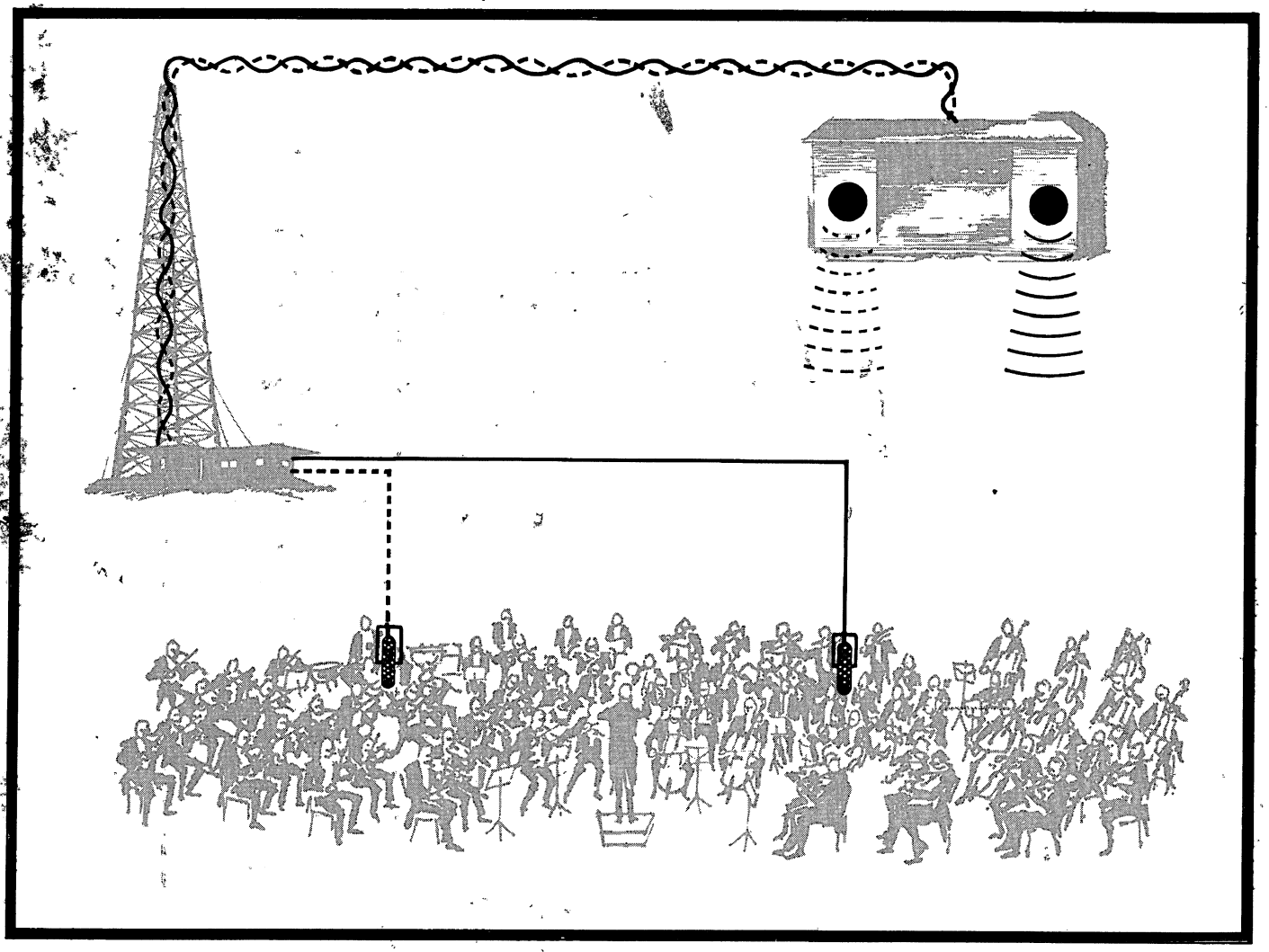
ZENITH®

SERVICE MANUAL



HIGH FIDELITY
AND STEREO FM MODELS

ZENITH RADIO CORPORATION
1900 N. AUSTIN AVENUE CHICAGO, ILLINOIS 60639

HF14

PRICE $2.50 PART #923-432

INDEX

INDEX

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

MODEL	CABINET				CHASSIS			SPEAKER		
	STYLE	MATERIAL	FINISH	COLOR	MODEL	TYPE	EIA POWER OUTPUT	SIZE (IN.)	MAGNET (WT.OZ.)	V.C. IMPEDANCE
ZP2B	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Blue & White	1L20	1 Tube Phono Only	- - - -	4	.68	3.2
ZP2V	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Red & White	1L20	1 Tube Phono Only	- - - -	4	.68	3.2
LPS70C2	Table (w/handle) (hinged speaker enclosure)	Wood	Plastic Coated Cloth	Charcoal Gray & Planked Walnut	Waters Conley	3 Tube Phono Only	- - - -	2-6 1/2 2-4	2.15 .68	3.2 3.2
LPS70L2	Table (w/handle) (hinged speaker enclosure)	Wood	Plastic Coated Cloth	Light Whirlwind Tan Metallic & Planked Walnut	Waters Conley	3 Tube Phono Only	- - - -	2-6 1/2 2-4	2.15 .68	3.2 3.2
LPM95W4	Table (w/handle) (hinged speaker enclosure)	Wood	Plastic Coated Cloth	Walnut & Beige	10L02Z	Phono-AM-FM	5W.	2-3 1/2 2-8	.46 4.8	45. 6.4
LPM95L4	Table (w/handle) (hinged speaker enclosure)	Wood	Plastic Coated Cloth	Mocha & Beige	10L02Z	Phono-AM-FM	5W.	2-3 1/2 2-8	.46 4.8	45. 6.4
MP550L1	Table (w/handle) (hinged speaker enclosure)	Wood	Durastron Covering	Tan & White	3L03	3 Tube Phono Only	- - - -	2-5 x 7	1.0	3.2
MPS50Y1	Table (w/handle) (hinged speaker enclosure)	Wood	Durastron Covering	Black	3L03	3 Tube Phono Only	- - - -	2-5 x 7	1.0	3.2
MPS90W1	Table (w/handle) (hinged speaker enclosure)	Wood	Plastic Coated Cloth	Walnut	Waters Conley	10 Transistors Phono Only	- - - -	2-8 2-4 2-3 1/2	4.8 1.47 .47	8 6.4 45.
NP8L	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Beige	1N21	1 Tube Phono Only	- - - -	4	.68	3.2
NP8W	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Off White	1N21	1 Tube Phono Only	- - - -	4	.68	3.2
NP8B	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Blue	1N21	1 Tube Phono Only	- - - -	4	.68	3.2
NP10J	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Walnut Brown & Ivory	2NT20	2 Transistor Phono Only	- - - -	4	.68	3.2
NP10P	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Light Olive & Off White	2NT20	2 Transistor Phono Only	- - - -	4	.68	3.2
NP15C	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Gray Metallic & Black	5NT20 or 4NT22	5 or 4 Transistor Phono Only	- - - -	4 x 6	.68	13
NP15P	Table (w/handle) (lift lid)	Plastic	Textured Plastic	Pale Gold Metallic & Light Gray	5NT20 or 4NT22	5 or 4 Transistor Phono Only	- - - -	4 x 6	.68	13
NPS40G	Table (w/handle)	Wood	Durastron Covering	Amoy & Blue Pinseal Metallic	4NT20	4 Transistor Phono Only	- - - -	2-4 x 6	1.0	3.2

