

SHURE[®]

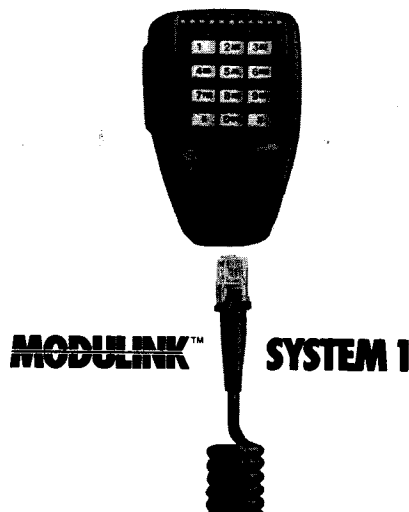
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THE SOUND OF THE PROFESSIONALS[®] WORLDWIDE

MICROPHONES AND ELECTRONIC COMPONENTS

**DATA SHEET
MODEL 890TT****HAND-HELD TRANSISTORIZED CONDENSER MICROPHONE****GENERAL**

The Shure Model 890TT is a hand-held, amplified, condenser DTMF microphone with an illuminated keypad and lithium-battery-retained number storage capabilities. The microphone is ideal for upgrading existing two-way radios for use with advanced telephone interconnect systems or for new installations. It is designed for rugged and reliable operation in any mobile communications application. The 890TT has an omnidirectional pickup pattern and provides extremely clear transmission, even in noisy environments. In addition to its clear, crisp, natural voice response, the 890TT has extremely low sensitivity to hum pickup and low susceptibility to radio-frequency interference. The 890TT's silicon transistor amplifier provides an output level high enough to permit the use of up to 30 meters (100 feet) of unshielded cable.

For installations where transmitter input gain requires sensitivity modification, the 890TT has convenient, externally accessible screwdriver controls for independent adjustment of both microphone and DTMF levels. This eliminates the problem of fixed audio levels and the necessity for disassembling the microphone for adjustments. Restricting control access also prevents accidental changes common to external controls.

The 890TT is designed for use with most currently available mobile two-way radio sets. For installation convenience, all microphone and signaling functions, including keypad illumination, are powered directly from the microphone input circuit of most transmitters, minimizing the need for equipment modification. The microphone is compatible with a choice of five-conductor, pre-wired, coil-cord cables (sold separately), each of which has a telephone-type modular plug on the microphone end, and a choice of popular transmitter input connectors on the other. One cable model provides only bare tinned leads on the microphone input end so that the user or installer can attach the desired connector. The cables are instantly changed or replaced without soldering.

The 890TT features attractive, contemporary styling, designed to blend with most radio designs and vehicle interiors. The microphone is ergonomically designed; it fits naturally and comfortably in the hand and is not affected by heat or humidity. The rugged AFMO-DUR[®] case is immune to oil, grease, most fumes and solvents, salt spray, sun, rust and corrosion. It is outstanding in its ability to withstand mechanical shocks and vibration. The Million-Cycle Plus[™] leaf-type switch is a double-pole, single-throw type, designed to resist the effects of severe operating conditions and constant usage. It has nickel-silver blades, and its contacts are palladium-alloyed for reliable, oxidation-free operation.

The 890TT's keypad is made of tough silicone rubber, with durable printed characters that will last the life of the microphone. The keypad is backlit by red LEDs, easily visible during night operation and minimizing eye readjustment for night vision.

The 890TT is supplied with a small screwdriver for adjusting the microphone amplifier gain and DTMF level, and for releasing the modular-plug microphone cable from the microphone. A programming tool for programming the 890TT's memory is also supplied. Mounting brackets for affixing to radio equipment or other surfaces are available in quantities of three as Shure RK6MB.

Features

- Top-Talk Sound Channels[™] for clear voice input, easy handling
- Built-in transistor amplifier (powered by carbon-microphone-type circuit)
- Frequency response from 200 to 4,000 Hz, tailored for voice communications
- Illuminated keypad with positive tactile feel and audible confirmation tones
- Ten 16-digit memories including automatic last-number storage
- Automatic transmitter keying from keypad without using push-to-talk switch
- Programming tool (supplied) for number storage without keying transmitter
- Programmable pause function for access code and phone number storage in a single memory location
- Long-life lithium battery retains memory even with equipment turned off
- Internally selectable dialing speed
- Convenient external microphone gain adjustment accommodates most input circuits
- Externally accessible DTMF level adjustment, independent of microphone gain setting
- Modular-plug, vinyl-rubber-jacketed coil-cord—easily attached and removed. Available with plugs to fit most popular radio sets

- Low sensitivity to hum pickup
- Low susceptibility to radio-frequency interference
- Rugged Million-Cycle Plus™ leaf-type switch stands up under severe environments and constant use
- High-impact ARMO-DUR® case—stronger and lighter than die-cast metal, comfortable to the touch in hot or cold weather
- Rugged and dependable under all operating conditions
- Sturdy, convenient mounting button for attaching to equipment or nearby surface using optional mounting bracket
- Hang-up button connection available for microphone hang-up sensing

SPECIFICATIONS

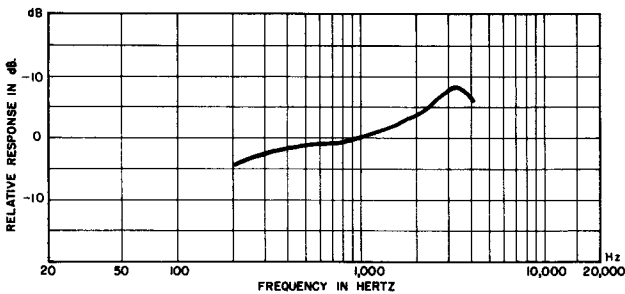
(Test conditions unless otherwise specified: audio output measured between pin 2 and ground; PTT switch depressed; no hang-up button connection; mic and DTMF level trimmers full clockwise; dc VTVM 10 megohms or greater input impedance; ac VTVM 1 megohm or greater input impedance. Test circuit as shown in Figure 3B.)

