

# CATERPILLAR SAFETY SERVICES

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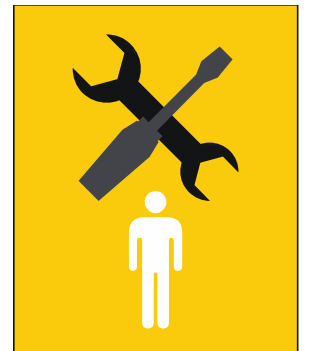


## DRIVER SAFETY SYSTEM (DSS)

Preventative Maintenance

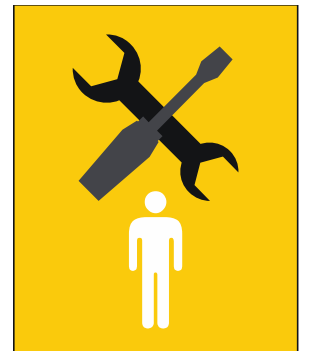
# Introduction

- During this session you will be familiarised with the Driver Safety System (DSS) Preventative Maintenance tasks.



# Overview

- As with any piece of equipment, there is a level of Preventative Maintenance (PM) that must be carried out.
- The PM tasks will ensure that the DSS is kept running at a high level, ultimately protecting operators or drivers from Fatigue and/or Distraction related incidents.
- The PM can be done in a variety of ways:
  - During regular service intervals
  - Monthly
  - Quarterly (minimum recommended PM interval)
  - Site specific interval



# Operator Checks

- **Operator Checks** are recommended in high dust environments and can be done at the beginning of shift.
  - Ensure the **Camera Lens** is clean
    - Wiped in a circular pattern with a soft, dry cloth
    - If the operator finds the Camera Lens can not be cleaned, this should be reported to for Technician assistance
  - Ensure the **IR Illuminators** covers are clean
    - Wiped in a sideways pattern with a soft, dry cloth
    - If the operator finds the IR Illuminators can not be cleaned, this should be reported to for Technician assistance
  - The **Test Button** can be utilised to ensure the DSS is fully operational



# Technician Checks – Power Off

- Technician Checks are recommended to be done during the PM schedule.
  
- For ease, these tasks can be broken down:
  - Technician Checks – **Power Off**
    - Physical checks
  
  - Technician Checks – **Power On**
    - Software checks

# Technician Checks – Power Off

## ▪ DSS ECM

- No visible damage
- Mounted correctly and is secure
- Rubber vibration mounts are effective (DSS-M)
- Air circulation is available
- Connector protector is in place and not damaged
- Any connectors not being used have the protective coverings fitted



# Technician Checks – Power Off

- **DSS Camera**

- No visible damage
- Camera is mounted correctly, is secure and not able to be moved
- Camera bracket is mounted correctly, is secure and not able to move
- Clean Camera lens as required with soft, dry cloth
- Check Camera lens for damage (hairline cracks, excessive scratching etc.)



# Technician Checks – Power Off

- **DSS IR Illuminators**

- No visible damage
- Mounted correctly, is secure and not able to be moved
- Clean cover of IR Illuminator as required with soft, dry cloth



# Technician Checks – Power Off

- **DSS Speaker**

- No visible damage
- Mounted correctly, is secure and not able to be moved



# Technician Checks – Power Off

- **DSS Antennae**

- No visible damage
- Mounted correctly, is secure and not able to be moved



# Technician Checks – Power Off

- **DSS Vibration Motor**

- No visible damage
- Mounted correctly, is secure and not able to be moved
- Check visible cabling
  - Ensure the cable has enough slack so that the seat can be fully adjusted – up, down, back and forwards
- Where required, ensure that the cable is secured to the seat to prevent damage from the cable being pulled



# Technician Checks – Power On

## ■ Test System

- Use the Camera Test Button or Test System button in the Dashboard tab to ensure all peripherals are functioning correctly.



**DSS** Configuration Dashboard Diagnostics Data Uploader Maintenance

**Temperature**

CPU: 43  
Environment: 32

**Peripherals**

- Camera (Green)
- Logging Drive (Green)
- GPS (Green)
- GPS Valid (Red)
- Vehicle Interface (Grey)
- Speaker (Red)
- Vibration Motor (Green)
- Vehicle Data (Grey)

**Versions**

Software:	4.3.0.129228
Carrier Board:	1.03.000
Camera Board:	1.8.3.0
Camera MC Firmware:	1.00.004

**System Testing**

Test System

# Technician Checks – Power On

- IR Illuminators

- Confirm that the IR Illuminators are glowing and orientated to face the operator
  - Shielding with a hand may be necessary to see the faint glow



# Technician Checks – Power On

- Software

- In the Versions section of the Dashboard tab, confirm that the software is current for the site
  - Update software as required

The screenshot shows the DSS Dashboard interface. The top navigation bar includes 'DSS', 'Configuration', 'Dashboard', 'Diagnostics', 'Data Uploader', and 'Maintenance'. The 'Dashboard' tab is active. Below the navigation bar, there are three gauge charts for 'Temperature' (CPU, Environment, Board), all showing 0. The 'Peripherals' section shows status indicators for Camera, Logging Drive, GPS, GPS Valid, Speaker, and Vibration Motor. The 'Versions' section is highlighted, showing the following data:

