

WVRS RS742
2015 SEAGRAVE/RESCUE 1
HEAVY RESCUE SQUAD
DRIVER TRAINING BOOKLET



TRAINEE _____

INTRODUCTION

New RS742 is a 2015 Seagrave/Rescue 1 Heavy Rescue Squad. The unit has been conceived, designed, and constructed to be the best equipped and functional rescue squad possible. The WVRS placed an enormous responsibility on the committee to produce a unit that the Department would be proud of, with a nod to some of the great rescue squads that the WVRS operated in the past. A great deal of time and effort went into every analysis and decision made in achieving the resulting unit. In addition, the WVRS Board of Directors, and the membership, provided unparalleled financial support for the project.

Based on the above, it is imperative that you, as a driver, take the time necessary to learn every operational aspect of this unit. This includes driving and operations at the scene of emergency incidents. It is also critical that you chauffeur the unit in a safe and responsible manner and that you show the unit the respect that it deserves. The unit is longer, taller, and heavier than anything we have ever operated. **Crew safety, and the safety of the public, is in your hands.**

PHASE 1 TRAINING - CHASSIS FAMILIARIZATION

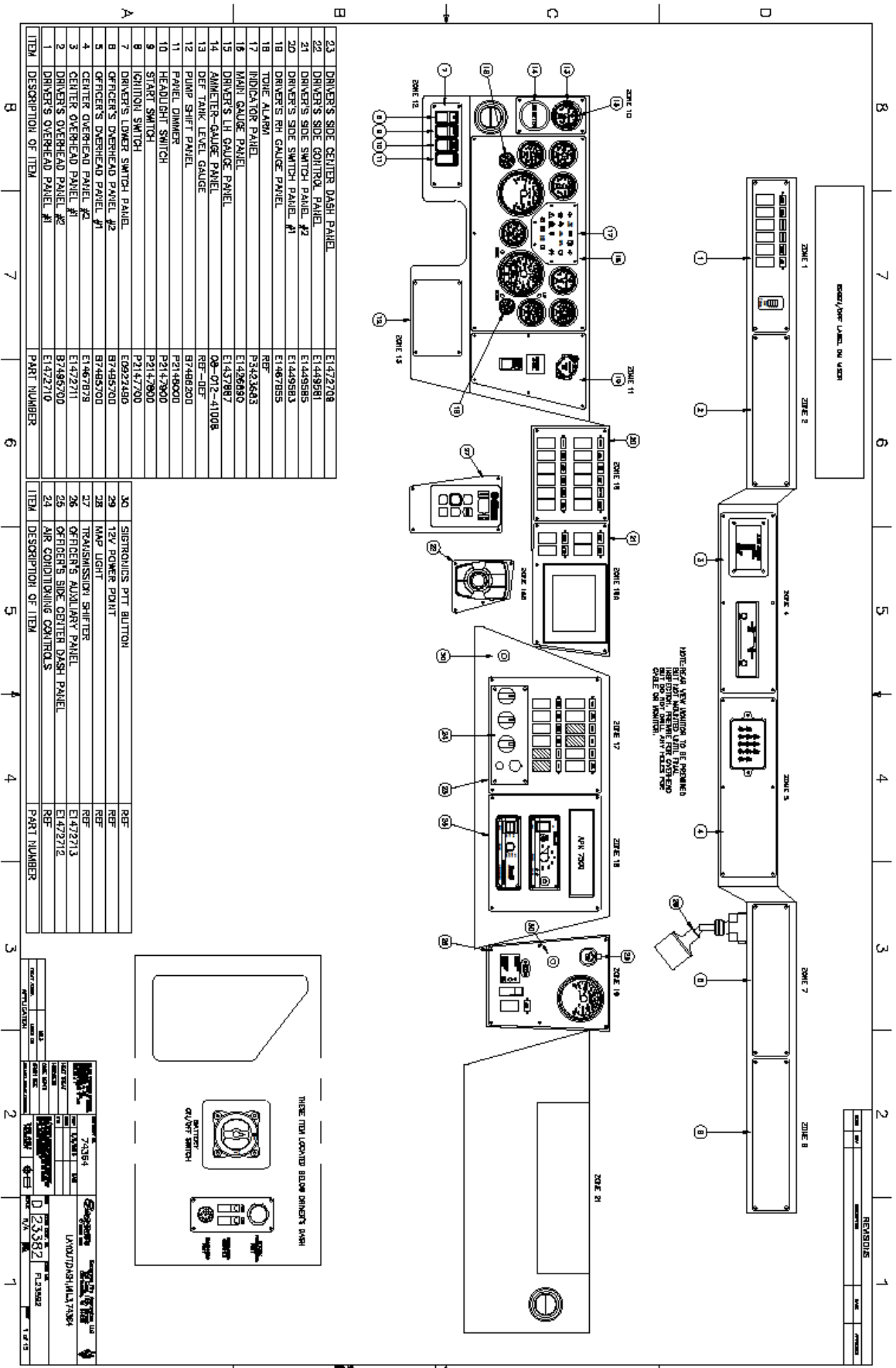
IMPORTANT UNIT DATA

LENGTH	37'-0"
WIDTH	9'-0"
WEIGHT	68,200 LBS
HEIGHT	11'-9"
WHEELBASE	229"

