



OPERATOR'S MANUAL

CRESTLINE COACH LTD.

Crestline FleetMax 2.0 Type III Ambulance

v.1.1 November 2022

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INTRODUCTION

Thank you from all of us at Crestline Coach, for investing in our industry-leading product. The ambulances and specialty vehicles we deliver today are the result of over five decades of service and manufacturing experience in the Emergency Medical Services and Transportation industries. This ambulance will provide you with safe and reliable service for years to come.

Crestline Coach is based in Saskatoon, Saskatchewan, Canada and has delivered ambulances and specialty vehicles to customers in over 30 countries worldwide and from coast to coast here in North America. We are proud of the product you have chosen and hope you will share in that pride as a new owner of a Crestline ambulance.

In this manual, you will find all the basic information relating to the operation of the various systems that make up the ambulance conversion portion of the vehicle. Should you have any questions or other support needs throughout the life of the ambulance, please contact your nearest Crestline Dealer or our Customer Care Team. Complete contact information can be found online at www.crestlinecoach.com.

Once again, thank you for choosing a Crestline Coach ambulance. We look forward to building our relationship with you and appreciate the trust you have placed in us and in our product.

Sincerely,

CRESTLINE COACH



IMPORTANT NOTE ABOUT THIS MANUAL

This document provides comprehensive information about the ambulance portion of your new vehicle. **It contains information about all standard and optional systems and equipment that are available as of the date of publication.** Review the vehicle's Build sheet or purchase invoice to identify which options apply.

The chassis base upon which the ambulance conversion has been built is provided with a separate Owner and Operator's Manual, by the chassis manufacturer. Please take the time to read and understand both it and this document. Copies of both the Crestline and chassis manufacturer manuals should be kept in the vehicle for the life of the ambulance, for ease of future reference.



1. Vehicle Overview

1.1. Terms and Acronyms

“Chassis” refers to OEM vehicle base on which ambulance is built. Ford and Chevrolet are examples.

“Conversion” refers to structure, items, systems and components that are part of the ambulance upfit – added to base chassis by Crestline.

“ECC” stands for Electrical Control Center, located behind cover panels in second exterior compartment on driver’s side.

“MCC” stands for Medical Control Center. Street side MCC is located in patient compartment on driver’s side. Optional Curb side MCC is on passenger side.

“Curb” and “Right” side refer to the Passenger side of the vehicle.

“Street” and “Left” side refer to the Driver side of the vehicle.



1.2. FleetMax 2.0 Model & Chassis Variants



Type III – Cutaway chassis with integral patient compartment (Standard & Tall)

Ambulance Specifications:



	Chev 3500	Ford E350
Amb Type	Type III	Type III
Module length	164"	164"
Module Width	88"	88"
Vehicle Overall Length	270"	270"
Vehicle Overall Height	Standard box 99" Tall box 103"	Standard box 99" Tall box 103"
Headroom	Standard box 68" Tall box 72"	Standard box 68" Tall box 72"
Seating	1 Driver 1 Passenger 1 Patient (Cot) 1 Attending Paramedic 2 Curb side rear Passengers Optional 1 Curb side Mobility seat	

2. Safety and Security

2.1. Systems and Equipment

EMERGENCY DOOR RELEASES are located on the inside faces of the three patient cabin entry doors. Refer to Section 6.6 for details on their use.

PATIENT STATUS INDICATOR LIGHTS (INTERCODE) SYSTEM has Indicator lights in front console and activation buttons at Street side MCC panel.

FIRE EXTINGUISHERS are located behind seats in front cab and beside the Attendant's seat in Patient Compartment.

ROAD FLARES are located behind Drivers Seats in the front cab.

REVERSING ALARM AND MUTE SWITCH: Reversing Alarm activates automatically when shifter is placed in reverse. Reversing alarm mute button is in front console. See Section 4.1.1.1 for details.

REVERSING CAMERA AND MONITOR consist of an added monitor and wall-mounted camera which activate automatically when shifter is placed in reverse.

HIDDEN UNLOCK SWITCH is located in rear streetside vent cover.

ANTI-THEFT SYSTEM is activated in front console. Refer to Section 4.1.1.1 for details.

***OPTIONAL* CARBON MONOXIDE DETECTOR** is located in street side MCC area in Patient Compartment.

***OPTIONAL* DRIVER INTENTION LIGHTS IN PATIENT COMPARTMENT** consists of three LED indicators mounted above rear entry doors, that illuminate in conjunction with signal lights and brake lights, when activated by driver.

***OPTIONAL* HEPA FILTRATION SYSTEM** consists of a filter and housing added to the patient compartment air circulation system.

***OPTIONAL* UV AIR STERILISATION SYSTEM** consists of stand-alone wall-mounted system which sterilizes compartment air using UV light.

***OPTIONAL* ACETECH DRIVER ID SYSTEM** consists of a swipe card reader or an iButton reader on the front console, when logged in via card or iButton it logs driving habits.

***OPTIONAL* REVERSE SPOTTER SWITCHES** are located at the streetside rear in a vent cover.

***OPTIONAL* SEAT BELT MONITORING** consists of sensors checking if each seat is occupied and if all occupied seats are buckled.

***OPTIONAL* WHEEL NUT INDICATORS** indicate that wheel nuts are maintaining proper torque. These should be installed by any technician re-installing and torquing wheel nuts after vehicle service. They must

be installed with arrow end pointing to center of adjacent wheel nut. If any indicator has spun away from this position, have wheel nut torqued checked by a certified technician immediately.



2.2. Reporting Safety Defects (U.S. only)

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Crestline Coach Ltd.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Crestline Coach Ltd.

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.safercar.gov>; or write to: Administrator, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. You can also obtain other information about motor vehicle safety from <http://www.safercar.gov>.

2.3. Reporting Safety Defects (Canada only)

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform Transport Canada and Crestline Coach Ltd, Canada.

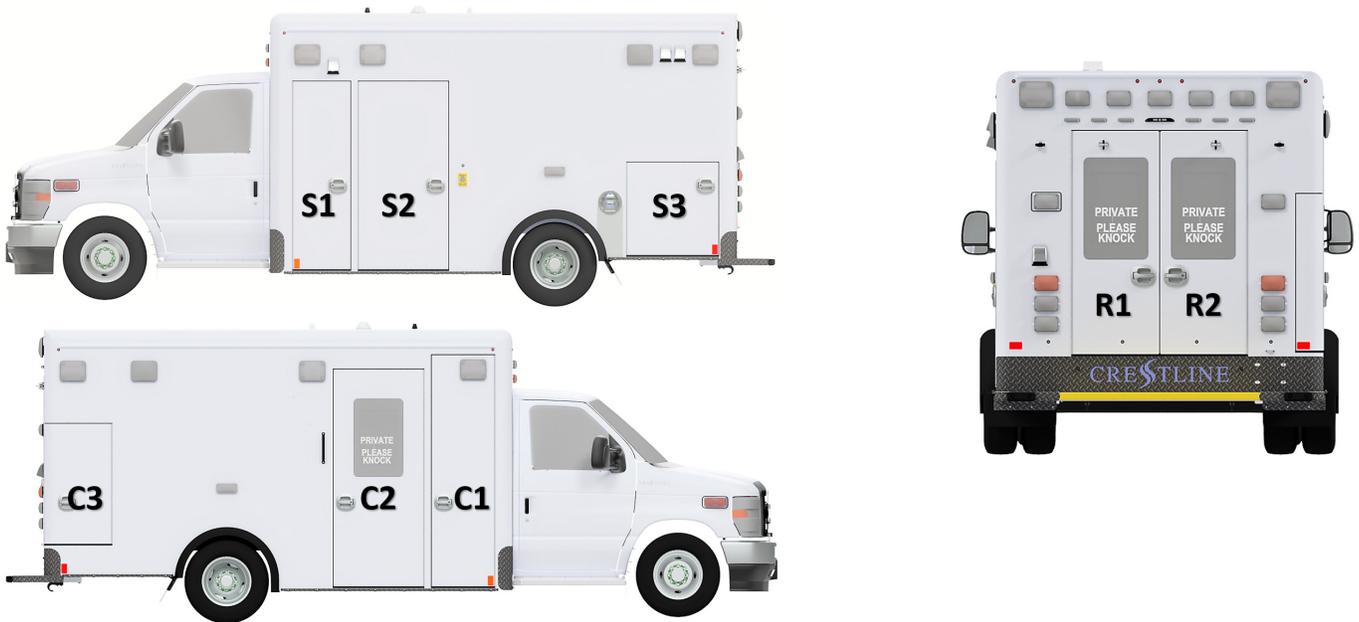
Transport Canada Contact Information	
website	http://www.tc.gc.ca/eng/motorvehiclesafety/reporting-defects-motorvehicles.html (English)
website	http://tc.canada.Website.ca/recalls (English) http://tc.canada.ca/rappels (French)
Phone	1.800.333.0510

Crestline Coach LTD, Canada Contact Information	
website	https://crestlinecoach.com (English)
Direct Contact	Customer Care Dept. Direct Phone: 1.800.363.7591 Phone: 306.934.8844 Toll Free Phone in North America: 888.887.6886 Fax: 306.242.5838 Toll Free Fax in North America: 800.667.0002 Email: info@crestlinecoach.com

3. Ambulance Exterior

3.1. Compartment Identification

Exterior compartments are referred to using an alpha-numeric combination which identifies its position on the ambulance. Doors starting with an “S” are on the Street side of the vehicle while Doors starting with a “C” are on the Curb side. The second digit is a number indicating which position the door occupies (from front-to-back) on the ambulance. For example, door S1 is the forward-most door on the Street side, and door C3 is the third door (from the front) on the Curb side. Rear entry doors are designated R1 (driver’s side) and R2 (passenger’s side)



Door C1 – Spine-board compartment door

Door C2 – Side entry door

Door C3 – Kit tree compartment exterior access door

Door S1 – Main oxygen tank door

Door S2 – Electrical compartment door

Door S3 – Rear storage compartment door

Door R1 – Rear entry door – left side when facing from outside

Door R2 – Rear entry door – right side when facing from outside

3.2. Shoreline Plug

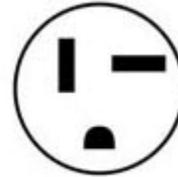
A 120-volt shoreline connection located on the Street side of the ambulance exterior, near compartment S2 is used to connect ambulance to an external power source. The Shoreline plug is a standard 15 Amp, or 20 Amp male-prong connector protected by a sealed cover. Shoreline plug may be standard (manual cord removal) or auto-ejecting. **Non-ejecting Shoreline plugs must be removed by Operator before pulling Ambulance away.** Auto-ejecting plugs will propel Shoreline cord end from vehicle when vehicle is started.



Shoreline connection



15A plug



20A plug

The LED Shoreline indicator light will illuminate when proper Shoreline connection is present.



3.3. Rear Step Bumper

The ambulance is equipped with a rear flip-up step bumper. When flipped down, it can be used as a step into the rear of the ambulance. When loading a patient, it may be necessary to flip up the bumper to avoid contact with the cot. To flip up the bumper, pull up on the rear edge of the center portion, and rotate upward until it contacts the rubber bumpers installed on the rear of the ambulance. After the patient is loaded, flip the center portion of the bumper back to its down position. The flip-up portion should be in the down position other than when loading or unloading the cot.

4. Operator Controls

4.1. Touchscreen

The touch screen will always revert to first page after a time out period.

4.1.1. Physical Top Button (Master Emergency)

This physical button enables primary, howler, and wig-wag.

4.1.2. Selecting Pages

You can change pages by selecting the top page you wish to use.



Driver SP3 pages are main(contains emergency lighting, siren, eco, and other essential controls), lighting, HVAC, seat belt monitoring and configuration. After 10 seconds of no user interaction the SP3 will revert to the main page.



MCC SP3 pages are lighting, HVAC, timer, oxygen and configuration. The MCC SP3 has no timeout feature like the driver SP3.

4.1.3. SP3 Indicator Bar



The Driver SP3 shows: Date, time, conversion temperature, chassis voltage and amperage, emergency master, battery low, rear load lights, curbside scene lights, Eco-Run, Door open, Seat belts, Driver ID, and Shoreline.



The MCC SP3 shows: Date, time, conversion temperature, chassis voltage, Eco-Run, and Intercom.

4.1.4. Primary



Enables the primary emergency light pattern, can be enabled via master emergency.

4.1.5. Secondary



Enables the secondary emergency light pattern.

