Welcome to Montgomery County Fire Rescue
Class "A" Tractor Drawn Apparatus
Pre-Trip Inspection/Operations

GVW = 71,740 lbs

L = 58' W = 96" H = 11' .25"

Max Outrigger Spread = 18'

GVW= 67,800 lbs

L= 59'.5" W = 96" H = 11' ¾"

Max Outrigger Spread = 18'

2007 Pierce Tractor Drawn Aerial

100’ 4 Section Ladder

2005 Pierce Tractor Drawn Aerial

100’ 4 Section Ladder

Purpose

Safety is the most important reason to inspect a vehicle. Vehicle components that are overlooked on a preventative maintenance inspection may lead to malfunctioning and equipment failure during emergency responses. The importance of diligent inspections cannot be over emphasized, especially in the wake of liability issues and challenges that confront the new driver. Federal and state laws require that drivers inspect their vehicles.

New Philosophy

We drive our vehicles with the mindset that the other driver will make a mistake in the path of our vehicle.

Our operators will drive proactively by adjusting their driving to avoid collisions triggered by other drivers, traffic, and environmental conditions.

OVERVIEW

- Circle Check
- Engine Compartment
- Steering
- Suspension
- Brakes
- Tires/Wheels
- Frame/Undercarriage
- Batteries
- Windshield
- Interior Cab Area
- Exterior Features
- Operations
- Emergency Overrides

EMERGENCY VEHICLE PRE-RESPONSE

AREAS FOR INSPECTION:

1. Vehicle overview
2. Walk around check
3. Engine compartment
4. Interior cab
5. Undercarriage check
7. Compartment equipment check
8. Moving and driving test
9. Complete inspection process

Circle Check

- ✓ **FRONT VIEW:**
  - ✓ **Look for leaning**
  - ✓ **Look at all body parts**
  - ✓ **Look for any unknown damage**
  - ✓ **Look underneath**

Circle Check

✓LEFT SIDE:

- ✓Inspect entire left side
- ✓Look for leaning
- ✓Assure that all
- ✓doors close and latch securely
- ✓Look for any unknown damage

Circle Check

- ✓ **REAR VIEW:**
- ✓ **Inspect rear**
- ✓ **Look for unknown body damage**
- ✓ **Look for hanging or broken wires and fluid leaks**
- ✓ **Look for leaning, which indicates broken or weak suspension**

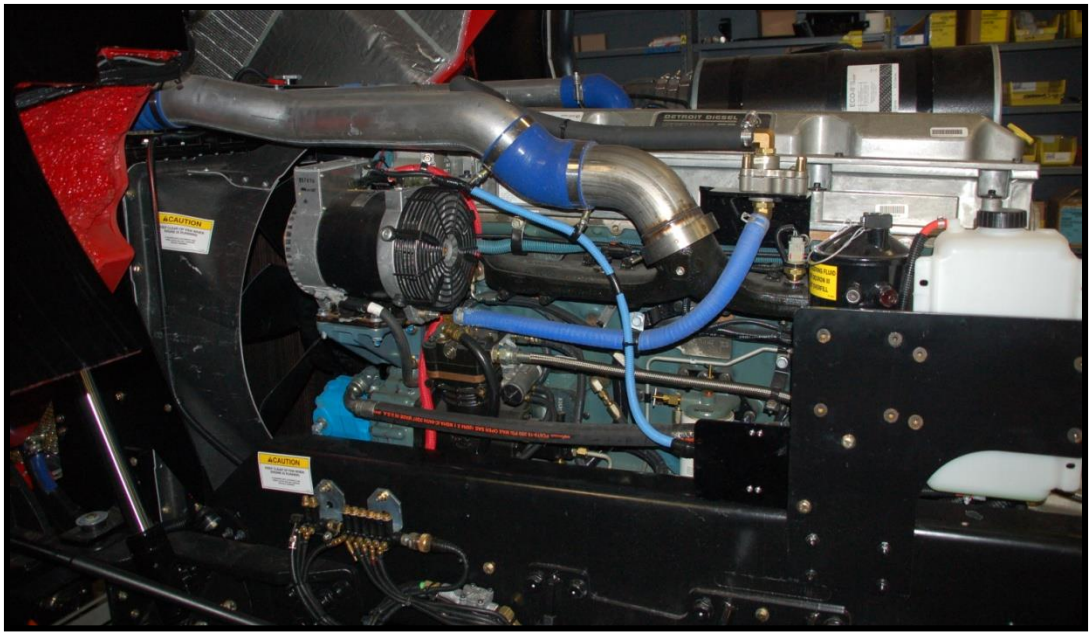
Circle Check

✓RIGHT SIDE:

- ✓Inspect entire right side
- ✓Look for leaning, which indicates weak or broken suspension
- ✓Assure all doors close and latch securely
- ✓Any unknown damage

ENGINE COMPARTMENT

- ✓Raise cab during weekly checks and begin engine check on the driver's side



ENGINE COMPARTMENT

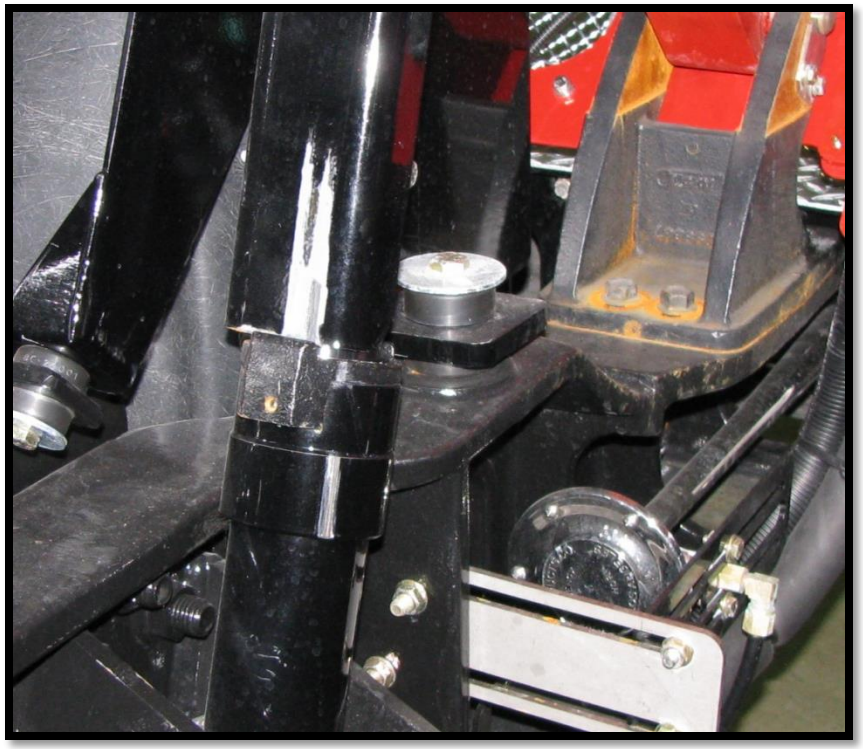
✓Raise the Cab:

- ✓ Controls are located on the officers side behind the cab.
- ✓ Batteries and ignition must be on.
- ✓ Contents in the cab MUST be secured
- ✓Turn the red switch to raise
- ✓ Hold up the activate switch until the cab is fully raise.
- ✓ Watch overhead for clearance

ENGINE COMPARTMENT

✓Raise the Cab:

- ✓ The lock for the cab tilt is on the officers side.
- ✓ The locking channel must **NOT** rest on the collar of the piston. But, must fall against the piston and behind the safety.



ENGINE COMPARTMENT

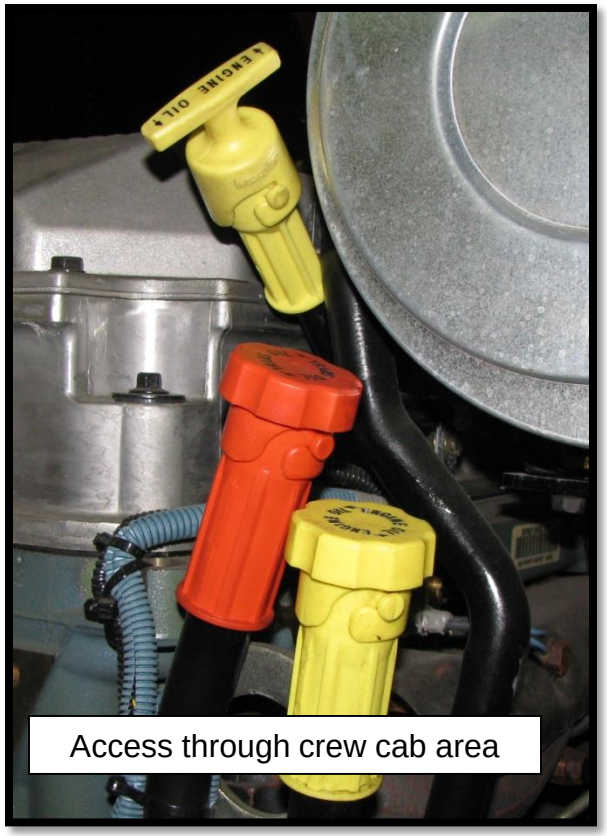
Full cab tilt feature:

Offers wide open access to the motor, transmission, pto's, batteries, fluids, etc.

ENGINE COMPARTMENT

✓FLUIDS:

- ✓ Engine Oil
  - Proper level
  - Not milky or frothy
  - Doesn't smell like diesel
- ✓Transmission Fluid
  - Checked with the engine running.
  - Proper fluid levels
  - Doesn't smell burned
  - No antifreeze bubbles



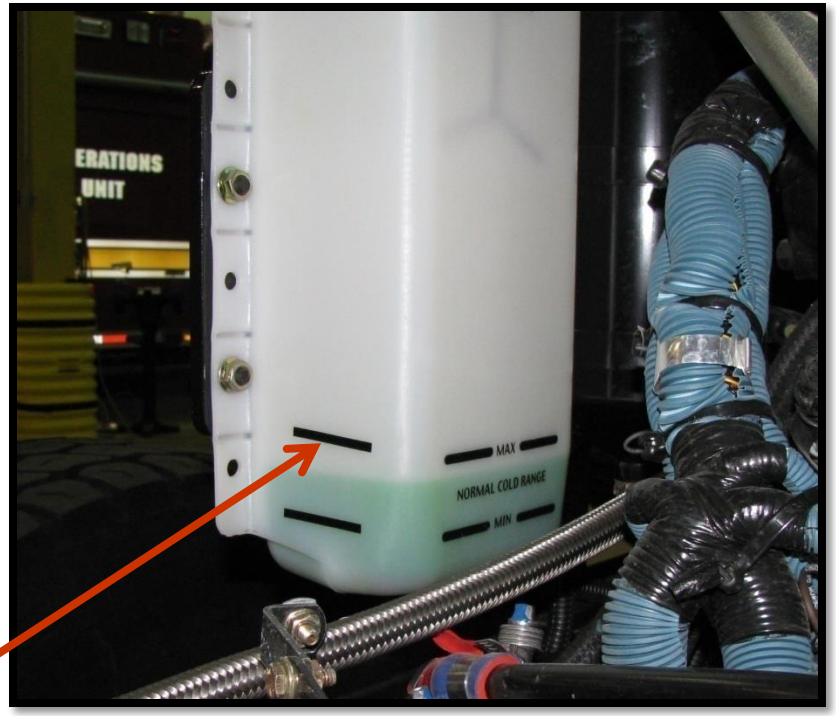
Access through crew cab area

ENGINE COMPARTMENT

- ✓ **RADIATOR:**
  - ✓ Unit securely mounted
  - ✓ Unit is not leaking
  - ✓ Filled to proper level
  - ✓ Proper cap
  - ✓ Check all hoses

ENGINE COMPARTMENT

- ✓ **RADIATOR RESERVOIR**
  - ✓ **Unit securely mounted**
  - ✓ **Unit is not leaking**
  - ✓ **Filled to proper level**



Reservoir

ENGINE COMPARTMENT

✓FAN :

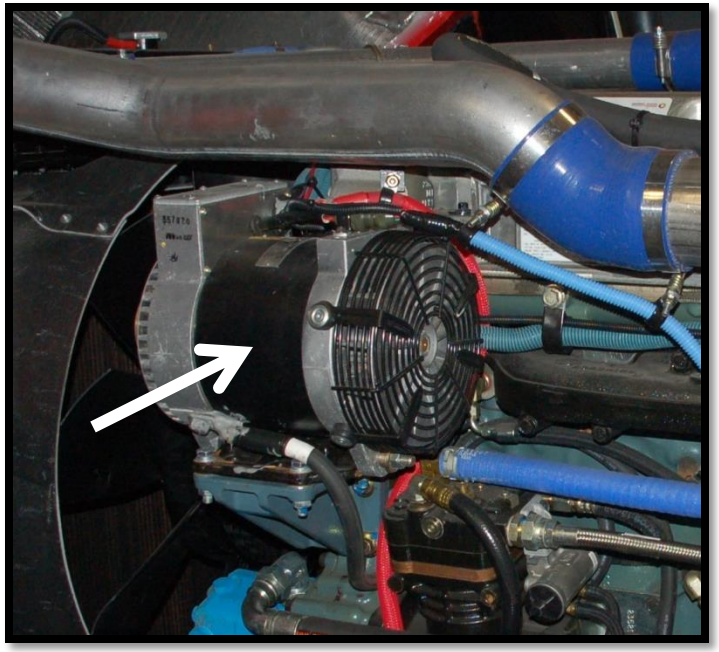
Fan blades are all present not broken

Fan shroud secure and intact.

