

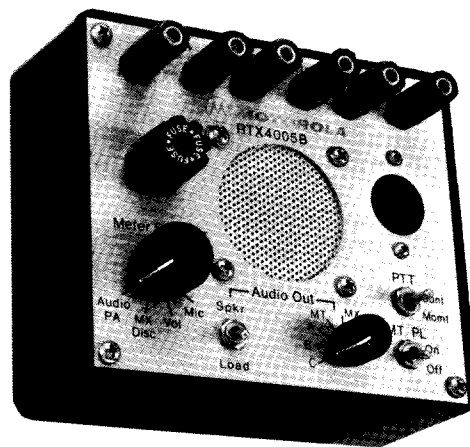
NOTE: This unit has been replaced by the RLN4460 Test Box.



MOTOROLA
test equipment

PORTABLE RADIO TEST SET

RTX-4005B





MOTOROLA INC.
Communications
Sector

PORTABLE RADIO TEST SET MODEL RTX-4005B

1. DESCRIPTION

The RTX-4005B Portable Radio Test Set is a service aid for the following Motorola *Handie-Talkie* series portable FM two way radios: *MT500*, *MX-300*, *HT90*, *HT440*, *HT600*, *PT500*, and *EXPO*; also, the test set may be used to service the *Maxar 50* fm two-way mobile radio. Typical measurements such as simulation of transmitter modulation and keying, receive audio output, and various receiver test points can be readily accessed. The applications and procedures using the test set are described within the appropriate radio service manual. Since the RTX-4005B Portable Radio Test Set is a self-contained unit, all interfacing to a portable or mobile radio is accomplished through an accessory cable, as described in paragraph 3.

2. OPERATOR ITEMS

All operator items are mounted on the front panel and are identified as to their function. Before using the RTX-4005B Portable Radio Test Set, the operator should thoroughly understand the functions of these items given in the following paragraphs. For quick reference, Figure 1 shows a brief functional description and location of all the operator controls.

- *MT B+ Binding Posts*

15 V dc input power connections for *MT500* series radios when tested with the front panel cover removed. An inline fuse protects the B+ circuit. The black binding post is internally connected to the radio via the accessory cable.

- *AC/DC MTR Binding Posts*

Connections for external ac or dc voltmeter when measuring circuit performance or the microphone (MIC) input level. The black binding post is internally connected to the radio via the accessory cable.

- *AUDIO IN Binding Posts*

Connections for an external audio oscillator for circuit testing. The input impedance is 600 ohms and is developed from a 15 dB resistive network. The black binding post is internally connected to the radio via the accessory cable.

- *METER SELECTOR Switch*

Determines which circuit is connected to the AC/DC MTR binding posts for performance measurements. The MIC (microphone) position provides metering of the internal radio microphone output level, or the input signal level from the audio oscillator connected to the AUDIO IN binding posts. The VOLUME position provides metering of the receiver audio directly from the volume control before it is fed to the output power amplification stages. The MX DISC position provides metering of the recovered receiver audio directly from the discriminator for *MX-300* series radios. The AUDIO PA position provides metering of the amplifier receiver audio.

- *MT PL Switch*

Used to select the type of receiver squelch control, either *Private-Line* (PL) or noise (carrier), of *MT500* series radios. The ON position enables the PL squelch circuit while the OFF position disables the PL squelch circuit, reverting back to noise squelch control.

- *AUDIO OUT Switches*

Used to route the recovered receiver audio to the test set speaker (SPKR) for audible testing or to the internal resistive LOAD for non-audible testing. Use the MT/MX/A/B/C rotary switch to select the proper LOAD impedance; MT position for *MT500* series radios and MX position for *MX-300* series radios, and "B" position for *HT600*.

EXPO, Handie-Talkie, HT440, HT600, HT90, Private-Line, PT500, MX-300, and Maxar 50 are trademarks of Motorola, Inc.