4.1.6. Wig-Wag



Enables wig-wag on the front chassis lights, can be enabled via master emergency.

4.1.7. White Disable (Standard in AB, not offered in ON)



Disables the front box white light during primary.

4.1.8. Howler



Enables the howler, can be enabled via master emergency. Pressing the chassis' horn is used to control the howler when the button is enabled.

4.1.9. Left Scene



Enables the left scene lights.

4.1.10. Rear Loading Lights



Enables the rear loading lights. Opening the rear R2 door will turn on the lights for up to 5 mins or until the door is closed. The light will remain on for 2s after the door is closed.

4.1.11. Right Scene



Enables the right scene lights. Opening the side door will turn on the lights for up to 5 mins or until the door is closed. The light will remain on for 2s after the door is closed.

4.1.12. Fog Light



Enables the fog lights. Will run when high beams are off, and battery is not low. Will disable the drive light switch.

4.1.13. Drive Light



Enables the drive lights. Will run when high beams are on, and battery is not low. Will disable the fog light switch.

4.1.14. Mute Switch



Mutes the reverse alarm for 30 seconds. Will also mute the low voltage alarm.



Warning – Use a spotter if muting the reverse alarm.

OSHA § 1926.601 Motor vehicles – states

(4) No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

- (i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:*
- (ii) The vehicle is backed up only when an observer signals that it is safe to do so.*

4.1.15. Anti-Theft



Enables anti-theft feature, must have hood closed, engine running, and in park.

4.1.16. Boost



Enables the battery bypass to connect batteries for more starting power. Is automatically enabled if chassis voltage is above 13.1 volts via external battery charger or if shoreline is connected which powers onboard battery charger.

4.1.17. SP3 Backlight



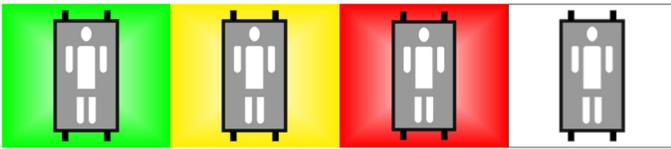
Disables the touchscreens backlight. Will automatically turn off 5 minutes after the engine and eco-run are off. Engaging the low beams will reduce the SP3 backlight for nighttime use.

4.1.18. Door Ajar Indicator

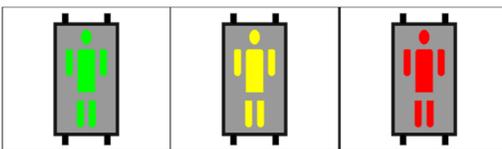


Will indicate if the Side door, R1 door, or any compartment doors are open. Will only work when ignition is on.

4.1.19. Patient Status



Will indicate the current patient status as set from the MCC or RMCC. When patient status has changed a dialog will popup.



The MCC SP3 has a button for each patient status for quick updates. Pressing a patient status button will update the driver panel indicator and display a notification of the change.

4.1.20. Service Mode



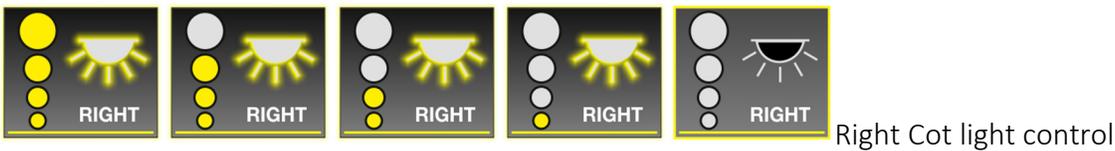
Enables ambulance power for 15 mins. Other power disconnect timeouts will be overridden.

4.1.21. Rear Hands Free

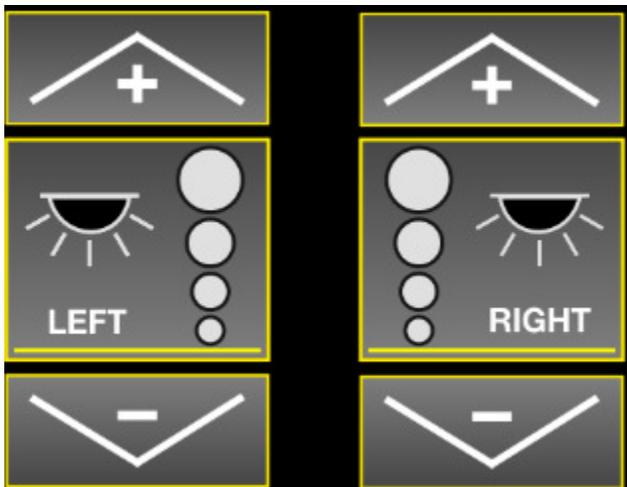


Enables the rear mic for the intercom system. Will not disable the HVAC fan like the MCC and RMCC buttons.

4.1.22. Cot Lights



Press button to cycle through power levels. The cot lights have 4 different power levels.



The MCC cot light control has additional light intensity control buttons. The centre ones work the same as the ones on the Drivers panel. The up and down arrows will increase or decrease the light intensity by 20%, you can also hold them for a faster change.

4.1.23. Cabinet Lights



Press to cycle cabinet lights on and off. Will not function on low battery.

4.1.24. Left Cot Light Timer



Press to cycle through how many minutes you want left cot lights to be on. Does not allow selectable intensity.

4.1.25. Driver ID



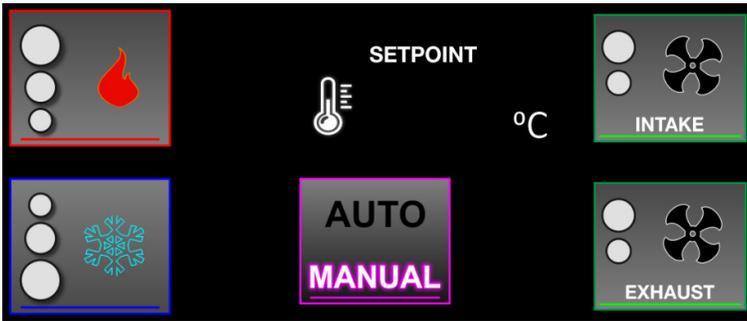
Will trigger when not logged in using the Driver ID system. Will continue to re-appear until logged in. Press X at top left to dismiss.

4.1.26. Shoreline



Will trigger when shoreline is connection, ignition is on, and engine is running. It will also trigger an auditory alarm. This will not trigger in the case of an auto-eject shoreline. Eject shoreline to dismiss.

4.1.27. HVAC



Manual mode lets you set how much heating or cooling you want. Auto mode will allow you to set a temperature setpoint which the system will try to maintain. The Intake (if equipped) and exhaust fans allow you to set a high or low speed mode. The push to talk buttons will set the HVAC system to low speed.

4.1.28. Low Battery Warning



Will trigger when patient compartment battery voltage is below 11.8v. Press X at top left to dismiss. It is highly recommended you either plug in the shoreline, or run the engine to charge the batteries.

4.1.29. ECO-Run Engine Status



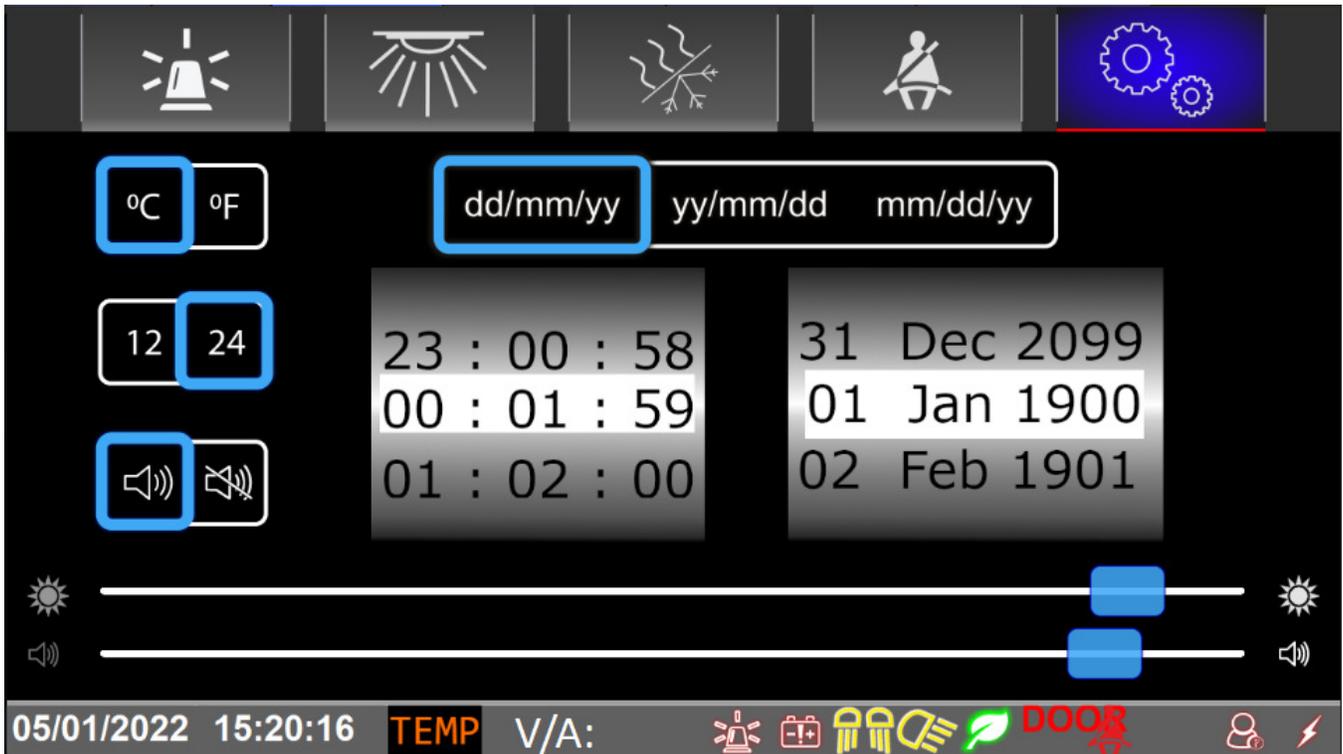
ECO-Run will give notifications when the engine status changes. Each notification has a 5 second timeout.

4.1.30. Seat Belt Monitoring



Will trigger notification and alarm when driver seatbelt, attendant (airway) seatbelt, or mobility seatbelt (if equipped) are not engaged when the seat is occupied and the vehicle is no longer in park. The Mute Button will not mute the seatbelt monitoring alarm.

4.1.31. Configuration Page



In the configuration page you can select Celsius or Fahrenheit for temperatures, 12 or 24 hour time, enable or disable the SP3 audio, the date format, the current date and time, the screen brightness, and the audio volume.

4.1.32. Suction



Enables the suction pump.

4.1.33. Oxygen Valve



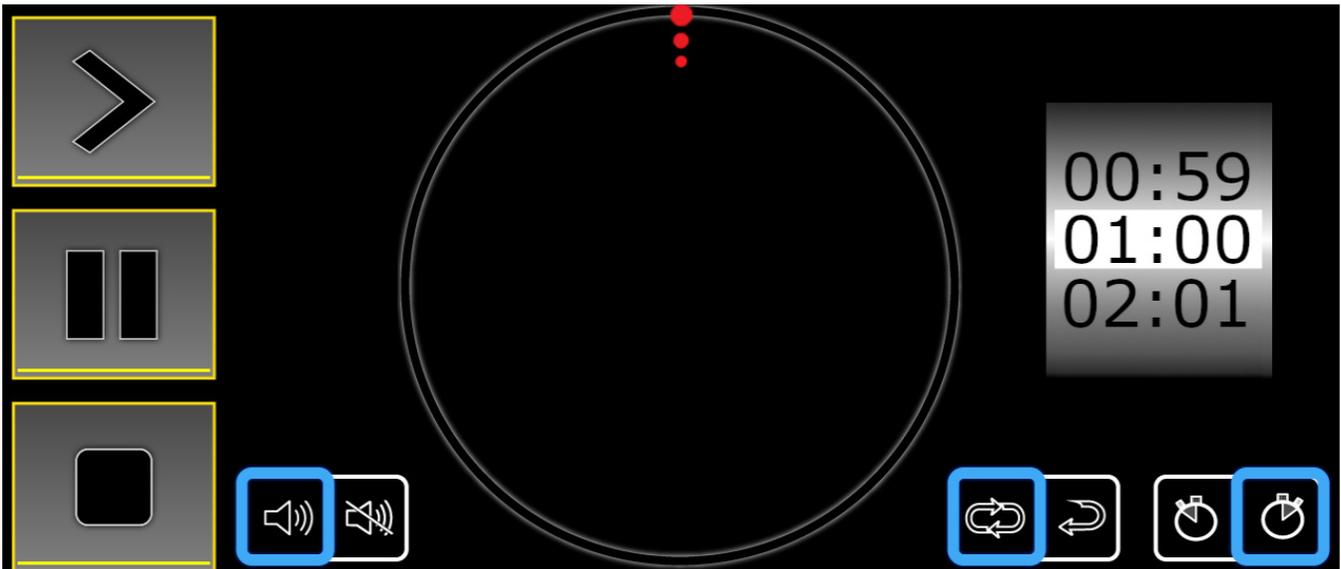
Enables the electronic oxygen valve.