Type

Electret condenser (with transistor preamplifier, DTMF signaling circuitry, memory, illuminated keypad)

Frequency Response

200 to 4,000 Hz (see Figure 1)



TYPICAL FREQUENCY RESPONSE
FIGURE 1

Polar Pattern

Omnidirectional

Output Level (at 1,000 Hz, 5/16 in.)

-4.5 dB (0 db = 1 volt per 100 microbars)

DC Supply Current

2.3 mA

Internal Battery (memory)

Lithium, 180 mA·H, 5 years minimum life at 25°C (77°F), 0 to 90% relative humidity

Hum Sensitivity

-94 dBV maximum in a 1 oersted 60 Hz field (gain control full counterclockwise)

DTMF Output Level

1.1 volts peak-to-peak

Audio Polarity

Positive sound pressure produces positive voltage at pins 2 and 6 of modular connector with respect to ground

Environmental Conditions

Operating Temperature: -40° to 60°C (-40° to 140°F)
Storage Temperature: -54° to 85°C (-65° to 185°F)
Relative Humidity: 0 to 95% (non-condensing)

Microphone Connector

8-conductor modular telephone type (6 conductors used)

PTT Switch Assembly

Mechanical: Double-pole, single-throw, leaf-type, normally open.
Electronic: Open NPN transistor collector to ground; positive polarity only; maximum on-state current 100 mA to produce 0.8V or less; maximum off-state voltage 40V.

Cable (optional choice)

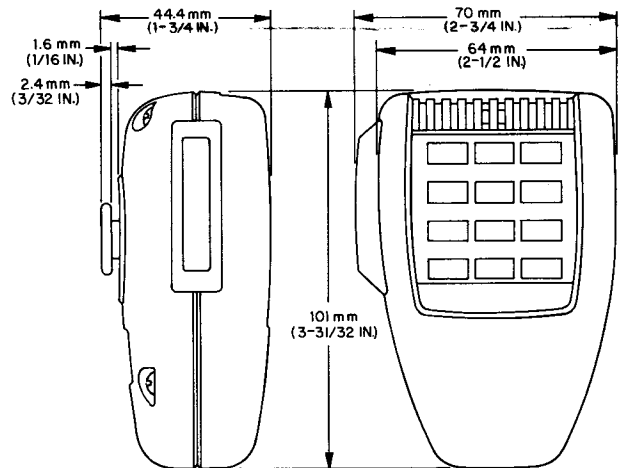
Detachable, 1.4m (48 in.), 5-conductor (1 shielded), vinyl-rubber-jacketed coil cord with modular plug on microphone end (see table for available installed equipment plugs)

Construction

Case: Black textured high-impact ARMO-DUR®
Switch Button: Black ARMO-DUR®
Keypad: Molded silicone rubber

Dimensions

See Figure 2



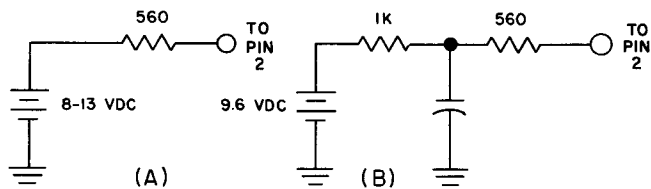
OVERALL DIMENSIONS
FIGURE 2

Net Weight

160 grams (5.6 oz.)

CONNECTIONS

The 890TT is designed to operate with two-way radio sets with input circuits similar to those in Figure 3. When wiring ALM-1 cables with connectors for radios not listed in the table, modular connector pin 2 is to be used for the dc-biased audio output. For radios without a dc bias resistor on the input, see *Modifications* section, *E.F. Johnson and Special Applications*.



MICROPHONE INPUT CIRCUITS
FIGURE 3

MOUNTING

The 890TT is provided with a rear-case hang-up button for use with a mounting bracket on or near associated equipment. **IMPORTANT:** The microphone hang-up button is connected to the blue cable conductor for radios with microphone hang-up sensing.

Heavy-duty, chrome-plated mounting brackets are available in quantities of three as Shure Part No. RK6MB.

MICROPHONE CABLES

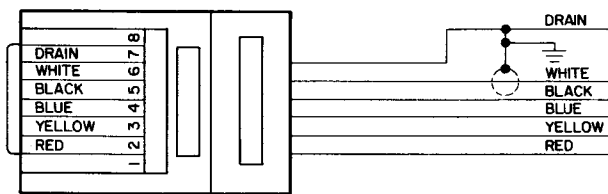
The 890TT can be used with various microphone cables. Each cable has a modular microphone plug on one end and the user's choice of equipment plugs on the other. The table indicates the Shure cables available at present.

Shure Model	Connector Type	Radio Equipment
ALM-1	No connector supplied (see Figure 4)	Various
ALM-2	Five-pin molded rectangular	Motorola Micor, Mitrek, Motrek, Syntor, MCX100, MCX1000
ALM-3	Modular type	Motorola Mostar
ALM-4	Five-pin round	Motorola Maxar 80, Motrar
ALM-5	Four-pin round	Midland Syntech ¹
ALM-10	Flat (PC header mating)	G.E. Phoenix Series, PSX
ALM-11	Flat (PC header mating)	G.E. CMX, MLS and TMX* Series
ALM-15	Five-pin round	Motorola Mocom 35 ²
ALM-16	Five-pin round	E.F. Johnson LTR8700*, SDL*, PPL*, Fleetcom II*
ALM-17	Six-pin rectangular	G.E. Mastr II, Rangr, Delta, Custom MVP
ALM-18	Modular type	E.F. Johnson Challenger*; Regency RTE 2020*
ALM-20	Four-pin round	Motorola Mocom 70, Motrac ²

¹ Change radio 270-ohm bias resistor to 1.2k.