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• PTT Switch

Provides a switched ground push-to-talk (PTT) function to turn on the transmitter of the radio under test. This is a three-position switch with one non-locking, spring-loaded return-to-center position. The CONT (up) position is locking and provides a continuous PTT function whereas the MOMT (down) position is non-locking and provides the PTT function for as long as the switch is held in the MOMT position. The PTT function is disabled when the switch is in the unmarked (center) position.

3. ACCESSORY CABLES

There are several accessory cables available for servicing with or without the front cover panels installed as identified in Figure 2. The RTK-4000A and RTK-4021A Test Cables provide direct connection to the Universal MT500 series radios and MX-300 series radios, respectively, without removing the front cover from the radio. This permits rapid performance testing of the selected functions. The RTK-4001A Test Cable provides connection to MT500 Series models, when the front cover is

removed. This permits circuit adjustments to be made within the radio when the radio is being tested with the test set. The RTK-4003A RF Test Cable is available for making rf measurements of Universal MT500 series radios without removing the front cover. The test set is not used when taking rf measurements with this cable.

The RTK-4013B Test Cable provides interfacing between the test set and PT500 series radios by connecting directly to the microphone connector on the radio. The RTK-4038A Test Cable provides the interface between the test set and the HT90 and HT440 series radios only if the front cover is removed from the radio. The RTK-4039A Test Cable provides interfacing between the test set and the HT90 and HT440 series radios with or without the radio covers in place. The RTK-4059A Test Cable provides the interface between the test set to the EXPO series radios only if the radio unit is removed from the housing. The RTK-4073A Test Cable provides interfacing between the test set and the Maxar 50 series radios by connecting directly to the microphone connector on the radio.

The RTK-4205A Test Cable provides interfacing between the test set and the HT600 series radios.

