



DRIVER INSTRUCTIONS

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Introduction

• The eStar, from Navistar, is a quiet, environmentally-friendly, all electric truck



Objective

Upon completion of this material, you will be able to:

- Use the unique keyless entry system
- Locate various driver controls
- Identify unique instrument cluster displays
- Understand operating limits
- Deal with unique start up and driving requirements

Notice

- This program is limited
- For comprehensive information and important cautions and warnings, please consult the Operator's Manual



I. eSTAR INTRODUCTION



Basic Description

A brief summary of the eStar:

- Electric powered, urban use
- Rear-wheel drive
- Class 2c-3 truck
- 50 mph max speed
- 100 mile range per charge
- 221 ft. lbs of torque
- 12,100 pounds gross weight,
- 4,000 pound payload capacity
- Operation as low as 0°F

Driving Differences

- Very low noise
- Roll-back at an incline

Approaching Pedestrians

- The extreme quiet of the eStar benefits the driver
- Pedestrians will most likely not hear you coming
- Take added precautions such as operating the horn when appropriate



High Voltage Safety Warning

- The eStar contains high voltage
- To avoid the risk of death or serious personal injury to yourself or others, never touch or handle any electrical wiring with orange insulation or any high voltage electrical components anywhere in or on the eStar
- Follow charging procedures exactly as presented in this program and the Operator's Manual

Regeneration

- In normal operation the system will go into regeneration when the accelerator pedal is released
- This provides a secondary braking effect
- The energy is returned to the battery to extend charge life and maximize the vehicle's range



Roll Back in Drive

- Be aware of potential roll-back while stopping on an incline while in drive
- There is no driveline creep to hold the vehicle from rolling back
- Be prepared to use the handbrake while holding or launching from a stop on an incline
- When applying the hand parking brake, 6 clicks indicates a full application while fewer clicks is only a partial application
- More than 6 hand brake clicks indicates the need for adjustment



Changing Gears

- The eStar must be stopped to change gears
- The brake pedal must be pressed
- There is no gear engagement sensation with the eStar
- Gear changes are instantaneous except when shifting out of or into park
- When engaging or disengaging park, you need to allow up to 5 seconds for the parking pawl to engage or release

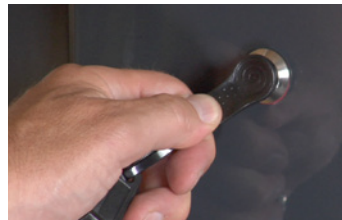


II. iButton KEYLESS ENTRY



iButton Basics

- Just like many keyless systems each iButton is uniquely programmed to work with one vehicle
- Unlike many keyless entry systems, the fob operates without the need to press any switch on the fob itself
- If entry is attempted with the wrong iButton, an audible warning will be generated by the eStar
- Manual override keys are also provided with the eStar to enable cab entry if a suitable iButton is not available, or the iButton cab door reader fails to work
- The iButton is required for start up



Vehicle Entry

- Using the iButton reader, the rear cab entry door will unlock and open slightly
- The door must then be opened by hand the rest of the way
- A mechanical latch engages when the door is opened fully



Closing the Door

- To release the door once it is latched open, raise or lower the lever inside the cab behind the passenger seat
- Slide the door closed



Manual Override

- Insert one of the keys into the lock on the left side of the door opening
- Turn the key counter-clockwise to unlock the door
- Turn the lever clockwise to release the door latch
- With a loss of power, the cab door can be opened from inside by accessing emergency release lever behind the driver's seat



Leaving the Cab

- Press and hold the button behind the driver seat



III. CAB INTERIOR FEATURES & CONTROLS



Left of Driver

- Gear selector
- The start up iButton reader
- Below that, the hand brake control



Emergency Cut Off Switch

- The emergency stop control is activated by pressing it down
- It is only designed to be used in an actual emergency—it will only stand up to limited use
- If it is used routinely to stop the truck, eventually, you will not be able to re-engage the switch

Disengaging The Cut Off Switch

- Vacate the seat for at least 5 seconds to initiate high voltage shut down
- Next, turn the switch clockwise until it pops up to the high voltage power position
- Complete the power up process explained on page 7



Inertia Switch

- This switch is located below the dash on the passenger side
- It is designed to “trip” in a collision and could also trip if the truck is otherwise jarred
- It disconnects the high voltage batteries from the vehicle’s electrical system as a safety precaution

WARNING: If the vehicle has been damaged, the driver should not attempt to reset the switch as a personal safety precaution. The vehicle should be inspected by a qualified technician first.

