD13
- Transmission - Allison 4000 EVS Automatic w/ PTO
- Brakes - Air disc; all axles
- Front Axle Rating - 20,000 pounds
- Intermediate and Rear Axle Rating - 23,000 pounds
- Approximate Actual Vehicle Weight with full tank - **TBD**
- Unit Height - 9' 9"
- Unit Length - 34' 1" with 242" wheelbase
- Unit Width – body 99" ; mirror to mirror: 117"



# Specifications

- Tire Pressure - 130psi front / 105psi rear
- Coolant - 13 gallons OAT Coolant
- Engine Oil - 9 gallons 15w40
- Transmission Fluid - 34 quarts synthetic ATF
- Power Steering Fluid - 4 quarts Dexron III
- Fuel Tank - 50 gallons diesel
- Diesel Exhaust Fluid - 6 gallons DEF
- Fire Pump – 1500gpm Hale Single Stage Qmax
- Water Tank – 3,500 gallons



# DO NOT MOVE VEHICLE

- Two warning lights – headliner and console
- DO NOT move vehicle if either light is illuminated
- Check for:
  - ✓ Open compartments
  - ✓ Extended dump chutes
  - ✓ Extended folding tank trays



# Transmission Fluid Check



- The Transmission Fluid level may be checked in the cab through the keypad selector.
- ✓ The engine must be running at idle and the unit must be on level ground.
- ✓ The engine must idle at least five minutes from a cold start.
- ✓ The transmission must heat to at least 140 degrees F

# Transmission Fluid Check

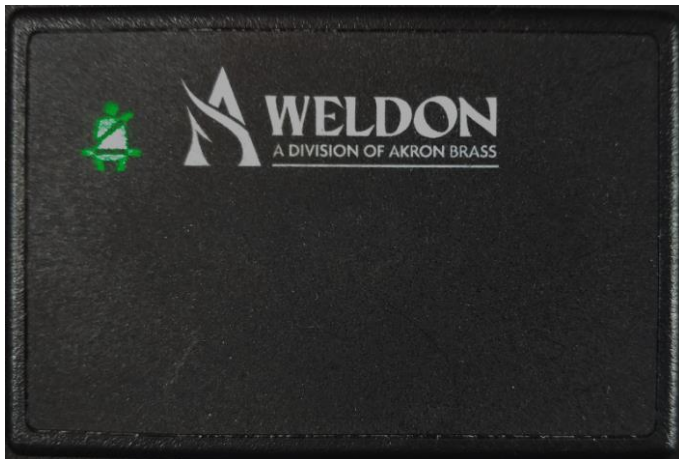


1. Simultaneously push the up and down arrows on the keypad.
2. "oL" will display on the screen
3. oL will be followed by OK, -1 thru -7, or +1 thru +7.
  - Negative indicates underfill
  - Positive indicates overfill
  - Numeral indicates the number of quarts
4. Any other message indicates a problem and CMF should be notified.
  - Always confirm the digital reading on the dipstick BEFORE adding fluid.
  - ONLY use **TranSynd** Fluid.

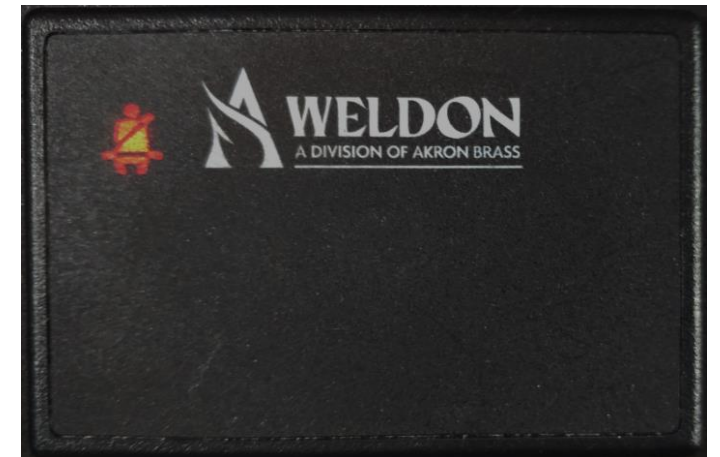


# Seat Belt Indicator

**Occupant Belted  
(displays green)**



**Occupant NOT Belted  
(displays red)**



# Reverse Camera

- Camera located below arrow stick on rear
  - Displayed on screen on center headliner





