How to do a pre-shift inspection on a battery electric underground loader (ST14)

This checklist explains how to do a pre-shift inspection on a battery electric underground loader, using the ST14 battery powered loader as the example. It covers the checks that differ from a diesel loader: battery locks, high voltage and low voltage connections, and battery charge. It also covers the startup and shutdown sequences for the battery system and hydraulics.

Work through the sections in order. Tick each box as you complete the check. The electrical startup steps must be finished before you start the hydraulic system.

Equipment details

Record the following before you begin the inspection:

- [ ] Equipment ID: _____
- [ ] Equipment type: battery electric underground loader
- [ ] Model: ST14 battery powered loader
- [ ] Hour meter: read total hours of use from the graphical user interface (GUI) after startup (the example screen shows 26.9 hours)
- [ ] Location: _____
- [ ] Shift: _____
- [ ] Inspector: _____

The source does not define the equipment ID, location, shift or inspector fields. Fill them in according to your site's records.

Differences from a diesel loader

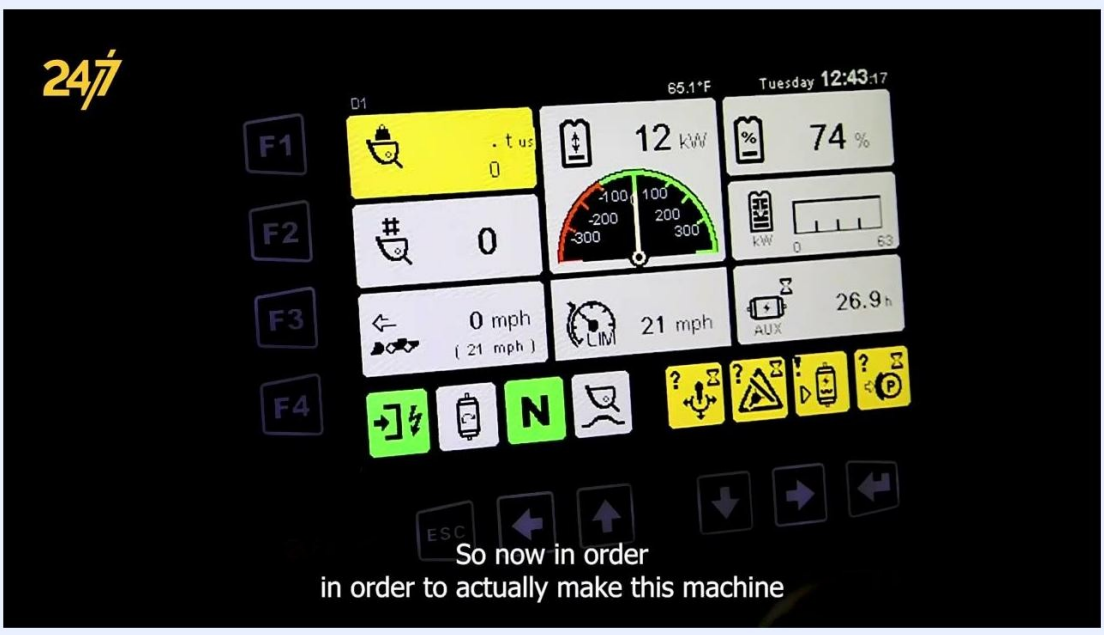
- Check battery locks and electrical connections instead of engine oil.
- Check battery charge instead of fuel level.
- Still check transmission oil and hydraulic oil.

Safety systems

The material for this procedure covers only the cab door and the battery isolation switches in this category. Brakes, steering, lights, alarms, fire

suppression, seat belt, access systems and emergency stops belong in this section, but the source gives no check steps for them. Add them according to your site procedure.

- [ ] The cab door is securely closed. The hydraulic system will not start while the door is open.
- [ ] The machine battery isolation switch and the main battery isolation switch are both in the ON position before you request power from the cab (see the electrical startup steps).



Loader GUI with operational data and system status, which you check before closing out the cab door requirement.

Mechanical checks

Tires or tracks, buckets, blades, pins, guards, leaks and structural damage belong in this section. The source gives no steps for them. Add them according to your site procedure.

