



IC BUS EV DRIVERS TRAINING



Dash Cluster



Propulsion & Regenerative Load

Ready to Move

Air Tanks

Drive Position



12 Volt Indicator

State of Charge/ Energy Gauge

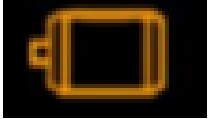
Battery Temperature

Fuel Fired Heater Fuel Level

Motor Temperature

Regenerative Brake Indicator

Cluster Lights- What's Different?



Malfunction Indicator Lamp (MIL)- Commonly, you would see an engine shaped lamp here and refer to as Check Engine Lamp. For EV, it represents an electric motor.



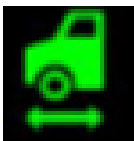
Low State of Charge Indicator- Comes on when you reach 19% SOC



Turtle Lamp- Indicates that torque is limited due to vehicle condition. When combined with the low SOC lamp it comes on at 5% and torque will be limited to conserve power. Accessory items like HVAC may also become inoperable at this time.

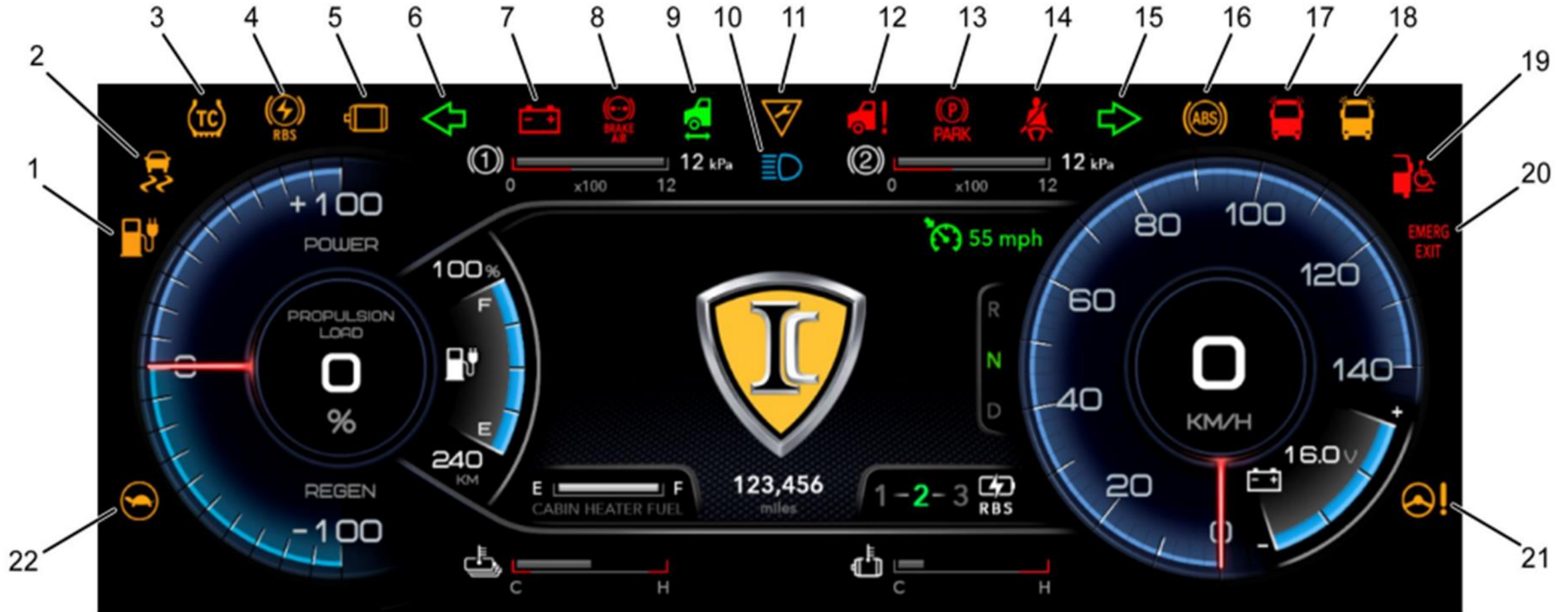


Regen Braking System Caution Lamp- Indicates that the RBS system may have limited capacity due to vehicle conditions and it could feel less intense than normal. Factors: SOC, HV Battery Temp.












