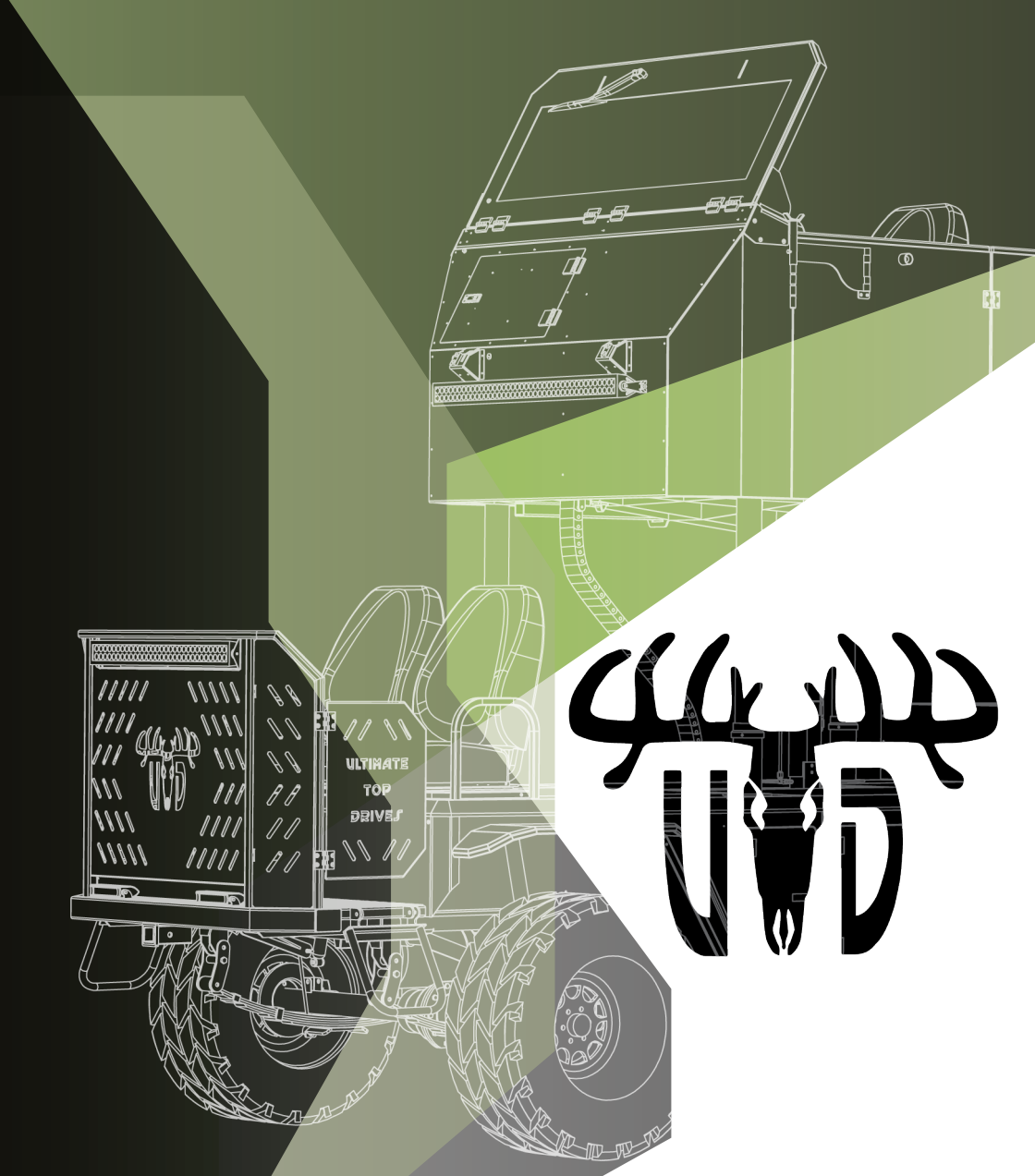


ULTIMATE TOP DRIVES

CABRA

OWNER'S MANUAL

ULTIMATE TOP DRIVES
2023 CABRA OWNER'S MANUAL

CABRA OWNER'S MANUAL [R2.1_2023]

16742 PAWLIN DRIVE
SELMA, TX 78154, USA
512.610.0090
WWW.ULTIMATETOPDRIVES.COM

CONGRATULATIONS ON THE PURCHASE OF YOUR CABRA! WE HOPE IT ENHANCES THE WAY YOU HUNT AND ENJOY THE OUTDOORS.

THE CABRA IS UNIQUE AND HAS SIGNIFICANT DIFFERENCES IN OPERATION FROM TYPICAL CARS, TRUCKS AND OTHER OFF-ROAD UTILITY VEHICLES. IT MUST BE OPERATED PROPERLY TO ENSURE A SAFE AND ENJOYABLE EXPERIENCE.

READ AND BE FAMILIAR WITH ALL ASPECTS OF THIS OWNER'S MANUAL BEFORE OPERATING THE CABRA.

SAFETY

VEHICLE INFORMATION

NORMAL OPERATIONS

SAFETY

SYMBOLS AND NOTES USED IN THIS MANUAL

This owner's manual uses the following symbols and notes to indicate key specifications, requirements or potentially hazardous conditions or situations that may arise for the driver and / or passengers. Read and heed all warnings.




NOTE:

IMPORTANT WARNING / HAZARD OR NOTE

CRUSHING HAZARD

ELECTROCUTION HAZARD

PINCHING HAZARD

NOTE: General note on a specific system or procedure.

OPERATOR

The Cabra must be operated by drivers 16 years of age or older and with a valid driver's license. Operators must not be under the influence of alcohol, drugs, or any other substance that may diminish the ability to safely operate the vehicle. Adhere to all guidelines, including maximum vehicle capacities (see pg.16).

ROLLOVER

The Cabra has a higher center of gravity than typical vehicles and is more prone to rollover. It does not have rollover protection systems. Extreme care must be taken when the passenger cab is at full occupancy or load, and is in a raised position! Overloading the cab will drastically raise the design-center of gravity and make the vehicle much more prone to rollover.

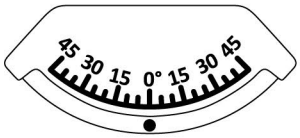
MAXIMUM 5 PEOPLE OR 1,000 LBS IN THE CAB

TERRAIN SLOPE GUIDELINES

Driving on extreme side-to-side slopes will cause the Cabra to experience rollover conditions. Stay within the slope guidelines!

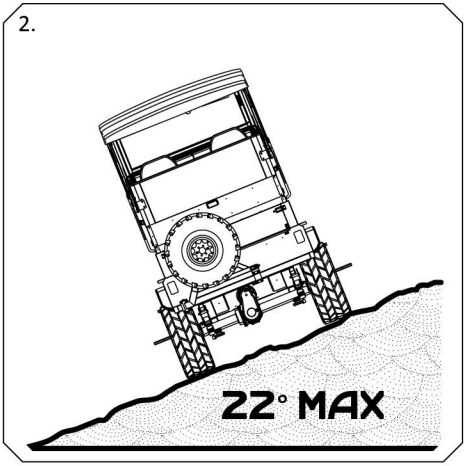
An inclinometer is located on the dashboard above the steering wheel for convenient reference of the current vehicle side-to-side tilt angle (fig.1).

1.

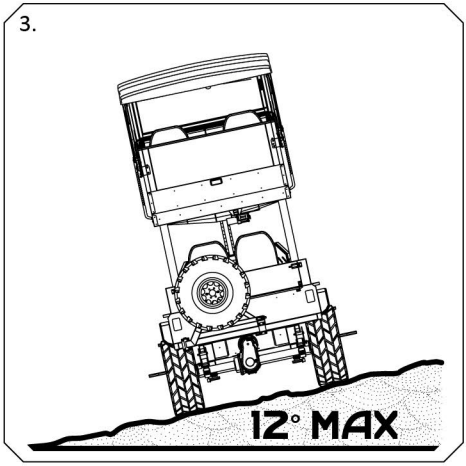


Do not exceed 22° of side-to-side slope when the cab is in the lowest position (fig.2).
Do not exceed 12° of side-to-side slope when the cab is raised to any height above the lowest position (fig.3). Vehicle speed is limited when the cab is raised above the lowest position.

2.



3.



CAUTION

Even without exceeding slope guidelines, the Cabra may still experience rollover conditions if subjected to sharp steering input. The combination of side-to-side slopes and sharp turning is very dangerous and should always be avoided.

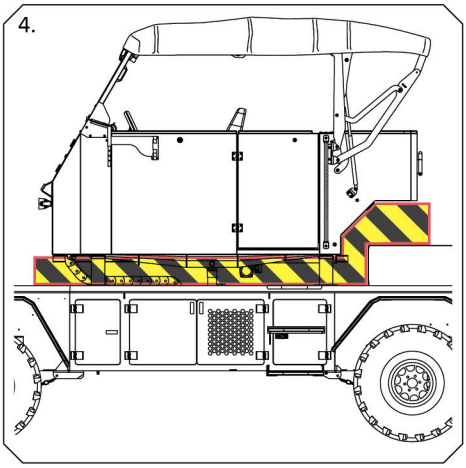
CRUSHING HAZARD

LOWERING THE CAB

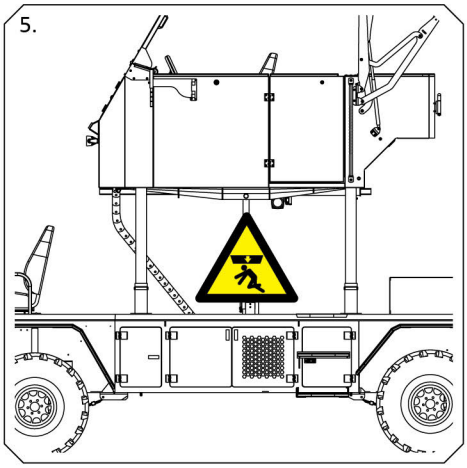
The Cabra's main cab may be raised and lowered from the driver's seat switch panel or side charging compartment switch. There is inherent crushing risk to any person or object placed below the main cab when it is being lowered. A safety gap is designed into the base of the vehicle, however extreme caution should be exercised when lowering the cab.

Never place or store objects on the base of the vehicle below the cab, as this will diminish the safety gap (fig.4). Always be cautious of people or objects below the cab when lowering (fig.5).

4.



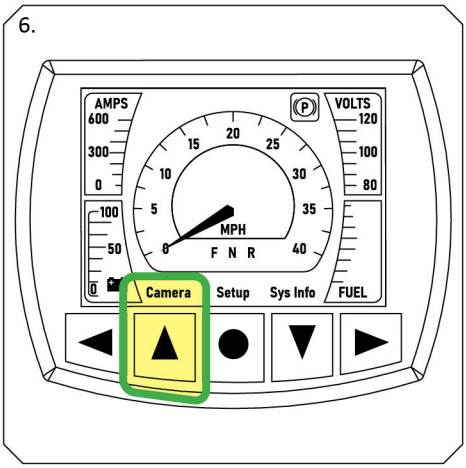
5.



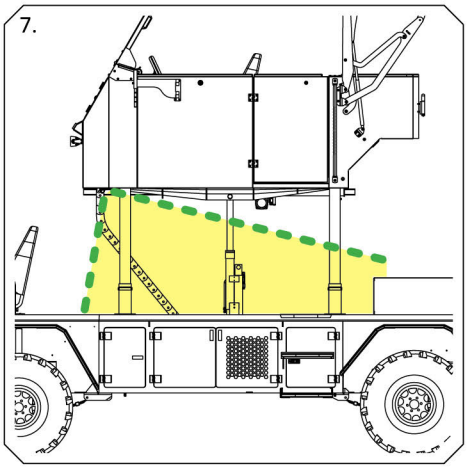
BELOW CAB CAMERA

When the cab is being lowered, a live camera view of the area below is automatically displayed on the main screen. This camera view may also be brought up at any time by pressing the ▲ button under "Camera" on the display panel (fig.6). Press the button again to exit. The camera is located under the front of the cab body and affords a wide-angle view of the space below (fig.7). Clean the lens as needed.

6.



7.

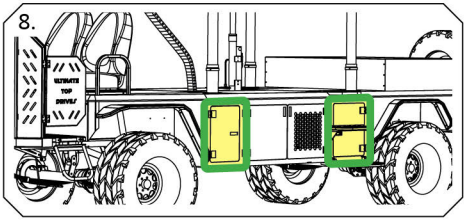


WORKING BELOW THE CAB

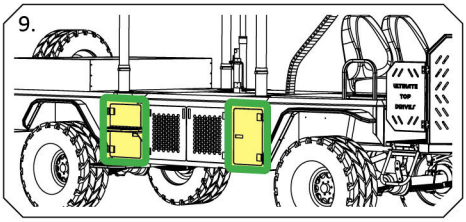
CAB LIFT TUBE LOCKING PINS

If any work or maintenance below the cab must be performed, insert the locking pin into each of the 4 cab lift tubes located in the side compartments of the vehicle (figs.8,9). Use the Raise Cab / Lower Cab switch inside the charging compartment to lift the cab high enough to align the pin holes in the support tubes and fully insert all 4 pins (fig.10). Lower the cab until it is resting securely on the locking pins.

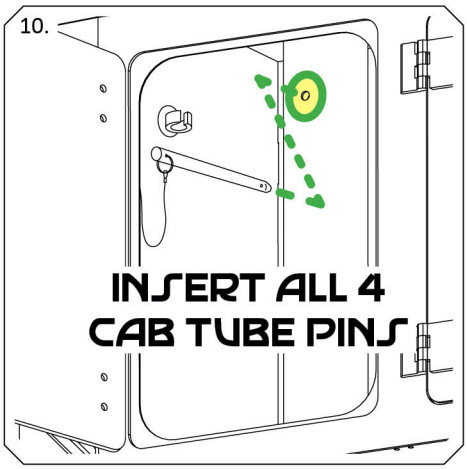
8.



9.



10.



NOTE: Inspect visible hydraulic hoses for wear / abrasion before each use. The hydraulic cab lift system includes a safety burst valve that prevents the cab from collapsing down in the event of a hose or pressure failure. If the burst valve is activated, hydraulic pressure must be restored to the repaired system in order to lower the cab. Do not rely on this system for working beneath the cab—the locking pins must be used!

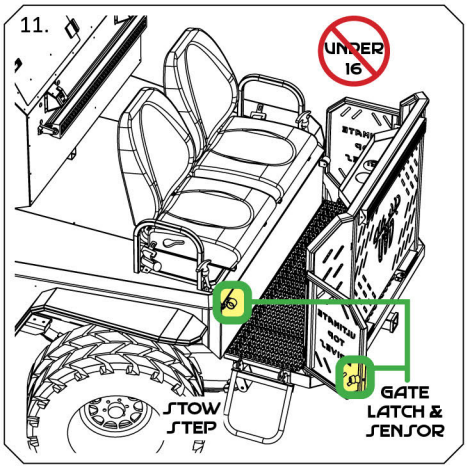
QUAIL SEATS / PLATFORM

No occupants under the age of 16 may use the quail seats or platform (fig.11). Always wear seatbelts while the vehicle is in motion. Do not enter or exit the platform while the vehicle is moving—doing so may result in serious injury or being run over!

Each safety gate has a magnetic senor. Throttle will be cut and regenerative braking automatically applied if either safety gate is opened while the Cabra is moving. The vehicle will slow to a stop on flat terrain. On sloping terrain, the mechanical brake should also be applied to fully stop the vehicle.

Test the safety gate function before each use by opening the gates and ensuring throttle input does not cause the vehicle to move. Stow the folding steps when the vehicle is in motion.

11.



NOTE: The gate sensors may be temporarily bypassed with a switch in the front electrical compartment. This allows for short-term driving in an instance where the sensor(s) need servicing (see pg.25).

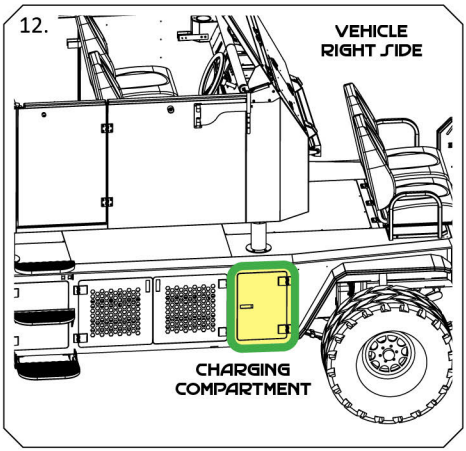
ELECTROCUTION

Do not drill, weld or cut anywhere on the vehicle without first consulting UTD. High voltage cables run behind body panels and could cause a direct short, electrocution or fire should they be damaged.

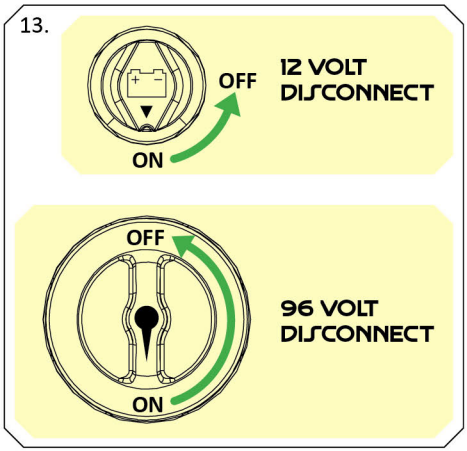
POWER DISCONNECTS

The Cabra utilizes a 24 KWH 96 Volt (nominal) DC lithium iron phosphate battery for its main electrical drive system, as well as a 12 Volt (nominal) accessory system. Touching bare cables or components may result in electrocution causing injury or death. 96V and 12V disconnects are provided in the charging compartment on the right side of the vehicle (fig.12). **SHUT OFF BOTH DISCONNECTS** before working on any part of the electrical system (fig.13).

12.



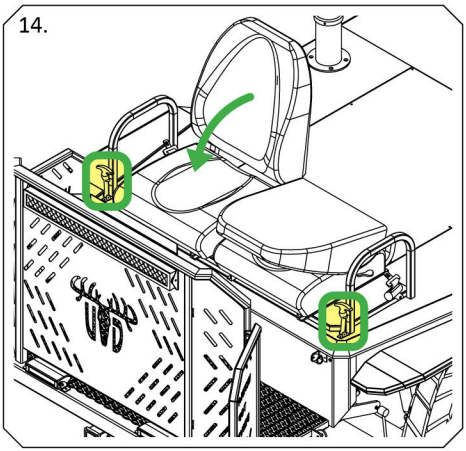
13.



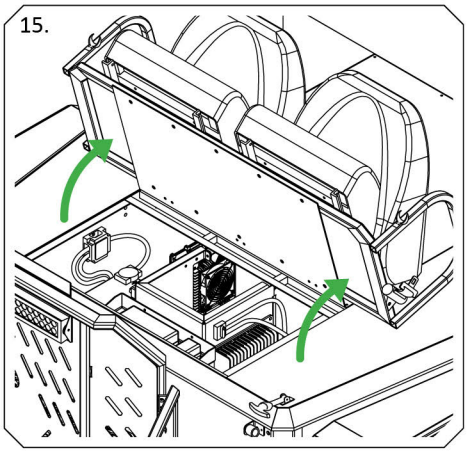
FRONT ELECTRICAL COMPARTMENT

With 96V power disconnected, the front motor / electrical compartment may be accessed beneath the quail seat cover. Fold the seat backs down using their recline levers, then release the rubber latches on both sides by pulling up and forward (fig.14). Once free, the seat cover may be tilted open towards the cab of the Cabra (fig.15). Exercise caution any time the quail seat cover is raised. For details on the owner serviceable components in the electrical compartment, refer to page 25.

