



RACAL

TH 6379

PRM 4720A VHF Transmitter/Receiver

TECHNICAL SPECIFICATION

GENERAL

Frequency Range : 30 - 88MHz
Channels : 10 programmable from 2321
Channel Spacing : 25kHz
Frequency Stability: ± 10 ppm
Operating Mode : F3E (narrowband FM) simplex or two
frequency simplex
F1E 16Kbit/s data
Duty Cycle : Continuous (thermal protection fitted)
Supply : 10V nominal
MA4721A rechargeable battery pack
MA4516B primary battery pack
Antennas : Wideband : 1.0m whip
Narrowband : 0.4m helical
Dimensions : Length 225mm with MA4721A battery
Width 75mm
Depth 26mm

TRANSMITTER

Power (into 50 Ω) : 1W +3 -1dB (9.6V supply)
Harmonics : Below - 40dB relative to carrier
Peak Deviation : 5kHz nominal
Pilot Tone : 148.8Hz @ 2.5kHz deviation nominal
AF Response
Narrowband (Voice): 400Hz to 2.5kHz within 6dB
Wideband (Data): 30Hz to 10kHz within 6dB
Current Consumption: 430mA typical

RECEIVER

Sensitivity : Better than 10dB SINAD for 0.6 μ V emf
with 5kHz deviation @ 1kHz

: 12mW into 300 Ω typical
400mW into 8 Ω typical

AF Response

Narrowband (Voice): 400Hz to 2.5kHz within 6dB
Wideband (Data): 30Hz to 8kHz within 6dB

Image Rejection : 60dB typical

IF Rejection : Better than 60dB

Squelch : Carrier to noise

Current Consumption: 33mA receive typical
6mA standby typical

ENVIRONMENTAL

Temperature : Operating -20 $^{\circ}$ C to +55 $^{\circ}$ C
: Storage -40 $^{\circ}$ C to +85 $^{\circ}$ C

Immersion/Humidity: Transceiver case and batteries fully
sealed. Designed generally to MIL810C.

CONTROLS AND CONNECTORS

The function of the controls and connectors are as follows:-

- ① Channel Switch. Used to select channel 0 to 9 (also used during programming).
- ② Volume Control. Selects ON/OFF, an audio level with whisper microphone sensitivity, and three further audio levels with normal microphone sensitivity. Other functions are Squelch Override, Programme transmit/receive frequency, Programme receive frequency and Backlight ON.
- ③ Antenna connector (screw type).
- ④ Audio/Ancillary socket 7 pin. For connection of headset, handset or other audio ancillary and programming devices.
- ⑤ Display. Indicates channel no., frequency in use, programme mode and low battery condition.

PREPARATION FOR USE

- (1) Clip battery to base of transceiver by offering up to unit at right angles and rotating through 90° . If required place transceiver and battery in pouch, so that display is visible. Fix retaining tab over the top of the unit.
- (2) Screw in suitable antenna. When using a helical antenna, note that it has a restricted operating frequency range.
- (3) Connect handset or headset.

- (4) If the pouch is used the unit is normally worn on the left hand side of the chest so that the display is easily visible.

OPERATION

The unit is operated as follows

- (1) Set the Volume Control to one of the four volume positions (the first one is for whisper use, the remainder for normal use). The transceiver is now in receive mode and the receive frequency is shown on the display.
- (2) Set the channel switch to the required channel. The channel number is shown on the left of the display.
- (3) Press the PTT pressel to transmit. The transmit frequency is now shown on the display.

SITING FOR OPERATION

The PRM4720A operates at low power and high frequencies consequently the location of equipment greatly effects its operating range. Line-of-sight communication normally can be expected, therefore location on a hill top or a tall building will increase the operating range.

Valleys, densely wooded areas and sites near sources of electrical interference should be avoided.

EFFECTIVE RANGE

The effective range between transceivers using 1 m whips is approximately as follows:-

Over open-rolling terrain	6 km
In wooded country	4 km
In built-up areas	2 km
Over open water	25 km

Helical antennas have considerably less range than the 1 m whip, with best range around designated operating frequency (marked on antenna).

AFTER USE

- (1) Set Volume control to OFF
- (2) Remove and stow antenna, and remove handset or headset.

BATTERY

The MA4721A is a re-chargeable battery using NiCd cells. Batteries are protected by an internal thermistor. Protection is automatic, and no external fuse is provided. The MA4516B is a dry-cell battery pack, with replaceable cells.

BATTERY CHARGING

MA4721A NiCd batteries should only be charged using an MA4517A or MA4518A Charger (see separate Operators Card).

CHANNEL FREQUENCY PROGRAMMING

The operating frequency range is 30.000 MHz - 88.000 MHz.