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

SPEAKER NO.	RECORD CHANGER (SEE NOTES)				CONTROL PANEL	INDICATOR LIGHT	TYPE OF IDENTIFICATION AND SPECIAL FEATURES	RECORD STORAGE	RADIAL SOUND SPEAKER
	TYPE	MOUNTING	CARTRIDGE	STYLUS					
49-993	Manual Player	Shelf	142-95	Sapphire Sapphire	None	No		None	None
49-993	Manual Player	Shelf	142-95	Sapphire Sapphire	None	No		None	None
964-12963 964-11792	169-265	Hinged Panel	142-142	Sapphire Sapphire	Metal Plate	No	20	None	None
964-12963 964-11792	169-265	Hinged Panel	142-142	Sapphire Sapphire	Metal Plate	No	20	None	None
49-978 49-1009	169-263	Hinged Panel	142-151	Diamond Sapphire	Plastic Escutcheon	No	18	None	None
49-978 49-1009	169-263	Hinged Panel	142-151	Diamond Sapphire	Plastic Escutcheon	No	18	None	None
49-995	169-265	Hinged Panel	142-142	Sapphire Sapphire	Metal Plate	No	20	None	None
49-995	169-266	Hinged Panel	142-142	Sapphire Sapphire	Metal Plate	No	20	None	None
964-18016 964-13857 964-16237	169-263	Shelf	142-151	Diamond Sapphire	Metal Plate	No	6	None	None
349-3	169-267	Shelf	142-149	Sapphire Sapphire	Metal Plate	No		None	None
349-3	169-267	Shelf	142-149	Sapphire Sapphire	Metal Plate	No		None	None
349-3	169-268	Shelf	142-149	Sapphire Sapphire	Metal Plate	No		None	None
349-3	169-257	Shelf	142-149	Sapphire Sapphire	Metal Plate	No	3	None	None
349-3	169-257	Shelf	142-149	Sapphire Sapphire	Metal Plate	No	3	None	None
49-1072	169-258	Shelf	142-149	Sapphire Sapphire	Metal Plate	No	2	None	None
49-1072	169-258	Shelf	142-149	Sapphire Sapphire	Metal Plate	No	2	None	None
49-926	169-260	Hinged Panel	142-148	Sapphire Sapphire	Hot Stamped on Cabinet	No	4	None	None

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

MODEL NO.	CABINET				CHASSIS			SPEAKER		
	STYLE	MATERIAL	FINISH	COLOR	MODEL	TYPE	EIA POWER OUTPUT	SIZE (IN.)	MAGNET (WT.OZ.)	V.C. IMPEDANCE
NPS40L	Table (w/handle)	Wood	Durastron Covering	Scandia & Black	4NT20	4 Transistor Phono Only	- - - -	2-4 x 6	1.0	3.2
NPS45X	Table (w/handle) (Latched speaker enclosure)	Wood	Durastron Covering	Pearl Finish, Accent White & Walnut	4NT20	4 Transistor Phono Only	- - - -	2-5 x 7	2.15	3.2
NPS45P	Table (w/handle) (latched speaker enclosure)	Wood	Durastron Covering	Metallic Pale Gold & Gray	4NT20	4 Transistor Phono Only	- - - -	2-5 x 7	2.15	3.2
RT1960W5	Console (lift lid)	Wood	Wood	Walnut	8NT02 6L01Z2	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MT1960W5	Console (lift lid)	Wood	Wood	Walnut	8NT02 7L01Z2	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
SN2410W	Console (sliding panels)	Wood	Wood	Walnut	3L04	Phono Only	5W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2410W	Console (sliding panels)	Wood	Wood	Walnut	3L02 6L01	Phono-AM-FM	5W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2410W	Console (sliding panels)	Wood	Wood	Walnut	3L02 7L01	Phono-AM-FM	5W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
SN2420W	Console (sliding panels)	Wood	Wood	Walnut	8NT04	Phono Only	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2420W	Console (sliding panels)	Wood	Wood	Walnut	8NT02 6L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2420W	Console (sliding panels)	Wood	Wood	Walnut	8NT02 7L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
SN2425R	Console (sliding panels)	Wood	Wood	Mahogany	8NT04	Phono Only	8W.	2-3 1/2 2-6 x 9	.46 3.16	45 6.4
SN2425H	Console (sliding panels)	Wood	Wood	Cherry	8NT04	Phono Only	8W.	2-3 1/2 2-6 x 9	.46 3.16	45 6.4
RN2425R	Console (sliding panels)	Wood	Wood	Mahogany	8NT02 6L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2425H	Console (sliding panels)	Wood	Wood	Cherry	8NT02 6L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2425R	Console (sliding panels)	Wood	Wood	Mahogany	8NT02 7L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2425H	Console (sliding panels)	Wood	Wood	Cherry	8NT02 7L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
SN2430M	Console (sliding panels)	Wood	Wood	Maple	8NT04	Phono Only	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2430M	Console (sliding panels)	Wood	Wood	Maple	8NT02 6L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2430M	Console (sliding panels	Wood	Wood	Maple	8NT02 7L01Z1	Phono-AM-FM	8W.	2-3 1/2 2-6 x 9	.46 3.16	45. 6.4

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

SPEAKER NO.	RECORD CHANGER (SEE NOTES)				CONTROL PANEL	INDICATOR LIGHT	TYPE OF IDENTIFICATION AND SPECIAL FEATURES	RECORD STORAGE	RADIAL SOUND SPEAKER
	TYPE	MOUNTING	CARTRIDGE	STYLUS					
49-926	169-261	Hinged Panel	142-148	Sapphire Sapphire	Hot Stamped on Cabinet	No	4	None	None
49-1077	169-261	Hinged Panel	142-148	Sapphire Sapphire	Metal Plate	No	4	None	None
49-1077	169-261	Hinged Panel	142-148	Sapphire Sapphire	Metal Plate	No	4	None	None
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-978 49-902	169-264	Shelf	142-137	Diamond Sapphire	Plastic Escutcheon	No	5	No	†
49-978 49-902	169-264	Shelf	142-137	Diamond Sapphire	Plastic Escutcheon	No	19	No	†
49-978 49-902	169-264	Shelf	142-137	Diamond Sapphire	Plastic Escutcheon	No	8	No	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	6	No	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	6	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	6	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	6	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	None	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	None	†

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

MODEL NO.	CABINET				CHASSIS			SPEAKER		
	STYLE	MATERIAL	FINISH	COLOR	MODEL	TYPE	EIA POWER OUTPUT	SIZE (IN.)	MAGNET (WT.OZ.)	V.C. IMPEDANCE
SN2501W	Console (lift lid)	Wood	Wood	Walnut	8NT04	Phono Only	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2601W	Console (lift lid)	Wood	Wood	Walnut	8NT02 6L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2601W	Console (lift lid)	Wood	Wood	Walnut	8NT02 7L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
RN2602M	Console (lift lid)	Wood	Wood	Maple	8NT02 6L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2602M	Console (lift lid)	Wood	Wood	Maple	8NT02 7L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2603H	Console (lift lid)	Wood	Wood	Cherry	8NT02 7L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2603R	Console (lift lid)	Wood	Wood	Mahogany	8NT02 7L01Z1	Phono-AM-FM	8W.	4-3 1/2 2-6 x 9	.46 3.16	45. 6.4
MN2604W	Console (lift lid) (Pivotal Louver Doors)	Wood	Wood	Walnut	8NT02 7L01Z1	Phono-AM-FM	8W.	6-3 1/2 2-10	.46 6.8	45. 6.4
MN2605H	Console (lift lid)	Wood	Wood	Cherry	8N0T2 7L01Z1	Phono-AM-FM	8W.	6-3 1/2 2-10	.46 6.8	45. 6.4
MN2605M	Console (lift lid)	Wood	Wood	Maple	8NT02 7L01Z1	Phono-AM-FM	8W.	6-3 1/2 2-10	.46 6.8	45. 6.4
MN2606W	Console (lift lid)	Wood	Wood	Walnut	27NT20	Phono-AM-FM	70W.	4-3 1/2 2-5 1/4 2-12 Whizzer	.46 1.0 6.8	45. 6.4 6.4
MN2607H	Console (lift lid)	Wood	Wood	Cherry	27NT20	Phono-AM-FM	70W.	4-3 1/2 2-5 1/4 2-12 Whizzer	.46 1.0 6.8	45. 6.4 6.4
MN2608W	Console (lift lid)	Wood	Wood	Cherry	27NT20	Phono-AM-FM	70W.	4-3 1/2 2-Horn 2-12	.46 1.33 6.8	45. 6.4 6.4
MN2610M	Console (lift lid)	Wood	Wood	Maple	27NT20	Phono-AM-FM	70W.	4-3 1/2 2-Horn 2-12	.46 1.33 6.8	45. 6.4 6.4
MN2640L	Console (lift lid)	Wood	Wood	Butternut	10MT26 8L1T20Z MLT15	Phono-AM-FM	40W.	4-3 1/2 2-Horn 2-12	.46 1.33 6.8	45. 6.4 6.4
MN2650H	Console (lift lid) (Pivotal Louver Doors)	Wood	Wood	Cherry	27NT20	Phono-AM-FM	70W.	4-3 1/2 2-Horn 2-12	.46 1.33 6.8	45. 6.4 6.4
MN2670W	Console (lift lid) (Pivotal Louver Doors)	Wood	Wood	Walnut	1N26T24 8NT24	Phono-AM-FM	160W.	4-3 1/2 2-Horn 2-15	.46 4.28 8.5	45. 8. 6.4
MN2675H	Console (lift lid)	Wood	Wood	Cherry	1N26T24 8NT24	Phono-AM-FM	160W.	4-3 1/2 2-Horn 2-15	.46 4.28 8.5	45. 8. 6.4