ENGINE COMPARTMENT

✓ALTERNATOR:

- ✓Unit is securely mounted
- ✓Belt is not frayed, cut or broken
- ✓Belt has no more than ¾ inch deflection
- ✓Electrical connections are not loose, frayed or broken



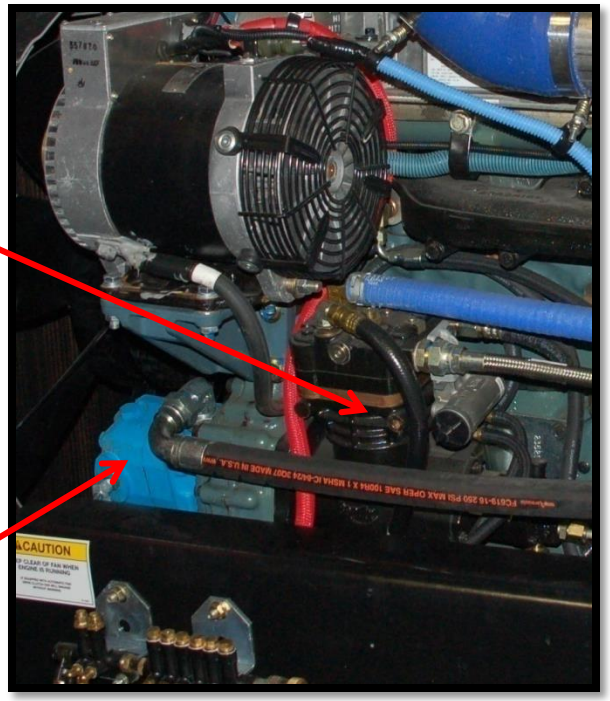
ENGINE COMPARTMENT

✓AIR COMPRESSOR:

- ✓Securely mounted and no audible air leaks

✓POWER STEERING PUMP:

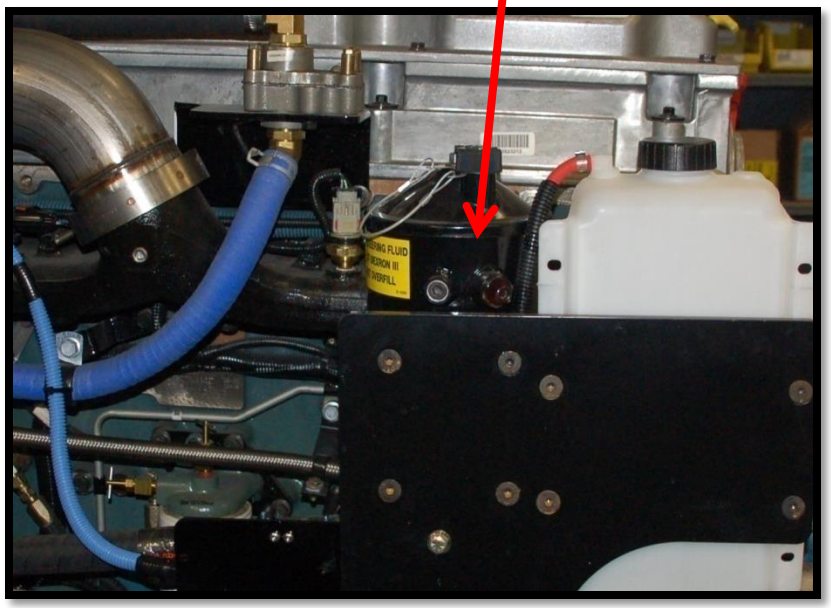
- ✓Securely mounted and no visual fluid leaks



ENGINE COMPARTMENT

✓POWER STEERING RESERVOIR:

- ✓Securely mounted and no visual fluid leaks
- ✓Reservoir is filled to proper level
- ✓Use either sight glass or dipstick

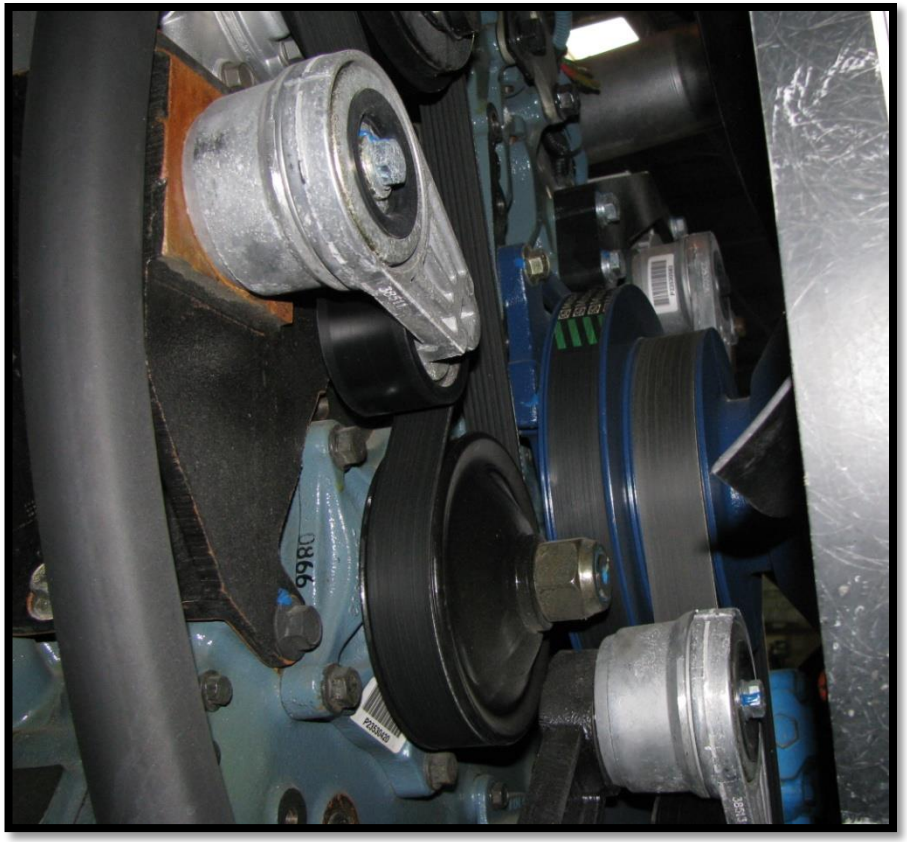


ENGINE COMPARTMENT

✓POWER STEERING RESERVOIR
TILLER AXLE:

ENGINE COMPARTMENT

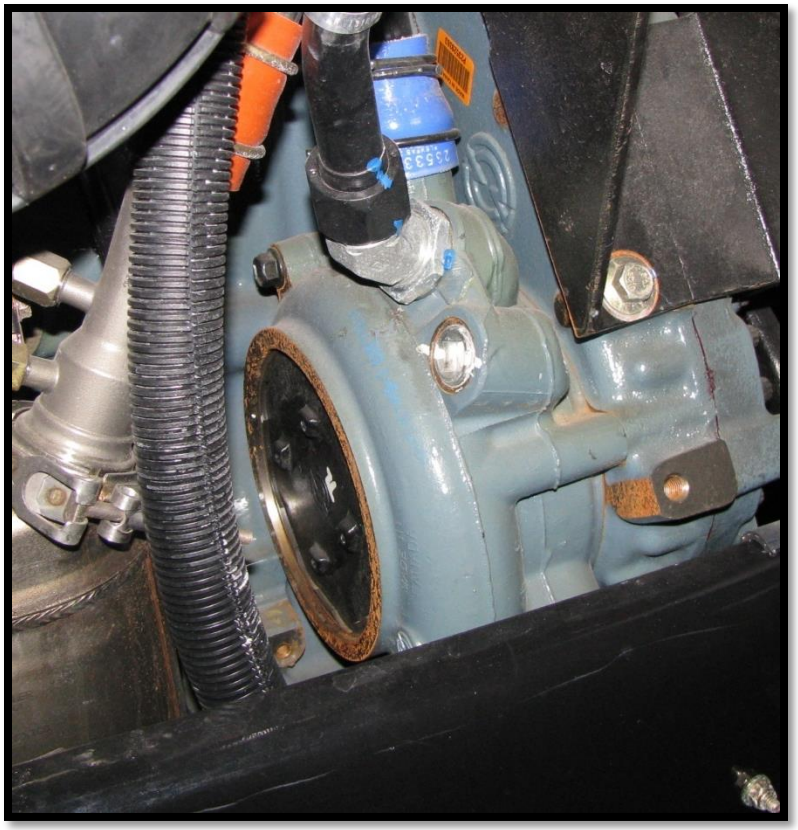
✓BELTS AND HOSES:



ENGINE COMPARTMENT

✓WATER PUMP:

- ✓Secure, not leaking
- ✓Lower radiator hose connection not leaking
- ✓By-pass hoses not bulging or leaking.

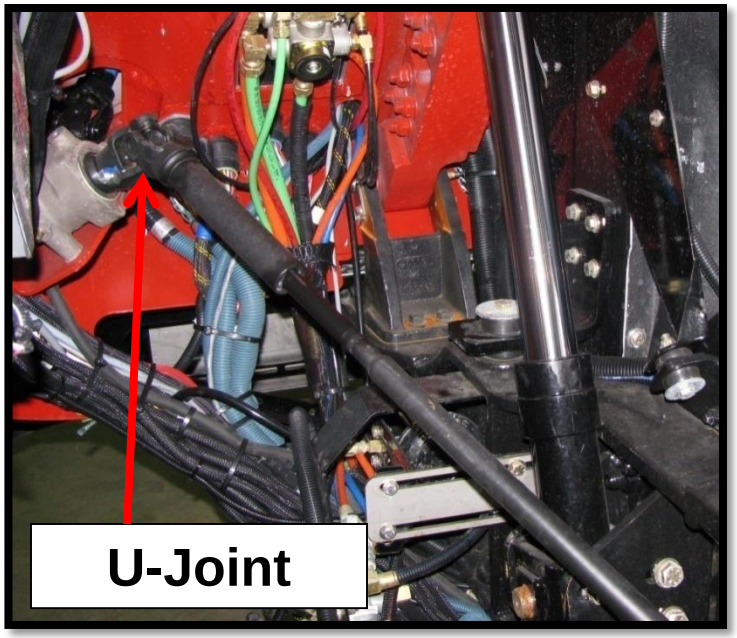


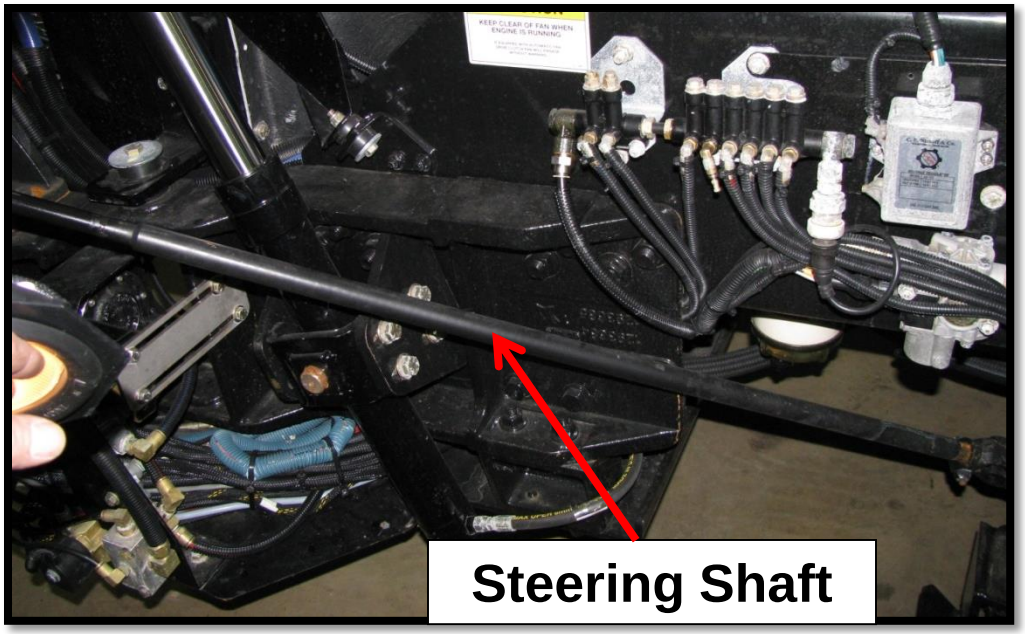
STEERING

- Remember the order : Steering shaft to Steering Box. Steering output shaft to Pitman Arm. Pitman Arm to Drag Link. Drag Link to Steering Arm.
- Castle Nuts with locking pins hold the Drag Link to the Pitman Arm, and Steering Arm.
- Are all the parts secure ? And not bent, broken or missing
- Are there any class III leaks ?

STEERING

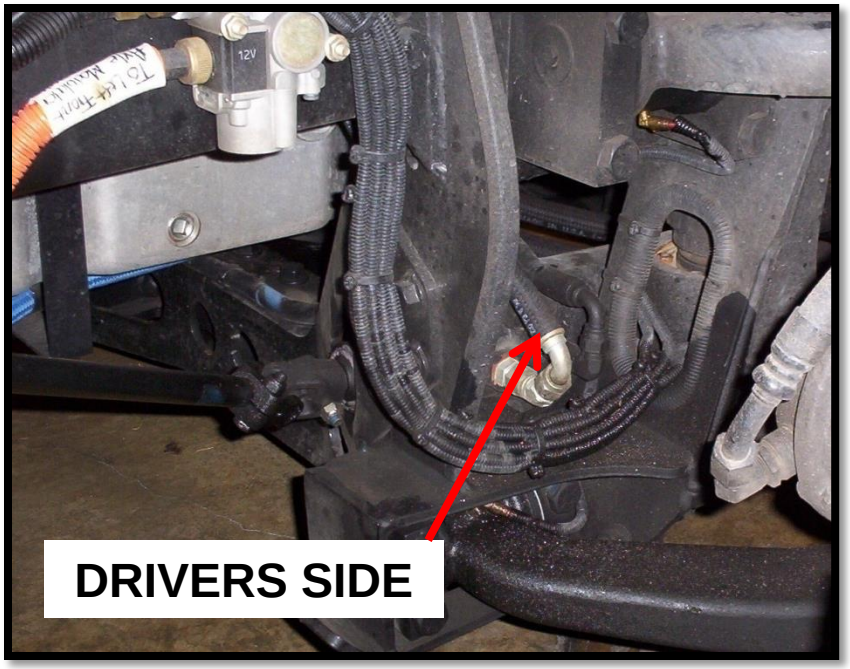
The 2005 and the 2007 Pierce TDA'S have the TAK4 suspension which changes the location of the steering components.





