

Mission Readiness: Sensor Cleaning Process - VH6B Fleet-Wide

This Mission Readiness (MR) procedure explains how to clean the sensors on the VH6B vehicles.

⚠ CAUTION 	
	<p>Damage to Sensors Ensure that all steps are followed correctly during the procedure. If there is not enough time to complete the entire procedure, STOP, and clean the sensors properly at the next earliest opportunity.</p>

Components, Consumables, and Required Tools

The following components, consumables, and required tools are required to complete this procedure:

Components

Quantity	Component Name	Part Number
N/A		

Consumables

Quantity	Consumable Name	Torque (Nm)	Part Number	KPC	Replace? (Y)	Image
1x	Distilled Water					
As many as necessary	Microfiber Wipe					
As many as necessary	Zeiss Wipe					

Required Tools

Tool Name	Part Number
MR-labeled funnel	
MR-labeled spray bottle	
Mirror	

Tool Name**Part Number**

Stepladder

Cleaning Equipment Preparation

This section explains how to prepare the necessary tools to clean the Sensors.

1. Retrieve the Following:

- a. 3x Microfiber Wipes

**⚠ CAUTION**

Damage to Sensors

Ensure that all Microfiber wipes are clean and inspected for debris that can scratch the camera.

- b. 1x Bottle of Distilled Water



- c. 1x MR-Labeled Spray Bottle



d. 1x MR-Labeled Funnel



2. Prepare the Spray Bottle.

- a. Remove the Spray Bottle Lid.
- b. Insert the Funnel into the Spray Bottle.
- c. Pour the Distilled Water into the Spray Bottle.

Note: Depending on the number of vehicles needing to be cleaned, fill the Spray Bottle appropriately.

Sensor Spraying

This section explains how to spray the Sensors on the vehicle.

1. Adjust the Spray Bottle Setting to Water Stream.
2. Spray the Following Lidar Components Until the Surfaces are Dripping with Distilled Water:
 - a. Long Range Lidar Upper Housing
 - b. Long Range Lidar Window



c. Short Range Lidar Upper Housing

d. Short Range Lidar Window



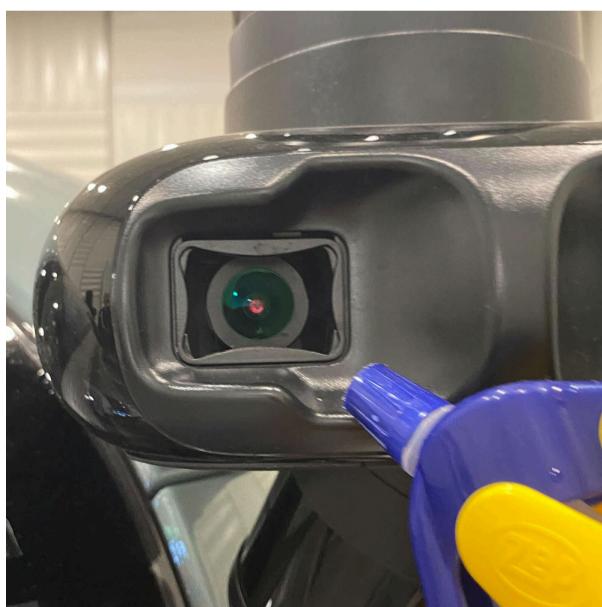
e. Repeat the above steps for all Lidars.

f. Allow the Distilled Water to drip from the Lidars while spraying the Camera and LWIRs.

Important: Complete the next steps while the Lidars are partially drying. Ensure that the water does not completely evaporate before drying.

3. Spray the Following Camera Components Until the Surfaces are Dripping with Distilled Water:

a. Camera



b. LWIR

VH6.B1/B2 LWIR**VH6.B3 LWIR**

c. Repeat the above steps for all Cameras and LWIRs.

d. Allow the Distilled Water to drip from the Cameras and LWIRs while spraying the Mohawk Camera.

Important: Complete the next steps while the Cameras and LWIRs are partially drying. Ensure that the water does not completely evaporate before drying.

