



WIRELESS MICROPHONE

WM-290 WM-291



Please follow the instructions in this manual to obtain the optimum results from this unit. We also recommend you keep this manual handy for future reference.

■ GENERAL DESCRIPTION

The TOA WM-290 (WM-291) is a hand-held vocal wireless microphone incorporating a Shure's SM58 in its head, and a compressor/expander system noise reduction circuit to minimize the influence of high-frequency noise generated from digital equipment such as personal computers and word processors.

■ FEATURES

- Ideal for vocal applications.
- Maximum input level of 144 dBspl.
- Continuous operation for 12 hours or more on one alkaline battery (LR6/1.5V).
- Two battery indicators (green and red).
- Internal L.D. signal generator for tone squelch.
- Stopper to prevent the fall of a battery case.
- Compressor/expander system noise reduction circuit.

■ USER PRECAUTIONS

- Take care not to drop the unit on to a hard floor.
- Do not flip nor blow into the microphone head.
- Avoid placing the unit in areas of extremely high humidity and temperature.
- Never open the unit nor touch its internal components.
- Clean the unit's exterior periodically with a soft dry cloth. If it gets very dirty, wipe first with a soft damp cloth lightly soaked in a neutral detergent, and then dry with a soft cloth.
Never use thinner, benzene, or other solvents, which may damage plastic part of the unit.
- Remove the battery if the unit is to be stored for two weeks or more.

BATTERY LOADING

Use LR6 type alkaline battery.

1. Hold the microphone body and rotate the microphone grip anticlockwise. (Fig. 1) The microphone grip is so designed that it can not be completely removed from the body because the battery grip past the lock point as damage may occur. (Fig. 2)

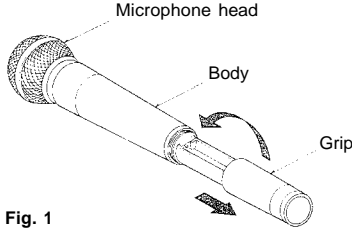


Fig. 1

2. Observing correct polarity instructed inside the battery compartment, insert a battery. (Fig. 2)

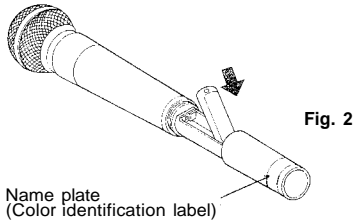


Fig. 2

3. Replace the microphone grip by sliding the grip upward and hand tightening the grip in a clockwise position.

BATTERY REPLACEMENT

1. The alkaline battery LR6 can be continuously used for approximately 12 hours. (The manganese battery R6 for approximately four hours.)

2. Battery indicator

When the battery voltage is sufficient, the green LED lights. The green LED becomes dimmer as the battery voltage drops, and the red LED lights.

In such a case, renew the alkaline battery LR6 inside an hour or two (renew the manganese battery R6 inside a half hour.).

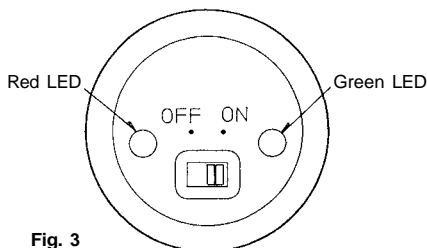


Fig. 3

HOW TO USE

1. Verify that the receiver frequency is identical with the microphone (transmitter) frequency.
2. Set the microphone on/off switch to ON, and verify that the green battery indicator lights.
3. Set the on/off switch to OFF after use and verify that the green LED is extinguished.