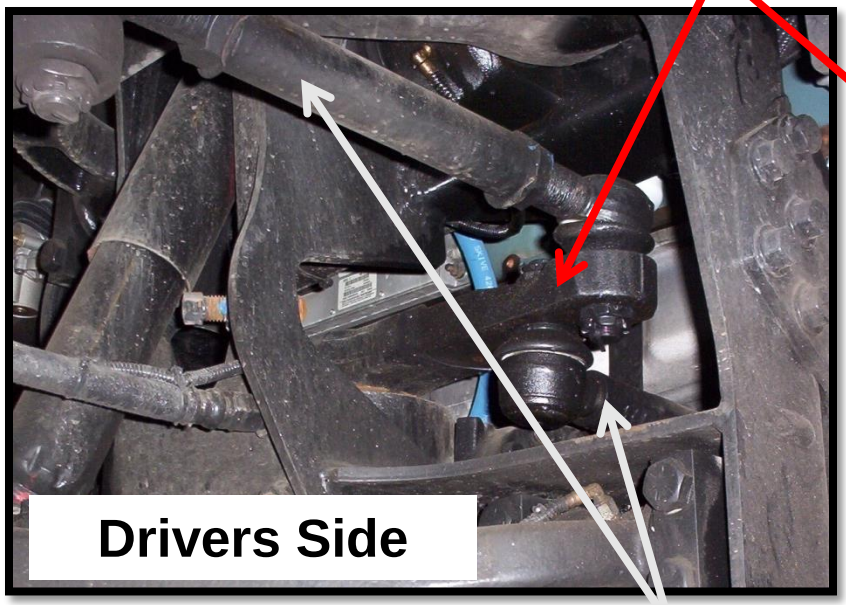
STEERING

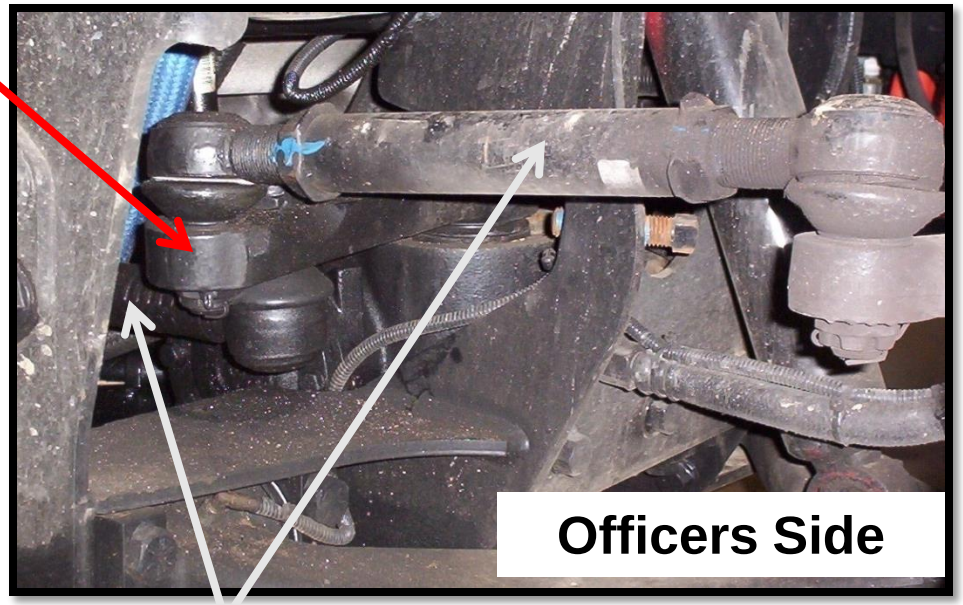
✓POWER STEERING BOXES:



STEERING

PITMAN ARMS

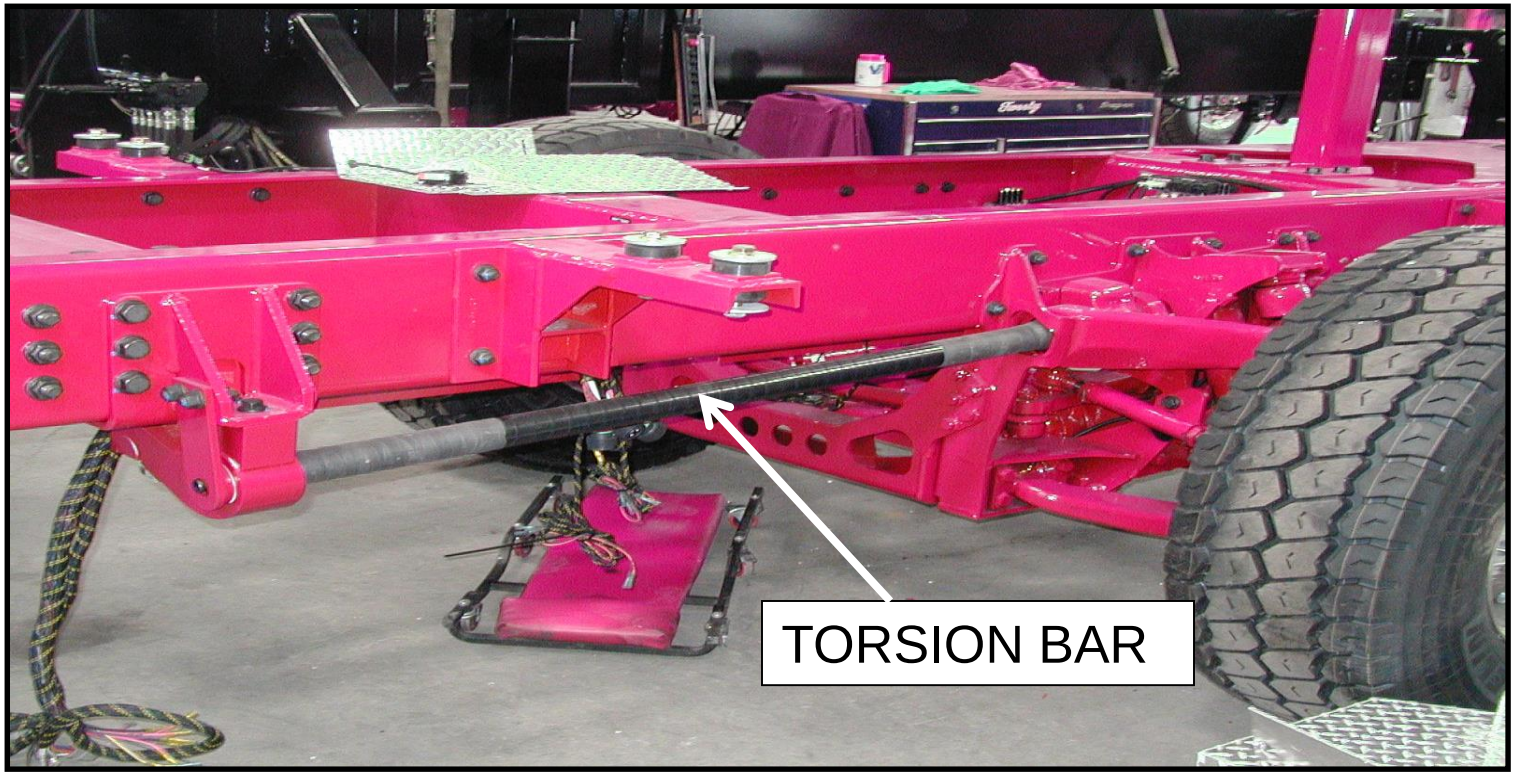




TIE RODS

SUSPENSION

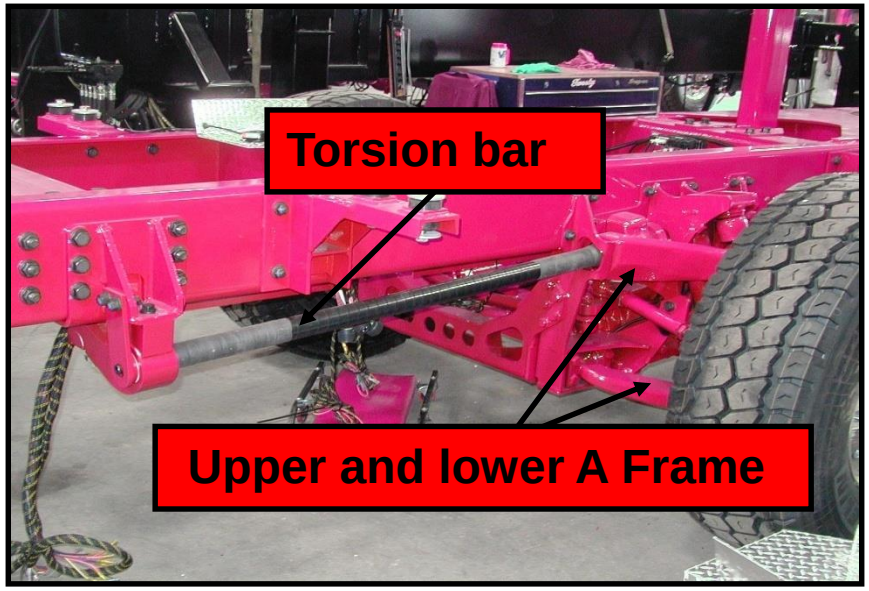
TAK 4 SUSPENSION SYSTEM



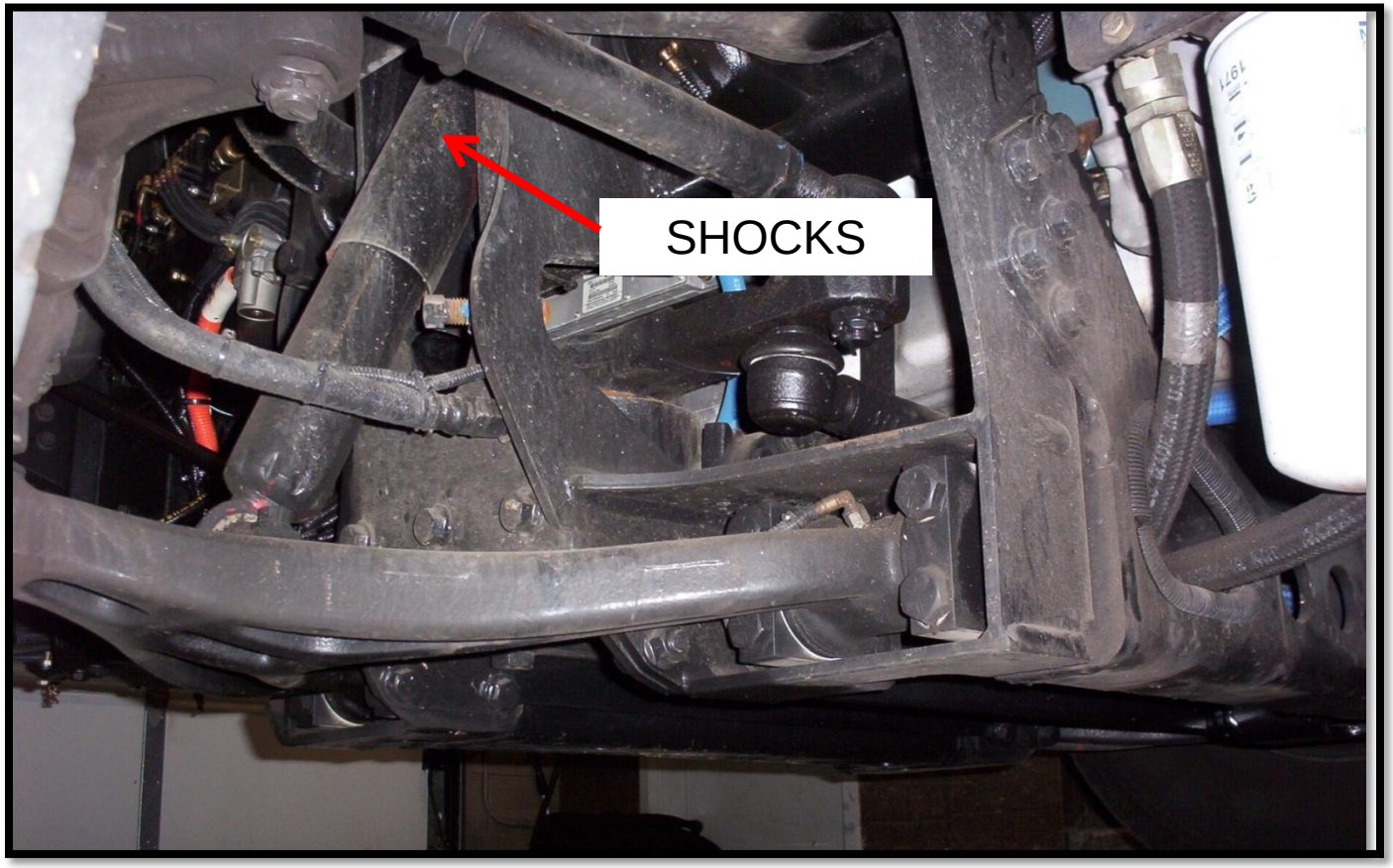
SUSPENSION

TAK 4 SUSPENSION SYSTEM

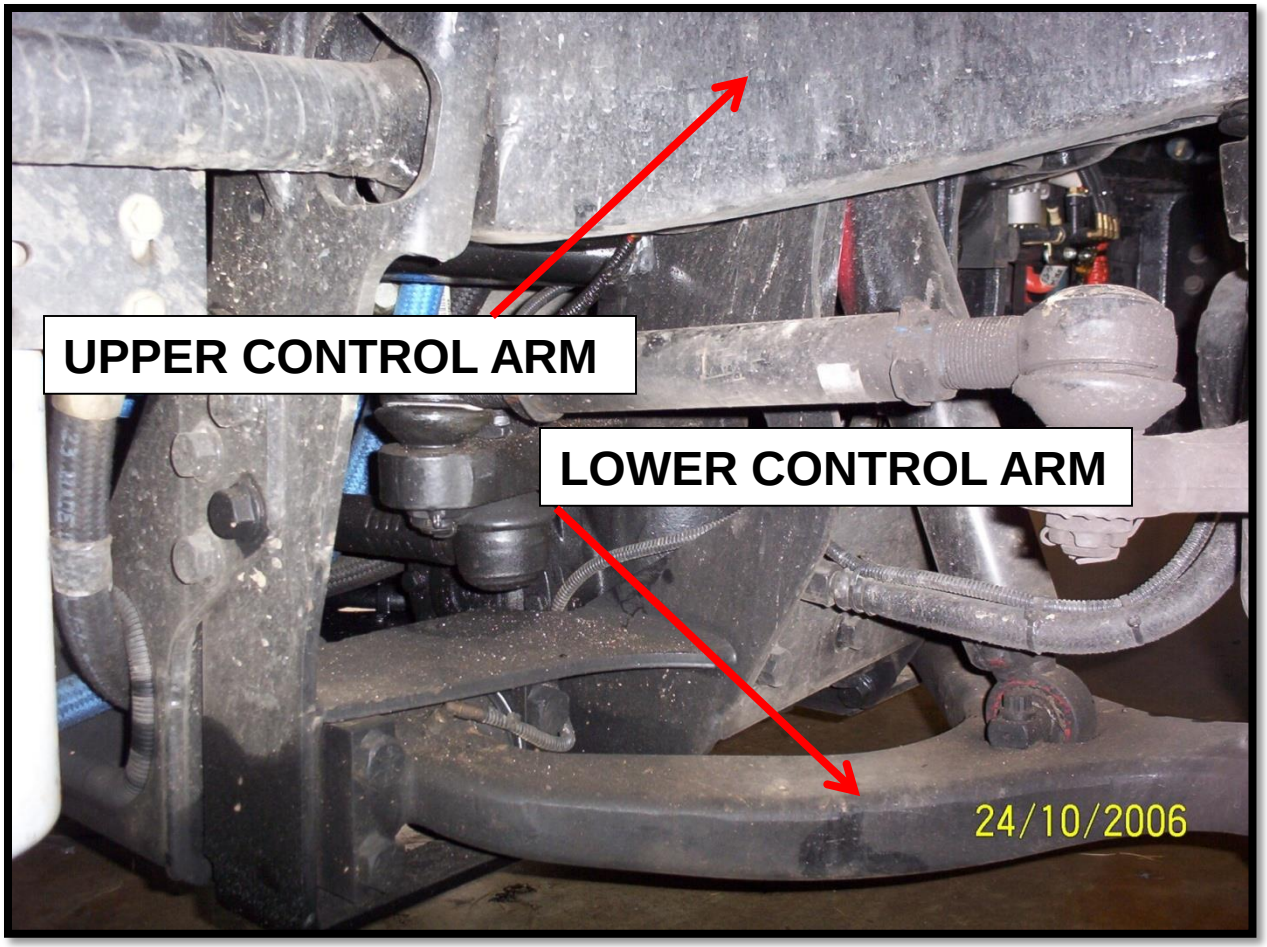
- ✓ This is the Pierce-TAK4 suspension system.
- ✓ The Pierce-TAK4 suspension is a torsion bar system, with a upper and lower A-frame assembly. It has a shock absorber for wheel control.