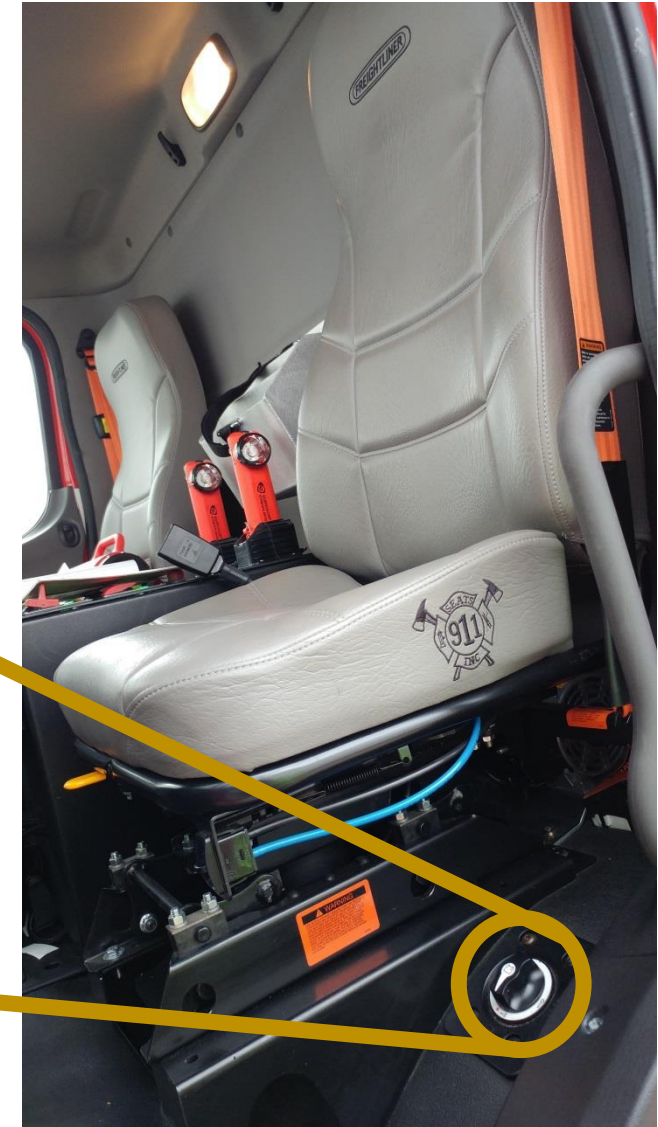
# Side Cameras

- Camera located forward of the intermediate axle on both sides
  - Camera looks rearward
  - Activated by engaging respective turn signal
  - Displayed on screen in cab center headliner



# Battery Master Switch

- Located on floor next to driver's seat
  - ✓ Must be on for ANY electrical power



# Chassis Controls



# Chassis Controls



# Chassis Controls

Automatic  
Traction  
Control

Manual  
Regeneration/Regen  
Inhibit

Shutdown Override  
Delays an emergency shutdown by  
the ECM to allow driving to a safe  
parking area



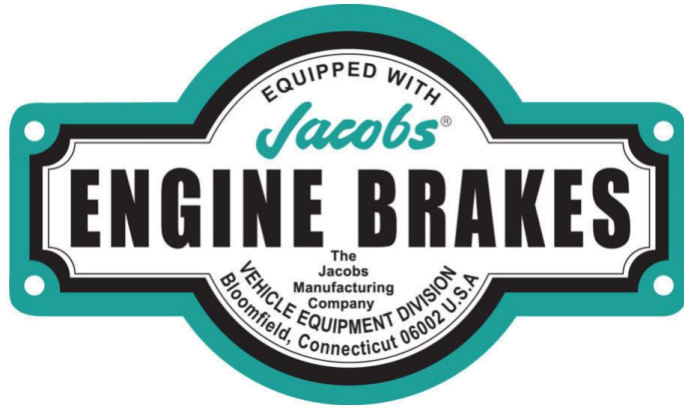
Engine Brake

(3 position switch)

