

1. DESCRIPTION

The Model NSN6027A 12-Watt Audio Amplifier-Speaker provides an increased audio output level for high-noise level areas. It is designed for use with the MX300 and MT500 Series "Converta-Com" consoles. The user can adjust the audio level to that most suitable to override the surrounding noise level regardless of the volume setting on the portable radio in the "Converta-Com" console. The portable radio volume level can remain adjusted for best audio as needed when worn on the belt. There is no need to adjust and readjust the volume setting each time the radio is taken in and out of the vehicle.

The assembly consists of an audio amplifier circuit board, a weatherproof speaker, and a cable terminated in five contacts which are inserted into the "Converta-Com" console multiconductor plug. For additional information refer to the appropriate console interconnecting and intercabling detail in the "Converta-Com" instruction manual. The plug is located on the rear of the console. The 3.2Ω, five-inch speaker is capable of handling up to 12 watts of audio.

2. INSTALLATION

The audio amplifier-speaker includes a trunnion bracket,

hanger bracket, and wall-mount bracket which permits the speaker to be mounted in a variety of ways. The trunnion bracket is used to permanently mount the speaker to the dashboard or accessible firewall areas, while permitting the speaker to be tilted or angled. The hanger bracket (already attached to the speaker) permits temporary mounting, such as on an automobile window. The speaker must be removed from the trunnion bracket to use the hanger bracket. The wall-mount bracket can be used for permanent mounting if the trunnion bracket is too large to fit in the desired area. In this instance, the trunnion bracket is removed and the speaker is attached to the wall-mount bracket by the hanger bracket.

Refer to Figure 1 for installation information. Perform the following procedures:

- Using the speaker trunnion bracket as a template, drill the necessary mounting holes and secure the bracket with the self-tapping screws provided.
- Position the audio amplifier-speaker onto the trunnion bracket, and secure it using the wing screws supplied.
- Remove the multiconductor cable plug from the