FEATURES OF HIGH FIDELITY & STEREO FM MODELS

SPEAKER NO.	RECORD CHANGER (SEE NOTES)				CONTROL PANEL	INDICATOR LIGHT	TYPE OF IDENTIFICATION AND SPECIAL FEATURES	RECORD STORAGE	RADIAL SOUND SPEAKER
	TYPE	MOUNTING	CARTRIDGE	STYLUS					
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	6	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	7	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-978 49-1063	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-979 49-1064	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-979 49-1064	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-979 49-1064	169-252	Shelf	142-151	Diamond Sapphire	Plastic Escutcheon	No	8	Yes	†
49-978 49-1056 49-1058	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	8	Yes	MR102
49-978 49-1056 49-1058	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	9	Yes	MR102
49-979 49-1042 49-1045	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	9	Yes	MR105
49-979 49-1042 49-1045	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	9	Yes	MR105
49-978 49-1042 49-1045	169-227	Shelf	142-143	Diamond Sapphire	Die-Cast Escutcheon	No	ZENITH-Transistor Stereophonic High Fidelity - Crests Stereophonic - FM	Yes	MR105
49-979 49-1042 49-1045	169-250	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	9	Yes	MR105
49-978 49-1004 49-1073	169-250	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	Yes	10	Yes	MR105
49-978 49-1004 49-1073	169-250	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	Yes	10	Yes	MR105

MODEL NO.	CABINET				CHASSIS			SPEAKER		
	STYLE	MATERIAL	FINISH	COLOR	MODEL	TYPE	EIA POWER OUTPUT	SIZE (IN.)	MAGNET (WT.OZ.)	V.C. IMPEDANCE
MN2685H	Console (lift lid)	Wood	Wood	Cherry	1N26T24 8NT24	Phono-AM-FM	160W.	4-3 1/2 2-Horn 2-15	.46 4.28 8.5	45. 8. 6.4
MNT2670W	Console (lift lid) (Pivotal Louver Doors)	Wood	Wood	Walnut	1N26T24 8NT24	Phono-AM-FM Tape	160W.	4-3 1/2 2-Horn 2-15	.46 4.28 8.5	45. 8. 6.4
RN2780W	Console (lift lid)	Wood	Wood	Walnut	16M24 7L22Z	TV-Phono AM-FM	8.5W.	2-3 1/2 2-8	.46 3.16	45. 6.4
MN2780W	Console (lift lid)	Wood	Wood	Walnut	16M24 9M1T22Z1	TV-Phono AM-FM	8.5W.	2-3 1/2 2-8	.46 3.16	45. 6.4
MN2781R	Console (lift lid)	Wood	Wood	Mahogany	16M24 9M1T22Z1	TV-Phono AM-FM	8.5W.	2-3 1/2 2-8	.46 3.16	45. 6.4
MN2781H	Console (lift lid)	Wood	Wood	Cherry	16M24 9M1T22Z1	TV-Phono AM-FM	8.5W.	2-3 1/2 2-8	.46 3.16	45. 6.4
MN2782M	Console (lift lid)	Wood	Wood	Maple	16M24 9M1T22Z1	TV-Phono AM-FM	8.5W.	2-3 1/2 2-8	.46 3.16	45. 6.4
7050W	Console (lift lid)	Wood	Wood	Walnut	24NC31 3L02 7L01	Color-TV- Phono-AM-FM	8.5W.	2-4 x 6 2-10	1.47 6.8	6.4 6.4
9510H	Console (lift Lid) (folding doors)	Wood	Wood	Cherry	25MC45 10M9T25 8MT25	Color TV- Phono-AM-FM	120W.	4-3 1/2 2-Horn 2-12	.46 4.28 13.0	45. 8. 6.4
9600W	Console (lift lid)	Wood	Wood	Walnut	25MC36 27NT20	Color TV- Phono-AM-FM	70W.	6-3 1/2 2-12	.46 6.8	45. 6.4
9610M	Console (lift lid)	Wood	Wood	Maple	25MC36 27NT20	Color TV- Phono-AM-FM	70W.	6-3 1/2 2-12	.46 6.8	45. 6.4
MR102W	Table	Wood	Wood	Walnut	- - - -	- - - - -	- - -	3-1/2 6 x 9	.46 3.16	45. 6.4
MR105W	Table	Wood	Wood	Walnut	- - - -	- - - - -	- - -	Horn 6 x 9	1.33 3.16	6.4 6.4

TYPE OF IDENTIFICATION AND SPECIAL FEATURES

No. 2 – *Battery Powered - Solid State.*
No. 3 – *Solid State.*
No. 4 – *Stereophonic – Solid State.*
No. 5 – *Stereophonic High Fidelity.*
No. 6 – *Stereophonic High Fidelity - Solid State Amplifier.*
No. 7 – *Stereophonic High Fidelity - Solid State Amplifier-AM-FM.*
No. 8 – *Stereophonic High Fidelity - Solid State Amplifier - AM - Stereophonic FM.*
No. 9 – *Stereophonic High Fidelity - Solid State - AM - Stereophonic FM.*
No. 10 – *Stereophonic High Fidelity - Solid State - Extended Bass - AM - Stereophonic FM.*
No. 11 – *ALL CHANNEL - Stereophonic High Fidelity - AM - FM.*
No. 12 – *ALL CHANNEL - Stereophonic High Fidelity - AM - Stereophonic FM.*
No. 13 – *Stereophonic High Fidelity - Solid State - Extended Bass - AM - Stereophonic FM - Stereophonic Tape.*
No. 14 – *ALL CHANNEL COLOR TV - Color Emblem - Solid State - Stereophonic High Fidelity - AM - Stereophonic FM.*
No. 15 – *ALL CHANNEL COLOR TV - Color Emblem - Solid State - Stereophonic High Fidelity - AM - Stereophonic FM. Extended Bass - SPACE COMMAND SIX HUNDRED.*
No. 16 – *Zenith Radial Sound Speaker.*
No. 17 – *None.*
No. 18 – *Stereophonic High Fidelity - AM - Stereophonic FM.*
No. 19 – *Stereophonic High Fidelity - AM - FM.*
No. 20 – *Stereophonic.*
No. 21 – *ALL CHANNEL COLOR TV - Color Emblem Stereophonic High Fidelity AM - Stereophonic FM.*

NOTE: † - *DENOTES MODELS WHICH HAVE PROVISIONS FOR FIELD INSTALLATION OF RADIAL SPEAKER ADAPTER KIT THAT WILL PERMIT USE OF MR102 RADIAL SOUND SPEAKER.*