Battery locks and fastening

1. Inspect the battery locks and confirm they are in the correct position.
2. Confirm the battery is securely fastened to the loader frame.

- [ ] Battery locks are in the correct position.
- [ ] Battery is securely fastened to the loader frame.

Transmission oil

1. Inspect the transmission oil level.
2. Confirm the level is within the recommended range.

- [ ] Transmission oil level is within the recommended range.

You do not need to check engine oil on the battery powered loader.

Hydraulic checks

Hoses, cylinders, fittings, pressure indicators and contamination signs belong in this section. The source gives no steps for them. Add them according to your site procedure.

Check the hydraulic oil level

1. Inspect the hydraulic oil level.
2. Confirm the level is adequate.

- [ ] Hydraulic oil level is adequate.

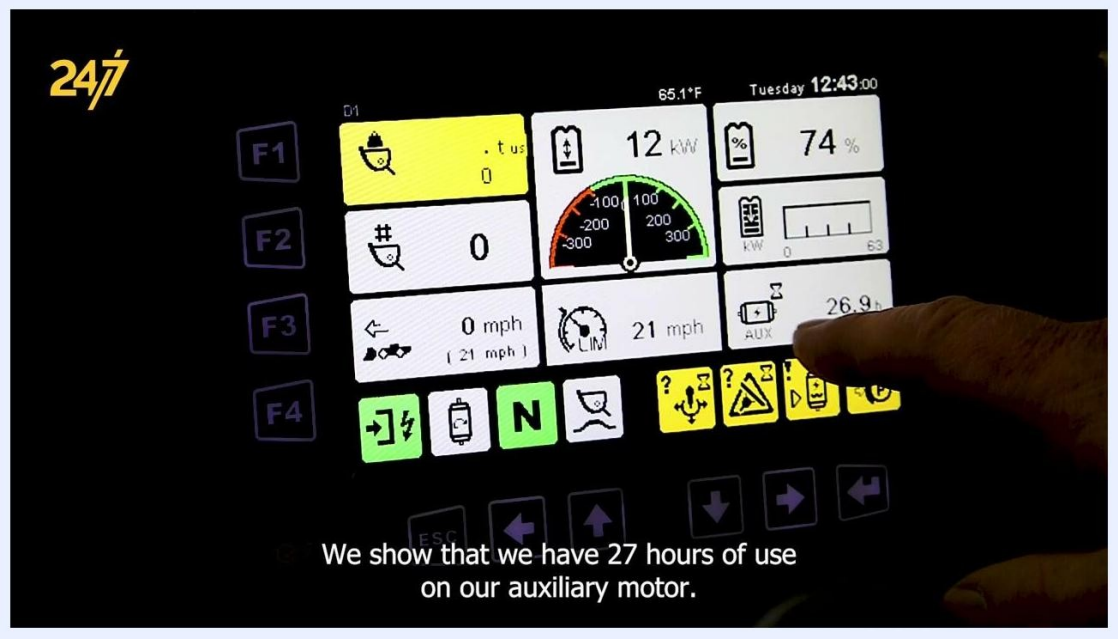
Review the auxiliary motor and system indicators

Complete the electrical startup steps first so that the GUI is powered. Then review the GUI before you start the hydraulic system.

The example screen shows the following values:

- Auxiliary motor hours: 26.9 h
- Power draw: 12 kW
- Battery state of charge (SOC): 74%
- Travel speed: 0 mph, with a limit of 21 mph

The GUI also shows load indications, travel speed, the travel speed limiter, and other system icons and warnings. Confirm all indicators are within normal operating ranges.



Loader GUI showing auxiliary motor hours, power draw, battery state of charge, travel speed and system icons.

- [ ] Auxiliary motor hours, power draw, SOC and travel speed are displayed and normal.
- [ ] No unresolved warnings appear on the GUI.

Start the hydraulic system

1. Confirm the cab door is closed.
2. Locate the start button on the operator console, as indicated on the GUI.

3. Press the start button to start the hydraulic system. This is similar to starting a diesel-powered machine.



Loader GUI with highlighted controls, ready for you to press the hydraulic system start button.

