Heavy Rescue Squads

2008 Pierce Dash

Heavy Rescue Squads

Unit Specifications

- Unit height 10’ 6”
- Unit length 38’ 2”
- Unit weight 62,000 lb.
- Fuel tank 65 gallon
- Engine Cummins 450 hp
- Alternator 400amp Niehoff
- Transmission Allison 4000 EVS
- Tires: Front 425/65R 22.5 @110 psi
  Rear 11R/22.5 @120 psi
- Generators: PTO Onan 35 KW
  Diesel Kohler 20KW
- Air Compressor: Atlas Copco 16.2 cfm
- Light tower: Will-burt night scan with six 1500 watt lights=9000 watts

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Unit Specifications

- 9000 lb. Warn portable electric winch with 4 connection points
- 20,000 lb hydraulic fixed winch with 40 gallon reservoir.
- 4 upper body tie downs with 2,000 pound rating.

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Warning

This vehicle is equipped with a Drive Cam audio and video recording device. All conversation and activity occurring in this vehicle is being recorded.

Disclaimer

The drive cam records continuously while the motor is running. The device saves audio and video in any G-force incident. In a G-force incident, the tape records and saves ten seconds before the incident and ten seconds after the incident. This gives a total of 20 seconds of saved tape.

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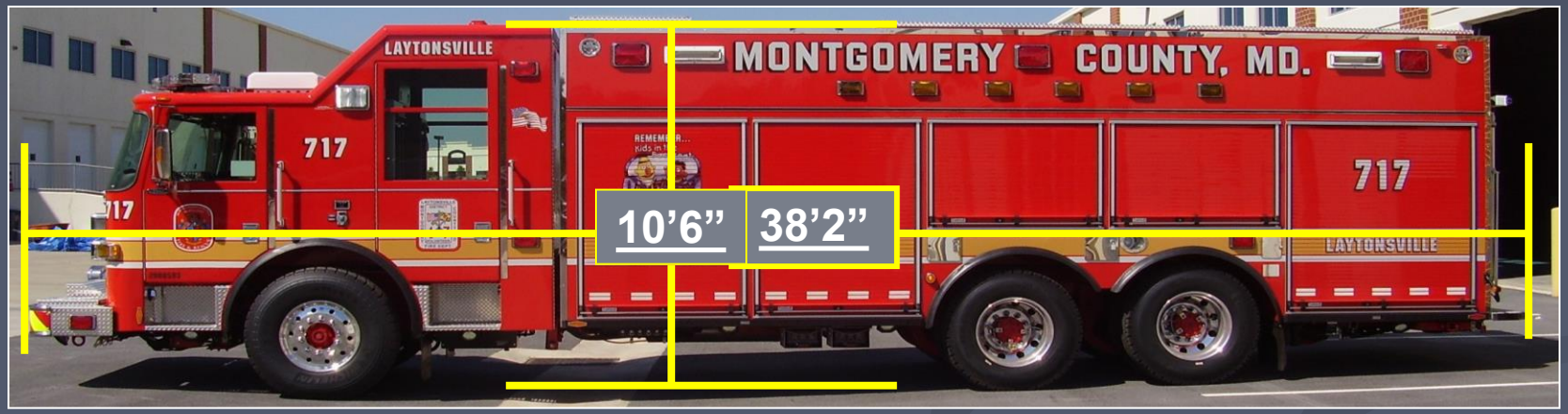

Length is 38’ 2”

Height is 10’6”

Weight is 62,000 lb. gvwr

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Raising the cab

- Before raising the cab make certain all equipment in the cab is secure. Remove lose equipment
- The unit must be on level ground to prevent twisting of the cab.
- The battery switch and ignition switch must be on and the parking brake set.

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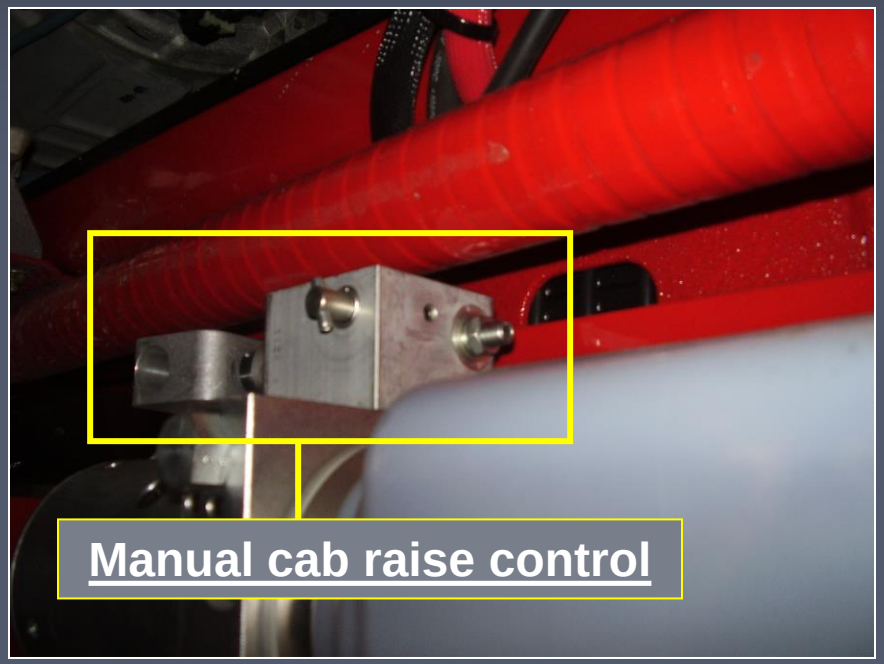
Raising the cab with manual override



- In the event the electric cab lift fails you can raise the cab manually.
- This manual override is located on the officers side behind the cab raise reservoir.
- The jack handle is located on the B-post behind the drivers seat.

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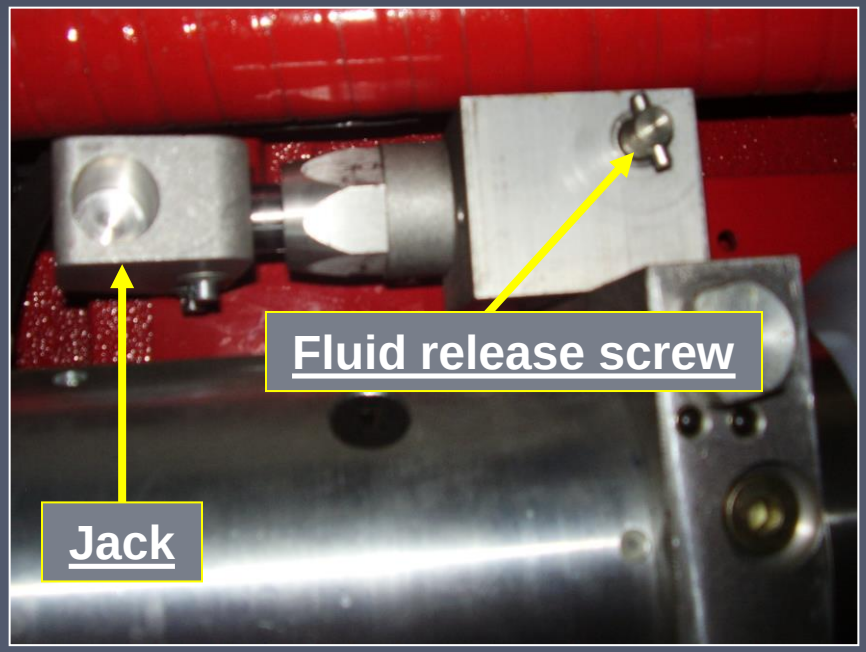
Raising the cab with manual override



- To raise the unit put the jack handle into the receiver and jack the cab up.
- To lower the cab use the slotted end on the handle and turn the screw to release fluid and lower the cab

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Raising the cab

This photo indicates the cab lift switch is in the raise position

- On the front wall of the P-5 compartment you will find the cab lift control panel.
- To raise the cab, rotate the red rocker switch to the raise position and toggle up the activate switch and hold.
- Raise the cab until the cab stay falls into place.
- **Do not back the cab back down onto the cylinder.**
- **Doing this causes unnecessary strain on the cab and cracks the cylinder cup.**

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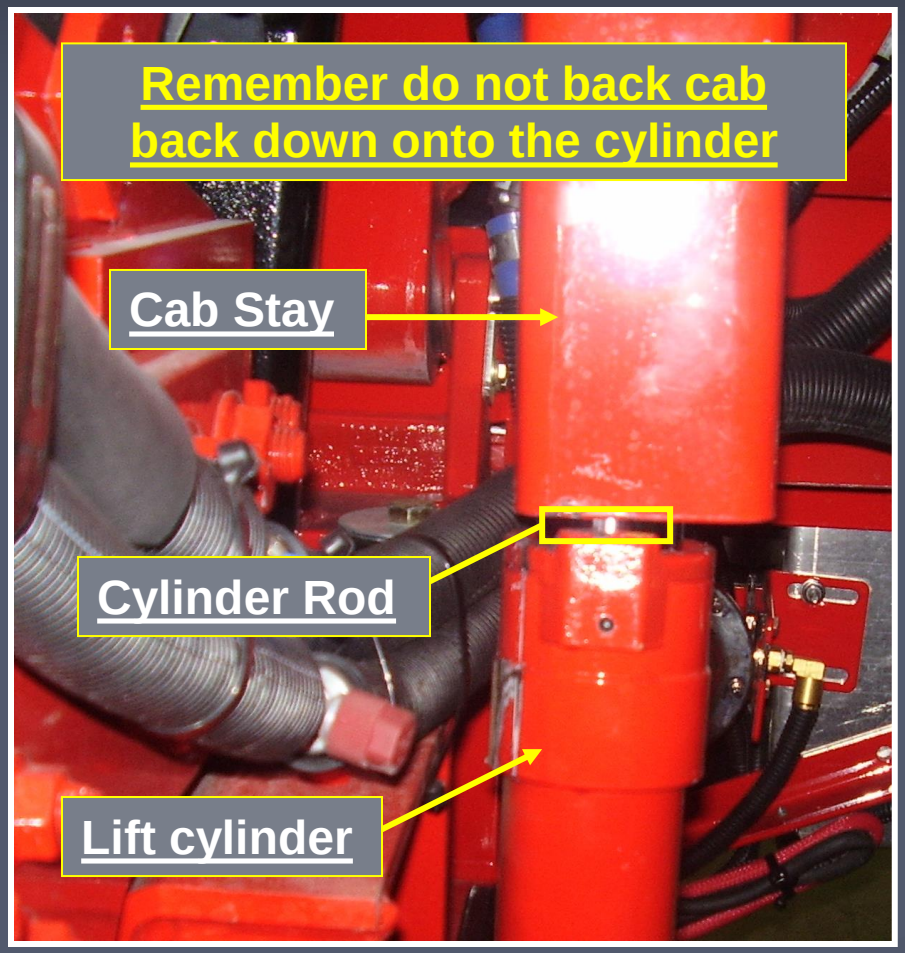
Cab Stay (safety)



- The cab stay is the same color as the unit.
- There are two ways to indicate if the cab stay is set.

1. Hearing the cab stay strike the cylinder rod.
2. Seeing the cylinder rod between the cylinder and the stay.

- After being certain the cab stay is set, turn the battery switch off.

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Lowering the cab

This photo indicates the cab lift switch is in the lowering position

- To lower the cab turn the battery switch on.
- Rotate the red selector switch to the lower position.
- Toggle up the lock release switch and hold then toggle up the activate switch and hold.
- After approximately 5 seconds release the lock release switch, and continue to hold the activate switch.

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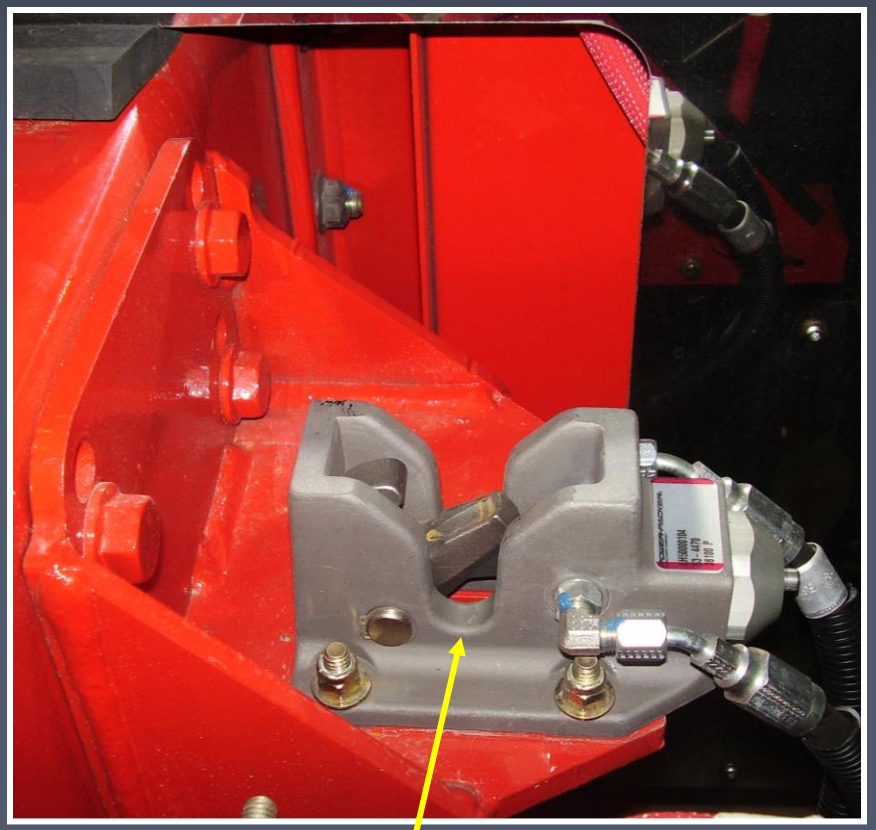
Lowering the cab



- After the cab has settled continue to hold the activate switch for approximately 5 seconds.
- This action insures that the cab locks have engaged.

