



**MOTOROLA**

# REMOTE SPEAKER/MICROPHONE

Models: NMN6191B/C and NMN6193B/C

## DESCRIPTION

The NMN6191B/C and NMN6193B/C Remote Speaker/Microphones include a speaker, microphone, and push-to-talk (PTT) switch. Both remote speaker/microphones include a 3.5mm earphone jack located on top of the accessory connector. A seal, which is attached to the accessory connector, is provided to cover the earphone jack when it is not in use. The NMN6191B/C Remote Speaker/Microphone includes a noise-cancelling port that reduces background noise during transmit.

When the remote speaker/microphone is attached to the radio, the speaker in the radio is disabled, and the receiver audio is connected to the accessory speaker. Similarly, the accessory microphone is connected to the transmitter, and the accessory PTT switch can now control the PTT function of the radio. The radio microphone and PTT switch are still operational, but since the radio speaker is disabled, you can listen to the received audio only through the accessory speaker.

## PERFORMANCE TEST

### General

The speaker/microphone audio performance is designed to be similar to that of the radio. The transmit audio sensitivity of the microphone requires slightly louder voice loudness to produce the same carrier deviation as the radio. The characteristics described above improve communications in noisy areas.

### Audio test

The speaker/microphone accessory can be checked for proper performance by comparison with another new or known-good unit on the radio. Start each of the following two tests with the new, or known-good unit, on the radio.

1. Microphone - Transmit to a communications monitor while voicing a tone or the word 'four.' The speaker/microphone should be held at a distance that causes approximately 3kHz deviation. Repeat these conditions using the speaker/microphone to be tested. Good units compare to each other within  $\pm 2$ kHz deviation.
2. Speaker - Using the communications monitor, generate an RF signal to the radio. Set the modulation to a 1kHz tone at 3kHz deviation. Set the

volume control on the radio to a loud, yet undistorted, position. Without disturbing any settings, repeat these conditions using the speaker/microphone to be tested. Good units should sound equally loud and undistorted.



### CAUTION

Wearing a conductive wrist strap (Motorola No. RSX-4015A) will minimize static buildup during servicing.



### WARNING

**When wearing a conductive wrist strap, be careful near high voltage sources. The good ground provided by the wrist strap will also increase the danger of lethal shock from accidentally touching high-voltage sources.**

## HANDLING PRECAUTIONS

To avoid damage to circuits, observe the following handling, shipping, and servicing precautions.

1. Prior to and while servicing a remote speaker/microphone, particularly after moving within the service area, momentarily place both hands on a bare metal, earth-grounded surface. This will discharge any static charge which your body may have accumulated.
2. Whenever possible, avoid touching any electrically conductive part of the unit with your hands.
3. Because they contribute to static buildup, avoid carpeted areas, dry environments, and certain types of clothing (silk, nylon, etc.) when servicing a unit.
4. All electrically-powered test equipment should be grounded. Apply the ground lead from the test equipment to the unit before connecting the test probe. Similarly, disconnect the test probe prior to removing the ground lead.
5. When soldering, be sure the soldering iron is grounded.
6. Prior to replacing circuit components, be sure to discharge any static buildup. Since voltage differences can exist across the human body, it is recommended that only one hand be used if it is necessary to touch the microphone cartridge and associated wiring.

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Service Manual



68P81083C43-B

- If the microphone has been exposed to water, shake the unit to remove any residual water from the speaker grille area. Blow out any residual water from the microphone grille area before operating the radio; otherwise, the sound may be distorted until the water has evaporated from these areas.

### MAINTENANCE AND REPAIR

If necessary, the external surfaces of the remote speaker/microphone may be cleaned. Use a 5% solution of mild dish washing detergent in water (one teaspoon of detergent in a gallon of water).

Refer to the schematic diagram, the exploded view, and the parts lists for a better understanding of the parts availability for these remote speaker/microphones. Although parts of the cord and connector assembly are repairable, the speaker/microphone head is not. If a problem occurs with the speaker/microphone head, it must be replaced as a complete unit. Separate the microphone head from the cord and connector assembly as follows:

- Pull the rubber strain-relief boot from the base of the microphone head and slide the rubber boot down the cord away from the microphone head.