4.1.34. Push To Talk



Momentary button enables the rear conversion push to talk. It will set the HVAC fans to low speed to reduce background noise.

4.1.35. Timer



Top left is start button, below is pause, and the bottom is stop.

Beside the buttons is the audio mute buttons.

Select the timer duration on the right scroll wheel. It's indicated in Hours:Minutes.

Below is the loop option, and the timer/stopwatch option.

4.1.36. Oxygen Gauge



Displays how full the oxygen tanks are.

4.2. Driver's Cabin

4.2.1. Front Console

Main Operator control is done through the front center console and up to two Medical Control Center (MCC) panels in the patient compartment, (Standard street side MCC, and optional curb side MCC). Following is a description of those consoles and their components.



Type III Ambulance front console

4.2.1.1. Touchscreen

Refer to section 4.1 regarding the Acetech Touchscreen.

4.2.1.2. Button Pad

The Acetech button pad replicates existing buttons on the Acetech touchscreen. The only exception is the Group Light Master button. It will turn on and off all the cabinet, and cot lights. The touchscreen has a similar functionality except individual control over each.

4.2.1.3. Indicator Lights

The driver console has a green shoreline indicator light that will illuminate when the shoreline is plugged in.

4.2.1.4. Map Bin Light

The map bin light will stay illuminated with ambulance power.

4.2.1.5. Remote Battery Control Switch

The remote battery control switch allows the user to disconnect the batteries from within the cab. The switch has a sliding cover to prevent accidental presses. It will kill power to the entire vehicle. There is also a manual lever in the ECC if servicing the vehicle.

4.2.1.6. Acetech Driver ID

There are 2 options for Driver ID, iButton and card type. Both function in the same manner. You tap your iButton or access card on the reader in the console to register as the driver. The touchscreen will throw an alert if you do not correctly swipe in your driver ID badge before you start driving.

4.2.1.7. Siren Control Head

Refer to Section 6 for detailed information about Siren system.

4.2.1.8. 2-Port USB charging outlets

There are two (2) USB charging outlets in the front console. One port provides 2.1 Amps of power and the other provides 1 Amp. Each port is marked with its rating.



4.2.2. Heated Remote Mirrors

Ambulance is equipped with chassis OEM mirrors or upfitted remote/heated mirrors. Mirror heat and remote adjustment switches are located on or near driver's door. Use remote adjustment switch to position rear view mirrors for maximum safe viewing before operating vehicle.



4.2.3. Front Cabin lighting

Aside from the chassis dome light(s), added Passenger (Standard) and Driver (Optional) ceiling-mounted reading lights are available. These are activated using rocker switch attached to light housing. Each light has a white or red illumination mode which is selected by activating switch to either side. Place switch in central position to turn light OFF.



4.2.4. Hand-held Spotlight

If equipped, turn ON spotlight using handle-mounted switch. Note that Ignition must be ON to use hand-held spotlight.



4.2.5. High Idle (Throttle Up) Control

High idle is enabled when transmission is in Park, engine running and with foot off brake pedal. Activate High Idle by setting vehicle's parking brake; engine speed will be electronically raised to 1500 RPM.

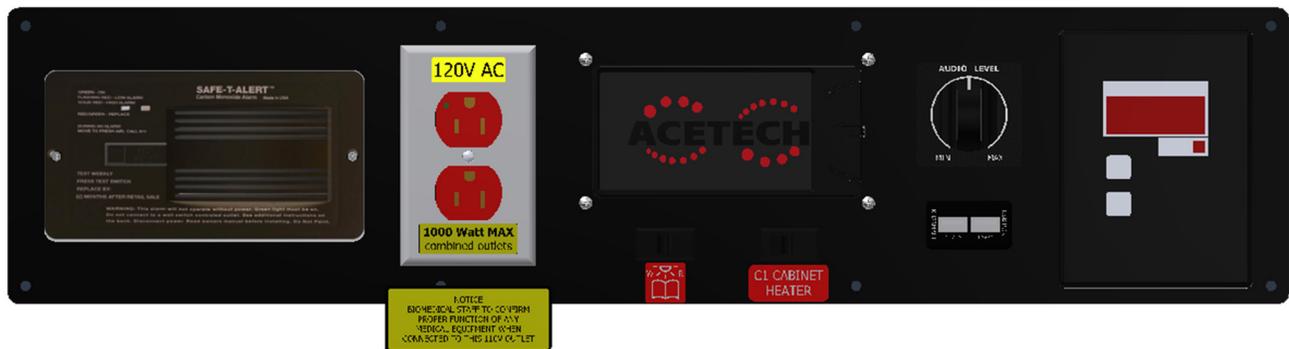
4.2.6. Liquid Spring Suspension Controller

If equipped, a Liquid Spring suspension Operator's control panel is located near steering wheel. See Section 12 for details on optional Liquid Spring suspension.

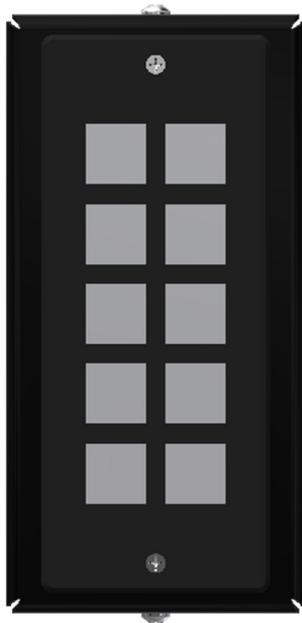


4.3. Patient Care Area

4.3.1. Medical Control Center (MCC) Consoles



MCC Panel (Streetside)



Remote MCC Panel (Curbside)

4.3.1.1. Touchscreen

Refer to section 4.1.

4.3.1.1. 2-Port USB charging outlets

There are two (2) USB charging outlets in the front console. One port provides 2.1 Amps of power and the other provides 1 Amp. Each port is marked with its rating.

4.3.1.2. Digital Oxygen Monitor

The wall unit will display the current oxygen tank pressure in PSI. The default low pressure alarm threshold is 500psi, and will throw an alarm until the low tank is replaced.

4.3.1.3. Speaker Volume Control

Patient compartment stereo speaker volume can be adjusted using volume dial.



4.3.1.4. Remote MCC Button Pad

The RMCC button pad replicates existing features in the touchscreens as described in section 4.1. The ventilation button will enable or disable both the intake (if equipped) and exhaust fans. This is similar functionality as the touchscreens but ties both fans (if equipped) together.

5. Electrical System

5.1. Ambulance Electrical Systems Management

The ambulance has a multiplex electrical system which controls most ambulance functions. Management of Ambulance electrical loads is accomplished through Operator-controlled switching and several automatic features. This helps protect vehicle electrical systems from unnecessary loads to ensure maximum battery life. Following are explanations of these features as they relate to Operator use.

5.1.1. Battery Switch (Front Console)

The ambulance has a battery disconnect switch installed in the front console. It has a sliding cover to prevent accidental presses. It is a latching design so it only requires momentary presses to enable or disable the battery disconnect. The disconnect solenoid is located in the ECC battery well. There is a lever on the top to physically connect or disconnect the batteries. There is also a service position if you are doing service work on the vehicle.



Battery Switch

5.1.2. Ambulance Connect Signal

A multiplex-controlled Triggering system is used to activate Ambulance functions automatically. The following explains basic Ambulance Connect signal functionality.

With Batteries connected, multiplex will energize systems when any one or more of the following trigger events occurs:

- Ignition is ON
- Service mode is engaged(Driver Touchscreen button)
- Shoreline plugged in
- Eco-Run activated

A trigger **OFF**-timer signal ensures those electrical systems are automatically switched OFF when ambulance is not in use, even if console battery Switch is left ON (see Exceptions further below when Shoreline is plugged in). The multiplex does this by placing those systems into Sleep mode in the following conditions:

- 15 minutes of service mode being on
- Eco-Run is disabled

Exceptions - Plugging the Ambulance via Shoreline keeps the ambulance available even after Sleep mode engages

5.2. 120 Volt GFCI-protected outlets

AC power is available at several on-board GFCI-protected outlets. GFCI protection is provided by the outlet found in street side MCC panel. If a ground fault is detected, protection will cut power to all on-board outlets. To reset, press RESET button on street side MCC outlet face. Note that maximum combined load taken from all 120 volt outlets cannot exceed Inverter rating (1000 or 1800 watts, check your inverter output rating). Maximum combined load is identified on outlet face plates.



5.3. 12-volt Outlets

Aside from those provided by chassis OEM, there are standard and optional 12 volt outlets at several locations in the ambulance. These are energized when battery Switch (Section 5.1.1) and ambulance connect condition (Section 5.1.2) are active. These outlets are powered regardless of Trigger conditions when ambulance is plugged into Shoreline.



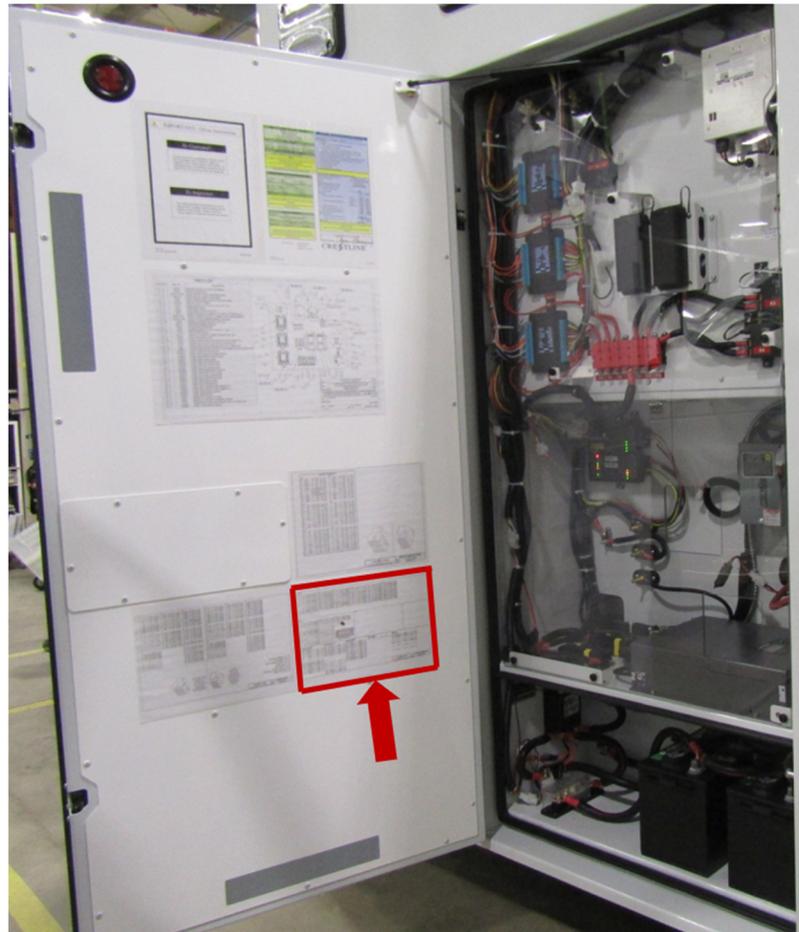
5.4. Vehicle Boosting

Please refer to OEM vehicle manual for proper under hood battery boosting procedure.

5.5. Fuses and Breakers

The Power distribution board contains both circuit breakers and fuses. Depending on configuration, circuit breakers can be Type 1 Auto Reset or Type 3 Manual reset. Simply press button on end of Type 3 breaker to reset. Blown Fuses should only be replaced with identical rated fuses.

A reference chart with conversion fuse information specific to your ambulance is located inside the electrical compartment door. See below for approximate location.



