

**7224P**

## **PORTABLE CASSETTE TAPE RECORDER**

The **7224P** tape recorder makes recordings on two cassettes simultaneously on two channels.

A tape timer is incorporated to display the total time of recording on one side of the cassette.

Channel 1 is connected to an external microphone.

Channel 2 is connected to an internally generated announcement of the time of recording displayed by the tape timer.

The recorder ensures that two cassettes must be inserted and running correctly in order to engage the record mode and that the signal and bias currents drive both recording heads. It is not possible to run only one cassette or to drive only one recording head.

An LED display shows the recording level on the microphone channel.

An internal alarm sounds:

- at switch on;
- when the Record button is held down;
- for 7 seconds after Record has been selected;
- when the cassettes have reached a point 2 minutes before the end;
- if a cassette jams or reaches the end;
- if either channel has failed or been silent for 60 seconds.

Whenever the alarm sounds, the red **alarm** LED in the **stop** switch lights.

The portable recorder is mounted in an integral carrying case. In the absence of a mains supply, it may be powered from an internal rechargeable battery or dry batteries.

The remote socket allows the connection of external equipment to provide additional interview facilities.

## PORTABLE RECORDER CASE

The recorder forms the centre section of the case. The case has separate front and rear covers.

To remove the Recorder from the case, place the case on the bench with the handle uppermost so that the case rests on the rubber feet on the rear section.

Free the two catches at either side of the top of the case and remove the front cover. Free the two catches at either side of the rear cover, lift the Recorder from the rear cover and place on the bench so that it rests on its rubber feet.

Remove the mains lead from the rear cover. Plug this into the mains input connector on the rear of the Recorder if it is required to drive the Recorder from the mains supply. Remove the microphone from the rear cover and plug into the microphone socket on the rear of the Recorder.

Repacking of the mains lead is the reverse of the removal procedure. Hold the mains connectors together, coil or fold the mains lead, slip the cable under the battery cover (at the right hand side of the rear cover).

The recorder should not be transported with cassettes inserted in the cassette carriers.

## POWER SUPPLIES

The Recorder can be powered by an external AC mains supply, or the internal rechargeable battery (if fitted).

The Recorder itself is switched on and off from the mains or battery supply by the rocker switch on the rear. When the mains supply is connected the rechargeable battery is charged, whether the power switch is on or off.

## POWER INDICATORS

When the mains supply is connected the lights behind each cassette are lit, whether the power switch is on or off.

With battery or mains power the elapsed time display is lit when the recorder is switched on (provided that the cassette carriers are closed).

### Rechargeable battery operation:

The rechargeable battery capacity is sufficient to power the recorder in the Record mode for 10 hours. The power consumption of the recorder when switched on in the Stop mode is approximately 1/3 of the consumption in the Record mode, so it is advisable to switch the Recorder off during long periods of inactivity if the mains supply is not connected.

In battery operation, the red **battery** LED in the **stop** switch will start to flash when there is sufficient battery capacity for a further 45 minutes of recording, and will continue to flash until the battery is recharged. (If the alarm is sounding, and the battery is low, the **alarm/battery** LED pulsates in brightness).

To charge the battery when the recorder is not being used, connect to an AC mains supply and switch the recorder off.

The time taken to recharge a fully discharged battery to 90% of capacity is 5 hours if the Recorder is switched off during charging. The recharge time is increased if the recorder is switched on while the battery is being charged.

### WARNING:

**A discharged battery should be recharged as soon as possible and must be fully recharged within 4 weeks of discharge. During long periods of inactivity or storage, the battery should be recharged every 6 months if it is left in the recorder or every 2 years if it is removed from the recorder. Failure to do this may reduce the battery capacity and the battery life considerably.**

## OPERATION OF RECORDER

### Insertion and Ejection of a Cassette

Open the cassette carrier by pulling back the projection on its top edge with the fingertips. Insert the cassette with the open edge showing the tape at the top. Engage the cassette by pressing on the projecting edge of the cassette carrier until the carrier closes fully.

If no cassette is present, or the cassette carrier is in the ejected position, then Record can not be permanently engaged.

If the recorder is run on batteries well beyond the "low battery" point there is a possibility that there will not be sufficient power to disengage the cassette carrier mechanism in order to eject the cassettes at the end of the recording. If the recorder is powered from the mains, in the absence of a rechargeable battery, failure of the mains during a recording will prevent ejection of the cassettes. Operation from mains power will release the cassettes.

The recorder should not be transported with cassettes inserted in the cassette carriers.

### To Make a Recording

Connect Recorder to AC mains supply if available. Plug microphone into microphone socket (on rear panel). Turn on power switch (on rear panel). Press the **stop** button to reset the alarm. Insert blank cassette in each recorder. Select Record by pressing **record** button. To stop recording, press **stop** button.

### Channel 1 - microphone signal

The microphone input is recorded on channel 1. The recording level on the microphone channel is preset by an internal record level control.