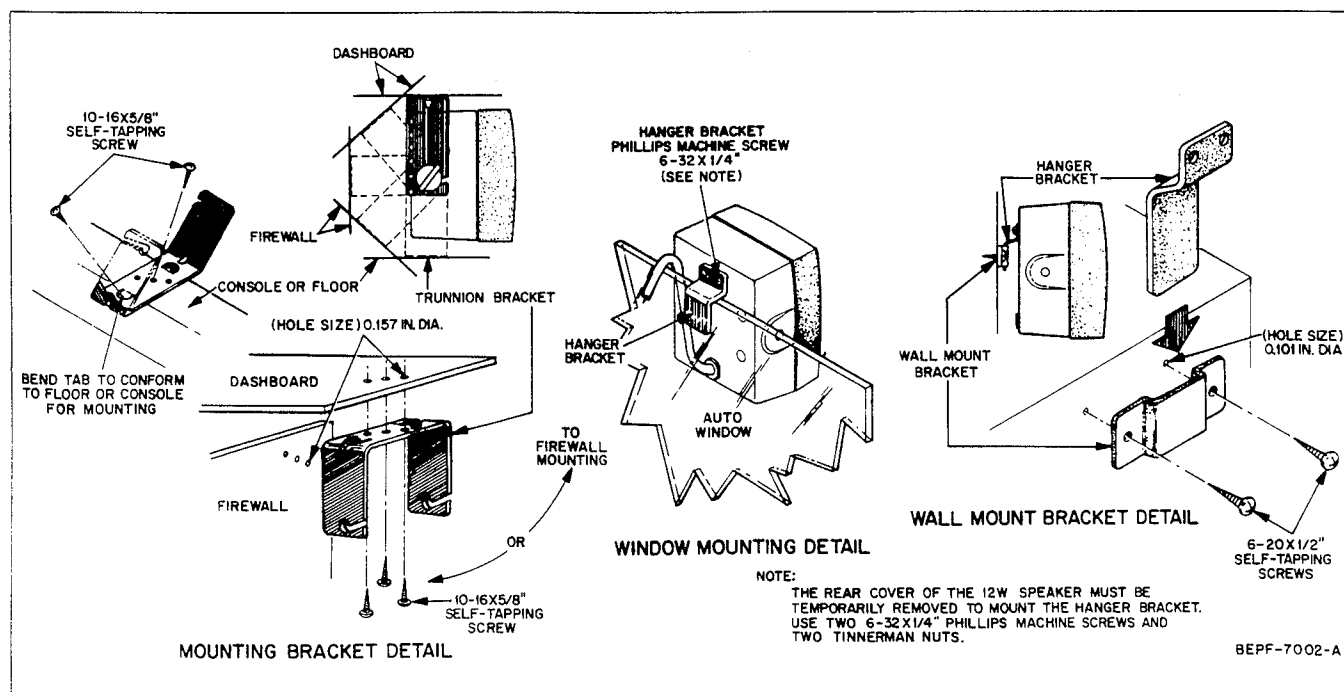


Figure 1. 12-Watt Audio Amplifier-Speaker Installation Detail

NSN6027A SPEAKER WIRE COLOR	TO "CONVERTA-COM" CONTROL CABLE
Brown	P3-1
Shield	P3-2
Black-White	P3-3
Green	P3-14
Red-Yellow	P3-19

"Converta-Com" console (P3) and connect the five contacts to the plug as designated in the table above.

Also, add a jumper from P3-21 to P3-22 and a jumper from P3-2 to P3-3. If some of the contacts need to be relocated, refer to Figure 2 for instructions on contact removal and installation.

d. Reconnect the multiconductor plug back to the console.

3. CIRCUIT DESCRIPTION

The audio output of the "Converta-Com" console is amplified by the two halves of a 12-watt differential audio amplifier (U1A and U1B). After amplification, it is fed to the drivers; the U1A output is fed to Q4 and Q5, and the U1B output is fed to Q10 and Q11. These further amplify the signal giving it more power gain. From there the audio signal is fed into final amplifiers Q6 and Q7, and Q8 and Q9, which drive the speaker.

The squelch input from the output of portable radio hybrid U8 is fed through R6 to the base of Q3. When the radio

is squelched, the base of Q3 is low, allowing Q3 to remain in the off condition. If Q3 is off, it disables integrated circuit U1, and through transistors Q2, Q1, Q13, and Q12 shuts off the rest of the power amplifier circuit so that a minimum of current is drawn. When the receiver unsquelches, U8 of the portable radio is on, the dc level on the squelch input rises, turning on Q3 and enabling integrated circuit U1. Q3 also enables Q1, Q2, Q12, and Q13 to bias the remaining circuitry up to its normal operating condition to amplify the incoming audio signal.