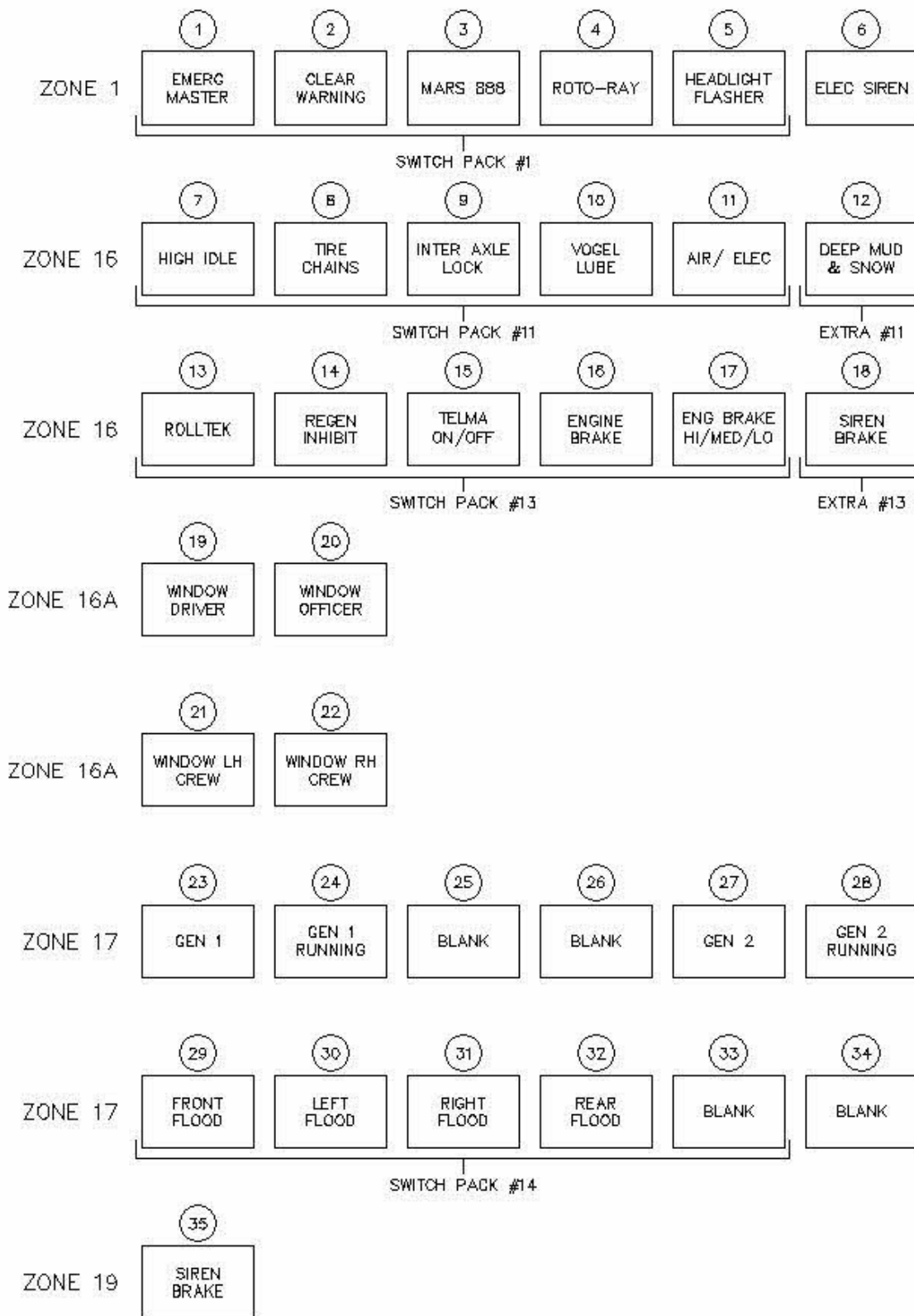
UNIT SUMMARY

- Seagrave Marauder II 6 seat chassis - tilt cab with stainless steel cab construction
- 24" front bumper extension with front 12,000 lb electric winch
- rear 20,000 lb hydraulic winch
- 2 front tow eyes
- Cummins ISX-12 500 HP engine with Jacobs engine brake
- Allison EVS 4000 6 speed automatic transmission
- Telma electromagnetic retarder
- air conditioning in cab
- Seagrave Intelex Plus
- front axle 22,800# with disc brakes and elliptical springs
- rear axle 48,000# with disc brakes and Hendrickson HN-642 with Vari Rate springs
- inter axle lock
- anti-lock brakes
- 65-gallon fuel tank with fill on either side
- 420-amp alternator
- Stability and rollover control system
- Rolltek rollover air bag system
- Seat alarm system for all seats
- Automated load management system
- Data recorder
- officer speedometer
- rear view camera system
- Two Hot shift PTO's
- 24' Stainless Steel Walk Through Body
- Two Harrison 30kW Hydraulic Generators with complete redundancy
- 9000W Command Light - Light Tower
- 6000W of quartz lights on each side, 3000W front and rear
- 2 bottle 6000 PSI ASME bottle cascade with booster pump
- 2 complete Hurst systems 1 each side (3 reels each side)
- 200' Electric reel each side
- 200' low pressure air reel officers side
- 200' high pressure air reel officers side
- complete County RS inventory plus WVRS desired extra equipment
- 5000 lb mono pod with capability to deploy front or rear
- 7500 lb Anchors placed around vehicle located high and low
- Speed governed at 68 MPH

DASH LAYOUT



SWITCH PANEL ASSEMBLIES



DASH SWITCH NOTES:

1 - Emergency master controls all warning lights. When the vehicle is in park the white lights (including Roto-Ray and Mars) will be automatically turned off.

6 - Siren is controlled by this switch (on-off). The siren should not be controlled (or the tone changed) at the siren controller.

7 - This is an indent type switch so that it is not accidentally activated. Note that high idle should be used anytime the truck is running and stationary. Also, note that the truck will automatically engage high idle when the parking brake is set and the voltage drops below a set level. The PTO's for the generator will not engage when the high idle is on. If you set the parking brake and the high idle kicks on and you have not engaged the generators you will need to dis-engage the parking brake, engage the PTO's, and set the parking brake.

8 - Tire chains are provided on the forward (drive) wheels. The chains can be expected to be helpful with snow less than 6" in depth or on ice. They can be lowered while moving or stationary but should only be raised while moving.

9 - Inter axle lock is used when more traction is needed. This MUST only be engaged when stopped or at speeds below 10 mph. Note that turning radius will be increased when the axles are interlocked. This should ONLY be used when traction is an issue (mud (note this truck should NEVER be operated off road), snow, ice).

10 - Auto lube indicator light. should be on to indicate system is working properly.

11 - Air/electric switches horn button between air horn and electric horn.

12 - Deep Mud & Snow allows more wheel spin to gain momentum. NOTE IF YOU ARE IN MUD YOU ARE IN BIG TROUBLE. There are very few scenarios where this truck should be off the hard surface.

13 - Rolltek indicator that system is functioning.

14 - Regin inhibit MUST only be used for maintenance purposes.

15 - TELMA should be left on at all times. The first two stages engage as soon as you lift your foot off the accelerator. The second two stages engage when the brake is applied. Good drivers can operate the vehicle by modulating the brake pedal and stopping with very little actual brake usage. This greatly extends the life of the brakes.

16/17 - The Jacobs engine brake has an on/off switch and a hi/med/low setting. Jacobs recommends not using the brake in wet/slippy conditions. It is recommended that the operator feel comfortable in these conditions. A good start would be to operate the vehicle in the low setting in these conditions to start and see what the conditions dictate. Remember, no matter what the vehicle must be operated (speed, stopping distances, turning) taking the road conditions into account.

23/24 - This switch engages the PTO for generator 1 and the rear winch. The light indicates when the system is engaged. Note that you can activate the switch at any time but the system will not engage until the RPM are below 900.

26/28 - This switch engages the PTO for generator 2. The light indicates when the system is engaged.

ENGINE WARNING LIGHTS



Left turn indicator

Wait to start - do not start vehicle until light goes out. Premature starting will cause engine codes

High Beam

Check Transmission - indicates transmission related problems

Right Turn indicator

Aftertreatment Diesel Particulate Filter Indicator - when lit or flashing indicates regen necessary

High Exhaust System Temperature Indicator - when lit indicates high exhaust temperatures due to regen

Stop Engine Light - STOP ENGINE. The engine must be shut down and not operated.

Check Engine - When lit indicates fault that one or more engine parameters are not within normal range. Could also be low coolant level, High coolant temp, Low oil pressure. Must be checked.

Malfunction indicator - When lit indicates engine malfunction warning, typically related to Regen

General warning - When lit check Intalex display

DEF Level Indicator Light - When lit indicates that DEF fluid has fallen below critical level. Note that DEF fluid should be filled when below 1/2 and typically is done when cab is titled during weekly check. IF THE UNIT RUNS OUT OF DEF DO NOT TURN OFF UNTIL DEF TANK HAS BEEN FILLED.