- If the truck has not sustained damage, the driver can attempt to reset it by pressing down on the top of the switch and releasing it
- If you are not able to reset the inertia switch, have your vehicle towed for authorized service



Emergency Hammer/Fuse Box/Hood Release

- An emergency hammer is located at the inside of the passenger seat (see photo in 3rd column).
- In an emergency that prevents access through the center door, the driver can get out of the cab by breaking one of the side windows with the hammer
- Use caution—these tempered windows will break into small pieces
- The fuse box is inside a panel behind the passenger seat—a metric torx tool is needed
- Consult the Operator’s Manual for specific fuse locations
- The hood release lever is found to the right of the driver, between the steering column and the center console



III. CAB INTERIOR FEATURES & CONTROLS (CONT'D)



iPack Introduced

- The iPack serves as the vehicle information center
- The iPack continuously displays
 - vehicle speed
 - trip miles
 - odometer
 - selected gear
 - the percentage of battery charge
- The battery charge indicator is presented as a colored arc that recedes counterclockwise as the state of charge is reduced
 - Blue represents a charge while red represents a lack of charge
- The photo above indicates slightly less than a full charge



Energy Flow: Consumption

- While driving, there is a continuously changing energy flow display within a ring around the battery charge display
- It shows the momentary power consumption level during acceleration in a red bar that sweeps clockwise from bottom to top



Energy Flow: Regeneration

- The energy flow display also indicates the momentary regeneration level during braking or coasting in a blue bar that sweeps counterclockwise from bottom to top
- Neither a red or a blue indicator will appear while the vehicle is running, but at rest
- Note that the same blue bar shows the level of charge when the eStar is stopped and connected to a high voltage charger



Select and Enter Buttons

- Be aware of the two buttons located on the top of the iPack
 - The left “select” button is used to choose between the screen brightness adjustment and the trip meter reset function
 - Once screen brightness adjustment is selected, pressing the right “enter” button allows the driver to change the brightness of the screen
 - The left button is used to cycle through to the desired screen brightness settings, and then, pressing the right button enters the new setting
 - Holding down the right button for two seconds resets the trip meter proving a “clear” function at any time



III. CAB INTERIOR FEATURES & CONTROLS (CONT'D)



Center Console Switches

- The rocker switches below the iPack control the left and right power windows and the center control operates the hazards
- These switches include a one touch express down function

Horn Control

- The horn is located in the center of the steering wheel



HVAC Controls

- HVAC controls include
 - fresh air/re-circulate
 - air distribution control
 - temperature control
 - the blower fan switch
- An auxiliary 12 volt outlet located on the lower left of the center console



Left-hand Multifunction Switch

- The left hand multi-function switch controls the following functions
 - the turn signal indicator is operated by moving the end of the lever downward for a left turn or upward for a right turn signal
 - the side lights/headlights are turned on by rotating the multi-function switch end towards the dash
 - toggle between low and high beam headlights by pulling the multi-function switch toward you



Right-hand Multifunction Switch

- The right-hand multi-function switch of the eStar controls the windshield wiper functions
 - moving the end of the switch upward controls the windshield wiper speed
 - the lowest position is off, the second is for normal low speed, the third is for medium, and the fourth position is for fast speed
 - pulling the switch towards you controls the wash-wiper function
 - one momentary push downward on the switch provides one sweep of the wipers providing a mist clearing function



IV. eSTAR POWER UP, POWER DOWN, & STANDBY POWER MODE



Power Up

- The power up sequence requires that you must be in the driver seat, you are firmly applying the foot brake, and you have the gear selector in park
- Place the iButton on the reader until the iPack illuminates
- You should be able to hear the power steering pump, brake system vacuum pump, and coolant pump all start to run, which verifies that the high voltage start up procedure is complete



Power Down

- With the eStar stopped, apply the hand parking brake, and then move the gear selector lever into the 'Park' ('P') position
- The high voltage system de-energizes automatically five seconds after the driver leaves the driver's seat
- All non-essential electrical systems will shut down, including the headlights, windshield wipers, mirrors and map lights
- After five minutes, the I-Pack will turn-off and the electrical system will power down.
- Some items such as hazard lights and parking lights will be available for use.