² Rewire radio for continuous mic bias.

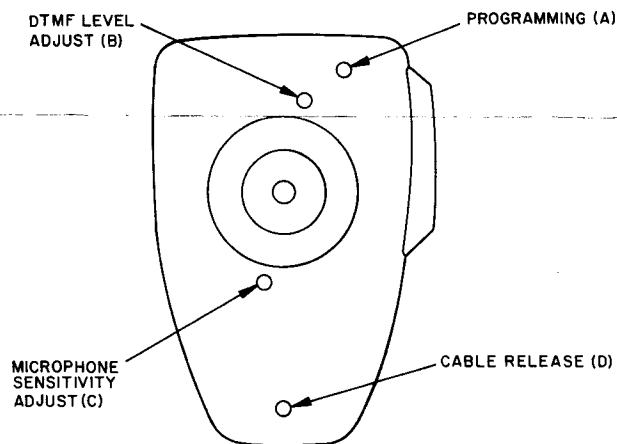
*890TT must be modified when used with these models. See *Modifications* section.



MODEL ALM-1 CORD WIRING
FIGURE 4

Pin	Color	Function	Pin	Color	Function
1	—	N.C.	5	Black	PTT Switch Ground
2	Red	Bias (+), DC-Biased Audio Output	6	White	Audio Out
3	Yellow	PTT Switch	7	Drain	Ground
4	Blue	Hang-up Button	8	—	N.C.

The cable is attached to the 890TT by inserting the modular telephone-type plug in the microphone jack until it locks. To remove the cable from the microphone, insert the small screwdriver supplied with the 890TT in rear case hole "D" just above the cable jack (see Figure 5) to unlock the plug and withdraw the plug from the jack.



MICROPHONE CASE REAR
FIGURE 5

ADJUSTMENTS

After connection to the communications equipment and with equipment power turned on, the microphone sensitivity and DTMF output levels should be adjusted with the supplied screwdriver as follows.

1. **MICROPHONE SENSITIVITY:** Press the push-to-talk button and speak normally into the microphone while observing transmitter modulation. Adjust the microphone sensitivity control (rear case hole "C" in Figure 5) and repeat the talk test as required.
2. **DTMF OUTPUT:** Do *not* press the push-to-talk button. Enter a sequence of 10 to 16 digits from the keypad. Press **[*]**, then **[OPER]**, and observe transmitter modulation while the sequence is automatically generated. Adjust the DTMF output control (rear case hole "B" in Figure 5) and repeat as required.

OPERATION

Operation of all microphone and DTMF functions, including programming, requires that the 890TT is connected to the communications equipment and that the equipment power is turned on. Power application can be verified by observing the keypad LED backlighting.

Voice Transmission

1. Hold the microphone comfortably in the hand, positioned so that the Top-Talk Sound Channels™ at the top of the case are near the mouth. The clearest sound is often obtained with the microphone at the *corner* of the mouth, with the cable away from the face.
2. Press the push-to-talk button and make sure the equipment is in the transmit mode before speaking.
3. Release the push-to-talk button before dialing.

Manual Dialing

1. Do *not* depress the push-to-talk button.
2. Press the desired keypad buttons in sequence. A high-pitched tone will confirm that the code has been transmitted.
3. When the first keypad button is pushed, the transmitter is automatically keyed. The transmitter will automatically turn off after the last digit has been transmitted.
4. Codes can be entered more quickly than they are transmitted. To ensure transmission of the complete sequence, do *not* press the push-to-talk button until the tones have stopped.
5. If the sequence requires sending the [*] or [#] codes, press that button *twice*. A low-pitched tone is generated on the first press; a high-pitched confirmation tone accompanies the second press.

Last-Number Redialing

1. Do *not* depress the push-to-talk button.
2. Press [*], followed by [OPER]. The transmitter is automatically keyed, and turned off after the sequence is transmitted. A low-pitched tone confirms the [*] key; high-pitched tones indicate each digit being sent. To ensure generation of the complete sequence, do *not* press the push-to-talk button until the tones have stopped.
3. NOTE: Do *not* press any other button before the [*] [OPER] sequence; otherwise memory storage of a new sequence will be initiated.
4. NOTE: If a low-pitched tone is heard when the [OPER] key is pressed, this indicates that the last number memory has been erased.

Memory Dialing

1. Do *not* depress the push-to-talk button.
2. Press [*], followed by the numeric key ([1] through [9]) for the memory location of the desired sequence previously programmed. The transmitter is automatically keyed, and turned

off after the sequence is transmitted. A low-pitched tone confirms the [*] key; high-pitched tones indicate when each digit is sent. To ensure generation of the complete sequence, do *not* press the push-to-talk button until the tones have stopped.

3. NOTE: If a low-pitched tone is heard when the numeric key is pressed, this indicates that *no* information has been programmed in that memory location.

Programmed Pause Memory Dialing

The programmed pause feature may be used to allow automatic dialing of an access code followed by the number to be dialed. If the 890TT has been previously programmed for this function, the following procedure is to be used.

1. Do *not* depress the push-to-talk button.
2. Press [*], followed by the numeric key ([1] through [9]) for the memory location of the desired sequence previously programmed. The transmitter is automatically keyed, and turned off after the access sequence is transmitted. A low-pitched tone confirms the [*] key; high-pitched tones indicate when each tone is sent. Do *not* press the push-to-talk button. NOTE: If a low-pitched tone is heard when the numeric key is pressed, this indicates that *no* information has been programmed in that memory location.
3. Listen for the dial tone or other confirmation signal returned from the base station.
4. Press ANY numeric key ([1] through [OPER]) to dial the number and complete the sequence. Do *not* press the push-to-talk button until the tones have stopped.