Seagrave LOGO - When lit indicates that ignition switch is ON

Battery Power Indicator - When lit indicates that battery switch is on

Parking Brake Indicator Light - When lit indicates that the parking brake is applied.

Anti-Lock Brake System (ABS) - When lit, indicates that the ABS has a malfunction

Traction Control Indicator - When lit indicates that wheel spin has occurred and traction control is engaged.

Low Air Pressure - When lit, indicates low air pressure in reservoir available for braking.

CAB TILTING

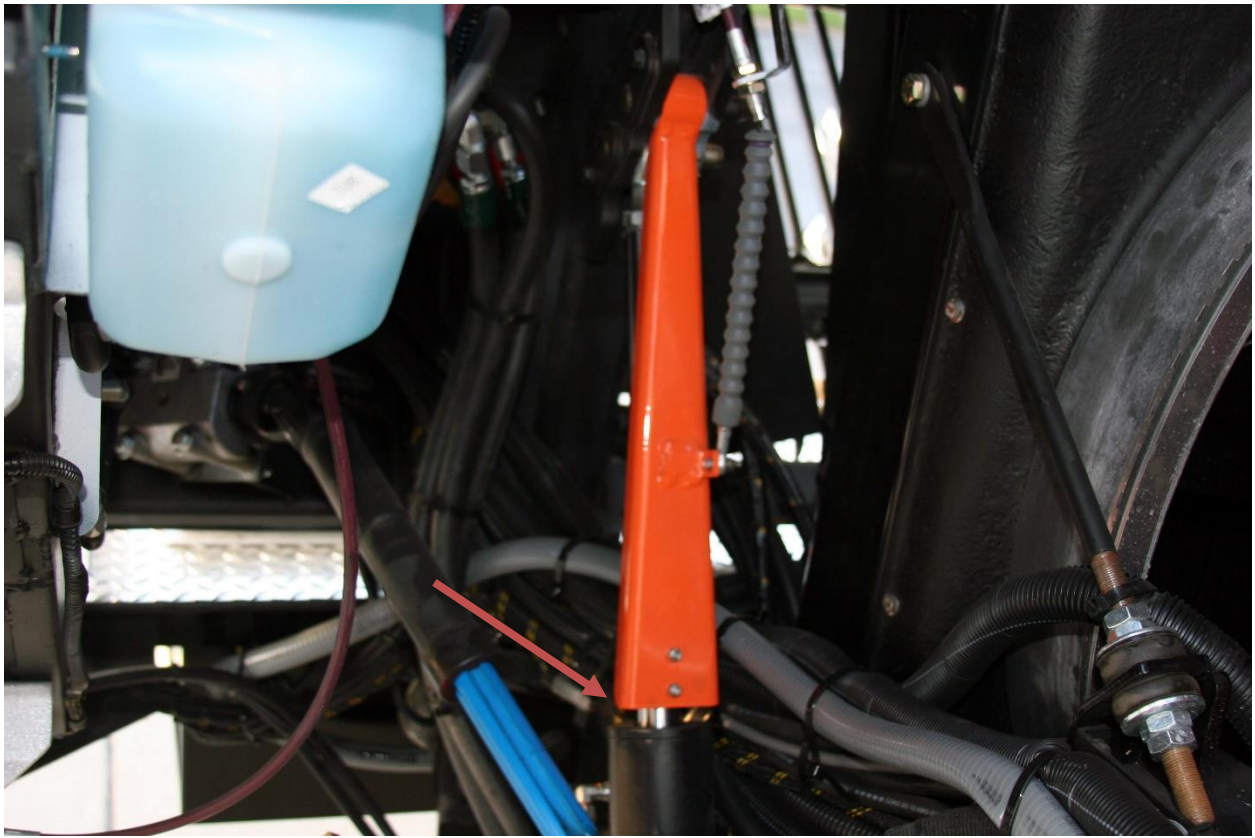
Tilting the cab is not a routine operation. The cab should be tilted once per week (by the career staff during weekly checkout) and in order to add DEF, coolant, or check an issue.

When tilting the cab, the following steps must be taken:

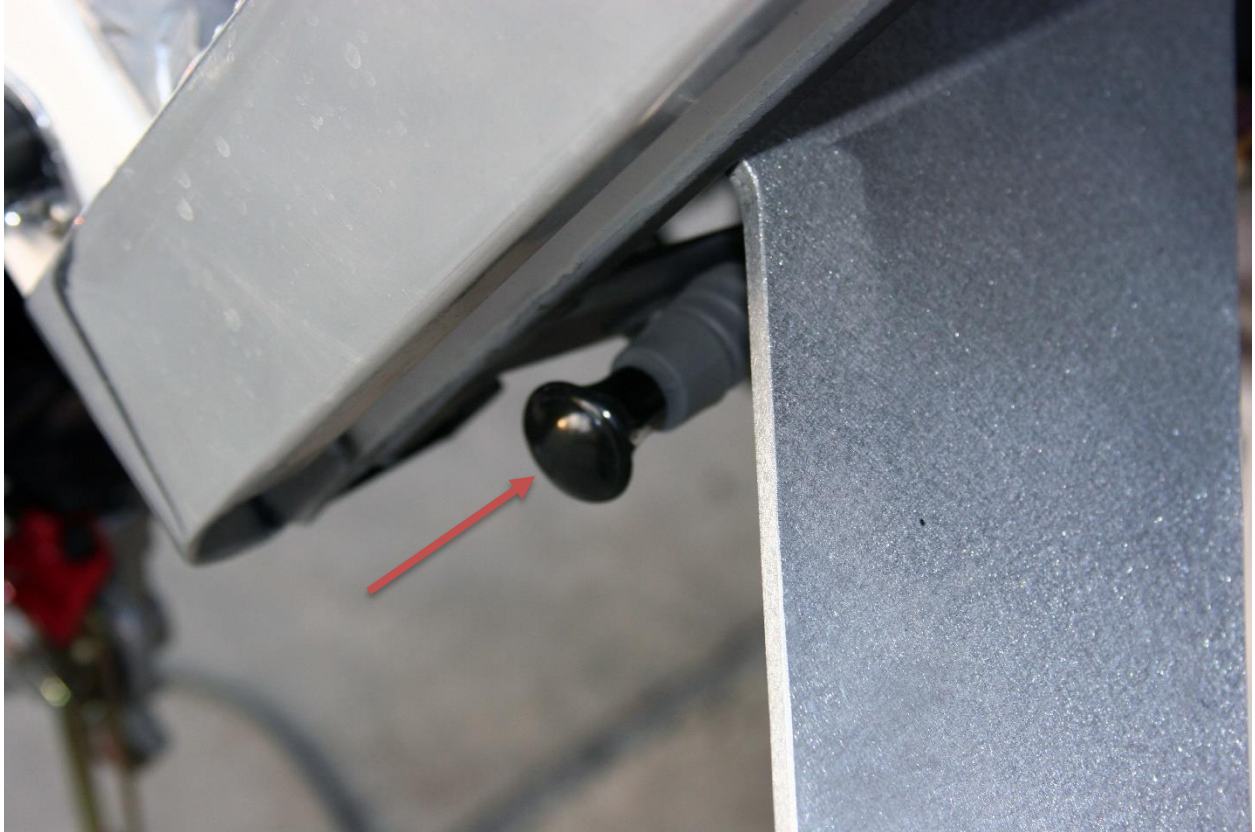
1. Never tilt the cab in the station. The vertical clearance necessary is not present. Do not tilt cab in rain or snow. Remember, the body entryway on the back of the cab is open.
2. Check for overhead obstructions.
3. Make sure that there is nothing loose within the cab. Remove forward facing SCBA's.
4. Battery should be on.
5. Note that the cab will clear the site poles but opening the officers or driver's door WILL NOT clear the site poles.
6. Engage CAB TILT switch, this deflates the bladder between the cab and body.
7. Plug in remote control and raise cab past safety stop. DO NOT lower cab onto safety stop.