- Up – High
- Center – Low
- Down - OFF

Inter-Axle Lock

# Auxiliary Braking Device



## CAUTION

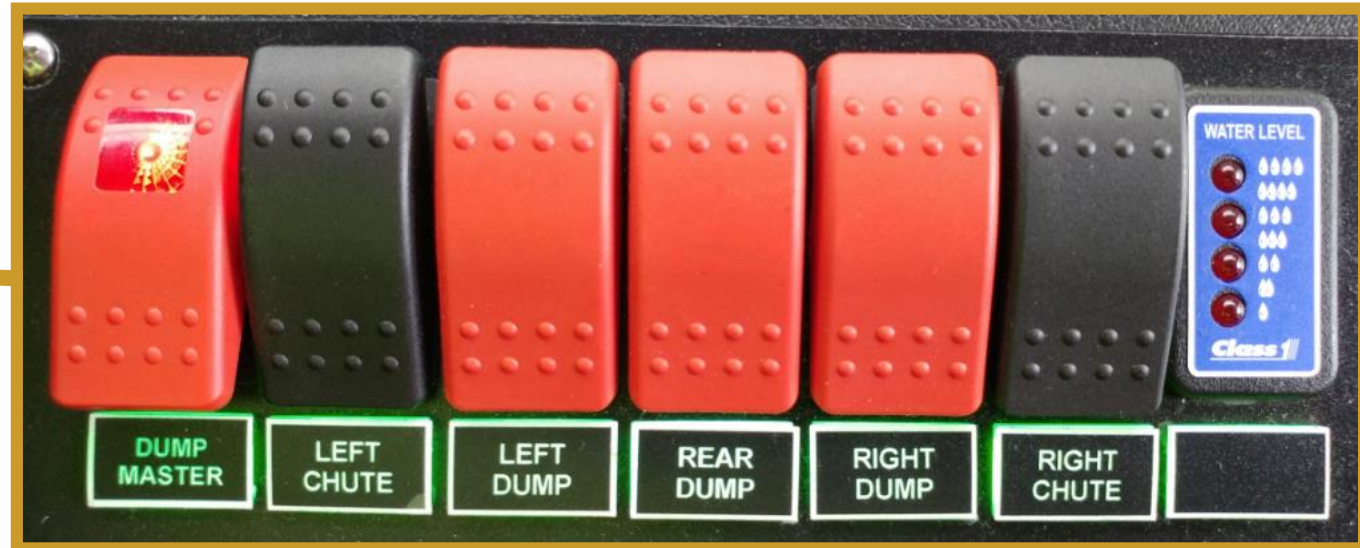