Refer to the chassis OEM documentation for chassis fuse information.

5.6. Anti-Theft System



This function allows Operator to remove ignition key and leave engine running. It protects against theft by turning off the engine if an attempt is made to move vehicle without keys.

To activate Anti-Theft, you must:

- Have engine running
- Hood closed
- Foot brake unpressed
- Have shift selector lever in the "P" (Park) position
- Activate the ANTI-THEFT button to the on position. The indicator light will illuminate. Note: DO NOT press the brake pedal during the procedure
- Remove key from the ignition after anti-theft activated

To deactivate the Anti-Theft without shutting the engine down, put the key back in the ignition position and deactivate the ANTI-THEFT button, or press the brake pedal.

To deactivate the Anti-Theft and shut down the engine, deactivate the ANTI-THEFT button or press the brake pedal.

5.7. ECO-Run

ECO-Run is a voltage and temperature based engine management system. ECO-Run will be enabled under the following conditions:

- Foot brake is unpressed
- Hood is closed
- Vehicle in park
- Key is in the vehicle
- Engine is running

The ECO-Run routine will shut down the engine when:

- The 3-minute minimum run timer elapses
- 2 minutes after the ECO-Run thermostat is within set temperature
- 10 minutes timeout after ECO-Run is triggered from low battery voltage

Once ECO-Run has shut down the engine, it will stay off for at least five minutes and until conditions are met that require engine restart.

5.7.1. Detailed ECO-Run Information

General

ECO has been enhanced to automatically engage when the vehicle is in park and idling to increase the opportunity for fuel savings and wear and tear reductions on chassis drivetrain.

ECO and Anti-theft are separate functions, they work together but the use of one does not require use of the other nor imply that the other is active.

There is a three-minute delay that will start every time engine is running, transmission is in park, and foot brake has been released. State of Anti-theft system has no effect on the ability for ECO to activate.

When ECO is enabled, there will be a green leaf icon in lower status bar of touch panels. This leaf will be on entire time ECO is enabled.

Initial Conditions and Actions

At time of enabling, if patient compartment temperature is within 18-24 °C, ECO will begin a five second notification on each touch screen to notify that it will be stopping engine. At end of five seconds, ignition will be turned off and engine stopped, even if key is still in RUN position.

A couple seconds after stopping engine, if key is still in RUN position, ignition will be turned back on, but engine will remain off. When stopped, a message will flash continuously on touch panels to indicate ECO is on and has stopped the engine. ECO will monitor for restart conditions and can restart engine at any time as long as key is left in ignition.

If patient compartment temperature is outside of 18-24 °C at time of enabling ECO, ECO will take partial control of ignition to keep engine running. Removal of the keys is possible in this state and engine will continue running with Anti-Theft system OFF.

However, once conditions are stabilized and ECO stops engine, ECO will see that ignition key was removed and self-disable, preventing any further automatic restarts. If you want to immediately stop the engine, simply press brake pedal.

Anti-Theft & ECO-Run Integration

Enabling Anti-Theft switch at any point before or during this process will allow you to remove the keys and enable ambulance to start and stop automatically on its own without the key. Provided you have activated Anti-Theft with engine running or before removing key when engine stopped by ECO. When key is removed, ignition will remain off.

When shutdown, simply turn the key to start to restart engine manually. Restarting manually does not disable ECO, if settings go out of range and come back, it will attempt to stop the engine again after stabilization delay.

On some chassis' if the ignition has been on continuously without engine starting, OEM voltage protection may engage and turn off ignition. If this happens, you may need to turn key to off position before trying to start.

Pressing brake pedal will Disable ECO temporarily and will restart the three-minute delay to enable if engine is running and in park gear. Note that ignition needs to be on for footbrake press to register.

De-activating anti-theft will also de-activate ECO. If the transmission is not removed from park or foot brake touched, deactivating ECO with Anti-theft (it must be in ECO mode first), will allow a temporary disable of ECO until next time transmission is moved out of and back into park, foot brake is pressed and released or engine is shutdown and restarted.

Engine Stop & Start

When ECO has stopped engine, there is a five-minute minimum shutdown timer on temperature threshold. It will not restart due to temperature out-of-range condition for these five minutes. This is to reduce wear and tear of engine stopping, immediately going out of range and restarting.

When ECO restarts, an alert will be displayed on both touch panels and reverse alarm will sound as a warning before engine is started. When restarting because of temperature out-of-range condition, temperature must return within 18-24 °C and stay there consistently for two minutes.

If a low voltage threshold of 11.8V for conversion, or 12.0V for chassis occurs during ECO Engine Stopped state, it will immediately restart and run for a minimum of ten minutes before allowing engine stop again. Please note that chassis battery is currently only monitored if key is in ignition RUN position.

Due to some chassis configurations and chassis battery condition, manually restarting engine during ECO Engine Stopped condition can trigger low chassis battery threshold. When this happens, ECO will stop engine again, sound back up alarm and display restart alert on touch panels and then restart again automatically.

You can interrupt this by pressing the foot brake to disable ECO when starting the vehicle.

The rear HVAC controls are fully adjustable for both auto/manual mode, temperature adjustment, and fan speed adjustment, manual HVAC mode only, during ECO operation.

Every time temperature reading goes outside of 18-24 °C, the temperature stabilization timer will be reset. If temperature is only just inside, such as 19 or 23 degrees, the reading can fluctuate enough to go out of range and come back in.

Recommendations and Settings

It is currently recommended to be on AUTO mode, and to target a temperature of 19-20 °C in the summer and 20-21 °C in the winter for optimum ECO operation. Your local seasonal climates can affect this recommendation and you may find a slight adjustment to these recommend settings to be more optimal.

Please note that the ECO comfort range of 18-24 °C is currently a fixed setting and is not user adjustable in the field.

5.8. Traffic Advisor

The traffic advisor has the following gating conditions

- Vehicle in park (ignition on or off)
- Ambulance power (must not have low battery)

5.9. Ambulance power

Ambulance power is used to gate many of the electrical systems in the ambulance. The gating conditions are ignition with a 5 minute time out, or service mode with a 15 minute time out, or shoreline or Eco-Run is enabled.

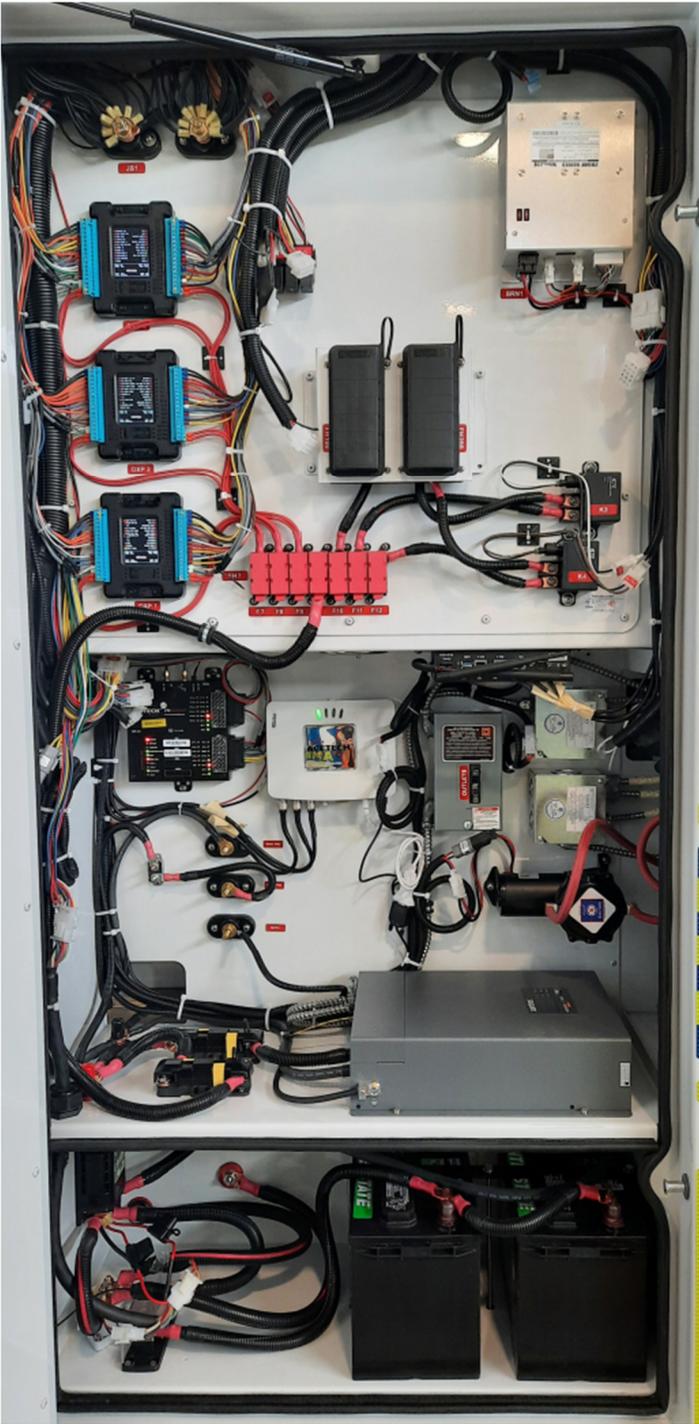
5.10. Inverter/Charger

The ambulance is equipped with an AC power inverter and battery charger combination unit. The Inverter function is automatically turned ON and OFF when vehicle is started or stopped.

When engine is running, inverter is providing power to 120v outlets, using vehicle's batteries. When shoreline is plugged to an outside source, 120v outlets receive power from external source and integral battery charger recharges vehicle's batteries.

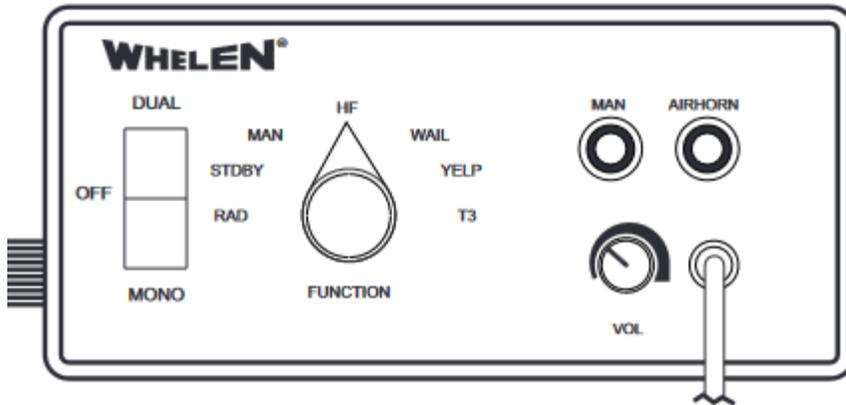
5.11. Electrical System Service

Contact your Crestline Dealer for any repairs or verifications requiring access to the main Electrical Compartment. Only trained persons should work in this area.



6. Siren System

The Siren controller and integrated amplifier is mounted in driver console. Two loudspeakers are mounted in the front of the ambulance. Below is a description of the siren's operation.



6.1. Siren Control Switches

POWER SWITCH This switch has three positions: Center (OFF) and Down (ON/Mono) and Up (ON/Stereo). When switch is in OFF position, the siren will not function. When switch is in ON position, the siren is functional and may be activated.

MAN BUTTON The Manual button generates a variety of tones, depending on the position of the rotary switch. For further explanation of this button's function, refer to Rotary Switch Operations.

AIRHORN BUTTON Pressing and holding the HORN button generates an AIRHORN tone when the siren is powered.

VOL. (PA VOLUME) BUTTON Use this button to adjust PA output volume.

ROTARY SWITCH The Rotary switch controls the siren and PA (Public Address) functions. There are seven positions that may be selected. Each position and its function are outlined under "Rotary Switch Operations".

6.1.1. Rotary Switch Operations

RAD (Radio Repeat) When the rotary knob is in the RAD position, any signal that is received by the ambulance's two-way radio will be simultaneously broadcast over the ambulance's loudspeaker (unit must be connected to the two-way radio).

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.

- Pressing the MAN button results in the AIRHORN tone until the MAN button is released.
- Activating the HORN RING input results in the VEHICLE HORN until the HORN RING input is de-activated.

STDBY (Manual Siren) When the rotary switch is in this position the siren is in a standby state where no tones have been activated but is waiting for another action to be taken by the operator.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.
- Pressing the MAN button will produce a WAIL tone. This tone will ramp up to peak frequency and stop when the MAN switch is released.
- Activating the HORN RING input will produce a AIRHORN tone until the HORN RING input de-activated.

