

CHAPTER 2
INSTALLATION AND OPERATING INSTRUCTIONS

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CHAPTER 2

INSTALLATION AND OPERATING INSTRUCTIONS

SYSTEM CHECK LIST

1. The following items are supplied with a TR28B2.

Item	Description	Quantity
1	Transceiver TR28B2	1
2	Battery Box	1
3	3,65m (12ft) whip antenna	1
4	Gooseneck	1
5	Carry-bag	1*
6	Capacity wallet	1
7	Hand-microphone-telephone (h.m.t.)	1
8	Charging lead A (with Souriau plug)	1
9	Charging lead C (with Painton plug)	1

*Two carry-bags are provided for certain installations.

The following accessories are optional extras which may be supplied:

Headset, noise excluding, with plug

Morse key and knee strap, with plug

G5RV antenna

Centre - fed dipole antenna

Capacity belt

Field Charger

Ground spike and lead

1 Watt amplifier and speaker unit

SETTING UP

General Inspection

2. Inspect the set as follows:

- (1) Check the desiccator at the bottom of the set: its colour should be blue. If it is pink, dry out the set desiccator with warm air. Replace the desiccator.
- (2) Remove the transceiver cover (four allen screws behind the handles) and check that the correct crystals are fitted. Make a note of the BAND and USB-LSB switch settings for each antenna frequency (antenna frequency = crystal frequency minus 10,7015MHz). Replace cover.
- (3) Set the front panel mode switch to OFF.
- (4) Clip the battery box to the set.

Battery Check

3. Check the battery as follows:

- (1) Connect the antenna to be used, to the set.
- (2) Connect the h.m.t. to either of the front panel AUDIO sockets.

(3) Set the front panel controls as follows:

GAIN control : fully clockwise
USB-LSB switch : USB or LSB and
CHANNEL switch : channel required
BAND switch : LP on appropriate range
NET control : Central
TUNE control : Immaterial
Mode switch : SSB

(4) Operate the PTT switch and check the battery voltage. For a fully charged battery the front panel meter should read half to full-scale deflection. If the meter reading is below the half-scale the battery needs recharging. (See paragraph 8 for charging procedure). Release the PTT switch.

Tuning

4. The set may be tuned by either of two methods. Generally, the most accurate method and the one which must be used if radio silence is imposed is by tuning the receiver. This method is given in paragraph 5. If radio silence is not required the aerial may be tuned by the method given in paragraph 6 which is quite accurate for whips and reasonably accurate for other types of antenna.

5. Tuning by the receiver method

(1) Set the front panel controls as follows:

GAIN control : fully clockwise
USB-LSB switch : USB or LSB as required
CHANNEL switch : channel required
BAND switch : TUNE
NET control : Central
TUNE control : Immaterial
Mode switch : SSB

(2) Adjust the TUNE control for maximum noise on the h.m.t. At this stage noise will be found over a wide range of TUNE control adjustment. Set the TUNE control to about the centre of this range.

(3) Reduce the GAIN control until the noise can just be heard.

(4) Readjust the TUNE control for maximum noise.

(5) Repeat (3) and (4) until a sharply defined maximum is achieved.

The set is then tuned for both transmission and reception.

6. Tuning by the transmitter method.

(1) Set the front panel controls as follows:

GAIN control : fully clockwise
USB-LSB switch : USB or LSB as required
CHANNEL switch : channel required
BAND switch : LP on appropriate range
NET control : Central
TUNE control : Immaterial
Mode switch : BK CW

(2) Operate the PTT switch and adjust the TUNE control for maximum brilliance of the lamp between the BAND switch and TUNE control.

(3) Release the PTT switch.