Memory Programming

As many as 9 code sequences (up to 16 characters each) can be programmed into the battery-retained memory using the following procedure. Note that as supplied all nine of the 890TT's code sequence memory locations contain the code [*].

1. Place the 890TT in the programming mode by carefully inserting the metal shaft of the supplied programming tool into rear case hole "A" (see Figure 5). Make certain the tool is fully seated (plastic handle nearly touching microphone case back).
2. To prevent the sounds of the programming process from being transmitted, do *not* press the push-to-talk button.
3. Press the desired keypad buttons in sequence. To program the [*] or [#] codes, press that button *twice*.
4. To include a programmed pause in the sequence, press [*], then [#].
5. To complete storage of the sequence in memory, press [*], followed by the appropriate numeric key ([1] through [9]) for the desired memory location.
6. Each key press is accompanied by a *low*-pitched tone, and the transmitter is not keyed. This indicates that the 890TT is in the programming mode, not the dialing mode.
7. Program additional sequences as described above.
8. Remove the programming tool to restore the dialing mode.
9. LAST-NUMBER-DIALED STORAGE: The current contents of the last number memory can be stored in a numeric memory location by entering the programming mode, pressing [*], and pressing the appropriate numeric key ([1] through [9]).

10. NOTE: The 890TT can also be placed in the programming mode by pressing and holding the push-to-talk button. Although DTMF tones will not be generated, the *sounds* of the programming process, including the confirmation tones, will be transmitted.
11. NOTE: If the programming tool is not available and it is not desirable to key the transmitter during programming, a substitute tool can be made from a standard #1 bare wire paper clip made of smooth-surfaced 0.91 mm (0.036 in.) wire. To avoid internal contact damage, the wire diameter must not exceed 0.97 mm (0.038 in.), and serrated-surface clips are not recommended. Use extreme care in inserting this emergency tool, and do not allow the uninsulated protruding portion to make contact with any metal surface.

MODIFICATIONS

Certain applications require that the 890TT be internally modified. These modifications should be performed by qualified service personnel only.

CAUTION

This microphone contains static-sensitive semiconductor devices. All work must be performed at a static-free work station using properly grounded equipment. Soldering operations must be performed using a fine-pointed, low-wattage soldering iron.

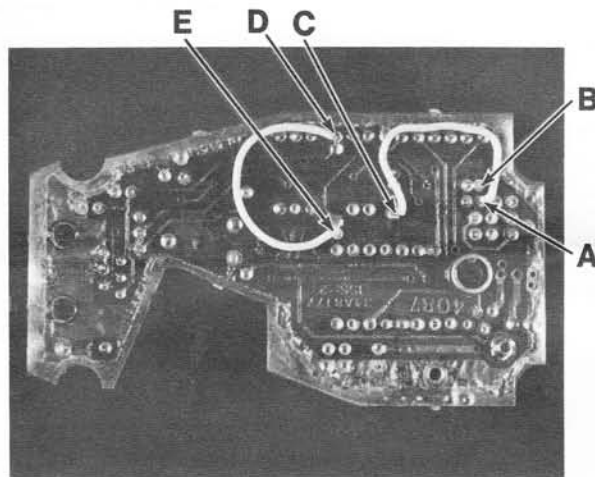
To perform internal modifications, disassemble the 890TT as follows.

1. Turn the equipment power off.
2. Remove the cable from the 890TT as previously described.
3. Remove the four screws from the rear of the 890TT case.
4. Holding the 890TT with the rear toward you and the cable connector downward, *carefully* remove the case rear from the front. Make certain the rear printed-circuit board *does not become disconnected* from the remaining boards attached to the case front. Carefully pivot the case rear to the right. Five wires remain attached between the rear printed-circuit board (retained in the case front), and the switch and lug attached to the case rear. This exposes the solder side of the rear printed-circuit board.
5. Perform the required modification(s).
6. Carefully reassemble the case rear to the case front, guiding the front pin of the push-to-talk button into the round pivot recess of the case front. Reposition wires as necessary to make certain none are pinched between the case halves.
7. Replace the four screws and reinstall the 890TT.

E.F. Johnson and Special Applications

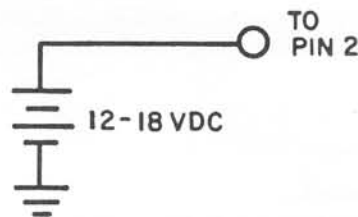
IMPORTANT: To avoid permanent damage to the 890TT, this modification *must* be performed before using the 890TT with any equipment marked with an asterisk (*) in the microphone cable listing or with any radio having an input circuit as shown in Figure 7. For radios with this type of input, the audio output must be wired to pin 6 (not pin 2) of the 890TT's modular connector.

1. Open the microphone as described above.
2. Locate the jumper wire connected between points "D" and "E" as shown in Figure 6.



JUMPER LOCATIONS
FIGURE 6

3. Using diagonal cutting pliers, clip and remove this wire from both points and discard it.
4. Reassemble the microphone.



NON-DC-BIASED INPUT CIRCUITS
FIGURE 7

Changing Dialing Speed

The rate at which dialing takes place can be modified by changing the location of a jumper wire as shown in Figure 6. The choices are as follows.

Initial Delay (msec)	Tone Duration (msec)	Intertone Duration (msec)	Tone Signal Rate (per second)	Jumper Position
60	48	50	10.2	A to B
125	95	97	5.2	A to C*
350	260	270	1.9	B to C
420	320	330	1.5	Remove Jumper

*As supplied.