SUSPENSION

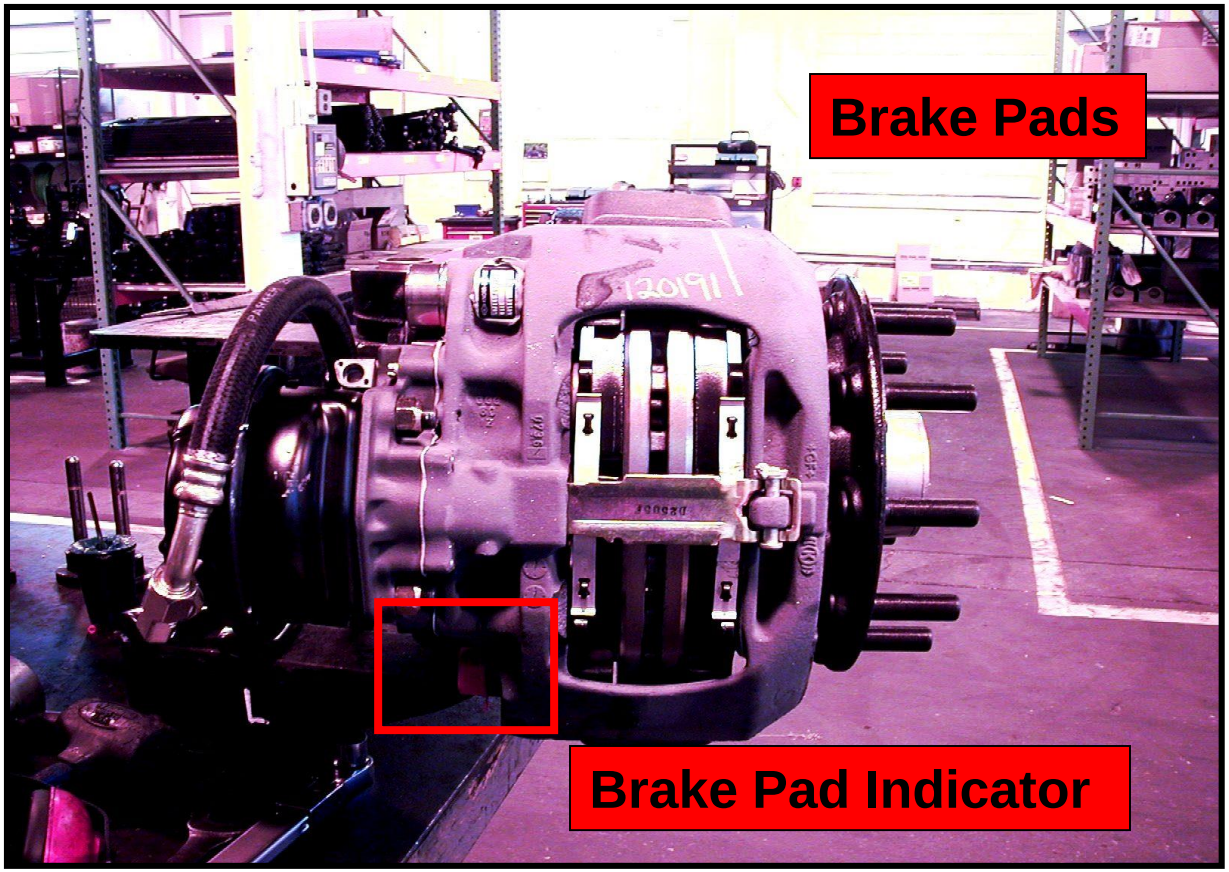


SUSPENSION



BRAKES

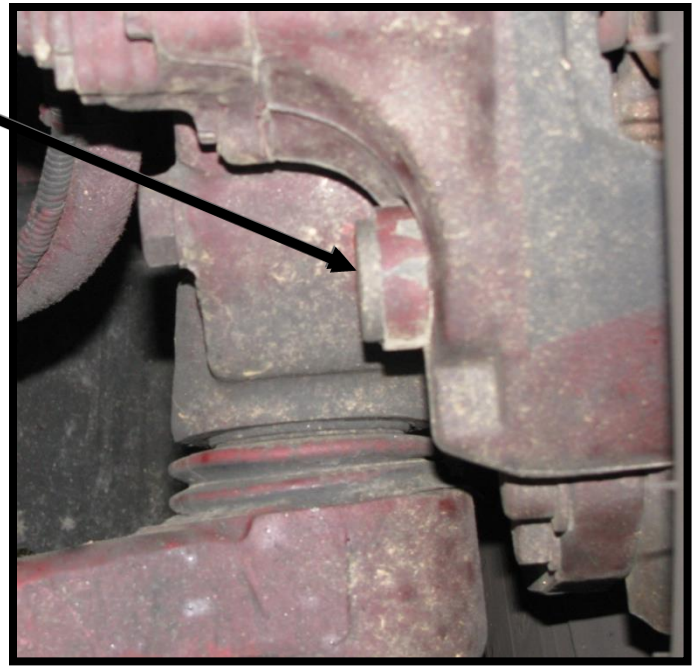
Knorr – Bremse (Bendix)



BRAKES

Brake lining indicator:

Silver piston travels with the brake lining thickness. Once flush with the red collar, the brakes need replacing. This indicator is on the front axle only. 2005 Models Only



BRAKES

- What type of brake is on the apparatus ? Are they Disc brakes, Drum brakes, or a combination of both types ?
- Are the Drums or Disc present and intact ?
- Is there at least ¼” of brake pad and are they free from oil and grease.
- Is the air line to the brake chamber intact ? Is the air line cut or rubbed ?
- Do you hear any air leaking at the brake chamber ?

BRAKES

- How many air Tanks are on the Apparatus ?
- When were the tanks drained last ?
- When the Air Compressor kicks off what does the air dryer Spit ? Is it a clear spray or is it oil ?
- When does the Air Compressor shut off ?
- When does the compressor start ?
- When does your low air warning devices activate ?
- When does the protection valve activate ?

BRAKES

- The following defects and deficiencies of the air brake system reduce the operational safety and performance of the fire apparatus and shall be considered when placing the apparatus out of service. Use the prescribed test procedure for MCFRS to assist with determining out of service condition.

Brake System OOS Criteria

- Service brakes that have an air pressure drop of more than 3psi in 1 minute for a single unit or more than 4psi in 1 minute for a combination unit, with engine stopped and service brake released.
- Leak down rate (time) of the applied side of the air brake that is more than 3psi in 1 minute for a single fire apparatus or more than 4psi in 1 minute for a combination fire apparatus, with the engine stopped and the service brake applied

Air Brake OOS Criteria

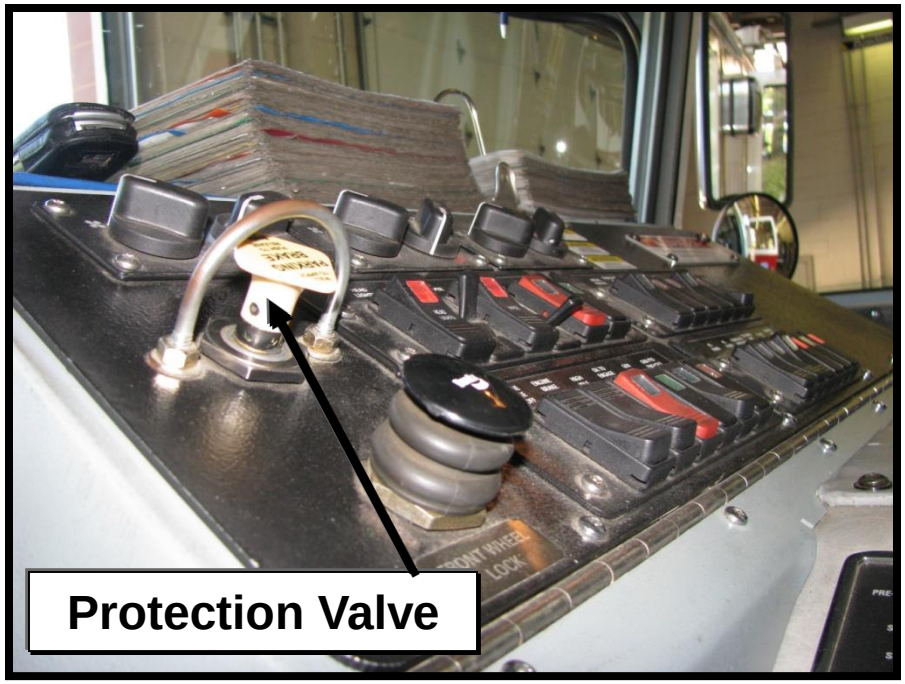
- Air compressor that fails to fill the air system to the air compressor governor cutout pressure with the service and parking brakes released
- The cut out pressure should not exceed 135psi
- The cut in pressure should not be less than 80psi

D.O.T. BRAKE TEST

- This brake test must be preformed in this order
- Out of order sequence will result in failure !!!!
- Before you begin this test be sure that the wheels are chocked.
- Make sure battery and ignition is on so gauges will read, and warning devices will sound

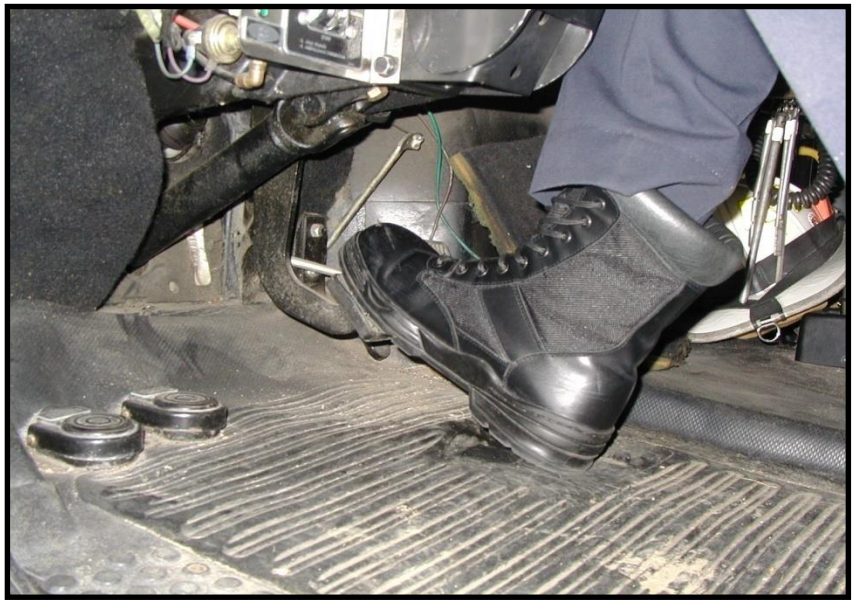
D.O.T. BRAKE TEST

- Push Protection valve in charging the system
- Let tanks settle
- Tell instructor you are going to watch the gauge for 1 (one) minute.
- You are looking for air loss no greater than 3psi in one minute.(4psi for tiller trucks)
- Ask instructor to time you if you have no watch



D.O.T. BRAKE TEST

- After one minute you will put your foot on the brake pedal and apply and hold steady pressure
- After tanks settle, time for one minute.
- You are looking for air pressure loss of no more than 3psi in one minute. (4psi for tiller trucks)



D.O.T. BRAKE TEST

- After one minute you will start fanning the brakes
- Tell instructor “At approximately 60 to 90 lbs I will get a low air warning light and buzzer
- After light and buzzer activate, keep fanning brake

D.O.T. BRAKE TEST

- **Tell Instructor “At approximately 20 to 40 psi my protection valve will pop”**
- **Keep fanning until it pops**
- **Once valve pops stop fanning brake**

D.O.T. BRAKE TEST

- You will now start engine
- Air pressure must build from 50 to 90 lbs in 3 min. at 1200 RPM
- Ask instructor to time you

Note: Do not touch protection valve once you start the DOT brake test. If you touch it you fail

D.O.T. BRAKE TEST

- After starting the engine and waiting for pressure to reach 90lbs within 3 min.
- Tell instructor that all gauges are at working pressures
- After air pressure reaches 120-135 lb you may pick up your wheel chock and place unit into drive then reverse to show inspector that the spring brake works.

- NOTE: Do not step on throttle let engine tug at brakes at idle

Air Compressor

C.O.L.A

- C= Air Compressor Cut-In
- O= Air Compressor Cut-Out
- L= Low Pressure Warning
- A= Air Leakage Rate

ORDER

(1) Cut in pressure

(2) Cut out Pressure

(3) Low Pressure Warning

(4) Air Leakage Rate

Air Compressor

C.O.L.A.

- **C=Cut in Pressure With motor running slowly fan brake, watch air gauge drop. When gauge reaches about 100psi compressor will come on stopping air drop age. This is the compressor cut in pressure. Any compressor which fails to cut in before 95psi will be reported to mechanic.**
- **O=Cut out Pressure With motor still running watch the air gauge rise and when you hear the air discharge that is the compressor cut out pressure. This will happen between 120 to 135psi. Any higher pressure cut out will be reported to mechanic. Now shut down the engine**

Air Compressor

C.O.L.A.

- L=Low Pressure warning With engine shut down but ignition on start fanning brake. When air pressure gauge reaches approximately 90psi you will get a low pressure light and buzzer. Any light or buzzer which fails to activate below 60psi will be reported to mechanic.
- A=Air Leakage rate With engine shut down air leakage will be less than 3 (three) psi per minute. This is with foot on or off brake pedal. 4 (four) psi in tiller trucks

TIRES / WHEELS

C=Condition

- ✓ No cuts that expose cord
- ✓ No bulges on sidewall which indicates cord separation
- ✓ Front tires are not re-grooved or recapped
- ✓ Front tires are not mismatched

TIRES / WHEELS

I=Inflation

- ✓ Not leaking or flat
- ✓ Tire pressure will match posted pressure on the wheel well
- ✓ Tire pressure will not exceed manufacture's recommended pressure.
- ✓ Valve stem will be capped and not touching the wheel

TIRES / WHEELS

I=Inflation

Crossfire pressure gauge:

Measures tire pressure in both tires, inner & outer simultaneously.