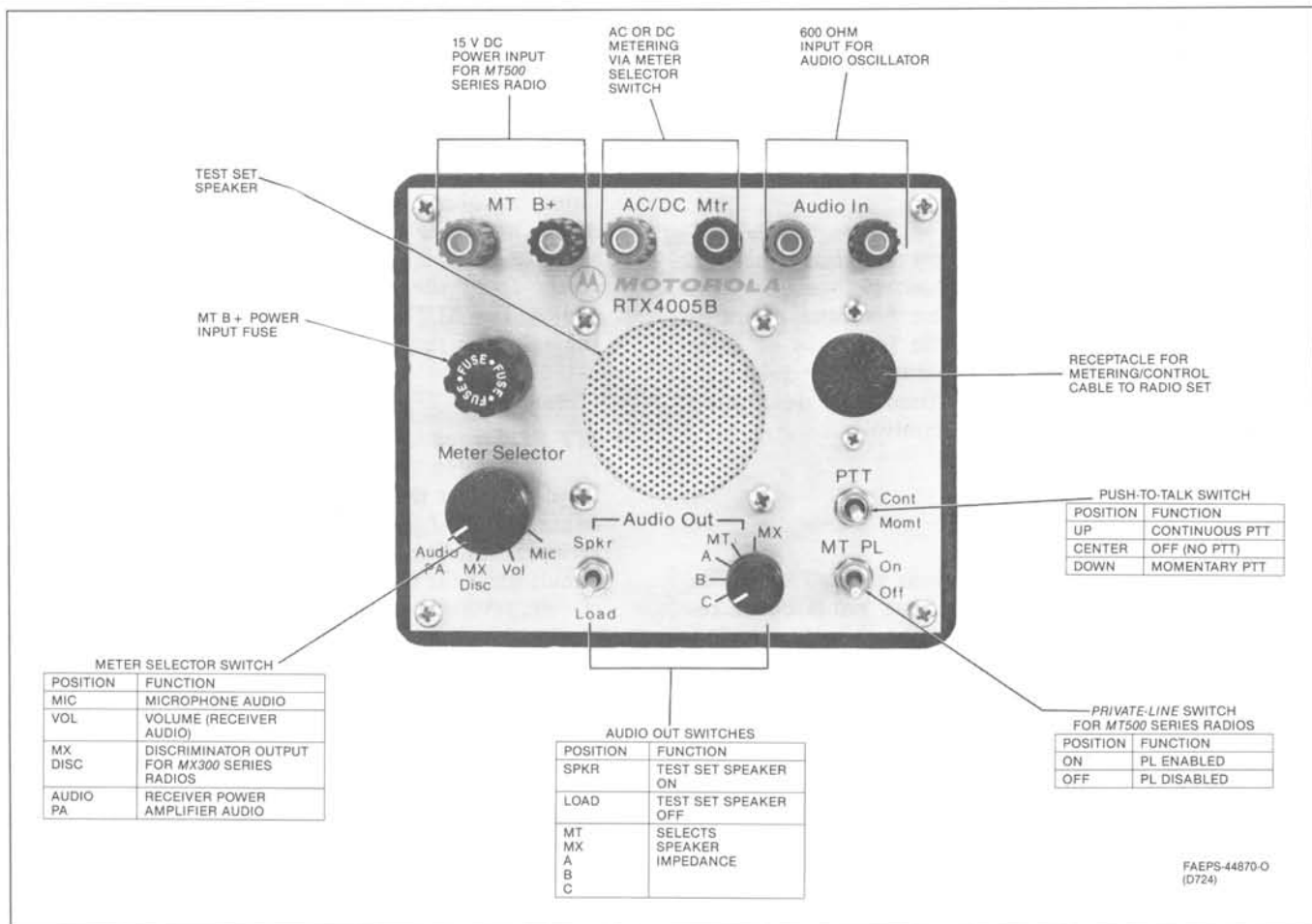












Figure 1. Portable Radio Test Set Operator Items

CABLE	PART NO.	USED WITH	CABLE	PART NO.	USED WITH
	RTK-4000A	UNIVERSAL MT500 SERIES		RTK-4038B	HT90 AND HT440 SERIES
	RTK-4001A	BASIC OR UNIVERSAL MT500 SERIES		RTK-4039B	HT90 AND HT440 SERIES
	RTK-4003A	MT500 SERIES		RTK-4059A	EXPO SERIES
	RTK-4013B	PT 500 SERIES		RTK-4073A	MAXAR 50 SERIES
	RTK-4021A	MX300 SERIES		RTK-4205A	HT600 SERIES

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Figure 2. Accessory Cables For Portable Radio Test Set