14.



15.



FRONT ELECTRICAL COMPARTMENT: 96V COMPONENTS

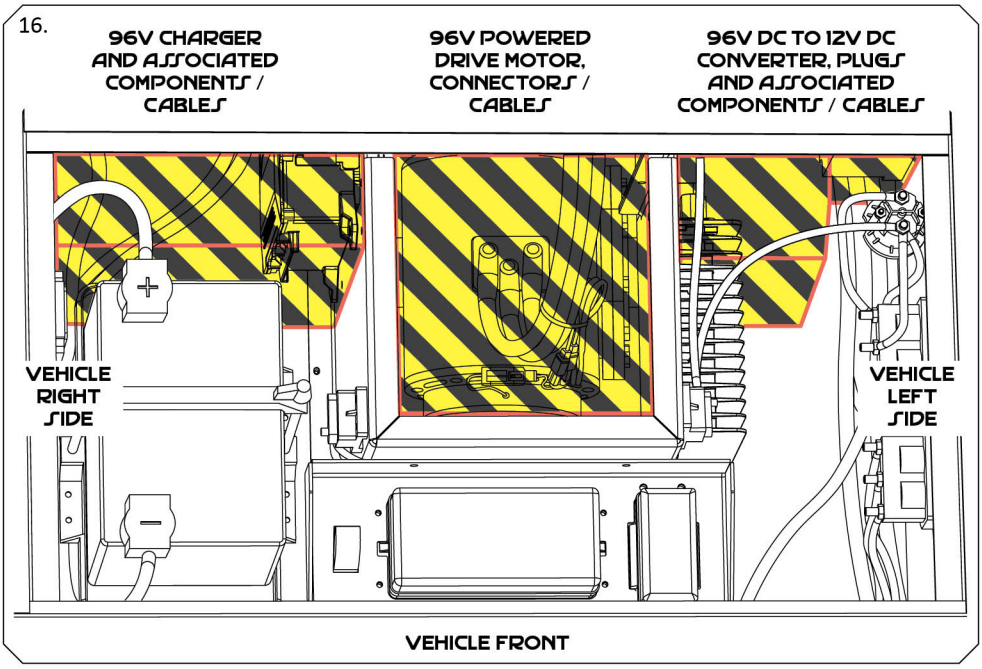
The forward area of the front electrical compartment contains accessible 12V system components (12V battery, fuse and relay boxes, breakers, etc). Using caution, this area may be accessed to utilize the quail gate sensor bypass, check the 12V battery, breaker status, fuses, troubleshooting, etc.

However, the rear covered areas and motor access opening of the front electrical compartment contain high voltage 96V systems / components that should never be touched or encroached upon unless the 96V and 12V disconnects have been switched off and specific guidance is followed for working on or near these systems. Do not extend hands or tools into these areas of the electrical compartment (fig.16).

Specifically, these areas extend back into the covered portion of the electrical compartment sides: from behind the 12V battery and rearward on the vehicle right side, and the back plug panel of the DC/DC converter and rearward on the vehicle left side, in addition to the center motor access opening.

NEVER EXTEND HANDS OR TOOLS INTO THE REAR AREAS OR MOTOR ACCESS OPENING OF THE FRONT ELECTRICAL COMPARTMENT UNLESS 96V AND 12V POWER IS DISCONNECTED AND SPECIFIC GUIDANCE IS FOLLOWED.

16.



STEERING SYSTEM

The Cabra utilizes a remote hydraulic power steering system assisted by an electric pump. It is important that drivers are familiar with its characteristics. Sudden or aggressive steering input will require more effort due to the nature of the hydraulic system. Under normal driving circumstances this will likely not be encountered, and can mitigate rollover risk as it slows down sudden or dangerous steering maneuvers.

The 12V power steering pump is located in the rear of the vehicle and provides assist to the driver. When Drive or Reverse is selected, the pump is activated (with a slight delay) and hearing its operation is normal. The pump does not run when the vehicle is in Park, ensuring the quietest environment.

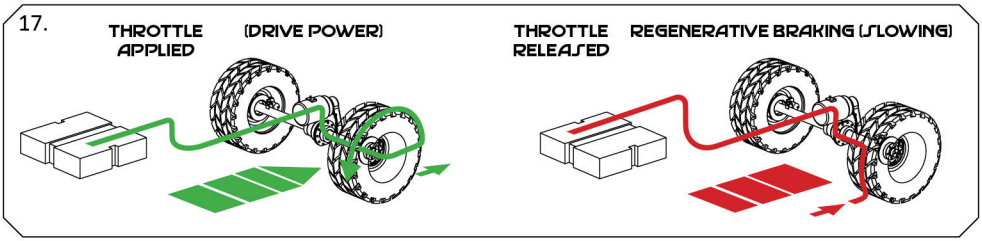
BRAKING SYSTEM

The Cabra utilizes regenerative and mechanical brakes. It is important that drivers are familiar with the system characteristics. The position of the throttle pedal determines the speed the motor controllers are working to achieve. Regenerative braking force is applied automatically when the throttle is released (the brake pedal is not linked to this system). The driver must use the brake pedal to apply mechanical braking force, while regenerative braking is only determined by the position / action of the throttle pedal.

For example, if the driver pushes the throttle to 50%, the controllers will accelerate the vehicle to approximately 18 MPH. If the driver then releases the throttle to 0%, the controllers will command regenerative braking which reverses the flow of electricity, charging the battery pack and slowing the vehicle (fig.17). It will come to a stop on flat terrain but will require also using the mechanical brakes on sloped terrain. The mechanical brakes are not power assisted, so it may take more pedal effort than drivers are accustomed to, in order to stop the vehicle.

NOTE: If the battery pack is fully charged and the Cabra immediately goes down a steep hill, the battery management system (BMS) will protect the battery from overcharging and will significantly reduce regenerative braking. Running the vehicle in hybrid mode while the state of charge (SOC) is above 80% will also reduce regenerative braking. Loss of electrical power to the motor controllers will completely eliminate regenerative braking. **Drivers should always be ready to apply mechanical brakes.**

17.



PARKING BRAKE

The parking brake is commanded by the motor controllers and consists of electrically actuated magnetic brakes mounted to each front and rear drive motor. It is immediately engaged when the ignition is switched off, and remains engaged until the ignition is switched on and the gear selector moved out of Park to either Reverse or Drive. If the gear selector is moved to Park while the vehicle is in motion, the parking brake will not be applied until the vehicle comes to a stop. Turning off the ignition while moving will damage the parking brake. The parking brake may not hold on slopes over 15°. If necessary, chock wheels when parked on steep slopes.

TOWING THE CABRA

Care must be taken when towing the Cabra. For towing at low speeds over short distances, it is acceptable for a person in the cab to switch on the ignition and put the gear selector in Drive.

The 96V system, DC/DC converter and motor controllers must be powered and properly functioning to tow the Cabra. If the vehicle cannot be turned on as normal, the 96V power has been disconnected (or there is no 96V power for some other reason), or there is a problem with the DC/DC converter, the parking brake will remain engaged and the vehicle cannot be towed unless both brakes are removed from the motors. Refer to the Troubleshooting section for specific towing info.

A reference of the 12V system digital gauge can indicate proper operations of these systems. If the gauge reads below 13.0 volts, there is a problem with the 96V system or DC/DC converter.

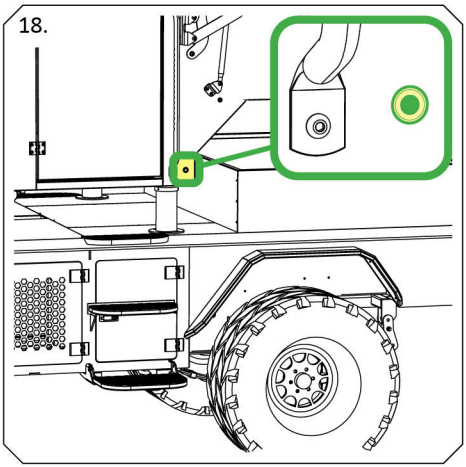
CAB DOORS

Keep doors closed when the vehicle is moving or being trailered. Door latches are electronic for safety and are disabled when the cab is raised above the lowest position to prevent opening the doors from a dangerous height.

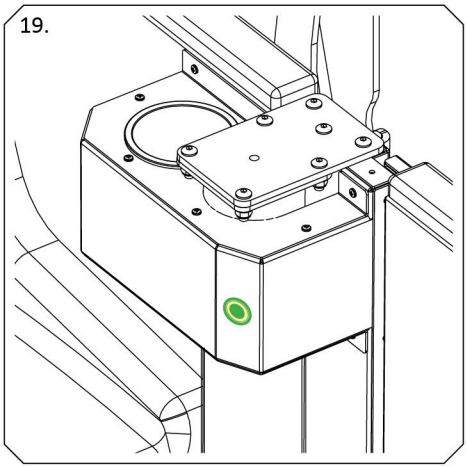
Each side of the Cabra's exterior has an electronic latch release button to open the cab door. The button is located near the bottom, rear-most corner of the cab body by the grab handle (fig.18). To open the door, press and hold the button until the latch releases—the door will spring open. Each side of the interior has an electronic latch release button as well, located on the rear seat cup holder panel (fig.19).

Periodically, the electronic latch requires an extended button hold to reset the latch position. If the latch does not normally release or catch the door, perform this step.

18.



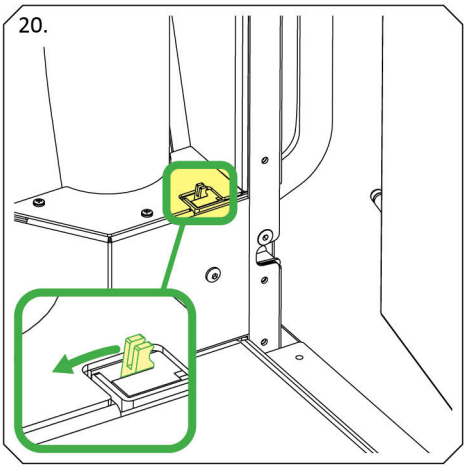
19.



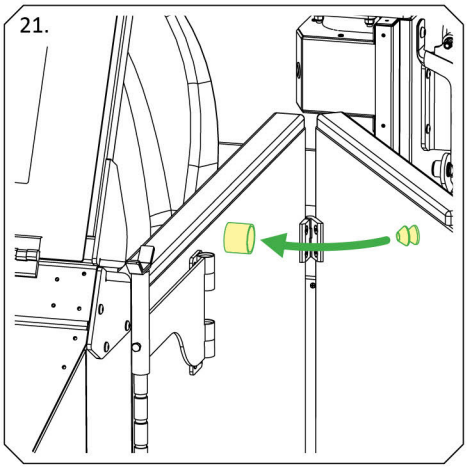
The electronic door latches will not function in the event of a loss of vehicle electrical power. Each door has a manual latch release that is easily accessed without tools, located near the floor and door opening. To release, push the latch tab inwards towards the center of the cab—the door will spring open (fig.20).

When a door is open, ensure it is fully secured to the cab side by firmly pushing it into the socket (fig.21).

20.



21.

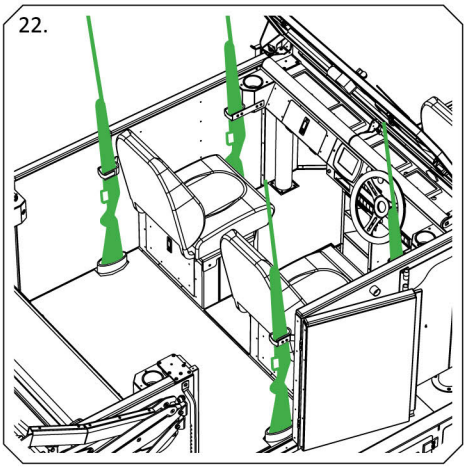


GUNS MUST BE UNLOADED AND SECURED IN THE SIDE COMPARTMENT SCABBARDS OR VEHICLE GUN RACKS WHILE THE CABRA IS IN MOTION.

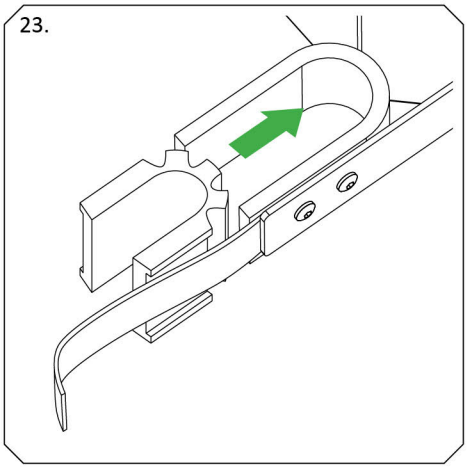
GUNS

The Cabra features integrated scabbard storage for 4 guns in the vehicle side compartments (see pg.36). Each main seating position in the passenger cab has a floor mounted molded holder and a vertical barrel rack with strap (fig.22). The quail platform has vertical stock and barrel racks with straps for storing 2 guns. Always utilize the racks for securing all guns in the cab while the vehicle is in motion. If necessary, use the provided rack reducers to achieve a secure fit (fig.23).

22.



23.



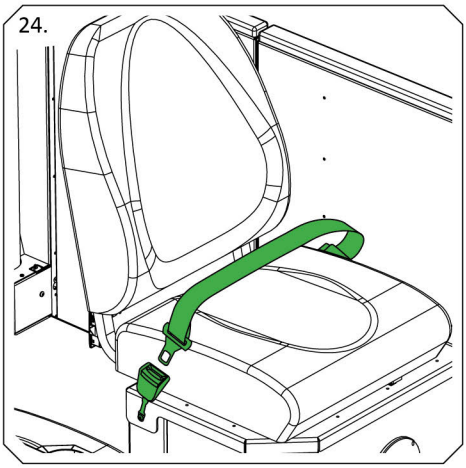
SEATBELTS

Seatbelts are provided for all occupants and must be used when the vehicle is in motion (fig.24). The seatbelt mechanism is auto-locking for safety. In the event that it becomes too tight, release the seatbelt to reset the mechanism.

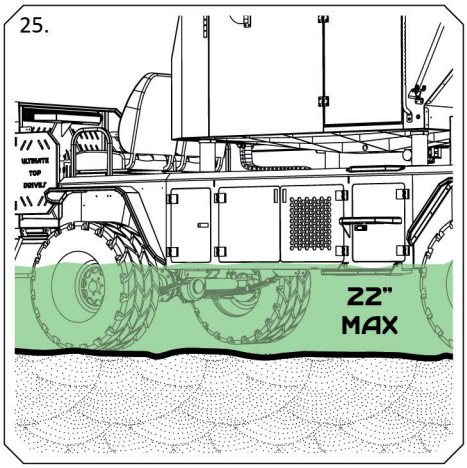
WATER FORDING

Do not drive through water deeper than 22”—typically slightly higher than the height of the lower edge of the Cabra’s body (fig.25). The generator and electrical systems are exposed to significant damage in water deeper than 22”.

24.



25.



Vehicle Information

DO NOT OVERLOAD

Overloading the Cabra will dramatically change the center of gravity and make the vehicle more susceptible to rollover conditions. Always adhere to maximum load limits.

PASSENGER LOAD CAPACITIES

VEHICLE:	• Maximum 7 people in/on the vehicle at any time • Maximum 1,700 lbs total load in/on the vehicle at any time (passengers, gear, dogs, harvested game, etc.)
PASSENGER CAB:	Maximum 5 people or 1,000 lbs in the cab, including gear (whichever is greater)
QUAIL SEAT / PLATFORM:	Maximum 2 people or 500 lbs on the platform, including gear (whichever is greater)

VEHICLE CAPACITIES

TOWING:	Maximum 2,000 lbs Maximum 250 lbs tongue weight
CARGO BED:	Maximum 1,000 lbs
RECOVERY WINCH:	Maximum 5,500 lbs
GAME HOIST:	Maximum 500 lbs
FEEDERS:	Maximum 100 lbs in each compartment
COMPARTMENT SLIDE-OUTS:	Maximum 100 lbs
GENERATOR:	14 gallon fuel capacity (unleaded 87+ octane, 10% or less ethanol, 5% or less methanol)
HYDRAULIC POWER UNIT:	5 quarts system capacity Fill to 4 quarts with cab DOWN
GUN RACKS / SCABBARDS:	10 total guns

OTHER SPECIFICATIONS

PURE ELECTRIC RANGE:	30-35 miles*
HYBRID MODE RANGE:	120 miles*

*(estimate; varies by driving habits and terrain)

VEHICLE TOP SPEED:	38 MPH with cab in fully lowered position 13 MPH with cab in any position above fully lowered
DRIVE MODE:	Full-time All Wheel Drive (front / rear independent direct-drive)
BATTERY SYSTEM:	Lithium Iron Phosphate, 24 KWH, 96 Volt** **(nominal; may range 90V to 120V)
GENERATOR:	7,200 watts, 120V / 240V nominal

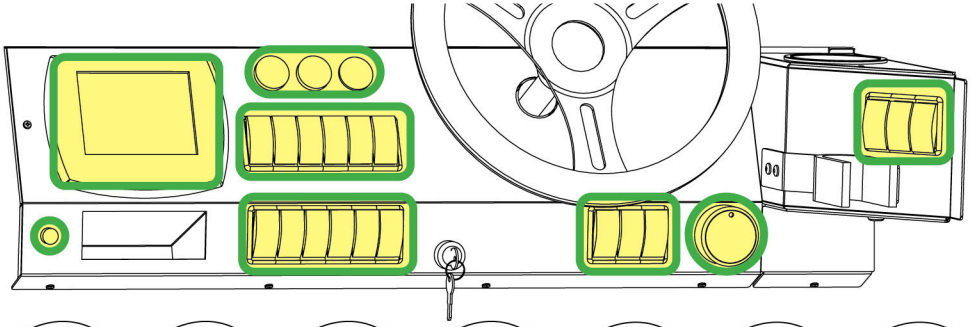
Vehicle Dimensions

Wheelbase:	128”
Length:	• 224” with spare tire • 217” without spare tire
Width:	• 98” with steps down • 87” with steps up • 83” tire to tire (outer sidewall)
Cab Down Height	• 100” with windshield frame and convertible top down • 117” with windshield frame up and convertible top down • 121” with windshield frame and convertible top up
Cab Raised Height:	• 132” with windshield frame and convertible top down • 149” with windshield frame up and convertible top down • 153” with windshield frame and convertible top up
Cab Vertical Lift:	32”
Cargo Bed:	• 44” length x 64” width inside rail edges • 46” length x 66” width floor space • 12” rail height • 44” floor height
Tailgate Opening Width:	44”
Ground Clearance:	• 17.5” to underbody • 11.5” to differential
Water Fording Clearance:	22”
Receiver Hitch Size:	2”
Wheel and Tire Weight:	99 lbs
Wheel Lug Nut Torque:	90 ft/lbs
Recommended Tire Pressure:	25 PSI
Compartment Slide-Outs:	16” extension
Mast (Night Vision Camera):	111” extension (if equipped)

(all measurements nominal)

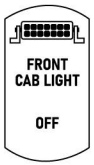
CONTROLS AND INSTRUMENTATION

The majority of the Cabra's controls and instrumentation are on the dashboard and surrounding driver area. Some features are optional and may not be present on every vehicle. (Switch location may vary.)