When lowering cab pull back safety stop using cable handle located under driver's step - shown below.



Remember you can check the coolant level without tilting the cab. You must tilt the cab to add coolant.



Battery studs are provided to allow jump starting without tilting the cab. They are located beneath the driver's side crew door.



DIESEL EXHAUST FLUID (DEF) – REGENERATION AND THE DRIVER

The vehicle emissions use DEF as part of the system. The DEF tank can be filled without tilting the cab; however, the cab should be titled in order to avoid getting DEF on the unit (it will tarnish the paint and aluminum diamond plate). There is no need to keep the tank 100% filled by constantly topping it off. The tank should be filled once it gets below the ½ level. If a container is only partly used after filling discard any fluid remaining (crystals can form in an opened container that will cause issues with the DEF system).



If the unit indicates that a REGEN is necessary (solid REGEN lamp), then follow the procedures outlined in the Cummins *Drivers Tips for Emergency Vehicles* pamphlet provided herein. Note that it is impossible to know how often a REGEN will be required. In addition, the unit can REGEN when the vehicle is operated a highway speeds for long periods. When a REGEN is conducted, there are several safety tips that must be followed, especially related to high exhaust temperatures discharged from the exhaust pipe. The unit will operate at an increased idle speed and the operation should not be interrupted. If the unit calls for a REGEN (solid REGEN lamp), consult a Staff Duty Officer, place the unit OOS, and proceed. Note that a REGEN can be performed automatically by the system when driving without any input from the driver. This can be done when the vehicle operates at highway speeds for approximately 20 minutes after the first REGEN light comes on. This may be an alternative to a parked REGEN. Again, consult with the Staff Duty Officer.

To initiate a parked, REGEN, the unit must be; parked, not in high idle, PTO's not engaged, and running. The ENGINE TEST switch must be held on for several seconds. An indication that the REGEN has begun will be an increased engine speed.



C

Driver Tips For Fire And Emergency Vehicles.

For EPA2013 Cummins On-Highway Heavy-Duty And



This guide covers engine, aftertreatment and emissions-related indicator lamps* found on your vehicle's instrument panel and explains what they mean and the actions drivers need to take when the lamps illuminate. Important information about fuel, oil, Diesel Exhaust Fluid (DEF) and operating tips is also included.

The information in this tips card is specific to Cummins-powered fire and emergency vehicles . If you need information regarding other on-highway applications, please reference Bulletin 4971404 .

General Engine Indicator Lamps.



Check Engine Lamp Or Amber Warning Lamp

The Check Engine Lamp (which may also be referred to as the Amber Warning Lamp) illuminates when the engine needs to be serviced at the first available opportunity.



Stop Engine Lamp

The red Stop Engine Lamp indicates, when illuminated, that the vehicle needs to be stopped as soon as it is safe to do so.

On-Board Diagnostics.

In 2013, all on-highway engines will include On-Board Diagnostics as a part of the emissions regulation requirement. On-Board Diagnostics monitors all emissions- related engine systems during operation. If the system detects any emissions- related malfunctions, it will alert the operator to these detected malfunctions through a dash lamp known as the Malfunction Indicator Lamp (MIL).



Malfunction Indicator Lamp (MIL)

The MIL illuminates when the On-Board Diagnostics system detects a malfunction related to the emissions control system . The illuminated MIL indicates that the engine and aftertreatment system should be diagnosed and serviced at your next available opportunity. The MIL can be illuminated along

with any of the engine indicator lamps.



If the MIL is illuminated with the red Stop Engine Lamp, the vehicle should be stopped as soon as it is safe to do so. It should then be taken to an authorized Cummins location for repair.

Diesel Exhaust Fluid For Selective Catalytic Reduction (SCR) Aftertreatment.

Every vehicle with a U.S. Environmental Protection Agency (EPA) 2010 or later engine has an on-frame storage tank for Diesel Exhaust Fluid (DEF) and a dash lamp that indicates low DEF levels. Refilling this tank with DEF is critical in order for your vehicle to comply with EPA emissions regulations.

Diesel Exhaust Fluid (DEF) Lamp



Illuminated

An illuminated DEF Lamp is an indication that the DEF level is low. This can be corrected by refilling the DEF tank with Diesel Exhaust Fluid.



Flashing

A flashing DEF Lamp indicates that the DEF level has fallen below a critical level. This can be **corrected by refilling the DEF tank.**



Flashing DEF Lamp With Check Engine Lamp/Amber Warning Lamp

A flashing DEF Lamp combined with an illuminated Check Engine Lamp/Amber Warning Lamp indicates that the DEF level is critically low. This can be corrected by refilling the DEF tank.

Emissions Derate Exemptions.

Cummins EPA 2013 diesel engines for fire and emergency vehicles should not experience any emissions-related vehicle speed or engine torque derates. Some EPA 2013 ISX12 and ISX15 engines for fire and emergency vehicles built in early 2013 may require an electronic calibration update to eliminate emissions-related derates. For information regarding the calibration update, contact Cummins Care at 1-800-DIESELS™ (1-800-343-7357) with your Engine Serial Number (ESN).

Diesel Particulate Filter (DPF).

The DPF is an integral component of the aftertreatment system on vehicles equipped with

EPA 2007 engines, excluding some EPA 2007 ISM engines. It captures Particulate Matter (PM) in a wall-flow ceramic filter. The exhaust system periodically undergoes regeneration, raising temperatures to oxidize captured PM and clean the system. Lamps alert the driver when a regeneration is needed.



High Exhaust System Temperature (HES1) Lamp

The HEST Lamp illuminates to indicate that high exhaust temperatures may exist due to aftertreatment regeneration. This is normal, and does not signify the need for any kind of vehicle service or engine service. When this lamp is illuminated, ensure that the exhaust pipe outlet is not directed at any combustible surface or material. Reference your Cummins Owner's Manual for complete instructions.

Aftertreatment Diesel Particulate Filter (DPF) Lamp

Illuminated

The Aftertreatment DPF Lamp indicates, when illuminated or flashing, that the Aftertreatment DPF requires regeneration. This is accomplished by the following:

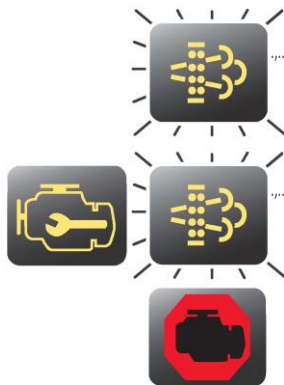
1. If the vehicle is equipped with a Regeneration Inhibit Switch, ensure that the switch is not in the Inhibit position.
2. Perform a DPF regeneration by one of the following methods:
 - a. Change to a more challenging duty cycle - such as highway driving - for at least 20 minutes to increase exhaust temperatures.
 - O
 - R
 - b. Perform a parked regeneration.