MAN (Manual Siren) When the rotary switch is in this position the siren is in a standby state where no tones have been activated but is waiting for another action to be taken by the operator.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the HORN button is released.
- Pressing the MAN button will produce the AIRHORN tone until the MAN switch is released.
- Activating the HORN RING input will produce the WAIL tone. This tone will ramp up to peak frequency and stop when the HORN RING is de-activated.

HF (Hands Free Operation) When the rotary knob is in the HF position, the siren functions are placed in a standby mode. Siren tones are activated by a single 'tap' on the MAN button or a single tap on the steering wheel horn. The first tap produces a Wail tone (a steady rise and fall tone). A second tap produces a Yelp tone (a fast rise and fall tone.) A third tap produces a Piercer™ tone (an extremely fast rise and fall tone). The next tap returns the siren to a wail tone and the cycle repeats itself. Two quick, successive taps will stop the siren.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.
- Pressing the MAN button will result in the HF cycle as described above.
- Activating the HORN RING input will result in the HF cycle as described above.

WAIL (Wail Tone) When the rotary knob is in the WAIL position, a steady, rise and fall tone (wail) is produced.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.
- Pressing the MAN button will change the siren tone to a YELP pattern (a fast rise and fall tone). Pressing the MAN button a second time returns it back to a WAIL tone.
- Activating the HORN RING input will change the siren tone to a YELP pattern (a fast rise and fall tone). Activating the HORN RING input once again returns it back to a WAIL tone.

YELP (Yelp Tone) When the rotary knob is in the YELP position, a fast rise and fall tone is produced.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.
- Pressing the MAN button will produce the PIERCER tone. Pressing the MAN switch a second time returns it back to YELP.
- Activating the HORN RING input will result in the AIRHORN tone. Activating the HORN RING input once again returns it back to a YELP tone.

T3 (Piercer Tone) When the rotary knob is in the PIER position, an extremely fast rise and fall tone is produced. May be used for Hi/Low and auto sequence in some applications.

With the Rotary Switch in this Position:

- Pressing the AIRHORN button results in the AIRHORN tone until the AIRHORN button is released.
- Pressing the MAN button will result in the AIRHORN tone until the MAN button is released.
- Activating the HORN RING input will result in the AIRHORN tone until the HORN RING input is deactivated.

6.1.2. Volume Adjustments

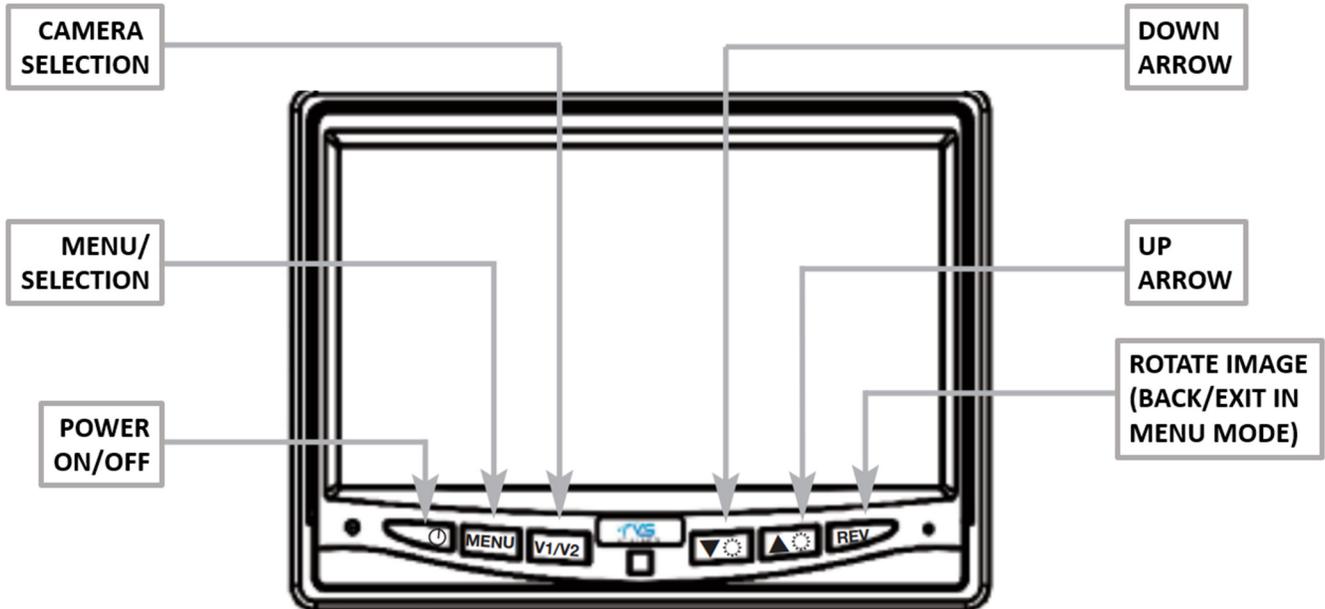
Before using the siren, the microphone volume (PA) must be adjusted to satisfactory operating levels.

Adjusting Microphone Volume (PA): With the ambulance in an enclosed area, turn the Siren ON and speak into the microphone. While speaking, turn the MIC knob in a clockwise direction to increase the volume. Continue to increase the PA volume until audio feedback occurs, then turn the MIC knob in counter-clockwise direction until the feedback is eliminated.

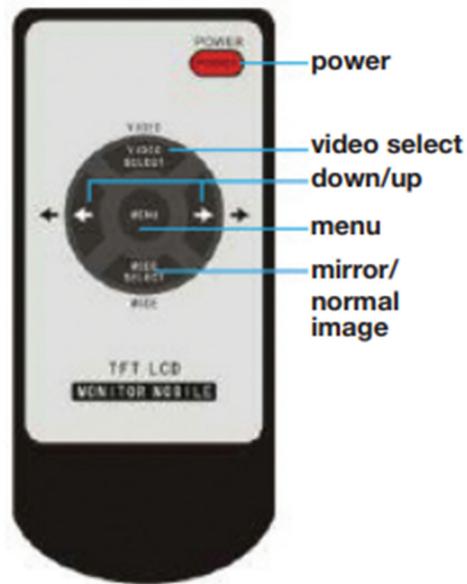
7. Camera and Monitor System

The Ambulance may be equipped with a camera and monitor system. By default, the monitor is configured to display the reversing camera view when the transmission is placed in Reverse. Depending on selected options, more camera views are available including patient compartment views. Below are general instructions on the use of the camera and monitor system.

Monitor Buttons & Indicators and Hand-held Remote



- To turn on the monitor, press "ON" button.
- To adjust brightness, press "MENU" 1 time and use arrows
- To adjust contrast, press "MENU" 2 times and use arrows
- To adjust saturation, press "MENU" 3 times and use arrows
- To adjust sharpness, press "MENU" 4 times and use arrows
- To adjust volume, press "MENU" 5 times and use arrows
- To change language, press "MENU" 6 times and use arrows
- To activate rotate image option, press "MENU" 7 times and use arrows.
- To activate day/night option, press "MENU" 10 times and use arrows
- To reset your system, press "MENU" 11 times and use arrows
- To view images on other cameras, press "CAMERA SELECTION" 1 time for camera one, 2 times for camera two and 3 times for camera three.



7.1. Camera DVR

The DVR setup has a camera facing forward towards the road in the cab, one in the cab headliner, one in the conversion ceiling, and one above the rear door pointed rearward. The default camera on the monitor is the patient camera and will switch to the backup camera when in reverse. All cameras are fed into the DVR and recorded.

7.1.1. Backup Sensors

The backup sensors extend the capabilities of the back-up camera system. They have a pre-set alarm distance of 5 meters. An audio alert will sound when an object is detected within the set distance range. When in reverse a detection zone and sensor distances are overlaid on the camera feed.

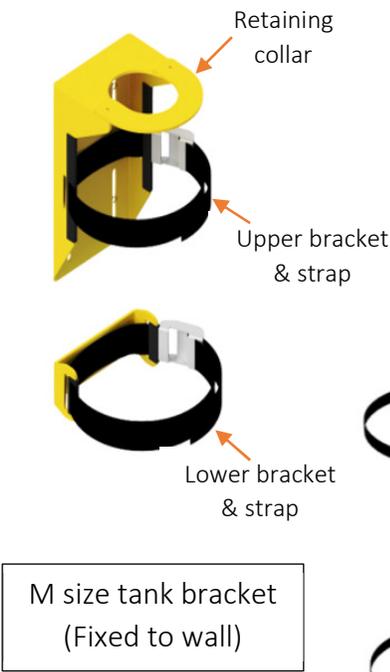
8. Oxygen System

8.1. Main Oxygen tank compartment

Main oxygen compartment may contain one M size tank brackets, able to hold an Oxygen or a Medical Air tank. Always ensure Main tank is properly secured in their brackets using both straps and neck retaining collar. There are two standard size D or E portable tank brackets installed along with an additional tank bracket installed at rear wall of the oxygen compartment (refer to section 8.4). The ambulance may be equipped with the O2 to Go oxygen tank loading/unloading system. The system is in the Main Oxygen compartment (Door S1) and consists of a ramp, a cart, and straps. The instructions on how to use the system are below.



Main oxygen compartment



O2 to Go Cart



Portable tank Bracket

8.1.1. O2 to Go Tank Unloading

1. Turn gas valve off.
2. Remove regulator.
3. Lift the ramp from its door bracket.
4. Attach ramp to slots in base of tank platform.
5. Loosen and remove wing nuts on top of vertical retaining collar. Place nuts and collar aside.
6. Release the larger horizontal cart buckles; pull the straps all the way out of the buckles.
7. While standing directly in front of the tank with one leg on either side of the ramp, slowly lower the handle of the oxygen cart to the horizontal position.
8. Back up slowly, pulling the cart down the ramp and transport empty tank to storage.
9. While on a level surface, undo tank straps to free tank from cart, and exchange with new tank.
10. Attach new tank to cart using tank straps.

8.1.2. O2 to Go Tank Loading

1. Slowly push the oxygen cart up the ramp until the wheels fall into the slots in the compartment floor.
2. Raise the handle until the oxygen bottle and cart are in the upright position. Ensure no straps are caught behind the oxygen tank.
3. Attach the two horizontal cart restraint belts and pull tight.
4. Place the vertical retaining collar over the valve and secure by tightening down wingnuts.
5. Place ramp back into storage position.
6. Install regulator.
7. Turn on gas valve and listen for leaks.

8.2. Oxygen Regulator and Flowmeters

A Main tank-mounted 50 PSI pressure regulator ensures correct flow of oxygen into on-board system. Oxygen flow rate at individual outlets is controlled by outlet-mounted flowmeters. Refer to Regulator and Flowmeter documentation for proper use and care. Main regulator can be removed and installed using an appropriately sized wrench.



8.3. Oxygen outlets

Wall mounted oxygen outlets located in up to four locations listed below a DISS type. Available locations are: 2 (two) at street side MCC area, at Curb side wall (hidden behind pocket) near Side entry door and in ceiling above Cot area. One of the MCC area outlet also may equipped with an integrated flow meter for the ceiling connection.



Diss (left) and Integrated flow meter (right) type Oxygen outlets

8.4. Portable Tank brackets



Up to four (4) portable tank brackets may be installed in the ambulance. One (1) inside patient compartment, near the front Bulkhead panel, and three (3) mounted to inside the Oxygen compartment.

Placing a tank in the holder:

1. Ensure strap that secures the tank is loosened.
2. Place bottom of tank into the bracket first, then lift top into place.
3. Tighten strap.

Removing the tank from the holder:

1. Loosen strap by pushing in on metal cam buckle.
2. Carefully remove oxygen tank from bracket by pulling top end outward, then lift out.

8.5. Electronic Oxygen Pressure Monitor

The electronic oxygen pressure monitor has an included display mounted in the streetside MCC. Additionally the oxygen pressure will be displayed on the Acetech control panels.

8.6. Electronic Oxygen Valve

The electronic oxygen valve is controlled via buttons on the streetside and curbside Acetech control panel.