Note

If the cab fails to lower or stops and twists you must raise the cab and then follow the lowering instructions.

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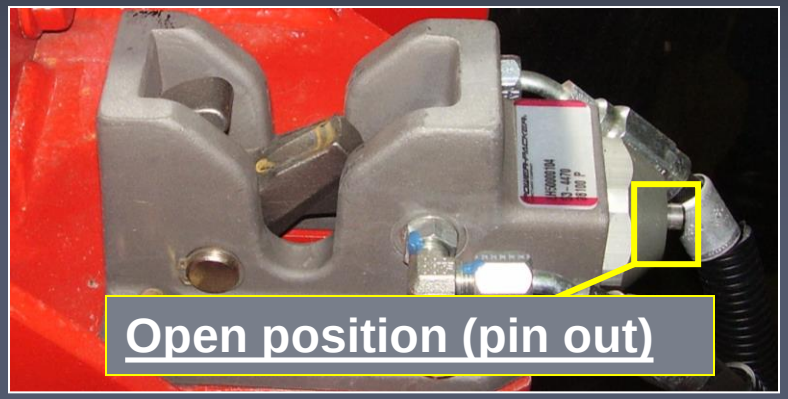
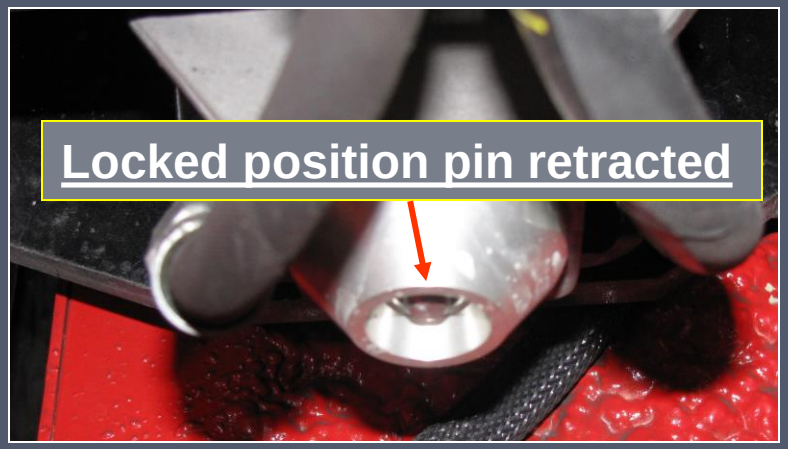
Lowering the cab





- After lowering the cab leave the switch, on the control panel, in the lowering position.
- There are no warning devices to let the operator know if the cab is secure, you must visually check the locking pin.

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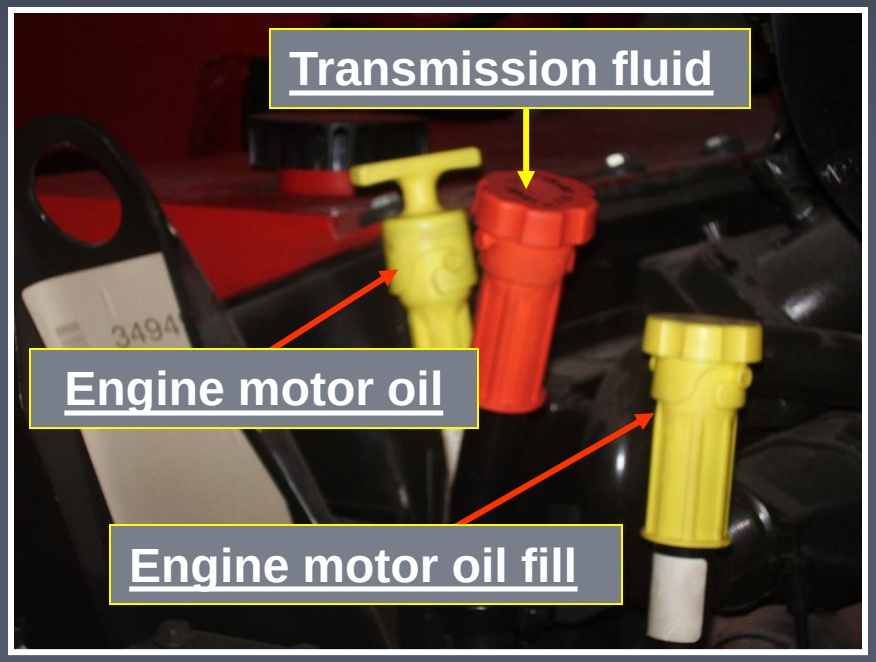
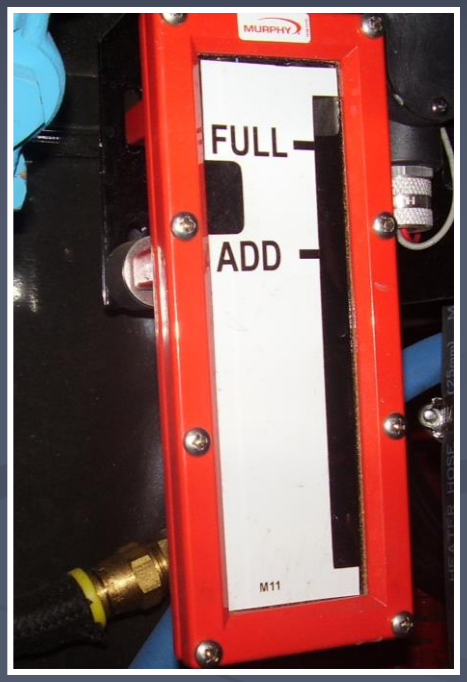
Engine oil check





- Engine motor oil can be checked by dipstick or by visual sight glass.

- This sight glass is located on the left lower side of the engine

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Engine oil check

- This picture is looking from the jump seats through the engine cover access door.

- Engine motor oil will be checked by the dipstick weekly, unless otherwise indicated. (leaks).
- The engine motor oil can be checked daily by the visual sight glass.
- When engine motor oil is to be added it will be 4 quarts of 15 - 40 weight CJ4 motor oil.

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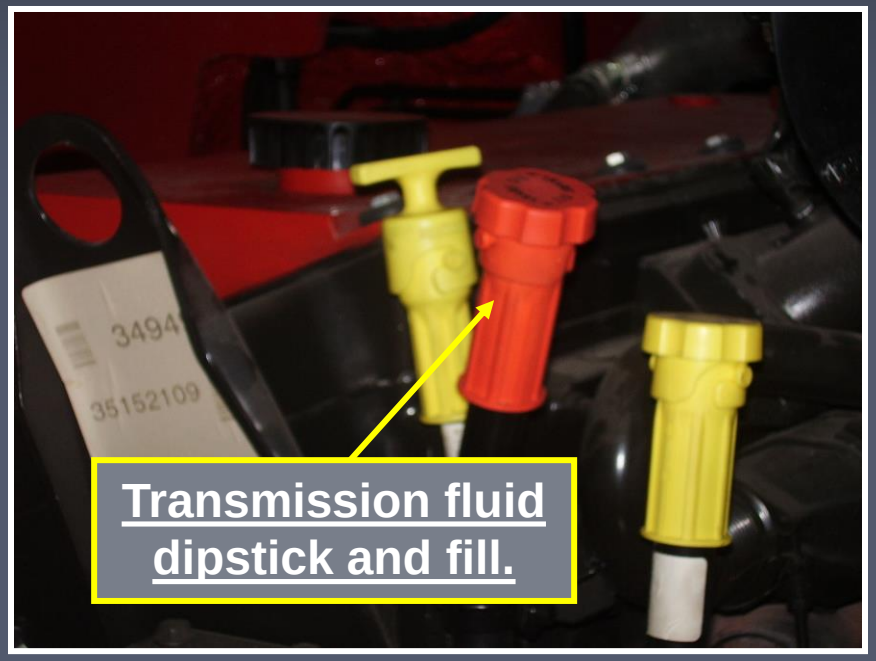
Transmission fluid check



- This transmission is a Allison EVS 4000
- The transmission fluid used is **Trans-synd.**
- The transmission fluid will be checked weekly unless otherwise indicated. (leaks).

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Transmission fluid check

In cab access door

Transmission dipstick and fill

- The transmission fluid can be checked by two methods.
  1. Transmission dipstick.
  2. Transmission selector pad.
- When checking the transmission fluid by either method the following criteria must be met.
  1. The transmission temperature must be 140 degrees.
  2. The unit must be parked on level ground with engine at idle for five minutes.

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Selector pad transmission fluid check

- The transmission temperature must be raised to 140 degrees.
- The unit must be on level ground and at idle for five minutes.
- Depress the up and down arrow at the same time once.
- The screen will read OL (oil level) OK or HI, LO followed by the number of quarts.

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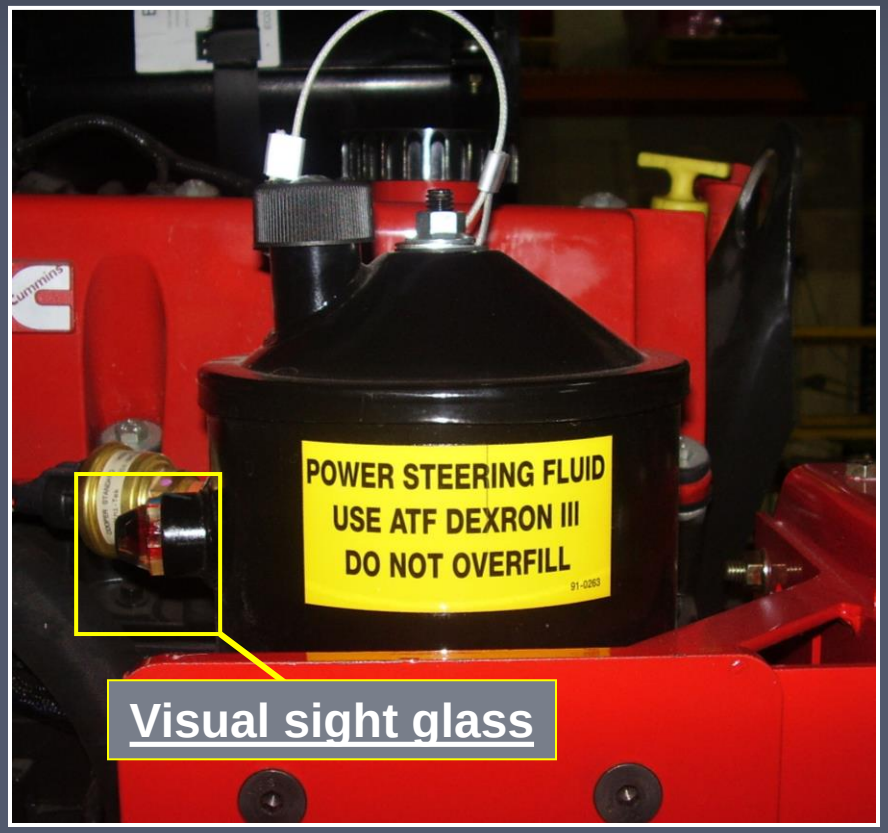
Power steering fluid check



- The power steering fluid can be checked cold or hot.
- A quick visual check can be accomplished by looking at the sight glass.
- When power steering fluid is required use **ATF Dexron III.**

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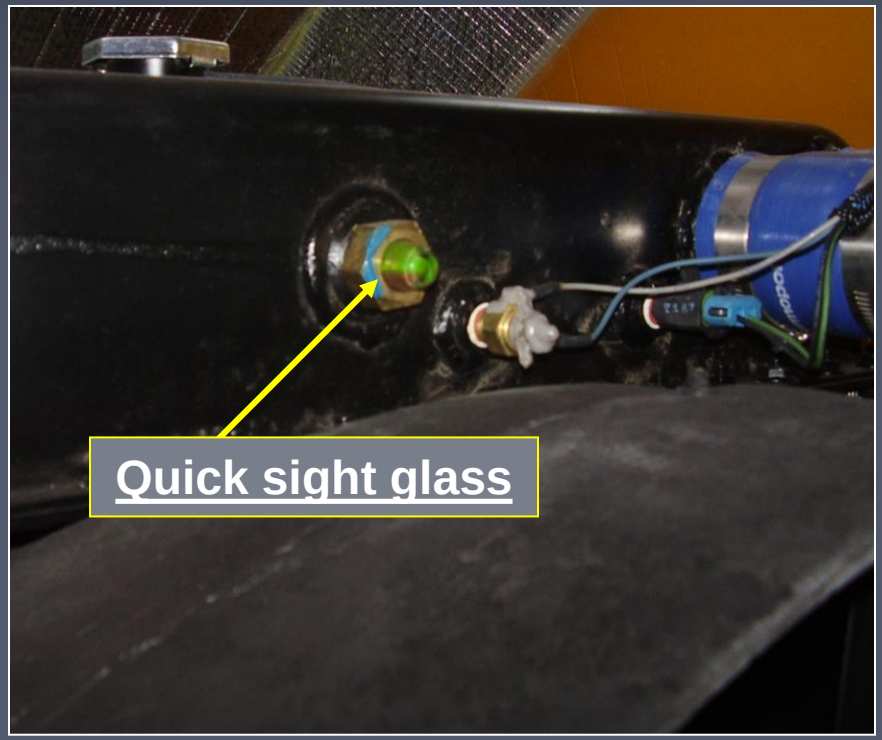
Coolant fluid check



- The coolant level must be checked with the cab raised.
- Check the coolant when the engine is cold by removing the cap. (monthly)
- A quick check can be done by using the sight glass. (weekly)
- When coolant is needed add Final – Charge.

