PREPARED BY ..... APPROVED BY .....

FUNCTION ENGINEERING MANAGER FUNCTION ENGINEERING MANAGER

2 W TRANSMITTER

M7062

OPERATOR HANDBOOK

ISSUE CONTROL SHEET

CHAPTER	PAGE	ISSUE
	i	1
	ii	1
	iii	1
	iv	1
1	1	1
2	1	1
	2	1
3	3	1
4	4	1

RECORD OF AMENDMENTS

AMENDMENT NO	NEW ISSUE	DATE INSERTED	SECTION	PAGE	SIGNATURE

It is the responsibility of the holder of the manual to ensure that all amendments are entered and the Record of Amendments updated accordingly. The holder of the Manual shall complete each column and sign the entry to signify completion of the amendments.

CONTENTS

1. INTRODUCTION

1.1 General Arrangement

The target transmitter Model M7062 is designed as a signal source for use with the Target Tracking Receiver System Model M7101. It provides a crystal controlled output power of 2 W into a matched (50 ohm) load. The antenna will normally be a short wire whip antenna fitted with the M7014 matching unit. An external source of 12 V DC power is required which may be connected to give either continuous or pulsed transmission. Two pulse rates are available, selected by an external link. A simple identification signal is included in which the output is frequency modulated by the pulse oscillator. This may be used to signal that an external contact or break wire, forming the external link, has been broken.

The transmission is also frequency modulated by the signal from a built-in accelerometer to provide motion sensing (although this is of practical use only when the continuous mode is selected).

The unit is housed in a small splashproof metal enclosure. DC connections (ie 12 V power input and external link if required) are made to a simple terminal block and the RF output is obtained via a subminiature coaxial connector.

1.2 Notes and Cautions

The maximum supply voltage should not be exceeded as this may cause permanent damage to the unit.

1.3 Accessories and Related Equipment

Related Equipment

M7014	Antenna Matching Unit
M7092	Antenna Matching Unit Cable
M7013	Directional Power Meter
M7101(/10)	Mobile Tracking Receiver

2. INSTALLATION

The procedure outlined below refers to installation of the transmitter and an Antenna Matching Unit on a vehicle or similar large metal structure.

The only adjustment required is to the length of the antenna wire. It is essential that this is correctly adjusted if maximum range performance is to be achieved, since the length is critical to a few mm. The procedure requires the use of a directional power meter (eg model M7013) and is more easily performed using a continuously operating transmitter than a pulsed transmitter.

For a rapid deployment, reasonable range performance can be obtained by adjusting the antenna wire length on a similar vehicle or large metal structure prior to final installation. The following procedure should be used and then step 3 may be omitted during final deployment.

1 Secure the Antenna Matching Unit to the vehicle so that the antenna wire is as far as possible from metal surfaces and in a position to maximise the transmitter power radiated from the vehicle. Ensure that the fixing clamp makes electrical contact with the vehicle.

2 Attach the transmitter in any convenient position, but preferably in contact with the vehicle bodywork to ensure the best pickup of vehicle movement and vibration.

3 Antenna wire length adjustment

a) Connect the power meter between the transmitter and the Antenna Matching Unit and set it to read reflected power at the appropriate power level.

b) Connect a 12 V power source of adequate capacity to the OV and +VC terminals.

c) Adjust the length of the antenna wire, preferably by folding the end into a tight spiral using small pliers or by hand, until minimum reflected power is indicated with the hand well removed from the wire. A reading of 10% or less of the forward power should be aimed at, but a value as high as 25% is acceptable.

d) Check that the forward power corresponds approximately to 2 watts, taking account of the voltage of the supply.

e) An indication of whether the wire is slightly too long or too short can be obtained by moving the hand steadily towards the antenna wire. If the reflected power increases steadily the wire is too long, but if the reflected power decreases to a minimum and then increases again the wire is too short.

f) Disconnect the 12 V power source and remove the power meter.

Note: The number on the label of the Antenna Matching Unit indicates the approximate length of the antenna wire in cm. that is required for a good match.

4 Connect the Antenna Matching Unit to the RF connector on the Transmitter using the miniature coaxial cable (M7092) supplied with the Matching Unit.

5 Connect the SLOW terminal to OV if desired with an external wire link or switch; when the connection is made the identification signal and the pulse rate are both slow (0.25 sec every 2 sec), but when no connection is made the identification signal and pulse rate are both fast (0.25 sec every 0.5 sec).

6 Connect a 12 V power source of adequate capacity to the OV and +VC terminals if continuous operation is required or to the OV and +VP terminals if pulse operation is required. The pulse rate is as given in 5.

3 OPERATION

Once installed, the unit continues to transmit in the selected pulsing or continuous modes for as long as DC power is applied.

Information relating to the status of the transmitter is available by monitoring the audio output of the Mobile Tracking Receiver (M7101 or M7101/10).

Mobile Tracking Receiver audio response to Transmitter

a) Continuous Transmission

The normal transmitter identification signal is an audio tone of approximately 500 Hz with a short burst of 1 kHz tone every 2 seconds. This is observed when the transmitter is stationary and not subject to vibration, with SLOW terminal connected to 0 volts (0v).

If the transmitter moves or vibrates (eg by the engine running or a door closing), the audio tone will be frequency modulated. The characteristics of the modulation will correspond to the movement or vibration involved, eg a rhythmic warble for the engine at tickover or a continuous noise-like variation for movement of the vehicle along the road.

Previous experience will permit various states of motion to be identified from the audio signal.

When the transmitter SLOW terminal is disconnected from 0v, the audio signal changes to a slow warble whose characteristics enable it to be readily distinguished from other signals. This can be used to produce a change of state/alarm indication.

b) Pulsed Transmission

When the transmitter is in the pulsing mode, no movement information is available and the audio tone is used only to confirm the operation of the transmitter. The SLOW terminal can be used to produce a change of state/alarm indication by a change of pulse rate.

4. FAULT FINDING

The following chart is provided to help correct problems that are not equipment failures.

FAULT	POSSIBLE CAUSE	REMEDY
Reflected power cannot be minimised (Installation step 3c)	Antenna mismatched (eg for AMU M7014 antenna wire too close to metal surfaces or length grossly incorrect)	Match antenna (for M7014 refer to Operator Handbook)
	Cables incorrectly connected or faulty	Connect or replace cables
Forward power differs significantly from nominal value	As above	As above
	DC power supply voltage out of specified range	Replace DC power source

5. SPECIFICATION

Power Output	2 W nom. into 50 ohms with 12 V supply
Frequency	Crystal controlled in range 27-155 MHz
Power Requirements	+10 to +15 V max. current approx. 350 mA at 12 V
Modulation	F.M. - Deviation nominally 500 Hz
Features	Continuous or pulsed transmissions, selectable by external connections: Pulse length: approx. 250 mSec
	Two pulse rates, selectable by external connection: Fast: approx. 2 pulses/sec Slow: approx. 1 pulse/2sec
	Identification signal
	Movement monitor signal
Connectors	SMC (Miniature coaxial to MIL ref UG 1460/U) for RF output
	Screw terminal block for D.C. connections
Size	Approx. 110 mm x 50 mm x 25 mm
Weight	150 g