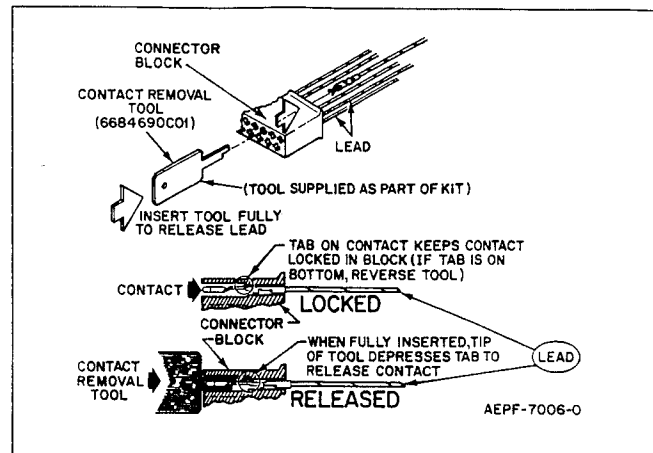
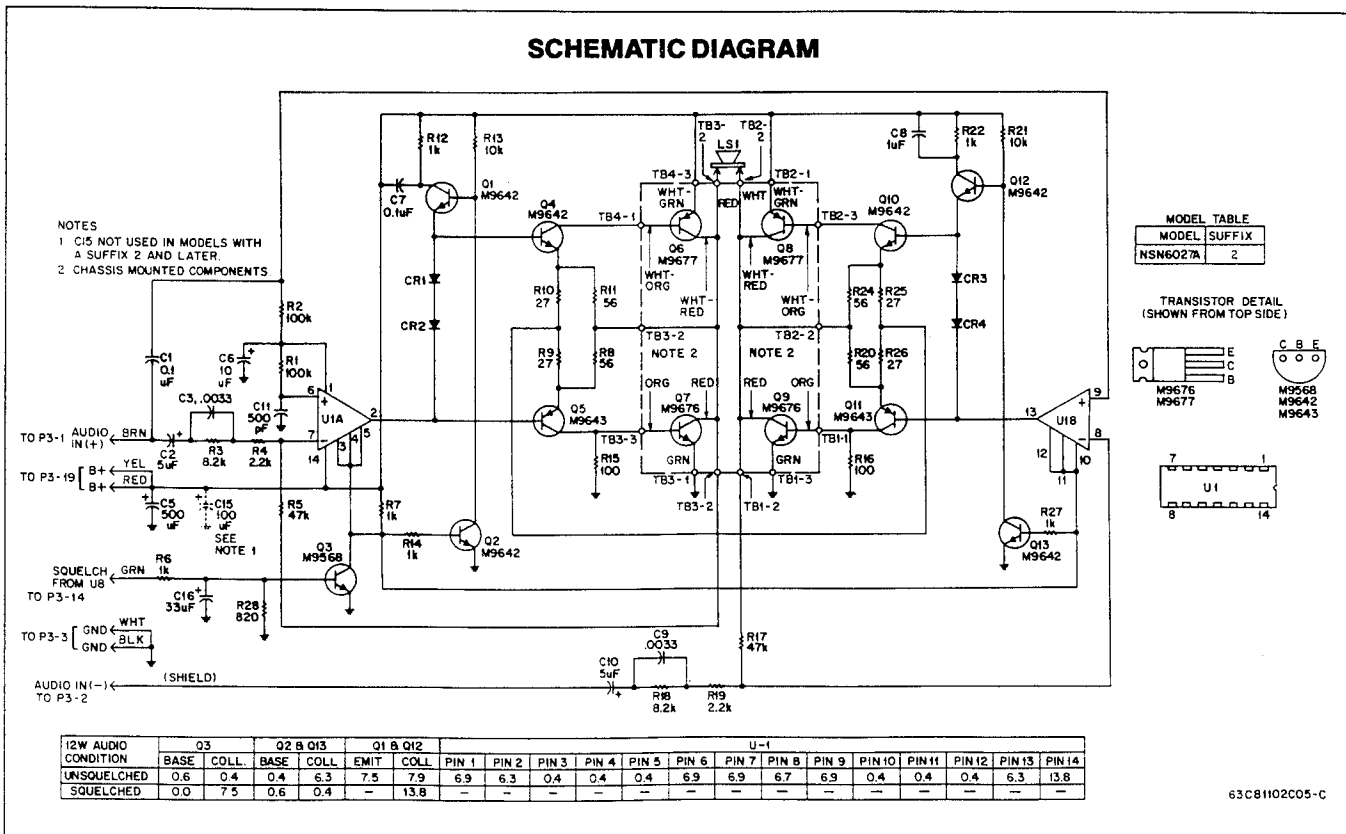