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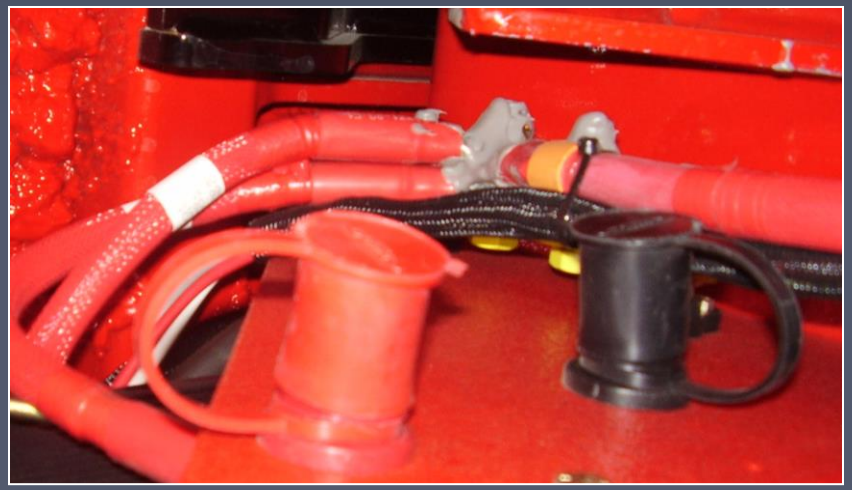
Jumper studs



- These studs are located under the drivers side on the rear of the battery box.

When jump starting a unit it is in this order:

1. **Live red to dead red**
2. **Dead black to a grounding point on the starting vehicle**

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Vogel lube system

- The vogel lube system is a automatic lubrication system.
- At a predetermined interval it will lubricate components on the truck.
- Make sure that there is fluid above the minimum line in the reservoir.
- **Only the mechanic will add the Vogel lube fluid.**

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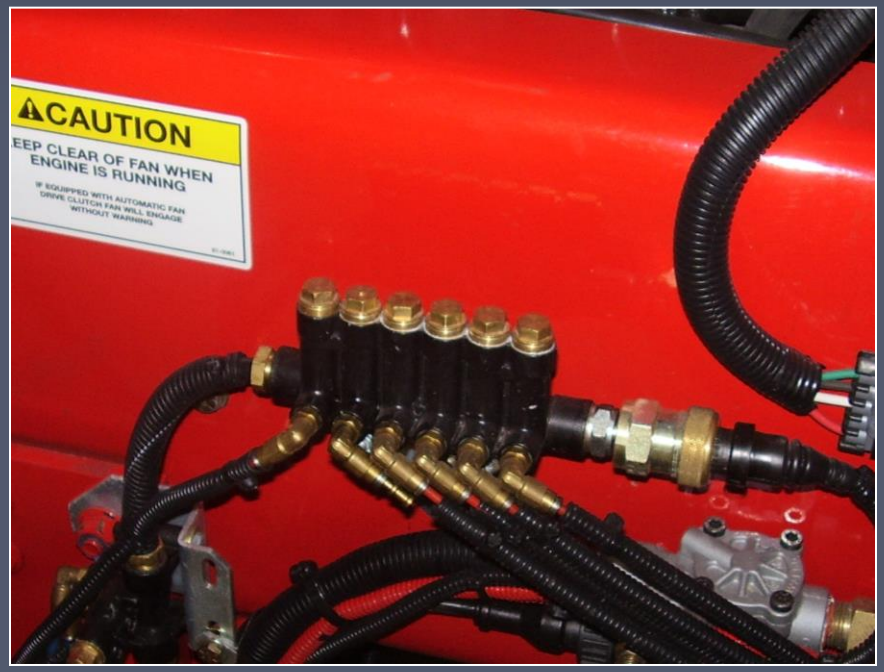
Vogel lube system



- The picture on the right is a vogel lube manifold.
- The lines leaving the manifold go to a particular body component.
- Check the manifolds weekly looking for no grease around the fittings.
- If grease is found around the fittings notify the shop.

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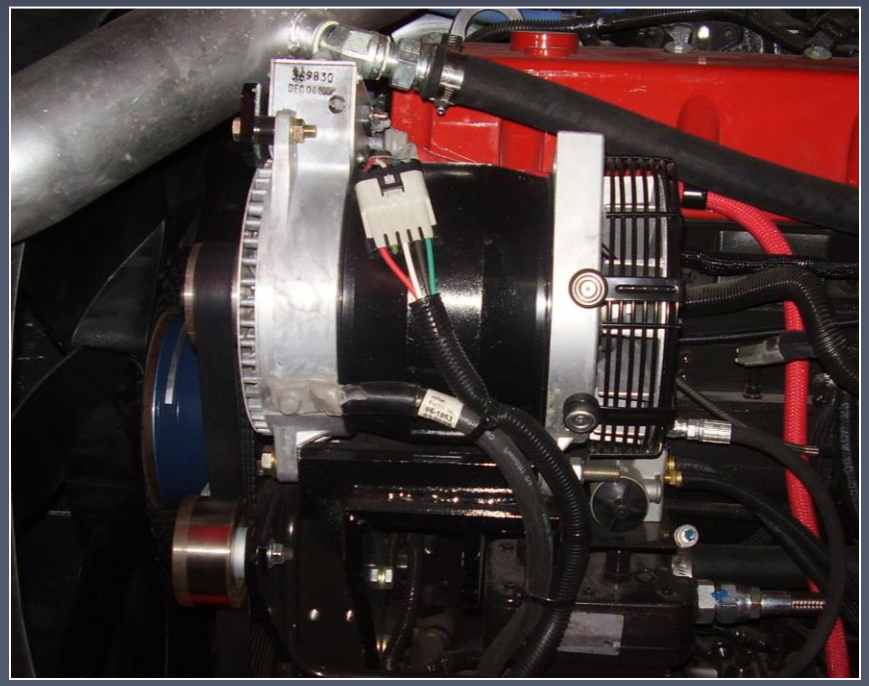
Alternator



- The alternator is a Neihoff 400 amp.
- Ensure that the serpentine belt has no more ¾ inch deflection.
- Ensure that all wiring is not chafing.

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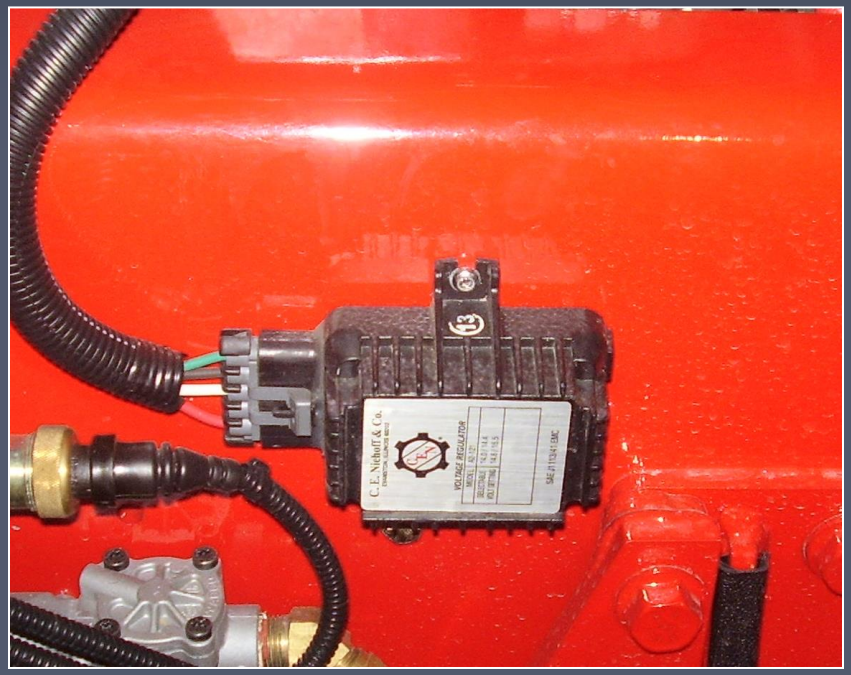
Alternator voltage regulator



- Due to heat related problems of the voltage regulator, the voltage regulator location has been changed.
- The voltage regulator is now mounted on the left frame rail.
- Insure that the voltage regulator is securely mounted.

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Glad hands

- These glad hands are used for towing.
- On weekly checks make certain that the glad hand covers are in place.
- If the covers are missing notify the mechanics shop.

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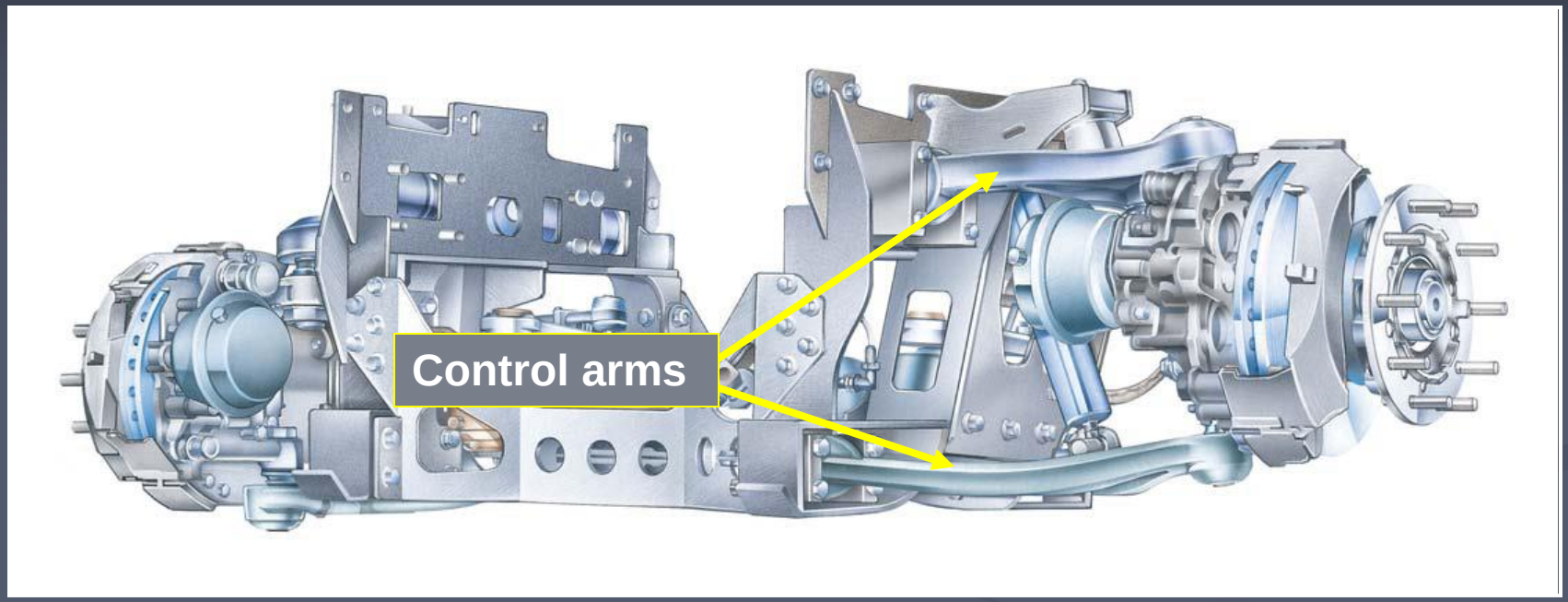
Tak 4 independent Suspension



The Tak 4 suspension is a independent suspension consisting of upper and lower control arms and a torsion bar. It is equipped with disc brakes.

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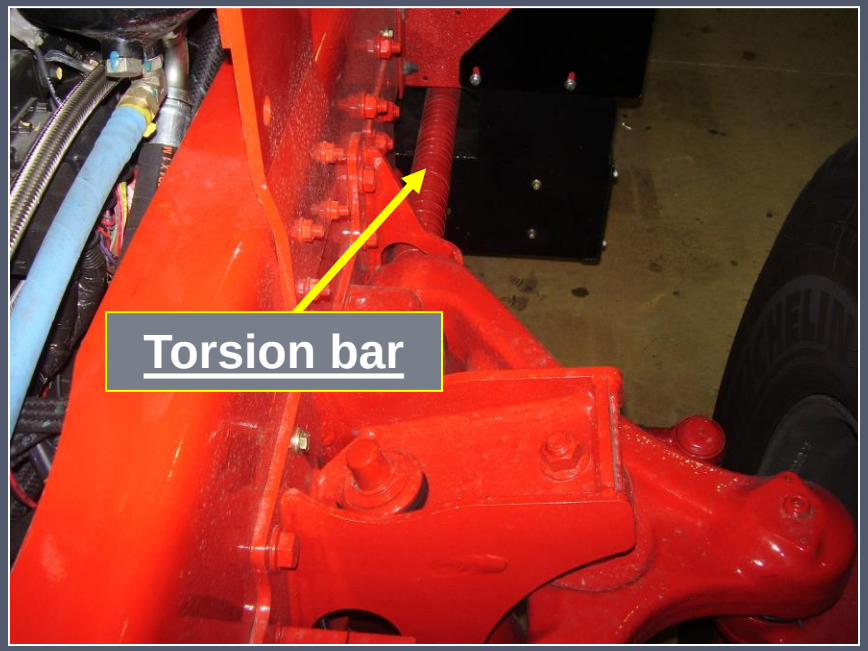
Tak 4 independent Suspension



- The torsion bar acts like a spring in this suspension.
- On weekly inspections ensure that the tape is intact.