SENSITIVITY SETTING

The maximum input sensitivity of this microphone can be set in the range of from 128 dBspl to 144 dBspl. (Factory-preset to 136 dBspl.) If the user's mouth is put extremely close to the microphone, and speaking loud into the microphone, the amplifier is overloaded, thus resulting in sound distortion. Conversely, if used away from the microphone, the sufficient S/N ratio may not be obtained due to low-level sound pickup. In such cases, observing the receiver's level meter, adjust the microphone gain control as follows:

1. Set the receiver's power switch to ON. Then set the microphone's power switch to ON and confirm that the receiver receives a radio signal.
2. Use a Philips type screwdriver to adjust the gain control, as shown in Fig. 4. Rotate the control clockwise to increase the sensitivity, and counter-clockwise to decrease it.
3. Speaking loud into the microphone, adjust the gain control that the level indicator lights yellow. There is no fear of sound distortion if the indicator lights red just occasionally.

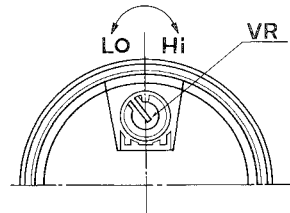


Fig. 4

4. If the receiver to be used is the WT-780 or WT-781, of which level indicator only indicates a peak level, similarly adjust the gain control so that the peak indicator lights just occasionally when the voice input is at its maximum.

TIPS FOR CONVENIENT USE

1. Strength and direction of a radio signal to be transmitted from the wireless microphone change depending on the part of the microphone body to be held by the hand. To prevent this, hold the upper part of the body.
2. To avoid feedback, use the microphone with your mouth put as close to the microphone top as possible.
3. Adjust the tuner volume control to an appropriate volume level that prevents feedback. The system is prone to feedback if the microphone comes too close to the speaker. It is suggested that tests be performed preliminarily of feedback points in locations where the microphone is to be actually used.
4. To prevent radio interference or malfunction of the tuner, always use the microphone at least 3m (10 feet) away from a receiving antenna.
5. When using multiple microphones simultaneously, separate them at least 60cm (2 feet) from each other to prevent noise or break in sound, which may result from mutual microphone interference.
6. Walls, floors, and ceilings block the radio wave's straight-line travel, and frequently create null spots that can cause temporary loss of signal reception even within the practical transmission distance threshold. In such cases, relocate a receiving antenna or change microphone locations. (To effectively reduce the null spots, use the diversity tuner instead of non-diversity tuners.)
7. Human bodies absorb radio signals, and this can badly affect signal reception. In rooms having a number of people, attempt to install an antenna high above the floor.
8. Once a wireless system is installed, actually move around the site with a microphone to check system operation.
9. Color Identification Labels
Identification labels of different colors are supplied with the wireless microphone to simplify confirmation of microphone frequencies when multiple microphones are in use. Attach one of the labels to the microphone. In this event, both the microphone and its corresponding receiver need to be in the same color scheme for easy association with their frequencies.