Ready to Drive Lamp- Indicates that conditions are met for the vehicle to be driven.





Dash Cluster Cont'd











Dash Cluster Icons




Item	Icon	Description
1		Illuminates YELLOW when the high-voltage battery charge level is 20% or less. Charge the high-voltage batteries as soon as possible.
2		Electronic Stability Control (if equipped) - Illuminates YELLOW with a flashing indicator which represents that the electronic stability control is engaged, while a solid indicator represents a fault in the system.
3		Illuminates YELLOW when the traction control system is turned OFF. It also illuminates momentarily when the traction control system is on and is limiting wheel spin. Blinks on if slippery road conditions may exist. If this happens, adjust your driving accordingly. Refer to the Driving section for more information.
4		Illuminates YELLOW when the Regenerative Braking System (RBS) is not available due to a vehicle malfunction. If the Regenerative Braking System indicator stays illuminated, have the system serviced immediately.

Item	Icon	Description
5		Illuminates YELLOW when a defect has been detected in the vehicle's drive or charging system and will be accompanied by an audible alarm to indicate an alert condition. Limited and adapted driving possible.
6		Flashes GREEN when the left-side turn signal or the hazard lights are turned ON.
7		Illuminates RED when the voltage in the 12V batteries is too low or too high.
8		Brake Failure (English Cluster) Illuminates RED when a failure in the service brake system has occurred. If the Brake Pressure warning indicator illuminates, safely stop the vehicle as soon as possible and seek service immediately.
8		Brake Failure (Metric Cluster) Illuminates RED when a failure in the service brake system has occurred. If the Brake Pressure warning indicator illuminates, safely stop the vehicle as soon as possible and seek service immediately.

Item	Icon	Description
16		Illuminates YELLOW when an antilock brake system malfunction has been detected. If the ABS indicator stays illuminated or continues to flash, have the system serviced immediately.
17		Illuminates when the RED flasher warning lights are activated.
18		Illuminates when the AMBER warning flasher lights are activated.
19		Illuminates YELLOW when the optional lift door is not securely closed when the key switch is in the ON position.

Item	Icon	Description
9		Drive Enable Indicator. Illuminates GREEN when the Vehicle is ready to drive.
10		Illuminates BLUE when the high beam head lamps are turned ON.
11		The AMBER Warning Lamp (AWL) illuminates when the vehicle needs to be serviced at the first available opportunity.
12		Illuminates RED when a critical defect has been detected in the Electric Vehicle System and will be accompanied by an audible alarm to indicate an alert condition to the operator. If the Electric Vehicle System Stop Lamp illuminates, immediately pull the vehicle safely off the roadway, turn on the flashers, set the parking brake, place warning devices, turn the key to the OFF position, and remove the charging plug (if connected). The vehicle should not be restarted prior to being serviced.

Item	Icon	Description
13		Parking Brake (English Cluster). Illuminates RED when the parking brake is applied. If the brake warning indicator does not illuminate, or if it stays on with the parking brake not engaged, seek service immediately.
13		Parking Brake (Metric Cluster). Illuminates RED when the parking brake is applied. If the brake warning indicator does not illuminate, or if it stays on with the parking brake not engaged, seek service immediately.
14		Optional indicator illuminates RED immediately after ignition is turned on to remind operator to fasten seat belt. This applies to only the driver's seat. Optional Seat Belt Reminder with Seat Belt Monitoring causes initial visual indication, then flashes with audible alarm when ignition is on, parking brake is released, and seat belt is not fastened.
15		Flashes GREEN when the right-side turn signal or the hazard lights are turned ON.