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Rear air suspension

The rear suspension is a Holland Neway air ride suspension. This suspension is rated at 40,000 lbs.

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Rear air suspension

- On the weekly inspection check air bags for evidence of rubbing.
- On the daily inspection ensure that the unit is setting level front to back and side to side.

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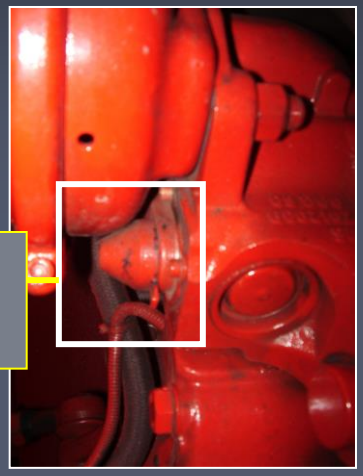
Brake pad indicators



- The squads are equipped with disc brakes.
- The wheels have a brake pad indicator on them.
- The front wheel indicator is covered by a rubber cover.
- The rear wheel pad indicators can be seen.
- As long as you see the indicators the pads are good

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Crossfire tire air pressure monitor

This picture shows the tires have proper air pressure. Crossfire monitors are designed to measure cold pressures

- Crossfire monitors have three inner panels consisting of three different colors.
- 1. Yellow with one broken black line.
- 2. Solid Black (under inflation)
- Solid Red (over inflation)
- The outside panel is yellow with one broken black line.

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Crossfire tire air pressure monitor

- This picture indicates the tire air pressure is approaching a over inflated condition.

- This picture indicates the tire air pressure is approaching a under inflated condition.

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Start up procedures

- The battery switch is located in the lower left corner of the drivers area.
- Turn the battery switch to the on position.
- Toggle the ignition switch on. The green light will illuminate in the switch.

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Start up procedures

Ignition is on

- After toggling the ignition switch on the green light inside the switch will illuminate.
- There is no gauge sweep on this unit.
- Wait approximately **5 seconds before depressing the start switch.**

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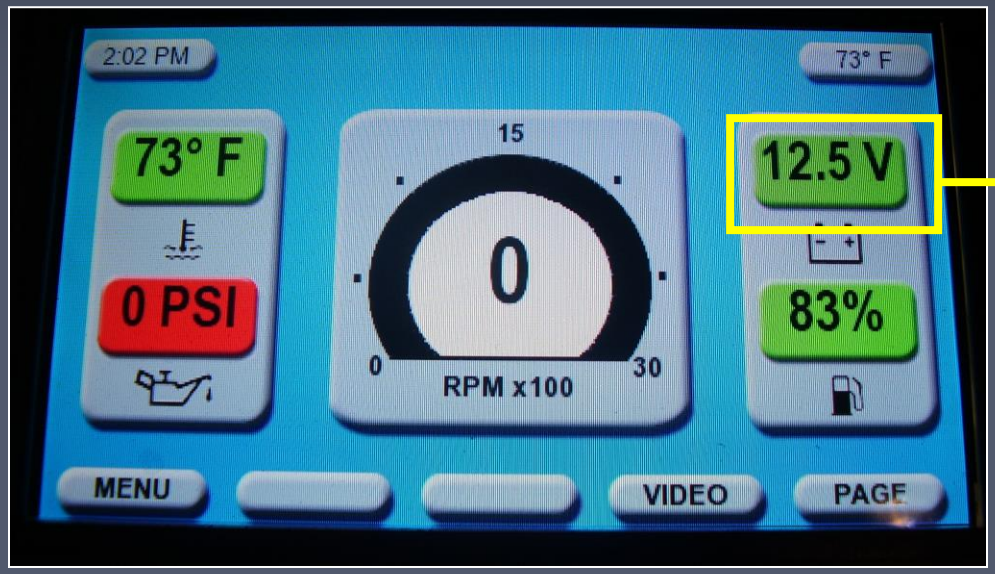
Start up procedures

Command Zone



After the ignition switch has been activated the Command zone screen will activate.

- Before starting the engine be sure that there is at least 12 volts.
- Less than 12 volts indicates electrical equipment is activated or poor battery condition.

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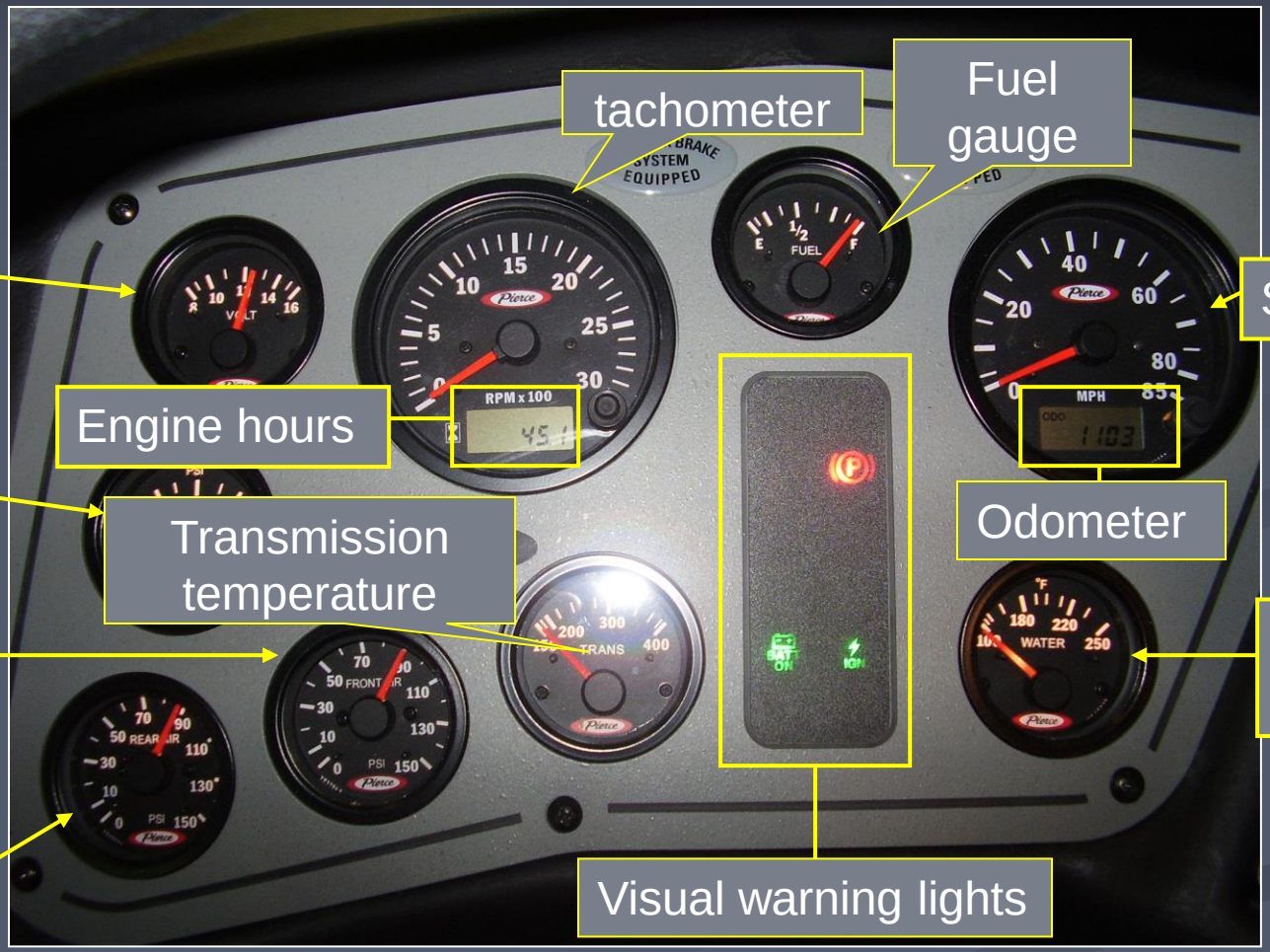
Gauge cluster



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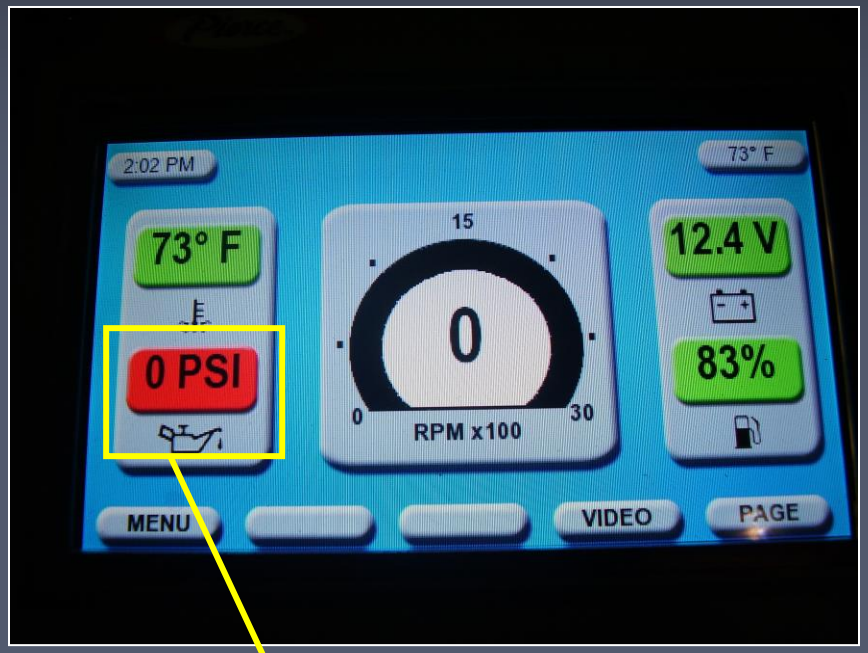
Command Zone



Red color indicates abnormal condition

- In normal conditions the oil pressure, water temperature, voltage, and fuel level blocks will be green in color.
- In abnormal conditions the blocks will turn red followed by a audible warning signal.
- When this condition occurs get mechanics assistance.

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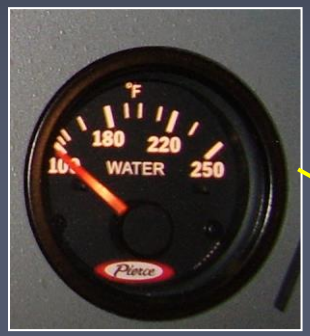
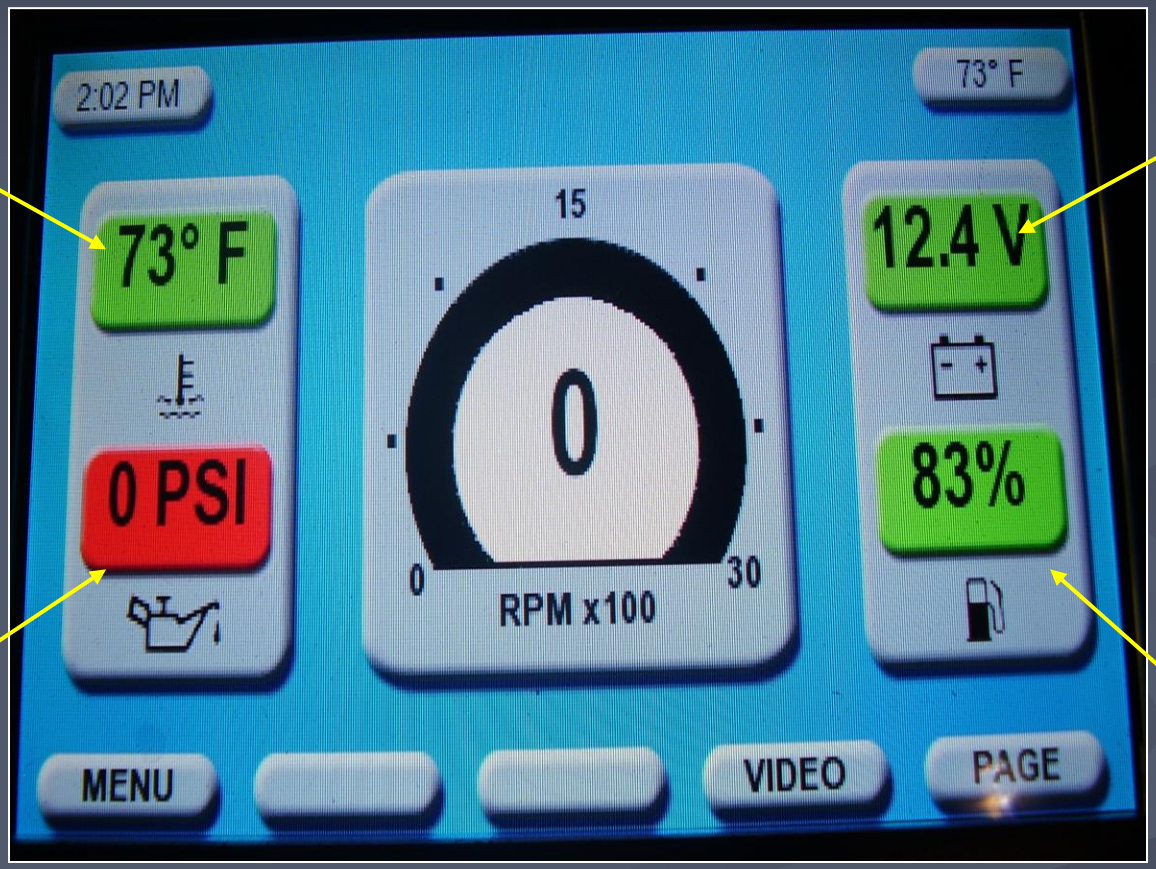
Command zone and gauge comparison





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Command zone and gauge comparison

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Air tank manifold

- The air dryer removes 95% of moisture from the compressed air.
- Open and bleed all air tanks until empty weekly.