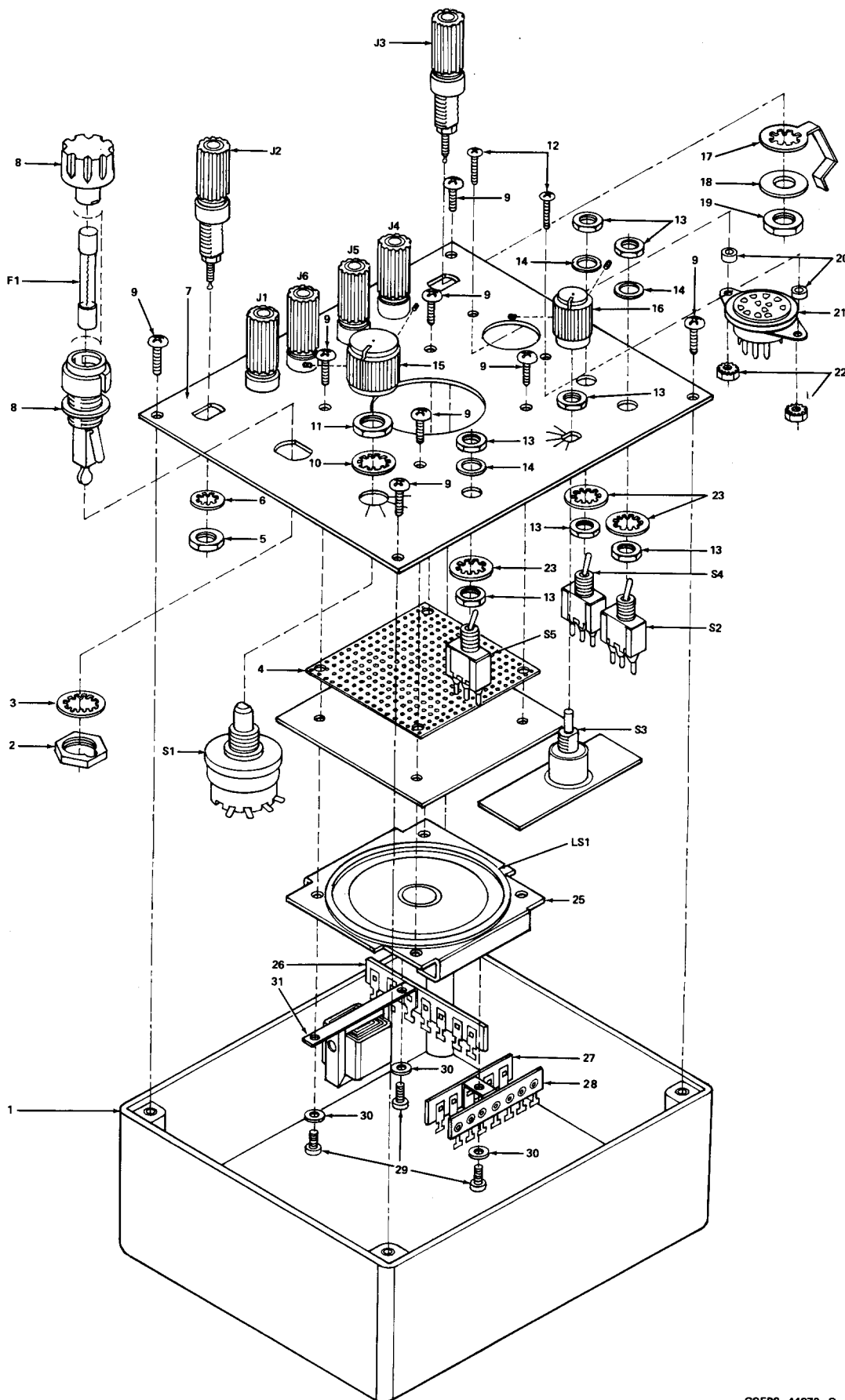


Figure 3. Mechanical Parts Detail

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parts list

RTX4005B Portable Test Set

PL-10701-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
CR1	4882466H13	diode: (see note) silicon
F1	6500042092	fuse: 2amp, 250V
J1,3,5 J2,4,6 J7	4600863924 4600863925 0982201E01	connector: post, binding: black post, binding: red female, 12 contact
LS1	5005334D01	speaker: 39 ohm
R1 R2 R3 R4,5 R6 R7 R8 R9	0600125C21 0600124A73 0600126A15 0600124C43 0600124A19 0610621A75 0684444A04 0611009A17	resistor, fixed: $\pm 5\%$ 1/4W; unless otherwise stated 68 $\pm 10\%$ 1/2W 10k 39 1W 560 10% 56 59 $\pm 1\%$ 7.87 $\pm 1\%$ 47
S1 S2 S3 S4,5	4083624D01 4080310A28 4080369B22 4082085J02	switch: rotary, 1 pole 4 position toggle, rotary, 1 pole 5 position toggle
T1	2584903H01	transformer: audio