Item	Icon	Description
20		Illuminates when the emergency exit is not securely closed when the key switch is in the Accessory (ACC) or ON position.
21		Illuminates YELLOW when the steering system could be faulty. Limited and adapted driving possible.
22		Illuminates YELLOW when the drive power is restricted. Typical causes for this condition include the high-voltage batteries not being sufficiently charged or being at its operating temperature limits, such as in very cold outdoor temperatures.

NOTE: If the MIL is illuminated, it is the vehicle owner's responsibility to have the fault repaired or face fines.

Regenerative Braking



Regen on/Off Switch



Level 1 (33%)
Lowest level of regenerative braking strength felt and **lowest level of energy recovery.**



Level 2 (66%)
Moderate level of regenerative braking strength felt and **midpoint level of energy recovery.**

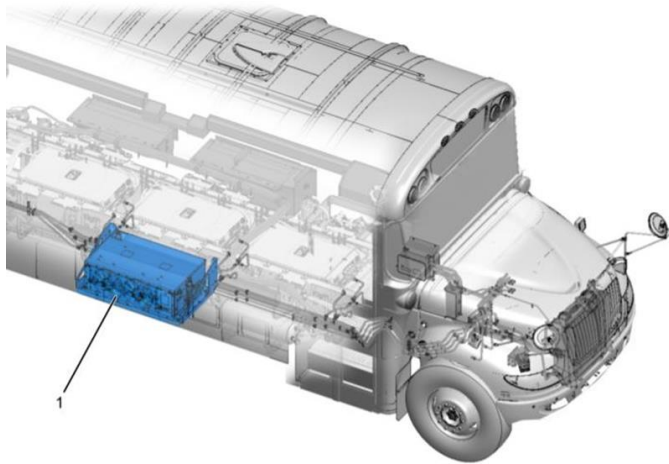


Level 3 (99%)
Highest level of regenerative braking strength felt and **highest level of energy recovery.**



Regenerative braking setpoint is noted on the instrument cluster!

EV Bus Cooling Systems



Battery Thermal Management: Responsible for keeping HV Battery system at target temp.

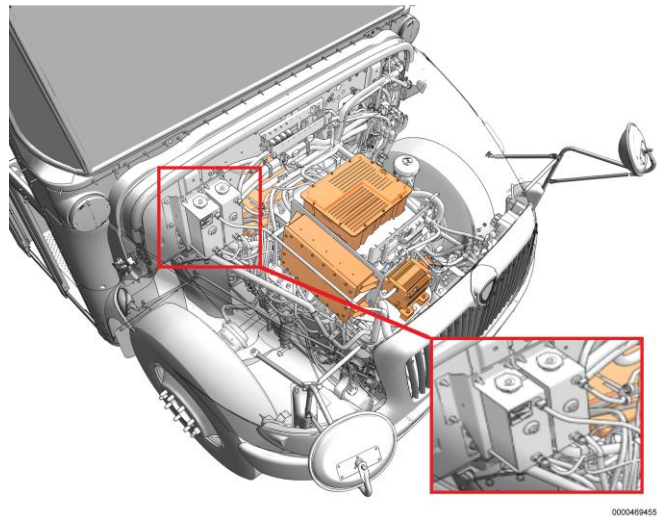
- Fleetrite Red 50/50 coolant

Power Electronics Cooling: Responsible for keeping HV components at target temp.

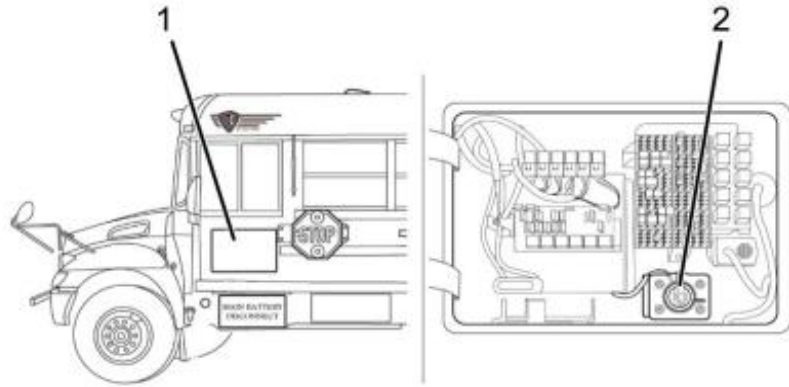
- Fleetrite Red 50/50 coolant

Cabin Heater Coolant System: Responsible for providing cabin heat.