9. Patient Compartment

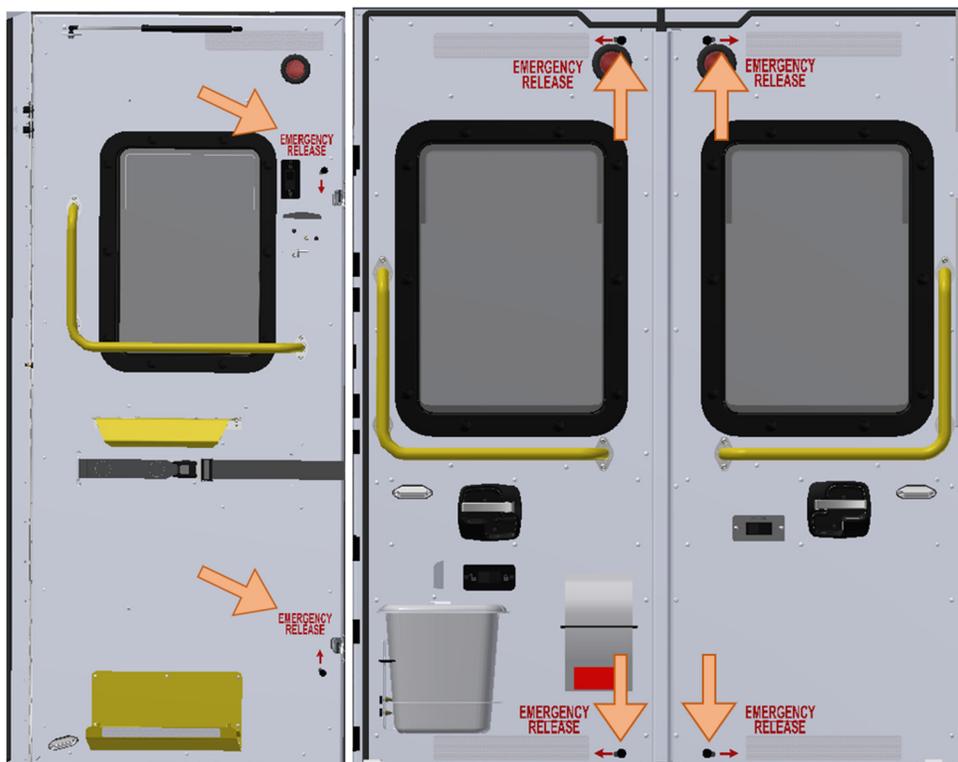
9.1. Emergency Door Release

In the event that the interior door handle is not working to open a door, it may be necessary to use the emergency releases to be able to exit the ambulance.

Using the picture below for the side entry door, the top and bottom releases are located beside the “EMERGENCY RELEASE” decals. The releases have a round red knob that slides using the directional arrows until the rotary latches holding the door closed release.

Each rear entry door has its own emergency releases. Like side entry door, there are red knobs beside the “EMERGENCY RELEASE” decals. The passenger side door is opened first, pulling the red knobs until their respective rotary latches are released. Follow the same procedure for the smaller door.

Note: Each knob is only connected to the individual latch nearby. Actuating a knob will only release its connected latch therefore both knobs on a given door must be used to open the door.



9.2. Seating

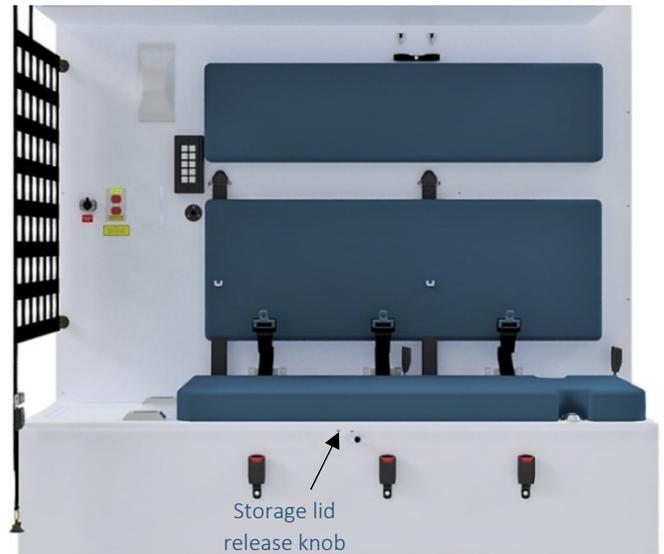
9.2.1. Attendant Seat



The Main (Cot head) Attendant's seat is equipped with 3-point seatbelt and forward/backward adjustable slide. It may also be equipped with a two- or eight-position swivel base. The forward/backward adjustment lever is behind the legs when sitting. The swivel lever is a pull-out style T-handle on the right-hand side of the seat.

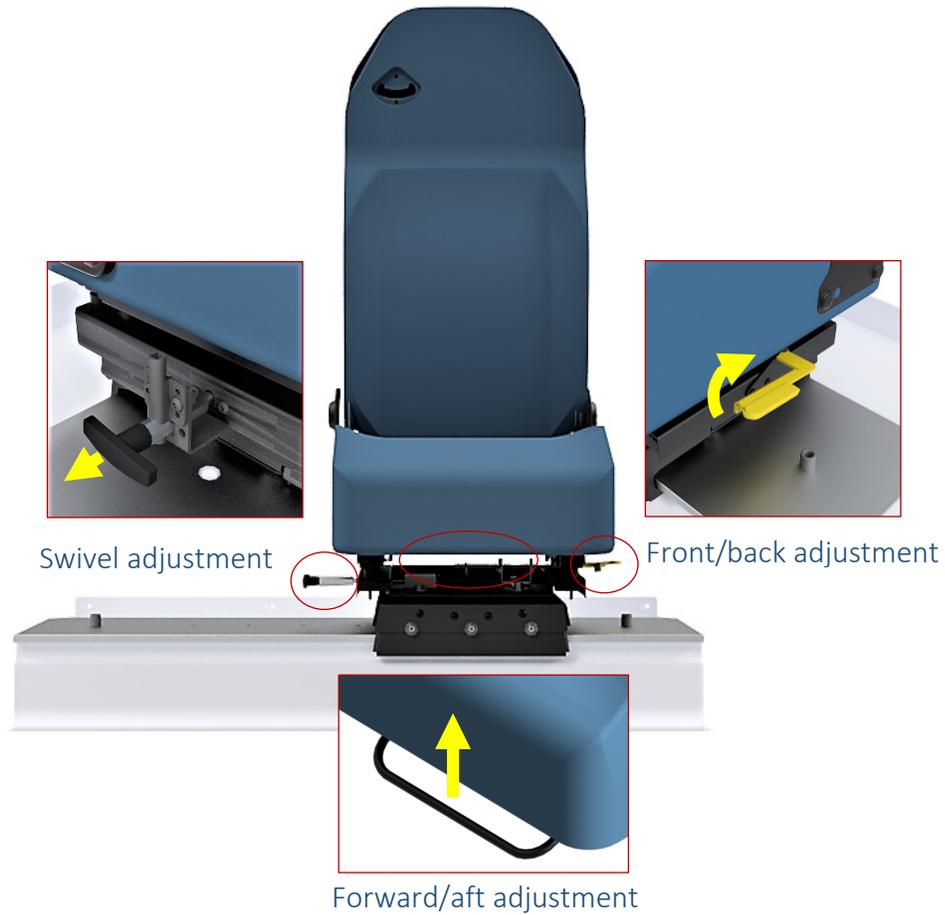
9.2.2. CS Squad bench

A 2-person squad bench with 3-point harnessing is on the Patient compartment Curb side wall. There is storage space beneath bench seat; open using the pull latch near center of base wall below seat cushion



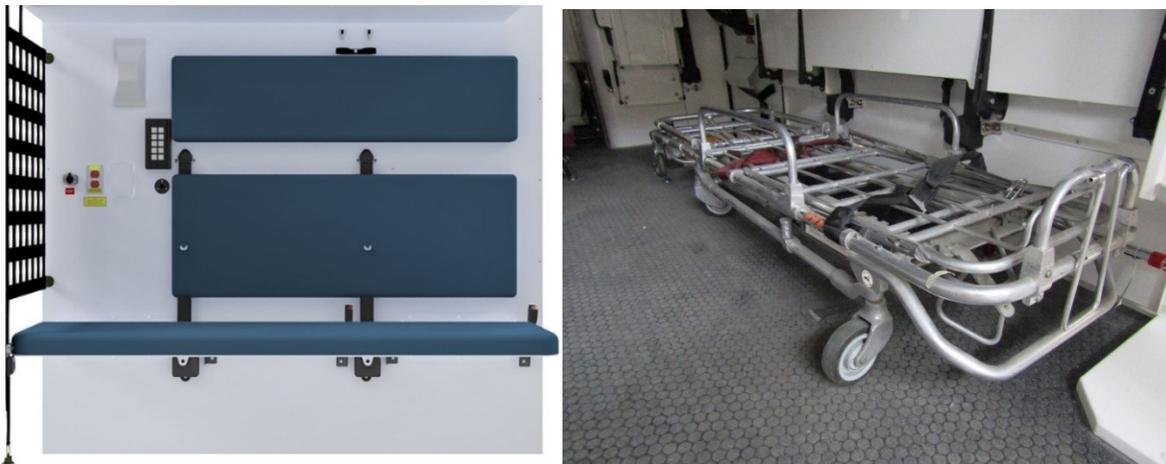
9.2.3. CS sliding mobility Seat

Mobility seat is equipped with a lever to the front which allows forward/aft adjustments. In addition, it has levers on the sides allows seat to slide front and back on the base track and rotate.



9.2.4. CS Flip-up bench seat

Some units are equipped with flip up bench with two three-point seat belts when folded up, allows installation of cot



9.2.5. CPR Seat



An optional CPR Attendant's seat with 3-point harness is located on Street side wall.

9.3. Cabinetry and Storage

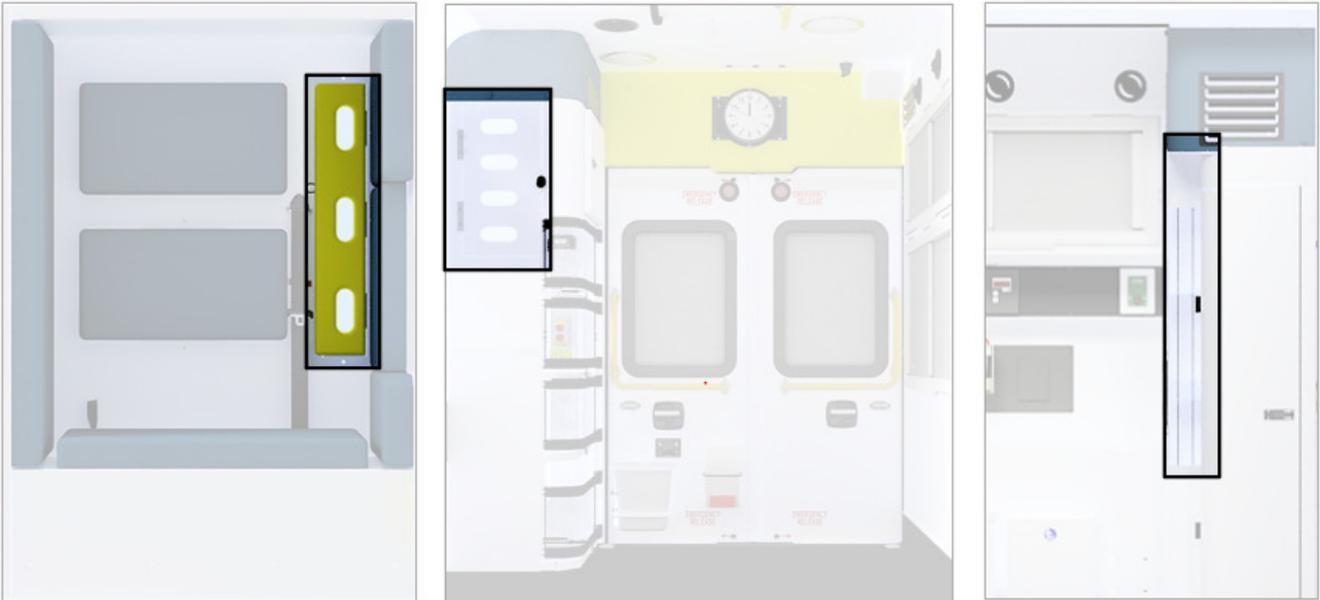
9.3.1. Waste bin and Sharps container

A waste bin and sharps disposal container are provided beside the Squad bench, within reach of the Main Attendant's seat.



9.3.2. Glove Dispenser compartment

There are three positions for glove boxes storage compartment can be found depending on the configuration purchased. These positions are- Near CPR Seat covered with yellow cushion, on the wall of rear kit compartment & behind rear facing attended seat.