Flashing

If a regeneration is not performed in a timely manner after the DPF Lamp is illuminated, the DPF Lamp will begin to flash. This indicates a higher level of PM in the DPF.

Flashing With Check Engine Lamp/Amber Warning Lamp

A flashing DPF Lamp combined with an illuminated Check Engine Lamp/ Amber Warning Lamp indicates that the aftertreatment DPF needs regeneration immediately. A parked regeneration is required.



Stop Engine Lamp

If a parked regeneration is not performed, the red Stop Engine Lamp will illuminate. As soon as it is safe to do so, the vehicle should be stopped. It should then be taken to an authorized Cummins location for repair.

Note: Cummins engines calibrated for emergency vehicle use are programmed to not reduce power or speed due to soot load. However, excessive soot load may impact engine performance.

Regeneration Inhibit Switch

The purpose of this switch is to prevent or disable active after treatment DPF regeneration. Reference the vehicle Owner's Manual for complete operation and use of this switch. Unnecessary or excessive use of the Regeneration Inhibit Switch will result in a loss of fuel economy, or an increased need for parked regeneration.

How To Perform A

Parked (Stationary) Regeneration.

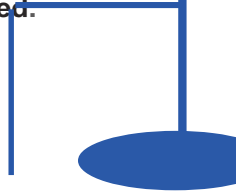
If the vehicle has a Manual Regeneration Switch and the DPF Lamp is illuminated or flashing:

- **Park vehicle in an appropriate location, set parking brake and place transmission in Park (if provided) or Neutral, and allow up to one hour for the regeneration.**
- **Set up a safe exhaust area. Confirm that nothing is on or near the exhaust system surfaces.**
- **Ensure that your fast-idle and power take-off (PTO) switches are off before starting regeneration.**
- **Push the Manual Regeneration Switch to begin a parked regeneration. Note: Engine speed will increase, and there may be a noticeable change to the sound of the turbocharger during the regeneration process. Once the DPF is regenerated, the engine will automatically return to the normal idle speed.**
- **Monitor the vehicle and surrounding area during regeneration. If any unsafe condition occurs, shut off the engine immediately. To stop a parked regeneration, depress the brake or throttle pedal.**
- **Once regeneration is complete, exhaust gas and exhaust surface temperatures will remain elevated for three to five minutes.**

Reference your Cummins Owner's Manual and vehicle Owner's Manual for complete operating instructions.

Fuel, Oil And DEF.

- Use only Ultra-Low Sulfur Diesel (ULSD) fuel.
- CJ-4 (low ash) is the recommended oil.
- Be sure to check the DEF gauge at every refueling. Cummins recommends topping off the DEF tank when refueling. DEF meeting ISO 22241-1 must be used.
- Please read your vehicle manufacturer's Owner's Manual to familiarize yourself with the location and capacity of the DEF tank.
- Put only DEF in the DEF tank, which has a blue cap.



Items Driver Will Notice.

- **Under** certain conditions (cold or very dry), condensation in the form of water vapor can be seen coming from the vehicle tailpipe. This is normal.
It will clear within a few minutes of normal vehicle operation.
- **If** the engine is left at idle for significant periods of time without reaching the minimum exhaust operating temperatures, the engine will automatically increase the engine idle speed for several minutes to maintain the condition of the particulate filter. This can be interrupted by pressing the service brake.
- **After** prolonged idle, you may notice momentary white vapor and an odor. This is normal.
- **When** the High Exhaust System Temperature Lamp is illuminated, you may notice an odor. This is normal. If the odor is excessive and you also notice white vapor, have the exhaust system inspected for leaks.


PHASE 2 TRAINING - CONE COURSE

The County Cone Course must be completed by every driver. Passing is completion of the course in under 10 minutes without the apparatus touching any cones (note that the rearward boundary lights may touch a cone provided they do not knock the cone over). Completion of the cone course must be witnessed by a RS742 Driver Trainer.

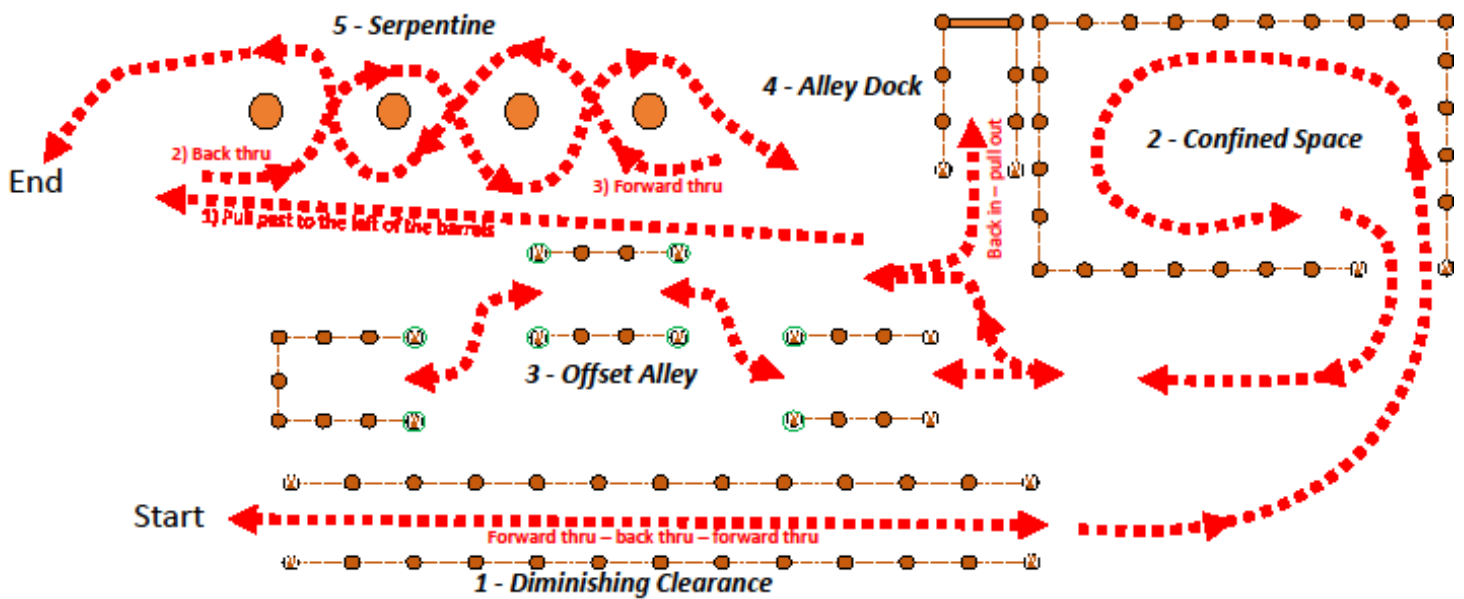
LOWER CONE COURSE

PSTA Driver Training Program

Adaptations:

All-steer – with all-steer locked out, adjust offset alley cones so the lanes are 18" shorter on each end. The cones that are adjusted are designated by .