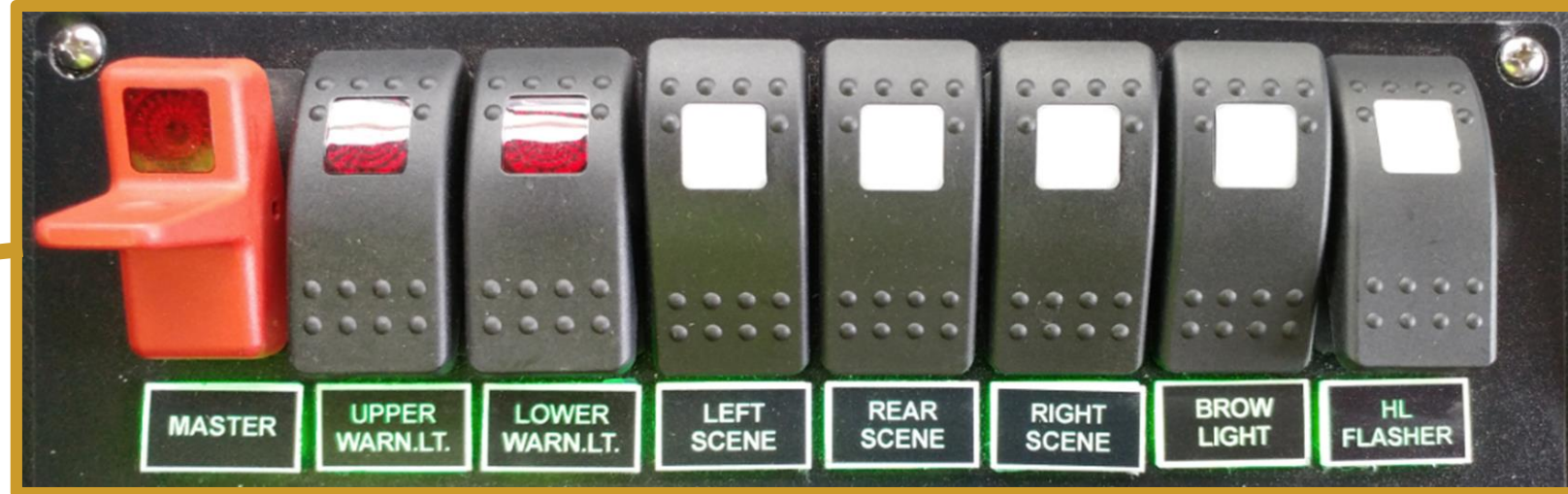
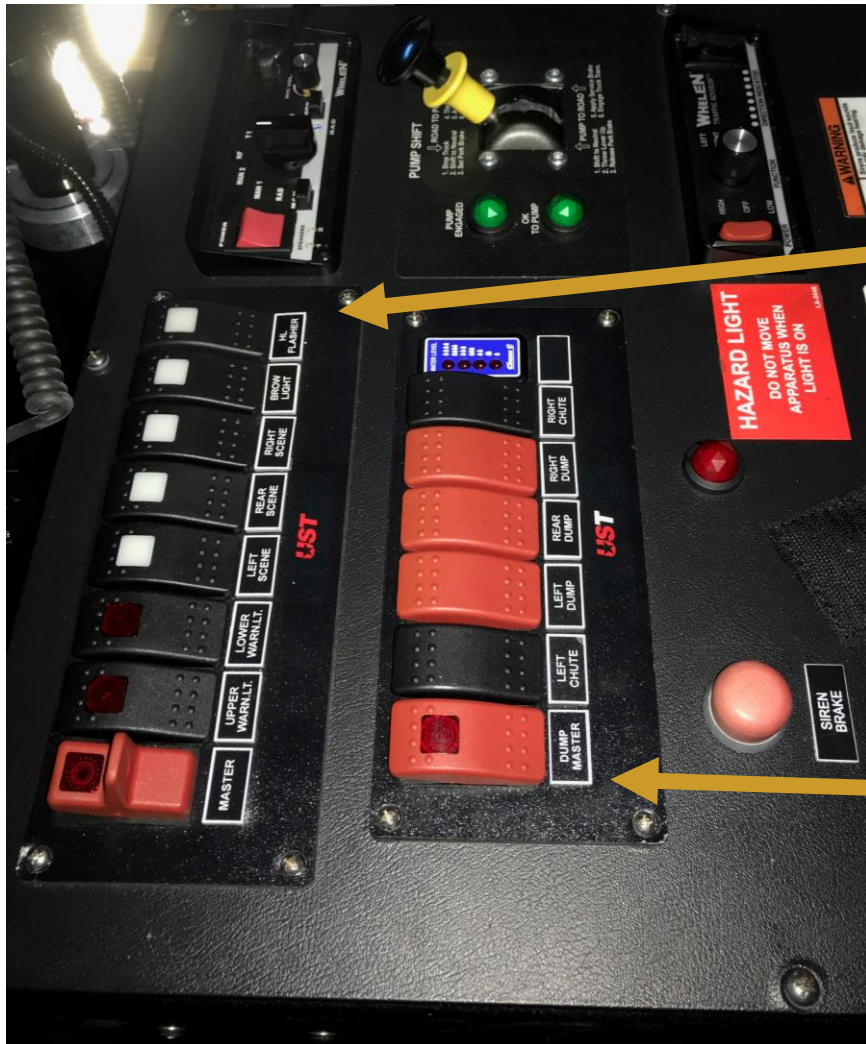
This unit is equipped with an Engine Brake.