When the horizontal lines match, the pressure is correct.

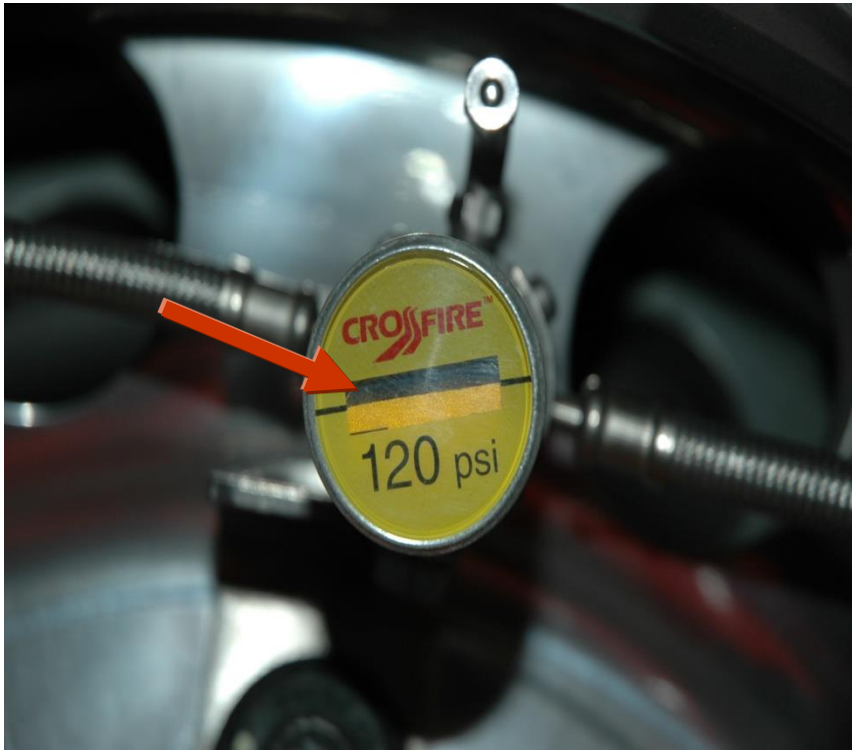
TIRES / WHEELS

I=Inflation

Crossfire pressure gauge:

Solid black shows in the window when the pressure is low.

Red shows in the window when pressure is high.



TIRES / WHEELS

Crossfire pressure gauge is designed to accurately display pressure with tires cold.

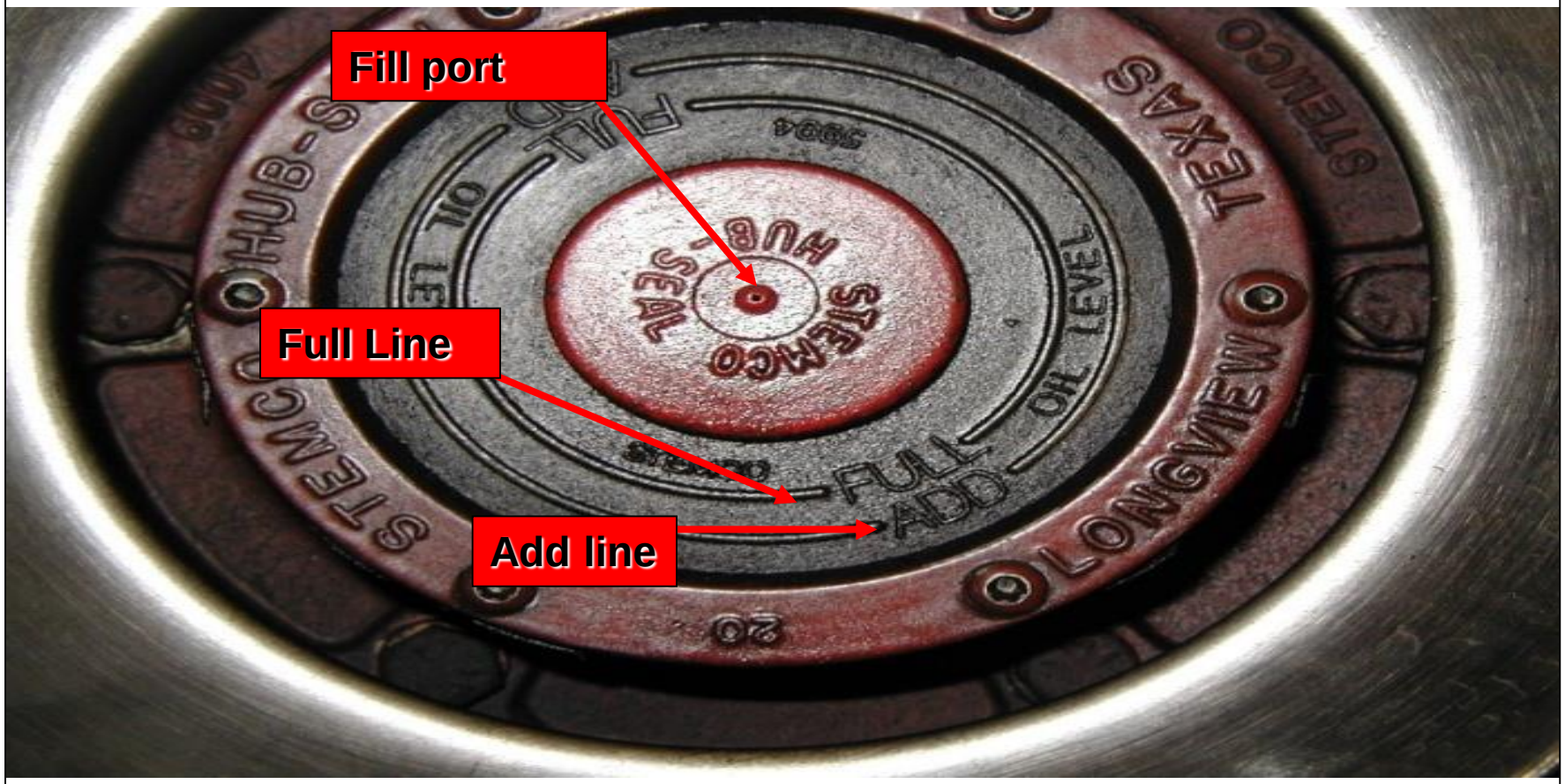
This single gauge also offers a single fill port for both tires simultaneously.

TIRES / WHEELS

D=Depth

- ✓ Tread Depth no less than 4/32 inch
- ✓ No tread missing exposing cord
- ✓ Tread should be worn evenly
- ✓ Tread depth will be obtained from any major groove

HUB OIL


Fill port
Full Line
Add line
FULL
ADD
OIL LEVEL
SIEMCO SEAL
HUB-SEAL
STEMCO
TEXAS
LONGVIEW

FRAME / UNDERCARRAIGE

✓FRAME:

- A frame consists of side frame rails and cross members.

OOS Conditions

- Any bent or sagging frame rail
- Any cracks on frame rail or cross members
- Any illegal drill holes or illegal welded repairs
- Missing or broken bolts at cross member/side rail.

FRAME / UNDERCARRAIGE

✓FRAME:

- ✓Foundation of the structure
- ✓Supports all features and weight
- ✓Cross members hold frame together

FRAME / UNDERCARRAIGE

✓**FRAME:** **Pre trip inspection found this OOS condition**

FRAME / UNDERCARRAIGE

ON THE CREEPER:

Start at the front, looking at the bottom of the radiator for leaks.
Check hose connections.
Check oil pan, filters,(fuel,oil,trans) for leaks.
Scan the inside of the wheel area for tire and wheel defects and heat checks on the rotor. Check the brake pad indicator.
Check the drive shaft for play in the universal joint and loose bolts.
Check the air dryer for improper discharge.
Check that the carrier bearing is securely mounted.
Check the exhaust for integrity and leaks.
Check air tanks are securely mounted and not leaking.
Check both brake chambers for rust and slack adjusters for clevis pins. Is the red tape showing on the brake rod?

FRAME / UNDERCARRAIGE

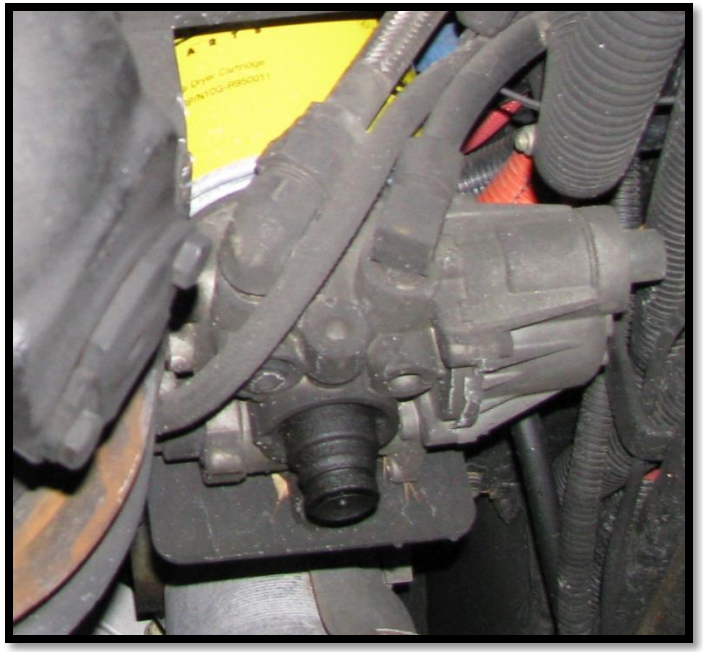
ON THE CREEPER:

Inspect rear brakes for minimum lining thickness. Check drums for oos heat checks. Scan the drums for cracks or broken pieces.
Inspect and manually move the on spot chains for their return.
Scan the fuel tank for punctures, leaks, and insulation between the tank straps and the tank.
Under the trailer there are many bushings that hold the compartments on the frame, quickly check them.
Check the rear air tanks.
Check the tiller axle and steering components the same as the front axle.
The tiller brake pads are very difficult to see. Scan the rotors.
Is the back up alarm secure ?

FRAME / UNDERCARRAIGE

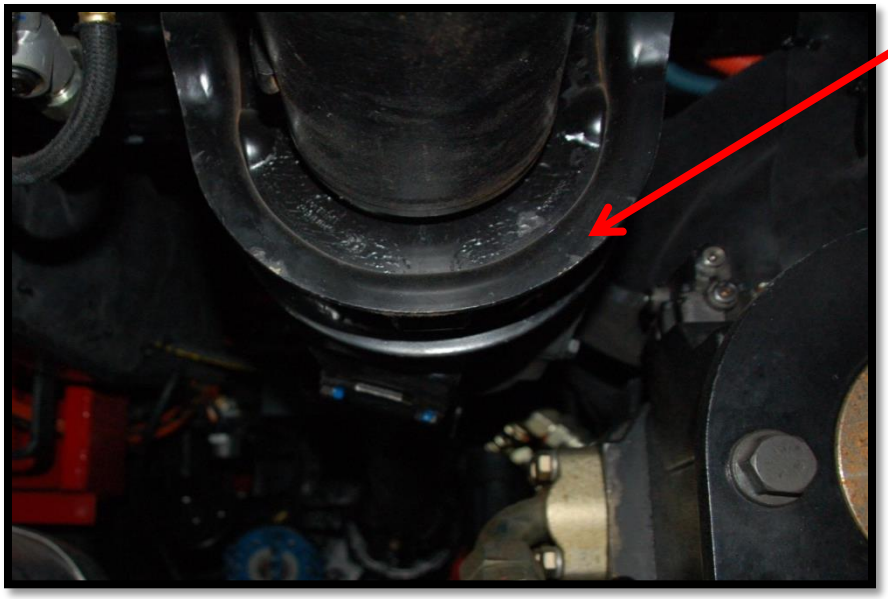
✓AIR DRYER:

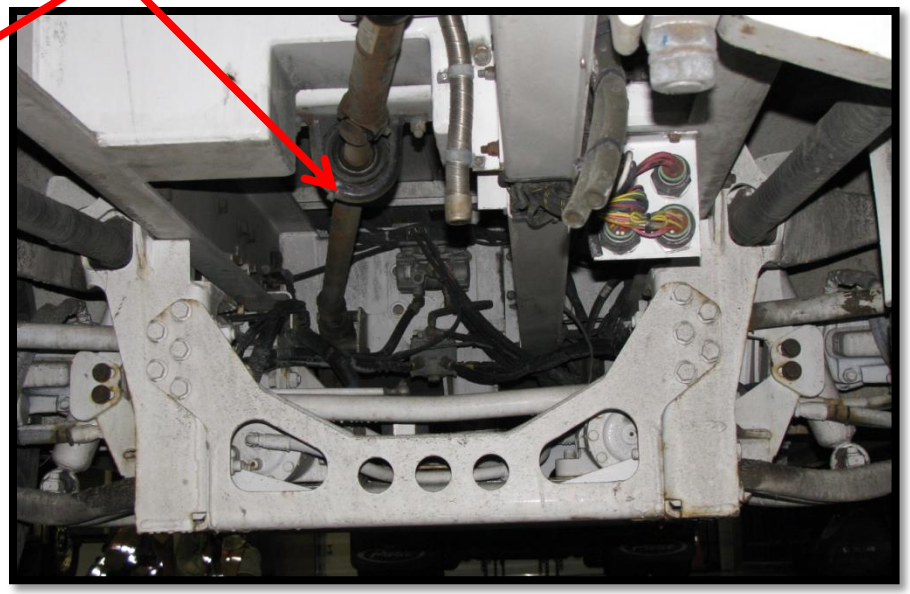
- ✓ Purges between 120 & 135 psi.
- ✓ Heavy discharge of oil suggests either full filter cartridge or defective air compressor.
- ✓ Must notify shop.