- Fleetrite Red 50/50 coolant

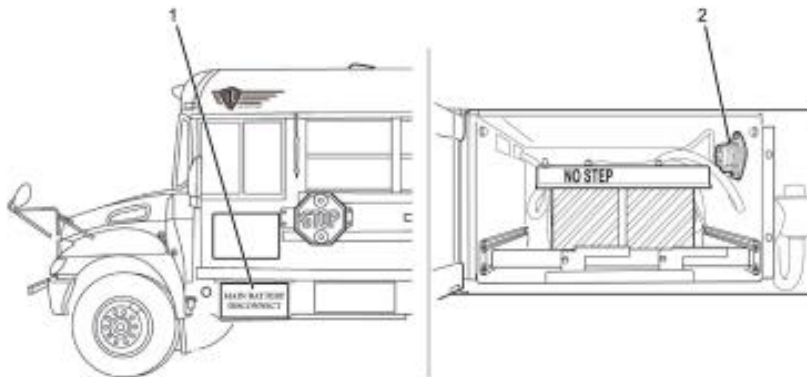


Voltage Disconnects



- 1. Access Panel
- 2. High Voltage Disconnect Switch

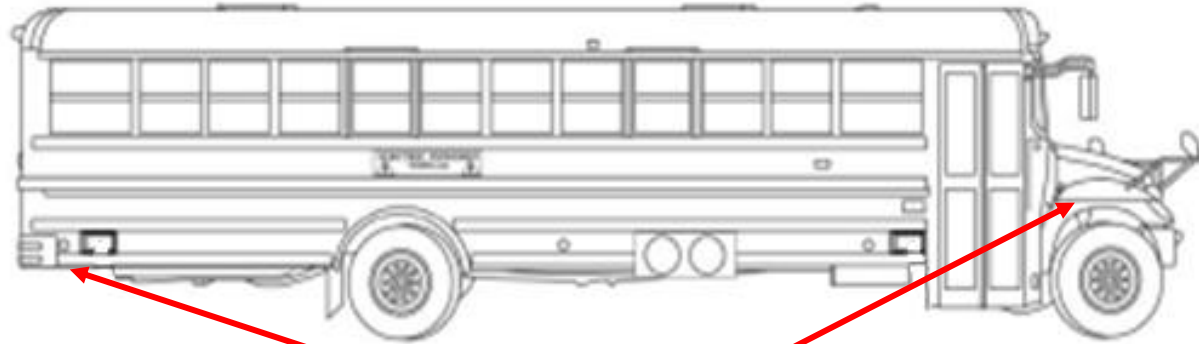
- Drivers do not need to interact with the HV disconnect switch.



- 1. Battery Box Cover
- 2. Low Voltage Switch

- In the event of an accident the vehicle can be disabled by turning off the 12V disconnect switch.