The Engine Brake will not be used in low traction or slippery conditions.

- 3 position switch
- Up – High
  - Center – Low
  - Down - OFF

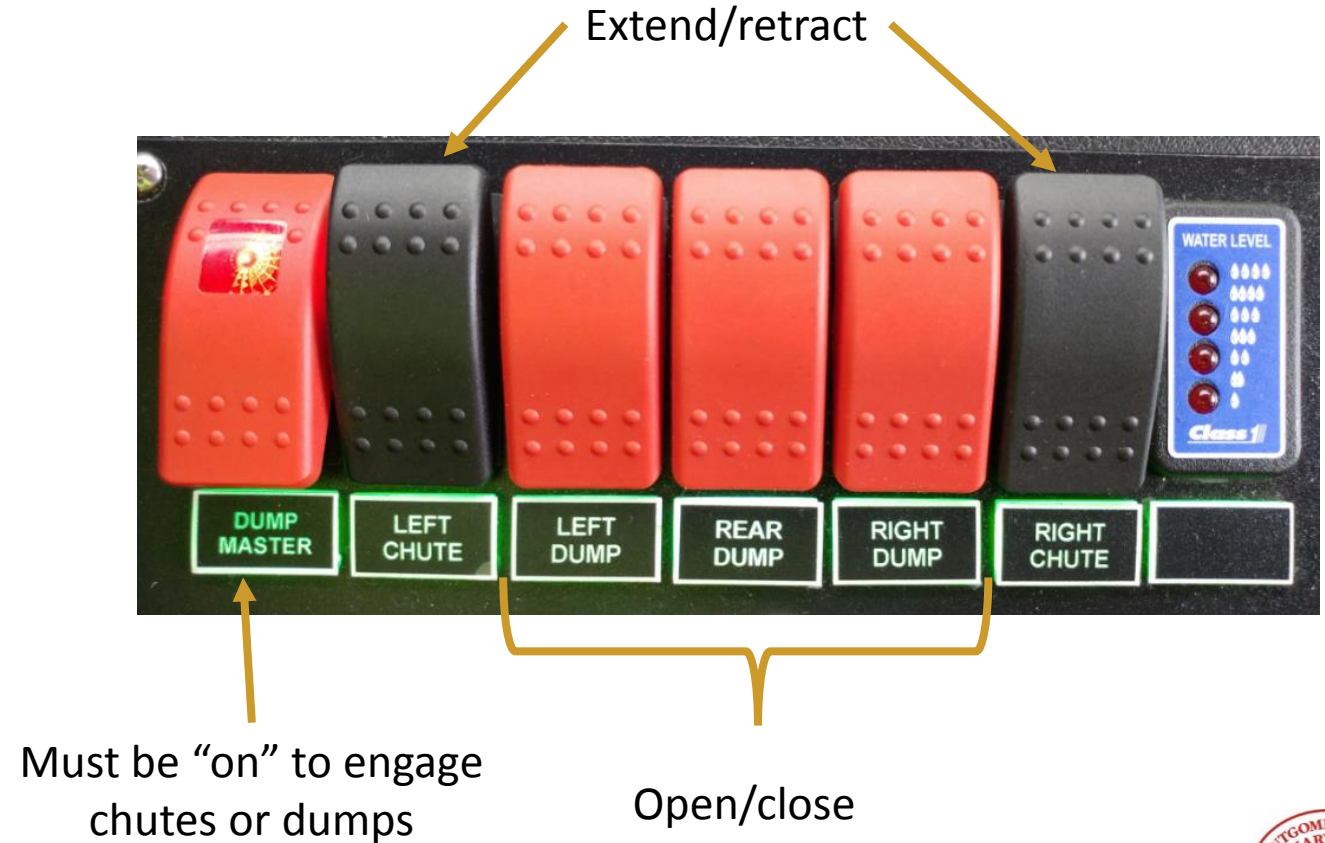


# Auxiliary Function Controls



# Dump Valve Controls - Cab

- Dump Master MUST be on to engage the in-cab or exterior controls
- Rear dump DOES NOT extend
- Side dumps are dual action
  1. Press black momentary switch to extend/retract respective chute
  2. Press red switch to open/close respective dump valve





# Dump Valve Controls - Body

- Each dump valve has a set of controls on the vehicle exterior
  - Side dump controls are located on the rear of the vehicle
  - Rear dump control is located on driver side of the vehicle
- Dump Master switch in cab **MUST** be ON



# Auxiliary Function Controls

Electronic  
Siren  
Control



Traffic  
Advisor  
Control

## Pump Transfer

1. Stop Vehicle
2. Shift to Neutral
3. Set Parking Brake
4. Shift Lever Down
5. Engage Service Brake
6. Place in Drive




# Engine Aftertreatment

- Enables compliance with EPA emissions standards – emergency vehicles are NOT exempt
- After 2006, all diesel exhaust systems have a particulate filter and associated regeneration system
  - Diesel Particulate Filter (DPF) captures soot and ash
  - Regeneration burns off the soot and ash that accumulates
- After 2009, aftertreatment systems include Diesel Exhaust Fluid (DEF) for additional treatment of exhaust gases
- There are two operator interventions necessary with these systems:
  - Active Regeneration – aka “parked” regeneration
  - Refilling the DEF tank



# Engine Aftertreatment

- DPF/DEF Warning Lights

IMPORTANT	
<p>DPF Regen Needed</p> 	<ul style="list-style-type: none"><li>• Diesel Particulate Filter (DPF) regeneration is needed.</li><li>• If flashing, regenerate as soon as possible. Engine derate possible.</li></ul>
<p>Hot Exhaust</p> 	<ul style="list-style-type: none"><li>• Hot exhaust can cause fire.</li><li>• Keep flammables and people away from exhaust.</li></ul>
<p>DEF Refill Needed</p> 	<ul style="list-style-type: none"><li>• Diesel Exhaust Fluid (DEF) level is low. Engine derate likely.</li><li>• Refill tank with certified DEF.</li></ul>
<p>See operator's manual or glove compartment card for complete instructions. 24-01656-000</p>	

# Diesel Particulate Filter



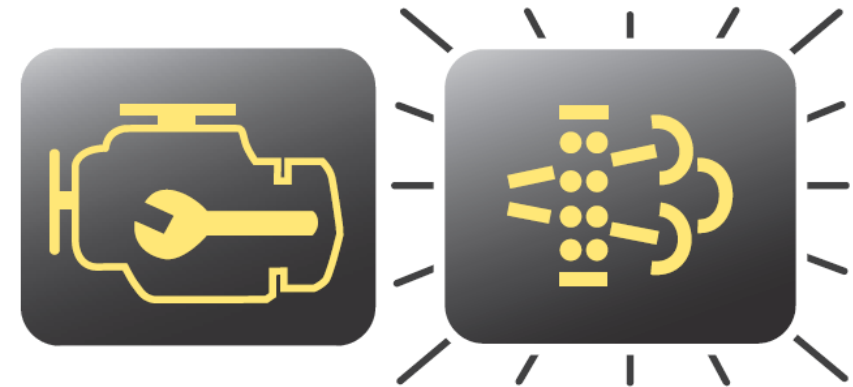
## Aftertreatment Diesel Particulate Filter

- Indicates a regeneration is needed – passive or active
- When flashing, regeneration is more urgently needed



## High Exhaust System Temperature

- Does not signify any need for service – regeneration occurs at high temperatures
- Keep the exhaust pipe outlet away from combustibles