OPERATION

7. The equipment is now set up to transmit and receive on the channel set by the CHANNEL and USB-LSB switches. If the channel is changed, the tuning procedure must be carried out with the switches set to the new channel. The front panel mode switch should now be set for the transmission and reception mode required:

- (a) OFF - In this position the set is switched off and there is no current drain on the battery.
- (b) REC - This position is for reception only. Operating the p.t.t. switch has no effect on the set, transmission is not possible.
- (c) SSB - The set will receive and transmit SSB signals, upper or lower sideband depending on the position of the USB-LSB switch.
- (d) BK CW - With the key connected to one of the front panel AUDIO sockets transmission and reception of morse is available. The set will transmit while the key is down and receive while the key is up.
- (e) CW - In this position the set is permanently in a transmit condition. However, no transmission will be made until the key is down. Reception is not possible whether the key is up or down.
CAUTION: if the h.m.t. is also connected, the microphone is 'live' and extraneous noise will be broadcast.
- (f) AM - In this position, AM signals can be transmitted and received. It is intended for communications between the TR28 and some other type of set using AM. Generally, AM operation between two TR28's is not recommended and should only be attempted if no other mode is available.

BATTERY CHARGING

Introduction

- 8. To charge the battery using the field charger (Battery Charger type BC28F) see handbook reference RE018.374.
- 9. The battery may be charged without using the field charger by one of two methods: with the Battery Box in situ or with the Battery Box removed from the transceiver. Before charging is attempted it is recommended that the operator first reads Appendix A: Nickel Cadmium Batteries - Technical Notes.
- 10. Whichever method is used first determine the source from which the battery is to be charged. This may be:
 - (a) A 12V vehicle battery.
WARNING: THE VEHICLE ENGINE MUST NOT BE RUNNING WHILE CHARGING FROM THIS SOURCE.
 - (b) An a.c. supply from a unit such as the mains powered Racal MSU28.
This must only be used for charging when the battery box is removed from the transceiver.
 - (c) A regulated d.c. power supply capable of giving an output of 12V at 1,0A.
 - (d) An unregulated 12V d.c. source such as a charger for lead-acid batteries.
WARNING: IF THIS TYPE OF CHARGING SOURCE IS USED, A BALLAST SUCH AS A 12V VEHICLE BATTERY MUST BE CONNECTED BETWEEN THE CHARGING SOURCE AND THE TR28 BATTERY BOX.
- 11. Figure 2.1 shows the general method of connecting the charging source to the TR28.
- 12. Check the state of charge of the battery while the Battery Box is still clipped to the transceiver:
 - (1) Connect the h.m.t. to either of the AUDIO sockets.

- (2) Set the front panel switches as follows:
BAND switch : LP on either range
Mode switch : SSB
Other controls : Immaterial
- (3) Operate the PTT switch and check meter reading:
(i) No deflection indicates a fully discharged battery which will require a 14-hour charge.
(ii) A centre scale reading may indicate a fully charged or near fully charged battery for which a charge of a few hours will be sufficient.
(iii) A reading between zero and half scale shows a partly discharged battery for which a pro rata charging time is required.
- (4) Estimate and make a note of the charging time required.