9.3.3. Compartment Shelving

The ambulance is equipped with adjustable shelves in some locations. To adjust, loosen the screws holding the shelves in the vertical track (do not completely remove), move to desired height and re-secure. Ensure track nuts are properly aligned with track when tightening.

9.3.4. Squad Bench storage

A large storage compartment is located under the Squad bench seat. Open by pulling release knob near center of bench base below seat cushion.

9.3.5. Drug Cabinet

A drug cabinet is located above rear kit compartment, on Curb side near rear entry door. This cabinet may be lockable.

9.3.6. IV Bag Hooks

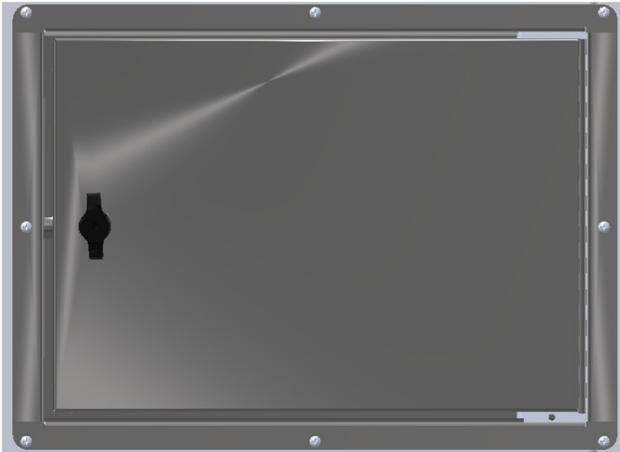
There are wall-mounted and optional ceiling-mounted IV Bag hooks (and straps). Wall-mounted hooks and straps are located above Squad bench and in Street side bulkhead.



Wall IV bag hooks and straps

9.3.7. Temperature-Controlled Cabinet

The ambulance may be equipped with a temperature-controlled compartment instead of the conventional Drug Cabinet.

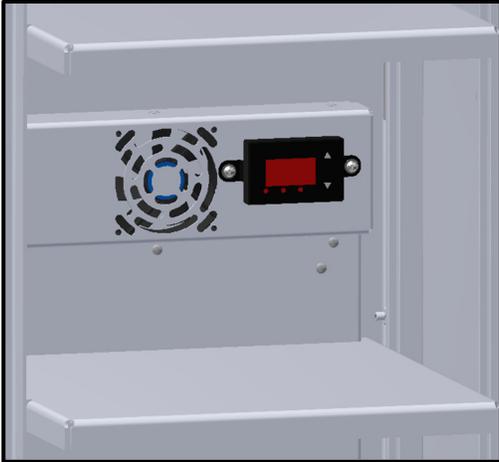


The unit will remain powered and maintain set temperature as long as vehicle battery voltage is above 10.5 volts, at which point it will de-power.

Pre-set temperature is adjustable between -10F and 110F (-23C and 43C). Contact your Crestline dealer for pre-set temperature adjustment.

9.3.8. Blanket Warmer

The ambulance may be equipped with a blanket warmer cabinet located in the C1 interior compartment. The cabinet will have a thermostat to set the temperature, a fan to circulate air, and a heater. The switch to control the blanket warmer cabinet is located on the streetside MCC.



9.4. Clock

The ambulance may be equipped with an analog or digital clock above the rear doors of the ambulance.

9.4.1. Analog Clock

Analog clock is battery-powered and time adjustment is completed using dial on rear of clock housing.



9.4.2. Digital Clock

Digital clock has an hours, minutes and seconds display. Follow the instructions below to set/operate the clock.

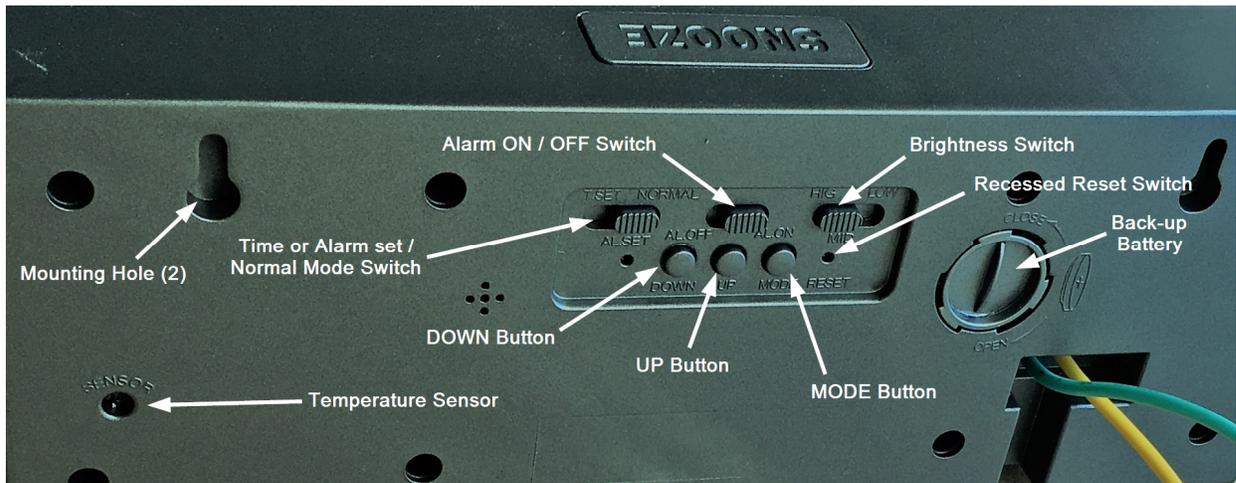


To remove the clock from its enclosure, pull the bottom out to detach the hook-and-loop strip, lift and slide off from screws in the keyholes on the back, and pull out. Be careful when pulling out the clock; electrical wires are tied to it.



Clock removal – Side View





Rear view of digital clock

Functions: Alarm, Snooze, 12/24 Hours Display, Calendar, Temperature, Brightness Adjustment, Battery Backup

SNOOZE: Press SNOOZE key to cycle through basic information about the clock: Time-Temperature-Date-Alarm Time-SNOOZE Time

12/24 Hours Display: Press DOWN key to change display between 12 and 24 Hour mode
 12 Hours: displays 1-12 only, there is a P icon on the display board when PM
 24 Hours: displays 0-23 only, without P icon on the display board

Time & Calendar Setting:

1. Slide the button on the back of the clock to T .SET position
2. The blinking digits start from HOUR, MINUTE, & SECOND, press UP/DOWN key to change the number.
3. Press MODE key to switch to the next position: MINUTE, SECOND.
4. Once time setting is complete, press MODE again to enter Calendar setting. The blinking numbers start with the YEAR value, then MONTH, then DAY. Press the UP/DOWN key to adjust value.
5. Once Time and Date settings are complete, slide the button back to NORMAL position from T-Set.

Brightness Adjustment

There are three level of brightness: HIG-MID-LOW. Slide the button to the desired level.

Temperature

Press SNOOZE once to check the temperature

Press UP key to change temperature display between degrees Celsius and Fahrenheit

AL ON & AL OFF Key

AL ON: Alarm icon is displayed on the display board; alarm is ON.

AL OFF: No alarm icon is on the display board; alarm is OFF.

10. Suction System



The ambulance is equipped with a Suction system. Turn Suction ON and OFF using toggle switch in MCC Console. Adjust suction rate using dial on front of gauge housing. Ensure not to overfill suction canister as damage to suction

pump will occur.



Suction Gauge, Rate adjustment and Cannister

11. Patient Loading/Unloading

The ambulance is equipped any of a number of available powered and non-powered cot loading and securement systems. Following are basic non-powered cot loading instructions. Refer to cot manufacturer documentation for complete loading instructions. Cot manufacturer instructions supersede any conflicting information below.

Loading of non-powered stretcher:

1. Open both rear doors of the ambulance, ensuring the door holders are fully seated.
2. Flip up the center section of the rear bumper (if needed).
3. Approach stretcher with the head end at the front, making sure the stretcher clears the height of the door sill.
4. Move the stretcher forward until the front bar is past the yellow safety hook.
5. Pull back on the stretcher until its front bar is secured onto the hook at the rear of the ambulance.
6. Raise the stretcher legs and wheel the stretcher into the ambulance until the front wheels are under the antler mount hooks.
7. Swing the back of the stretcher to the left until the stretcher pin locks to the rail.
8. Close both rear doors and lower the rear bumper center.

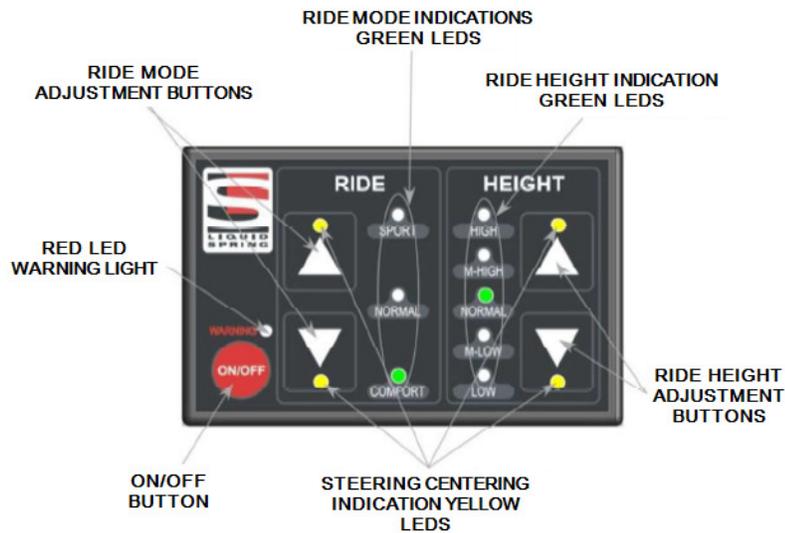
Unloading of non-powered stretcher:

1. Open both rear doors of the ambulance, ensuring the door holders are fully seated.
2. Flip up the center section of the rear bumper (if needed).
3. To release the stretcher, push the red handle of the rail. Note: There are arrows on the rail to indicate the direction in which to push.
4. Move the stretcher away from the rail and slowly wheel the stretcher back.
5. Slowly pull and support the stretcher, ensuring the front bar catches the safety hook at the back of the ambulance.
6. Once the front bar is hooked, release the stretcher legs and slowly lower to the ground.
7. Roll the stretcher forward slightly so that the bar unlatches from the hook and roll the stretcher the rest of the way out.
8. Close both rear doors and lower the rear bumper center section.

12. Liquid Spring Suspension

If equipped with a LiquidSpring rear axle suspension system, ambulance will be able to kneel rear of vehicle, adjust ride height and set different suspension ride modes. Below is a description of the system's operation and its controls and settings.

12.1. System Operation



Display and Control Panel

12.1.1. Daily Check before usage

Check the suspension system to ensure it is fully operational.

1. After starting vehicle, verify all LEDs on the driver display flash briefly, then are illuminated and the Red Warning LED does not stay ON or flash.
2. Verify the four yellow LEDs are ON when the steering wheel is centered.
3. Verify that the system is at NORMAL ride height, with a steady green LED. If the Driver Display indicates a blinking Ride Height LED, allow the system to complete leveling as indicated by a steady green LED. If LOW or HIGH height is shown with a solid green LED, use the arrow buttons to raise or lower the suspension to NORMAL height.
4. Visually inspect struts, hoses, and fittings for signs of leakage.
5. For any leak resulting in fluid pooled on the floor greater than 1" diameter, it is recommended to service the system immediately.
6. For signs of leakage or weeping that result in wetness on components or a single drop, it is recommended to monitor the leak and schedule repair service accordingly.

12.1.2. System Start Up

In most instances, the suspension system can be left alone to operate automatically. The ambulance is equipped with a display and control panel located in the driver's area. After start-up, all the indicator lights will flash ON for 1-2 seconds, and then the Green Ride Height Indication LED and Green Ride Mode Indication LED will illuminate to show the current Ride Mode and Ride Height. The four yellow Steering Centering Indication LEDs will illuminate if the steering wheel is within 10° to 20° to either side of straight ahead. They will not illuminate when steering wheel rotation angle exceeds 20° from center. **Note:** If the vehicle is steered straight ahead and the four yellow LEDs are not ON (and the red warning LED is not ON), see "Calibrating the Steering Sensor Only".

