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# Tait Orca Vehicle Kit Installation Guide

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## Components of the Tait Orca Vehicle Kit

The box your vehicle kit is supplied in should contain:

- radio holder unit
- power cable loom
- 2 keys
- 4 M5\*20 mm socket head cap screws
- 4 M5 square section spring washers
- 4 M5 nuts
- cable tie and base
- *User's Guide*
- this *Installation Guide*.

If any of the components listed are missing or damaged, contact your Tait dealer.

## Associated Items

Depending on the vehicle kit installation, the items listed may be required but are not supplied with this kit.

- vehicle antenna, cable and BNC connector  
*AND* one of
- TOPA-VK-100 mobile microphone (or T2000 mobile microphone T2000-02) *OR*
- TOPA-VK-300 visor microphone and TOPA-VK-400 remote PTT switch *OR*
- TOPA-VK-500 heavy duty mobile microphone (T2000-10)  
*AND*
- TOPA-VK-200 external speaker (if it is necessary to boost audio volume).

## Mounting Accessories

A combination of the following mounting kits are recommended for securely mounting the vehicle kit.

- TOPA-VK-010 Universal Mount Adaptor
- TOPA-VK-020 Single-height U-bracket
- TOPA-VK-030 Double-height U-bracket
- TOPA-VK-040 Triple-height U-bracket
- TOPA-VK-050 Mounting Plate.

The U-brackets are to be used in pairs, and the available sizes will allow the vehicle kit to be mounted in a suitable position in most situations. The mounting plate can be

used to securely mount the two-piece U-bracket assembly to the vehicle.

If the Tait U-brackets are unsuitable, a cellphone-type installation bracket can be used in conjunction with the Tait-supplied universal mount adaptor.

## Recommended Installation Tools

- M3 and M4 Allen keys
- portable drill
- centre punch and hammer
- BNC crimp tool (e.g. Transradio England Duo crimp 894)
- in-line power meter
- spanner for M5 nuts.

## Planning the Installation

The main requirements for the vehicle are:

- suitable mounting position, which will be established by the installation personnel and the customer;
- 13.8 V nominal supply, direct connection to battery; and
- switched accessory power for ignition sense feature.

To ensure trouble-free, efficient installation, inspect the vehicle and determine how and where:

- the antenna will be mounted;
- the vehicle kit and accessories will be mounted;
- the power cable loom will be run from the vehicle's battery to the vehicle kit.

Recommended antenna positions are shown in Figure 1.

When selecting the mounting locations, check that:

- the chosen locations for the vehicle kit and accessories do not endanger the vehicle occupants;
- a radio can be conveniently operated when seatbelts are worn;
- the radio display is readable;
- the radio with antenna fits into the vehicle kit, particularly when the glove box is opened; and
- the mobile microphone lead is long enough.

**CAUTION:** To prevent interference with vehicle electronic systems such as ignition and anti-skid devices, the vehicle kit, antenna and power cable loom should be mounted away from these units and their associated cables.

## Carrying Out the Installation

### Using the Tait Two-piece U-bracket

Hold the U-bracket assembly and radio holder unit (with radio inserted) to confirm that the desired position can be achieved with the chosen U-bracket assembly.

1. Once you have confirmed the feasibility of the bracket configuration, hold the mounting plate in the chosen position and use the four holes to mark where you will drill holes into the vehicle structure. Ensure that drilling at the selected points will not damage existing wiring.
2. Indent the drilling positions with a centre punch and drill 5.5 mm holes.
3. Place the mounting plate behind the vehicle wall section.
4. Secure the mounting bracket to the mounting plate with:
  - M5\*20 mm socket head cap screws, and
  - M5 square section spring washers.
5. Secure the second mounting bracket to the first using the supplied M5\*8 mm socket head button screws. Ensure the half shears engage, locking the bracket at the desired angle.
6. Secure the radio holder unit to the second mounting bracket at the required angle using the remaining M5\*20 mm socket head cap screws, M5 square section washers and M5 nuts.

### Using the Universal Mount Adaptor

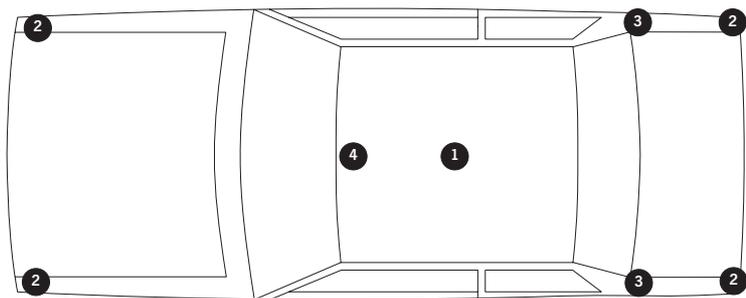
Four M4\*10 mm socket head cap screws and M4 spring washers are supplied to mount the universal mount adaptor to a cellphone-type installation bracket. Use four of the supplied M5\*20 mm socket head cap screws and M5 spring washers to mount the radio holder unit to the universal mount adaptor.