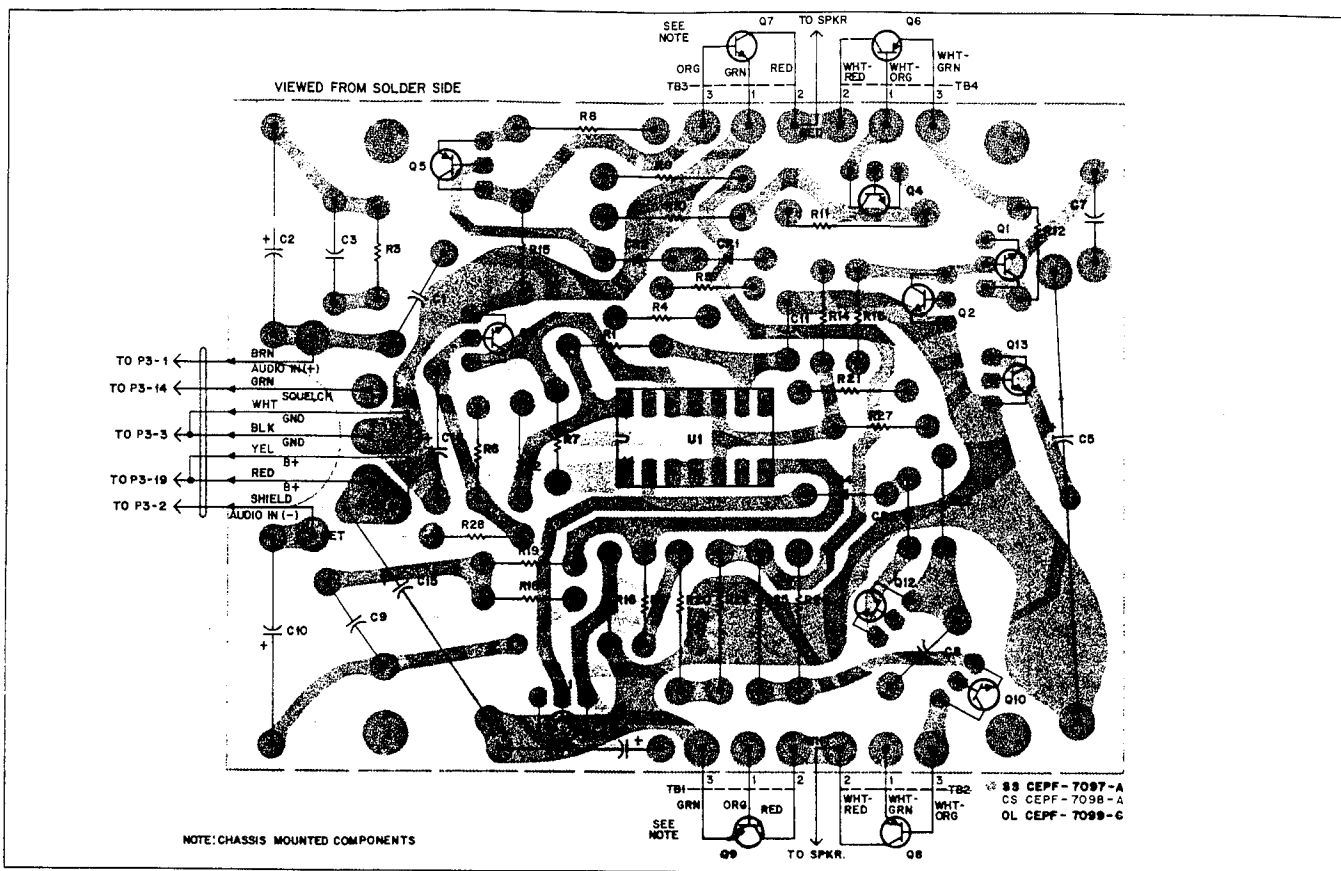