SPEAKER NO.	RECORD CHANGER (SEE NOTES)				CONTROL PANEL	INDICATOR LIGHT	TYPE OF IDENTIFICATION AND SPECIAL FEATURES	RECORD STORAGE	RADIAL SOUND SPEAKER
	TYPE	MOUNTING	CARTRIDGE	STYLUS					
49-978 49-1004 49-1073	169-250	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	Yes	10	Yes	MR105
49-978 49-1004 49-1073	169-250	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	Yes	13	Yes	MR105
49-978 49-1018	169-255	Shelf	142-150	Sapphire Sapphire	Leatherette on Cabinet	No	11	None	†
49-978 49-1018	169-255	Shelf	142-150	Sapphire Sapphire	Leatherette on Cabinet	No	12	None	†
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49-978 49-1018	169-255	Shelf	142-150	Sapphire Sapphire	Leatherette on Cabinet	No	12	None	†
49-1076 49-961	169-264	Shelf	142-137	Diamond Sapphire	Plastic Escutcheon	No	21	None	†
49-978 49-1004 49-1080	169-228	Shelf	142-143	Diamond Sapphire	Die-Cast Escutcheon	Yes	15	None	MR105
49-978 49-1082	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	14	None	MR102
49-978 49-1072	169-252	Shelf	142-151	Diamond Sapphire	Die-Cast Escutcheon	No	14	None	MR102
49-978 49-984	- - - -	- - -	- - - -	- - - -	- - - -	No	16	- - -	- - -
49-1042 49-984	- - - -	- - -	- - - -	- - - -	- - - -	No	16	- - -	- - -

SECTION 1

GENERAL

BASIC THEORY OF SEMI-CONDUCTORS

It is now considered that a conductor of electricity, simply, is any substance whose atoms contain many excess or "free" electrons. These so-called "free" electrons apparently are situated close to the outer orbit portions of the atomic structure and under certain conditions are free to move from one orbit to another. If the "free" electrons are controlled or guided in one direction, an intensified electron drift results. Such electron drift allows or causes an electric current to flow in the opposite direction to the drift of the electrons. Conductors also are defined as those substances which offer a low resistance to current flow. By these definitions, an insulator then would be any substance whose atoms contain relatively few "free" electrons and as a result, offers a high resistance to current flow.

Somewhere in between these two substances, conductors and insulators, are others known as semiconductors. Semiconductors are those substances having a crystal structure and which offer a low resistance to current flow in one direction and a high resistance in the opposite direction. The old familiar electronic components known as selenium and silicon rectifiers and crystal diodes are made from such semiconductor substances. Germanium and silicon are the two most important ingredients used in the manufacture of semiconductor diodes and transistors at the present time.

In order to produce a crystal material that is useful as a semiconductor, certain impurity substances must be added to the crystal material in controlled amounts during the manufacturing process. Specific types of impurity substances can cause the crystal to take on a positive character, after which the crystal is referred to as a "P" type semiconductor. Other types of impurity substances can cause the crystal to take on a negative character and this would be referred to as an "N" type semiconductor.

In order to create a "P" type semiconductor, an impurity substance must be added to the crystal material that has a lack of "free" electrons or an excess of "holes". The atoms of a substance having excess "holes" are called "acceptor" atoms because their atoms, containing fewer electrons, will, under certain conditions, accept an electron from the atom of crystal material. When the impurity atoms accept additional electrons from the crystal atoms, the impurity atoms acquire a negative charge and the crystal atoms acquire a positive charge. In this case, the crystal atoms are said to possess excess "holes" which simply are vacancies where the electrons previously have been. In the "P" type semiconductor, the impurity atoms are fixed in the crystal structure but the "holes" are free to move from one orbit to another. This movement of "holes" through the positive crystal material represents what is referred to as the majority current carriers in the "P" type semiconductor. The flow of current is in the same direction as the movement of "holes".

In order to create an "N" type semiconductor, an impurity substance must be added to the crystal material that has an excess of "free" electrons. The atoms of a substance having an excess of "free" electrons are called "donor" atoms because their atoms will donate electrons to the crystal atoms under certain conditions. When the impurity atoms donate electrons to the crystal atoms, the impurity atoms acquire "holes" and a positive charge; while the crystal atoms acquire electrons and a negative charge. In this case, the crystal atoms are said to possess an excess of electrons. In the "N" type semiconductor, the impurity atoms are fixed in the crystal structure, but the excess electrons are free to move from one orbit to another. This movement of electrons through the negative crystal material represents what is referred to as the majority current carriers in the "N" type semiconductor. The flow of current, however, is in the opposite direction as the movement of electrons.

Note that the drift of electrons and the drift of "holes" in a semiconductor are in opposite directions. The current flow is in the same direction as that of the "holes". (The "hole" in a semiconductor, in reality, does not move, but is filled in by an electron from an adjacent negatively charged atom. After the electron leaves an atom, a "hole" is created. This has the same effect as if the "hole" moved to a new position). In all books and treatise on semiconductors and transistors, the "hole" is treated as if it is in motion. This idea is quite necessary in order to simplify the action of semiconductors.

SEMICONDUCTOR DIODES

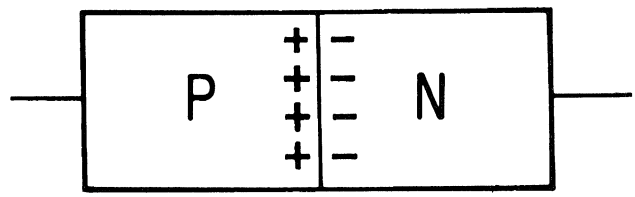


FIG. 1-1

When a "P" type section of semiconductor material and an "N" type section are joined together, (See Figure 1-1) a high resistance area is formed at the surfaces where the contact is made. This effect is due to the combining of some electrons in the "N" section with some of the "holes" in the "P" section to form a barrier region. As the barrier region builds up, a resistance is formed that eventually prevents any further combination of "holes" and electrons. Fortunately, it is this barrier that prevents both semiconductor materials from neutralizing each other completely in a short time.

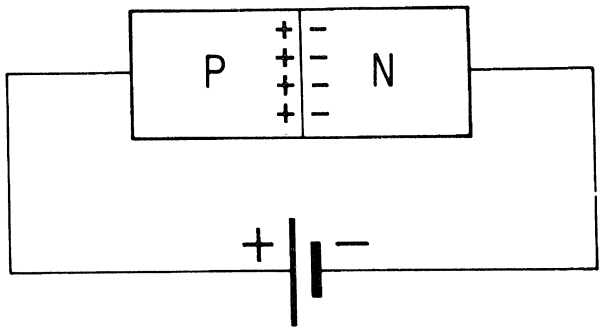


FIG. 1-2

If a battery is connected across the "P" - "N" sections (See Figure 1-2) having a terminal voltage sufficiently great to over come the barrier; positive battery terminal connected to the "P" section and negative terminal to the "N" section, a further combining of electrons and "holes" will be obtained. The action in the "N" section consists of the movement of electrons away from the negative terminal of the battery towards the "N" - "P" junction. The action in the "P" section consists of the movement of "holes" away from the positive terminal of the battery towards the "P" - "N" junction. As a result, the barrier is overcome and due to their acquired energy, some electrons and holes break through the barrier (junction) and combine. Some electrons near the positive end of the "P" section are forced out of the semiconductor material and enter the positive terminal of the battery. For every electron that breaks out of its bond in the "P" section (the magnetic force holding it in the atom) a "hole" is created which drifts toward the junction. For each combination of an electron and "hole", another electron from the negative terminal of the battery is forced to enter the "N" section and to drift toward the "N" - "P" junction. This process of the combining of "holes" and electrons causes a small electron flow in the external circuit. The amount of this flow will be determined by the value of the battery voltage and it will continue to flow as long as the battery is connected. Figure 1-3 shows the path and direction of electron flow in the circuit. Since current flow is opposite to electron flow, current flow in this circuit will be as in Figure 1-4. As the battery voltage is increased, the current will increase until a certain critical or maximum value is reached. If the battery voltage is increased beyond this maximum value, the semiconductor will overheat quickly and be destroyed.