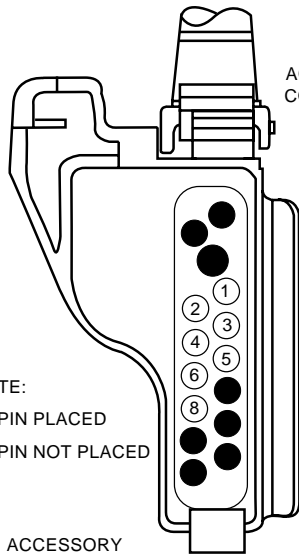
- Pull the gray rubber seal from inside the square base of the microphone head and slide the seal down the cord away from the microphone head.
- Remove the "phone-like" connector from inside the square base of the microphone.

Use reverse procedure to install a new speaker/microphone head.

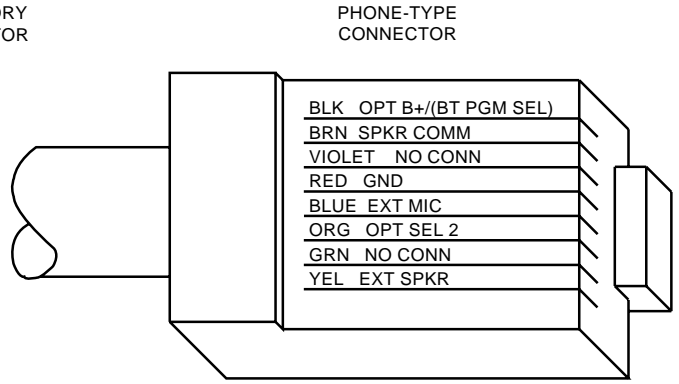
### Electrical Parts List

TPLF-4197-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C1	2113740A73 or 2113740A55	<b>CAPACITOR, Fixed:</b> 560pF (for NMN6191B and 93B) 100pF (for NMN6191C and 93C)
J1	0905100W01	<b>JACK:</b> Micro
L1 thru 7	2462587Q44	<b>COIL, RF:</b> unless stated Choke, 0.56μH
R1 R2 R3	0662057C89 0662057C83 0660076K01	<b>RESISTOR, Fixed: Ω±5%; 1/8W</b> unless stated 3.9k 2.2k 0Ω