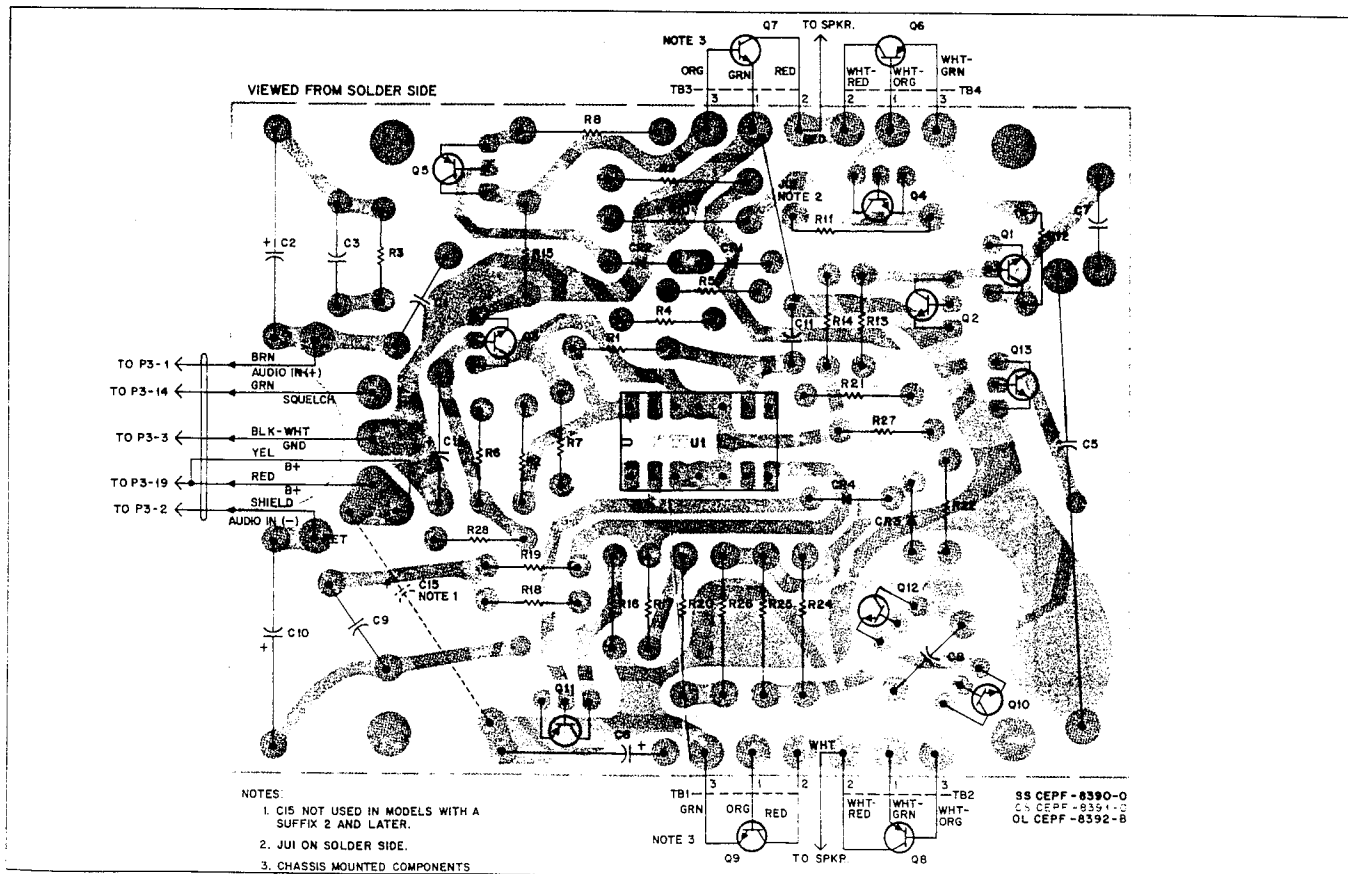
Figure 2. Contact Removal and Installation