non-referenced items

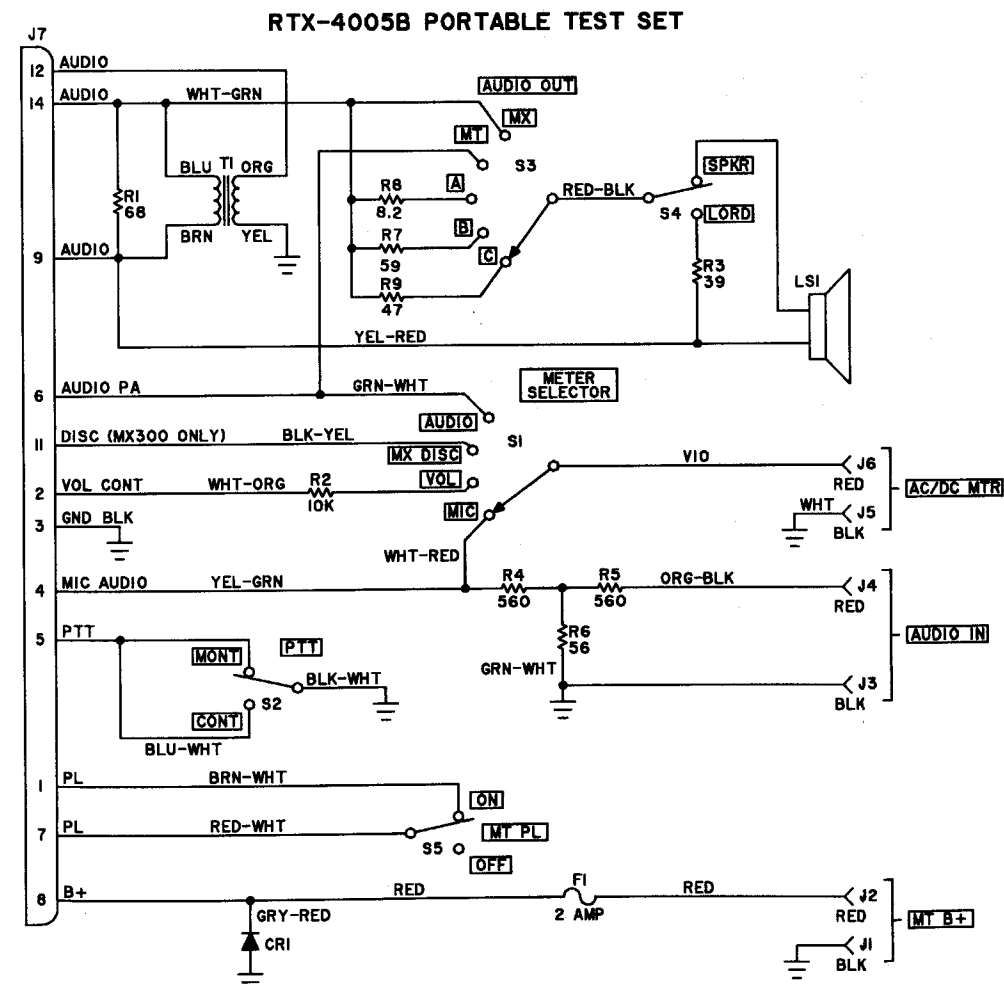
7584201D42	BUMPER
4300854337	BUSHING, spacer
1380329A66	SCREEN, speaker
1584819F01	CASE
2900005237	LUG, soldering
3100120582	TERMINAL, 6 insulated #4 ground 1/4"
3100124448	TERMINAL, strip 4 insulated #3 gnd 1/4"
3183193F01	TERMINAL, board
3580313A21	GRILLE, felt
3680337A83	KNOB
3680337A85	KNOB: blk
3380348A05	NAMEPLATE
5483042H67	LABEL
0200007018	NUT, 3/8-32x1/2x3/32"
0200131435	NUT, 4-40x1/4x3/32"; 2 used
0200140458	NUT, hex: 1/4-28x5/16x1/16"
0300001911	SCREW, machine: 2-56x1/4"; 3 used
0300121103	SCREW, machine: 6-32x3/8"; 8 used
0300122924	SCREW, machine: 4-40x5/16"; 2 used
0400001754	WASHER, flat: .328 .625 .040"
0400007669	WASHER, lock: #6 split; 8 used
0400007670	WASHER, lock: 1/4" internal; 3 used
0400007698	WASHER, lock: 3/8" internal
0400008242	WASHER, flat: .094 .250 .027"; 3 used
0400008406	WASHER, lock: #2 internal; 3 used
0400009788	WASHER, lock: 5/16" internal; 5 used
0400115021	WASHER, lock: 1/4" internal
0482650D02	WASHER, flat: 3 used
0780329A67	BRACKET, speaker
0982083C01	RECEPTACLE, fuse
5483042H67	LABEL
6480368B97	PANEL, front