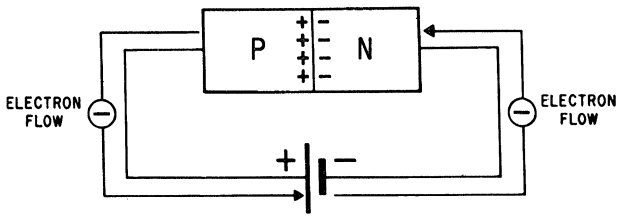


FIG. 1-3

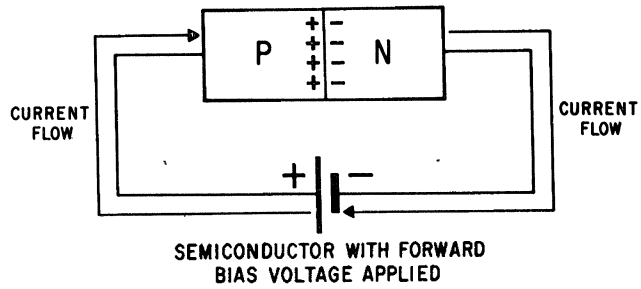
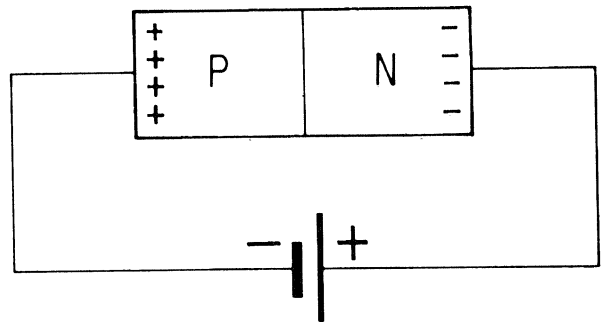


FIG. 1-4

NOTE: THE CONNECTION OF A BATTERY ACROSS A SEMICONDUCTOR DIODE; POSITIVE TERMINAL TO THE "P" SECTION AND NEGATIVE TO THE "N" SECTION, IS CALLED FORWARD BIAS. FORWARD BIAS ALWAYS CAUSES HIGH CURRENT FLOW.



SEMICONDUCTOR WITH REVERSE BIAS VOLTAGE APPLIED

FIG. 1-5

If the battery is connected in reverse (the positive terminal to the "N" section and the negative terminal to the "P" section) the "holes" are attracted toward the negative terminal; while the electrons are attracted toward the positive terminal. See Figure 1-5. As a result, the electrons and holes are not forced thru the barrier and no current can flow in the external circuit. However, since there are always some electrons and holes combining at the barrier a very small amount of current will flow. If the battery voltage is increased beyond the maximum barrier resistance, the "P" - "N" junction will break down and the resulting surge of current will quickly destroy the semiconductor.

THE REVERSE CONNECTION OF A BATTERY ACROSS A SEMICONDUCTOR DIODE; POSITIVE TO THE "N" SECTION AND NEGATIVE TO THE "P" SECTION, IS CALLED REVERSE BIAS. REVERSE BIAS ALWAYS CAUSES MINIMUM OR NO CURRENT FLOW.

The large current flow due to the application of forward bias and the low current flow due to the application of reverse bias is typical of all semiconductor diode type components. The current in the forward direction is high and is measureable in milliamperes. The resistance of a semiconductor diode in the forward direction therefore is very low. The current in

the reverse direction is low and is measureable only in microamperes. The resistance in the reverse direction therefore is fairly high.

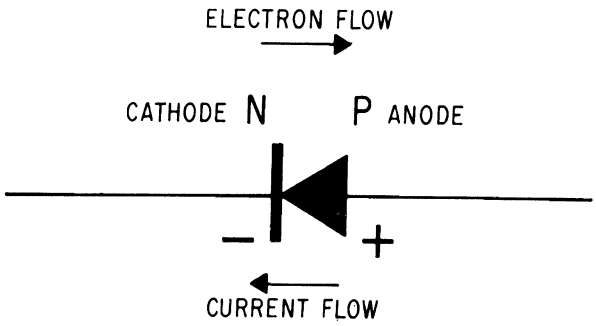


FIG. 1-6

The terminal lead connecting into the "P" section of a semiconductor diode is called the anode lead. The terminal lead connecting into the "N" section is referred to as the cathode lead. In the diagrammatic symbol, see Figure 1-6, the arrow point is the anode; while the straight bar is the cathode.

TRANSISTORS

In general, a transistor can be thought of as two semiconductor diodes stacked together sandwich style. Because the middle section is common to both diodes, the practical arrangement results in only a three section semiconductor device. The middle section always is much thinner than the two outer section.

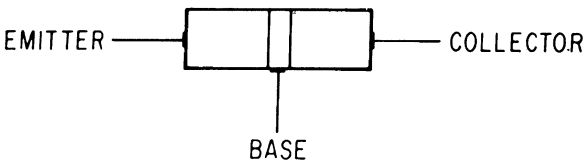


FIG. 1-7

There are two basic types of transistors depending upon which type of semiconductor material is placed in the middle. The two kinds of transistors are designated as PNP and NPN in order to show which kind has N-Type material in the middle section and which kind has P-Type material in the middle. As shown in Figure 1-7, the three sections of a transistor, (called electrodes) are named emitter, base and collector. The middle electrode is called the base because it is the base around which the rest of the transistor is built. The emitter is considered to be the source of electrons, and the collector, the electrode that collects the electrons or holes after they have been injected into the base by the emitter.

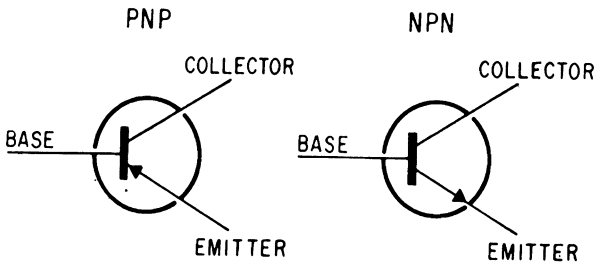


FIG. 1-8

The type of a transistor and also the terminal lead designations are shown by the particular transistor symbols used in schematic drawings, as shown in Figure 1-8. The emitter electrode is shown by an arrow which indicates the direction of major current flow. The direction of major current flow in an NPN transistor is from the collector to the emitter. The direction of major current flow in a PNP transistor is from emitter to collector. The base of a transistor can be thought of as a gate that is opened more or less by the small amount of current in the base circuit to allow more or less current to flow from the collector to the emitter or from emitter to collector. The action of the base electrode is similiar to the control grid of a vacuum tube but in a transistor the current is the operating medium. The amount of current that will flow in either diode section depends upon the voltage and polarity of the DC voltage applied across the junction (diode section). Within the normal or specified ranges of the transistor electrode voltages, the base bias voltage is the most critical because the base is the control electrode.

In order to explain the action of a transistor as an amplifier, we will consider it as two separate diodes. For amplification purposes the base emitter diode (BE) must be forward biased; while at the same time the base collector diode (BC) must be reverse biased and at a higher voltage. A simplified transistor amplifier circuit is shown in Figure 1-9.

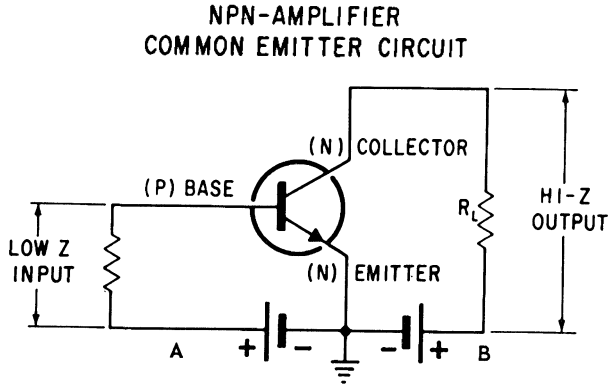


FIG. 1-9

In most transistor amplifier circuits the transistor is used in a grounded (common) emitter circuit. The term grounded or common means simply which electrode is common to both the input and output circuits and bears no relationship to which electrode actually is grounded in the practical sense. In the circuit of Figure 9, shown employing an NPN transistor, as an example, a fairly large quantity of electrons can be forced through the emitter base junction because of the small forward bias voltage applied. As a result, the resistance of the base-emitter diode and also the input impedance will be low. As electrons are injected into the base from the emitter section they drift around looking for "holes" with which to combine. Only a few electrons will be able to combine with "holes" because the base is made very thin and consequently contains only a few "holes". The excess electrons quickly are forced through the base collector junction and on through the collector section because of the high positive voltage of the reverse bias applied there. Due to the reverse bias

voltage, the base collector diode will have a high resistance and the output circuit impedance will be high. From the collector, the electrons continue on through the external load (RL) and back through the battery to the emitter. The direction of current flow in the circuit however, is shown in the opposite direction to the drift of electrons. The electron theory is used to provide a simple means of explaining what causes current to flow in the circuit.