To change from the factory-supplied dialing speed, proceed as follows.

1. Open the microphone as described above.
2. To change the jumper position, either:
 - A. Carefully unsolder the *one* end of the jumper whose location is to be changed. Solder this end of the jumper to the new point. Or,
 - B. Clip and remove the jumper from points A and C, and discard.
3. Reassemble the microphone.

REPLACEMENT PARTS

Battery-LED PC Assembly (front)	RK266
Digital PC Assembly (middle)	RK267
Cartridge-Amplifier PC Assembly (back)	RK268
Keypad	RK269
Membrane Switch Assembly	RK270
Leaf Switch Assembly	RK271S
Switch Pushbutton	65A1648
Cable and Modular Plug	See table

FURNISHED ACCESSORIES

Screwdriver	65A1587
Programming Tool	90A4074

OPTIONAL ACCESSORY

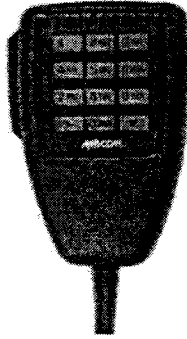
Mounting Bracket (3 in kit)	RK6MB
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M/A-COM
One Mountain View Road
Lynchburg, Virginia 24501

DATA SHEET
MODEL 344A4611P1
MODEL KRY1011637/3
MODEL KRY1011654/10

HAND-HELD TRANSISTORIZED CONDENSER DTMF COMMUNICATIONS MICROPHONE



GENERAL

The M/A-COM hand-held, amplified, condenser DTMF communications microphone with an illuminated keypad is ideal for upgrading existing two-way radios for use with advanced telephone interconnect systems or for new installations. It is designed for rugged and reliable operation in any mobile communications application. The microphone has an omnidirectional pickup pattern and provides extremely clear transmission, even in noisy environments. In addition to its clear, crisp, natural voice response, the microphone has extremely low sensitivity to hum pickup and low susceptibility to radio frequency interference.

For installations where transmitter input gain requires sensitivity modification, the microphone has convenient, externally accessible screwdriver controls for independent adjustment of both microphone and DTMF levels. This eliminates the problem of fixed audio levels and the necessity for disassembling the microphone for adjustments. Restricting control access also prevents accidental changes common to external controls.

The microphone is designed for use with most currently available mobile two-way radio transceivers. For installation convenience, all microphone and signalling functions, including keypad illumination, are powered directly from the microphone input circuit of most transmitters, minimizing the need for equipment modification. The microphone is compatible with a choice of five-conductor, pre-wired, coil-cord MODULINK® cables, each of which has a telephone-type modular plug on the microphone end, and a choice of popular transmitter input connectors on the other. The cables are instantly changed or replaced without soldering.

The microphone features attractive, contemporary styling, designed to blend with most radio designs and vehicle interiors. The

microphone is ergonomically designed; it fits naturally and comfortably in the hand and is not affected by heat or humidity. The rugged ARMO-DUR® case is immune to oil, grease, most fumes and solvents, salt spray, sun, rust and corrosion. It is outstanding in its ability to withstand mechanical shocks and vibration. The Million-Cycle Plus™ leaf-type switch is a double-pole, single-throw type, designed to resist the effects of severe operating conditions and constant usage. It has nickel-silver blades, and its contacts are palladium-alloyed for reliable, oxidation-free operation.

The microphone's keypad is made of tough silicone rubber, with durable printed characters that will last the life of the microphone. The keypad is backlit by red LEDs, easily visible during night operation and minimizing eye readjustment for night vision.

The microphone is supplied with a small screwdriver for adjusting the microphone amplifier gain and DTMF level, and for releasing the modular-plug microphone cable from the microphone.

Features

- Top-Talk Sound Channels™ for clear voice input, easy handling
- Built-in transistor amplifier (powered by carbon-microphone-type circuit)
- Frequency response from 200 to 4,000 Hz, tailored for voice communications
- Illuminated keypad with positive tactile feel and audible confirmation tones
- Auto push-to-talk (APTT) automatically keys transmitter when keypad is depressed
- Convenient external microphone gain adjustment accommodates most input circuits
- Simple, easy-to-use continuous-tone dialing
- Externally accessible DTMF level adjustment, independent of microphone gain setting
- Modular-plug coil-cord—easily attached and removed
- Low susceptibility to radio frequency interference
- Low sensitivity to hum pickup
- Rugged Million-Cycle Plus leaf-type switch stands up under severe environments and constant use
- High-impact ARMO-DUR case—stronger and lighter than die-cast metal, comfortable to the touch in hot or cold weather
- Rugged and dependable under all operating conditions
- Hang-up button connection available for microphone hang-up sensing (mounting bracket must be grounded)

NOTICE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

MODULINK, ARMO-DUR, Million-Cycle Plus, and Top-Talk Sound Channels are trademarks of Shure Incorporated, Evanston, Illinois, U.S.A.

SPECIFICATIONS

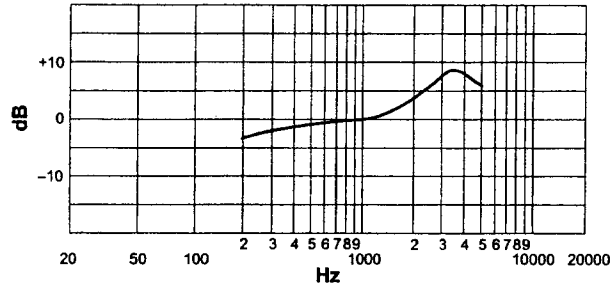
(Test conditions unless otherwise specified: audio output measured between pin 2 and ground; PTT switch depressed; no hang-up button connection; mic and DTMF level trimmers full clockwise; dc DMM 10 MΩ or greater input impedance; ac DMM 1 MΩ or greater input impedance.)