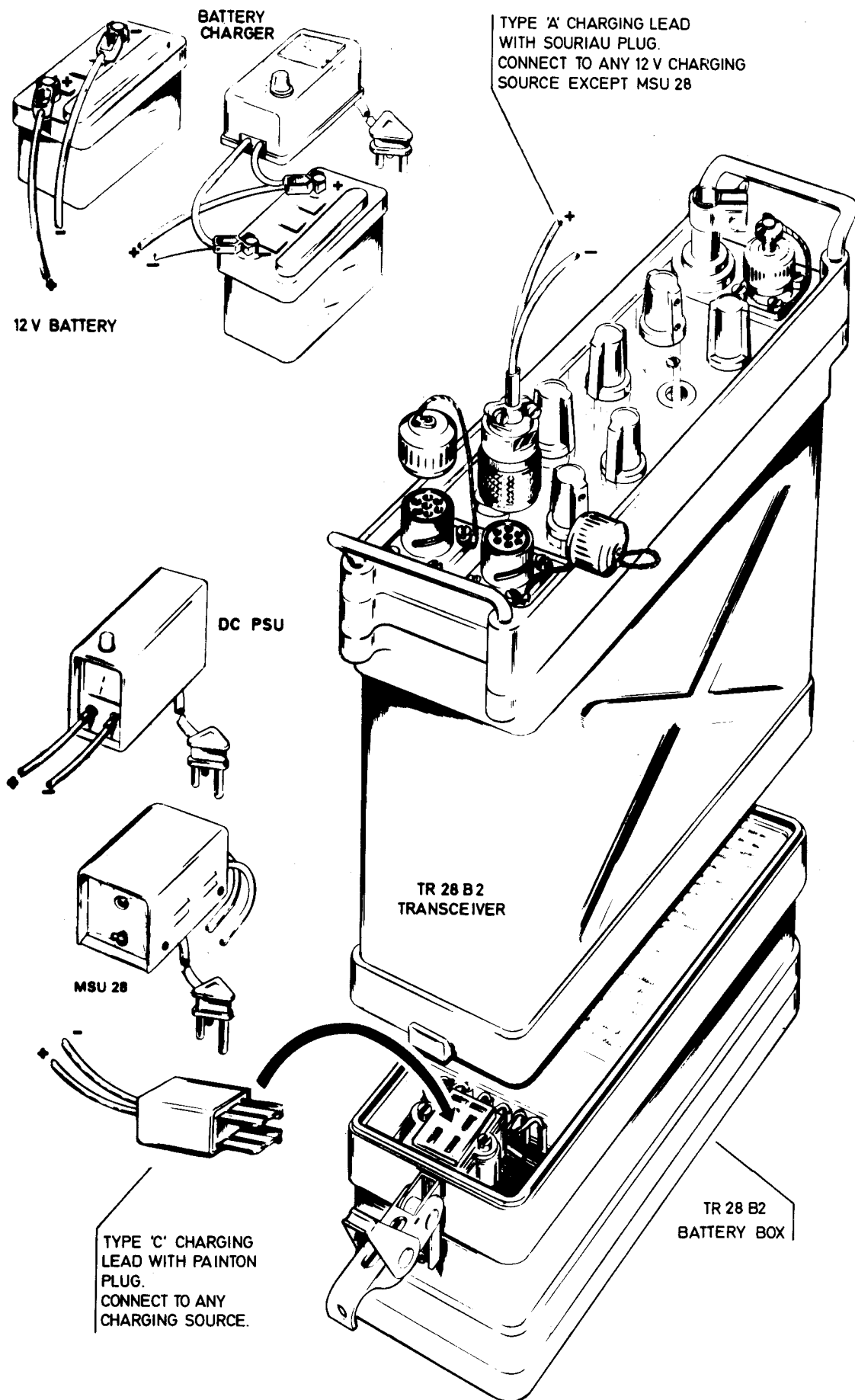
Charging with the Battery Box in Situ

13. To charge the battery:
- (1) Connect charging lead A (with Souriau plug) to either of the front panel AUDIO sockets.
 - (2) Connect the croc. clips on the other end of the charging lead directly to the terminals of the charging source listed under paragraph 10(a) or (c). If the charging source listed in paragraph 10(d) is to be used, connect the croc. clips to the ballast battery, select another pair of leads (40,0076 minimum) and connect between the charging source and the ballast battery. Ensure that polarity is observed: red charging lead to charging source or ballast battery positive.
 - (3) Set the MODE switch to OFF and listen for a 7kHz whine from the transceiver. This indicates that the battery is being charged.
 - (4) Leave the battery on charge for the period estimated above and then recheck and make a note of the state of charge as in paragraph 12 above.
 - (5) Return to the charge condition for one hour and then recheck the state of charge. If this is the same as noted in (4) the battery is fully charged. If not, return to the charge condition and repeat until there is no noticeable difference in the readings taken over a one hour period.
- NOTE: Whatever the original state of charge, the battery may be left on charge for a period of up to 24 hours without damage.
14. If required, the h.m.t. may be plugged into the vacant AUDIO socket and the mode switch set to REC while charging. A listening watch may then be kept although a fair amount of background noise can be expected.

Charging with the Battery Box Removed

15. With the Battery Box removed from the transceiver the charging procedure is similar, the only differences being:
- (a) Charging lead C (with a Painton plug) is connected to the socket on the Battery Box, the other end of the charging lead being connected to the charging source or ballast battery.
 - (b) The two lamps, one on either side of the socket, light to indicate that the battery is being charged.
 - (c) The mains powered a.c. unit may be used.





TR 28 B2 Charging Connections