### Connecting the Power Supply

The vehicle kit is designed to operate from a 13.8 V nominal supply. The vehicle kit will tolerate a supply voltage range of 11 V to 16 V.

Figure 1: Recommended antenna positions

1 = most preferred, 4 = least preferred



The recommended installation is to use the ignition sense feature. This will minimise the current used by the vehicle kit when the ignition is switched off by turning off the charger and external speaker. This does not affect the radio's internal speaker or the external microphones.

If powering the vehicle kit from a 24 V to 12 V converter, ensure that the converter maintains output regulation (12 V) with no (0 mA) load current.

1. Disconnect the vehicle's battery unless specifically prohibited from doing so by the customer, vehicle manufacturer, agent or supplier.

**CAUTION:** If you cannot disconnect the vehicle's battery, remove both fuses before beginning the installation and exercise extreme caution throughout the installation.
2. Determine the best route for the battery cable to pass through the firewall to the vehicle battery. Ensure the cable is protected from engine heat, sharp edges and from being pinched or crushed.
3. For optimum performance, connect both positive (red) and negative (black) battery leads directly to the battery terminals.
4. Ensure the fuses are fitted close to the battery so that they are easily accessible.
5. Connect the blue ignition sense lead to a switched accessory power terminal.
6. Plug the other end of the power cable loom into the vehicle kit, at the point shown in Figure 2.

**NOTE:** If ignition sense must be disabled, connect the ignition sense lead to permanent power.

## Connecting Accessories

Check that the chosen locations for accessories do not endanger the vehicle occupants, and that they can be operated when seatbelts are worn.

See Figure 2 for the location of the different connectors. Use the supplied cable tie to ensure that cables remain firmly connected to the radio holder unit.

## Vehicle-mounted Antenna

Fit the antenna, cable and coaxial (BNC) connector following the supplier's instructions.

Tune the antenna using the directional power meter. Reflected power should be less than 0.1 W for 5 W forward power.

## Mobile Microphone

Install the mobile microphone clip in an accessible place, and connect the cord to the vehicle kit.

## External Speaker

The external speaker is recommended in vehicles where excessive noise is a problem. It is only required if the volume from the radio speaker is insufficient.

The bracket can be used to permanently mount the speaker while allowing the speaker to be tilted to a desirable angle.

**NOTE:** If a siren or other loud audio source is nearby, it is recommended that the speaker be located near the operator's ear. With the speaker in close proximity, one volume setting will be appropriate in most situations. For example, the volume would not need to be changed if the siren was on.

## Visor Microphone and Remote PTT Switch

Install the visor microphone and remote PTT switch in an appropriate place and connect the cords to the vehicle kit. Ensure the cords are held securely out of the way of the vehicle operator.

The remote PTT socket can support programmable function buttons. Consult the *Service Manual* for more information.