In the common emitter type circuit, the collector-emitter (output) current will be much larger than the base-emitter (input) current because the base-emitter bias voltage is set at a low value that allows only enough "holes" to move into the base electrode from the battery "A" to keep the resistance of the emitter junction low. The much larger voltage of the battery, "B" even though applied in reverse polarity, can cause much more current to flow in the circuit from collector to emitter than is flowing in the circuit from base to emitter. The ratio of high output current to low input current thus represents the current gain of the transistor.

Note that up to this point we have applied only operating or DC bias voltages to the transistor for a static condition referred to as DC idling currents. The signal (an AC voltage) has not yet been applied to the circuit. It is at this point that one easily can see one of the greatest differences between the operation of a transistor and that of a vacuum tube. There is no vacuum tube circuit that could operate properly with a continuous current flowing in the grid circuit.

The signal voltage to be amplified is applied across RB. The AC signal, combined with the DC bias voltage will result in a varying bias across the base emitter junction. See Figure 1-10.

NPN-AMPLIFIER
COMMON EMITTER CIRCUIT

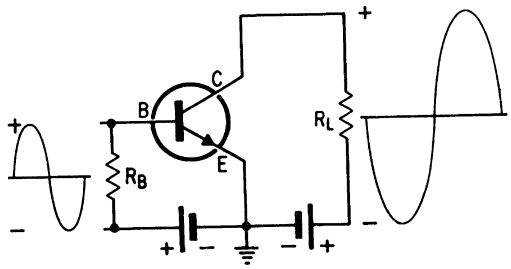


FIG. 1-10

During the positive half cycle of the signal voltage, the base-emitter junction is made more positive and the increased forward bias results in a decrease in junction resistance, an increase in collector-emitter current and a corresponding decrease in output voltage.

During the negative half cycle, the base emitter bias is made less positive, which results in higher junction resistance and a decrease in collector-emitter current. As the collector-emitter current decreases the output voltage will increase proportionately approaching the voltage of the battery as a maximum value.

The output voltage will be an amplified version of the input voltage, but reversed in phase 180°. Also, the output current and power will be an amplified version of the input current and power. If a PNP transistor is to be employed in the circuit the results would be the same, but the DC bias voltages would have to be reversed in polarity.

In order to have linear or undistorted amplification in a transistor amplifier stage, the fixed bias voltage and the resultant idling currents must be stabilized by the particular design of the stage. Transistors used in so-called small signal amplifiers such as found in most RF and IF stages in radio or television receivers, are normally biased at idling currents between .5 Ma and 10 Ma. Bias voltages required may range from .2 volt to as much as 20 volts or more, but never as high values as used in vacuum tube circuits.

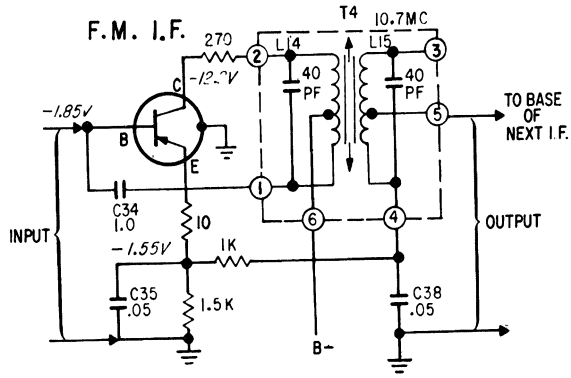


FIG. 1-11

The best method of stabilizing the bias voltages of a transistor is by the use of negative feedback. Negative feedback is used to fix the gain, increase the bandwidth, reduce certain distortions and stabilize the input and output impedances. If output voltage is fed back, the output impedance is decreased. If output current is fed back, the output impedance is increased. Gain is reduced at the mid-band frequencies as the amount of feedback is increased but this fact can be used to advantage in some circuits. A well designed bias circuit will assure proper operation that is relatively independent of the characteristics of the transistor, temperature changes and other important design considerations.

In most of the grounded-emitter transistor amplifier circuits, an emitter to ground resistor is used to provide some feedback to stabilize the operation of the transistor. To prevent any appreciable degeneration of the signal the emitter resistor may be either fully or partly bypassed by a capacitor. See Figure 1-11. Other forms of feedback may consist of an R/C network, or a single resistor or capacitor connected from one electrode to another in the same stage or to any preceding stage. (Voltage dividing resistances also may be found.) In every case, the greater the feedback, the lower the gain but the amplifier is less sensitive to changes in gain, temperature etc. It bias voltages and resultant (idling) currents are too low, serious distortions occur. If the bias voltages and currents are too high, problems of over-heating and excessive noise result.

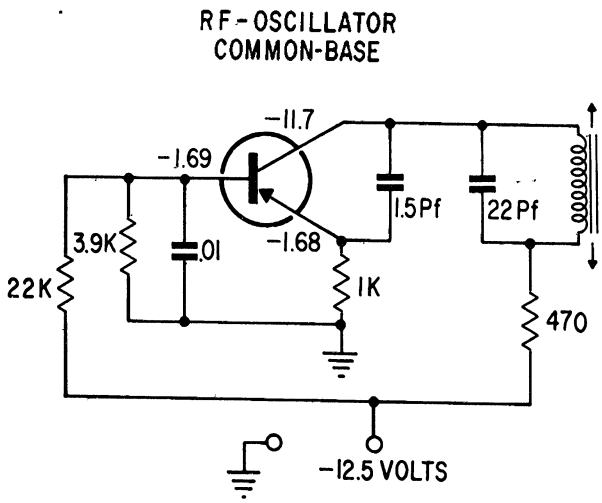


FIG. 1-12

The RF oscillator, see Figure 1-12, is most frequently a common base arrangement as shown. The base is brought to AC ground potential by the .01 capacitor. At the same time to insure oscillation a small 1.5 pf capacitor is shunted between emitter and collector. The internal capacitance between emitter and collector plus the 1.5 pf capacitor will supply sufficient feed back to cause the transistor to oscillate. In the common base arrangement the AC voltages at emitter and collector are out of phase. The 22 pf capacitor and the particular setting of the variable inductance of the oscillator coil establish the operating frequency of the oscillator. The 3.9K and 22K resistors act as a voltage divider to establish the proper base bias for the transistor. The 1K emitter resistor provides the emitter bias. The DC path for the collector is completed through the inductance.

The transistor, sometimes referred to as a solid-state device, is often compared to a vacuum tube. This comparison can be tricky because the transistor is basically a current operated device, while the vacuum tube is a voltage operated device.

When servicing transistor equipment, it must always be kept in mind that transistors operate on low voltages and small currents compared to the usual higher voltages and currents of the circuits using vacuum tubes. This means in general, that many former servicing techniques are not to be employed. In transistor circuits, the voltage ratings of many components such as coupling and filter capacitors are extremely low. It is very important also that the indicated electrode voltages be within 10% of stated values. The collector to emitter operating voltage and resultant collector current also must be held within certain specified limits, if the transistor is to function properly and have a long life. Unlike the vacuum tube, applying a too high voltage or one of opposite polarity can ruin a transistor very quickly.

All semiconductor diodes and transistors have a good mechanical ruggedness but are extremely sensitive to high temperatures. The greatest dangers to a transistor then can be summed up as excess heat, higher than normal, or incorrect polarity of DC bias.

In order to prevent overheating when soldering, all terminal lead soldering time should be kept as short as possible. Always use a pair of long nosed pliers pinched around the lead between the soldering iron and the semiconductor to act as a heat sink. The pliers will draw away the heat from entering the semiconductor at the terminal lead entrance.