Channel frequency programming can be carried out manually, or by using an MA4083B Fill Gun. Each channel can be programmed for transmission and reception on the same frequency, or on

separate frequencies. If separate frequencies are used there is no limit to frequency separation used other than that imposed by the antenna.

Manual Programming

- (1) Connect handset or headset. To programme both RX and TX frequencies the same set volume control to PTR. Select first channel to be programmed. Display reads (say) OP 30025
O = Ch 0, P = Prog mode, 30025 = Existing channel.

NOTE: The channel switch must be moved before each entry. If the channel switch is not moved the entry will not be accepted.

- (2) Press PTT pressel to clear frequency display.
- (3) Using channel switch select tens of MHz, as seen in display. Press PTT pressel to enter into memory. Repeat for MHz, KHz x 100, and 25 kHz increments, using pressel to make each entry.
- (4) Programme other channels.
- (5) For two frequency programming select PR (receive only) and select channel to be programmed (having first programmed TX frequency as above).
- (6) Repeat steps (2) to (4).
- (7) Select a volume control position to exit from the programming mode.

Fill Gun Programming

Programming channel frequencies using an MA4083B Fill Gun is carried out as follows:

- (1) Set the Volume control to a normal operating position (not to PR or PTR).
- (2) Connect the Fill Gun to the Audio/Ancillary socket. The NR LED on the Fill Gun illuminates during channel frequency loading.
- (3) When the NR LED extinguishes and the ON LED illuminates, loading is complete. Any other operation of the LEDs indicates a fault and programming should be re-checked before use (see MA4083B handbook).
Disconnect the Fill Gun.

USE OF BACKLIGHT

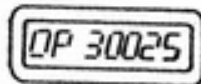
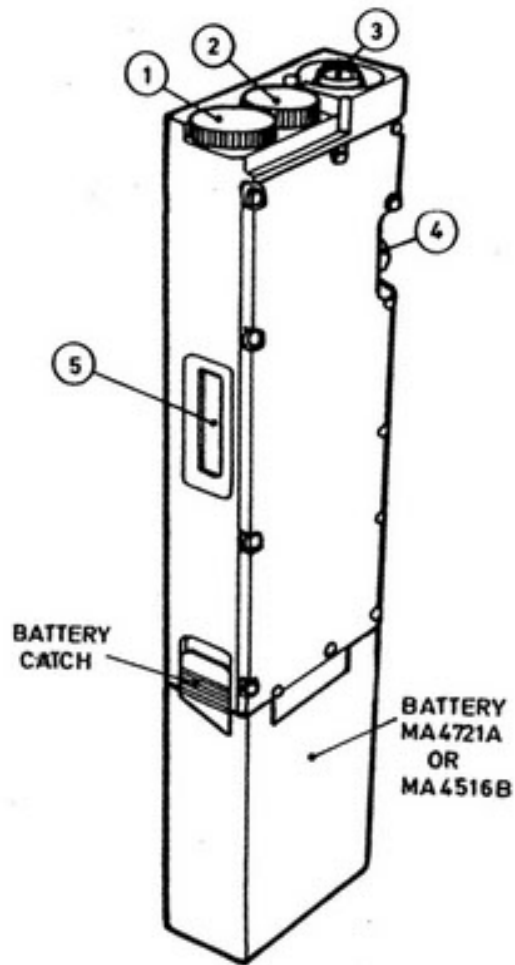
To turn the back light on, select E on the volume control. The display back light will remain on for approximately five seconds after switching to any other position apart from OFF. Once the back light is illuminated, and either of the the programme modes selected, as long as the channel switch is moved at least once every five seconds, the back light will remain illuminated.

FUNCTIONAL CHECKS

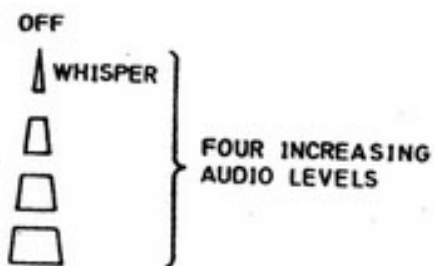
Functional checks are as follows:


- (1) If noise is heard in the receiver when * is selected the receiver is operational.

- (2) Sidetone is heard during transmission to indicate correct operation (except where a loudspeaker microphone is used).
- (3) A discharged battery is indicated by a row of dots in the display. The transceiver can still be used (with reduced effective range), but the battery should be charged or replaced as soon as possible.



DETAIL OF DISPLAY (5)



- * SQUELCH OVERRIDE
- PR PROGRAMME RECEIVE FREQUENCY
- PTR PROGRAMME TRANSMIT AND RECEIVE FREQUENCY
-  BACKLIGHT ON

DETAILS OF VOLUME CONTROL (2)