Confirm the system responds

1. Listen for the hydraulic motor starting.

2. Watch the GUI for an increase in power consumption. This confirms the hydraulic system is active.



Loader GUI showing active system status after the start button is pressed, with updated power and SOC readings.

- [ ] Hydraulic motor starts.
- [ ] Power consumption increases on the GUI.

Electrical checks

Inspect the battery connections and charge

1. Inspect both the high voltage and low voltage connections to the battery.
2. Confirm all connections are securely in place and undamaged.

3. Turn on the Rig Control System (RCS) and check the battery charge level indicator. Make sure the charge is sufficient before operation, just as you would check the fuel level on a diesel loader.



Battery compartment showing high voltage warning labels, multiple connectors and battery lock mechanisms.

- [ ] High voltage connections are secure and undamaged.
- [ ] Low voltage connections are secure and undamaged.
- [ ] Battery charge is sufficient for the shift.

Energize the control circuits

1. Go to the non-cab side of the loader and locate the battery isolation switch. This switch sends 24V control power to the RCS and the high voltage battery pack.
2. Turn the battery isolation switch to the ON position.
3. Go to the cab side of the loader.

4. Close the main switch for the high voltage battery to enable power flow to the loader systems.



Main high voltage battery switch and control panel on the cab side of the loader, with switches, warning labels and electrical connectors visible.

- [ ] Battery isolation switch is ON.
- [ ] Main high voltage battery switch is closed.

Confirm both isolation switches are closed

Battery voltage connects to the loader only after a request is made from inside the cab. Before you make that request, confirm that both the machine battery isolation switch and the main battery isolation switch are closed. The loader cannot receive power from the battery pack unless both are ON.



The yellow loader with its battery compartment and control panels, showing the battery isolation switches and their function.



Main battery isolation switch on the loader's battery compartment, with the switch and surrounding control panel clearly visible.

- [ ] Machine battery isolation switch is ON.
- [ ] Main battery isolation switch is ON.

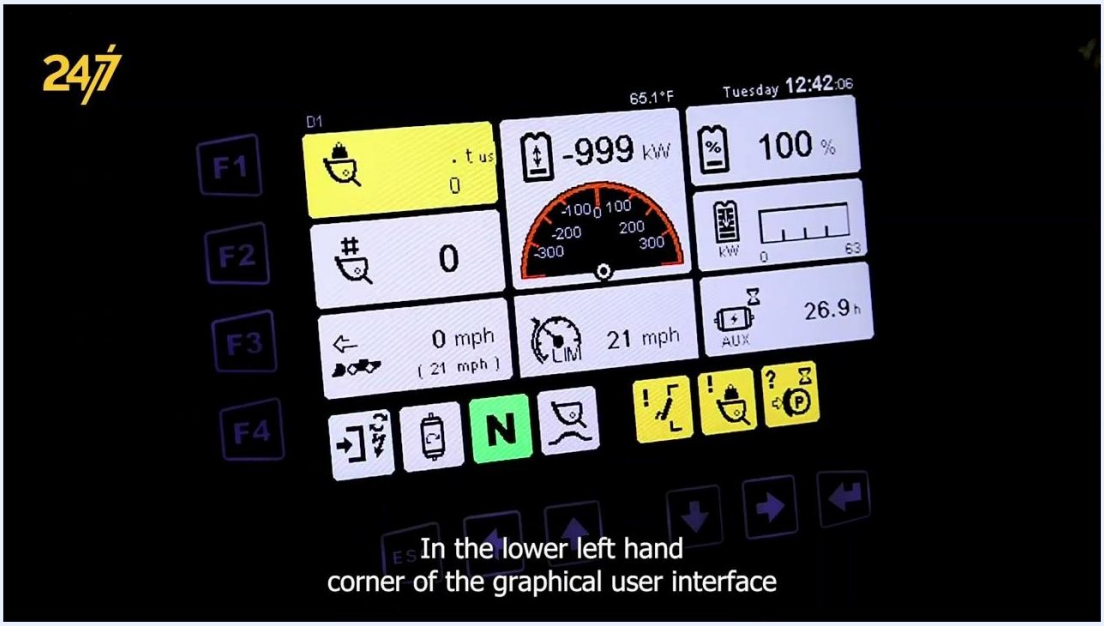
Start the Rig Control System

1. Enter the cab. The RCS sends the signal to the battery to close the high voltage bus and deliver power to the loader.
2. Power on the RCS using the GUI inside the cab.