## Flashing DPF Light + Check Engine

- Regeneration is needed immediately
- Active regeneration is required

# Diesel Particulate Filter

## Passive Regeneration

- Occurs automatically as needed when driving over 40mph
  - Does not require any action on the part of the driver
- It is unlikely that MCFRS apparatus will drive enough highway miles for Passive Regeneration to complete it's cycle



# Diesel Particulate Filter

## Active Regeneration – “parked regen”

1. DPF lamp illuminates or flashes
2. Determine a suitable location to park the apparatus
  - Away from combustibles or items that could be damaged by exhaust heat – need at least 5 feet of clearance
  - Outdoors and NOT connected to the PlymoVent
3. After parking the unit, engage the manual regeneration
  - Rocker switch on dashboard
  - Motor rpm automatically increases to approximately 1100rpm
4. The driver must remain with the vehicle during regeneration
  - Duration varies by amount of soot in the DPF – 5 to 20 minutes

The regeneration switch is located in the center of the dash below the Engine Brake switch.



# Diesel Particulate Filter

- Regeneration will stop:
  - Automatically when the motor controls sense the particulate filter is cleaned
  - Manually if the brake pedal is depressed
- Unit may remain in service during regen
- Regen will not engage when other vehicle functions are in use, i.e. pump, PTO, hydraulics
- Vehicle exhaust components will remain very hot following the regen process
  - High temperature light will illuminate





# Diesel Exhaust Fluid (DEF)

- Non-hazardous solution of 32.5% urea and 67.5% de-ionized water used in post-2009 diesel vehicles
- DEF is sprayed into the exhaust stream of diesel vehicles to break down NOx emissions into nitrogen and water
- DEF is **not a fuel additive** and never comes into contact with diesel
- DEF is stored in a separate tank next to the diesel tank
  - blue filler cap.



# Diesel Exhaust Fluid



Diesel  
EXHAUST  
FLUID Tank

Diesel FUEL  
Tank

# Diesel Exhaust Fluid

## Contamination – Fuel vs. DEF

- Nozzle sizes
  - DEF nozzles are 0.75”; diesel nozzles are 0.87”
  - The diesel nozzle should not fit into the DEF tank
  - The cap for the DEF tank is blue and will be clearly marked
- Diesel in the DEF tank
  - Diesel will float on top of DEF
  - Small amounts of diesel can damage the exhaust system
  - If any fluid except DEF is poured into the DEF tank, contact CMF immediately and do not drive the vehicle.
- DEF in the fuel tank
  - The motor will stop running almost immediately, and the vehicle will require repair



# Diesel Exhaust Fluid

## Supply, Handling, and Refill

- Stocked in 2.5 gallon containers with filler tubes or in bulk barrels
  - requested as needed through normal supply procedures
- DEF crystallizes when stored for prolonged periods as the water evaporates
  - Do not use DEF that shows signs of crystallization
  - Always completely use a container to avoid storing opened containers
- Refill when the level indicator reaches 1/2 or less
  - The tank should accept one full 2.5 gallon container of DEF
  - No need to continuously top off the DEF tank
- Filler tube for 2.5 gallon containers is supplied with the case
- Spills can be safely washed down with water. DEF is not corrosive to human skin, however is corrosive to aluminum. Do not allow it to remain on the diamond tread.
- The freezing point of DEF is 12°F, however vehicles are equipped to thaw the DEF and this should not restrict use of the vehicle.
- Personal protective equipment is not necessary when handling DEF, however it will stain clothes.



*DEF Tank gauge located below fuel gauge on dash.*

# Inter-Axle Differential

- Allows the wheels of either axle to revolve faster or slower than the wheels of the other axle
- Compensates for cornering, uneven road surfaces, and slightly different tire sizes
- Inter-axle Differential Lock
  - Sends equal power to all rear tires
  - Used during poor traction situations
  - Never engage while moving or with wheels spinning
  - Disengage once traction is regained; do not use on dry pavement



# Automatic Traction Control (ATC)

- Automatically applies the service brake to the spinning wheel
- Transfers torque through the differential to the opposite wheel
  - If both wheels lose traction, the system reduces engine torque until traction is sensed
- If the vehicle is stuck and the ATC keeps reducing engine speed, disengage by pressing the “NRM/SPIN” switch on the dashboard



# Rear Suspension

- Chassis is equipped with an air cushioned suspension on the rear axles
- Dashboard controller
  - Factory installed for use in conjunction with a 5<sup>th</sup> wheel tractor-trailer configuration
  - In a straight truck configuration there should be NO need for the operator to use this switch to adjust anything
- Dashboard gauge
  - Displays the pressure level in the rear suspension