TDA – no offset alley



PHASE 3 TRAINING - ROAD COURSE

The WVRS Road Course must be completed by every driver. Completion of the road course must be witnessed by a RS742 Driver Trainer.

<p>South on Georgia Ave.</p> <p>West on University Blvd. towards Kensington</p> <p>To South on Connecticut Ave.</p> <p>To Right on Warner St.</p> <p>To Detrick Ave.</p> <p>To Right Knowles Ave.</p> <p>To Left on Connecticut Ave.</p> <p>To Right on Aspen Hill Rd.</p> <p>To Right on Georgia Ave.</p> <p>To Left on Randolph Rd.</p> <p>To Right on Glenallen Ave.</p> <p>To Right on Kemp Mill Rd.</p> <p>To Left on Arcola Ave.</p> <p>To Right on University Blvd.</p> <p>To Right on Viers Mill Rd.</p> <p>To Right on Andrew St.</p> <p>To Left on Edwin St.</p> <p>To Right on Dalewood Dr</p> <p>To Right on Randolph Rd.</p>	<p>To Left on Georgia Ave</p> <p>To Right on Layhill Rd.</p> <p>To Right on Middlebridge Dr.</p> <p>To Left on Coach Lamp Lane</p> <p>To Right on Middlebridge Dr.</p> <p>To Right on Layhill Rd.</p> <p>To Right on Bonifant Rd.</p> <p>To Right on Notley Rd.</p> <p>To Right on New Hampshire Ave.</p> <p>To West on I495 (towards Silver Spring)</p> <p>To South on Georgia Ave.</p> <p>To Right on Seminary Rd.</p> <p>To Capitol View Ave.</p> <p>To Metropolitan Ave.</p> <p>To Left on Plyers Mill Rd.</p> <p>To Right on Connecticut Ave.</p> <p>To East on University Blvd.</p> <p>To Left on Grandview Ave.</p> <p>Right on Blueridge Ave.</p> <p>Left on Georgia Ave.</p> <p>Back to R2</p>
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PHASE 4 TRAINING – SYSTEMS

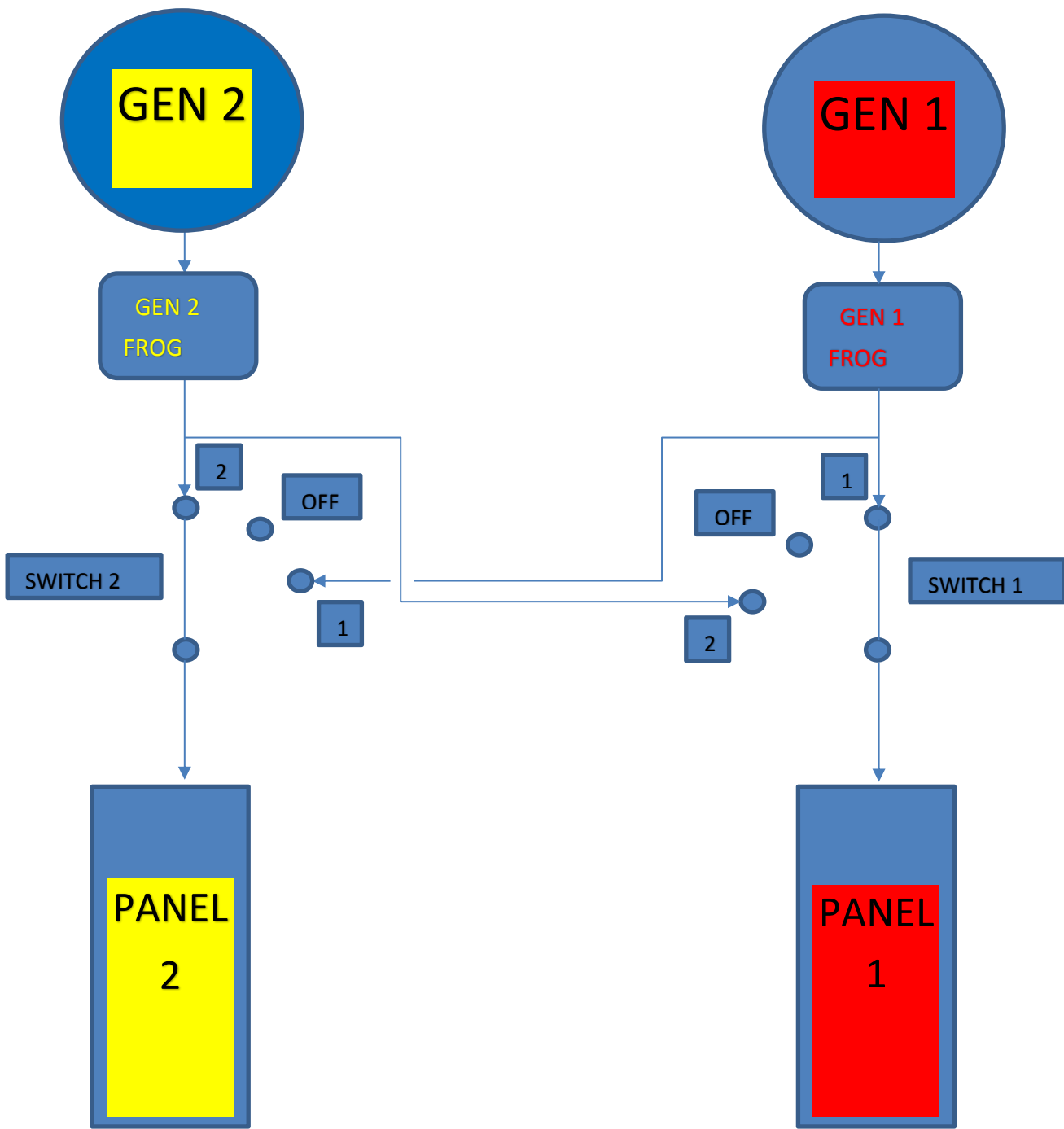
ELECTRICAL SYSTEMS

The unit is provided with two 30Kw (120/240 VAC 250/125 amps) Harrison HydraGen PTO driven generators. The generators are located on the top forward drivers side (Generator 1) and officers side (Generator 2) of the equipment body. The design incorporates a switchover system so that all loads on the truck can be fed from a single generator if necessary (a generator out of service). Under normal operating conditions Generator 1 feeds Panel 1 and Generator 2 feeds Panel 2. Note that the pump for the hydraulic winch is also on the Generator 1 PTO.

The Panel 1 and Panel loads are shown below. The loads that would be used while moving (scene lights) are on Panel 2. There is no reason that both Generator 1 and 2 cannot be engaged while moving. Note that the PTO's will not engage if the engine RPM's are greater than 900. Once the dash switches to engage the PTO's are activated, the system will indicate actual PTO engagement when the green lights next to the switches illuminate.