FRAME / UNDERCARRAIGE

✓CARRIER BEARINGS:





Securely mounted, bolts tight:

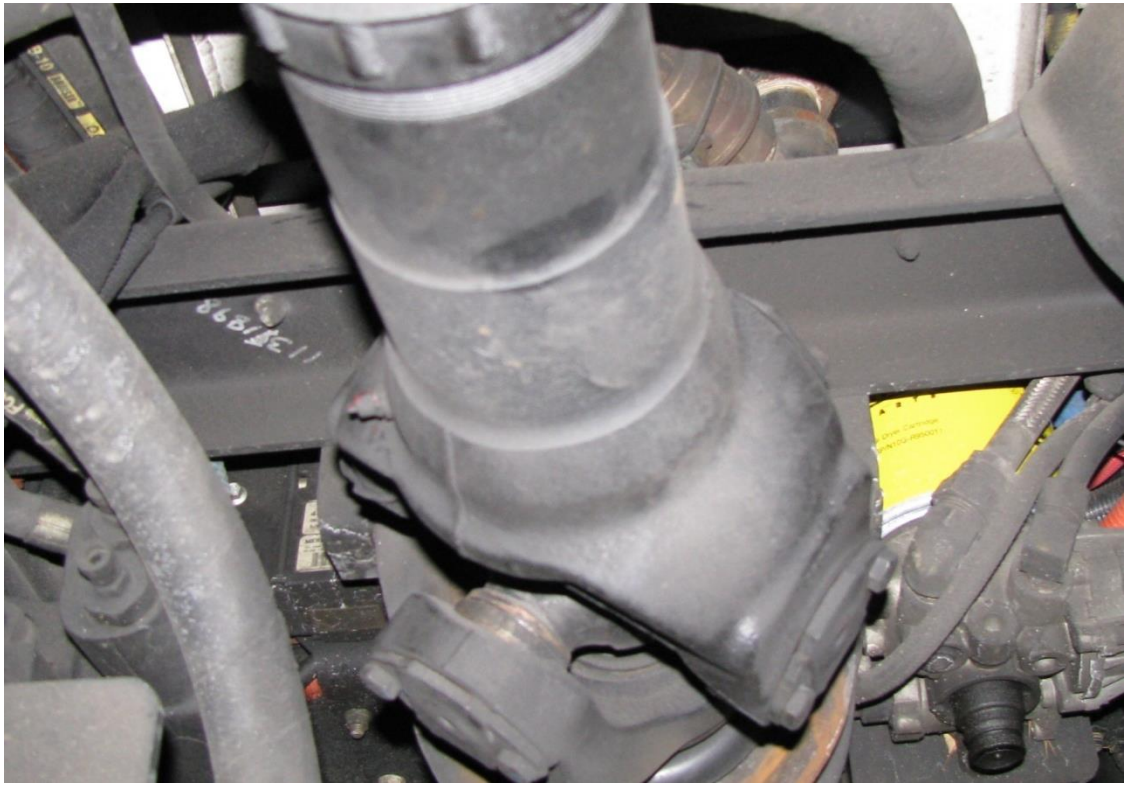
FRAME / UNDERCARRAIGE

Driveshaft :

Nothing rubbing the drive shaft as it turns

U-Joint:

All bolts tight, no obvious cracks



FRAME / UNDERCARRAIGE

Fuel tank inspection:

No leaks, insulation between tank straps and tank.

Batteries

- ✓Inspect batteries weekly
- ✓Inspect for corrosion, loose cables
- ✓Leaking battery fluid
- ✓Batteries secured

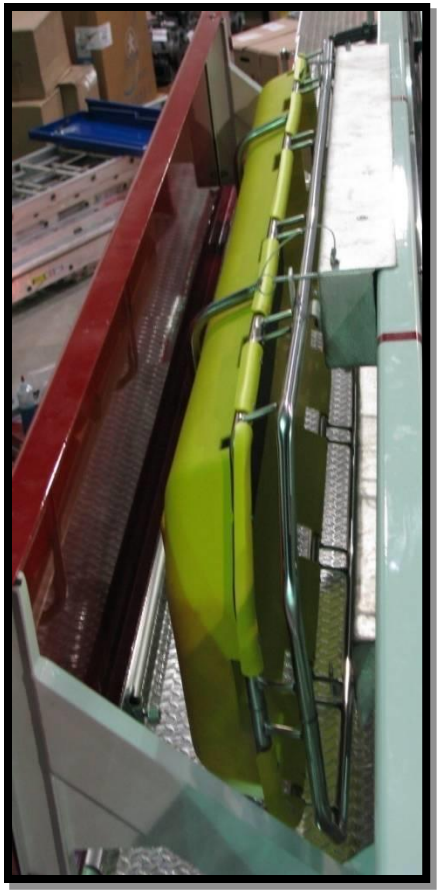
Windshield

- ✓No chips in the drivers view larger than the size of a dime.
- ✓No transverse cracks or the unit is OOS and the windshield replaced.
- ✓Check wipers

Cab Inspection

- ✓Seat secure
- ✓Seat adjustment
- ✓Seat belts
- ✓Mirrors
- ✓Steering wheel
- ✓Gauges/Switches
- ✓Fuel level, tiller heat fuel
- ✓Lights, OEM and Emergency
- ✓Siren
- ✓Defroster
- ✓Windshield wipers/washer
- ✓Safety equipment, vests, flares or triangles, fire extinguisher

EXTERIOR FEATURES



AERIAL OPERATIONS

2005 & 2007 Pierce Tiller Ladders offer:

100’ 4 section ladder with a 500 lb tip load

Pre piped waterway with 1000 gpm rating at any angle and any extension and unlimited nozzle position

The monitor can be used at the tip or at the end of the upper mid section. We default to the upper mid section for rescue purposes.

AERIAL OPERATIONS

✓Placing aerial in service:

Transmission in Neutral
Apply parking brake
Activate Aerial Master switch
Apply auxiliary brake (push and hold)
Aerial master switch will illuminate designating aerial ready.

AERIAL OPERATIONS

✓Placing aerial in service

Exit the cab and place <u>both</u> wheel chocks down !
Initiate outrigger stabilization: begin with the low side, extend fully and then lower, onto the outrigger pad grounding the stabilizer.
Bring level indicator to the green zone. Led lights will activate when outrigger fully deployed and grounded.

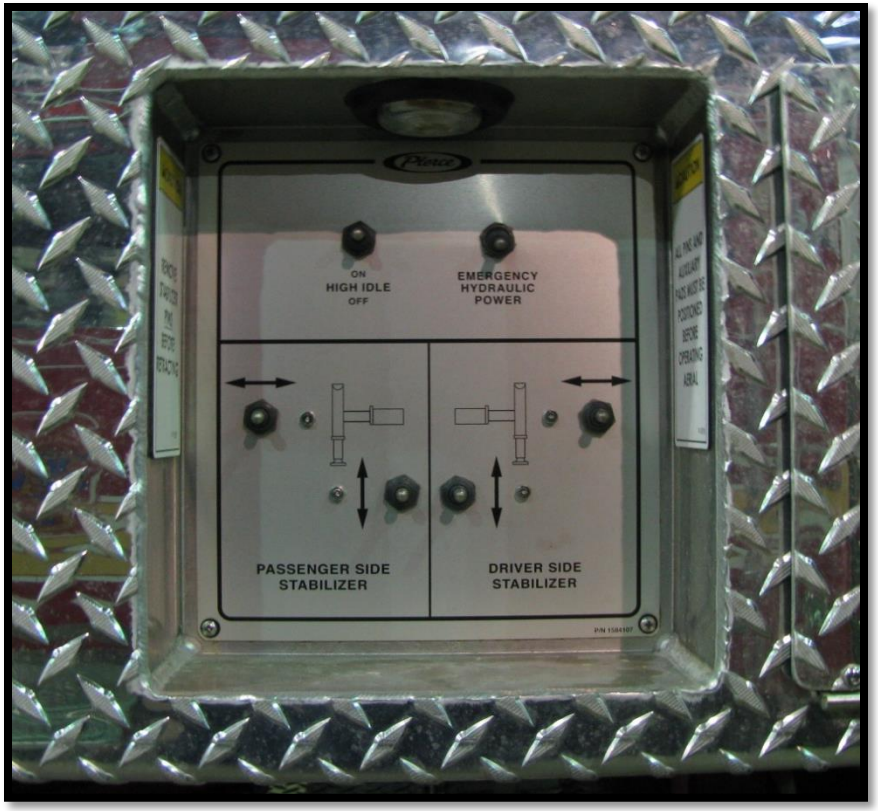
AERIAL OPERATIONS

✓Placing aerial in service

Use the controls on the side of the truck you are stabilizing.

This increases safety as it allows complete vision for operations.

Then complete this process on the other side and level the truck



AERIAL OPERATIONS

2005

2007/2008

AERIAL OPERATIONS

✓Stabilizing the truck:

- ✓**Full operations can only be obtained when both level indicators are in the green area. You lower both outriggers to take the bulge out of the tires. PIN BOTH STABILIZERS!!**

AERIAL OPERATIONS

Stabilizers NOT fully deployed is called shortjacking.

You can only shortjack the side opposite the working side. Your ladder will not rotate to the shortjacked side of the truck.

AERIAL OPERATIONS

STABILIZERS DEPLOYED FULLY:

GREEN = Full Operating capacities 500lb

YELLOW = Only HALF or 250lb

RED = NONE !!

THIS MEANS <u>BOTH</u> LEVEL INDICATORS MUST BE IN THE GREEN

AERIAL OPERATIONS

WITH STABILIZERS DEPLOYED FULLY:

Transfer power to aerial

Pull 5th wheel lockout lever towards you until locked

The turntable pistons are now locked and the handles on the pedestal are active.

*** Remember* Foot pedal depressed is required for valves to work. (2007 Models)**

AERIAL OPERATIONS

2005

2007

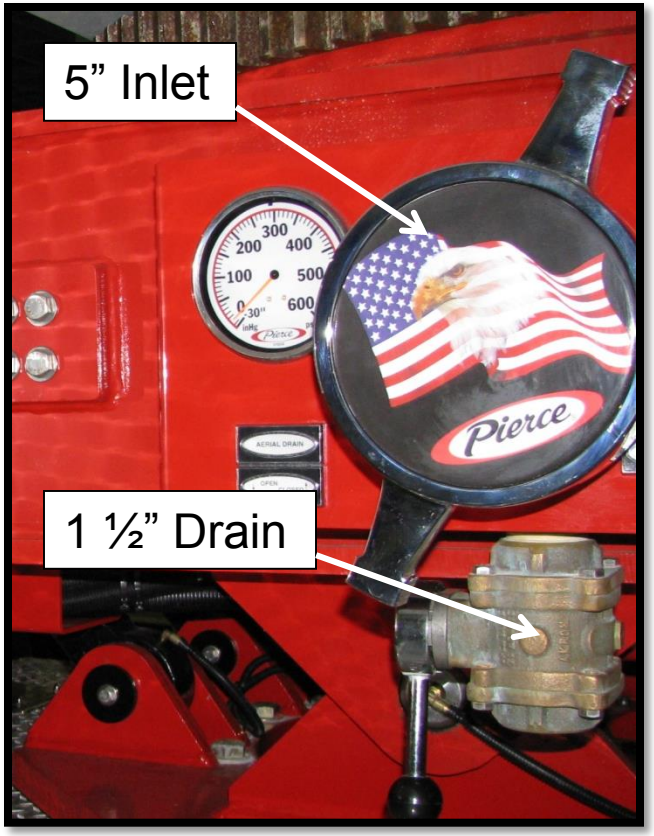
AERIAL OPERATIONS

Foot switch must be depressed to activate handles. 2007 /2008 models

AERIAL OPERATIONS

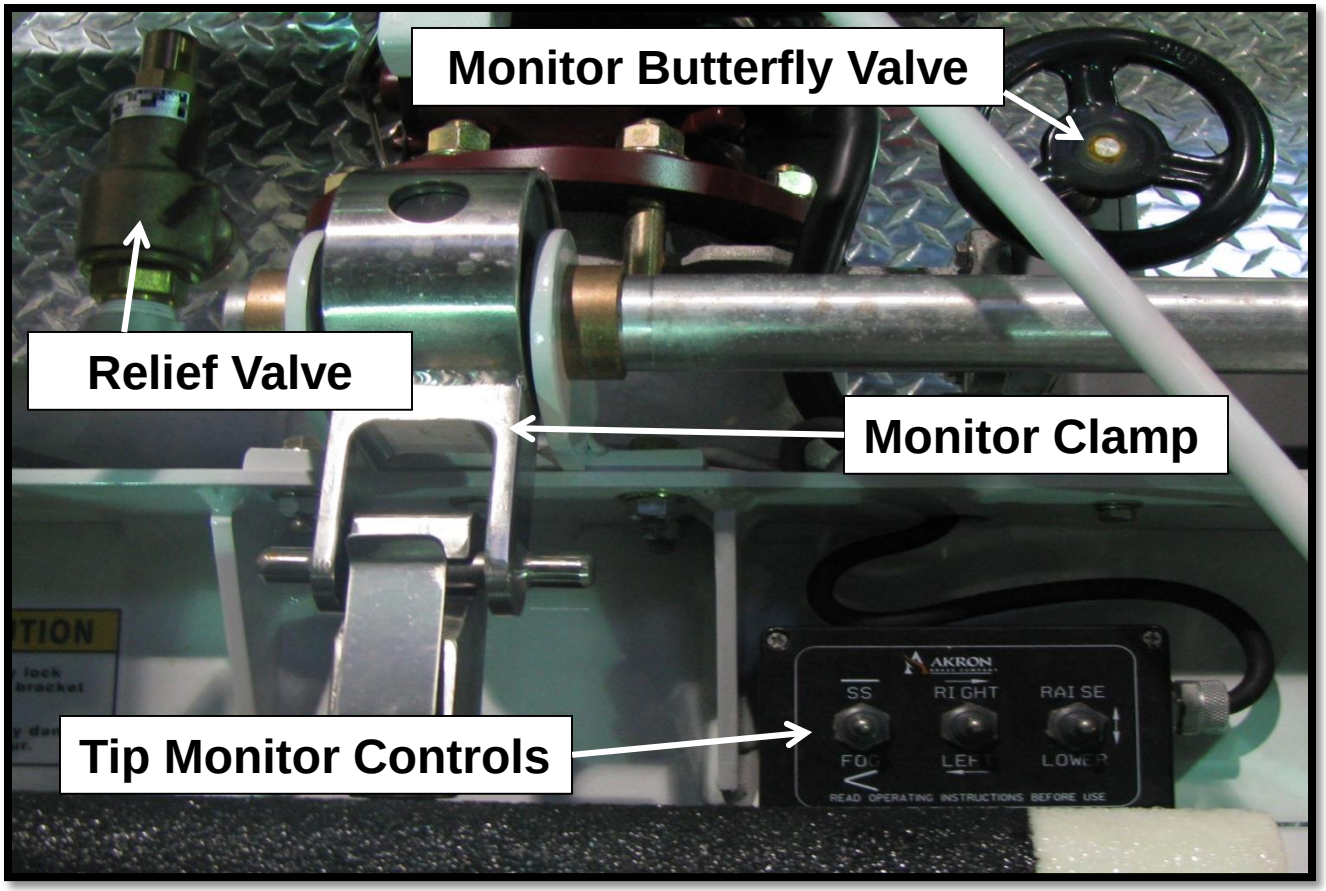
LADDER PIPE OPERATIONS

- ✓**Water inlet at the turntable will be set up with 4” stortz connections.**
- ✓**Waterway piping is open through to the other side and all the way to the monitor.**
- ✓**Be sure to use blind cap on the opposite side of water intake.**
- ✓**Apparatus is equipped with 25’ leader and gated 4x4x4 wye.**