note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

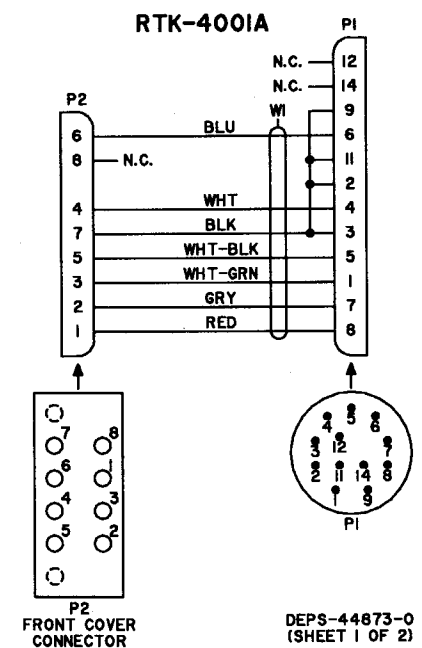
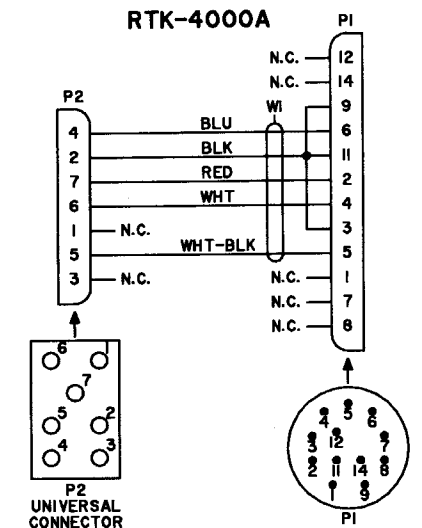
RTX4005B Mechanical Parts (Exploded View)

PL-10751-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
1	15-84819F01	CASE
2	2-7018	NUT, 3/8-32 x 1/2" x 3/32"
3	4-7698	WASHER, lock; 3/8" internal
4	13-80329A66	SCREEN, speaker
5	p/o J2	NUT
6	4-9788	WASHER, lock: 5/16" internal; 5 used
7	64-80368B97	PANEL, front
8	9-82083C01	HOLDER, fuse
9	3-121103	SCREW, machine: 6-32 x 3/8"; 8 used
10	4-115021	WASHER, lock: 1/4" internal
11	p/o S1	NUT
12	3-122924	SCREW, machine: 4-40 x 5/16"; 2 used
13	p/o S2, S4, S5	NUT, mounting: .062 x .312"; 6 used
14	p/o S2, S4, S5	WASHER
15	36-80337A85	KNOB (BLK)
16	36-80337A83	KNOB
17	29-5237	LUG, soldering
18	4-1754	WASHER, flat
19	2-140458	NUT, hex 1/4-28 x 5/16 x 1/16"
20	43-854337	BUSHING, spacer; 2 used
21	9-82201E01	NUT, 4-40 x 1/4 x 3/32"; 2 used
22	2-131435	WASHER, lock: #2 internal; 3 used
23	4-8406	NUT USED
24	—	—
25	7-80329A67	BRACKET, speaker
26	31-83193F01	TERMINAL, board; 6 insulated #3 ground
27	31-124448	TERMINAL, strip; 4 insulated #3 ground
28	31-120582	TERMINAL, strip; 6 insulated #4 ground
29	3-1911	SCREW, machine: 2-56 x 1/4"; 3 used
30	4-8242	WASHER, flat: .094 x .250 x .027"; 3 used
31	7-80329A67	BRACKET, speaker



METERING/CONTROL CABLES

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(SHEET 1 OF 2)

METERING/CONTROL CABLES