SECTION 2

MULTIPLEX TRANSMITTER AND RECEIVER THEORY

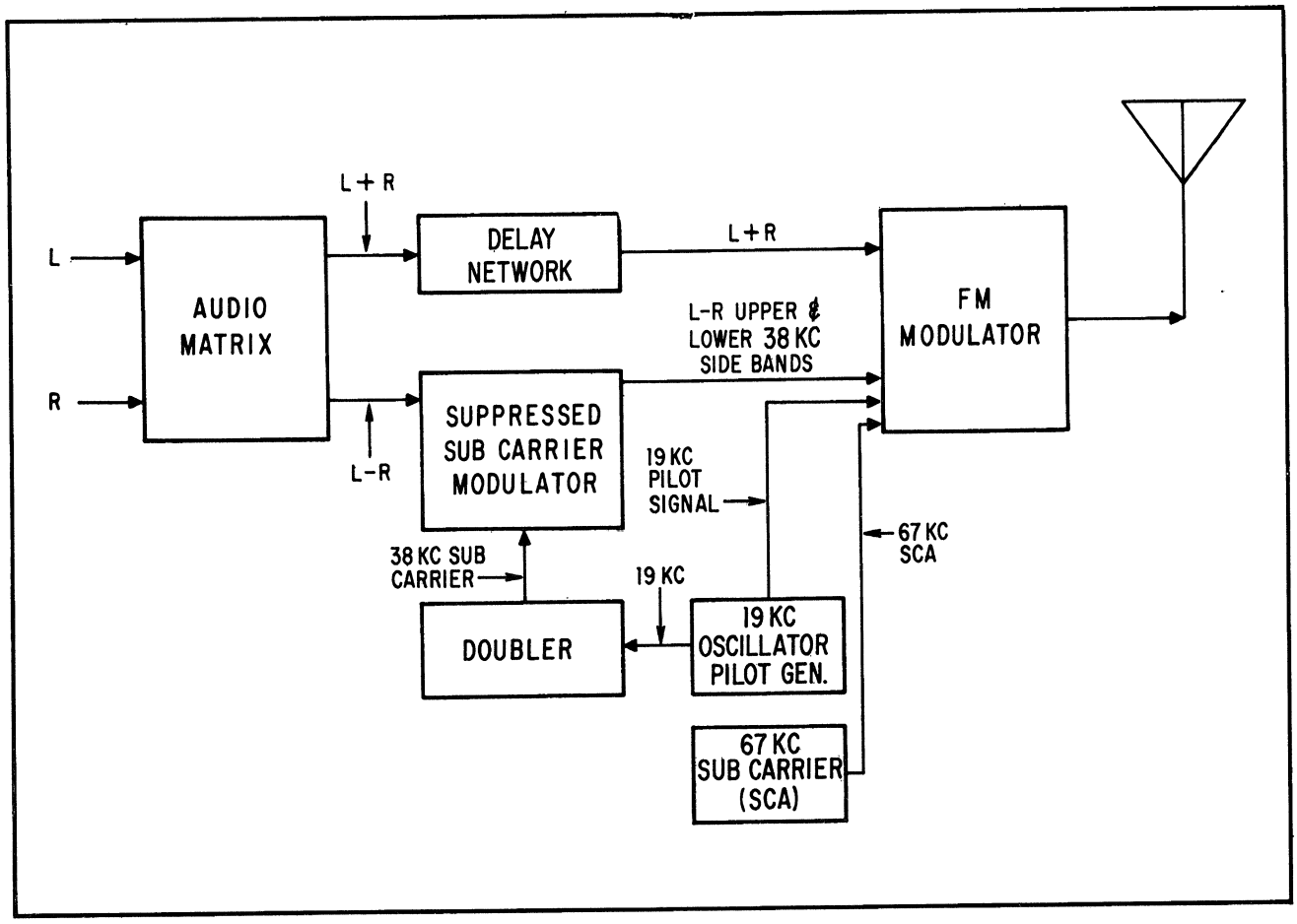


FIG. 2-1 Transmitter Block Diagram

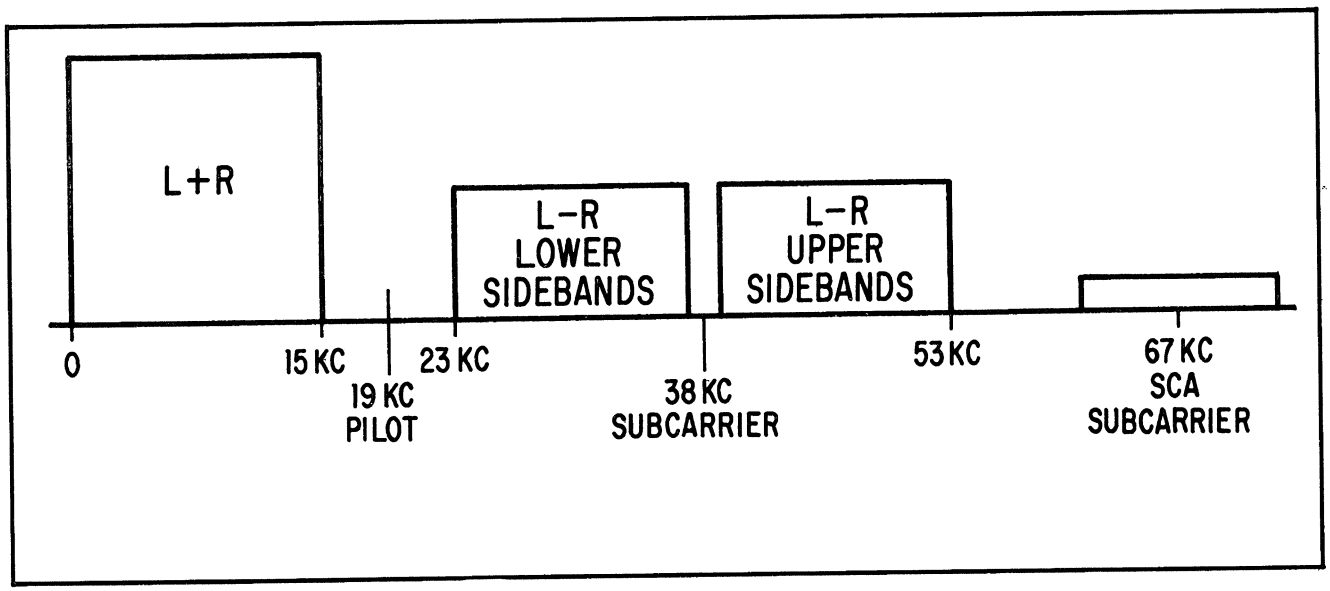


FIG. 2-2 F.M. Modulating Components

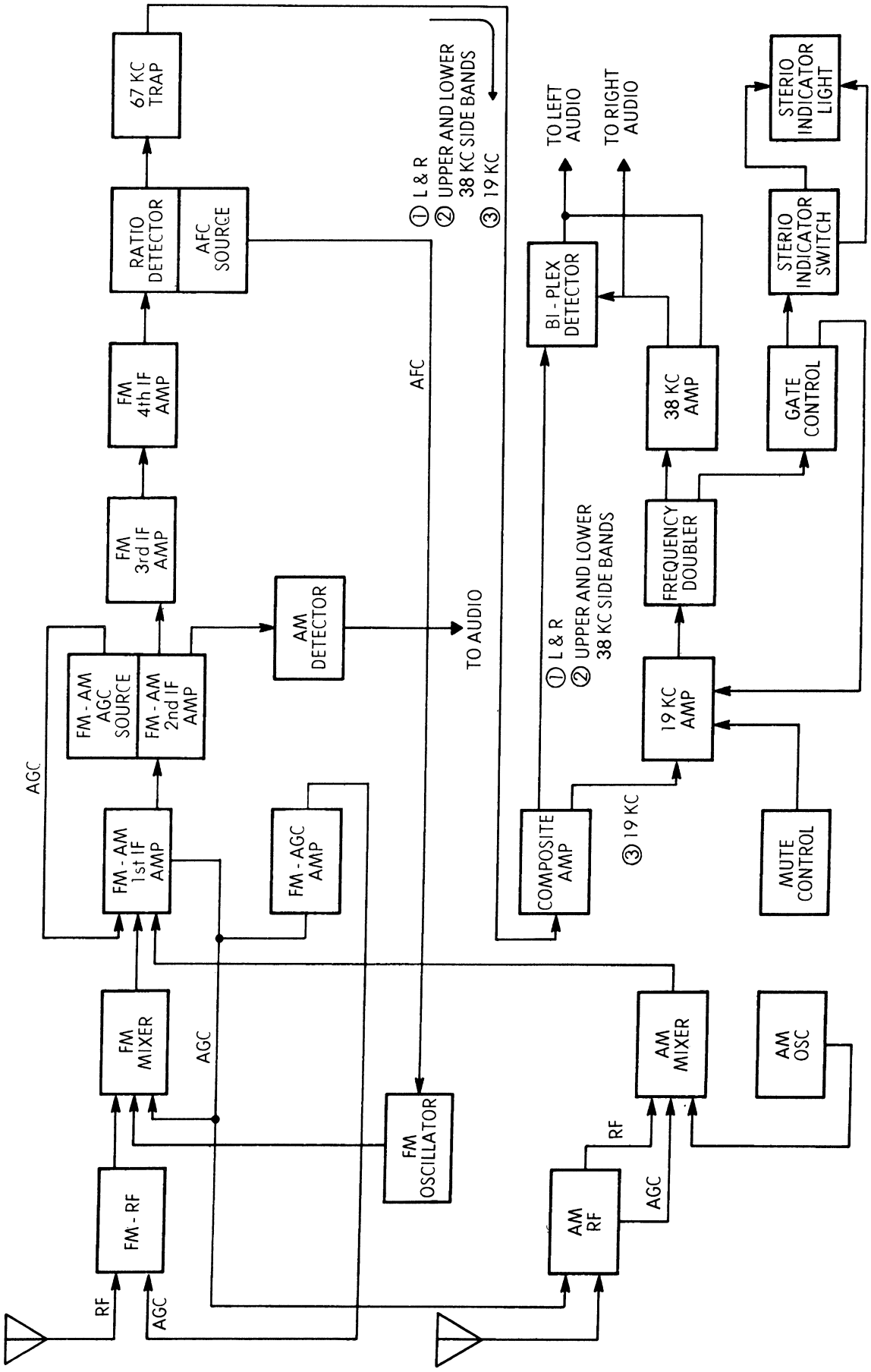


FIG. 2-3 27NT20 Receiver Block Diagram

MULTIPLEX TRANSMITTER THEORY

To help the technician thoroughly understand the purpose and performance of a stereo multiplex receiver, he should be familiar with the operation of a stereo FM transmitter.

It would be best to familiarize the technician with the method by which stereo information is transmitted. As a result, we must review the very basic concepts of stereophonic FM transmitters. A stereophonic FM transmission must not only be compatible with existing monophonic transmissions, but it also must be capable of transmitting background music, facsimile or any other form of SCA (Subsidiary Communications Authorization) simultaneously with the stereophonic programming. This must be done without any co-interference and still remain within the channel limits licensed to any FM broadcast station.

The two basic components necessary for any stereo system are right R and left L audio channel information See Figure 2-1. This information is matrixed and we obtain sum information L + R and difference information L – R. To obtain sum information L + R, + R was added to L; to obtain the difference information L – R a negative – R of the same magnitude as the + R only 180 degrees out of phase is added to L and thus L – R, the difference signal was created. The composite L + R and L – R information is now used as FM modulating components in this system. Normally, the L + R information could immediately FM modulate the carrier however, to be certain that the L + R information is in the same phase relationship to the L – R information as they were when they came from the matrix when they FM modulate the carrier, it is necessary to insert a delay network in the L + R channel. The sole purpose of this delay system is to shift the phase of the L + R modulating component in such a manner that it will be in phase with the L – R upper and lower 38KC sidebands when they too FM modulate the carrier.

