



**T2000*II***

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**T2000 SERIES *II***  
**INSTALLATION**  
**GUIDE**

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## Components of the T2000II Radio Kit

The T2000II Radio kit includes the following parts:

- T2000II Radio Unit
- BNC Antenna Crimp Plug
- Microphone
- Cradle Keys (2)
- Complete Cradle
- Power Cable (5m)
- 4 Ohm Speaker (not for internal speaker models)
- Installation Kit:
  - Two-way hermaphroditic connector (1)
  - Socket receptacle (2)
  - 10A 12V Blade fuse (2)
  - Inline crimp fuse holder (2)
  - Self tapping screw (4)
  - Shakeproof washer (4)
  - Microphone clip kit (1)
  - Control head mounting bracket (T2020II and T2040II only)

## Recommended Installation Tools

- Portable Drill
- Centre Punch
- Drill Bits: 4mm for self-tapping screws, 6mm for nuts and bolts
- “Pozidriv” Screwdrivers
- BNC Crimp Tool (e.g. Transradio England Duo crimp 894)
- In-line Power Meter capable of measuring forward and reflected power at the operating frequency of the radio
- Hammer

# Installation of your Radio

## Installation Planning

To ensure trouble-free, efficient installation, inspect the vehicle and determine how and where the antenna, radio and accessories are to be mounted.

It is possible to remote-mount the T2020II, T2040II and T2050II models as these have alphanumeric keypads, with the control head separate from the radio chassis. This enables the radio to be mounted in a discrete location, e.g. the rear luggage space, with the control head mounted in a convenient position for the vehicle's occupants. See the M2000 service manual, available from your Tait dealer, for details of this modification.

### **Occupant's Safety**

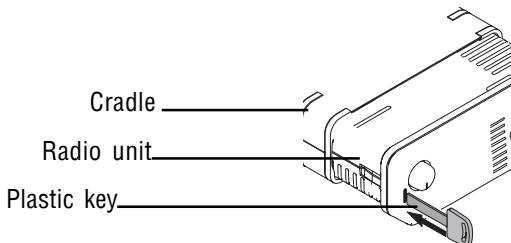
Check that the chosen locations for the radio and accessories do not endanger the vehicle occupants. Overhead mounting is not recommended, especially without an additional safety strap. Check that the radio may be conveniently operated when seat belts are worn.

**Caution:** To prevent interference with vehicle electronic systems (such as ignition and anti-skid devices), the radio, its antenna and wiring should be mounted away from these units and their associated cables.

Allow sufficient airflow around the radio to permit adequate cooling. Once you have found a suitable mounting position for the radio, hold it (fitted in the cradle) in the proposed mounting position and check there is clearance behind it for the heatsink, cables, etc. Check that the position provides a large enough flat surface that the cradle will not be distorted.

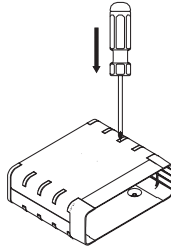
## To Disassemble the Cradle

- 1 Remove the radio from its cradle by sliding the plastic key supplied with the radio fully into the slot on the left front of the radio unit. The radio will now slide out forwards from the cradle, as shown below:



**Figure 1: Cradle and Key**

- 2 Disassemble the cradle by placing it on a firm surface and applying pressure down on one of the middle ribs of the plastic side moulding with a screwdriver. This will release the ribs along this edge from the slots in the metal cover with which they mate. A similar approach will release the other edge of the metal cover which can now be lifted clear (as shown below).



**Figure 2: Cradle Disassembly**

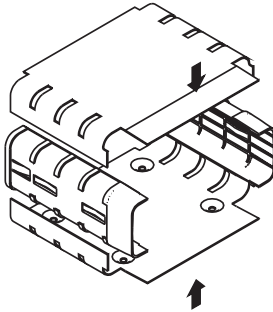
## Mounting

- 1 Hold the drilled half of the metal cradle cover in the position chosen for the radio and use the four cradle cover mounting holes as a template to mark the locations for drilling. Ensure that drilling at the selected points will not damage existing wiring.
- 2 Indent the drilling positions with a centre punch and drill 4mm holes for self-tapping screws, or 6mm holes for nuts and bolts. Reduce the hole size if using self-tapping screws in metal which is less than 1mm thick.
- 3 Drill any additional holes required for cables and fit them with suitable grommets or bushings.
- 4 Secure the metal cradle cover to the mounting points with the M5 self-tapping screws supplied, or with M5 nuts and bolts. Ensure that tightening the screws or bolts does not distort the cradle.