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Traction devices

- During normal driving conditions only one axle supplies power to the rear wheels.
- During certain circumstances more traction may be required.
- The following actions can be taken

1. Axle-interlock
2. Differential lock

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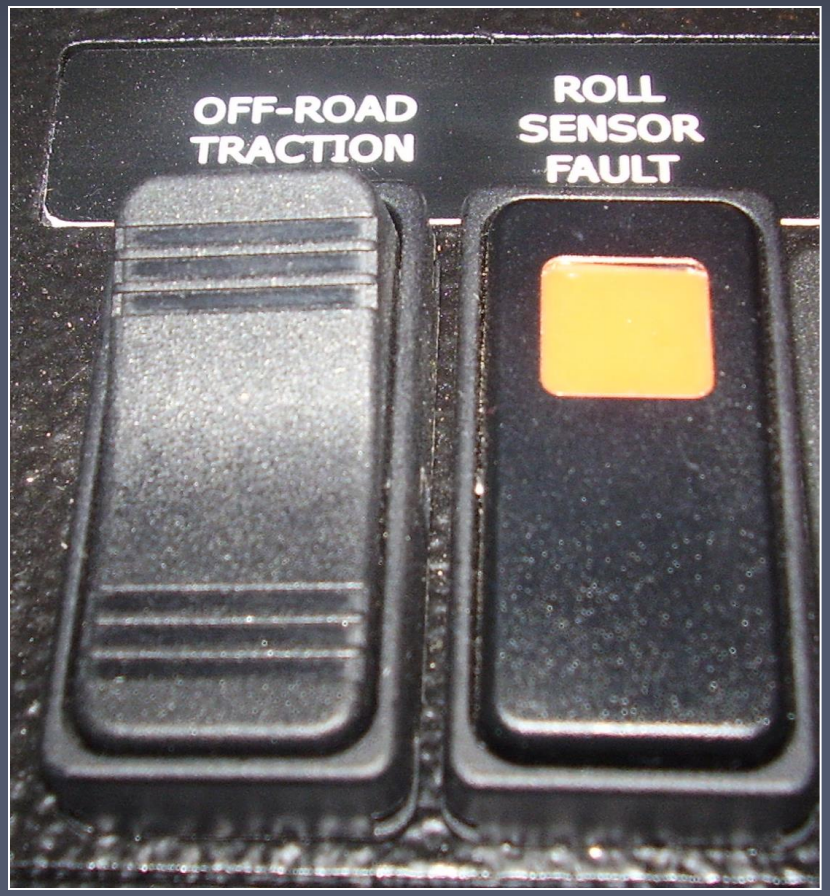
Off road traction



- In normal driving conditions if the drive wheels lose traction the ATC light will illuminate on the dash.
- When the ATC light on the dash illuminates either the brake is being applied to the spinning wheel or the engine is being powered down to regain traction.

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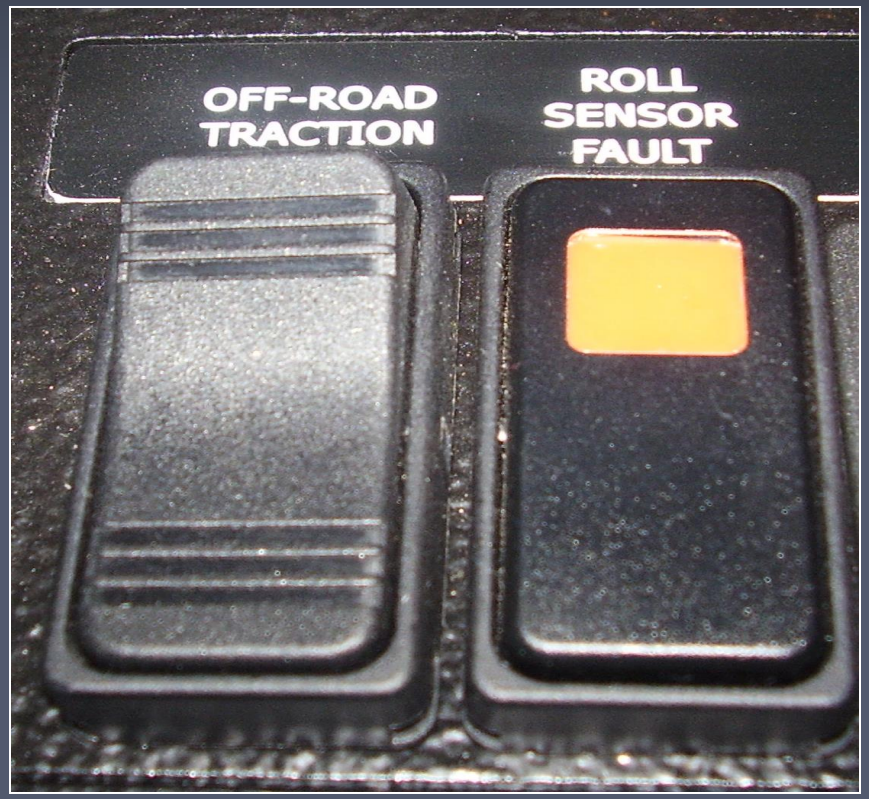
Off road traction



Toggle once to activate, toggle again to deactivate

- When the Inter axle lock or the differential lock is engaged the off road traction will be utilized.
- This switch deactivates the traction control allowing the rear wheels to spin.
- **Do not spin tires in mud.**
- **Take the slope of the terrain in to account when utilizing the differential lock.**

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Axle Interlock

Axle interlock engaged

- The axle interlock is also known as a power divider.
- The axle interlock allows the front and rear axle to be locked together.
- This function allows the front and rear axle to run at different speeds but have equal pulling power.
- A under steer condition could be noticed on slippery surfaces.

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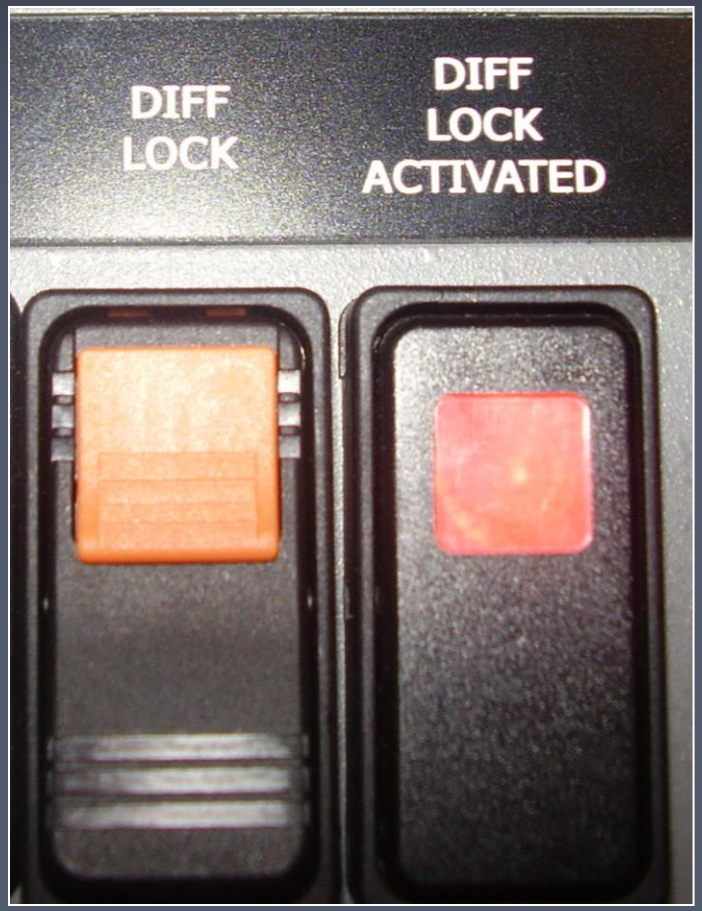
Differential lock



- The differential lock is also known as (DCDL) driver controlled differential lock.
- The differential lock locks the drive wheels side to side.
- This function is used when maximum traction is needed.
- The activation switch is a locking switch.
- Slide the orange lock down and push in the switch.
- When the differential lock is active the orange light will illuminate.

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Differential lock

- The differential lock can be activated when speed is under 25 mph.
- Maximum speed will be no more than 25 mph.
- Under steer conditions can become severe due to no tire speed difference.
- With the differential lock engaged the slope of the ground must be taken into concern.

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Roll stability Control

- The roll stability control is a ABS based system designed to help you manage road conditions that can lead to vehicle rollovers.
- The roll stability control is automatic.
- This function is controlled through the ECU.
- In a roll stability event up to three actions can occur.

1. Decrease in engine power
2. Retarder Activation
3. Brakes being applied

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Roll stability Control

These lights are located in the center dash gauge cluster

- The roll stability control and the ATC function share the same dash indicator light.
- The ATC indicator light will illuminate when the ECU senses a imminent rollover condition. (even if you don't)

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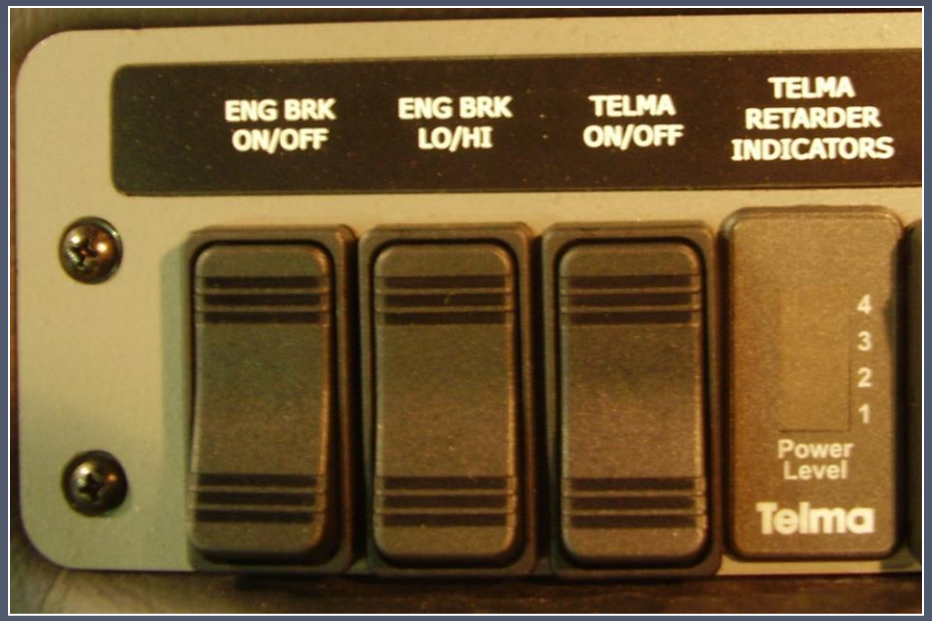
Auxiliary braking systems



- These units are equipped with two auxiliary braking devices.

1. Jacobs two level engine brake.
2. Telma retarder with four levels of braking power.

- Both devices can be used with each other or independently.