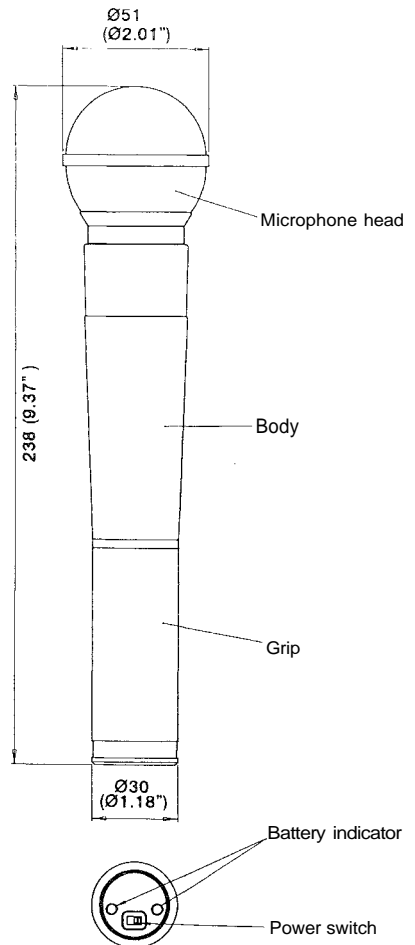
ADDITIONAL EXPLANATIONS

Squelch circuit

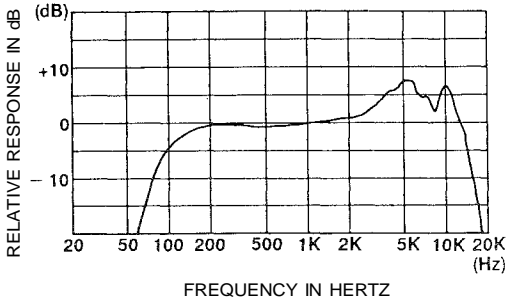
In a receiver employing only a noise or carrier squelch, the squelch circuit is actuated and provides the output whenever the receiver receives the same RF carrier as a receiving frequency. This causes even a disturbing radio signal to be received provided its frequency is the same as the receiving frequency. As a result, it can happen that sound is suddenly heard from the speaker due to disturbing radio signal even when the wireless microphone's power switch is left OFF.

The squelch circuit of TOA's wireless systems consists of both the tone and noise squelches, and is not actuated if only same RF carrier as the receiving frequency is received. It is so designed as to be actuated and output a signal only when the received RF carrier contains a very exact pre-determined tone frequency component. Therefore, disturbing radio signals are rejected and the speaker can be kept completely quiet when the wireless microphone's power switch is set to OFF, ensuring reliable use in every application.

PART NAME



TYPICAL FREQUENCY RESPONSE



FCC license requirement

The operation of the TOA wireless microphone systems must conform with the rules and regulations contained in the code of Federal Regulations, 47, Telecommunications, Part 74 and Part 90. These regulations are available from the U.S. Government Printing Office.

D.O.C. (CANADA) license requirement

The Department of Communication (D.O.C.) recommends wireless microphones operating in the 174 ~ 216 MHz band be licensed on the following basis:

- 1) on a no-protection non-interference basis;
- 2) frequencies shall be selected and assigned form within television channels 7 to 13 (174 ~ 216 MHz);
- 3) operational areas shall be restricted to locations that are at least 8 miles outside the Grade B contour of television stations that operate on the channel in which the frequency assignment falls;
- 4) location of operation to be shown on license; and
- 5) licenses shall resolve interference complaints that result from microphone operation.

SPECIFICATIONS

Versions	WM-290 US version		WM-291 CA version	WM-290 UK version	WM-290 AS version
Regulations	FCC Part 90	FCC Part 74	D.O.C.	MPT1345	DOC 60
Carrier Freq. Range	169.445 ~ 171.945MHz	174 ~ 216MHz	174 ~ 216MHz	173.8 ~ 175.0MHz	202.1 ~ 203.7MHz
Freq. Stability	± 0.005%	± 0.005%	0.005%	± 10kHz	0.002%
RF Carrier Power	15mW	15mW	15mW		15mW
Effective Radiated Power				Less than 2mW	
Input Level	128 ~ 144dBspl	↔	↔	↔	↔
Modulation (Max.)	± 15kHz Deviation	± 40kHz Deviation	± 15kHz Deviation	± 40kHz Deviation	± 15kHz Deviation
Tone Freq.	32.768 kHz	↔	↔	↔	↔
Controls	Power ON/OFF	↔	↔	↔	↔
Battery	LR6 (1.5 Volts) Alkaline	↔	↔	↔	↔
Current Drain	90mA Typ. (1.5V)	↔	↔	↔	↔
Battery Life	More than 12 hours	↔	↔	↔	↔
Battery Indicator	Green and Red LED's	↔	↔	↔	↔
Antenna	Internal Dipole	↔	↔	↔	↔
Ambient Temperature	-10°C ~ 50°C (14°F ~ 122°F)	↔	↔	↔	↔
Colour	Dark Gray	↔	↔	↔	↔
Dimensions	∅51 x 238mm (∅2.01" x 9.37")	↔	↔	↔	↔
Weight	390g (0.858 lbs.) with battery	↔	↔	↔	↔

*Specifications are subjects to change without notice.

Accessories:

- Microphone holder 1
- Color identification labels 1
- Operating instructions 1



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KOBE, JAPAN