Suspension height control – DO NOT USE

Suspension air pressure

# Fire Pump – Hale Qmax

- Single Stage
- Rated at 1500gpm
- Hale Total Pressure Master
- Hale Thermal Relief Valve
- Trident Manual Air Primer
- 6 total discharges
  - 2 crosslays
  - 2 driver's side discharges
  - 2 officer's side discharges (1 LDH)
- 3 total pump intakes
  - 2 side main
  - 1 driver side auxiliary



UST FIRE APPARATUS				PERFORMANCE		
PUMP MAKE	HALE	D.O.M.	01/2018	GPM	PRESSURE	ENGINE RPM
MODEL NO.	QMAX 150-23L			1503	150	1345
SERIAL NO.	H16144			1050	200	1510
TYPE	SINGLE STAGE			750	250	1650
CAPACITY	1500 GPMGPM			GOVERNED SPEED 1972 RPM		
				GEAR RATIO 2.28 TO 1		







# Pump Panel Layout



# Pump Panel Layout



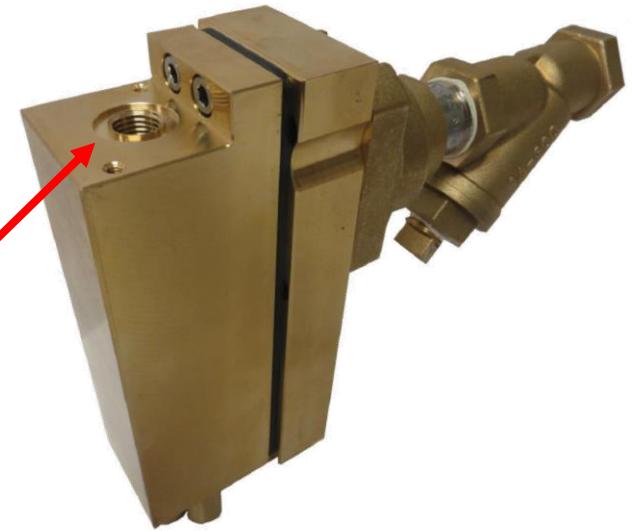
# Trident Air Primer

## Operating Characteristics

- Utilizes air supplied by the chassis air brake system to operate the pump primer
  - 15.6 cubic feet per minute
- Very low impact on vehicle electrical system - 0.4 amps
- Generally primes faster than traditional mechanical primers
  - 27' vertical lift capable
- Tanker is equipped with a manual system only
  - Automatic systems exist and will be on the 2018 Pierce Engines

MANUAL  
AIR  
PRIME

*Air supply  
ports –  
chassis air  
comes in*



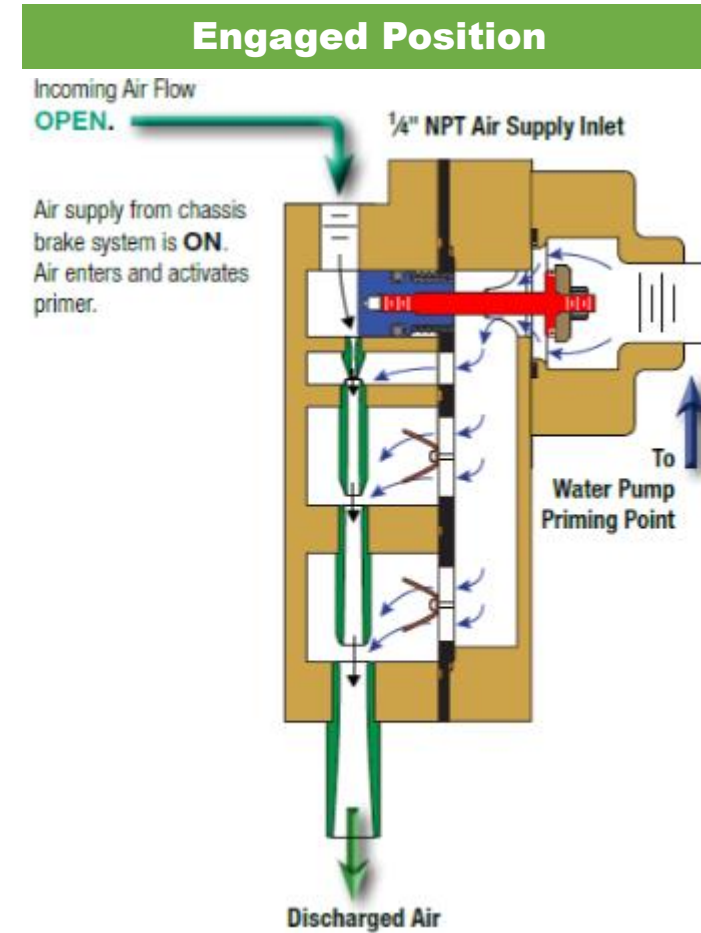
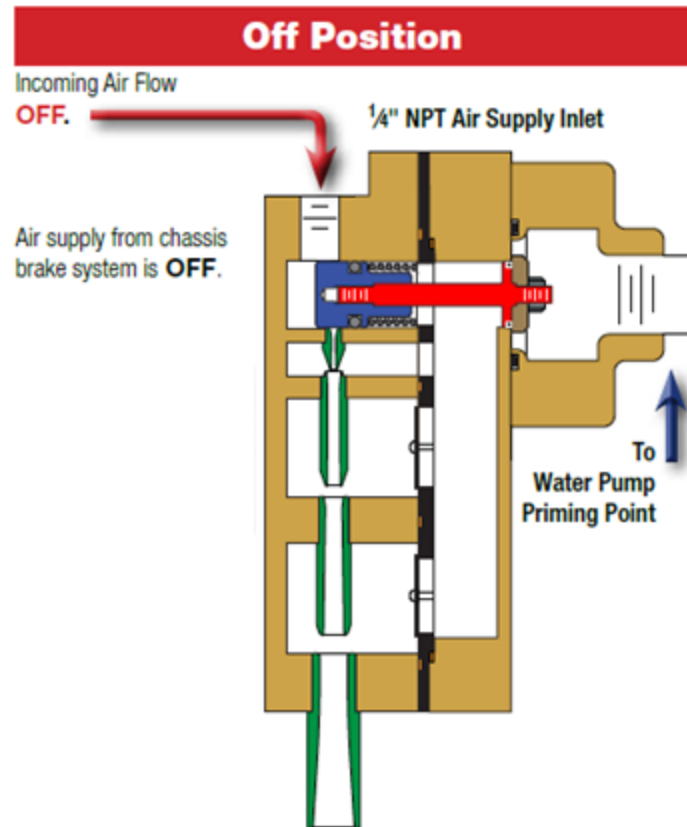
# Trident Air Primer