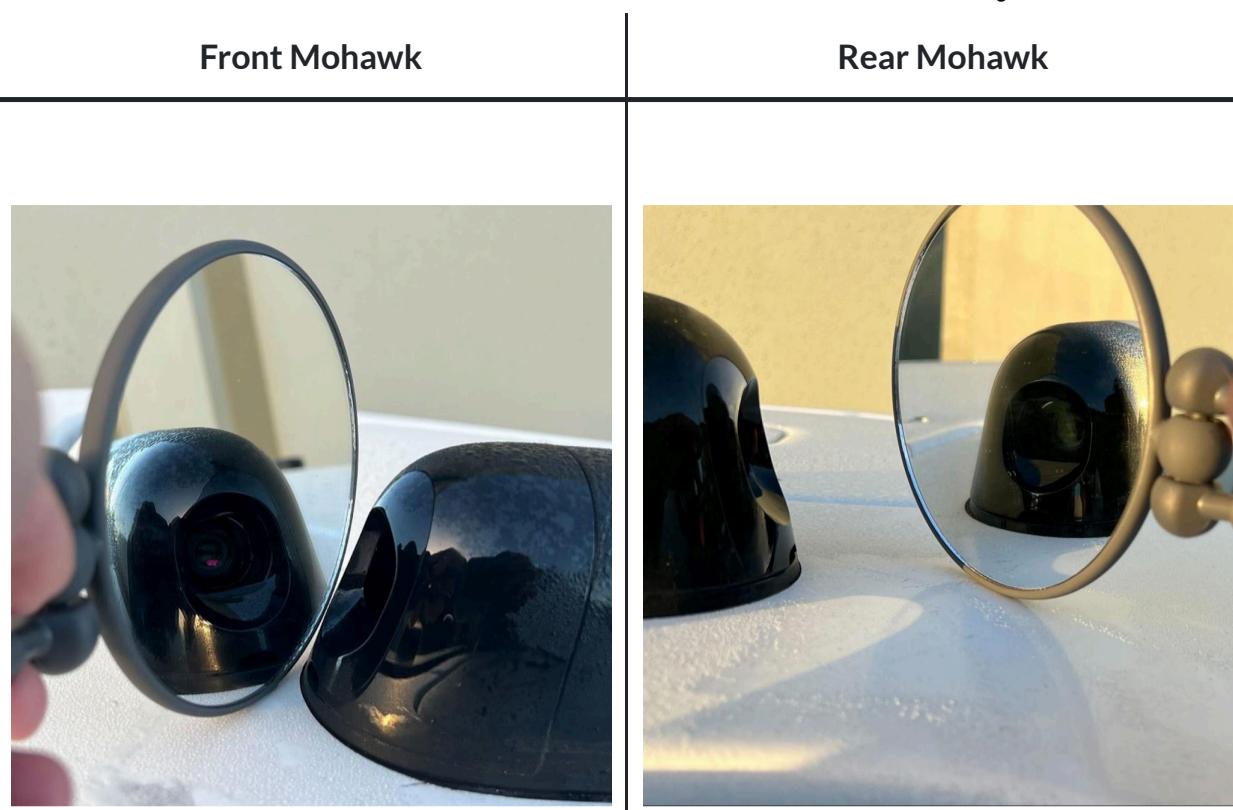
4. Spray the Mohawk Camera.

a. Use a Stepladder to reach the front and rear Mohawk Camera on the vehicle.



b. Inspect the Mohawk Camera with a Mirror for any debris or damage.

Front Mohawk**Rear Mohawk**



c. Spray the Mohawk Camera until the surface is dripping with water.



Sensor Drying

This section explains how to dry the Sensors on the vehicle.

1. Inspect and Dry All Lidars on the Vehicle.

a. If the Lidar upper-housing is soiled after spraying, use a clean Microfiber Wipe to clean the following debris:

- Dirt
- Dust
- Bugs
- Spiderwebs

Important: When cleaning the Lidar, ensure that no liquids and contaminants drip or slide onto the Lidar window.

b. Dry the Lidar Window with a Clean Microfiber Wipe.

- Wipe the Lidar window with a downward swipe to remove contaminants from the window surface.



- Ensure there are no large water droplets present on the Lidar after using the Microfiber Wipe.
- To ensure that water and debris are not transferred onto the sensors, use different dry parts of a Microfiber Wipe when drying.

■ **Important:** Replace the Microfiber Wipe if it becomes damp and soiled.

c. Repeat the above steps for all Lidars.

2. Inspect and Dry the Cameras.

a. To remove all water droplets, gently dry each Camera with a clean Microfiber Wipe.



b. Repeat the above step for all Cameras.

3. Inspect and Dry the LWIRs.

a. To remove all water droplets, gently dry each LWIR with a clean Microfiber Wipe.

b. Repeat the above step for all LWIRs.

VH6.B1/B2 LWIR

VH6.B3 LWIR

VH6.B1/B2 LWIR**VH6.B3 LWIR****4. Inspect and Dry the Mohawk Camera.**

To remove all water droplets, gently dry the Mohawk with a clean Microfiber Wipe.

**Sensor Inspection**

This section explains how to inspect the Sensors on the vehicle for any contaminants post-cleaning.

1. Inspect the Lidars.**a. Ensure the Lidars are free of the following contaminants:**

- Liquid (unless it is actively raining on the vehicle)
- Wipe streaks
- Bugs
- Webs
- Dirt
- Fingerprints

Important: Spot clean with a damp Microfiber Wipe to remove any debris. If the Lidar area is still wet, dry the water using a new Microfiber Wipe.

2. Inspect the Cameras.**a. Ensure the Cameras are free of the following contaminants:**

- Liquid
- Wipe streaks
- Bugs

- Webs
- Dirt
- Fingerprints

Important: Spot clean with a damp Microfiber Wipe to remove any debris. If the Camera area is still wet, dry the water using a new Microfiber Wipe.

3. Inspect the Mohawk.

a. Ensure the Mohawk is free of the following contaminants:

- Liquid
- Wipe streaks
- Bugs
- Webs
- Dirt
- Fingerprints

Important: Spot clean with a Zeiss wipe to remove any debris. If the Mohawk Camera is still wet, dry the water using a new Microfiber Wipe.



Important: Using the #wg-fleet-sensor-cleaning Slack channel, contact an MR Team Lead or Advanced Hardware Engineering (AHE) if the following are present on any of the sensors:

- Contaminants or debris not coming off sensors
- Cracks
- Chips
- Deep scratches

Functional Verification

N/A

Revision History

Version	Description	JIRA	Date
1	Initial release.	BD-1986	February 14, 2024

Version	Description	JIRA	Date
2	Added caution and new steps for how to not damage the sensors during cleaning.	BD-2873	May 7, 2024