AERIAL OPERATIONS

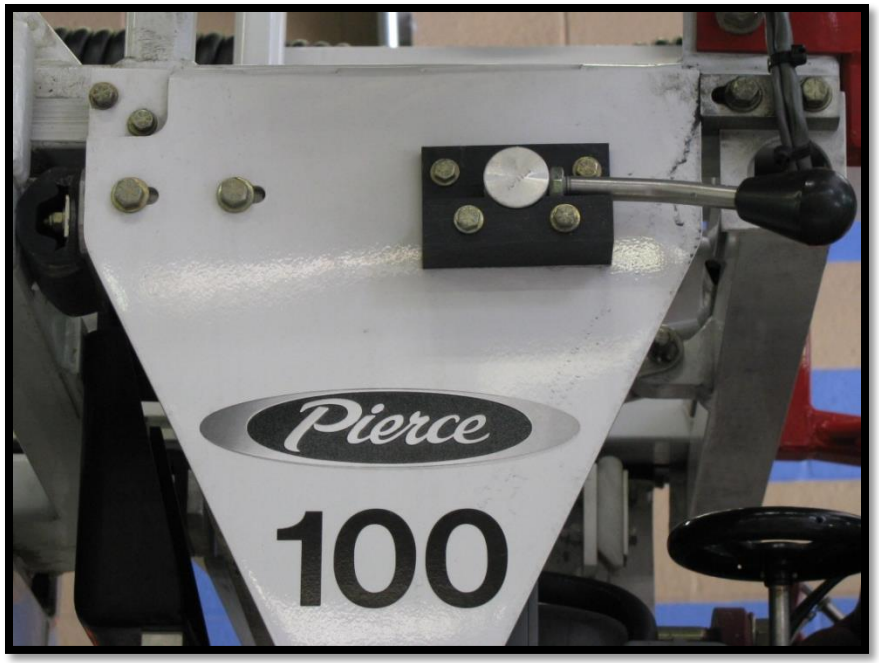
LADDER PIPE OPERATIONS

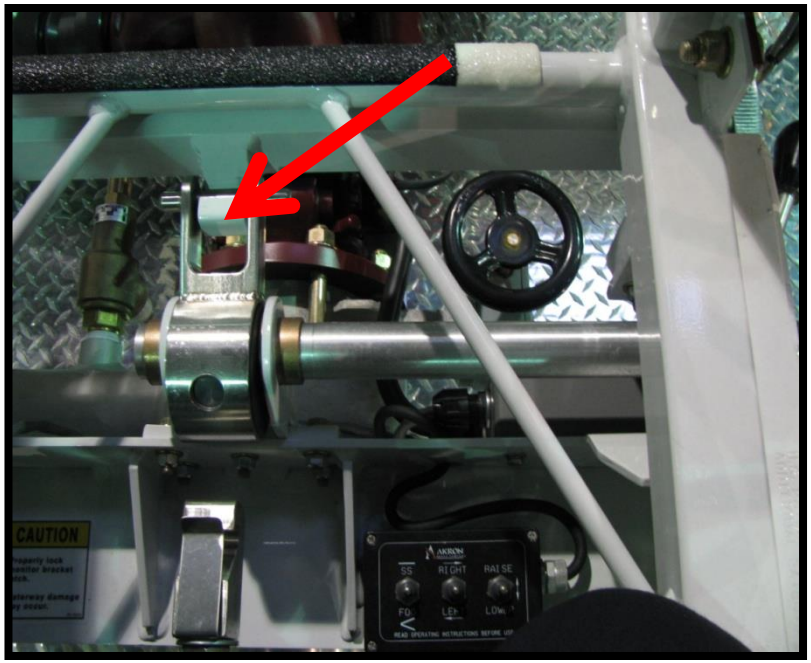


AERIAL OPERATIONS

Pinable Waterway

Monitor pinned to the Tip for full extension

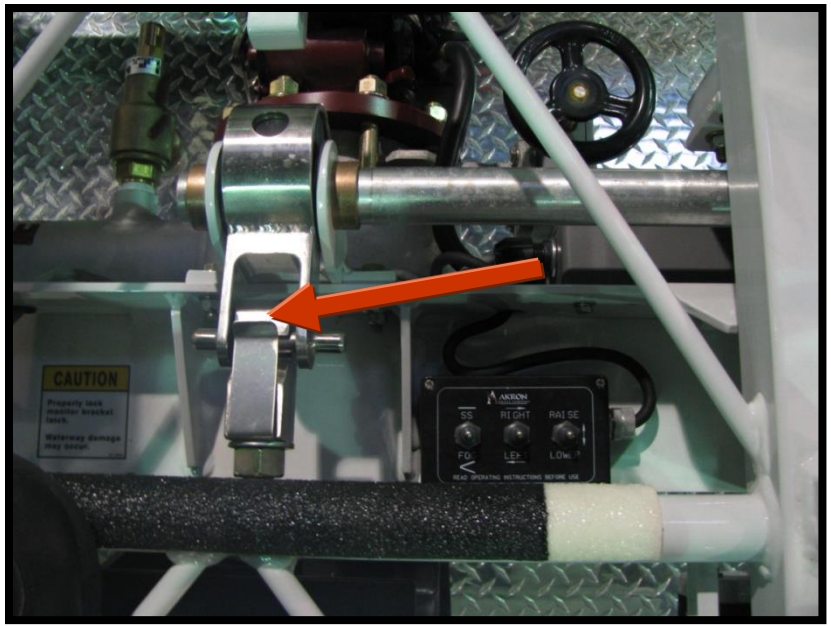




AERIAL OPERATIONS

Pinable Waterway

Monitor pinned to the upper mid section for rescue considerations.

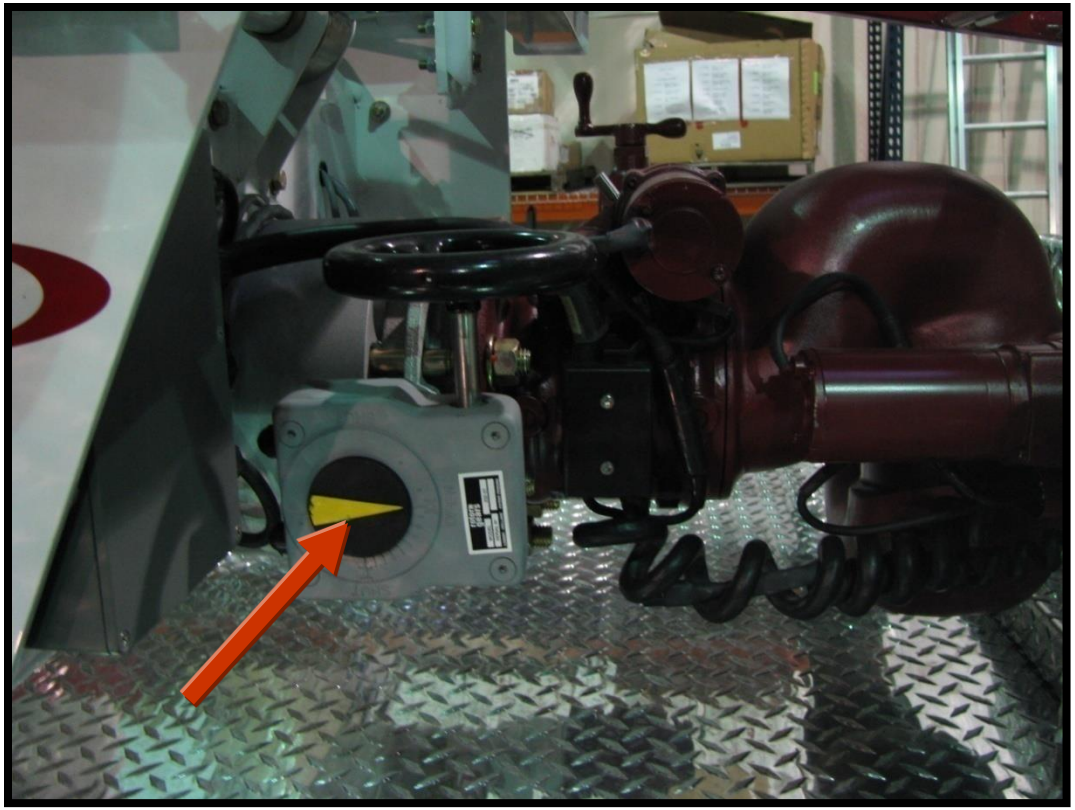


*** This position is the normal everyday setting***

AERIAL OPERATIONS

Monitor-

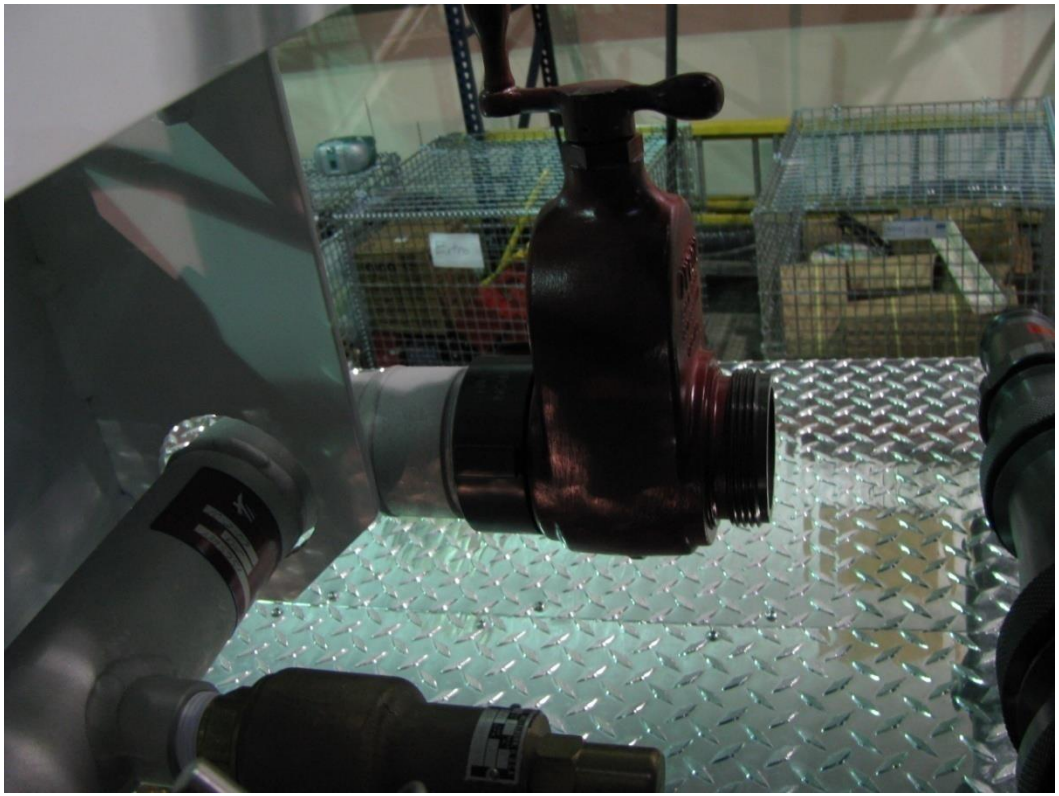
Water valve is to be checked daily and remain open.



AERIAL OPERATIONS

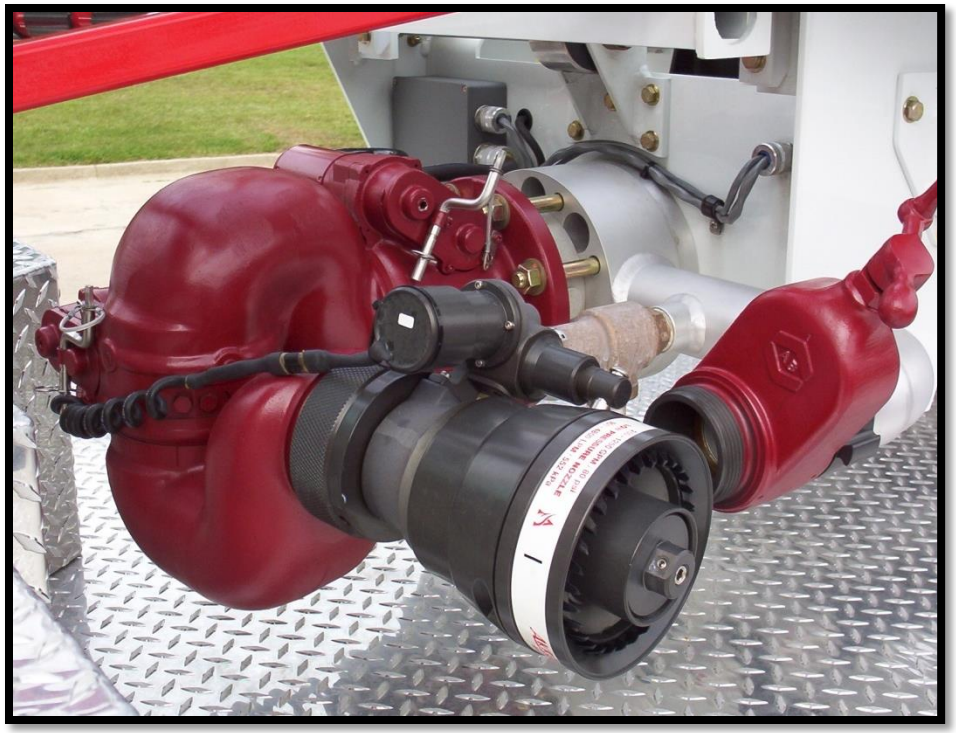
Monitor-

Gate valve for handline operations checked daily and remain in the closed position. To use standpipe pack, main water valve needs to be closed and open the gate valve.