Main vehicle headlights

Rear / bed-facing light



Main cab lightbar

Quail guard lightbar

Interior cab lights

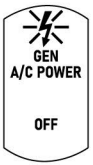
Left side lightbar

Right side lightbar

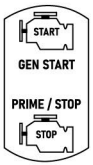
Windshield wiper

Vehicle horn

Night-vision mast control



Generator connect / disconnect



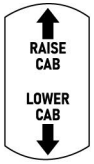
Generator prime / start / stop

Main display brightness adjust

Vehicle gear selector

Spread feed on left

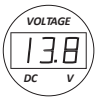
Spread feed on right



Cab height control

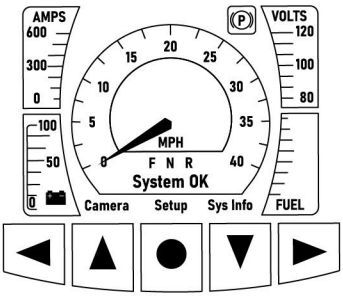
USB power outlets


12V power outlet



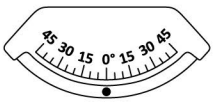
12V system voltage


Heated seats



MAIN VEHICLE DISPLAY

The Cabra's main display unit provides a plethora of live information during normal driving, multiple camera views, and can be used to access detailed vehicle systems information (see pg.29).



Inclinometer (side-to-side slope)

Normal Operations

Ignition

The Cabra utilizes a 3-position ignition switch (fig.26). To power the vehicle, insert the key and turn clockwise to the Start position (roughly 90°) and hold there until the main display powers on. Release the key to the On position.

To power off the vehicle, turn the key to the Off position (roughly vertical) and remove the key.

The Cabra has an auto power off (sleep) feature to protect the battery pack. Even if the key is left in the On position, the vehicle will power off if it has been left for 90 minutes drawing less than 10 amps.

To wake the vehicle from sleep, simply turn the key again to the Start position until the main display turns back on.

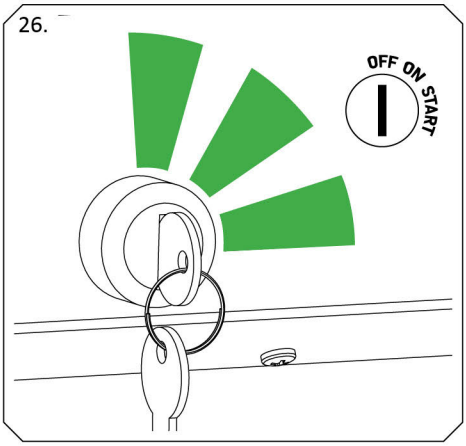
Gear Selector

The Cabra utilizes a 3-position rotary selector to choose Park, Reverse or Drive (fig.27). When in Park, the motor controllers are in neutral with the parking brake applied. In Reverse or Drive, the parking brake is automatically disengaged. Because it does not use a typical transmission, the Cabra does not shift gears.

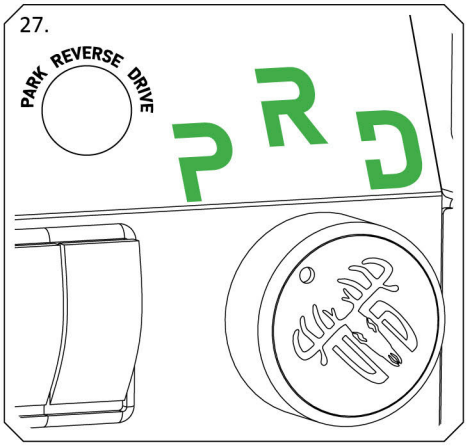
NOTE: Shifting from Drive to Reverse (or vice-versa) while moving with the throttle applied will not damage the vehicle, however it will violently attempt to change direction which may cause serious injury.

NOTE: Shifting to Park while the vehicle is moving will not damage the vehicle, however the parking brake will not be applied until the vehicle comes to a complete stop.

26.



27.



Hybrid-Electric Drivetrain

The Cabra features an electric drivetrain with an onboard gasoline powered generator to supply charging when the vehicle does not have access to mains power. The front and rear drive axles have independent, electric traction motors to provide power, each with its own motor controller. The controllers are constantly communicating with each other to synchronize their speed, which improves traction in muddy or loose conditions.

The Cabra drives differently than typical vehicles. The throttle pedal position determines the speed that the motor controllers are targeting to achieve. When the throttle pedal is released, the motor controllers begin to slow the vehicle with regenerative braking which charges the battery. Under normal driving conditions, regenerative braking is sufficient to slow the vehicle unless a quick or emergency stop is needed or the vehicle is stopping while driving down a hill. In these instances, the mechanical brakes must also be applied by the driver using the brake pedal. Drivers should always be prepared to apply mechanical brakes should the need arise. In some cases, regenerative braking can be diminished.

LITHIUM IRON PHOSPHATE BATTERY PACK

The most costly component in the Cabra is its main battery pack. The battery management system (BMS) constantly monitors multiple parameters of the battery pack, and controls other components in the vehicle in order to protect the battery. Multiple information / diagnostic pages are available on the main display (see pg.29). If the vehicle seems to be driving abnormally, contact UTD or the nearest dealer.

THE CABRA SHOULD NEVER INTENTIONALLY BE DRIVEN WHEN THE MAIN BATTERY PACK IS BELOW 5% STATE OF CHARGE (SOC). ALLOWING THE BATTERY PACK TO FALL TO 0% SOC WILL CAUSE IT TO FAIL

At 5% SOC, the BMS will significantly reduce power output and shut down if the SOC becomes too low. Leaving the battery pack at a low SOC will damage it.

STORING THE CABRA LONG-TERM

Switch off the 12V disconnect during storage. To promote optimum battery health, it is recommended to store the vehicle plugged-in, particularly in below freezing temperatures as the main battery heater only functions while charging or when the vehicle is on, and automatically maintains the battery temperature above 20-°C (68°F). If it is not possible to store the Cabra plugged-in, it is important to leave adequate SOC in the main battery to prevent it from falling below 5% SOC during the storage period. The main battery can lose up to 3% SOC per month if stored unplugged. See pg.55 for further details on adverse driving conditions that may be encountered if the vehicle cannot be stored plugged-in.

CHARGING THE CABRA

The vehicle may be charged from 120V (mains) or 240V (mains or generator). Charging times may vary.

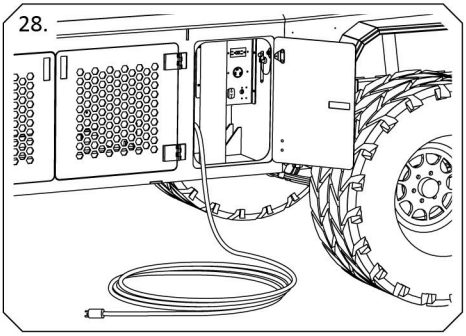
120V CHARGING:	**5%** ▮▮▮▮▮▮▶ **95%**	Approximately 14 hours
240V CHARGING:	**5%** ▮▮▮▮▮▮▶ **95%**	Approximately 3.5 hours

The full SOC of the main battery pack is de-rated to 97% which increases the longevity of the battery pack.
NOTE: The charge percentage will typically not settle above 97%—this is considered fully charged.

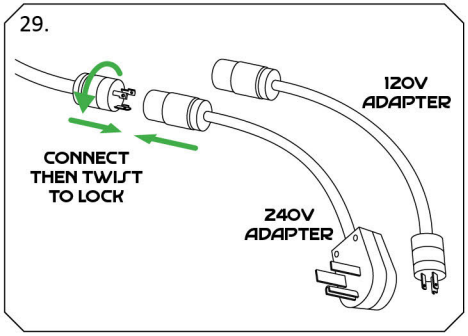
An integral 25' charge cable (fig.28) and adapters are supplied for charging from standard 120V or 240V outlets (fig.29). If a different adapter or replacement cable is required, contact UTD or the nearest dealer.
NOTE: If the vehicle is actively charging when unplugged, arcing may occur. Always unplug from the wall / mains outlet first before disconnecting the adapter from the integral charge cable.

DO NOT USE ANY OTHER CABLE OR ADAPTER EXCEPT THOSE PROVIDED BY UTD. DOING SO MAY CAUSE DAMAGE TO THE VEHICLE.

28.



29.



To prevent driving the Cabra while it is plugged into external power, the charge compartment door has a safety switch which disables throttle if the door is open. Periodically check the function of the safety switch.

Climate Effects on Operations

Temperature extremes affect how the Cabra's BMS handles charging, regenerative braking and discharging. In very hot or cold temperatures, the rate of charge and discharge to the main battery pack must be reduced or suspended to protect the battery, and the level of regenerative braking will vary. Additionally, the motor controllers reduce or suspend power output if the motors or components get too hot.

In temperate climates, these issues are minimized and may not be noticeable. The act of charging and discharging the battery raises its temperature above ambient. However, if the Cabra is left outdoors and unplugged in sub-freezing conditions, the battery pack will need to be warmed by the heater or by driving before the BMS will allow charging or regenerative braking.

In conditions when regenerative braking is diminished or suspended, drivers should exercise caution and adjust their driving habits to utilize the mechanical brakes more than they may be accustomed to.

Monitored Temperatures

The BMS constantly monitors the temperature of the main battery pack, adjusting the amount of charge and discharge to and from the battery. Battery temperature can be viewed on the main display Battery Diagnostics Page 2 (see pg.29). Ideal operations are when the battery temperature is within 10°C to 45°C.

Charging and Regenerative Braking	Battery Temp	Charge Amount	Regenerative Braking
If the battery temperature drops below 10°C or rises above 45°C, the BMS will begin to limit the amount of charge to the battery and diminish regenerative braking. If the battery temperature drops below 0°C or rises above 55°C, the BMS will not allow any charging or regenerative braking.	Above 55°C	None	None
	45°C to 55°C	Limited	Diminished
	10°C to 45°C	Normal	Normal
	0°C to 10°C	Limited	Diminished
	Below 0°C	None	None

Discharging and Power Delivery	Battery Temp	Discharge Amount	Power Delivery
If the battery temperature drops below 0°C or rises above 50°C, the BMS will begin to limit the amount of discharge from the battery and diminish power delivery. If the battery temperature drops below -25°C or rises above 65°C, the BMS will not allow any discharging and the vehicle cannot be driven.	Above 65°C	None	None; Cannot Drive
	50°C to 65°C	Limited	Diminished
	0°C to 50°C	Normal	Normal
	-25°C to 0°C	Limited	Diminished
	Below -25°C	None	None; Cannot Drive

In addition to battery temperatures, if either motor temperature rises above 120°C, the motor controllers will limit power output. If either motor temperature rises above 145°C, the controllers will shut off power completely. Motor temperatures can be viewed on the main display Primary and Secondary Sys Diagnostics Pages (see pg.30).

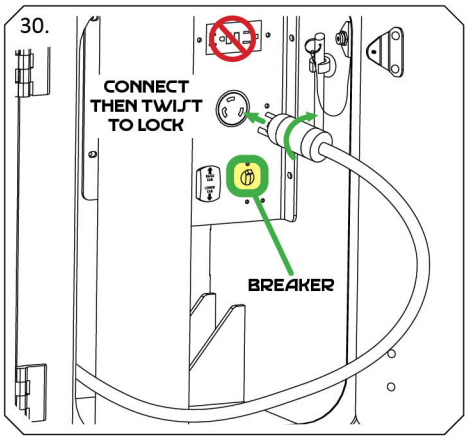
Hybrid System

The Cabra features a 7,200 watt Cummins gasoline generator which can charge the main battery pack while driving, or while parked if there is no electrical power available in remote locations. The generator's power output may also be used to supply electric tools, appliances or accessories in remote locations.

Read and understand the supplemental Cummins Onan generator owner's manual before operating.

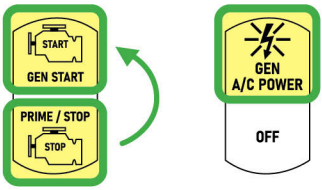
Do not run any other tools or appliances while charging the Cabra with the generator. Doing so will overload the system.

To charge the vehicle with the generator, plug the integral charge cable into the generator power output panel (twist to lock) and ensure the breaker is On (fig.30).

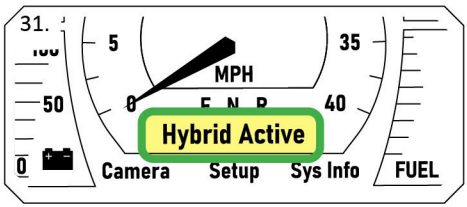


In the cab, locate the charging system controls on the dashboard. Start the generator by holding down Prime for a few seconds (if it has not been run recently), and then push Start. Let it warm up.

Once the generator is running, switch the system to Gen A/C Power—this energizes the generator power output panel.



Check that the main display indicates "Hybrid Active" (fig.31). The generator is now charging the main battery pack.



Do not charge with the generator using the low voltage output.

Do not drive in hybrid mode when the SOC is above 80%. Doing so will adversely affect regen braking and may damage the battery pack.

While driving, the generator may be used for charging up to 80% SOC. Above 80% SOC, the vehicle should be stopped (if continuing to charge is desired) or hybrid mode disconnected (if continuing to drive is desired). If the vehicle is not moving, the generator may be used for charging above 80% SOC. Once full charge is achieved, the BMS will automatically stop charging the battery but the generator will remain running unless powered off. (The Cabra is configured for deliberate, manual control of the generator so that it does not automatically power on in scenarios where quiet / stealth is required.)

NOTE: To disconnect the generator from charging the main battery pack (either to turn it off or to power other items), first switch Gen A/C Power to Off before stopping the generator or plugging in other items. If stopping the generator, let it run for a moment to cool down after disconnecting load before shutting it off.

PLAN YOUR TRIP

Under normal driving conditions, a full SOC will provide approximately 30-35 miles of battery-only driving. (Driving habits and terrain can greatly affect range.) In hybrid mode, the generator output is sufficient to drive the vehicle at an average of 11-13 MPH—driving faster will slowly diminish the SOC and driving slower will slowly increase the SOC. Typical use of the Cabra's unique drivetrain would be to drive quickly in hybrid mode (generator on) to the desired hunting area, and then quietly in battery-only mode (generator off) when stealth is needed. If the total trip will be 30 miles or less, the generator will likely not be needed at all.

REFUELING THE GENERATOR

The Cabra's generator fuel level is shown on the main display. A 14 gallon tank supplies the generator and the filler cap is located inside the rear bed access compartment of the vehicle. Use unleaded fuel only.

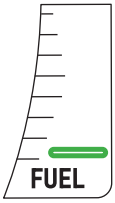
Move the spare tire mount out of the way by releasing the swing arm latch located on the rear bumper above the hitch mount. Firmly pull the latch lever away-right so that the bracket rotates free, and swing out the spare tire mount far enough to allow for the tailgate to be lowered (fig.32).

Lower the tailgate by pulling the latch pins inward (fig.33) and gently swing it down (fig.34).

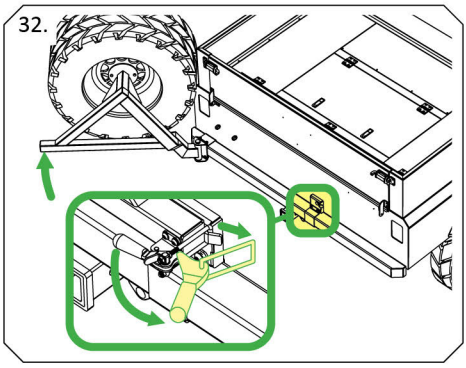
Open the access compartment panel by pushing down the latch buttons to release (fig.33) and open the compartment lid, swinging it up and back gently to rest on the bed rail (fig.34).

Unscrew the fuel filler cap counter-clockwise to remove it for fueling (fig.35).

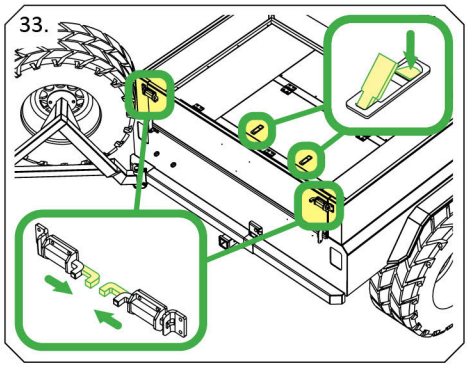
Reverse this process and ensure all latches are secure before driving the Cabra.



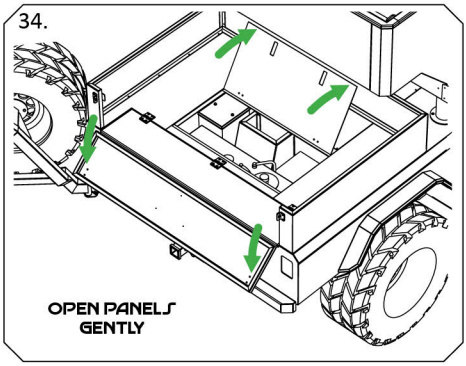
32.



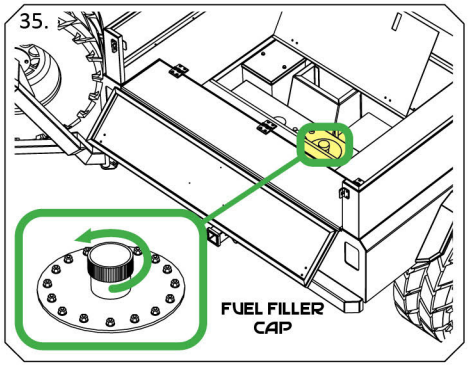
33.



34.

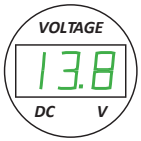


35.



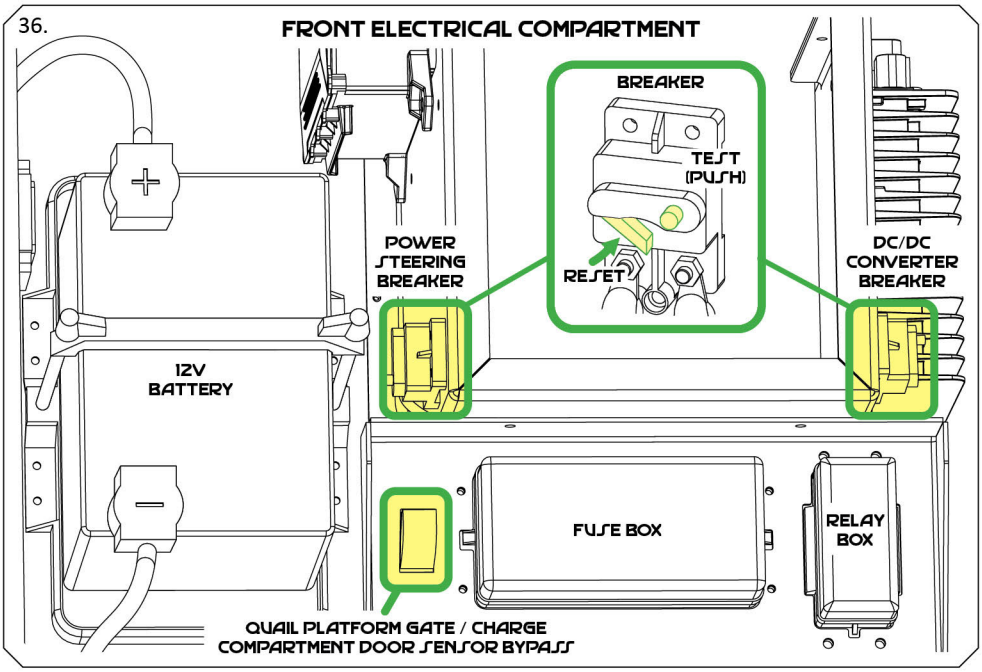
12 VOLT SYSTEM

Besides the Cabra's 96V drivetrain and generator, all other electrical systems run on 12V power. The main 96V battery pack powers a DC/DC converter which converts 96V down to 12V (similar to an alternator on an internal combustion engine). The converter outputs 1,000 watts at 12VDC, which is sufficient for all the constant demand power requirements of the vehicle. When the main power is on, the DC/DC converter is constantly charging the 12V battery located in the electrical compartment beneath the quail seat. When more than 1,000 watts is required (such as when raising the cab or using one of the winches), the 12V battery supplements the DC/DC converter by taking up the excess peak loads. The 12V system voltage can be monitored on the dashboard mounted digital gauge.