Type

Electret condenser (with transistor preamplifier, DTMF signaling circuitry, illuminated keypad)

Frequency Response

200 to 5,000 Hz (see Figure 1)



TYPICAL FREQUENCY RESPONSE
FIGURE 1

Polar Pattern

Omnidirectional

Output Level (at 1,000 Hz, 1 cm)

-27.5 dBV/Pa (V+ = 12 V) (0 dB = 1 V per Pascal)

DC Supply Current

4.0 mA at 12 V

Hum Sensitivity

-94 dBV maximum in 1 Oe 60 Hz field (mic level control full counterclockwise)

DTMF Output Level

1.0 V peak-to-peak

Audio Polarity

Positive sound pressure produces positive voltage at pin 6 of modular connector with respect to ground

Environmental Conditions

Operating Temperature: ... -40° to 60° C (-40° to 140° F)

Storage Temperature: -54° to 85° C (-65° to 185° F)

Relative Humidity: 0 to 95% (non-condensing)

Microphone Connector

6-conductor modular telephone type

PTT Switch Assembly

Mechanical: Double-pole, single-throw, leaf-type, normally open.

Electronic: Open NPN transistor collector to ground; positive polarity only; maximum on-state current 100 mA to produce 0.6 V or less; maximum off-state voltage 40 V.

Cable

Detachable, 1.4 m (48 in.), 5-conductor (1 shielded), vinyl-rubber-jacketed coil cord with modular plug on microphone end

Construction

Case Black textured high-impact ARMO-DUR®

Switch Button Black ARMO-DUR

Keypad Molded silicone rubber

Dimensions

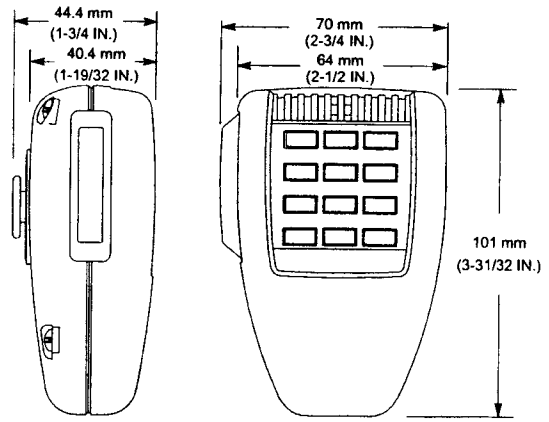
See Figure 2

Net Weight

160 grams (5.6 oz)

MOUNTING

The microphone is provided with a rear-case hang-up button for use with a grounded mounting bracket on or near associated equipment. Grounding of the bracket is the customer's responsibility. Heavy-duty, chrome-plated mounting brackets are available Part No. 344A4678P1.

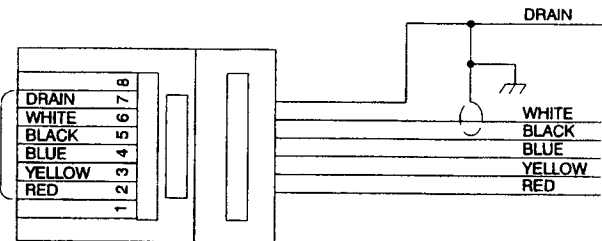


OVERALL DIMENSIONS

FIGURE 2

IMPORTANT: The microphone hang-up button is connected to the blue cable conductor for radios with microphone hang-up sensing.

MICROPHONE CABLES



MICROPHONE END CABLE WIRING

FIGURE 3

MICROPHONE CONNECTOR WIRING

Color	Function	Part No.		
		344A4611-P1 (Fig. 4)	KRY1011-637/3 (Fig. 4)	KRY1011-654/10 (Fig. 5)
Black	A-	7	7	7
Yellow	PTT	3	3	3
White	Mic Hi	1	1	1
Red	Switched A+	6	6	6
Drain	Mic Lo	2	2	2
Blue	CG Dis	8	8	8

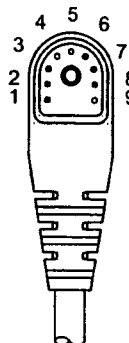


FIGURE 4

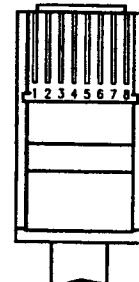


FIGURE 5

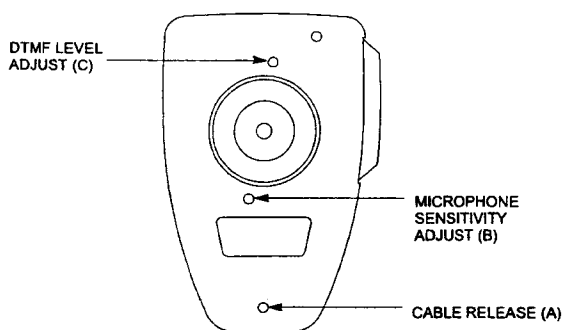
EQUIPMENT END CABLE WIRING

The cable is attached to the microphone by inserting the modular telephone-type plug in the microphone jack until it locks. To remove the cable from the microphone, insert the small screwdriver supplied with the microphone in rear case hole "A" just above the cable jack (see Figure 6) to unlock the plug and withdraw the plug from the jack.

ADJUSTMENTS

After connection to the communications equipment and with equipment power turned on, the microphone sensitivity and DTMF output levels should be adjusted with the supplied screwdriver as follows.