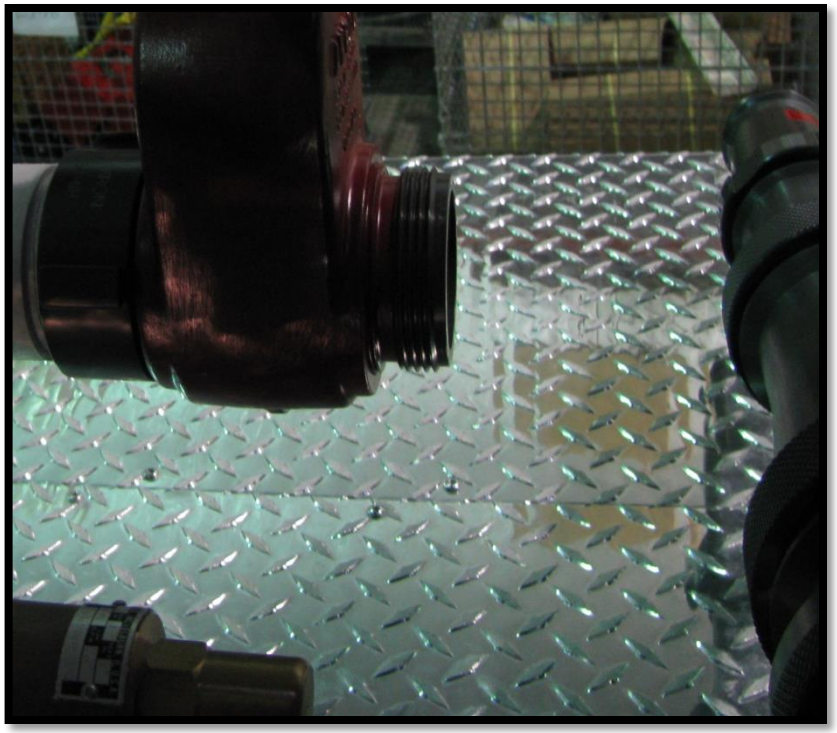


AERIAL OPERATIONS

2005 – Fog and Smooth Bore Monitor Nozzles



2007 – Smooth Bore Monitor Nozzles Only



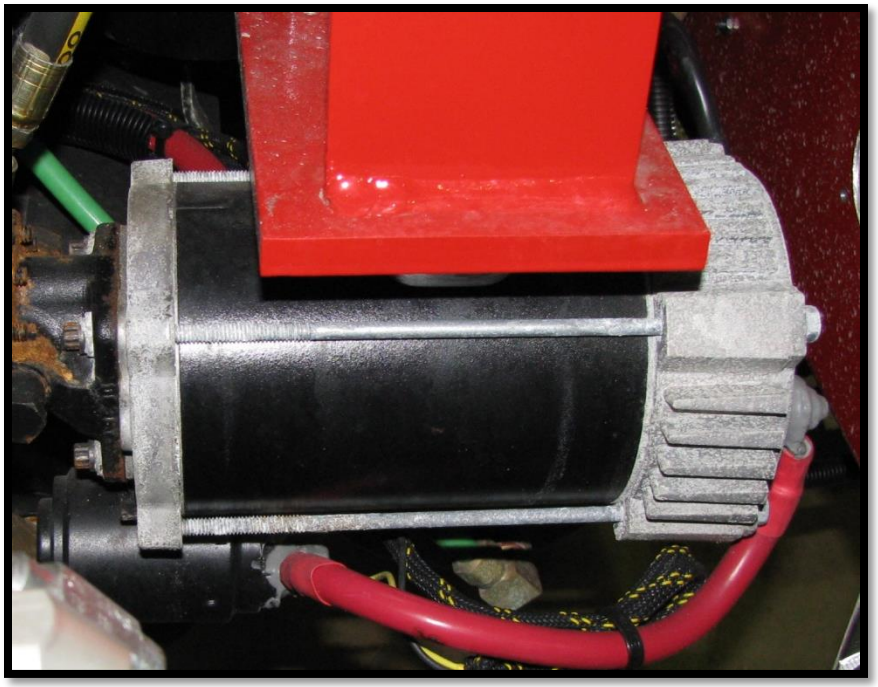
AERIAL OPERATIONS

EMERGENCY OVERRIDES

Whenever overrides are used, all safety interlocks are inactive

Hydraulic Pump Failure can be overcome with the use of the EPU (Emergency Pump Unit)

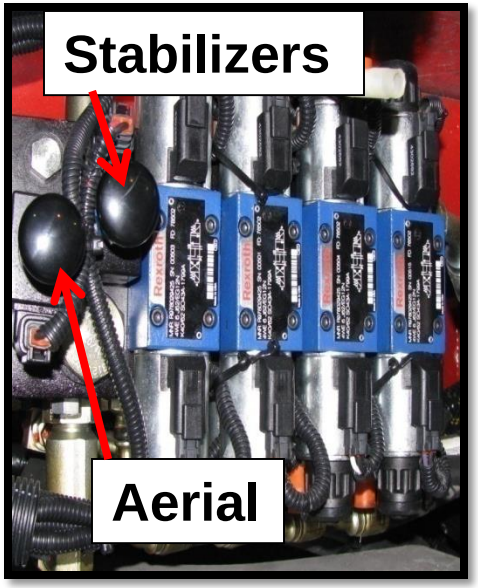
The EPU can be activated at the pedestal or outrigger switch consoles



AERIAL OPERATIONS

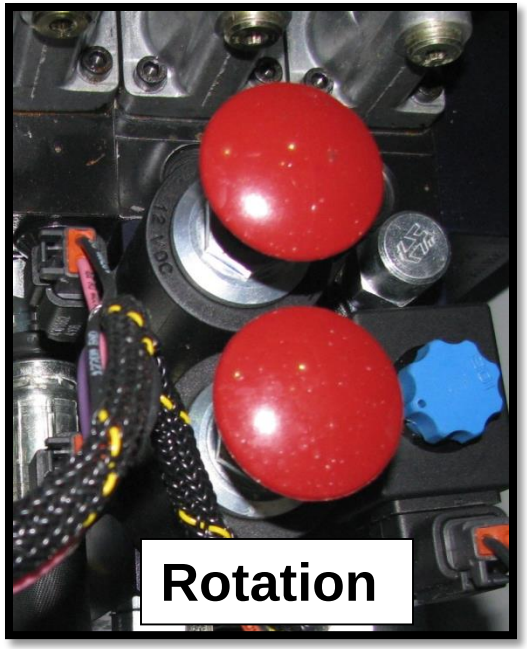
EMERGENCY OVERRIDES

Remember, overrides are only used to return the ladder to bed.
Never to put the ladder into service!



Electric Failure

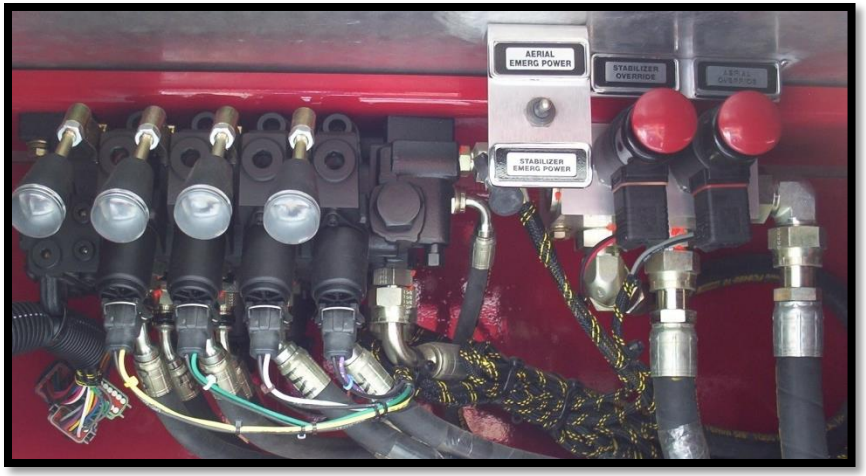
can be overcome with the mushroom valves and the regular operating valves.



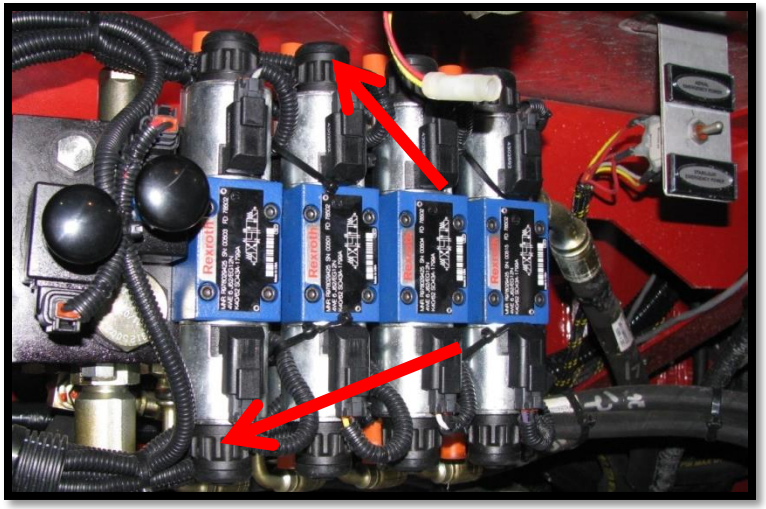
AERIAL OPERATIONS

EMERGENCY OVERRIDES

2005 with manual levers



2007 with push button manual



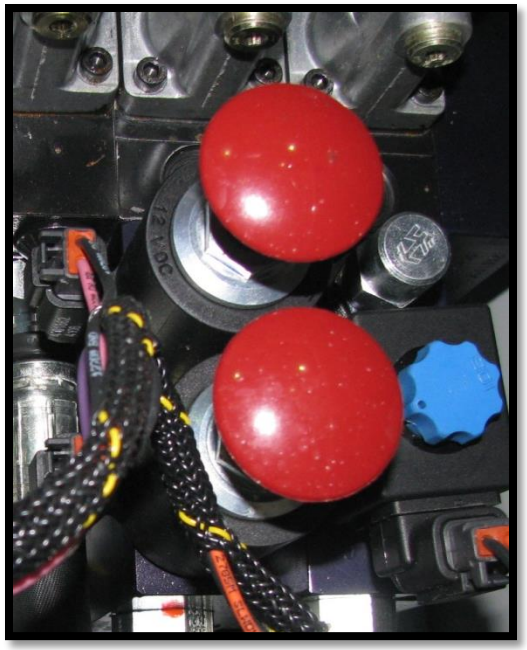
Different types, same locations

AERIAL OPERATIONS

ROTATION EMERGENCY OVERRIDES

2005 in Bottom step of aerial

2007 in Pedestal

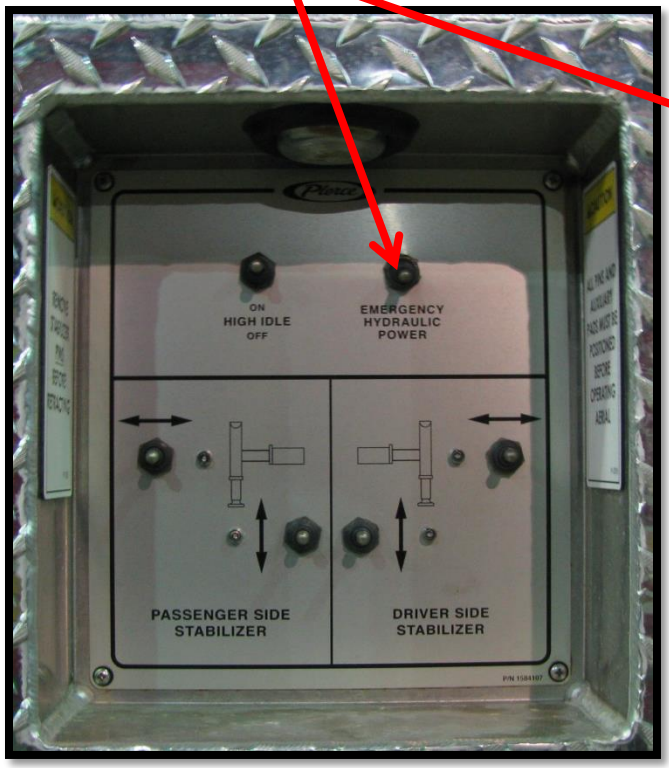


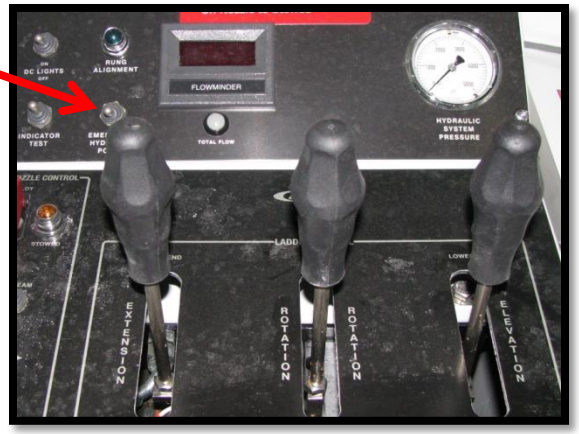
AERIAL OPERATIONS

EMERGENCY OVERRIDES

EPU'S

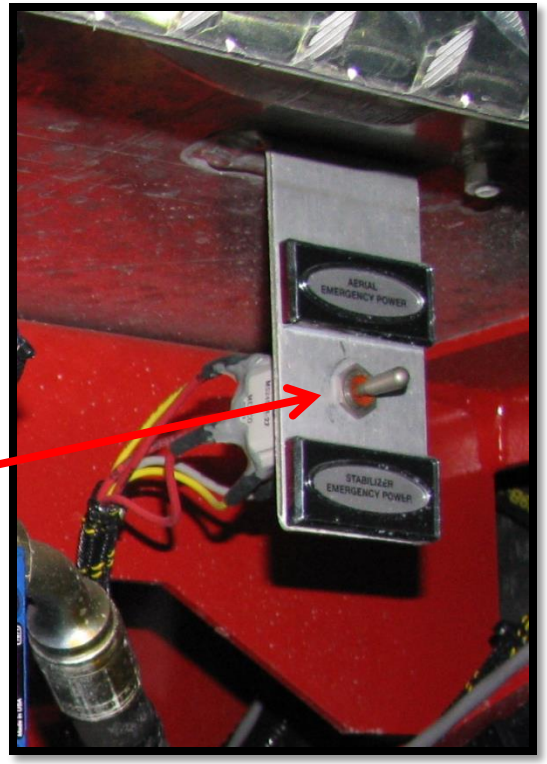
Energized through the aerial master switch





EPU

Energized through the battery switch



APPARATUS CHANGES

AERIAL

2005	2007
500 lb Capacity with overload warning. Fog Nozzle & Smooth Bore. Pedestal handles with locking handles. 1000 GPM	500 lb capacity without overload warning. Smooth Bore Nozzle only. Pedestal handles without locking handles, dead man foot switch instead. 1000 GPM

APPARATUS CHANGES

GENERAL

2005	2007
5Seats/Scba	6 Seats/Scba
Generator: 15 Kw hydraulic	Generator: 15 Kw hydraulic
Flood light switches in cab and1st high side compartment	Flood light switches in cab and tiller cab. No rear flood light.

Operating Tractor Drawn Apparatus

Advantages of TDA

- Maneuverability in congested traffic areas
- Allows for better positioning at incidents
- Compartment space for equipment

Operating Tractor Drawn Apparatus

Principles for Driving Tractor Drawn Apparatus

- **Teamwork is Essential**
- Good communication can avoid collisions
- Driver is responsible for the entire apparatus
- Tiller person is there to assist

REVIEW

- Circle Check
- Engine Compartment
- Steering
- Suspension
- Brakes
- Tires/Wheels
- Frame/Undercarriage
- Batteries
- Windshield
- Interior Cab Area
- Exterior Features
- Operations
- Emergency Overrides