There are a few components in the front electrical compartment that owners should be familiar with (fig.36): the 12V battery, power steering and DC/DC converter breakers, quail platform safety gate / charging compartment door sensor bypass switch, and the fuse and relay boxes.

36.



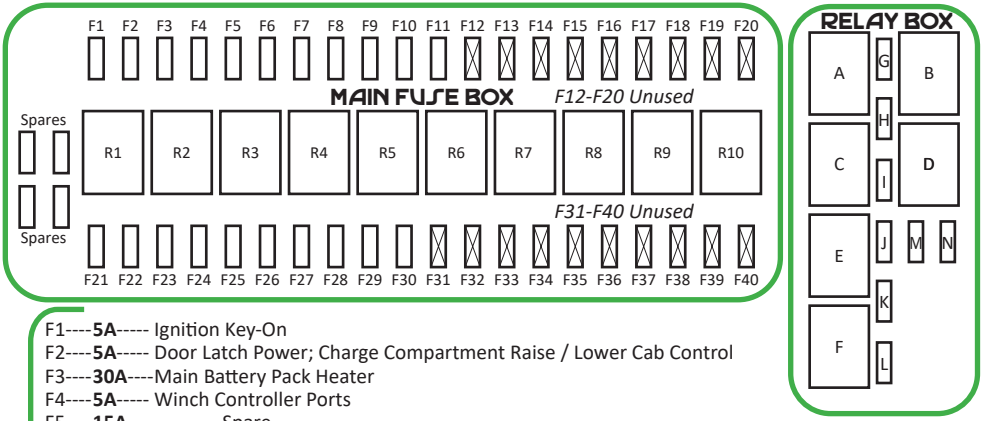
The 12V battery may be charged, jumped or replaced if necessary, as in a typical vehicle. Refer to the Troubleshooting section for details on jump-starting the Cabra.

There are two breakers associated with the 12V system. The power steering pump breaker is located on the battery side of the compartment, while the DC/DC converter breaker is on the opposite side. These breakers can easily be inspected and reset, or manually tested to aid diagnostics of those systems.

The quail platform safety gate and charging compartment door sensors may be temporarily bypassed by pressing the switch located to the left of the fuse box. This allows short-term driving of the vehicle in an instance where the gate / door sensor(s) need servicing. The bypass resets when the vehicle is turned off.

All owner accessible 12V system fuses and relays are contained in the fuse and relay boxes.

FUSE AND RELAY BOX DIAGRAMS



MAIN FUSE BOX

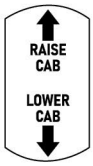
F1----**5A**----- Ignition Key-On
F2----**5A**----- Door Latch Power; Charge Compartment Raise / Lower Cab Control
F3----**30A**----Main Battery Pack Heater
F4----**5A**----- Winch Controller Ports
F5----**15A**---- -- -- -- Spare -- -- --
F6----**15A**----Right Side Feeder
F7----**15A**----Left Side Feeder
F8----**25A**----Air System Compressor
F9----**25A**----Air System Compressor
F10-- **15A**----Radio Head Unit; Brake Lights; Interior Cab Lights; Quail Guard Lightbar
F11-- **15A**----Water System Pump
F21-- **10A**----Generator Power Panel Control; Gear Selector; Mast Up / Down Control; Feeder Control
F22-- **15A**----Headlights; Tail Lights
F23-- **5A**----- Door Button Illumination
F24-- **5A**----- Main Display; Under Cab Camera; Dashboard Raise / Lower Cab Control
F25-- **15A**----Radio Head Unit
F26-- **15A**----Left Side / Right Side Lightbars
F27-- **15A**----Dashboard USB Port; 12V Power Outlet; 12V System Digital Gauge
F28-- **15A**----Front Cab Lightbar; Rear Cab Bed Light; Windshield Wiper
F29-- **5A**----- Gate / Door Sensors; Gate / Door Safety Bypass; DC/DC Converter Enable; CANBUS Noise Filter
F30-- **15A**---- -- -- -- Spare -- -- --
R1----------Ignition Solenoid Key-On
R2----------Ignition Solenoid Reset
R3----------Charger Safety / Redundant Battery Pack Overcharge Protection
R4----------Right Side Feeder
R5----------Left Side Feeder
R6----------Vehicle Speed Limiter
R7----------Cab Raised Door Latch Safety Disengage
R8----------Windshield Down Wiper Disengage
R9----------DC/DC Converter Enable Signal
R10---------- Quail Gate / Charge Compartment Door Safety System

RELAY BOX

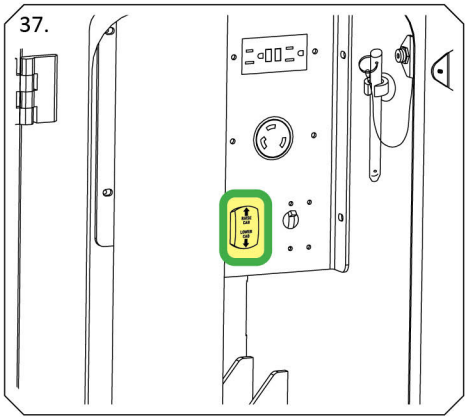
A---------- Air System Compressor
B---------- Unused
C---------- Air System Compressor
D---------- Quail Gate / Charge Compartment Door Safety Bypass
E---------- Main Battery Pack Heater
F---------- Unused
G ---- **5A** ---- Charger BMS Signal
H---------- Unused
I---------- Unused
J---------- Unused
K----------Unused
L----------DC/DC 12V Charging from AC/DC Charger
M---------- DC/DC 12V Key-On Charging
N---------- Quail Gate / Charge Compartment Door Safety Bypass

CAB LIFTING SYSTEM

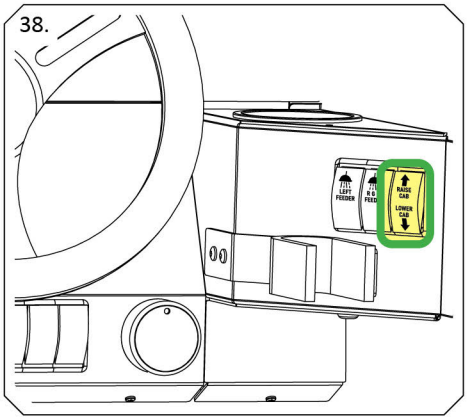
The cab of the Cabra is raised and lowered by an infinitely adjustable system consisting of an electrically operated hydraulic power unit in the vehicle's rear access compartment (fig.39) and central hydraulic lifting ram. Cab height may be set to any position and is controlled by either of two Raise Cab / Lower Cab rocker switches. The switch located inside the charging compartment operates whether the vehicle ignition is off or on (fig.37). The switch located on the driver console only operates when the vehicle ignition is on (fig.38).



37.



38.

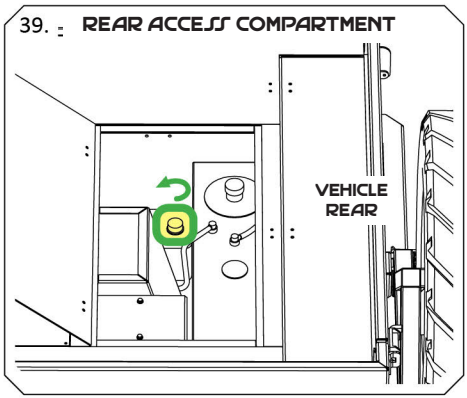


To raise the cab, press / hold the top of the rocker switch and release when the cab reaches the desired height or top position. Do not continue to hold the switch after the cab reaches the top position*. When being raised, the system pumps fluid from the hydraulic power unit reservoir into the hydraulic lifting ram, which raises the cab. To lower the cab, press / hold the bottom of the rocker switch and release when the cab reaches the desired height or bottom position. When being lowered, a valve is opened in the hydraulic power unit allowing gravity to lower the cab and return fluid to the reservoir.

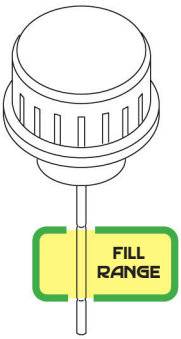
*Prolonged holding of the switch with the cab in the top position will cause a high power draw and the main display may momentarily turn off, then display "E7 Com Fault". This does not affect the operation of the vehicle. To clear the fault, turn the ignition off for 30 seconds and then re-start as normal.

DO NOT FILL HYDRAULIC FLUID WITH THE CAB RAISED TO ANY POSITION. DOING SO WILL OVERFILL THE SYSTEM AND BLOW FLUID INTO THE COMPARTMENT WHEN LOWERED. ONLY FILL OR TOP-OFF WITH THE CAB FULLY LOWERED (FIG.40).

39. REAR ACCESS COMPARTMENT



40.



ONLY FILL OR TOP-OFF THE HYDRAULIC FLUID RESERVOIR WHEN THE CAB IS IN THE FULLY LOWERED POSITION.

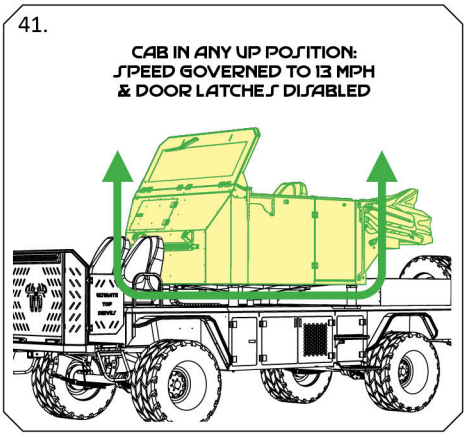
KEEP FLUID LEVEL BETWEEN THE DIPSTICK LINES.

WHEN LOWERING THE CAB FROM THE DRIVER'S SEAT, ALWAYS CHECK THE CAMERA VIEW ON THE MAIN DISPLAY TO ENSURE THERE ARE NO OBSTRUCTIONS OR PEOPLE BELOW. IF YOU ARE PARKED AND SUSPECT PEOPLE OR ANIMALS MAY BE BELOW THE CAB, TOGGLE ON THE CAMERA VIEW BEFORE LOWERING.

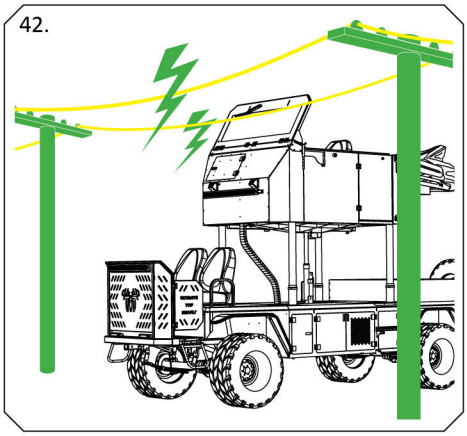
BE AWARE OF SURROUNDING POWER LINES! DUE TO THE HEIGHT OF THE CABRA, THE VEHICLE OR PEOPLE IN IT MAY COME INTO CONTACT WITH LOW HANGING POWER LINES WHICH CAN CAUSE SERIOUS INJURY OR DEATH.

When the cab is raised to any height above the fully lowered position, a magnetic sensor is switched which governs the vehicle speed to a maximum of 13 MPH and also disables the electronic cab door latches to prevent opening the doors from a dangerous height (fig.41). Full vehicle speed (38 MPH) is only available when the cab is in the fully lowered position. Be especially aware of the surrounding environment when the cab is in a raised position (fig.42).

41.



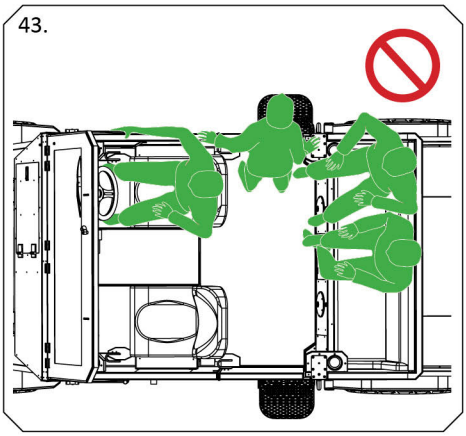
42.



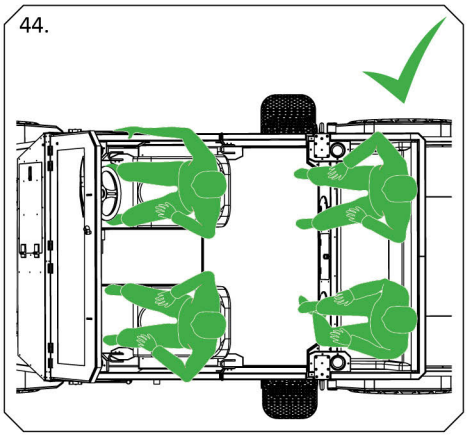
BALANCE THE LOAD IN THE CAB

If the weight in the cab is significantly unevenly distributed (fig.43), the cab will sit out of level. In this state, the cab lift tubes can rub against their guide tubes, damaging the paint finish. However, since the tubes are constructed of aluminum, the damage is only cosmetic. Always evenly load the cab (fig.44).

43.



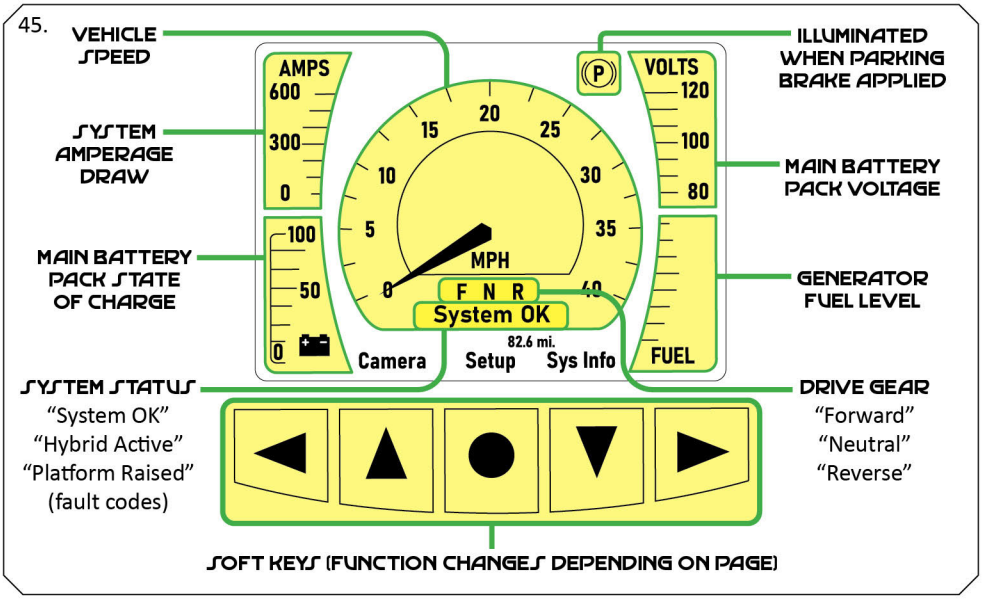
44.



MAIN INFORMATION DISPLAY

The Cabra features an integrated display unit which provides a wide range of live vehicle data. The default homepage shows all pertinent driving information (fig.45). Upon turning on the vehicle, the system status should state “System OK”. If the generator is on and charging the battery, it will state “Hybrid Active”. If the cab is raised to any level, it will state “Platform Raised”. Contact UTD or the nearest dealer for status indicators (not shown) signaling a system fault.

45.



Detailed vehicle systems diagnostic data can be accessed by pressing “Sys Info” on the homepage. This information is typically used by trained technicians during service, however it can be helpful in troubleshooting. (Example data depicted.) Pressing the “Home” soft key on any page will return the display to the homepage.

BATTERY DIAGNOSTICS PAGE 1

Main battery pack and generator (fig.46).

46.

BATTERY DIAGNOSTICS	1
Pack Voltage	99.60 Volts
DC Current	3.9 AMPS
State of Charge	97%
Ahrs Remaining	211.2 Ahrs
Capacitor Voltage	99.8 Volts
Auxiliary Battery	13.68 Volts
GENERATOR	
Total Hours	73 Hrs
Since Last Service	29 Hrs

Back Home Next

BATTERY DIAGNOSTICS PAGE 2

Main battery pack and BMS (fig.47).

47.

BATTERY DIAGNOSTICS	2
Low Cell	1
Low Cell Volts	3.321 Volts
High Cell	14
High Cell Volts	3.323 Volts
Cell Delta	0.002 Volts
BMS DCL	864 AMPS
BMS CCL	260 AMPS
BMS FAULTS	0
Battery Temp	25 °C

Back Home Next

PRIMARY SYS DIAGNOSTICS

Rear electric drive motor and controller (fig.48).

48.

PRIMARY SYS DIAGNOSTICS	
Motor Temp	28.3 °C
Controller Temp	31.7 °C
Motor RPM	0 RPM
Encoder A	0 RPM
Encoder B	0 RPM
Throttle Voltage	0.7 Volts
Throttle Command	0%
Main State	5
Controller Fault Pri	0

Back **Home** **Next**

SECONDARY SYS DIAGNOSTICS

Front electric drive motor and controller (fig.49).

49.