Noise Generators

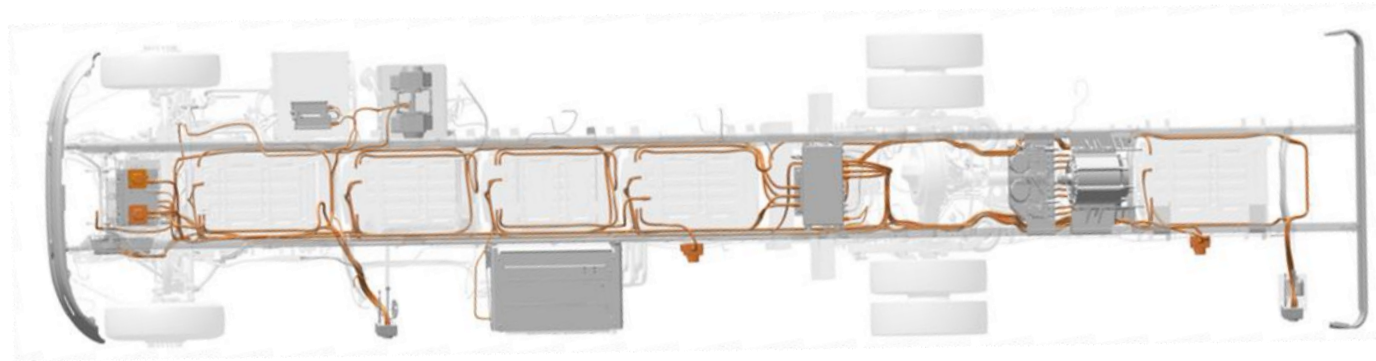


There are two noise generators on the ECE bus. The noise generators should activate when in Drive Ready and increase in volume as the vehicle speed reaches 23mph, and then will deactivate.

HV Protective Design

Navistar electric vehicles are designed with safety in mind and adhere to industry standards.

- Isolation monitoring
- High Voltage Interlock
- Manual safety disconnects
- HV system isolated from the chassis/body



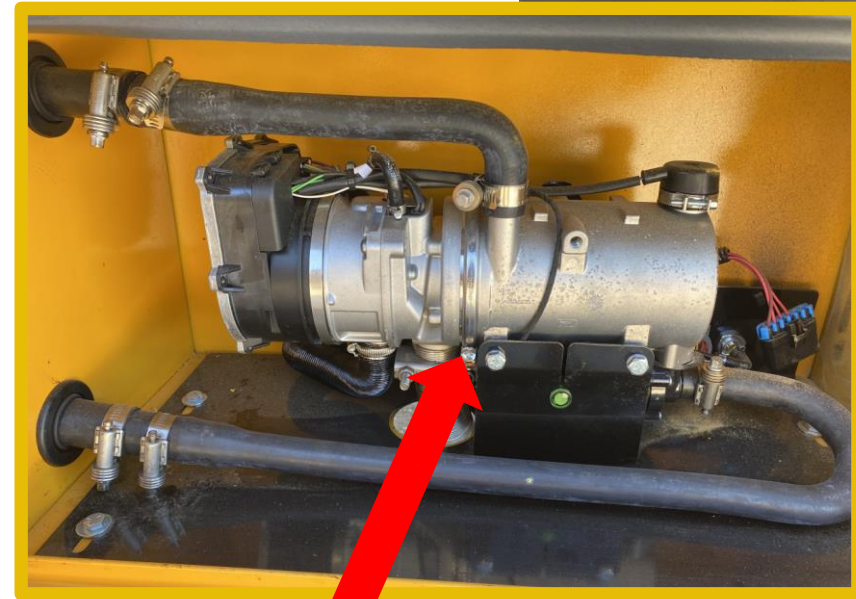
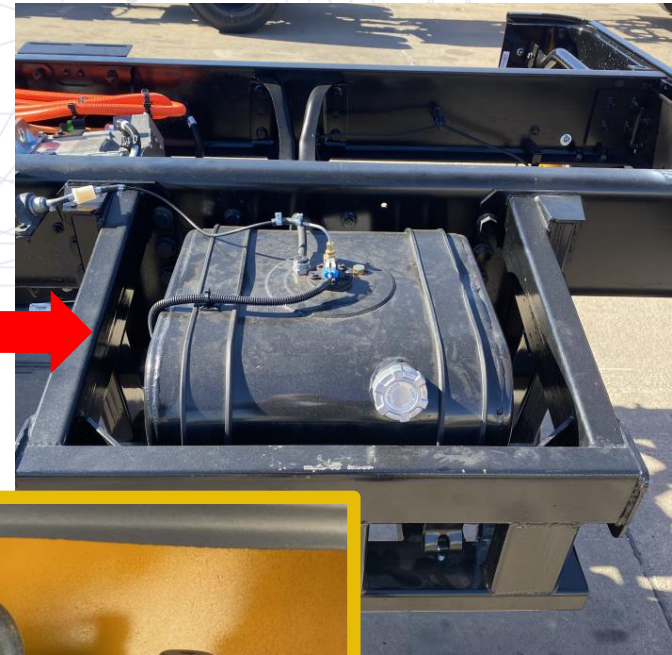
Auxiliary Fuel Fired Heater