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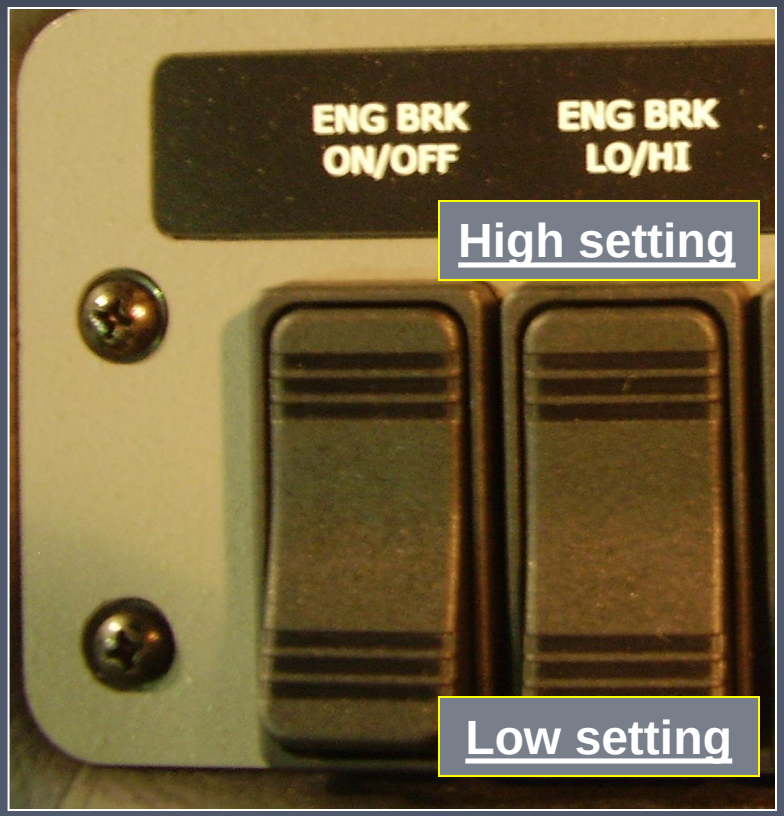
Jacobs brake



- The Jacobs brake has a on and off switch.
- The Jacobs engine brake has a high and low setting.
- This brake works by slowing the engine speed which in turns slows the drive wheels.
- **Turn this device off in slippery conditions.**

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Telma retarder

- The Telma retarder has a on and off switch.
- The Telma retarder is a electro magnetic braking device.
- When you lift off the accelerator two stages of the Telma engage.
- When you depress the brake pedal the last two stages engage slowing the unit.
- **Turn this device off in slippery conditions**

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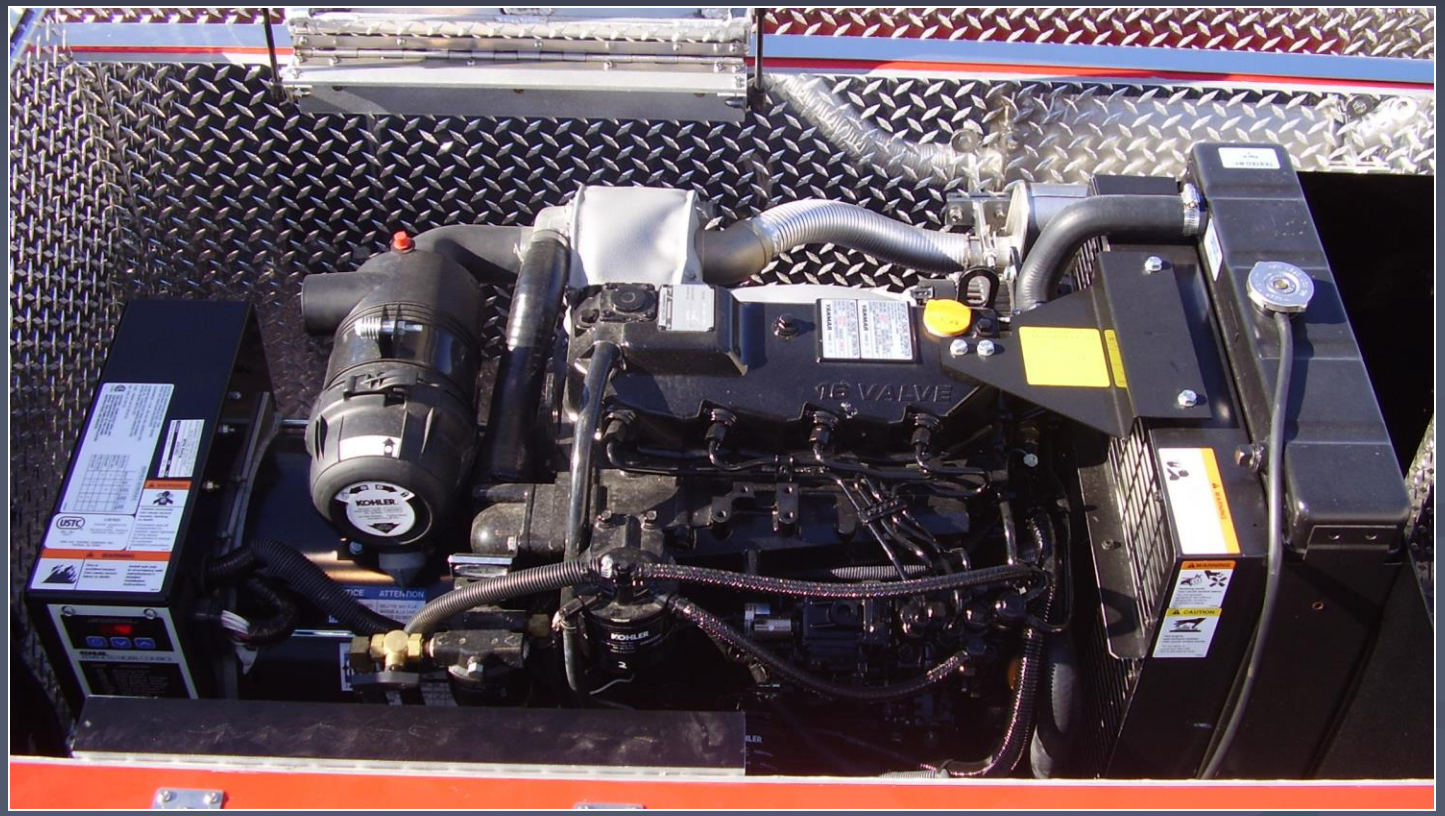
Kohler Diesel Generator



- 20 KW Kohler diesel generator
- 16.3 KW continuous use.

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Kohler diesel generator

Do not start under load

- This is a Kohler 20KW diesel generator.
- This is a 16.3KW continuous use generator.
- **Any use more, than the light tower and flood lights, for more than 20 minutes will damage the generator.**
- This is the generator that can be operated when the vehicle is in motion.

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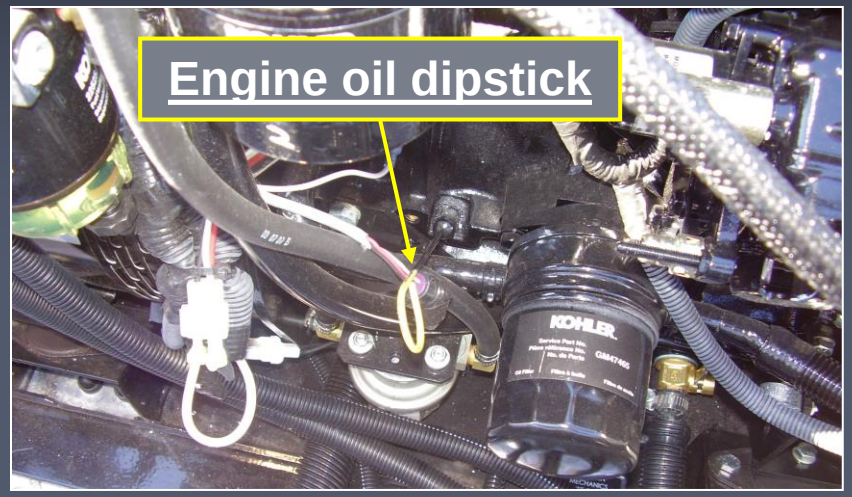
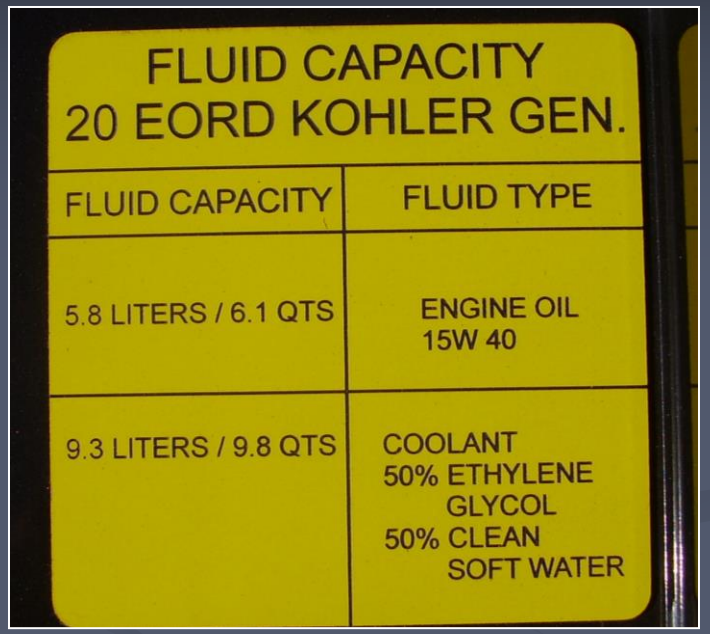
Kohler Diesel Generator





- Oil is 15-40 weight CJ-4
- Coolant is Final Charge

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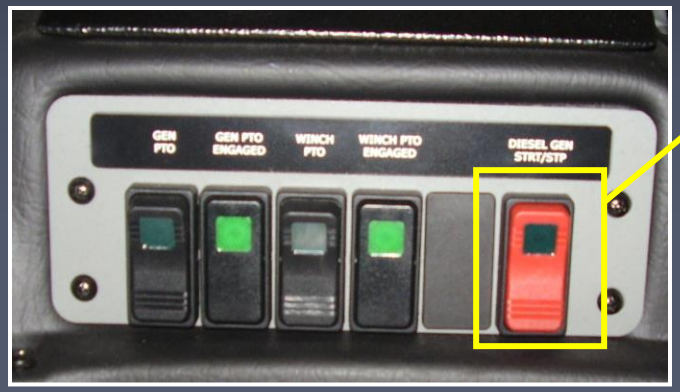
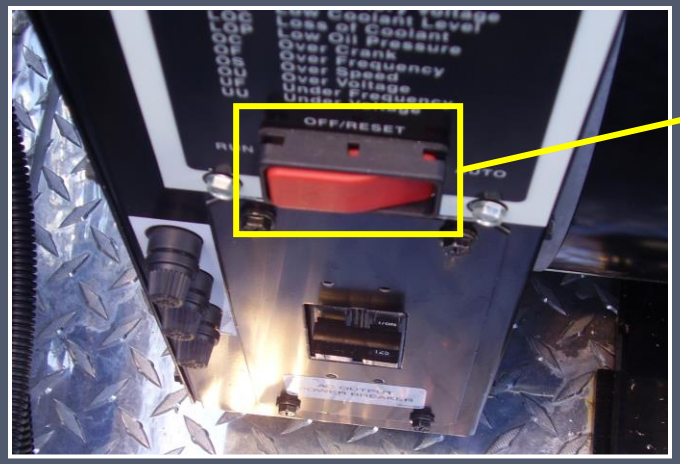
Kohler Diesel Generator

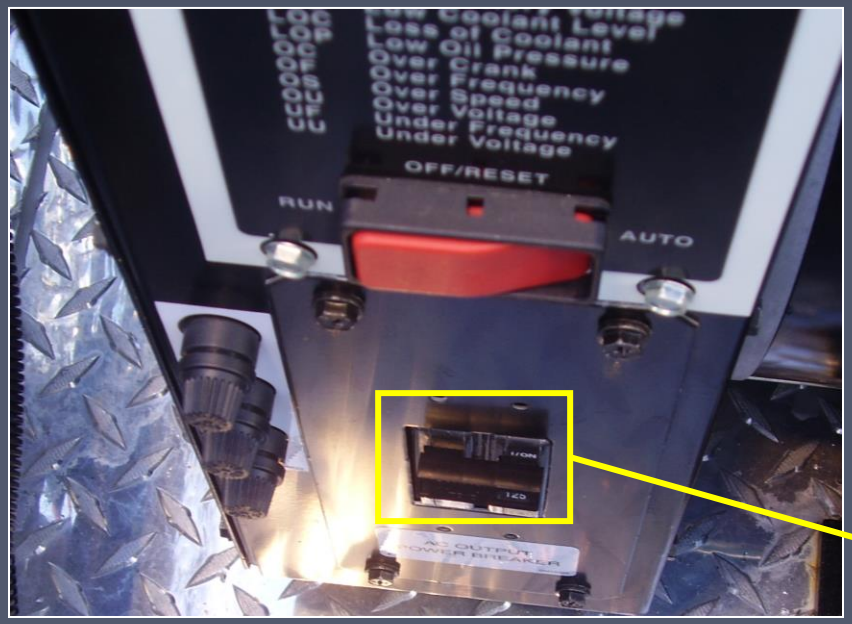




- The generator can be started from the drivers panel.
- There is no pre-heat switch.
- Toggle the switch for start and stop.
- If generator fails to start from the cab ensure that the red switch on the generator panel is in the auto position.

Heavy Rescue Squads

Kohler diesel generator



- If the generator is operating and there is no power check the following:

1. Ensure breakers in the panel box are in the correct position.
2. Ensure the breakers on the generator are in the correct position.

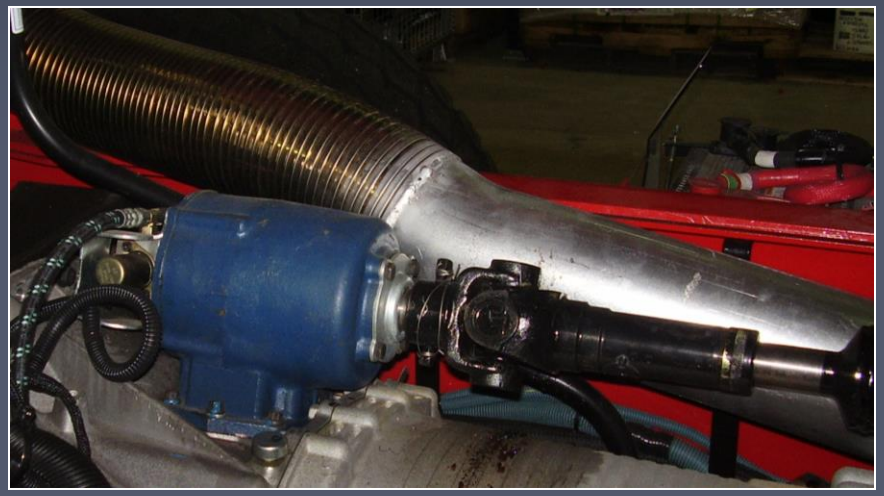
Heavy Rescue Squads

Onan PTO generator

- The Onan generator is in a sealed compartment under the P3 – D3 compartments.
- The Onan generator is a continuous 35KW and is PTO driven.
- This generator can only be used when the unit is stationary.
- **Do not attempt to use this generator while vehicle is in motion. Damage will result.**
- **Do not start under load.**

Heavy Rescue Squads

Onan pto generator



Generator PTO drive shaft

Operating Instructions

1. Insure the vehicle is parked and in neutral.
2. Parking brake is set.
3. Engine is at idle.
4. Place the generator pto switch into the engage position.