Standby Power Mode

- During the five minute period that begins when the driver leaves the cab, the eStar remains in standby power mode
- This allows the driver to leave the cab momentarily to make a delivery yet take advantage of a faster return to operational power upon returning to the cab to resume the route



Out of Sequence Warnings

- When sequences are attempted out of order, the iPack provides a warning
- For example, when a driver returns to the eStar during the standby mode, if the driver attempts to put the truck in drive without placing the iButton over the reader first, the iPack will display a warning with alarm
- The gear indicators flash with exclamation marks in-between
- Another sequence warning is generated if the driver leaves the seat with the truck still in drive or reverse—if the driver does this a red transmission unlocked warning indicator appears and an alarm sounds
- Note that the seatbelt warning appears too—the seatbelt must be fastened with the truck gear



V. iPACK OPERATIONAL DISPLAYS & SAFETY WARNINGS

Overview of Displays & Safety Warnings

In addition to the speedometer, odometer, trip meter, gear selector, battery charge display, and warning functions already covered, there are a number of operational, out of range, and safety warning displays:

1. ABS Fault (Normal braking should be functional.)

2. Power Steering Fault

(Stop the truck immediately; check the fluid level; have the vehicle serviced if necessary.)

3. Seatbelt Not Fastened

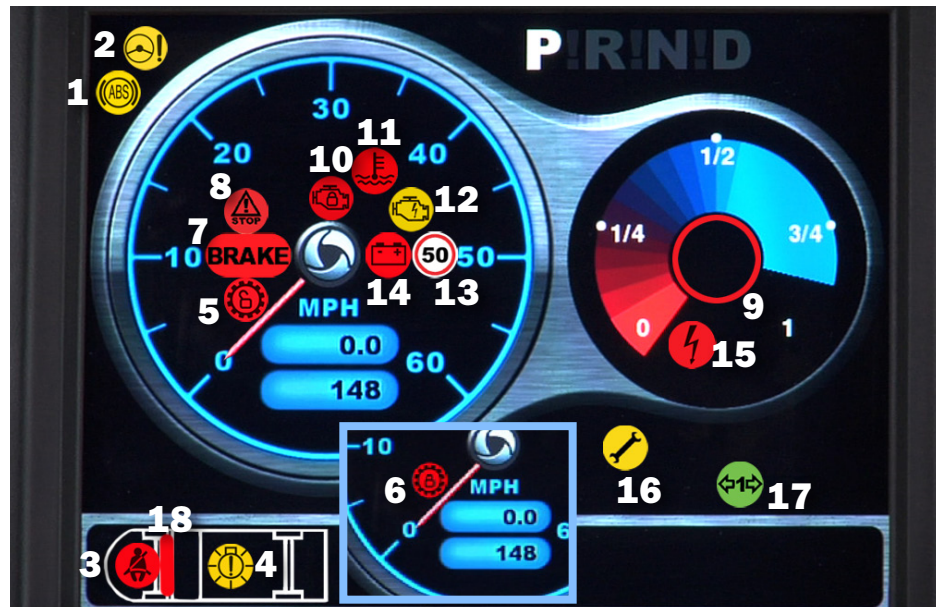
4. Bulb Failure (There is a bulb failure on the truck.)

5. Transmission Unlocked

(A continuous red indicator with alarm occurs when the driver's seat becomes unoccupied with the truck in drive or reverse.)

6. Transmission Locked

(A continuous red light indicates the transmission is locked in the Park "P" position; for example, if the brake pedal is not pressed the truck will not shift from park to drive or reverse.)



7. Brake System Warning

(This warning appears when the hand brake is applied; if the warning appears when the brake is not applied, stop the truck to check the brake fluid. If the fluid level is OK, the fault is caused by a brake pad wear sensor or the EBD system—obtain service.)

8. STOP (Stop the vehicle as soon as it is safe to do so; the truck must be serviced.)

9. Limited Power (A flashing red ring inside the battery level display indicates that internal

drive train or battery conditions are preventing the delivery of full power; normally the condition is self correcting. A continuous red indicator with alarm is generated with a lack of adequate charge—stop and have the truck charged immediately.)