SECONDARY SYS DIAGNOSTICS	
Motor Temp	30.6 °C
Controller Temp	33.3 °C
Motor RPM	0 RPM
CAN Communication	On
Main State	5
Controller Fault Sec	0

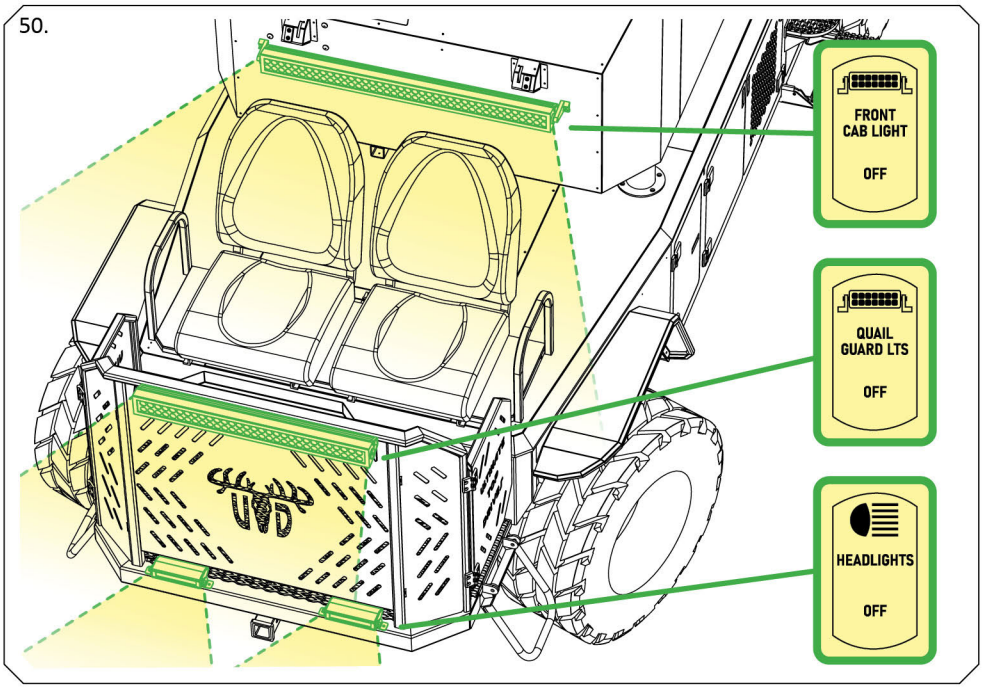
Back **Home** **Next**

If the charging compartment door or quail gates are open, fault code “54” will be displayed on Controller Fault Pri and Sec lines. The display unit’s time and date settings may be accessed by pressing “Setup” on the homepage then selecting “Time/Date”. Other menus are for technician use only.

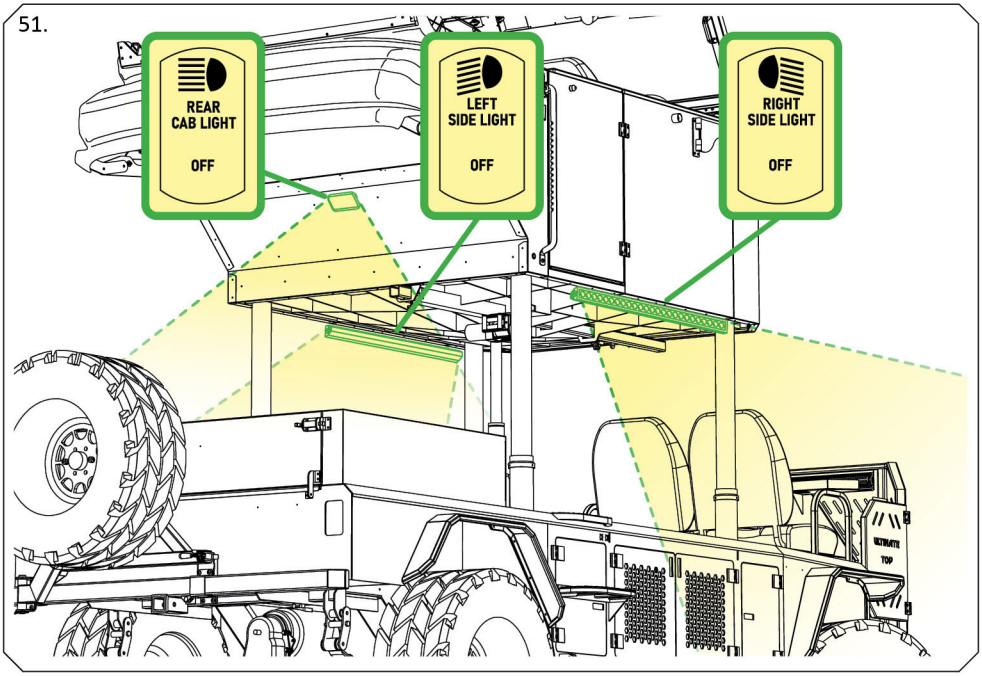
VEHICLE LIGHTING

The Cabra may be equipped with an array of lighting sources and comes standard with headlights, tail lights, quail guard lightbar, rear cab (bed) light, and interior cab lighting. All standard and optional lighting sources are shown with their corresponding control switch (figs.50,51,52).

50.

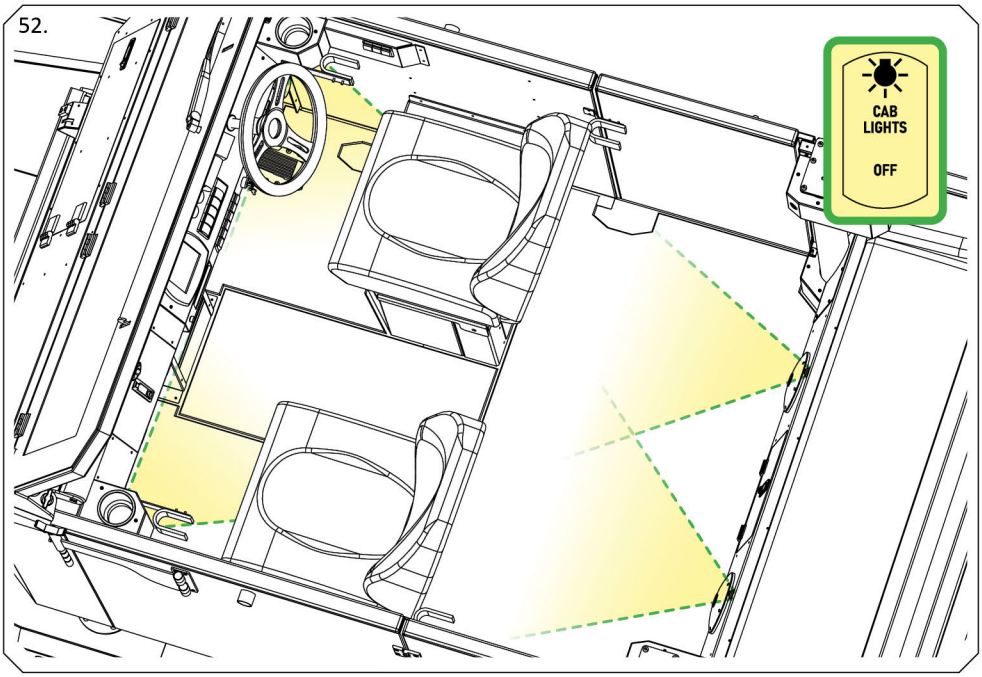


51.



NOTE: Interior cab lighting is low-mounted and shielded to allow for working in the cab without light escaping into the environment, which could negatively impact night hunting.

52.



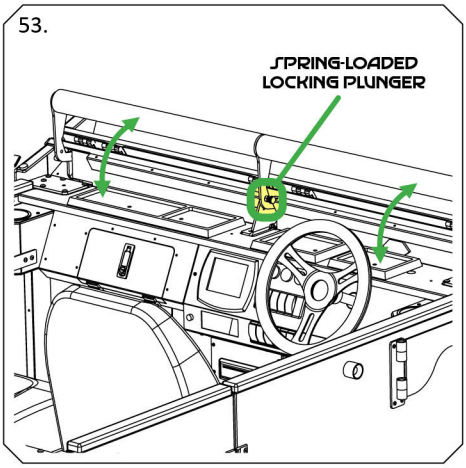
SHOOTING AIDS

To assist steady aiming and reduce arm fatigue, the Cabra features a shooting rail above the dashboard and side-mounted shooting supports that may be used to rest guns on when hunting.

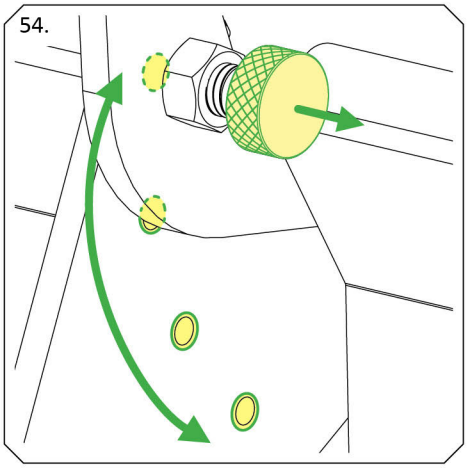
DASHBOARD SHOOTING RAIL

The shooting rail is padded for comfort and may be adjusted to various heights (fig.53). To change the rail height, pull the spring-loaded locking plunger out and lift the rail to one of the height positions (fig.54). Ensure the plunger springs back and is locked into one of the position holes before using the shooting rail. Always put the rail in the bottom position before lowering the windshield as it can impede reach.

53.



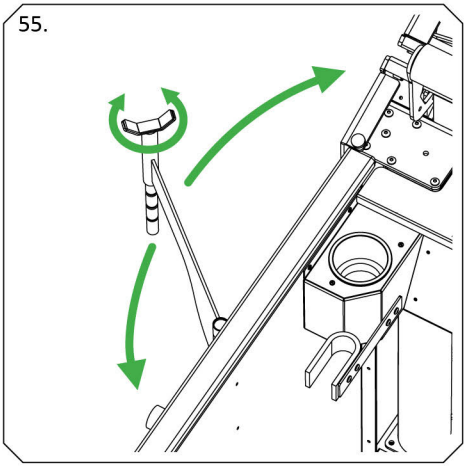
54.



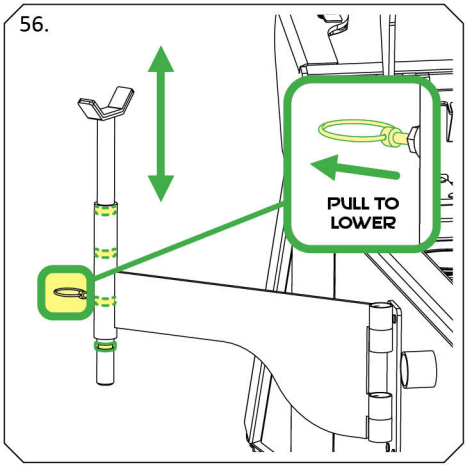
SIDE SHOOTING SUPPORTS

Highly adjustable side shooting supports are provided to help stabilize aiming. The supports are secured to the cab side by socket latches. To move the support, firmly pull it away from the cab to release the latch. The support arm sweeps 180° and the padded support head rotates 360° (fig.55). Raise the head height by lifting it to the desired position. Lower the head height by pulling the spring-loaded locking plunger (fig.56). Ensure the support head is fully locked into one of the positions before using. Always secure the support to the cab side while not it use by firmly pushing it into the socket latch.

55.



56.



FOLDING WINDSHIELD AND FRAME

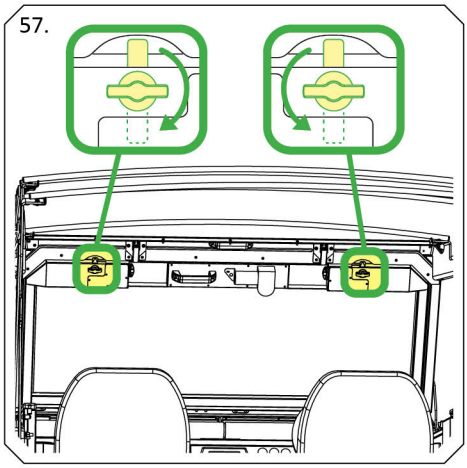
The Cabra's windshield and frame may be folded down to aid shooting from the front of the cab. If the convertible top is up, only the inner windshield may be folded as the frame is locked to the convertible top. If the convertible top is down, the windshield and frame may be folded down together as a unit.

WHEN LOWERING OR RAISING THE FOLDING WINDSHIELD, BE CAUTIOUS OF PINCHING HANDS OR FINGERS BETWEEN THE WINDSHIELD AND FRAME.

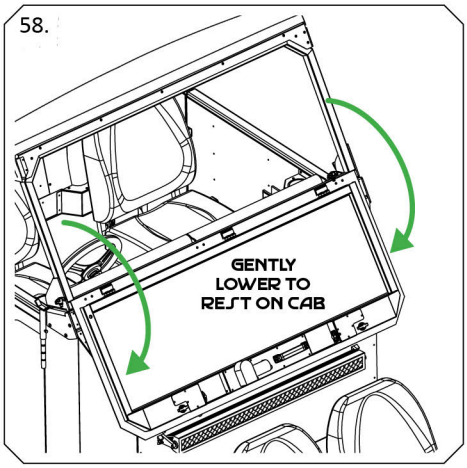
LOWERING THE INNER WINDSHIELD

The windshield is locked into the frame by 2 knobs / tabs atop the frame. To unlock, rotate the left knob clockwise 180° and the right knob counter-clockwise 180°, so that the tabs fully release the frame (fig.57). The inner windshield is now free to move by pushing out and lowering to rest using the grab handle—a helper may be beneficial (fig.58).

57.

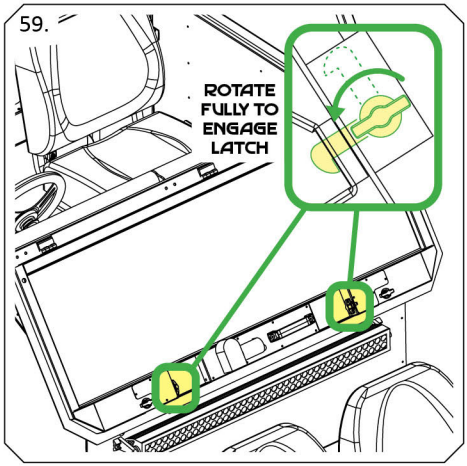


58.

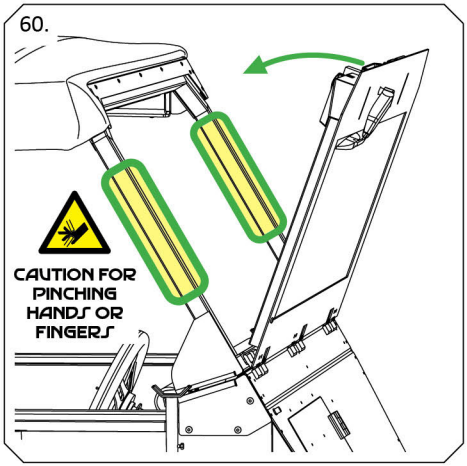


The windshield must be locked to the cab when down. Rotate both locking knobs 90° towards the cab until they stop, fully engaging the latches into the mounts (fig.59). Reverse the process to raise and lock the windshield in the up position. Use caution as hands / fingers can be pinched between the frame edges and inner windshield as they close together (fig.60).

59.

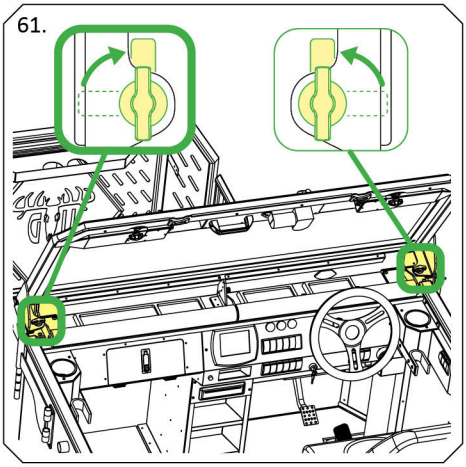


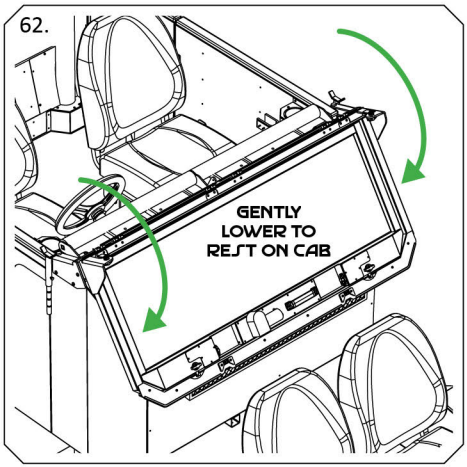
60.



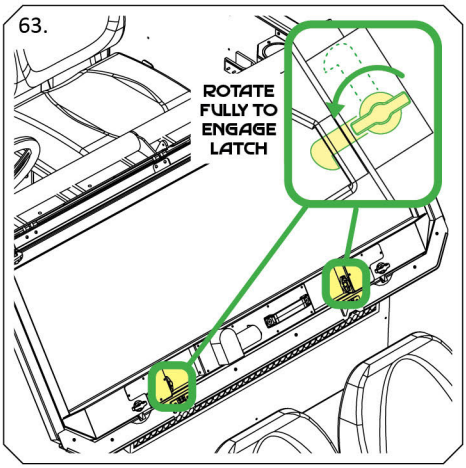
Lowering the Windshield and Frame Unit

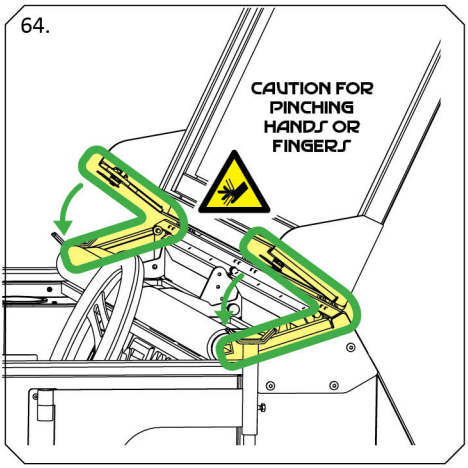
When the convertible top is down, the windshield and frame may be lowered together as a unit. The windshield frame is locked upright by 2 knobs / tabs in the lower corners of the frame. To unlock, rotate the left knob clockwise 90° and the right knob counter-clockwise 90°, so that the tabs fully release the panel below (fig.61). The windshield / frame is now free to move by pushing out and lowering to rest using the grab handle—a helper may be beneficial (fig.62).





The windshield / frame must be locked to the cab when down. Rotate both locking knobs 90° towards the cab until they stop, fully engaging the latches into the mounts (fig.63). Reverse the process to raise and lock the windshield / frame in the up position. Use caution as hands / fingers can be pinched along the bottom edges as the windshield frame closes towards the cab (fig.64).





Windshield Wiper

The windshield wiper switch is located on the dashboard. To power the wiper for continuous use, press the Wiper On side of the rocker switch. The wiper will remain on until the bottom of the switch is pressed. Press / hold Pulse to momentarily power the wiper for mist or bugs—it will remain on until the switch is released. There is a magnetic sensor which signals when the windshield is lowered to prevent the wiper from being powered.

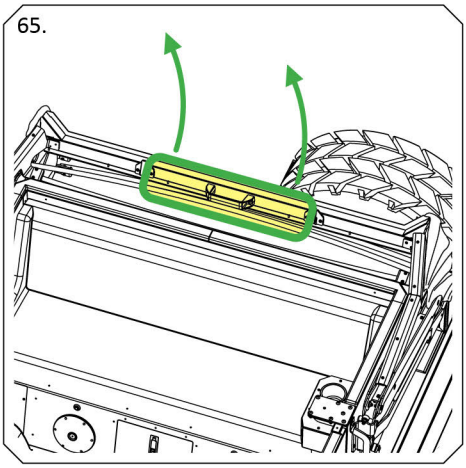
NEVER TRAILER THE CABRA WITH THE WINDSHIELD FRAME AND CONVERTIBLE TOP UP AS THEY ARE NOT INTENTED FOR HIGH SPEEDS.