Component	Version
Software:	4.0.1.89259
Carrier Board:	1.03.000
Camera Board:	1.8.3.0
Camera MC Firmware:	1.00.004

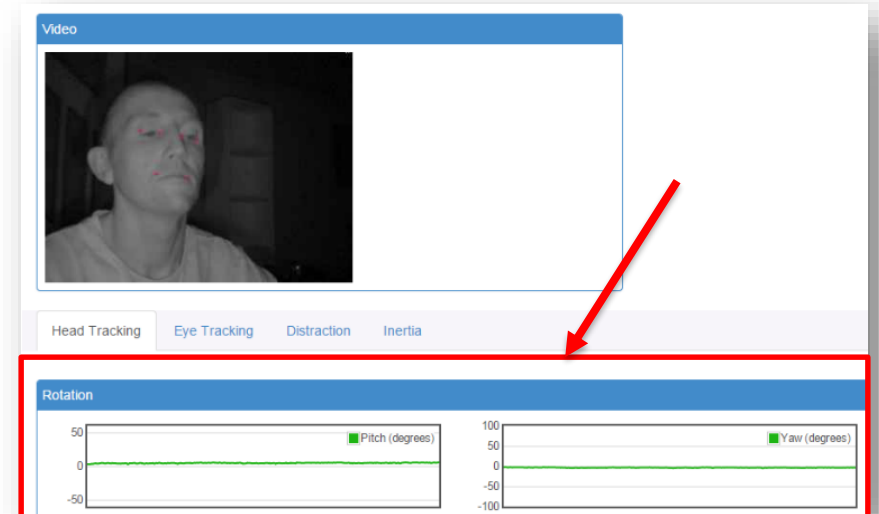
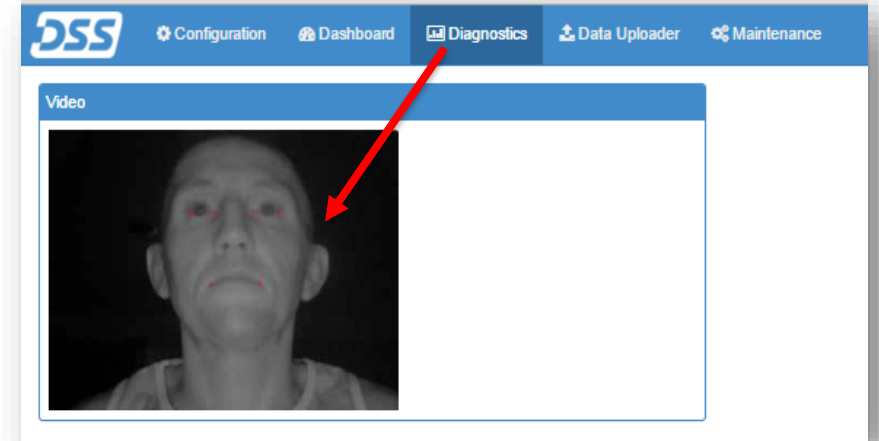
The 'System Testing' section at the bottom contains a 'Test System' button. A red arrow points from the 'Dashboard' tab to the 'Software' version number in the 'Versions' section.

# Technician Checks – Power On

- Camera - Field Of View

- From the Diagnostics tab, confirm that the Camera has:
  - A clear image
  - Alignment is correct

- Confirm that the **Pitch** and **Yaw** graphs are showing the green line settled on **0** degrees when sitting in a normal position facing down the



# PM Checklists

- Checklists have been created to assist sites and dealers in carrying out the PM checks.

- DSS-M Preventative Maintenance Recommendations
- DSS-M Preventative Maintenance Checklist
- DSS-H Preventative Maintenance Recommendations
- DSS-H Preventative Maintenance Checklist

## 1. Vehicle Details

Company:	
Site:	
Vehicle ID:	
Vehicle Make / Model:	
Date / Time:	
Processor Unit Serial Number:	

## 2. Physical Installation Checks

	Check Item	✓	N/A	Verifier Initials	Date
1.	Correct mounting/location of ECM	<input type="checkbox"/>			
2.	Correct mounting/location of Camera -Lens clean and free from damage	<input type="checkbox"/>			
3.	Correct mounting/location of Left IR Illuminator -Cover clean and free from damage	<input type="checkbox"/>			
4.	Correct mounting/location of Right IR Illuminator -Cover clean and free from damage	<input type="checkbox"/>			
5.	Correct mounting/location of Speaker	<input type="checkbox"/>			
6.	Correct mounting/location of GPS Antenna	<input type="checkbox"/>			
7.	Correct mounting/location of Vibration Motor	<input type="checkbox"/>			
8.	Correct connection of the Ethernet Cable	<input type="checkbox"/>			
9.	All cables routed correctly and not damaged	<input type="checkbox"/>			

## 3. System Power On Checks

	Check Item	✓	N/A	Verifier Initials	Date
1.	Vehicle powers up / down correctly with ignition	<input type="checkbox"/>			
2.	System test completed without fault	<input type="checkbox"/>			
3.	DSS Software version correct	<input type="checkbox"/>			
4.	Camera Field of View / Pitch / Yaw are correct	<input type="checkbox"/>			
5.	IR Illuminators are illuminated and aligned correctly	<input type="checkbox"/>			
6.	System is communicating with the database	<input type="checkbox"/>			