NLN6027A



NSN6027A-1 & LATER



REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		CAPACITOR, Fixed: $\mu\text{F} \pm 10\%$; 25 V unless stated
C1	0882905G07	0.1; 63 V
C2	2382601A11	5 - 10 + 33%
C3	0882096J25	.0033; 50 V
C5	2383210A19	500 - 10 + 100
C6	2382256J03	10 - 10 + 50%
C7, 8	0882905G07	0.1; 50 V
C9	0882096J25	.0033; 250 V
C10	2382601A11	5 - 10 + 33%
C11	2183162H08	500 pF; 100 V
C16	2383397D25	33 \pm 20%; 2 V
CR1 thru 4	4883654H01	DIODE: See Note Silicon
LS1	5084561B02	SPEAKER: 5" PM, 3.2 Ω
		TRANSISTOR: See Note
Q1, 2	4800869642	NPN; type M9642
Q3	4800869568	NPN; type M9568
Q4	4800869642	NPN; type M9642
Q5	4800869643	PNP; type M9643
Q6	4800869677	PNP; type M9677
Q7	4800869676	NPN; type M9676
Q8	4800869677	PNP; type M9677
Q9	4800869676	NPN; type M9676
Q10	4800869642	NPN; type M9642
Q11	4800869643	PNP; type M9643
Q12, 13	4800869642	NPN; type M9642
		RESISTOR, Fixed: $\Omega \pm 5\%$; $\frac{1}{4}\text{W}$ unless stated
R1, 2	0611009C97	100k
R3	0611009C71	8.2k
R4	0611009C57	2.2k
R5	0611009C89	47k
R6, 7	0611009C49	1k
R8	0600125A19	56; $\pm 10\%$; $\frac{1}{2}\text{W}$
R9, 10	0600125A11	27; $\pm 10\%$; $\frac{1}{2}\text{W}$
R11	0600125A19	56; $\pm 10\%$; $\frac{1}{2}\text{W}$
R12	0611009C49	1k
R13	0611009C73	10k
R14	0611009C49	1k
R15, 16	0611009C25	100
R17	0611009C89	47k
R18	0611009C71	8.2k
R19	0611009C57	2.2k
R20	0600125A19	56; $\pm 10\%$; $\frac{1}{2}\text{W}$
R21	0611009C73	10k
R22	0611009C49	1k
R24	0600125A19	56; $\pm 10\%$; $\frac{1}{2}\text{W}$
R25, 26	0600125A11	27; $\pm 10\%$; $\frac{1}{2}\text{W}$
R27	0611009C49	1k
R28	0611009C47	820
U1	5184320A99	INTEGRATED CIRCUIT: Dual Operational Amplifier

NONREFERENCED ITEMS		
6405739D01	PLATE, Serial	
1305178E01	BEZEL, Speaker	
3284564B01	GASKET, Speaker	
4200850861	STRAIN RELIEF	
0705152E01	BRACKET, Trunnion	
1505919D01	COVER, Rear	
0705155E01	BRACKET, Hanger	
0784569B01	BRACKET, Wall Mounting	
4200867839	STRAIN RELIEF	
4200893464	S-Hook	
0984151B03	CONNECTOR, Receptacle Pin (3 req'd)	
0984151B06	CONNECTOR, Receptacle Pin (2 req'd)	
3083560A02	CABLE, 6-conductor	
0705712C01	BRACKET, Enclosure Mounting	
0705920D01	BRACKET, Mounting	
3100135201	TERMINAL STRIP	
0384244C01	THUMB SCREW	
1405536E01	INSULATOR (for Q6, 7, 8, 9)	

NOTE: For optimum performance, order replacement diodes and transistors by Motorola part number only.

Back-Dating Information

BOARD AND SUFFIX NO.	REFERENCE SYMBOL	CHANGE
NSN6027A	C3, 9	WAS 0882096J01; .0033 μF ; 50 V
	C15	WAS 2383397D25, $\pm 20\%$; 2 V
	R28	ADD 0600124C47; 820 $\Omega \pm 10\%$ ADD 1405536E01; INSULATOR (for Q6, 7, 8, 9)
NSN6027A-1	C15 Jumper	DELETED 2382783B04; 100 ADD from Q7 emitter to ground
NSN6027A		AS SHOWN



MOTOROLA

MANUAL REVISION

for

**Manual No. 68P81102C04-C
MX300/MT500 SERIES
"Converta-Com" Consoles
12-W Audio Amplifier-Speaker**

This revision outlines changes that have occurred since the printing of your manual. Use this information to supplement your manual. Installation of these changes in earlier equipment is not necessary except as recommended in Motorola Service and Repair Notes (SRN's).

REVISION DETAILS

NO.	CHANGE AFFECTS	ITEM NO.	SUFFIX
1	Parts List	NSN6027A	3

CHANGES

NO.	REF. SYM.	ACTION	PART NO.	DESCRIPTION
1	C2, 10	changed to	2382256J04	CAPACITOR, Fixed: uF 1-10+50; 100V
	C16	changed to	2382256J03	10-10+50; 25V
	R28	changed to	0611009C73	RESISTOR, Fixed: Ω 10k