1. **MICROPHONE SENSITIVITY:** Press the push-to-talk button and speak normally into the microphone while observing transmitter modulation. Adjust the microphone sensitivity control (rear case hole "B" in Figure 6) and repeat the talk test as required.
2. **DTMF OUTPUT:** Do not press the push-to-talk button. Depress and hold down the "#" key for a continuous tone. Adjust the DTMF output control (rear case hole "C" in Figure 6) for 60% of rated system deviation.



MICROPHONE CASE, REAR
FIGURE 6

OPERATION

Operation of all microphone and DTMF functions requires that the microphone is connected to the communications equipment and that the equipment power is turned on. Power application can be verified by observing keypad LED backlighting.

Voice Transmission

1. Hold the microphone comfortably in the hand, positioned so that the Top-Talk Sound Channels™ at the top of the case are near the mouth. The clearest sound is often obtained with the microphone at the corner of the mouth, with the cable away from the face.
2. Press the push-to-talk button and make sure the equipment is in the transmit mode before speaking.
3. Release the push-to-talk button before dialing.

Dialing

1. Do not depress the push-to-talk button.
2. Press the desired keypad buttons in sequence. A high-pitched tone will confirm that the code has been transmitted.
3. When the first keypad button is pushed, the transmitter is automatically keyed. The transmitter for models 344A4611P1 and KRY1011654/10 will remain keyed for approximately 1.5 seconds after the button is released. Model KRY1011637/3 has no hangtime delay upon release of the keypad.

SERVICE INSTRUCTIONS

CAUTION

These microphones contain static-sensitive semiconductor devices. All work must be performed at a static-free work station using properly grounded equipment. Soldering operations must be performed using a fine-pointed low-wattage soldering iron.

To Disassemble the Microphone

1. Disconnect the microphone and remove the cable.
2. Remove the four Phillips-head screws from the back of the microphone.
3. Hold the microphone with its back toward you and the cable connector down. Carefully separate the case back slightly from the front. Pivot the case back to the right taking care not to damage any internal leads or components. Observe that four leads attach the leaf switch to the boards, and one blue lead attaches the rear board to the terminal in the center of the case back.

To Detach the Case Back and Rear Printed Circuit Board

1. With the partially disassembled microphone face down on a flat surface and with the cable entry toward you, locate the multipin connector on the left side between the center board and the rear board. Carefully pry the rear board away from the connector on the center board. (To start the process, the flat blade of a small screwdriver can be inserted between the terminal pins connected to the rear board and the connector attached to the center board.)
2. Lift the microphone case back and the rear board away from the center board.

CAUTION: The center board contains static-sensitive semiconductor devices that can be functionally damaged by handling. Make certain proper procedures are followed when working with this board.

To Separate the Center Board From the Front Board

1. Observe that a flexible ribbon cable connects the center board to the front board. To detach this cable, with the case front still face down on the table and the cable entry still toward you, carefully unsolder the tabbed leads.
2. Rotate the case front so the voice entry port is toward you. Use the two cylindrical posts at diagonal corners of the board to lift the center board away from the front board. The flat blade of a small screwdriver, inserted under the board edge near the voice entry port, may be used to aid in carefully prying the center board (which is now uppermost) away from the front board.

In the microphone, back-to-back connectors on the side of the center board opposite the push-to-talk switch attach to the rear and front boards. When pried up, the center board will detach at this connector.

In the microphone, the orange lead from the push-to-talk switch is connected to the center board. To complete separation of the center board, unsolder the orange lead at the leaf switch.

3. Lift the center pc board out of the case.

To Remove the Front Board from the Case

1. Remove the two flat-head Phillips screws, one from each side of the board.
2. Remove the insulator around the base of the flexible cable. Thread the cable through the slot in the board. Lift the board free of the case, carefully sliding the whole length of the flexible cable through the slot.

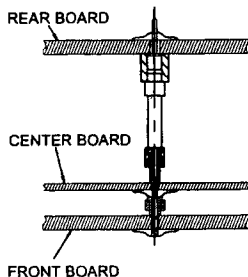
To Conclude Disassembly of the Microphone

The membrane switch assembly and keypad can now be lifted out of the case.

1. To free the rear board from the case back, unsolder the leads from the hangup button and leaf switch terminals.
2. To remove the leaf switch assembly, remove the two Phillips-head screws that attach it to the case back.

To Reassemble the microphone

Reassemble the microphone by reversing the steps of disassembly. Figure 7 shows the configuration of connectors between the front, center, and rear boards in the microphone.