In some climates the use of a diesel fuel fired heater can help with reaching desired cabin temperature. The system will include a 15 Gallon diesel tank, located on the driver's side of the bus, and an aux. Webasto heater.

Busses equipped with the aux heater will have the fuel gauge readout in the drivers dash cluster.



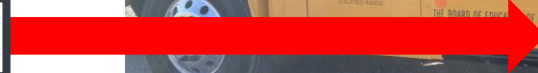
Diesel Tank



Heater

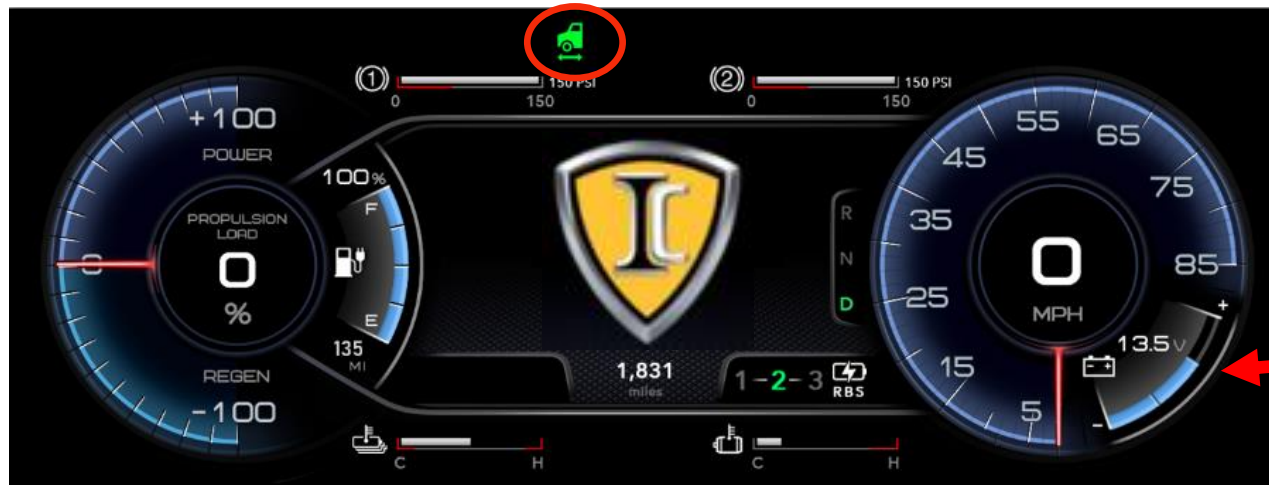
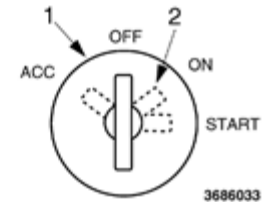