CONVERTIBLE TOP

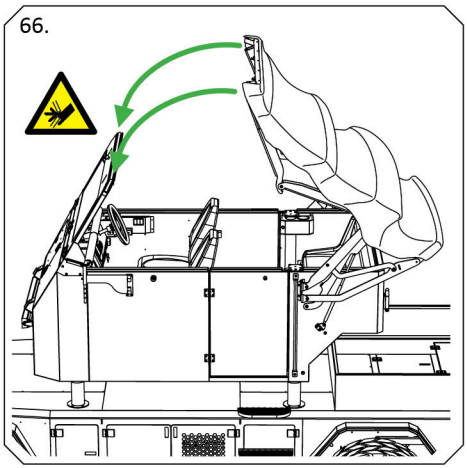
The Cabra's canvas convertible top features gas-assisted manual movement that may be operated by a single person. Ensure the windshield frame is up and locked in position (the inner windshield does not need to be up). Keep hands free of the folding linkage when raising or lowering the top.

To raise the convertible top, lift it from the center of the leading crossmember, accessed just behind the rear bench seat (fig.65). Pull and guide the top forward over the cab (fig.66). As the convertible top comes down to rest on the windshield frame, be cautious not to pinch hands or fingers in the closing gap.

65.

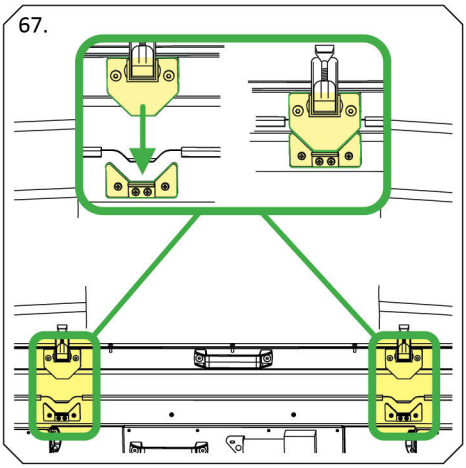


66.

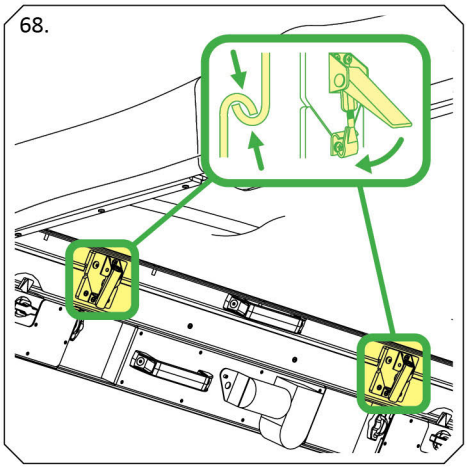


The convertible top guide plates align with mating guides on the windshield frame. Pull the top down and fully seat the guides (fig.67). 2 draw latches lock the top to the windshield frame. With the latches open, place their hooks over / into the hooks on the windshield frame then push the latch handles down to lock (fig.68). Refer to the Troubleshooting section if the draw latches require adjustment. Reverse the process to lower the top. Use caution as hands / fingers can be pinched in the folding linkage.

67.

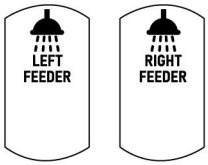


68.

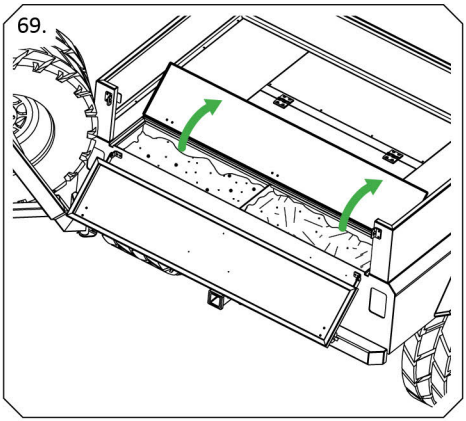


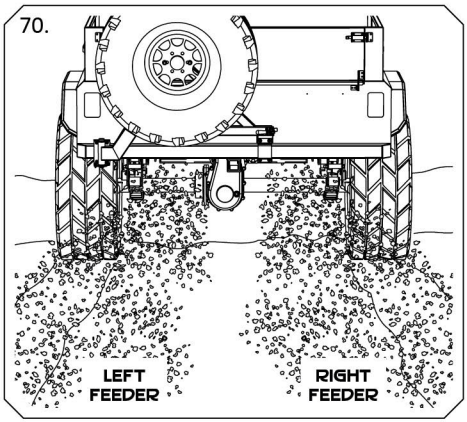
FEEDERS

The Cabra is equipped with two separate feeders controlled by switches on the driver console. To release feed, press and hold the desired rocker switch—the feeder will stay open until the switch is released. Feed bins are located in a rear bed compartment of the vehicle and each hold up to approximately 100 lbs of typical feed. To prevent rotting, do not store feed long-term in the compartments.



To access the feed compartment, swing the spare tire mount out of the way and lower the tailgate. The compartment lid is closest to the tailgate and may be opened to rest gently on the bed floor (fig.69). Feed is released under the rear bumper area (fig.70).

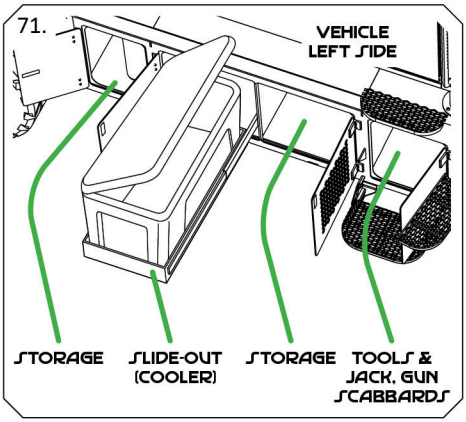


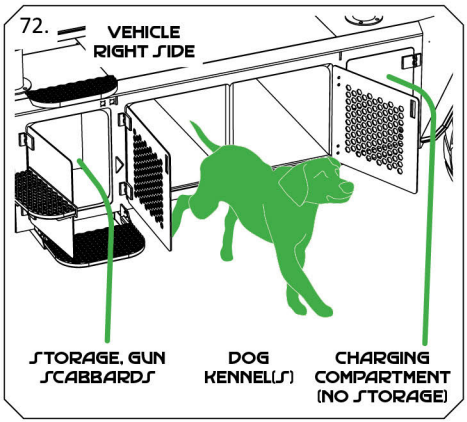


SIDE COMPARTMENTS / STORAGE

The Cabra's generous side compartments allow for flexible storage of supplies, food, dogs, guns, etc. All doors open with push-to-release latches and are lockable. Particular compartment feature locations may vary depending on vehicle options. Generally, the Cabra's left side features a large cooler-sized slide-out, general use compartments, and a tools / jack compartment with gun scabbards (fig.71). The right side features dog kennels, a general use compartment with gun scabbards, and the charging compartment (fig.72). Do not use the charging compartment for storage. Any compartment with a perforated door may be used for dogs or animals.

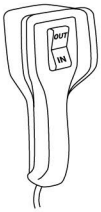
NOTE: During hot weather when the generator is running, dog kennels can become hotter than normal.



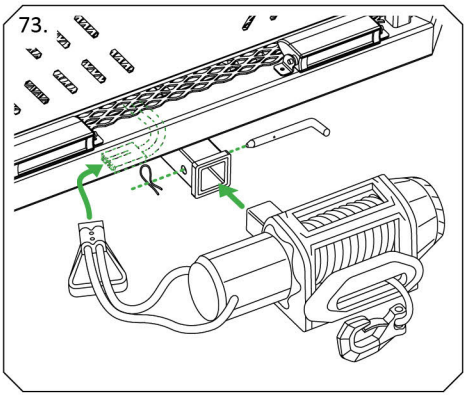


RECOVERY WINCH

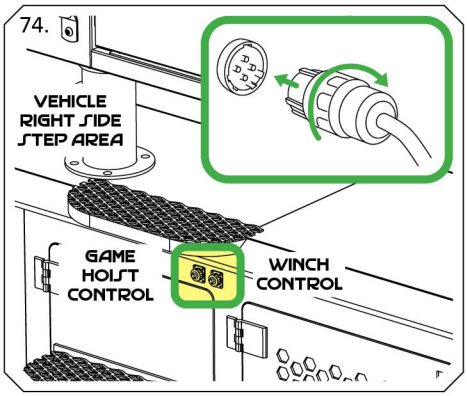
The Cabra is equipped with a 5500 lb portable recovery winch intended for light duty use. It is lightweight enough to be moved / installed on the front or rear of the vehicle and is controlled by remote (found in the Cabra's tool bag). Mount and lock the winch into the desired receiver hitch using the hitch pin. Plug the winch harness into the power outlet located on the underside of the front or rear bumper (fig.73). Locate the winch controller ports near the right side steps (fig.74). Plug the controller into the right hand port, aligning the plug tabs with the port slots, and rotate the plug collar clockwise to lock. "Out" feeds out line, while "In" retracts line.



73.



74.

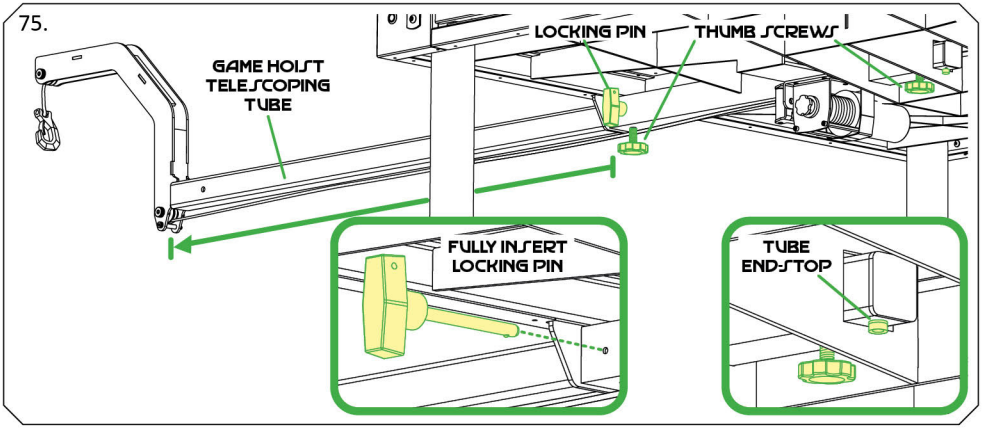


GAME HOIST SYSTEM

The game hoist is designed to aid the loading of game into the bed, up to 500 lbs. Move the spare tire and lower the tailgate before use. Plug the winch remote into the left hand port (fig.74). Use the charging compartment switch to raise the cab enough to access the thumb screws, and allow the telescoping tube to clear the bed rail when extended. Remove the locking pin and loosen the thumb screws (counter-clockwise) so that the tube slides freely (fig.75). Feed out roughly 10 ft of winch line and extend the tube to the end-stop. Reinsert the locking pin. Raise the cab fully and insert all 4 lift tube locking pins then lower the cab to rest on the pins. Attach the winch line to an appropriate part of the animal and aid in manipulating the animal into the bed while winching, so that it does not hang up. Reverse the process to stow the hoist.

RETRACT THE HOIST TUBE BEFORE LOWERING THE CAB. FAILING TO DO SO WILL DAMAGE THE BED RAIL WHEN LOWERING THE CAB. TIGHTEN THUMB SCREWS.

75.



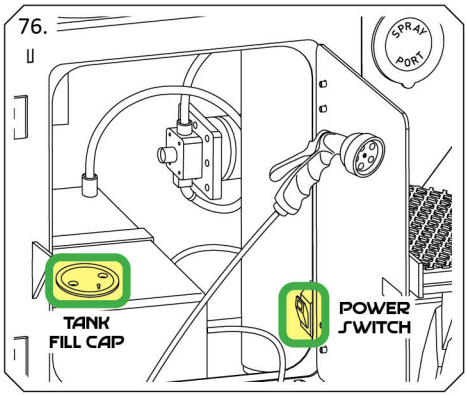
WATER SYSTEM (OPTIONAL)

The Cabra may be optioned with an onboard (non-potable) water system that provides a fresh water tank, quick-connect hose and a multi-pattern spray head. If equipped, the system is typically located and controlled in the rear-most compartment on the vehicle's left side, and the spray port hose connection is mounted on the body exterior to the right of the compartment door (fig.76).

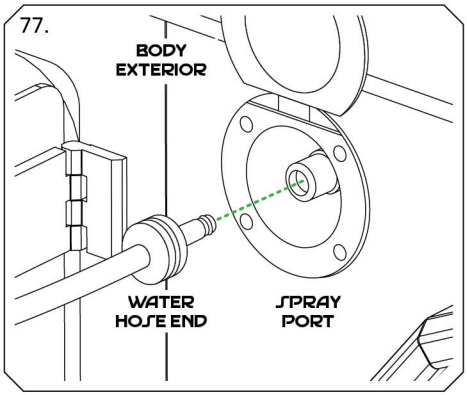
To fill, remove the tank cap by rotating counter-clockwise 90°. Attach the hose quick-connect to the spray port by firmly pushing in until the collar locks (fig.77). Toggle on the rocker switch to power the system—the switch should illuminate indicating the system is ready for use. Always turn off and stow the system when not in use. To disconnect the water hose, push the spray port collar inward to release.

NOTE: If freezing temperatures are expected, empty the system completely: pump, tank and hose.

76.



77.

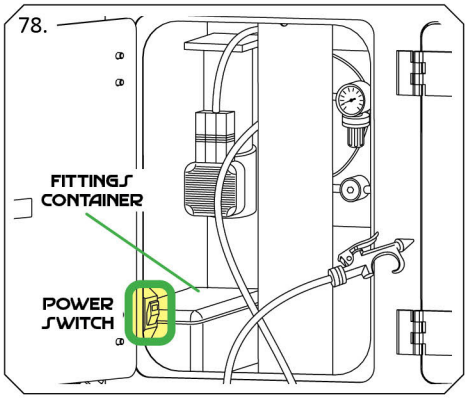


AIR SYSTEM (OPTIONAL)

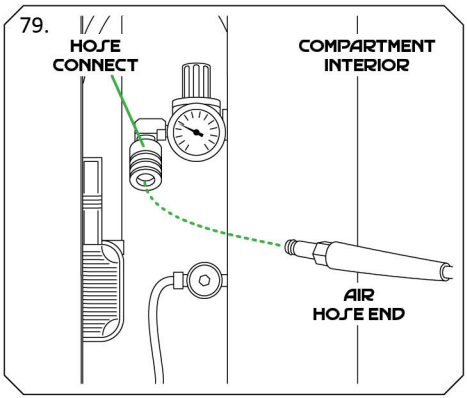
The Cabra may be optioned with a general use onboard compressed air system that provides up to 100 PSI for filling tires, leisure gear (sports balls or water floats), debris removal, etc. An air hose, various fittings and pressure gauge are supplied. If equipped, the system is typically located and controlled in the front-most compartment on the vehicle's left side (fig.78). Do not adjust the system pressure knobs.

Connect the air hose male end to the Cabra's air outlet by firmly pushing in until the collar locks (fig.79). Connect the desired fitting to the hose in the same manner. Toggle on the rocker switch to power the system—the switch should illuminate, indicating the system is ready for use. Always turn off and stow the system when not in use. To disconnect the air hose or fitting, push the collar inwards to release.

78.



79.



Maintenance

MAINTENANCE

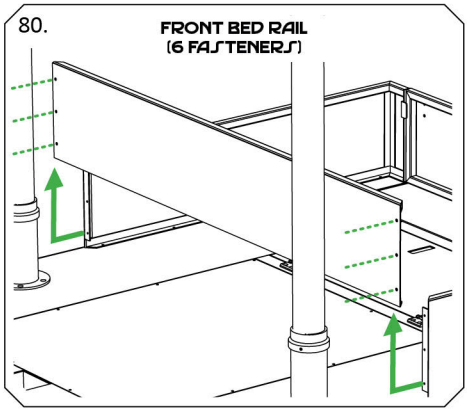
Due to the Cabra's electric drivetrain, it requires little scheduled maintenance. However, there are a few systems that need attention as outlined in this section.

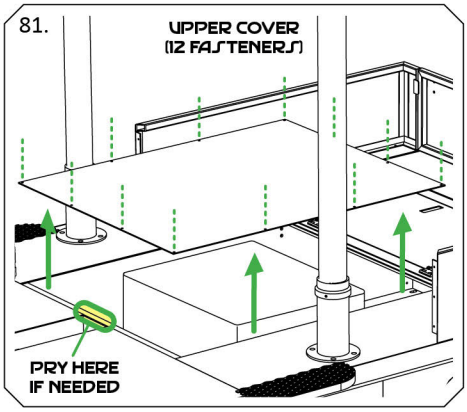
ALWAYS PLACE THE VEHICLE IN PARK ON A FLAT SURFACE WITH THE WHEELS PROPERLY CHOCKED BEFORE PERFORMING ANY MAINTENANCE UNDER IT.

GENERATOR ACCESS

The generator is housed in the Cabra's lower body compartment and is accessed by removing upper and lower covers. Most all generator maintenance can be done with these covers removed.

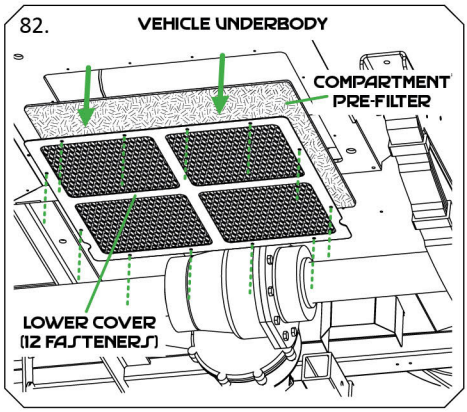
Fully raise the cab and insert all 4 cab lift tube locking pins, then lower the cab to rest on the pins. Remove the front bed rail secured by 6 fasteners (fig.80). Remove the upper generator compartment cover secured by 12 perimeter fasteners (fig.81). If the cover is stuck down, gently pry from the center lifting ram slot edge with a flathead screwdriver or similar tool. Carefully lift the cover away.

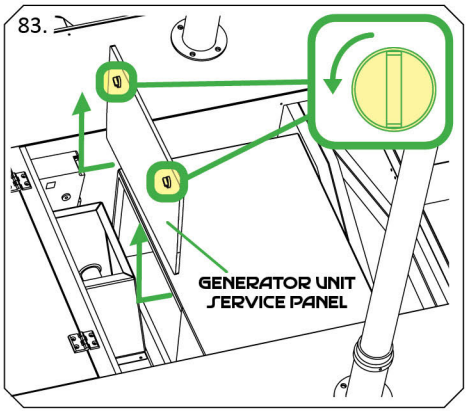




Locate the lower generator compartment cover on the underbody in front of the rear axle. Remove the cover secured by 12 perimeter fasteners, being cautious to support the cover so that it does not fall and cause injury (fig.82). The compartment pre-filter is sandwiched between the cover and the underbody.

2 knobs secure the generator unit service panel. Rotate them 90° counter-clockwise and firmly pull the panel outward to release, then up and out of the compartment (fig.83).





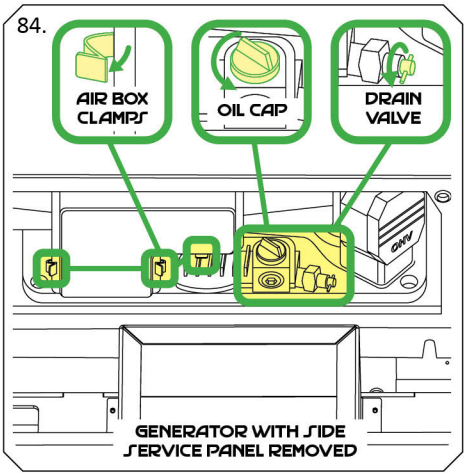
ALWAYS REFER TO THE SUPPLEMENTAL CUMMINS ONAN GENERATOR MANUAL FOR SPECIFIC DETAILS WHEN PERFORMING ANY GENERATOR SERVICE.