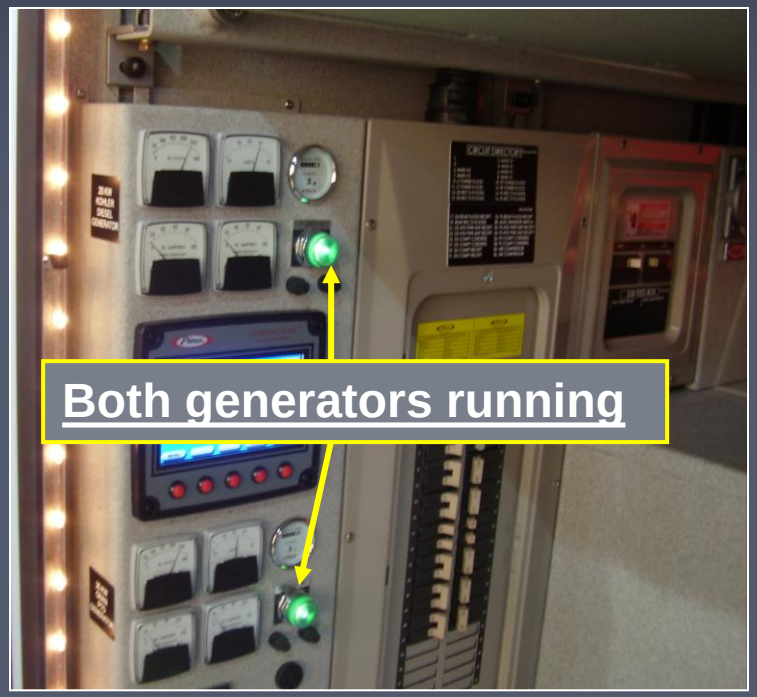
Heavy Rescue Squads

Onan PTO Generator

- After the pto switch has been placed into engaged position both lights on the switches will illuminate.
- The idle will increase to approximately 1100 rpm.
- At the operators panel in Compartment D the green light will illuminate.

Heavy Rescue Squads

Generator change over



- When operating the diesel generator and more electrical power is required (beyond 16KW) you must change over to the PTO generator.
- Start the PTO generator and then shut down the diesel generator.
- The change over is automatic.

Heavy Rescue Squads

Generator change over

1. Shows the diesel generator in use
2. Shows both generators running.
3. PTO generator in use.

Heavy Rescue Squads

Generator change over

Power will only transfer after one generator is shut down.

- Both generators can be running at the same time.
- Power is only being supplied by one generator.
- If any more electrical demand is required other than the light tower and unit flood lights the PTO generator must be used.

Heavy Rescue Squads

Light tower operation

Heavy Rescue Squads

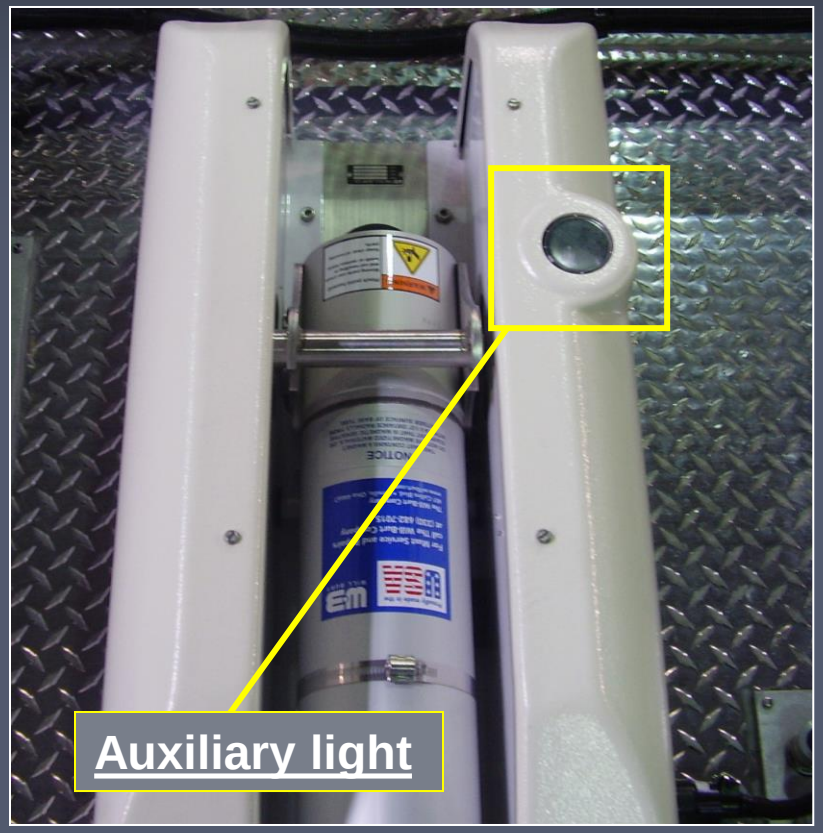
Light tower operation

Control box

- **Before the light tower is put into operation make certain there is no overhead obstructions.**
- The handheld control box must be connected to the outlet box.
- Pull out the red button to activate the hand held controller.
- When the hand held controller is active all the lights will illuminate.

Heavy Rescue Squads

Light tower operation



- The light tower can be raised without generator power.
- When the light tower raises out of the cradle the auxiliary light illuminates.
- This light will illuminate over head obstructions.

Heavy Rescue Squads

Light tower operation

- To lower the light tower push the **MAST DOWN** button twice in quick secession.
- The light tower will automatically return to its normal position and lower.
- When all the lights go off on the hand controller the light mast has nested.

Heavy Rescue Squads

Portable winch

- The portable winch is a Warn 9000 lb portable electrical winch.
- There are four mounting points for this winch. The locations are:

1. Front center
2. Rear midline
3. Under D1 compartment
4. Under P1 compartment

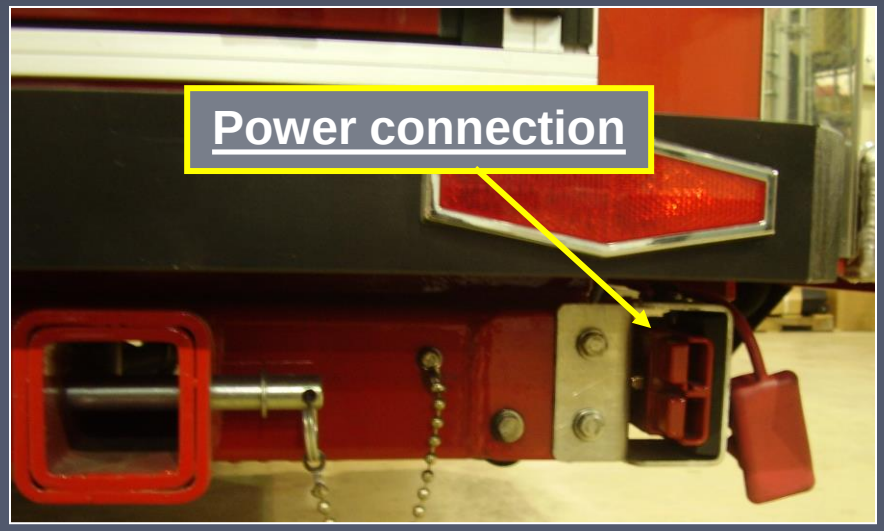
Heavy Rescue Squads

Portable winch

- All mounting points are rated to 9000 pounds.
- All mounting points have power connections next to the mounting post.
- Always use the pin provided if pins are lost notify the shop so proper pin can be supplied.

Heavy Rescue Squads

Portable winch



- The power connection is a push/pull connection.
- When using this winch always engage the fast idle.

Heavy Rescue Squads

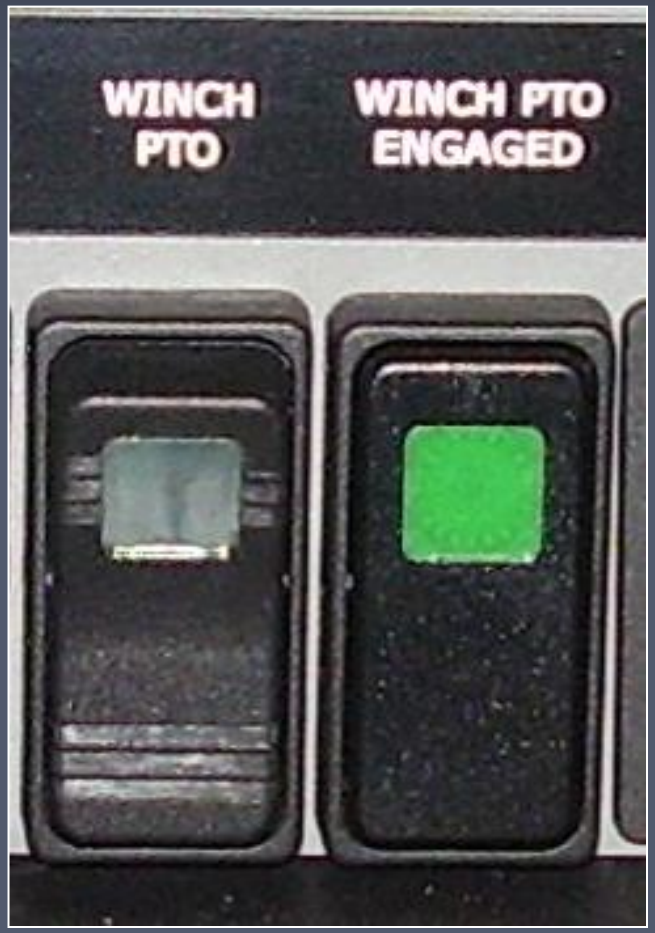
Fixed Winch

- The fixed winch has a 20,000 lb rating.
- It will have 200 feet of Plasma rope.
- There are two connection points for the hand controller.

1. One in the D1 compartment.
2. One in the P1 compartment
3. And one manual override under the D1 compartment.

Heavy Rescue Squads

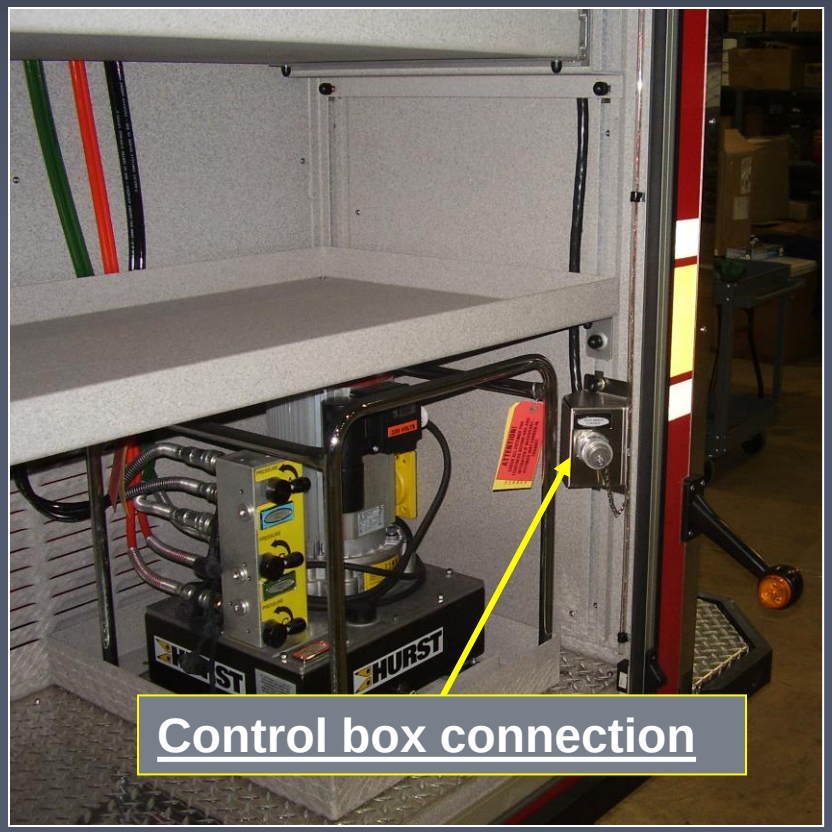
Fixed Winch operation

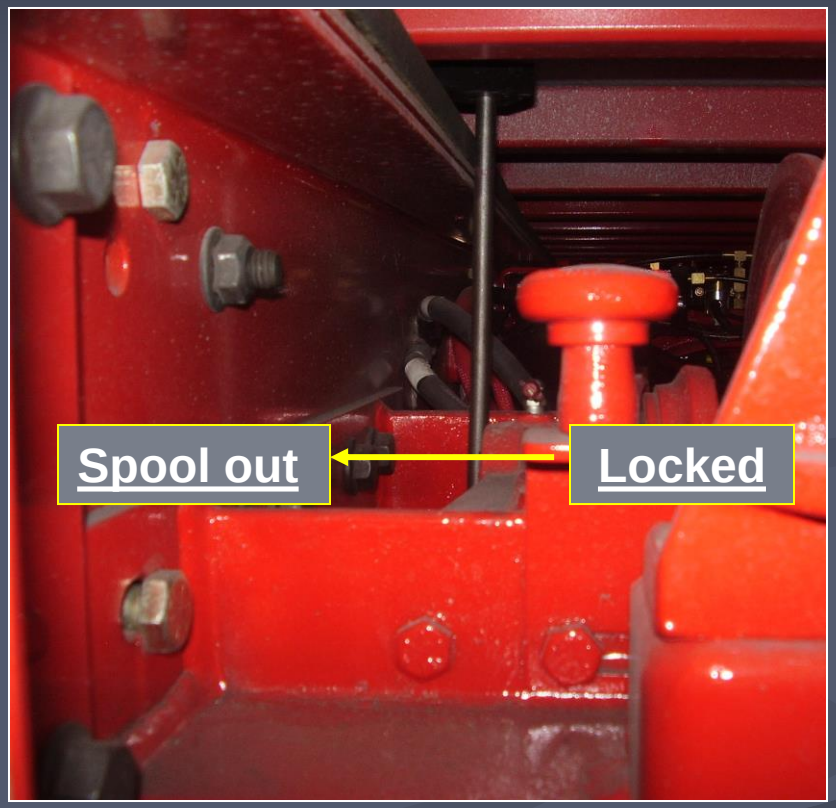


- The unit must be in neutral with the parking brake applied.
- Toggle the winch PTO switch and the corresponding light will illuminate.
- The unit will now deflate the rear air bags allowing the rear axles to sit on the axle stops.