Location



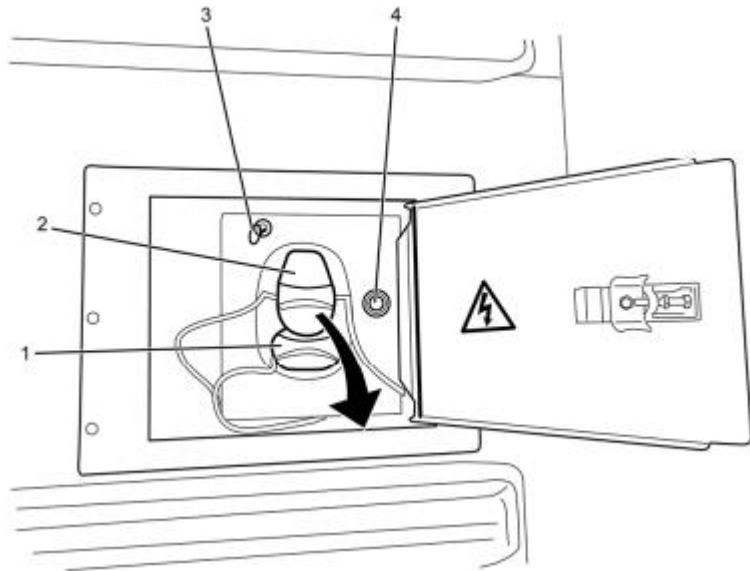
Starting Procedure

- ❖ Pre-requisites: Charger must be disconnected, Park Brake Set and Neutral.
- ❖ Key on.....wait 10 seconds (for modules to perform system checks)
- ❖ At this time, you should notice the 12V status start to climb to ~13.5V
- ❖ Depress Brake Pedal
- ❖ Turn the key to “Start”
- ❖ Instrument Cluster will display “Green” “OK to Drive” symbol



12V Status

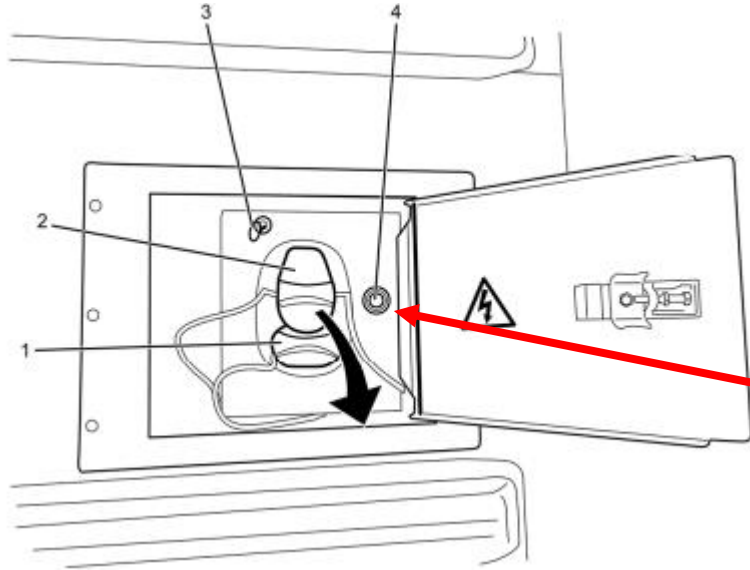
Charging



1. DC charging port lid
2. AC charging port lid
3. Emergency charger plug release cable
4. Charge interface button

- Navistar Electric Vehicles are equipped with the Combo Charging Standard (CCS1) Charge port.
- It accommodates both AC and DC charging at speeds of 19-125 kw/h depending upon charging equipment.
- This style of plug features a locking mechanism to prevent accidental disconnect during a charge session.
- The plug lock can be manually unlocked by using the release cable (item 3) but should only be used in emergency situations.
- The Interface button has only one function; to command the vehicle to STOP charging.

Charging Cont'd



1. DC charging port lid
2. AC charging port lid
3. Emergency charger plug release cable
4. Charge interface button

LED Color	State of Charge
BLUE ●	Charging plug is successfully connected and unlocked OR charging plug is ready to be removed.
AMBER-flashing ⚡	Vehicle not ready to charge. Parking brake must be set and driver mode selector must be in Neutral (N).
AMBER ●	Charging plug is connected but charger not active.
WHITE ●	Charging communication in progress.
GREEN-pulsing ⚡	Low power charging mode is active to sustain High-Voltage (HV) auxiliaries (if equipped).
GREEN-flashing ⚡	Charging in progress.
GREEN ●	Charging is complete.
PURPLE-flashing ⚡	Discharging in progress (if equipped).
PURPLE ●	Discharging complete (if equipped).
RED ●	A vehicle or charger error has been detected. P/N 4333602C1

“Thank You”



NAVISTAR

