### Introduction

In Railways, where the communication can not be established through telephone, such as between train drivers, guards, station masters etc., a small mobile set is used. These sets are known as Walkie – Talkie sets.

### Specification

#### General

| a) Type of working | Simplex |
| b) Type of modulation | FM/PM |
| c) Frequency range | 66-88 MHz & 145-174 MHz |

#### Transmitter

| a) Power output at antenna port | 2 or 5 watt |

#### Receiver

| i) Sensitivity | Better than 0.35 micro volt for 12 dB SINAD |
| ii) Adjacent channel selectivity | Not less than 70 dB below carrier frequency |
| iii) Spurious and image rejection | Better than 60 dB |
| iv) Audio output | 500 milli watt at full volume |

#### Power Supply

| a) Type of power supply | Re-chargeable Ni - Cd battery |
| b) Voltage | 7.5 Volt DC ±10% |
| c) AH capacity | 500 mAH for 2 watt, 1200 mAH for 5 watt sets |
**On/Off Volume Control**
It turns the radio ON or OFF and adjust the required volume level.

**Rotary Channel Selector Switch**
It selects the operating channel.

**Led Indicator**
A tri coloured light emitting diode (LED) indicates the radio operating status.

**Accessory Connector**
It provides accessibility for connection to remote accessories such as a remote speaker microphone. A cover is placed on accessory connector for protection. This cover should remain in place whenever the radio is not being used with an accessory.

**Press To Talk Button (Ptt)**
When depressed and held the PTT button, it engages the transmitter in transmit mode. When released the radio operates in the receive mode.

**Monitor Button**
It selects the mode of operation, carrier squelch (CSQ) or Private line/Digital Private line (PL/DPL squelch).
Control Button
When pressed, it monitors the channel for any activity. The radio has the ability to monitor all activity on the radio channel, whenever this button is pressed. This control button can also be programmed for nuisance channel delete on radio models with the channel scan feature.

INSTALLATION

Antenna Installation
Fasten the antenna to the radio by placing the threaded end of the antenna into the large threaded antenna bushing on top of the radio. Rotate the antenna clockwise until hand tight.

Battery Installation
a) Turn off the radio and hold it in one hand with back of the radio facing up.

b) Disengage the battery latch on the bottom of the radio by pushing and holding the latch towards the front of the radio.

c) With the battery latch disengage, slide the battery down from the top of the radio about ½ inch. Once the battery is freed from the control rails, lift it directly upward to remove the battery from the radio housing.

d) To install the new or freshly charged battery, align the top of the battery (belt clip end) with the stamped housing figure showing the correct battery positioning. Slide the battery towards the top of the radio until it is fully engaged by the battery latch.
Operating Instructions

To receive

a) Set the channel selector to the desired channel.
b) Listen for a transmission and adjust the volume control to a comfortable listening level. If no transmission is heard, press and hold the volume set button to unsquelch the radio.
c) The radio is now set to receive all calls on the selected frequency.
d) For monitoring a channel (disable PL/DPL) press the side mounted monitor button. The LED glows yellow for 4 seconds. It confirms that the coded squelch is disabled. When the radio is in the PL/DPL disabled mode and if we press PTT button at any time the LED glows yellow temporarily to remind that this state is active. The radio remains in the Monitor State until the monitor button is pressed again to reverse the state.

Note: The radio have an internal squelch setting which is adjusted by the manufacturers.
To Transmit

a) Turn the radio ON and set the channel selector to the desired channel.

b) Do not interrupt another user. Listen for activity on channel. Momentarily press the monitor button to listen for channel activity. The channel must be clear before transmitting.

c) While holding the radio in the vertical position with the speaker microphone grille 2 or 3 inches from mouth. Press the PTT button on the side of the radio and speak slowly and clearly into the grille area. After transmission release the PTT button to receive. During pressing of the PTT button the LED glows red and remains ON for the entire length of the transmission and turns OFF when the PTT button is released.

d) When the PTT button is pressed the battery voltage is automatically monitored and if the voltage is low, the LED flashes red to alert for low battery condition. In addition a double alert tone is sounded when the PTT is released.

Instructions for Battery

The radio receives its power (7.5 volt DC) from a rechargeable nickel-cadmium battery. Ni-Cd battery is fixed to the radio (Walkie talkie set) by means of slide locks. This battery is a safe, dependable power source. Proper care of the battery will ensure its effectiveness and allow for peak performance of the radio. The following instructions will enhance the performance and life of the battery:

- Charge the new battery about 14 to 16 hours before using. After rapid charging the battery may be trickle charged for 1 to 2 hours for enable maximum capacity.
- Do not connect fully charged battery to the charger for an extra boost. It reduces life cycle significantly.
- New batteries can be stored up to two years.
- Store the batteries in cool and dry area at room temperature.
- Do not use the battery charger as radio stand.
Before charging, stabilize battery to room temperature 22°C. Charging below 4.5°C & above 40°C will decrease cycle life.

Do not recharge the battery if it is not fully discharged.

Trouble Shootings
On observing any failure check the following items:

1. Review steps under OPERATION (Para 6.0).
2. Ensure that the rotary channel selector switch is set to the correct channel.
3. Ensure for proper battery voltage otherwise replace or recharge the battery as required.
4. If reception is poor, check the antenna. It must be undamaged and operated in the vertical position for best reception.
5. If the radio is operated inside the buildings, try from several different operating locations.
6. Check transmitter by transmitting and receiver by receiving with another tested set.
7. If the LED does not glow red when the battery is inserted into the charger, check the contacts of battery and charger for cleanliness.

Do’s And Don’ts

Do’s
- During operation Radio should be kept in a vertical direction with the microphone 2.5 to 5 cm far from the mouth and the antenna should be kept 2.5 to 5 cm away from the head or body.
- When charging a battery that is attached to a radio, always turn the radio off to ensure a full charge.
- Avoid physical abuse of your radio such as carrying it by holding the antenna.
- Wipe the battery contacts with a lint-free cloth to remove dirt, grease, or other material, which may prevent good electrical connection.
When not in use, keep the accessory connector covered with the protective cap.

Clean the radio exterior using a cloth moistened with water. Keep attention that use of chemicals such as detergents, alcohol and/or petroleum products may be harmful and damage the radio housing and cover.

Radio should be used in Railway premises only.

When operating from Loco or break-van, keep the antenna outside the through window for reliable communication.

The system works in line of sight, so try to keep line of sight between transmitting and receiving.

**Don’ts**

- Do not hold the transmit PTT button on when not actually desiring transmit.
- Do not allow children to play with any radio equipment.
- Do not operate near unshielded electrical blasting caps or in an explosive atmosphere.
- Do not operate the radio with a headset or other audio accessories at high volume levels.
- Do not use the radio for any other purpose other than railway working.
- Do not press the PTT switch unnecessarily.
- Do not expose the radio to harsh climatic condition like rain etc.
- Do not operate from shielded places or near the coach body when standing on ground.
- Do not operate from below dense trees.