### Peak Level Indicators

The two element peak reading LED meter monitors the channel 1 recording signal. The red LED indicates maximum allowable recording level. The green LED indicates a level approximately 30dB below this level. A normal recording should light the green LED but not the red LED.

### Channel 2 - clock signal

The internal clock generates a spoken announcement of time once every ten seconds. The precise time spoken is indicated by the tone at the end of the announcement. The record level is preset by an internal record level control.

### Tape Timer

The two digit display indicates the period in minutes that Record has been selected. The display is blank when the cassette carriers are opened to eject the cassettes and is reset to zero when cassette carriers are closed. The carriers must be open for a few seconds to ensure that the display is reset.

### Cleaning Cassette

When the Record button is held down the alarm sounds and the tape breakage detector is disabled. This allows the use of a standard cleaning cassette which does not drive the cleaning tape at the normal tape speed. Place a standard cassette at the start of the tape in the unused position.

### **Start Alarm**

Each time the Record mode is selected the alarm sounds for 7 seconds. This is to avoid the possibility of attempting to record on the leader tape and also to signify the restart of a recording if the recorder has been stopped in the middle of the tape.

### **Low Tape Alarm**

When the tape in a C60 cassette reaches a point approximately 2 minutes before the end the alarm sounds for approximately 1 second.

### **Tape Motion Sensor and Alarm**

If either cassette reaches its end or becomes jammed, Stop is automatically engaged and the alarm sounds continuously. The alarm is reset by pressing **stop**.

### **Signal Alarm**

If during recording either channel fails to record, or there is insufficient signal level on the microphone channel to light the green LED, or the signal on the clock channel is less than this level, for a continuous period of approximately 60 seconds, the alarm sounds continuously. The alarm is silenced when the signal level is restored or Stop is selected.

A silent period of approximately 60 seconds is allowed after selecting Record before the alarm sounds.

Note that the sound of the alarm picked up by the microphone may be sufficient to light the green LED. If this is the case, the alarm indicates the lack of any normal recording signal for a period of approximately 2 seconds, before the recording of the alarm sound silences the alarm.

The signal alarm indicates silence at the microphone, microphone not plugged in, microphone cable broken, or a fault in the recording chain of either channel.



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## SAFETY NOTICE

### WARNING: THIS APPARATUS MUST BE EARTHED

The wires in the mains lead supplied with this apparatus are coloured in accordance with the following code:

Green and Yellow	Earth
Blue	Neutral
Brown	Line

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or is coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured Red.

The above directions refer to standard European cable colours.

For other countries, where the cable colours may be different, please refer to local regulations.

## CONNECTIONS

**Switch off the power to this equipment before making any connections to the sockets on the rear of the equipment.**

### Remote Output

Connections are made using a 6 pin DIN plug.

- 1 Low when **record** pressed (Low is +0.6V via 47R)
- 2 Low when **stop** pressed (Low is +0.6V via 47R)
- 3 Ground (0V)
- 4 Channel 2 output (400mV rms at 0dB)
- 5 Channel 1 output (400mV rms at 0dB)
- 6 Unstabilized power output (+11V to +16V via 100R)

Use screened cable, with the screen connected to the shell of the plug.

### Mic Input

Connection is made using a 3 pin XLR plug.

This input directly powers a PZM.

- 3 Signal
- 2 Signal ground (at +3 volts DC)
- 1 Ground (not required for signal connection)

Use 2 core screened cable with screen connected to pin 1.

## MALFUNCTION

In the event of any apparent malfunction in the operation of the equipment, first switch off, wait at least ten seconds and switch on again. Contact service personnel if the malfunction remains.

## NEAL RECORDING SYSTEMS

NEAL Recording Systems manufacture the **NEAL** range of Interview and Communications recorders, primarily designed around the compact cassette format and manufactured in our factory under ISO 9002/BS 5750 quality assurance. **NEAL** brand equipment is the choice of every police force in the UK, as well as many other organisations.

The **NEAL** range of equipment is proven in service and includes:

**Audio Interview Recording** - the range includes Home Office-approved audio tape recorders, featuring portable, extended-duration and three tape models.

**Video Interview Recording** - built to the same high standards as our audio recorders. These can be supplied as new combined audio/video systems or as upgrades to the existing units. They are available as child witness and as suspect interview systems.

**Transcribers** - the only dedicated transcriber available from a PACE Interview Recorder manufacturer, thus ensuring compatibility of formats and the same quality build standard. Two and four channel transcribers are available for use with our communications recorders.

**High Speed Copiers** - state-of-the-art audio cassette copiers, operating at up to 16x normal speed to ensure immediate availability of extra working copies. A 20 minute interview can be copied in just 75 seconds.

**Communications Recorders** - 2 and 4 -channel recorders which can record up to 12 hours of radio or telephone activity. Automatic voice detect or remote contact recording with time and date search, NEAL Communications Recorders can be supplied to meet a variety of requirements for fixed location or portable use.  
Dedicated Communications transcribers are available with time/date search.

We also supply a range of accessories including cassette tapes and headphones.

For further information on any of the above please contact:-

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