The block diagram below shows the general layout of the system. Typically, a generator switchover will only be necessary if a generator is out of service or goes down on an incident. Switchover is simple and straight forward. The switch above each panel is provided with positions shown as 1-off-2. This indicates what generator is serving the panel below the switch. It is best to switchover with no load; however, on an incident in an emergency the switchover can occur while loads are present.

When trouble shooting, remember that there is a breaker located on each generator. This can be accessed using the forward roof hatch and ladder.



RS742 ELECTRICAL BLOCK DIAGRAM

RS742 PANEL SCHEDULES

120V/240V PANEL 1 LAYOUT

1	BUMPER OUTLET	2	R. TOWER FLOODS
3	BUMPER OUTLET	4	(30A)
5	L5 HYDRAULIC PUMP	6	R5 HYDRAULIC PUMP
7	(30 A)	8	(30 A)
9		10	R3 OUTLET
11		12	(100 A GFI)
13	L3 ELECTRIC REEL	14	R3 ELECTRIC REEL
15	(30 A)	16	(30 A)
17		18	
19		20	
21		22	
23		24	
25		26	
27		28	
29	L. COMPARTMENT OUTLETS (15 A)	30	R. COMPARTMENT OUTLETS (15 A)

120V/240V PANEL 2 LAYOUT

1	REAR FLOODS	2	CAB FLOODS
3	(20 A)	4	(20 A)
5	L. FRONT MIDDLE FLOODS	6	R. FRONT & MIDDLE SIDE FLOODS
7	(20 A)	8	(20 A)
9	LEFT REAR SIDE FLOOD	10	R REAR SIDE BODY FLOOD
11	(15 A)	12	(15 A)
13	BROW FLOODS	14	SIERRA BOOSTER
15	(20 A)	16	(15 A)
17	L WHEELWELL	18	R WHEELWELL
19	L REAR OUTLET	20	R REAR OUTLET
21	L3 OUTLET	22	R4 OUTLET
23		24	L3 OUTLET
25		26	(100 A)
27		28	
29	L. INTERIOR OUTLETS (15 A)	30	R. INTERIOR OUTLETS (15 A)

LIGHT TOWER



The unit is provided with a 'Command Light CL Series' light tower equipped with six 1500 watt fixtures. The tower is equipped with a strobe as well. The tower lights are 240v AC and are powered from Panel 1 (typically Gen 1). When operating the light tower:

1. **CHECK for overhead obstructions – POWER LINES. DO NOT OPERATE if the tower can come into contact with power lines.**
2. The tower control must be activated by operating the switch shown below by the RED arrow.
3. On the light tower controller, the two toggle switches raise and lift the tower.
4. The white buttons turn the fixtures on – 2 at a time.
5. The BLUE button activates the strobe.
6. The ORANGE button is inactive.
7. The GREEN button will automatically stow the tower.
8. The RED button stops the tower movement immediately.



HIGH PRESSURE AIR SUPPLY/FILL SYSTEM

The unit is provided with a high pressure (6000 psi) air supply and SCBA fill system. There are two ASME 6000 psi storage bottles that are set up as a bulk fill station. When full, the system is capable of filling approximately 16 empty 4500 psi 45 minute bottles.

1. The ORANGE arrows show the supply valve from the storage and the storage pressure gage. This valve must be on in order to get air from the storage cylinders.
2. The BLUE arrow shows the pressure selector valve. The pressure selected (4500/5500) **MUST** match the maximum rated pressure of the SCBA cylinders being filled.
3. The GREEN arrows show the SCBA fill valve and SCBA pressure gage. The valve can be used to control the fill rate of the SCBA cylinder(s). The gage shows the pressure of the SCBA cylinder(s) being filled.
4. The PURPLE arrow shows the ON/OFF control for the booster pump. It should be in the ON position when filling cylinders.
5. The RED arrows show the control, regulator, and pressure gage (showing the regulated pressure) for the 200' high pressure air reel.
6. The BLACK arrow shows the storage cylinder fill inlet. The storage system consists of two ASME rated 6000 psi cylinders. The ASME rating means that the cylinders never have to be removed to be hydrostatically pressure tested. The in station fill system is capable of filling the storage cylinders to 6000 psi.



The system is also provided with a closed system booster pump. This greatly increases the capacity of the system to fill SCBA cylinders. The pump is designed to run in the remote automatic mode (the ON/OFF for the booster located next to the fill panel should be in the ON position when filling SCBA cylinders). The following positions/settings are required for the system to operate properly.

1. BLUE – ON/OFF switch – always in ON position
2. ORANGE – REMOTE/LOCAL – always in REMOTE position
3. RED – OPEN/CLOSE – always in OPEN position
4. GREEN – OUTLET BLEED – always closed

Basically, the booster pump can be left in this setup and never has to be interfaced with.



WINCH SYSTEMS

The unit is equipped with three winches:

1. Rear 10 ton (20,000 lb) rated hydraulic winch
2. Forward bumper mounted 6 ton (12,000 lb) rated electric (12v) winch
3. Portable 4.5 ton (9,000 lb) rated electric (12v) winch

Rear 10 Ton Winch

The rear winch is hydraulic and rated at 10 tons. As with all winch ratings, this is the rating on the first wrap, or layer, on the drum. Successive wraps reduce the winch capacity by approximately 15% for each layer. So a winch with four layers will have a capacity that is reduced by 45%.

The rear winch must have PTO 1 (also serving Gen 1) engaged in order to operate. In addition, the winch pump must be on. This control panel is located in the R5 compartment. The winch remote control is plugged in here as well. (Use of the load cell, and operation with the monopod is covered in Squad Tech Training A). Activation of the winch clutch will allow the winch to be freewheeled. The high idle can be turned on from this location, but not off.