- No internal motor, solenoid, or cables
- Brass and steel construction
- Primer design provides automatic draining to avoid freezing
- No moving parts to create a vacuum
- No lubrication necessary
- No limitation on primer engagement time
  - Only limitation is avoiding running a dry pump in gear



# Trident Air Primer

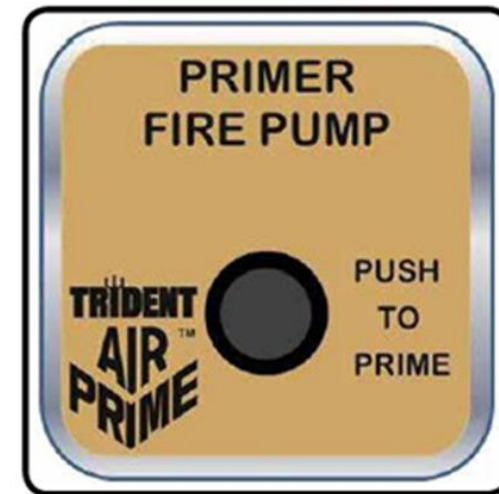
## Internal Operating Mechanism



# Trident Air Primer

## Manual System

- Operator depresses the PUSH TO PRIME button for the main pump or desired intake
- Maximum engine speed of 1000rpm
- Press and hold the priming button until discharge pressure begins to rise
- Primer will only engage when the button is pressed



# Dual “Tank to Pump” Valves

- Features dual tank to pump valves
- Front and Rear
- Allows all tank water to be used when parked on grades
- In-Open/Out-Closed
  - Setup like an engine company





# Water Tank

- Total capacity of 3,500 gallons
- Two direct fills located at the rear
- Three dump valves
- Two tank-to-pump valves



# Side Dump Chutes

- Dual action air actuated chutes
  - Extend 10.5 inches
  - Controlled from cab console or rear of unit
  - Dump Master MUST be on for dump controls to work from ANY location
- Side dumps are dual action
  1. Press momentary switch to extend chute
  2. Press switch to open respective dump valve



# Portable Folding Tanks

- Each tanker has TWO Fol-Da-Tank Single Lane Folding Tanks
  - Switches to lower rack located at respective pump panel
  - Each folding tank holds 2000 gallons
  - 8 feet wide
  - 14 feet long
  - 29" tall



# Portable Folding Tanks

- Accessories to maximize the efficiency of the Single Lane Tanks include:
  - 6" elbow for dump site engine intake
  - Flex-Lite interconnector hose
  - Low-flow strainer
  - Jet siphon
  - Mounting plate and flange for interconnector



# Driving a Tanker

Remember that you are driving a vehicle with 14 tons of fluid pushing and pulling on you.

This creates a huge amount of energy when accelerating, braking, and turning. All vehicle movements are exaggerated by this weight.

Given the exact same road conditions and configuration, a Tanker will react much more intensely than an Engine.

Slow down and plan your next move.