Heavy Rescue Squads

Fixed Winch operation





Pull knob up and slide in appropriate direction

Heavy Rescue Squads

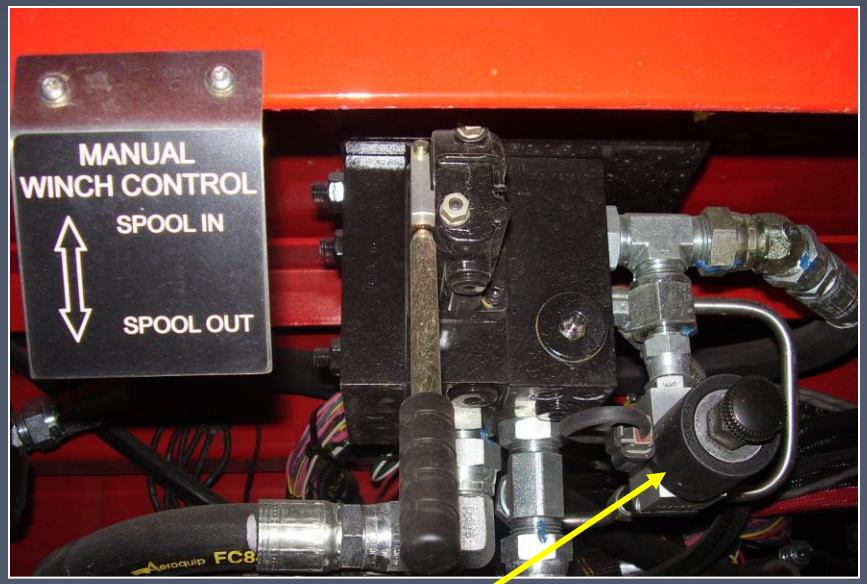
Fixed Winch heat exchanger

Looking through rear winch door

- Under the winch is the hydraulic fluid heat exchanger.
- On the weekly apparatus check ensure that this heat exchanger is clean and not clogged with road debris.

Heavy Rescue Squads

Fixed Winch manual operation

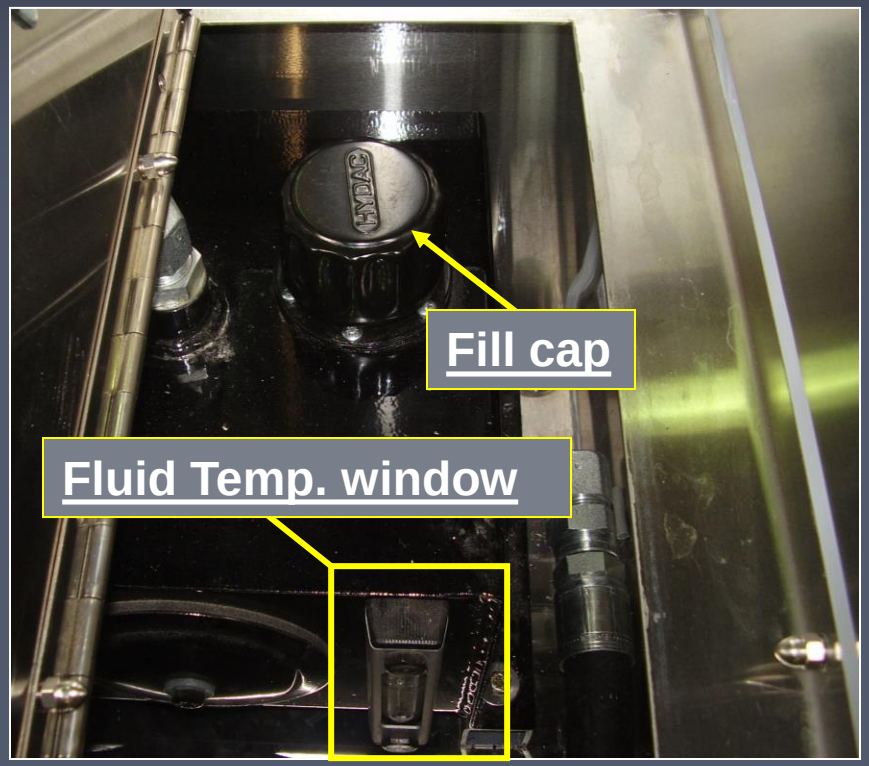


Diverter valve

- In the event that the hand controller is damaged the winch can be controlled from the manual winch control.
- This control is located under the D1 compartment.

Heavy Rescue Squads

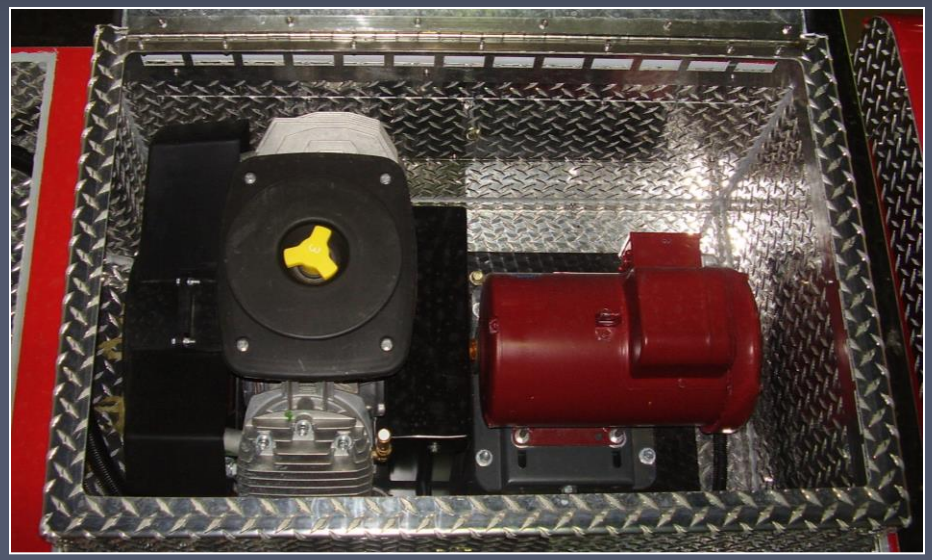
Fixed Winch hydraulic tank



- The hydraulic oil reservoir is located on top of the vehicle, in the left rear coffin compartment.
- The fluid level should be at the bottom of the fill strainer.
- **Only mechanics will add the hydraulic fluid**

Heavy Rescue Squads

Air compressor

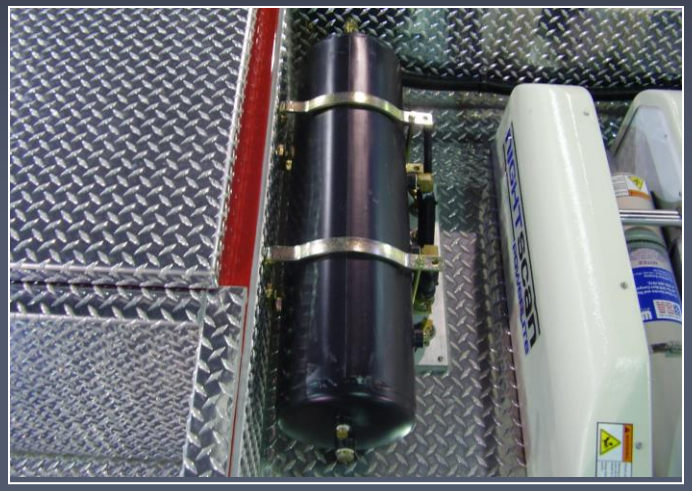


Do not walk on the air compressor cover

- The air compressor is a Atlas Copco 16.2cfm air electric air compressor.
- This unit is located in the trough on the top of the unit.
- The control panel is located in the D4 compartment.

Heavy Rescue Squads

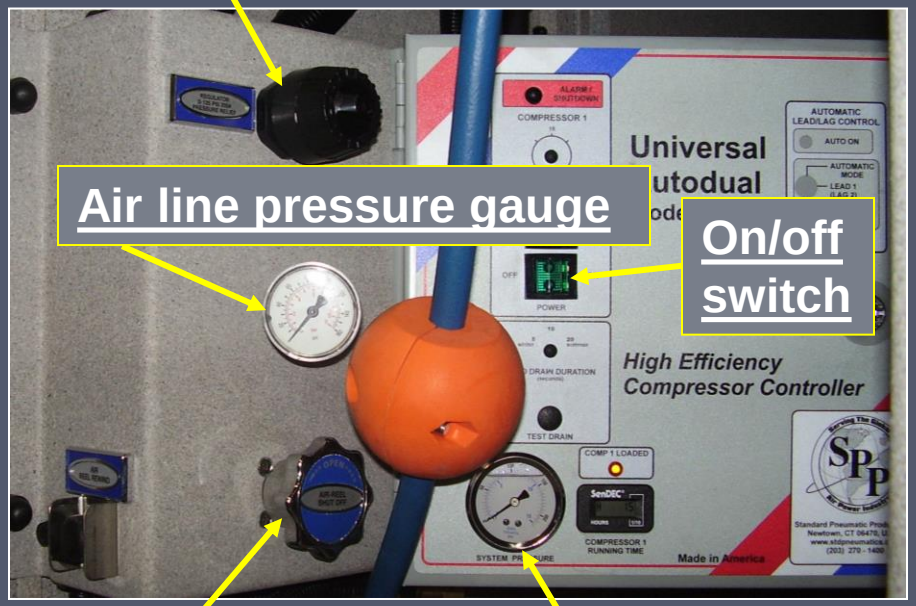
Air compressor



- The air compressor storage tank is located next to light tower.
- The control panel contains the off and on switch, regulator pressure control valve and the reel shut off valve.
- The electric generator must be running to utilize this tool.

Heavy Rescue Squads

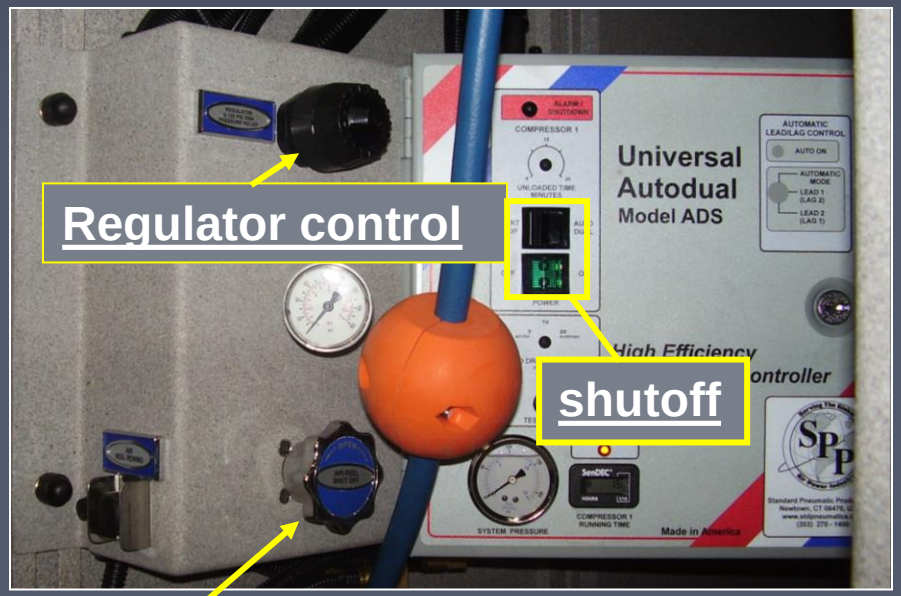
Air compressor



- After the generator is engaged activate the air compressor.
- When the task is completed turn deactivate the air compressor.
- After the vehicles ignition switch is turned off the air tank automatically empties.
- You may use the air bleed on the air tank manifold to empty the air tank also.

Heavy Rescue Squads

Air compressor control panel



- The vehicle must be in neutral with parking brake engaged.
- Engage the pto generator
- Toggle the Green switch to on.
- The compressor will fill the air tank to approximately 150 psi.
- The air tank will drain automatically after you disengage the generator.

Heavy Rescue Squads

Anchor points

- On the left and right side of the box there are two, 2,000 pound anchor points.
- One is located on the front, the other is located to the rear of the box.