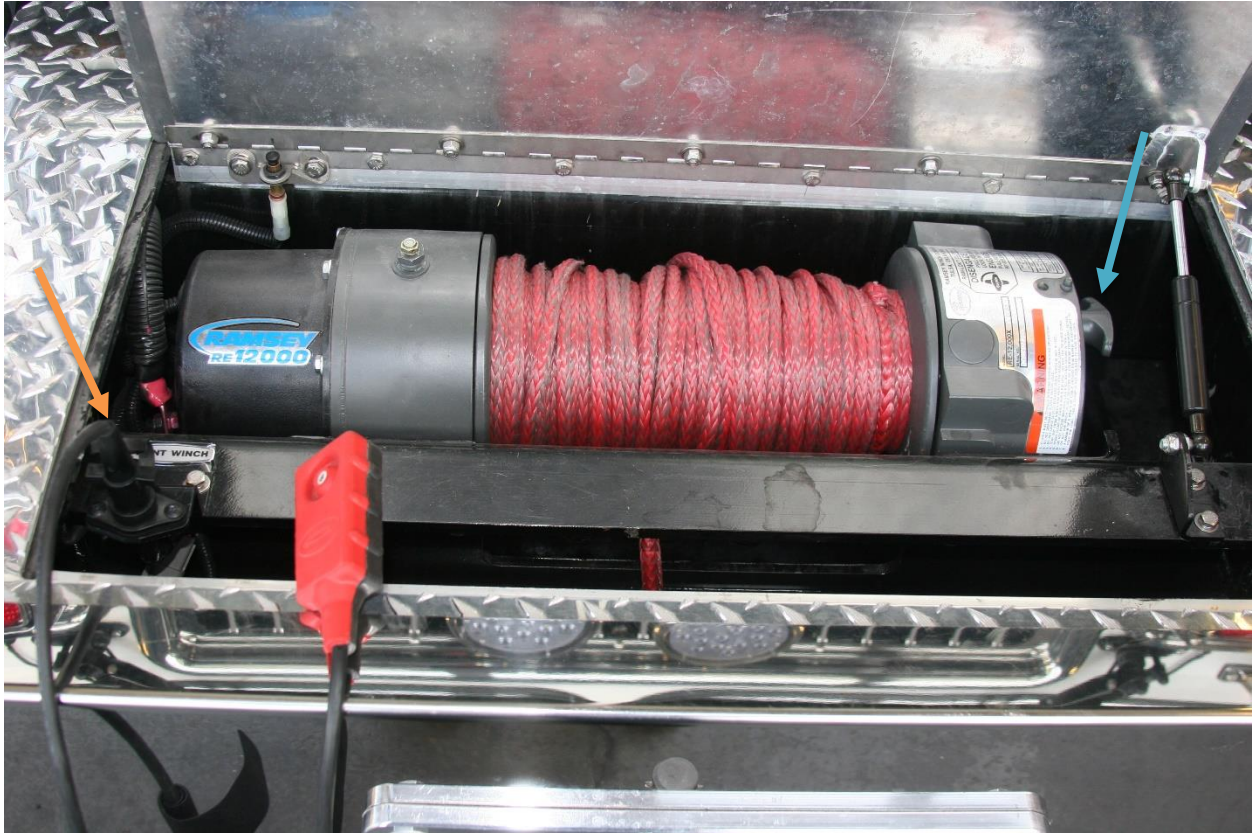


When conducting winch operations, remember to chock the rear wheels in both directions.



Front 6 Ton Winch

The front winch is electric (12V) and rated 6 tons. The remote winch control is plugged in where the ORANGE arrow is pointing. The freewheel clutch is shown by the BLUE arrow. Pushing the lever in engages the winch and pulling it out freewheels it.



Portable 4.5 Ton Winch

The unit is provided with a portable electric (12V) winch rated at 4.5 tons. This winch can be used on either side of the rescue using the provided anchors. There is also a 12V special receptacle located proximate to each of the anchors.



The extension should be used. This makes installing the winch easier. Install the extension first, then the winch.



The ORANGE arrow shows where the winch remote control plugs in. The BLUE arrow shows the winch freewheel lever.



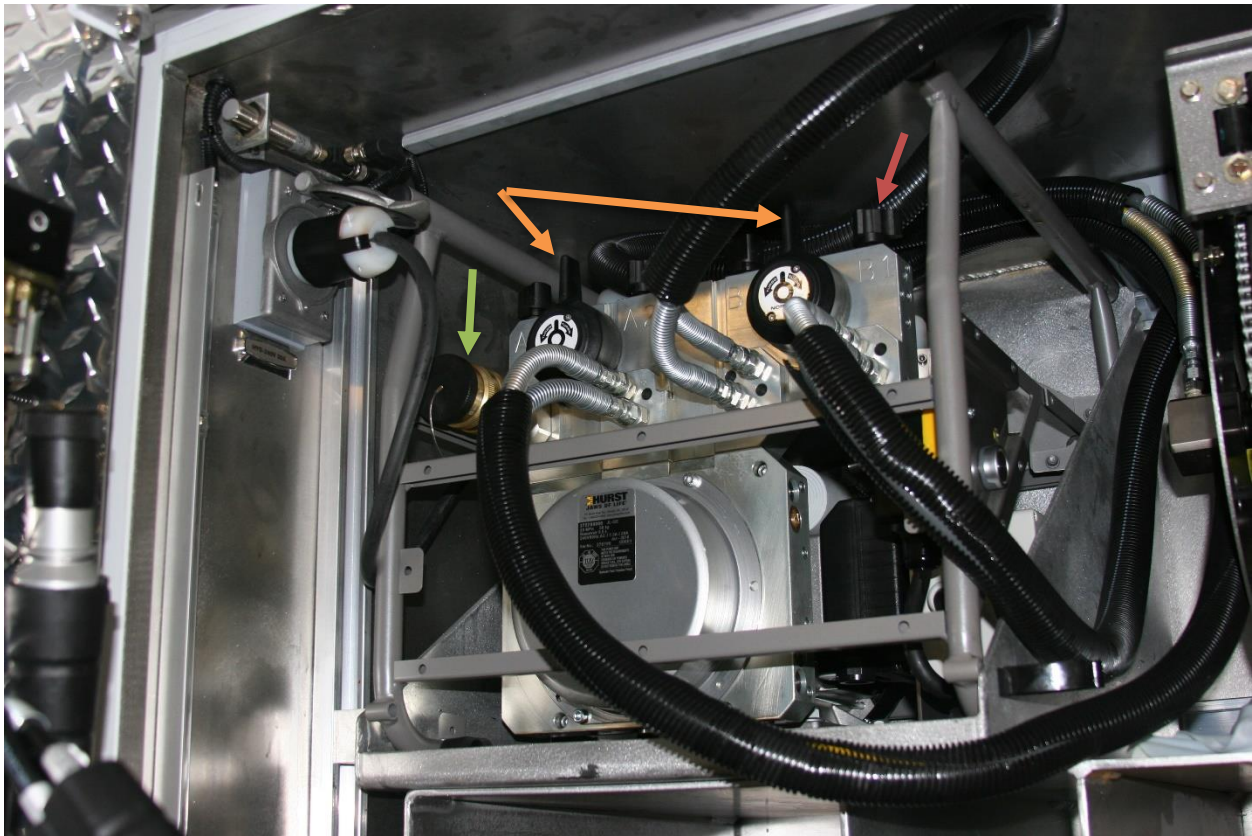


The portable winch can also be operated remote from the rescue. The cable shown can be connected to any 12V automobile battery (following proper polarity) and the winch can be plugged into the special receptacle.

There are several methods that may be used to anchor the winch, including a special anchor carried in R5 and made specifically for trees or telephone/power poles.

HURST SYSTEMS

The unit is equipped with two Hurst 240V electric quad pumps. One located on each side (in R5 and L5). Each of these operates three fixed hydraulic reels on each side of the rig. While the pump can operate 4 tools at normal speed it can also operate up to 2 tools in 'Turbo' mode. The unit has been set up so that the primary cutter on each side operates at turbo speed and the other two tools operate at normal speed. Note that tools can no longer be 'Y'ed together. Only one tool can operate on each reel. The RED arrow shows the typical dump for each output. The ORANGE arrow shows the TURBO selector. Note that the outlet shown with the GREEN arrow could be used to power a tool using a Hurst extension line. The TURBO selector would need to be placed so that both outlets are powered.



Each pump is provided with an ON/OFF switch. It is important to remember to keep the switch OFF when not in use. Starting the pump motor before the generators come up to full output voltage causes strain on the pump motor.



Each reel has an independent rewind. The switch cover is color coded to match the reel hose color.

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