ON/OFF Button:

Cycling the ON/OFF button will enable/disable the suspension. When the suspension is ON, relevant LEDs are illuminated. When the suspension is OFF, none of the LEDs are ON. It is recommended to leave the suspension ON at all times unless the vehicle or suspension is being serviced.

IMPORTANT: After turning the vehicle ignition off, the suspension system will remain powered for 1 hour.

Warning Light:

If the Red LED warning light is continuously illuminated along with one or more of the other indicator lights, please have the vehicle checked by a qualified technician.

12.1.3. Ride Mode Adjustment

Press the UP/DOWN arrow buttons to change the ride mode between SPORT, NORMAL, and COMFORT. The Green indicator light will show the set mode:

Comfort Mode provides a smooth, soft ride. Use for normal city and highway driving.

Sport Mode provides more "feel" or response to road conditions. Use where road conditions or personal preference demand more control.

Normal Mode is a balance between Comfort and Sport. Use where more control than Comfort but a softer ride than Sport is desired.

This setting can be changed at any time. Based on road conditions, steering wheel angle, and vehicle speed, the system automatically adjusts to provide the best handling while providing a smooth ride. All three settings will feel similar on a smooth road.

12.1.4. Suspension Kneeling with Rear Door Switch

This function is only active if the driver display is set to NORMAL height, the system and ignition are turned ON, and for 1 hour after the vehicle ignition is turned off.

Characteristics of operation:

- The kneeling mode is set by a switch in the ECC compartment. The settings
- If the system and ignition are ON and the door is closed before the system achieves the kneeled position, the system will return to NORMAL height. Re-opening the door will resume lowering to the kneeled position.
- If the system and ignition are OFF and the door is closed before the system achieves the kneeled position, lowering will cease. Re-opening the door will resume lowering to the kneeled position, if done within 1 hour of ignition-OFF.
- The door switch can be over-ridden by the driver display height selections.

12.1.4.1. Kneeling Rear Door Switch Enabled

- Opening the rear door and pressing the kneel switch in the R1 door will set the suspension to LOW height and the suspension will lower to a kneeled position.

12.1.4.2. Kneeling Rear Door Switch Bypass

- Opening the rear door will set the suspension to LOW height and the suspension will lower to a kneeled position.

12.1.5. Ride Height Adjustment

Press the UP/DOWN arrow buttons to change ride height from NORMAL to HIGH (body up) or to LOW (body down).

Ride height settings and LEDs:

- A solid green LED will indicate the selected height.
- A flashing green LED will indicate the current height and that height adjustment is occurring. When a single solid green LED is illuminated, the selected height has been achieved.
- Two solid green LEDs will be ON if the current height is not the selected height and height adjustment is not occurring.
- If LOW or HIGH height setting is selected while the vehicle is traveling at less than 16Km/h or stopped, the suspension height is either lowered or raised correspondingly.
- If LOW or HIGH height setting is selected while the vehicle is traveling at greater than 16 Km/h, the suspension will ignore the selection and remain in NORMAL height but the NORMAL green LED will flash and the selected height green LED will be lit solid. If vehicle speed drops to less than 16 Km/h within 2 minutes of selecting the height, the height adjustment will take place. If however, the vehicle speed does not drop below 16 Km/h within the 2 minute period, the suspension will remain in NORMAL height indicated by only the NORMAL height green LED lit solid.

- If LOW height is selected and the ignition is turned off before LOW height is achieved, the system will continue to lower to LOW the height setting. When LOW height is selected, the system will monitor and maintain the kneeled position by only lowering as needed; this setting is active for 1 hour after the ignition is turned off.
- If HIGH height is selected and the ignition is turned off before HIGH height setting is achieved, the system will stop adjusting ride height. When HIGH height is selected the system will monitor and maintain the current position by only lowering as needed; this setting is active for 1 hour after the ignition is turned off.

The door switch kneeling function (if equipped) is disabled when the driver display LOW or HIGH height is selected before the door is opened.

IMPORTANT: While parked for an extended time with the vehicle and/or suspension system turned off, suspension ride will change with temperature change. Increases in ambient temperature or parking in direct sunlight can cause the suspension ride height to increase. As temperature lowers, the suspension ride height can decrease.

13. Ambulance Care and Cleaning

13.1. Cleaning Exterior

To clean the exterior of the ambulance, hand wash using soap and a soft bristled brush. Use care when removing stuck-on dirt, to avoid damaging paint finish and polished surfaces. In general, any cleaning chemicals and soaps that are safe to use on commercial vehicles can be used on the ambulance's aluminum exterior.

Note: Power washing is not recommended as it may damage components and force water into unwanted locations such as door seals and electronics components.

13.2. Cleaning Interior

13.2.1. General Interior Cleaning

The interior of the ambulance is built with several different materials. Below are the cleaning instructions.

Aluminum

The aluminum is powder-coated with antimicrobial paint to provide protection against the growth of microorganisms. To clean the aluminum use one of the following:

- A solution of mild soap and warm water
- RM900 cleaner
- Glass Cleaner

Fiberglass

Some cabinetry sections are made of fiberglass material covered in gel coat and can be cleaned using the same products as for aluminum, listed above.

Flooring

The flooring can be cleaned using:

- A solution of mild soap (pH balanced) and water
- The list of recommended cleaners from the manufacturer, in the table:

Manufacturer		Neutral Cleaner (Basic Cleaning)	Heavy Duty Cleaner (Periodic Cleaning)	Degreaser	Spray-Buffer	Dust Mop Dressing	Disinfectant
Hilway Direct www.hilway.com (877) 356-6748	Cleaners	Neutral Cleaner	Neutral Cleaner (1:10 ratio; rinse with clean water)	Allsafe Stripper (1:10 ratio; rinse with clean water)	Plus Floor Finish (1:5 ratio in spray bottle)	N/A	Disinfectant Cleaner
3M Facilities Care & Cleaning www.3m.com/facility/ (800) 852-9722		3M™ Twist N Fill™ #3 Neutral Cleaner	3M™ Twist N Fill™ #8 General Purpose Cleaner	3M™ Twist N Fill™ #7 Food Service	N/A	3M™ Easy Trap Duster	See Note 1 Below
Hillyard Industries, Inc. www.hillyard.com (800) 365-1555		Top Clean, Super Shine-All	Heavy Duty Floor Cleaner, Citrus Scrub, Super Shine-All	Assurance, Green Select Degreaser	H.R. 2000, Hil-Glo	Super Hil-Tone	Re-Juv-Nal, Vindicator+
Spartan Chemical Company www.spartanchemical.com (800) 537-8990		Damp Mop, Xcelente	Industrial Pathmaker	Industrial Pathmaker	Spraybuff, Super Spraybuff	Dust Mop Dust Cloth Treatment	DMQ Neutral Disinfectant
Dr. Schutz www.schutzna.com (877) 272-4889		Neutral Cleaner	N/A	N/A	N/A	N/A	Disinfectant Cleaner
JFB Hart Coatings, Inc. www.jfbhartcoatings.com (331) 814-3136		N/A	N/A	N/A	N/A	N/A	N/A
Ultra Durable Floors www.udfloors.com (800) 722-2998		UD Neutral Cleaner	UD Neutral Cleaner	UD Degreaser	N/A	N/A	N/A

Note 1	► 3M™ disinfectants are chosen based on the infection risk the floor/area owner is trying to combat. See links below for additional information. 3M™ should be contacted with any questions. ► Comparison of 3M™ disinfectants: http://multimedia.3m.com/mws/media/973581O/summary-of-3mtm-disinfectant-cleaners.pdf ► 3M™ document for determining the appropriate disinfectant: http://multimedia.3m.com/mws/media/webserver/mwsId=SSSSuH8g7nZxtUoY1N8_GevUq17zHvTSeSSSSSS-8fn=787459.pdf
Note 2	► JFB Hart Coatings recommends the following stripping products to remove their finishes. See links below for additional information. The manufacturers should be contacted with any questions. ► DoradoStrip 3032 from Eldorado Chemical: http://www.dtepc.com/psd/DORADOSTRIP%203032%20TDS.pdf ► Smart Strip from Dumond Chemicals: https://www.dumondchemicals.com/pdf/tech%20data/Smart_Strip-TDS.pdf
Disclaimer:	The products listed in this chart were tested and approved for use with Lonsael flooring by the manufacturer. All warranties and support for these products lie solely with them. While other manufacturers' products not shown in this chart may be used with Lonsael flooring, that manufacturer should always be contacted to confirm suitability for use with resilient sheet vinyl, as they will be responsible for all warranties and support. Refer to Lonsael's corresponding Maintenance Guides for additional information.

Note: DO NOT use wax on the ambulance floor

Clear / Bronze Polycarbonate (Lexan)

The cabinetry windows and talk-through window are made of Lexan material. These can be cleaned using the following:

- A solution of mild soap and warm water with a soft cloth. Rinse well with clean water and dry thoroughly with a microfiber cloth to reduce water spots.
- Grease stains can be spot cleaned with a soft cloth and isopropyl alcohol.

DO NOT use:

- Abrasive or highly alkaline cleaners
- Squeegees, razor blades, or other sharp instruments
- Gasoline, acetone, or benzene

DO NOT clean the Lexan in elevated temperatures.

Vinyl Upholstery

The vinyl upholstery is a Duration Vinyl. Cleaning instructions are below.

To prevent buildup of dirt and contaminants which may cause permanent staining, periodic cleaning is highly suggested. The frequency of cleaning is dependent upon the environmental conditions the material is subjected to.

- Most common stains can be cleaned using warm soapy water and rinsed with clear water.
- Moderate scrubbing with a medium bristle brush will help loosen soiling materials from the depressions of embossed surfaces.
- For more stubborn stains, use Formula 409® commercially available cleaner following the manufacturer's instructions. If Formula 409 does not work, full strength rubbing alcohol or mineral spirits may be cautiously tried as a last resort on very stubborn stains.
- Bleach cleanable: When disinfecting with bleach, dilute with water up to a 9:1 ratio (10%). Liberally apply diluted disinfectant using a sponge. Rinse with cold water several times. Wipe Dry and repeat if necessary. Federal regulations require that bleach label guidelines be followed for antiseptic or antimicrobial purposes.

Note: Indiscriminate use of any solvent, or solvent containing cleaner, can severely damage or discolor vinyl. Always follow with a clear water rinse after cleaning with these solvents.

Note: Detergents should never be used on a regular or repeated basis for normal cleaning. It is recommended to use repeated rinsing with clear water after any cleaning procedures.

The following disinfectant cleaners are approved for use on MorCare products: Asepticare TB II, Lysol Foaming, Birex, Precise (Caltech), Cavicide (Metyrex), Super Sani-Cloth PDI, Citrace (Caltech), Virex 256, Dispatch, Wex-cide, CaviWipes, Virox 5, Oxivir TB, and Oxivir Plus. When opening a new container, please test the cleaner in an inconspicuous area as cleaning manufacturers may change the formula without notice.

Wear protective gloves and eyewear and ensure cleaning takes place in a well-ventilated area.

13.2.2. Cleaning EVS Seats

Step 1: Light Soiling: Clean with warm water and liquid cleaner such as Formula 409® Cleaner and Degreaser or an equivalent cleaner with a sponge or soft cloth.

Step 2: Heavy Soiling: Clean with a soft white cloth dampened with lighter fluid (naphtha). Rub gently and rinse with a water dampened cloth.

Step 3: Bodily Fluid Stains. Clean with a soft white cloth with a solution of household bleach (sodium hypochlorite); 10% bleach, and 90% water. Rub gently then rinse with a water-dampened cloth to remove bleach concentrate.

13.2.3. Cleaning Oxygen Outlets

The Amico Outlets are factory cleaned for oxygen service. Exposed surfaces of the outlet may be cleaned with a mild detergent solution or wiped with a disinfectant commonly used in patient rooms, which is compatible with plastics, anodized aluminium and die cast zinc. Lubricate elastomer seals sparingly with a silicone lubricant that is oxygen compatible. **DO NOT USE OIL.**

13.2.4. Safety Net/Belt Cleaning

To clean netting, unhook the net from the anchor points; soak the net in a solution of mild detergent (ex. Dish soap) and warm water, then rinse and hang to dry. If the net is not removable, scrub the area with a damp cloth. **DO NOT** use solvents or spray cleaners. **DO NOT** dry with heat of any kind.

14. Long Term Ambulance Storage

If ambulance is not going to be used for an extended period, it must be kept plugged into a 120-volt outlet via Shoreline to keep vehicle batteries in peak condition.