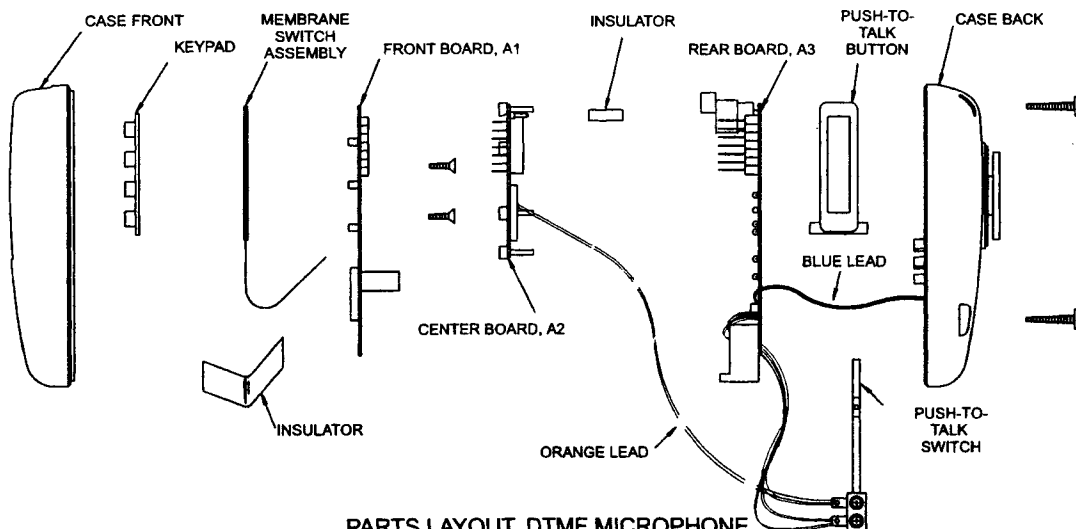
CONNECTOR DETAIL BETWEEN BOARDS
FIGURE 7

To Replace the Microphone Cartridge

1. Remove the flexible black resonator from the cartridge on the rear board.
2. Unsolder the three cartridge terminals from the board and detach the cartridge from the board.
3. Insert the new cartridge terminals in the board with the single (ground) terminal in the hole closest to the edge of the board and the other two terminals (with the insulator connecting them together) toward the center of the board. Insert the terminals until the posts on the front of the cartridge body stop at the board surface.
4. Carefully solder the new cartridge terminals to the board.
5. Replace the black resonator on the cartridge with its long flat edge parallel to the rear of the board.

OPTIONAL ACCESSORY

Mounting Bracket 344A4678P1

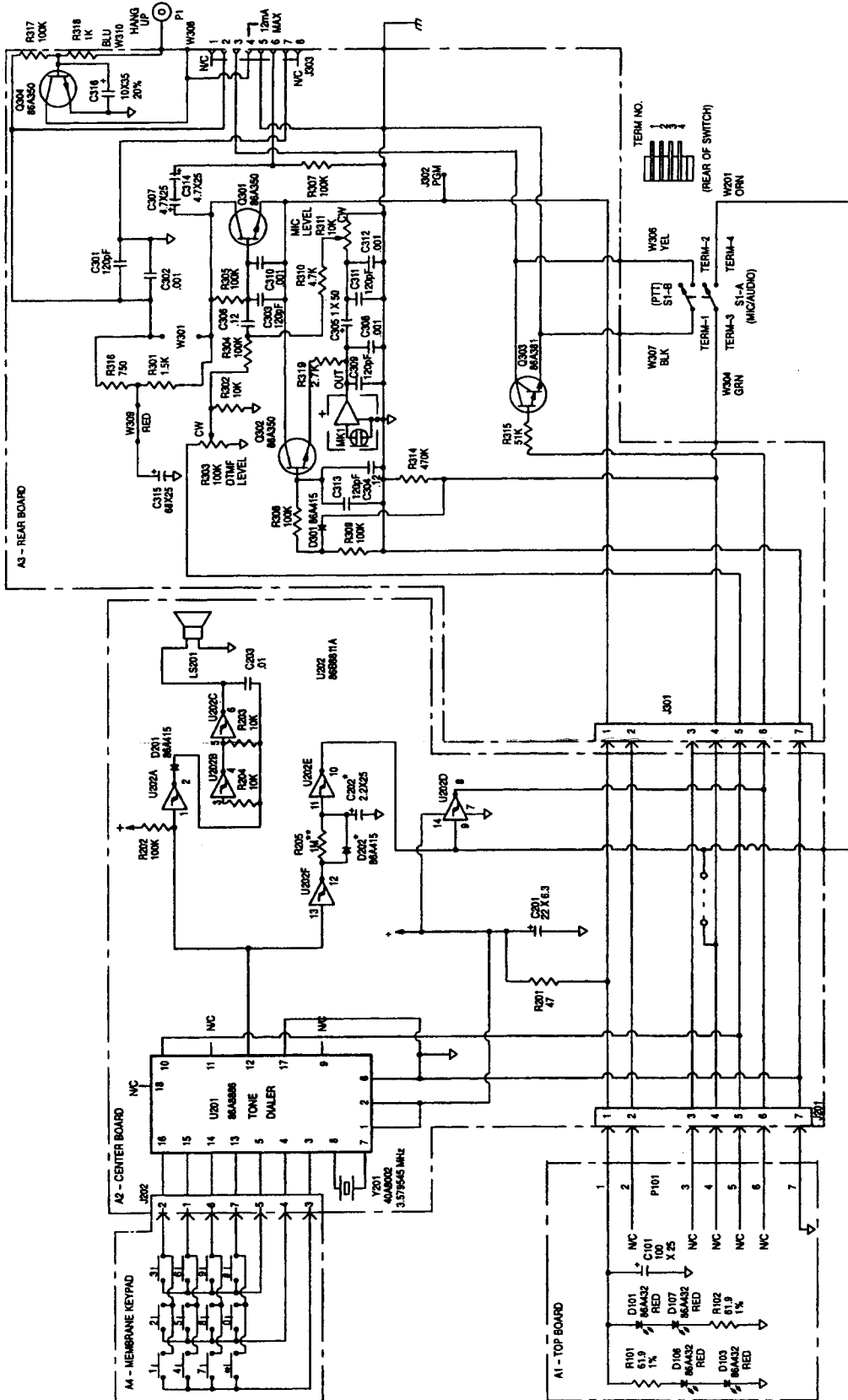


PARTS LAYOUT, DTMF MICROPHONE
FIGURE 8

INFORMATION TO USERS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and as set out in the Radio Interference Regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the microphone and receiver.
- Connect the microphone transmitter to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



NOTES:

1. ALL RESISTORS 1/4W, 5% UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITORS IN μ F AND 50V OR MORE UNLESS OTHERWISE SPECIFIED.
3. THE FOLLOWING SYMBOLS DENOTE: ∇ CHASSIS GROUND ∇ P.C. GROUND

4. * PARTS DELETED ON KRY1011637/3
 ** JUMPER USED ON KRY1011637/3

MODELS 344A4611P1, KRY1011637/3, and KRY1011654/1

M/ACOM