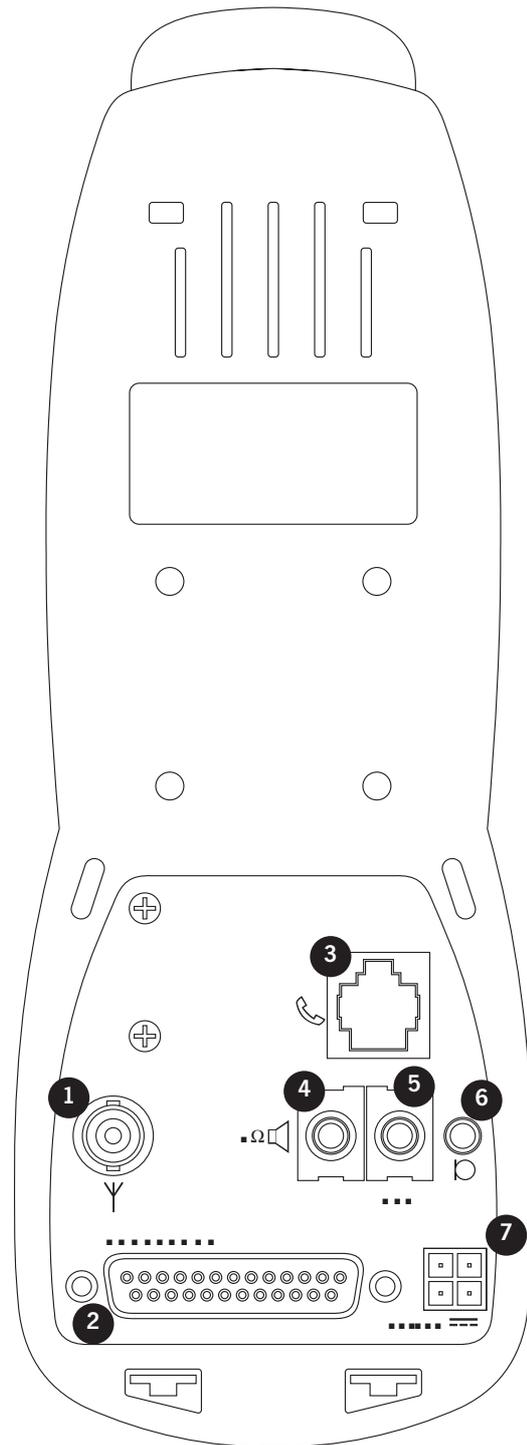
## Accessory/Data Connector

Consult the *Service Manual* for more information regarding this connector.

## Installation Checks

- Make a call to another party. Is the transmission clear?
- From another radio, make a call to the radio while it is mounted in the vehicle kit. Is the transmission clear? If the external speaker has been installed, does it work?
- If ignition sense was connected and a radio is in the vehicle kit, does the charger light go off when the ignition is off?
- Ensure that the operation of the radio is not affected by and does not interfere with the operation of the vehicle.

Figure 2: Rear view of the radio holder unit showing points of connection.



- 1 Antenna BNC connector
- 2 Accessory/data connector
- 3 Mobile microphone socket
- 4 External speaker connector
- 5 Remote PTT connector
- 6 Visor microphone connector
- 7 Power/ignition sense connector

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# Tait Orca Vehicle Kit Installation Report

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Please forward a copy of this *Installation Report* to:

Tait Electronics Ltd  
Mobile Radio Customer Services  
P O Box 1645  
Christchurch, New Zealand  
Fax +64-3-358 0340

Installer \_\_\_\_\_ Report Number \_\_\_\_\_

Name and Number \_\_\_\_\_

## Customer Details

Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Contact name \_\_\_\_\_

Contact telephone number \_\_\_\_\_

Order number \_\_\_\_\_

Appointment date/time \_\_\_\_\_

Vehicle kit model number \_\_\_\_\_

Vehicle kit serial number \_\_\_\_\_

## Accessories Installed

TOPA-VK-100 Mobile Microphone

TOPA-VK-200 External Speaker

TOPA-VK-300 Visor Microphone

TOPA-VK-400 Remote PTT Switch

TOPA-VK-500 Heavy Duty Mobile Microphone

Ignition sense disabled?

Yes  No

VSWR reading \_\_\_\_\_

Test call completed:  Tx  Rx

## Type of Installation

New install  De-install

Re-install  De/re-install

## Vehicle Details

Onsite  Offsite

### Installation

Vehicle registration number \_\_\_\_\_

Make \_\_\_\_\_ Model \_\_\_\_\_

### De-installation

Vehicle registration number \_\_\_\_\_

Make \_\_\_\_\_ Model \_\_\_\_\_

## Equipment Locations

Vehicle kit \_\_\_\_\_

Mobile microphone \_\_\_\_\_

External speaker \_\_\_\_\_

Visor microphone \_\_\_\_\_

Remote PTT switch \_\_\_\_\_

Fuses \_\_\_\_\_

Antenna \_\_\_\_\_

Installer's comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I accept the details as entered above and authorise the installation to proceed.

Signature of customer \_\_\_\_\_ Date \_\_\_\_\_

I hereby accept that the equipment has been installed and works to my complete satisfaction. This acceptance does not remove or alter any of my statutory rights. The basic operation of this vehicle kit has been explained to me.

**NOTE:** Before signing below, I have fully inspected the work carried out on my vehicle.

Signature of customer \_\_\_\_\_

Date \_\_\_\_\_

Print name \_\_\_\_\_

I hereby certify that the equipment above has been installed in accordance with the guidelines laid down by AS/NZS 4346 and that the pre- and post-installation checks have been carried out.

Signature of installer \_\_\_\_\_

Date \_\_\_\_\_

Print name \_\_\_\_\_