## To Reassemble the Cradle

- 1 Reassemble the cradle by clipping one plastic side moulding to each side of the mounted metal cover (as shown in Figure 3). Take care to locate the ribs on the plastic part in the slots on the shoulders of the metal cover. They will only fit one way round.

- 2 Take the remaining metal cover and fit it over the exposed edges of the side mouldings, again taking care to align the ribs with the slots. Clip it securely home.



**Figure 3: Cradle Reassembly**

## Antenna Installation

**Warning:** To comply with FCC RF exposure limits, the antenna must **not** be mounted at a location such that any person or persons can come closer than the minimum safe distance to the antenna.

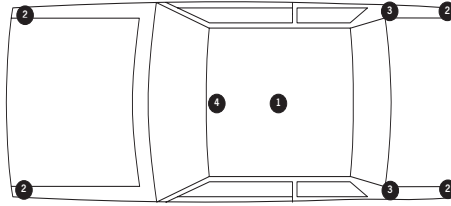
The antenna must be installed at or exceeding the minimum safe distance shown in Table 1.

|                    |    | Antenna Gain (dBi) |    |     |     |     |
|--------------------|----|--------------------|----|-----|-----|-----|
|                    |    | 1                  | 3  | 4.5 | 6   | 9   |
| Transmit Power (W) | 15 | 50                 | 65 | 75  | 90  | 125 |
|                    | 25 | 65                 | 80 | 95  | 115 | 160 |

**Table 1: Calculation for Minimum Safe Antenna Distance (cm)**

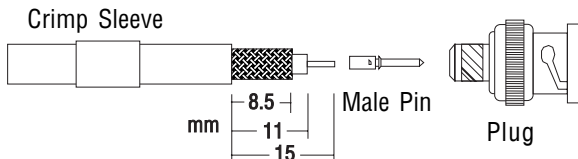
- 1 Use Table 1 to calculate the minimum safe distance for the antenna mounting position.
- 2 If the antenna is of the ground-independent type, it should be mounted on the vehicle according to any guidelines supplied with the antenna.
- 3 If the antenna is dependent on a ground-plane for its operation, it is recommended that it be installed in one of the positions shown in Figure 4.

\*1=most preferred \*4=least preferred



**Figure 4: Recommended Antenna Positions**

- 4 Terminate one end of the coaxial cable at the antenna. Good quality 50 ohm coaxial cables such as RG58 or UR76 are suitable. Run the free end of the coaxial cable to the radio's mounting position and cut it to length allowing 200mm to 300mm excess.
- 5 Terminate the free end of the cable with the BNC crimp plug, as shown in Figure 5:
  - Fit the crimp sleeve over the cable sheath.
  - Trim the outer sheath from the cable to 15mm (see Figure 5 below).
  - Trim the braid to 8.5mm.
  - Trim the dielectric to 11mm. (Take extreme care not to 'nick' the centre conductor with the trimming device.)
  - Fit the male pin onto the centre conductor with the shoulder pressed against the end of the dielectric.
  - Crimp the male pin onto the centre conductor.
  - Press the assembly firmly into the rear of the plug. (Ensure that no braid gets trapped between the dielectric and the inside of the plug.)
  - Slide the crimp sleeve over the braid and press against the shoulder of the plug.
  - Crimp the crimp sleeve onto the braid and plug body.



**Figure 5: Antenna Connector Assembly**



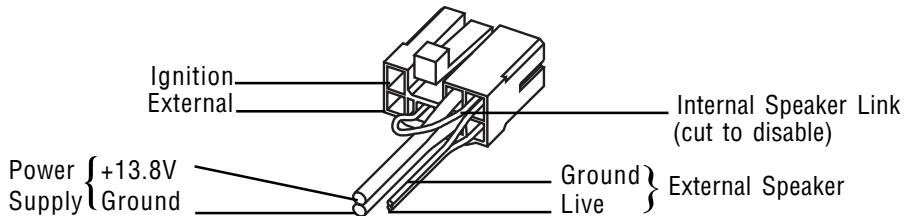
# Wiring

## External Speaker

Some T2000*II* models are fitted with internal speakers. However it is possible to fit an external speaker if so desired. A twin wire must be terminated in the power connector. To disable the internal speaker, cut the link on the power connector as shown overleaf.