10. Drive Train Interlocked

(The drive train has been immobilized by the drive train control module; check that the emergency switch is released and the inertia switch is not tripped; obtain service if necessary.)

11. Drive Train Temperature

(The drive train temp. is too high; this warning may be accompanied by a temporary reduction in power; service the truck.)

12. Drive Train Malfunction Indicator Light

(This amber light indicates the drive train needs to be serviced.)

13. Overspeed, High Range

This is the default warning that the driver has exceeded 50 mph; if 55 mph is reached, regenerative braking engages.)

14. Low Voltage System

(The 12 volt system is not charging; performance may begin to deteriorate; also, ABS may be affected, but normal braking should not be affected; the truck must be serviced.)

15. High Voltage System

(This is a red light that may be accompanied by a loss of power; the truck must be serviced.)

16. Service Required (This appears when the service interval equals or exceeds 20,000 miles.)

17. Trailer Directional Indicators

18 Cab Door Open



VI. eSTAR CHARGING

Charging Precautions

Since the eStar uses high voltage, a primary concern must be safety, especially during the charging procedure. To avoid the risk of death or serious personal injury to yourself or others never touch or handle any electrical wiring or components anywhere in or on the eStar. In addition:

1. Don't wear jewelry when handling the charging equipment.
2. Visually inspect the cables and cable placement to avoid tripping hazards.
3. Don't leave the power lead on the ground or on the vehicle when disconnected.
4. Return the power lead to storage after use to prevent damage and possible electric shock.
5. Allow the vehicle to power down before charging.
6. Make sure your feet are not in standing water while plugging in the power lead.
7. Check the iPack to ensure that the High Voltage Battery Cassette is charging.



Other Charging Notes

- In order for the high voltage battery cassette to accept a charge, the emergency cut off switch and inertia switch must be in their normal 'run' condition
- The eStar may be charged indoors—the High Voltage battery does not vent so ventilation is not required
- Be aware that the eStar won't start up if the charger is connected
- Be aware the charger itself is built into the eStar—it simply needs the proper power supply



Step-by-Step Procedure

Charge the eStar using a J1772 equivalent power supply, such as a Clipper Creek CS-40. These units are watertight and may be used outdoors. Consult the user's manual before use,

1. Open the lid on the right rear of the eStar.
2. Open the charger door to reveal the charge port. Locate the lower groove at the bottom and the tab at the top. Locate the corresponding points on the charge lead.
3. Push the latch down on the charger lead and insert it into the charge port while aligning the groove and upper tab. Push it in completely then lock it in place by releasing the latch.
4. Green light indicates charging. A red light indicates either

a ground fault or there is a problem on the vehicle. Due to cell balancing the green light will remain lit even after a full charge.

5. To ensure the vehicle is charging check the energy flow ring around the charge display—make sure the blue state of charge indicator is present.
6. Once the battery is charged, the battery charge indicator will arc clockwise past the 1, almost to the bottom. The blue bar will indicate a lower trickle level or could show a higher level if the charger is cell balancing. The charger can be disconnected once there is a full charge.
7. Push the stop button on the front of the charging station and remove the connector. Replace the charger lead into the charger. The vehicle charging is now complete and the vehicle is ready.



V. PRE-TRIP INSPECTION/ USING THE TOW HOOK



Pre-trip Inspection

- Inspect your eStar for safe, reliable and economic operation, before each route
- Complete all of the normal pre-trip inspection procedures as you would with any truck, including a check of the coolant, windshield washer, power steering, and brake fluids

- Check the operation of the service brakes by pumping the brake pedal three times, and then hold it down for five seconds
- The brake pedal should not move (depress) during the five seconds

- Check the operation of the parking (hand) brake by setting the brake and attempting to move the vehicle in drive

Using the Tow Hook

- A threaded towing eye is provided with your eStar—it is stowed under the hood
 - To remove it from its stored position, you simply unthread it counter-clockwise
 - The towing eye fits into a threaded hole in the chassis front cross-member
 - The hole is located behind a removable panel in the front bumper, to the left while facing the license plate
 - Remove the panel and thread in the towing eye until the flange contacts the chassis front cross-member
 - Always return the towing eye to the stored position after use
- Consult the complete instructions in the Operator's Manual before towing the eStar.