GENERATOR OIL CHANGE SERVICE

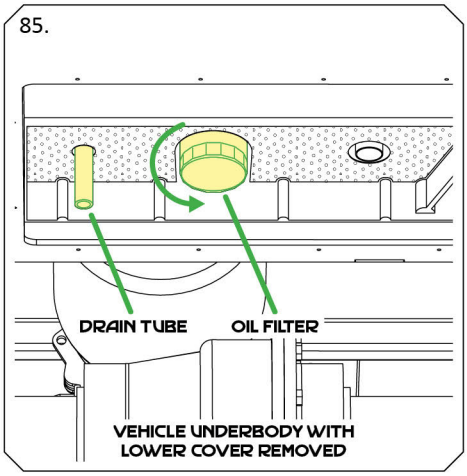
With the compartment covers removed, generator service may be performed. Refer to and understand the Cummins Onan Generator Manual for all pertinent service instructions, required parts / quantities, and ownership notes. **The Cabra's specific generator oil change service intervals begin at the first 20 hours of use, then at 50 hours of use, and then every 50 hours thereafter**. Use the appropriate oil service kit, which includes the proper type and amount of oil, oil filter, filter wrench, and air filter.

Remove the oil fill cap by unscrewing counter-clockwise (fig.84). Place a pan beneath the drain tube under the vehicle (fig.85). Open the drain valve counter-clockwise until oil begins to flow out of the drain tube. Drain all oil from the generator then close the drain valve. Remove the oil filter by spinning off counter-clockwise. Remove the gasket if it does not come off with the oil filter.

84.

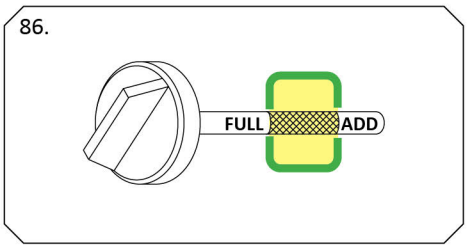


85.



Apply a light film of oil to the new filter's gasket, then spin on by hand until the gasket just touches the mounting pad, then tighten 1/2 to 3/4 of a turn. Refill the generator with 2 quarts of oil and check the level—add or drain as necessary as indicated by the cap dipstick (fig.86). Screw the fill cap on securely. Run the generator for a few minutes then shut it off and recheck for proper oil level. Check for leaks.

86.



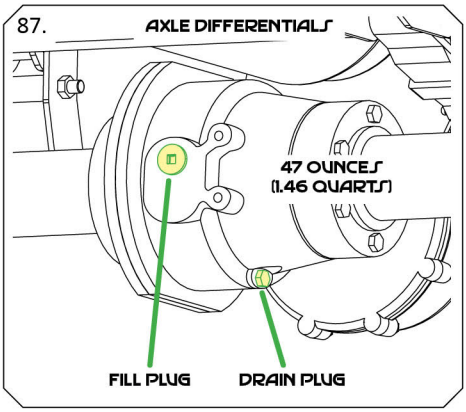
Change the generator air filter by removing the air box lid secured by 3 spring clamps and hooked at the top (fig.84). Release the clamps and pull the lid down and away from the generator. Replace the air filter and guide the lid top up into the hooked end first, then push the lid on and latch the spring clamps.

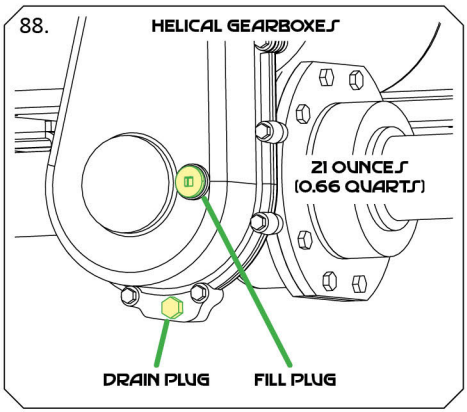
After servicing the generator, reinstall the unit side service panel then the vehicle upper compartment cover. Clean the lower compartment pre-filter with compressed air or water and let dry. Reinstall the lower compartment cover making sure to sandwich the compartment pre-filter between the cover and underbody. Reinstall the front bed rail. The cab may be raised off the lift tube locking pins and pins removed, then the cab lowered.

AXLE FLUID

The Cabra's front and rear axles are each driven by a high torque traction motor and helical gearbox. Each axle differential has a fill and drain plug, and each gearbox has a fill and drain plug—they do not share a common reservoir (figs.87,88). Drain and replace the fluid in all four units every 12,000 miles. 80W90 hypoid oil is the specified lubricant type. Each differential unit requires approximately 47 ounces (1.46 quarts), and each gearbox unit requires approximately 21 ounces (0.66 quarts).

Always remove the (upper) fill plug first. Place a pan beneath the drain plug of the unit being serviced and remove the drain plug. Examine the plug gaskets (o-rings), they may be re-used if not damaged and there have been no previous leaks. Drain all oil from the unit and replace the drain plug. Fill with oil until it begins to flow out of the fill hole and then replace the fill plug with gasket.

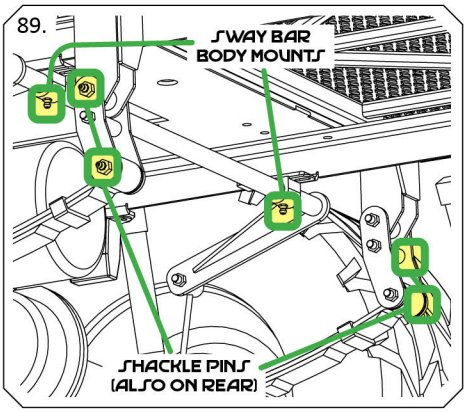


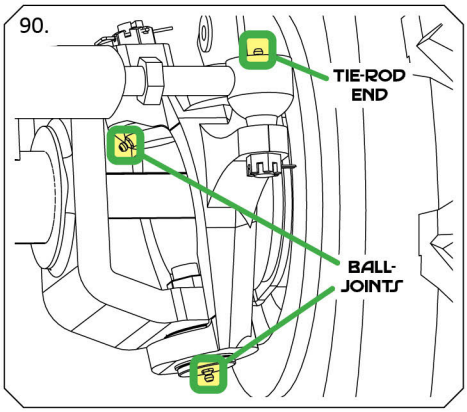


SUSPENSION LUBRICATION

The suspension / steering system has 16 greasable fittings on a number of moving joints. Use a standard grease gun and NLGI #2 type grease to lubricate these joints periodically, or if they begin squeaking. After washing the Cabra, it is recommended to grease the leaf spring shackles as they are more exposed.

The front and rear outer facing leaf spring shackle plates have 2 greasable pins each, and the front sway bar body mounts are greasable (fig.89). Each side front steering knuckle has greasable upper and lower ball-joints and outer tie-rod end (fig.90).





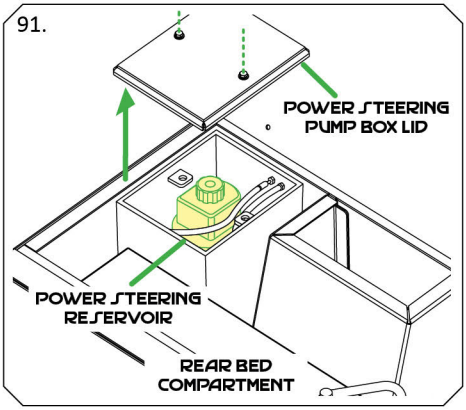
POWER STEERING FLUID

The power steering system uses standard power steering fluid. The reservoir is accessed in the same rear compartment as the fuel filler cap. In the forward-left side of the compartment, remove the power steering pump box lid secured by 2 fasteners (fig.91). The fluid level may be checked by referencing the fill range markings on the reservoir side. Unscrew the filler cap to add fluid.

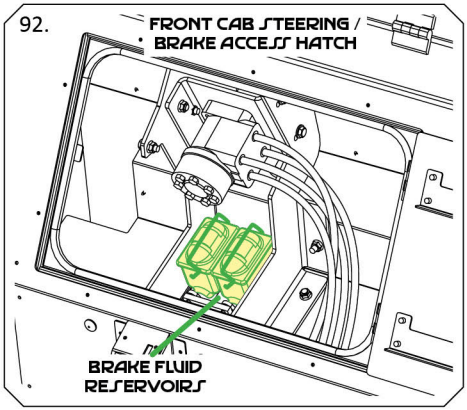
BRAKE FLUID

The mechanical brake system uses standard DOT-3 brake fluid. The reservoirs are located in the front cab access hatch, beneath the windshield on the vehicle exterior (fig.92). To check or add fluid, open the hatch and remove the reservoir caps by swinging the spring clamps off the lids then lifting the lids upward. Be cautious to keep brake fluid off any finished surfaces to prevent damage.

91.



92.

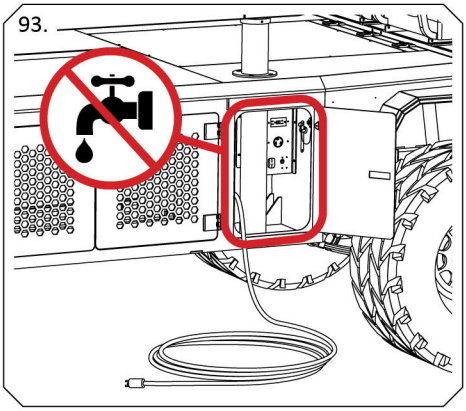


WASHING / CLEANING

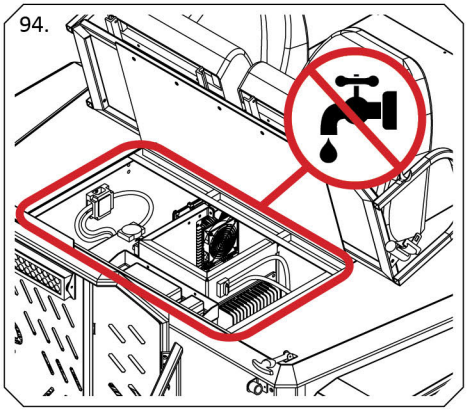
Generally, the Cabra may be cleaned with a combination of power washing and hand washing, similar to typical utility vehicles. However, due to its electric nature, there are a few areas that require special attention to avoid risk of shock or electrocution, or causing damage to vehicle systems.

Never liquid wash the charging compartment interior (fig.93) or front electrical compartment interior beneath the quail seat (fig.94). Only clean these areas by hand with a damp cloth if necessary. Do not power wash any of the dashboard components, inside the rear bed compartment containing the fuel tank and hydraulic pump, or any other compartment or area containing electrical switches. These areas may be hand washed with low pressure being careful not to damage any switches or wiring. The rest of the vehicle may be power washed in a normal manner.

93.



94.



MAINTENANCE SCHEDULE

FLUIDS

GENERATOR OIL CHANGE SERVICE:	• Change at first 20 hours • Change at first 50 hours • Change every 50 hours thereafter • Any additional Cummins Onan requirements
AXLE / GEARBOX FLUID:	• Check level every 2 years • Change every 12,000 miles
LIFT PUMP HYDRAULIC FLUID:	• Check level every 2 years • Top-off as needed
POWER STEERING FLUID:	• Check level every 2 years • Top-off as needed
BRAKE FLUID:	• Check level every 2 years • Top-off as needed
SUSPENSION POINTS:	• Grease every year or seasonally • Grease as needed if squeaking or noise arises

SAFETY SENSORS

CHARGE COMPARTMENT DOOR:	• Check throttle disable every year or seasonally
QUAIL PLATFORM GATES:	• Check throttle disable every year or seasonally
CAB RAISED ABOVE BOTTOM:	• Check speed limiter every year or seasonally • Check door latch disable every year or seasonally
WINDSHIELD DOWN:	• Check wiper disable every year or seasonally

GENERAL VEHICLE

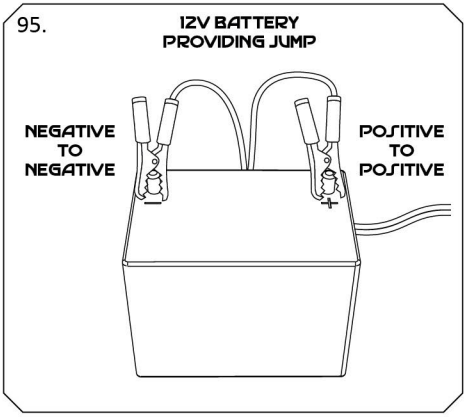
TIRE PRESSURE:	• Check before each use
LUG NUT TORQUE:	• Check after first 25 miles • Check 25 miles after any wheel/tire service • Check every year or seasonally
GATES / DOORS / CONV. TOP LATCHES:	• Check for secure fit before each use
BACKUP CAMERA / BELOW CAB CAMERA:	• Check operation before each use

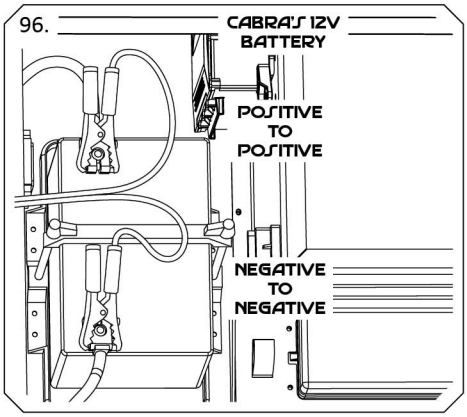
Troubleshooting

JUMP-STARTING THE CABRA (VEHICLE WILL NOT POWER ON)

The Cabra's 96V BMS requires an initial low voltage signal in order to activate. This is supplied by the 12V battery when the ignition is switched on. In the event that the vehicle's 12V battery charge falls below 12V, the BMS will not power on and the vehicle cannot be driven. The Cabra may be jumped in order to activate the 96V system. Once started, it will immediately begin charging the 12V battery.

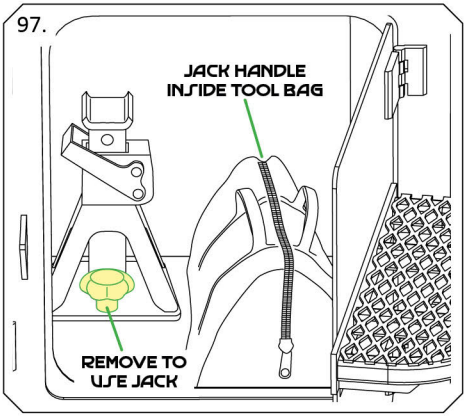
To jump the Cabra, locate the 12V battery inside the front electrical compartment beneath the quail seat. Any 12V battery, even small ones, may be used as the jumping source (fig.95). If using an automobile as the source, it is not necessary to start that vehicle. Connect the positive and negative cables from the jumping battery to the Cabra's positive and negative battery terminals (fig.96). Turn on the ignition fully and start the Cabra as normal. Once started, disconnect the jumper cables. If the battery fails to maintain a 12V charge, it may need to be replaced. Utilize the 12V and 96V disconnects during long-term storage.

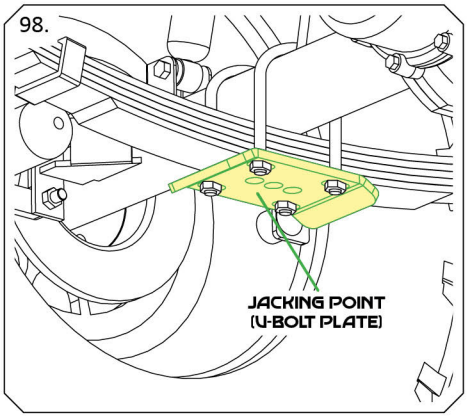




JACKING UP THE CABRA

The Cabra is supplied with a compact jack to lift the vehicle sufficiently to change a tire. The jack is secured to the floor inside the tool compartment. Remove the thumb screw (counter-clockwise) to release the jack (fig.97). The handle is found inside the tool bag. Only jack the vehicle from underneath the flat U-bolt plate beneath the leaf spring / axle, directly behind the tire being changed (fig.98). Evenly loosen lug nuts. Wheel and tire combinations are heavy, take caution when lifting or moving them. Tighten lug nuts to 90 ft/lbs using a star pattern. When not in use, always secure the jack using the thumb screw.





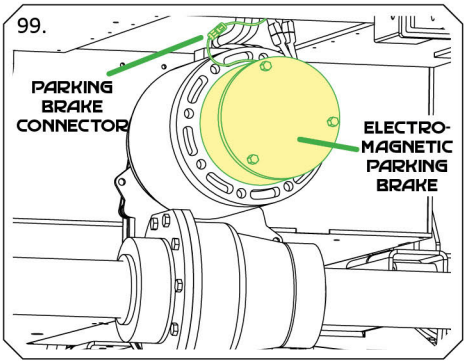
NEVER TOW THE CABRA FASTER THAN 35 MPH. DOING SO WILL CAUSE IRREPARABLE DAMAGE TO THE MOTORS AND GEARBOXES.

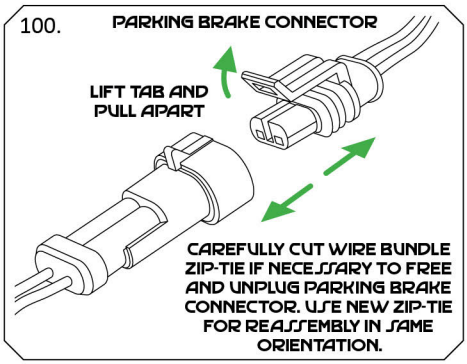
TOWING THE CABRA

The parking brakes on the Cabra are fail-on. An electromagnetic brake is mounted to each axle motor and releases only when powered by the motor controller. The 96V system, DC/DC converter and motor controllers must be powered and properly functioning to release the parking brakes in order to tow the vehicle. In this case, it may be towed a short distance at low speed with someone in the driver's seat to place the gear selector in Drive. If the vehicle cannot be turned on, the 96V power is disconnected (or there is no 96V power for another reason), or there is a problem with the DC/DC converter or motor controllers, the only way to tow or move it is to remove the front and rear electromagnetic brakes from the motors.

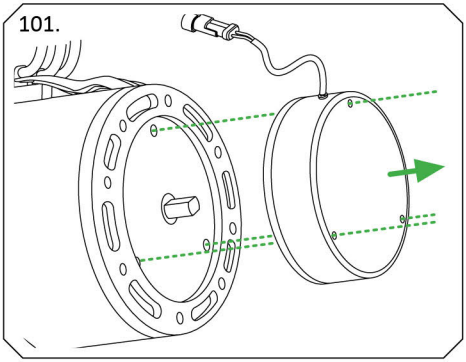
PROPERLY CHOCK WHEELS TO SECURE THE VEHICLE BEFORE REMOVING EITHER PARKING BRAKE. ONCE THE BRAKE IS REMOVED THE VEHICLE IS FREE TO ROLL.

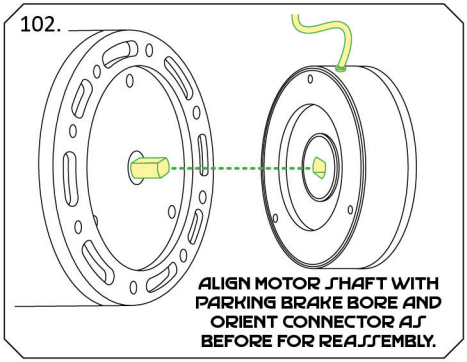
Before removing the brakes, chock the wheels and switch off both 96V and 12V disconnects. Locate the parking brake on the forward facing side of the axle / motor assembly. It is identified by 3 perimeter bolts securing it to the motor (fig.99). Disconnect the harness connector leading to the parking brake (fig.100).