T2000*II* models with no internal speaker must have an external speaker fitted. The power connector comes pre-wired with the speaker cable.

Mount the external speaker in a convenient location close to the operator. Run the free end of the speaker wire to the speaker, and connect it to the speaker plug.



**Figure 6: Power Connector Wiring**

## Power Cable

- 1 Disconnect the vehicle's battery unless specifically prohibited from doing so by the customer, vehicle manufacturer, agent or supplier. In this event, exercise extreme caution throughout the installation and fit the fuses only when the installation is complete.

**Caution:** Always disconnect the radio's power lead before connecting a second battery or using power from another vehicle (e.g. when "jump-starting" the vehicle).

- 2 Determine where the battery leads will be routed.
- 3 Cut the negative and the positive wires where the in-line crimp fuse holders will be placed (as close to the battery as practicable).
- 4 Insert each end of the negative wire into one of the in-line crimp fuse holders and crimp them to force the metal contacts onto the wires. Terminate the wire at the battery earth.
- 5 Repeat Step 4 for the positive wire and terminate it at the positive terminal of the battery.

**Caution:** Prevent the power wires chafing on any metal parts.

**Note:** T2000// radios are designed to operate from a nominal 12V negative earth supply, and require currents of up to 8A. (The radios will tolerate a supply voltage range of 10.8V to 16.0V). In vehicles with a 24V electrical system (e.g. many trucks), it is essential to provide a suitably rated 24/12V converter (e.g. Tait T2007) to isolate the radio from the battery and protect it against excessive voltages.

- 6 If the economizer is to be controlled by the ignition line, terminate a wire in the power connector and connect the 'ignition' wire to a +12V supply which is live only when the vehicle's ignition is switched 'On'.

## External Wire (Horn/Hush/Emergency)

The T2000// can be configured to operate the vehicle's horn, radio or a hidden switch:

- 1 Terminate a suitable length of wiring in the "external" port of the power connector.
- 2 Run the free end of the external wire from the power connector to the appropriate vehicle wiring.

The option's interface is usually configured to switch or be switched in the ground state. Confirm the exact operation in the documentation supplied with the interface unit.

## Remote Control Head Option

The control head of some T2000// models may be supplied ready for mounting remotely from the radio chassis. In this case the control head should be located away from direct sunlight, and the cable connecting it to the radio should be routed away from the antenna with care taken to ensure that the cable will not be subject to damage.

If it is necessary to run the cable through a bulkhead or similar obstruction, you may unplug the cable from the control head as follows:

- 1 Unscrew the rear of the control panel and lift off the rear cover, taking care not to lose the two nuts located on each end.
- 2 Disconnect the red connector from the printed circuit board socket to free the cable.
- 3 Route the cable as required, fitting grommets where necessary to prevent chafing of the cable insulation.
- 4 Fit the red connector to the printed circuit board socket – the connector is shaped so that it can be fitted in the correct orientation only.
- 5 Refit the cable to the cable clamp on the rear cover and slip the two nuts into the receptacles at each end of the rear cover.

- 6 Refit the rear cover and replace the cover screws, tightening them carefully. Do not overtighten the screws.

The control head can now be installed as follows:

- 1 Mount the bracket for the control panel on a flat surface using the self-tapping screws supplied.
- 2 Place the control head in the bracket, position it for a good viewing angle, and fit the 2 screws to secure it in place.

## Microphone Clip

The microphone clip must be earthed (to the negative supply line) if hookswitch control of monitoring, scanning or call termination is to operate. Refer to the radio's operating instructions to confirm requirements.

Ensure that the microphone clip is mounted in a position where the microphone PTT key cannot be inadvertently activated or jammed on.

## Installation Checks

- 1 Plug the microphone into the socket on the lower left-hand corner of the radio's front panel. Push the cable grommet into the rectangular aperture in the panel.
- 2 Insert the fuses into the power lead.
- 3 Switch on the radio and confirm that it is operational.
- 4 Connect an in-line power meter between the radio and the antenna and measure the forward and reflected power levels. Less than 1W should be reflected for 25W forward power. If this is not achieved, check the installation – including antenna length.
- 5 Make a call to another party on the radio (as described in the operating instructions).

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*Tait Electronics has made every effort to ensure the accuracy of information in this manual. However, Tait Electronics reserves the right to update the radio and / or this manual without notice.*



**T2000//**

## *Excellence in Radio Communications*

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