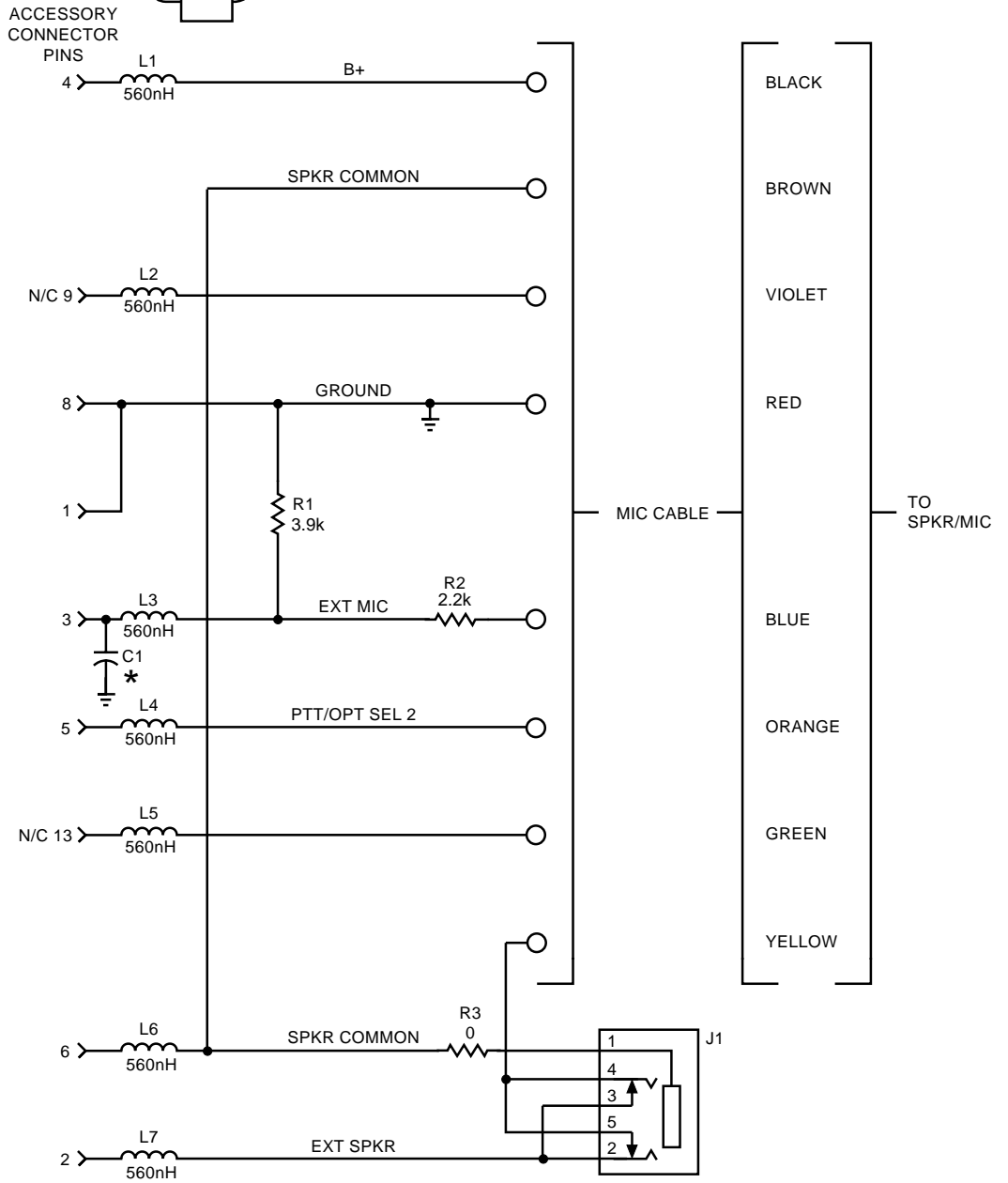


ACCESSORY CONNECTOR



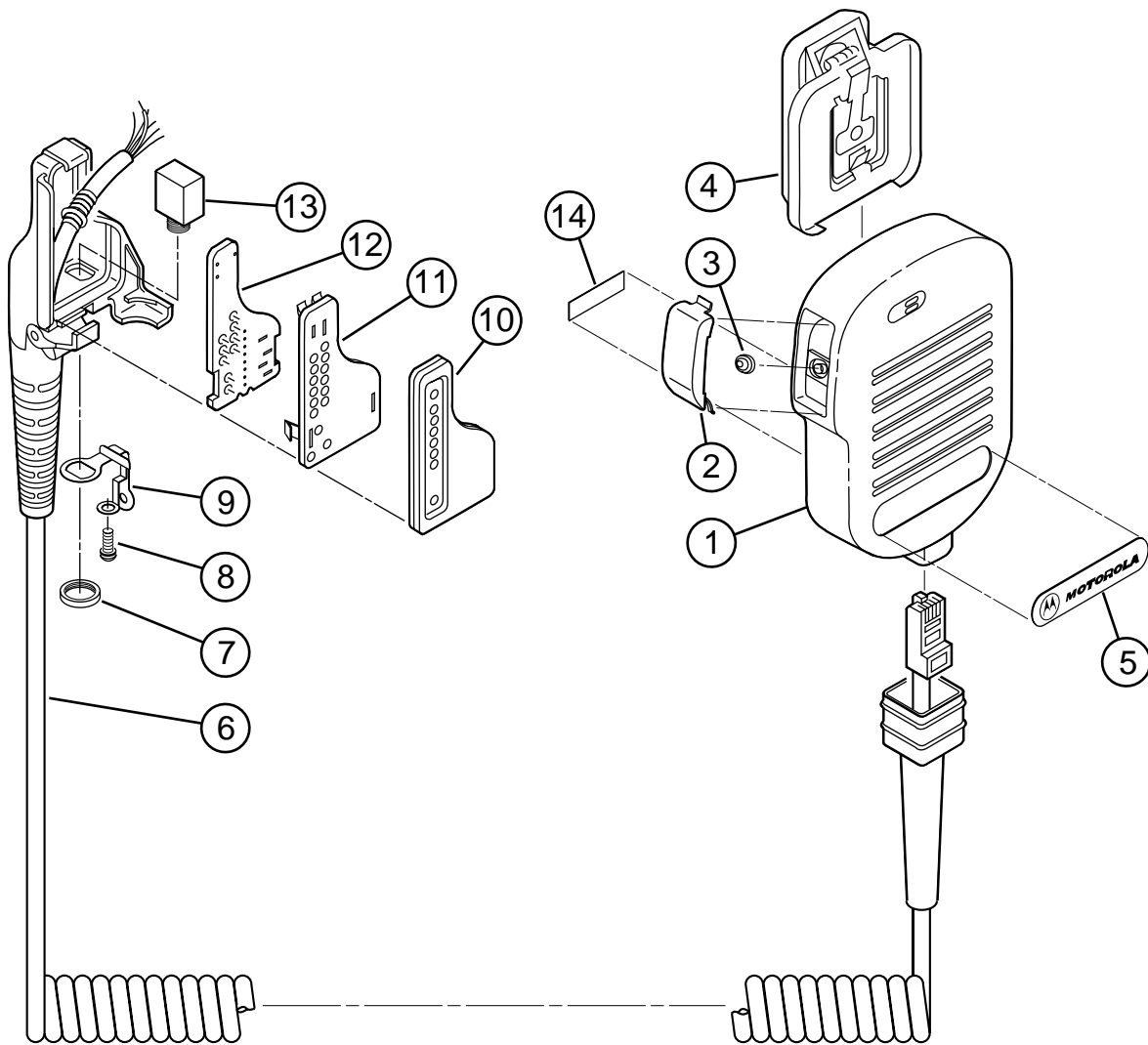
PHONE-TYPE CONNECTOR

NOTE:  
 (N) PIN PLACED  
 ● PIN NOT PLACED



MAEPF-24952-A

\* See Electrical Parts List.



MAEPF-24953-A

**Exploded View Parts List**

ITEM NO.	MOTOROLA PART NO.	DESCRIPTION
1	0104004J24 or 0104004J25 or 0104010J48 or 0104010J49	ASSEMBLY, Speaker/Microphone Head (for NMN6191B) (for NMN6193B) (for NMN6191C) (for NMN6193C)
2	4504470J01	PADDLE, PTT
3	7505618V02	KEYPAD, PTT
4	4205823V01	BELT CLIP
5	3305183R91	LABEL, Nameplate
6	0104004J26 or 0104010J46	ASSEMBLY, Cord and Connector (for NMN6191B and NMN6193B) (for NMN6191C and NMN6193C)
7	-----	part of item 13
8	0305731J20	SCREW
9	3205252W01	SEAL, Earphone Jack

ITEM NO.	MOTOROLA PART NO.	DESCRIPTION
10	3205235W01	GASKET
11	6405241X01	BASEPLATE
12	0105953S36	ASSEMBLY, Printed Circuit Board
13	See Note	JACK, Micro (J1)
14	3305706X26	NAMEPLATE, NMN6191B
	or 3305706X27	NAMEPLATE, NMN6193B
	or 3305706X79	NAMEPLATE, NMN6191C
	or 3305706X80	NAMEPLATE, NMN6193C

NOTE: Refer to electrical parts list for part number and description.