3. The RCS sends the start command to the battery pack, which connects the high voltage from the battery to the loader.



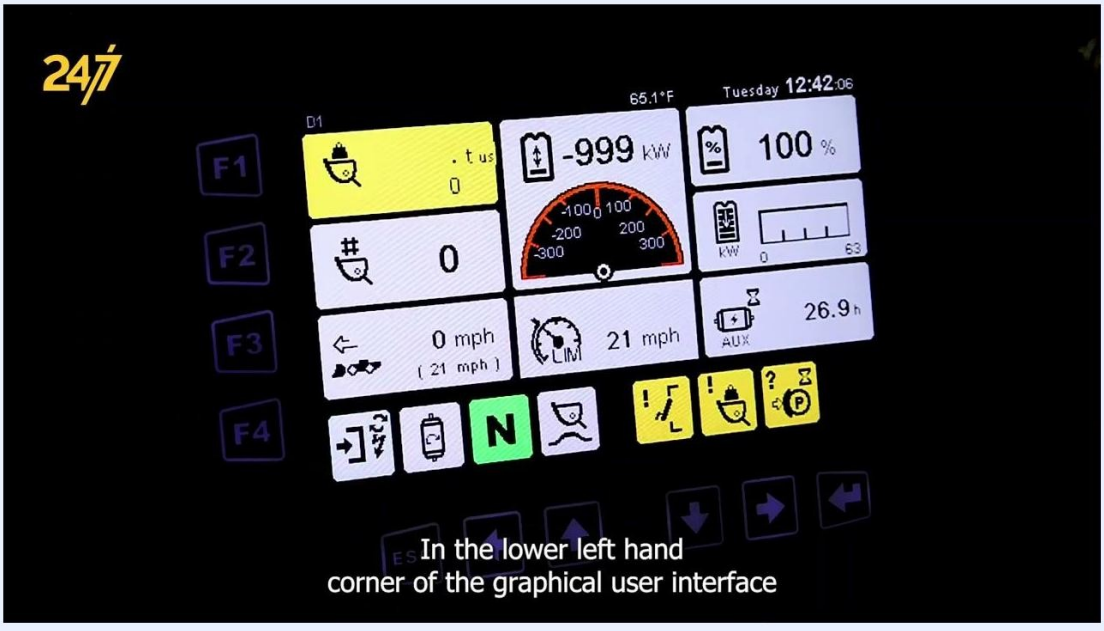
Inside the loader cab, showing the interior, controls and safety signage before the RCS is started.



Epiroc graphical user interface booting up, with the Epiroc logo and function buttons F1 to F4 illuminated.

