

Placement of geofencing devices on on-track plant (OTP) for Virtual Worksite Marker Boards (VWSMBs)

Compliance

This section provides essential guidance on the correct placement of Tended geofencing devices on OTP for the purposes of VWSMBs. These guidelines are designed to improve operational performance, ensure timely hazard alerts, and ensure compatibility with other technologies used on the railway.

- Tended equipment has met all required product acceptance criteria.
- This guidance should be reviewed alongside manufacturer-specific manuals and external requirements, such as GK/GN 0602.
- These guidelines include specific in-cab placement instructions to facilitate the use of VWSMBs.

General placement principles

To ensure optimal performance and safety, adhere to the following positioning requirements:

Longitudinal Center line: Position the device as high and as close to the longitudinal center line (centre of the 4-foot when on rails) of the machine as is feasible.

- The device should be positioned as close to the leading end of the machine as possible to ensure timely alerts relative to hazards.
- Devices may need to be repositioned if the machinery changes its direction of travel (e.g., reversing), especially if there are multiple operating positions.
- Ensure the device is placed in an open and unobstructed position to maximise signal strength and visibility for the operator.

Signal integrity and interference

OTP often contain antennas and high-power electronics that can interact with geofencing equipment.

The following points are suggested to maximise the performance of the equipment:

- Install the device at least 2 metres away from high-power radio transmission or reception equipment, including cellular, Wi-Fi, or Bluetooth systems.
- Keep the device at least 4 metres away from large components such as pantographs, climate control units, or other significant mounted equipment.
- Avoid placing the device near obstructions that cause signal interference or reflection, as these degrade quality.

Safety and installation

- Ensure neither the device nor any of its associated cabling presents a snagging hazard.
- Fasten the full length of any cabling securely.
- Ensure the equipment does not occlude reflectors or lighting required for safe vehicle operation.
- If installation requires working at height, use safe arrangements for fixing equipment.

In-cab placement for VWSMB

When mounting devices inside a cab for VWSMB use, the following additional criteria apply:

- Mount the device so that all alerts and status indications are clearly perceptible and continuously visible to the operator.
- The equipment must not impede the operator's line of sight to:
 - Other in-cab displays or controls.
 - The external environment necessary for safe operation.

| Vehicle type | Recommended placement |
|---------------------------------------|---|
| Excavator | Side windows or non-obstructive areas of the front pillar |
| Mobile Elevating Work Platform (MEWP) | Upper guardrails surrounding the control console |

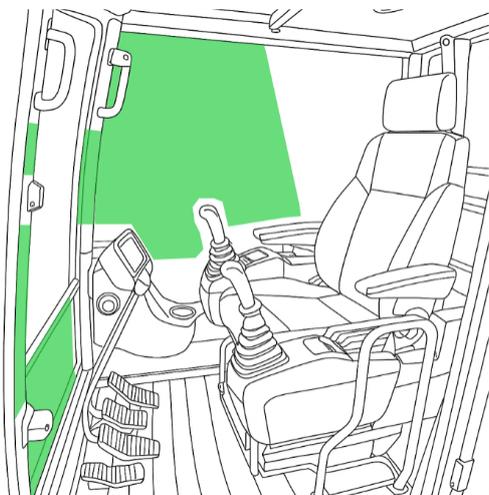
External antenna installation

An external antenna may be used to mount the device away from the GNSS antenna, particularly when the user needs to access the device during operation.

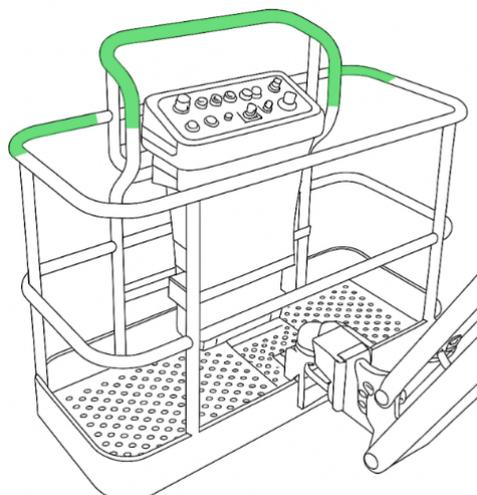
- Mount the external antenna as high and as close to the center line as possible.
- Install the antenna on a metallic surface (such as the machine's body) to serve as a ground plane.
- If mounting on a non-metallic surface, you must install a conductive ground plane or metallic film to achieve optimal performance.

Recommended placement zones

Green highlighted areas indicate recommended mounting locations. Positioning devices in the denoted areas ensure the alert and status indications on the device remain continuously visible to the operator.



Placement on excavator or similar



Placement on a MEWP