Remove 3 perimeter bolts and carefully pull the parking brake away from the motor (fig.101). Note the motor shaft side flats that mate into the parking brake bore, as well as the connector orientation (fig.102). Once both parking brakes are removed from the motors, the Cabra may be towed with the power off.





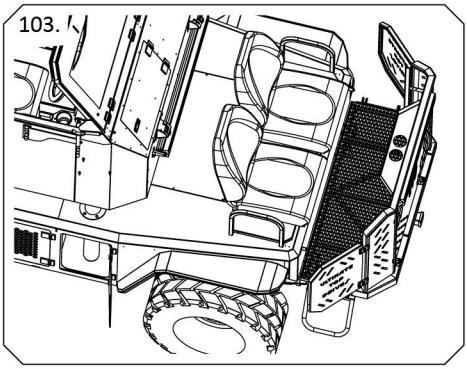
NOTE: If the 3 bolt holes no longer align upon reinstalling the parking brake onto the motor, it is necessary to jack up that axle and manually rotate the wheels, which will rotate the motor shaft until proper alignment of the bolt holes is achieved. Ensure the connector orientation is the same as before (fig102).

NO MOVEMENT OR RESPONSE TO THROTTLE

Check that the gear selector position matches the gear shown on the display. If the selector is in Drive or Reverse and the display shows Neutral and the parking brake Off, the likely problem is either the charging compartment door or quail platform gates are open (fig.103). Ensure the door and gates are fully closed. Contact UTD or a dealer if the problem persists. The safety bypass may be used as a temporary solution to drive the vehicle.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

103.

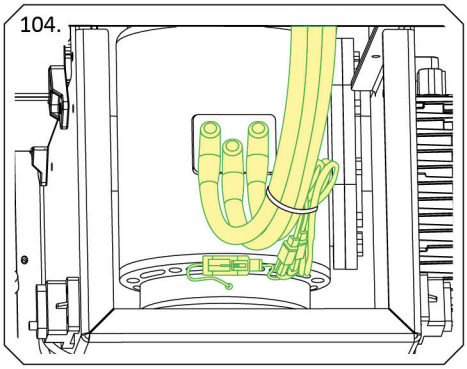


BARELY MOVES / FEELS LIKE BRAKE IS ON

The motor controllers communicate constantly to synchronize speeds. If any wires between them get damaged / cut, the motors can fight each other making it feel like the parking brake is on. The most likely place for this to occur is the wiring at the motors (fig.104). Visually check the wiring on top of each motor to make sure all connectors are intact and there are no cut or chaffed wires. Contact UTD or a dealer if the wiring is damaged.

DO NOT TOUCH ANY OF THESE WIRES UNTIL THE 96V AND 12V DISCONNECTS ARE SWITCHED OFF.

104.

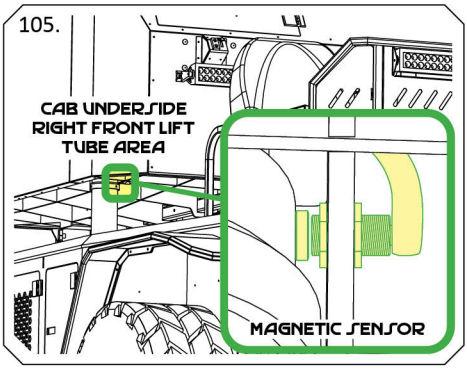


VEHICLE WILL NOT GO OVER 13 MPH

There is a magnetic sensor on the right front cab lift tube which signals as soon as the cab is raised (fig.105). If the sensor or magnet become damaged or broken, the motor controllers will think the cab is raised and govern the speed to 13 MPH. Inspect the sensor and magnet for damage. Ensure the cab is fully lowered. Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

105.

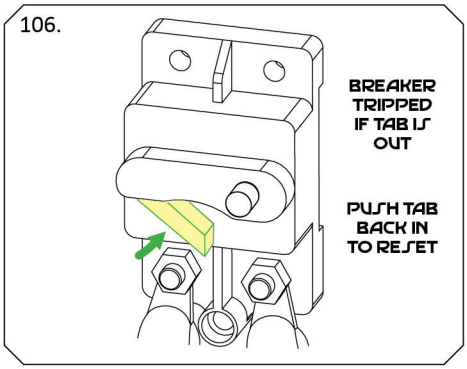


POWER STEERING / 12V POWER LOSS

The power steering pump and DC/DC converter each have a resettable relay inside the front quail platform electrical compartment (fig.106). If the power steering lacks its normal assist, check if its relay has been tripped, and if so reset the relay. If there is a loss of 12V power, check if the DC/DC relay has been tripped, and if so reset the relay. Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

106.



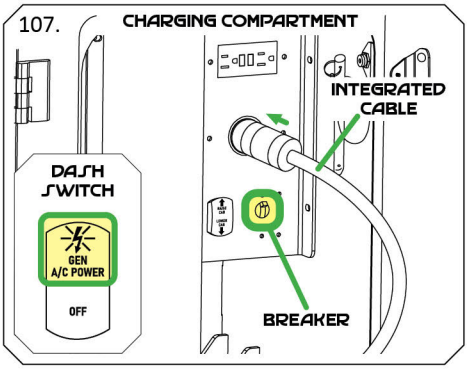
GENERATOR NOT CHARGING THE BATTERY

If the generator is properly connected, switched on and running, it will charge the battery (see pg.23). If it is not charging, check that the integral charge cable is securely connected to the generator panel and that the breaker is switched on. Ensure the generator has been started and is running normally. Check that the dashboard switch is in the Gen A/C Power position (fig.107).

Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

107.



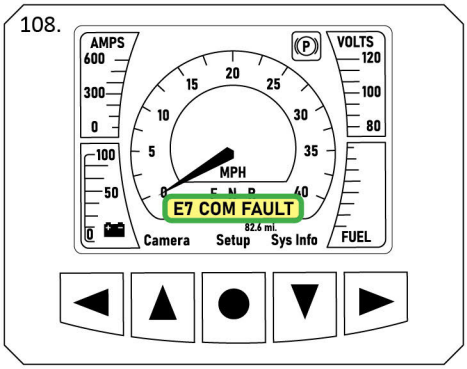
FAULT CODES / ERROR MESSAGES

Fault codes / error messages may be shown on the main display in the System Status area and can be cleared to return the display to normal (fig.108). Persistent codes / messages require attention. Only clear codes / messages while the vehicle is in park. Turn the vehicle ignition to the off position for 30 seconds and then restart as normal to clear the fault code / error message.

Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

108.



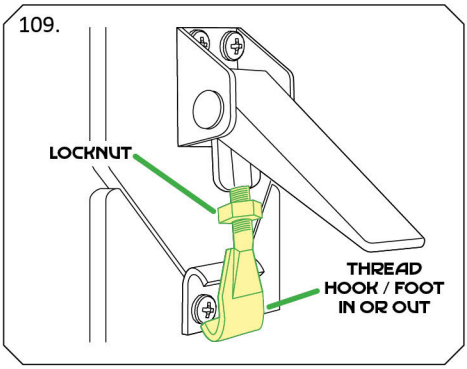
CONVERTIBLE TOP LATCHES ARE LOOSE

The latches that secure the convertible top to the windshield frame can periodically become loose, requiring simple adjustment. To readjust tension, loosen the shaft lock nut counter-clockwise which allows turning the hook / foot. Thread the hook / foot in or out until a firm lock-down can be achieved and re-tighten the lock nut (fig.109).

Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

109.



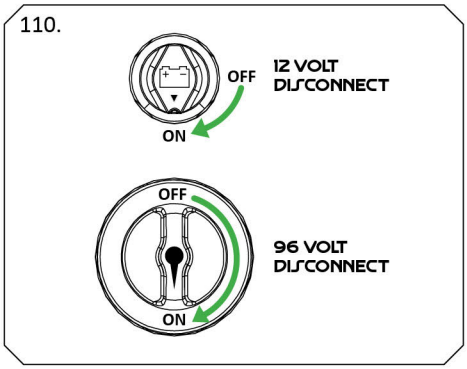
POWER DISCONNECTS

If the vehicle is started as normal and the main display shows a “No Canbus Signal” message, the 96V disconnect is likely switched off. If the vehicle appears to start as normal but loses power when any other system is tried, the 12V disconnect is likely switched off. Switch the appropriate disconnect on to restore normal operations (fig.110).

Contact UTD or a dealer if the problem persists.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

110.



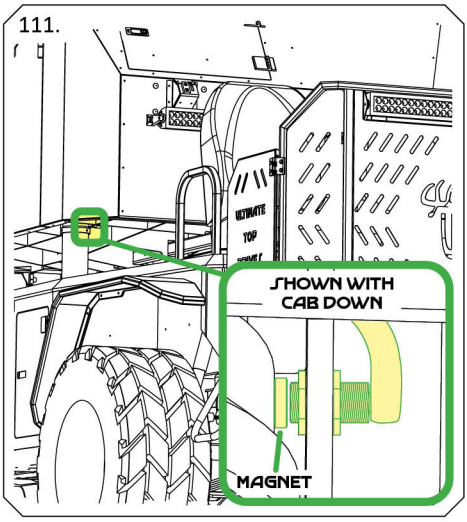
MAGNETIC SAFETY SENSOR LOCATIONS

There are 5 magnetic sensors on the Cabra, as outlined in this manual (figs.111,112,113,114). If the magnet or sensor becomes damaged, out of adjustment or removed, the sensor will fail to function. If a problem is encountered with a system that relies on one of the magnetic sensors, check that the magnet is attached securely and fully intact in good condition. For example, if the quail platform gates and charge compartment door are properly closed, yet the sensor bypass is required to drive the vehicle, it is likely that one of the magnets has been damaged or knocked off. Contact UTD or a dealer if a sensor magnet has been damaged or removed, or the corresponding sensor appears to have been damaged.

REPAIR THE ISSUE AS SOON AS POSSIBLE. DO NOT OPERATE THE CABRA IN THIS CONDITION.

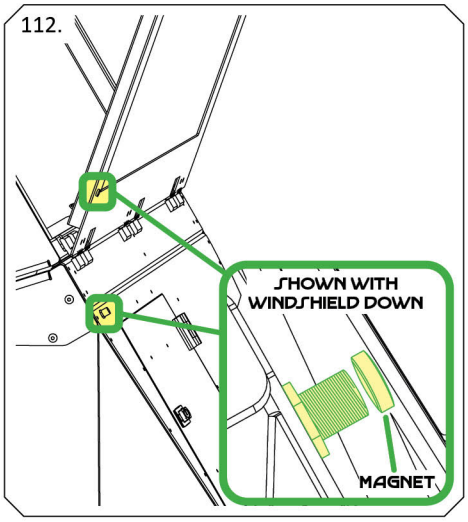
CAB HEIGHT SENSOR

111.



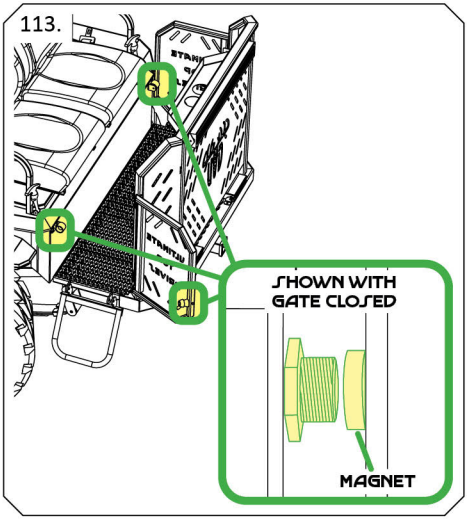
WINDSHIELD SENSOR

112.



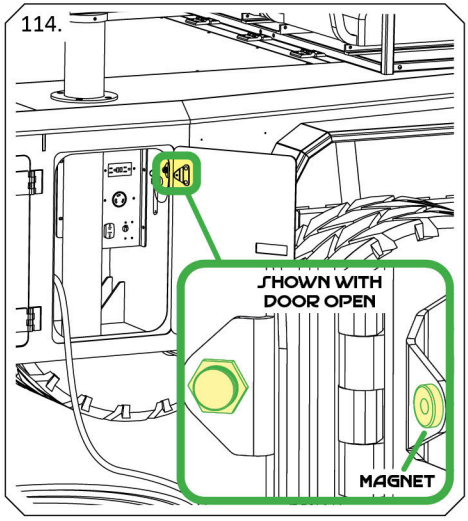
QUAIL PLATFORM GATES SENSORS

113.



CHARGING COMPARTMENT DOOR SENSOR

114.



Supplemental Manuals
Limited Warranty

Your Cabra contains a number of products that may require additional reference in order to maintain them, or to enjoy their full range of benefits. Please download all applicable owner / user manuals for your vehicle from www.ultimatetopdrives.com, or by scanning the provided QR code below. UTD customer service may always be contacted for requests of specific manuals pertaining to your Cabra.

- Cummins Onan Generator
- Recovery Winch
- Game Hoist Winch
- Standard Audio Radio Head Unit
- Premium Audio Radio Head Unit
- Premium Audio Subwoofer
- Premium Audio Amplifier

www.ultimatetopdrives.com/owners

ULTIMATE TOP DRIVES INC. (“UTD”), UNITED STATES AND CANADA

LIMITED WARRANTY:
Ultimate Top Drives Inc. (hereinafter referred to as “UTD”), hereby warrants to the original purchaser, that your new UTD Electric Utility Vehicle will be free from defects in material and workmanship for a period of one (1) year from date of purchase, except as provided below. Commercial Use Operators (defined below) are warranted for 90 days from date of purchase.

UTD Warranty Responsibilities:
UTD, if notified of a defect in material or workmanship during the period of warranty, will repair or replace, at its option, defective parts covered by this warranty at no charge, other than the reasonable cost for the transportation of the component(s). UTD will also agree to pay reasonable charges for labor, if necessary, to perform a warranty repair.

Warranty Claim Requirements and Procedures:
In order to be able to claim under this warranty the original purchaser must maintain and operate the vehicle in accordance with the instructions provided in the Operator’s Manual, the supplements thereto, and labels affixed to the vehicle. Additionally, within (10) days of the discovery of an alleged defect, the original purchaser must contact UTD’s Customer Service Department at 1-512-610-0090, 16742 Pawlin Drive, Suite 100, Selma, TX 78154 or via the internet at www.ultimatetopdrives.com. The repair or replacement of any part or parts under this Limited Warranty shall not extend the term of the warranty beyond the original term as set forth above.

General Exclusions:
This limited warranty does not cover component failure or damage caused by any of the following: abnormal strain or stress, neglect; abuse; improper assembly of components which were supplied in the factory sealed carton after the vehicle left UTD; improper maintenance, modifications, damage caused by use of non UTD accessories, improper use of the vehicle, including, but not limited to racing, jumping, stunt driving, or any other uses prohibited by the Operator’s Manual. Additionally, this warranty does not cover vehicles which are leased, rented, or used commercially. Expenses related to towing, storage, rental inconvenience, insurance coverage, loan payments, loss of time, loss of income, or any other type of incidental or consequential damages are not covered by this Limited Warranty.

Specific Exclusions:
This limited warranty does not apply to components which are subject to normal wear and tear. These items include the tires and brake pads. Downtime, pick-up and delivery charges are not covered by this warranty. UTD and/or its authorized service dealer can, at UTD option, repair or replace warranted components under the terms and conditions offered by UTD OEM suppliers.

Commercial Use Definition:
Commercial users of UTD products receive warranty coverage under this limited warranty from the date of first retail sale, or from the date on which the product was first put into service, whichever occurs first. Commercial use is defined as any work or employment related use of the product, or any use of the product which generates income, for any part of the warranty period, even if the product is only occasionally used for such purposes. Unexpired warranty coverage cannot be transferred either to or from a commercial use customer.

NO IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY:
THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. SPECIFICALLY, UTD MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITATIONS SPECIFIED IN THE WARRANTY ABOVE ARE HEREBY DISCLAIMED BY UTD AND EXCLUDED FROM THIS WARRANTY. ADDITIONALLY, THIS WARRANTY EXCLUDES ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE. SOME STATES DO NOT ALLOW A MANUFACTURER TO EXCLUDE OR LIMIT INCIDENTAL OR CONSEQUENTIAL DAMAGES AND, THEREFORE, THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY WILL LAST. IT IS POSSIBLE THAT THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS, WHICH VARY, FROM STATE TO STATE.

Warranty Registration:
At the time of sale, the Warranty Registration Form must be completed by your dealer and submitted to UTD within three days of purchase. Upon receipt of this registration, UTD will record the registration for warranty. No verification of registration will be sent to the purchaser as the copy of the Warranty Registration Form will be your proof of warranty coverage. If you have not signed the original registration and received the customer copy, please contact your dealer immediately. Proof of Purchase will be required if registration was not completed.

Warranty Service:
To obtain warranty service you must return your UTD product to the local authorized dealer or service center, or UTD (Selma, TX) and inform them of your warranty problem and provide proof of purchase before any warranty service can be provided. The authorized dealer or service center will inspect the product to determine what repairs or parts are needed and whether they are covered under this warranty. To locate the authorized dealer or service center nearest you please call UTD customer service at 1-512-610-0090, or visit our website at www.ultimatetopdrives.com for more information.

Transfer of Warranty:
This limited warranty is transferable to a subsequent purchaser, but only for the remainder of the unused portion of the limited warranty. This will not apply to products used for commercial applications. To transfer the warranty to the subsequent owner, send a copy of the Bill of Sale, new owner's name, address, and product identification number (PIN) to UTD Warranty Registration Department address above.

NEGLIGENCE OR ABUSE MAY VOID THE WARRANTY. PURCHASER SHALL BE RESPONSIBLE TO PERFORM ALL SCHEDULED MAINTENANCE ON THE VEHICLE AND FOLLOW ALL SAFETY AND OPERATING PROCEDURES.

Warranty Rev. B.
Release Date: 01/16/2023

STORING THE CABRA LONG-TERM (continued from pg.21)
It is recommended to store the vehicle plugged-in to promote optimum battery health. If it has been stored unplugged for an extended period of time and is driven without first fully charging the main battery, adverse driving effects due to *voltage-drift* may be encountered. Drivers may experience inconsistent throttle feel, a lack of power and/or regenerative braking force, and erratic vehicle charge level shown on the main display. If these conditions are experienced, fully charge the Cabra's main battery to 97%, letting it remain plugged in for 30 minutes after it is fully charged. The BMS will continue to balance the battery cells for up to 30 minutes after reaching full charge.

Voltage-drift is a normal occurrence when storing multi-cell batteries and takes place between the pack's individual cells when stored without charging for extended periods of time. When the main battery pack's individual cell voltages "drift", they are losing charge at an uneven rate and upon starting the Cabra, the BMS receives uneven battery data which may lead to the above noted adverse driving conditions. The act of fully charging the vehicle restores even cell voltage balance within the main battery pack and restores proper driving conditions.

CABRA OWNER'S MANUAL [R2.1_2023]

16742 PAWLIN DRIVE, SELMA, TX 78154, USA | 512.610.0090 | WWW.ULTIMATETOPDRIVES.COM