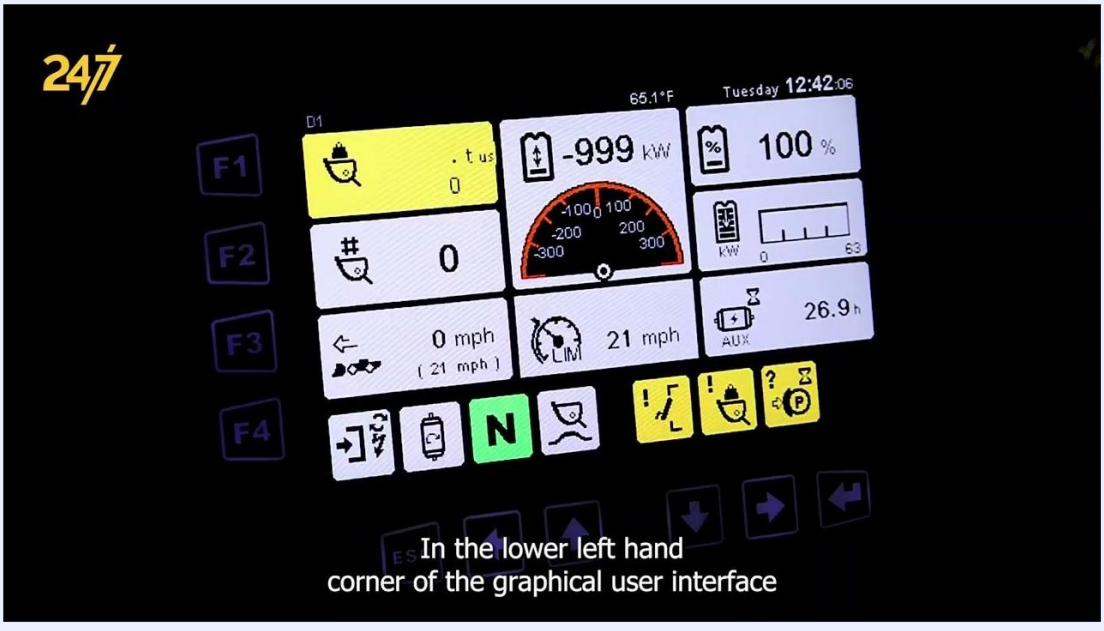
Watch the connection status indicator

1. Find the connection status indicator in the lower left-hand corner of the GUI.
2. Watch it flash from white to green while the system tries to connect.
3. Wait for the indicator to turn solid green.



GUI connection status indicator in the lower left corner, flashing from white to green as the connection is established.

A solid green indicator confirms the high voltage bus is connected from the battery pack to the machine and the loader has power.



GUI with the connection status indicator solid green, confirming the high voltage bus connection, alongside battery state of charge and power readings.

- [ ] Connection status indicator is solid green.

Review system information on the GUI

Check the GUI for the key operational data:

- State of charge (SOC) for the battery: 74% on the example screen
- Available current and power
- Current rate of power consumption
- Total hours of use: 26.9 hours on the screen, which is roughly 27 hours

- Other system indicators and warnings



GUI showing detailed operational information, including battery state of charge at 74%, power at 3 kW, speed, hours of use and system icons.

Radios, cameras and telemetry also belong in this section. The source gives no steps for them. Add them according to your site procedure.

- [ ] SOC, available power and hours of use are reviewed and acceptable.

Shut down the loader

Shut down in this order:

1. Turn off the hydraulic auxiliary motor from the operator console.
2. Power down the RCS using the GUI inside the cab. This disconnects the high voltage bus from the battery to the machine.
3. Exit the cab, go to the battery compartment, and turn off the main battery isolation switch. This fully disconnects the battery pack from the loader.

4. As the final step, isolate the machine batteries on the 24V supply side.



Loader and battery compartment, shown at the start of the shutdown process when the hydraulic auxiliary motor is turned off.



Loader during the shutdown sequence after the high voltage bus is disconnected.



Main battery isolation switch on the loader's battery compartment, reached to turn off the battery pack.

- [ ] Hydraulic auxiliary motor is off.
- [ ] RCS is shut down and the high voltage bus is disconnected.
- [ ] Main battery isolation switch is off.
- [ ] Machine batteries are isolated on the 24V supply side.

Defects

Remove-from-service criteria

Do not energize the loader or start the hydraulic system if any of the following is true:

- [ ] A battery lock is not in the correct position, or the battery is not securely fastened to the loader frame.
- [ ] A high voltage or low voltage connection is loose, out of place or damaged.
- [ ] The battery charge is not sufficient for the shift.
- [ ] The transmission oil or hydraulic oil level is outside the recommended or adequate range.
- [ ] The cab door cannot be closed. The hydraulic system will not start with the door open.
- [ ] The connection status indicator does not turn solid green after the RCS start.

Severity ratings and formal removal-from-service rules for other defects belong to your site's policy. The source does not define them.

Defect log

Record each defect you find.

Defect	Severity	Action	Work order	Equipment status
				☐ In service ☐ Removed from service
				☐ In service ☐ Removed from service
				☐ In service ☐ Removed from service

Signoff

The source does not define signoff roles or fields. Record the operator, supervisor, maintenance release and date and time here according to your site procedure.

Role	Name	Signature	Date and time
Operator			
Supervisor			
Maintenance release			

What's next

For additional information or troubleshooting, contact your local dealer or Epiroc Service Center.



Loader with Epiroc branding and loader details visible, shown with the contact guidance for further assistance.