In the stereo FM system of transmission, it is necessary that the L – R information AM modulate a subcarrier. To create this subcarrier, an extremely stable crystal oscillator produces a 19KC signal. The 19KC signal is doubled to obtain a 38KC subcarrier that is then AM modulated by the L – R information. The 19KC signal is also used as a pilot signal or synchronization signal and it too FM modulates the carrier. Since all the necessary signal information in the subcarrier system is contained in the upper and lower L – R 38KC sidebands of the AM modulating envelope, the 38KC subcarrier need not FM modulate the carrier. Therefore, the 38KC carrier is suppressed and only the remaining upper and lower L – R 38KC sidebands are used to FM modulate the carrier, See Figure 2-2.

We now have three carrier modulating components: L + R audio information, two L – R upper and lower 38KC sidebands, and the 19KC pilot signal. As we have stated previously, it is necessary that this system be compatible with facsimile or SCA transmissions, therefore, another modulating component can be added, the 67KC subcarrier (SCA).

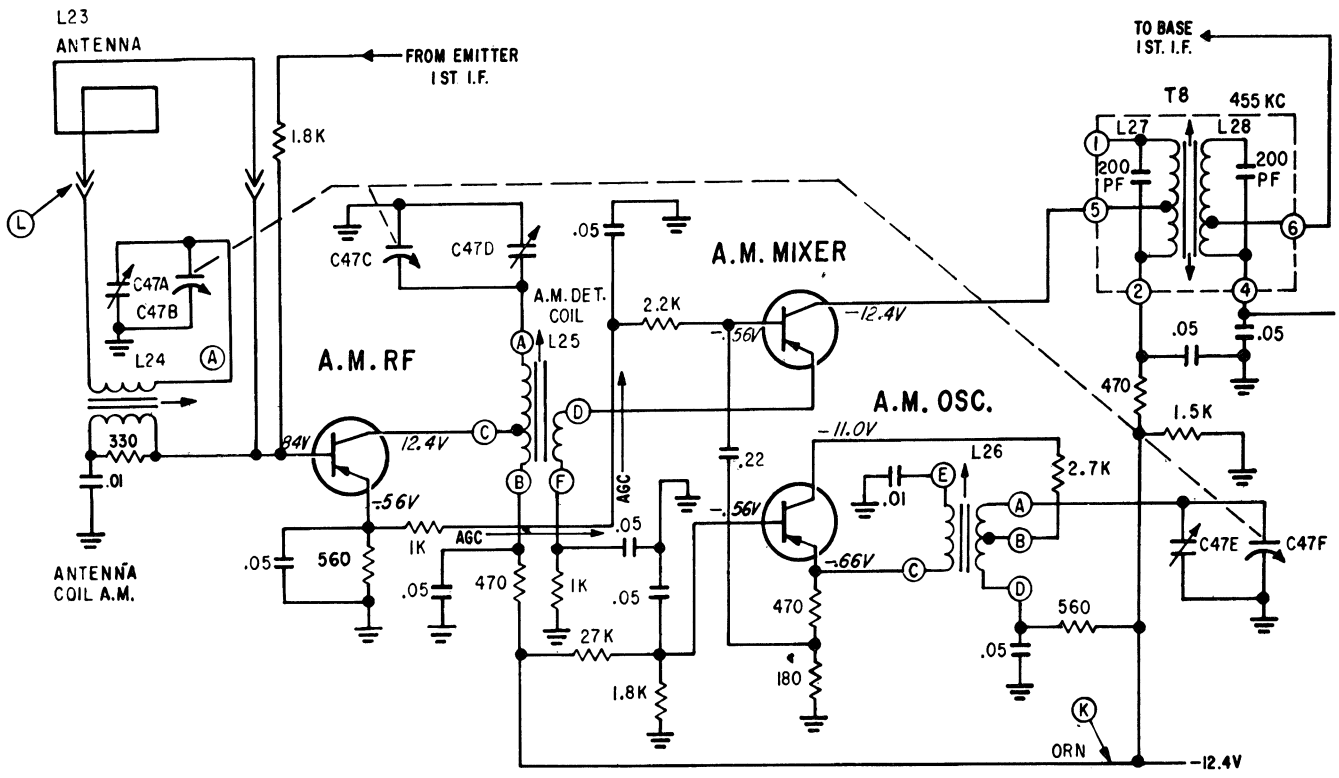


FIG. 2-4 AM-RF Tuner

TRANSISTORIZED MULTIPLEX RECEIVER THEORY

Since the basic principals involved in the operation of a multiplex FM transmitter have already been discussed, we should now give a circuit description of the transistorized multiplex receiver. However, before the reader proceeds, further, a very careful study should be made of the block diagram for the transistorized 27NT20 chassis. See Figure 2-3. This chassis will be used to describe the circuitry of Zenith transistorized FM multiplex receivers, since it includes all features that are basically common to our transistorized chassis.

The AM and FM tuners in this chassis are separate units, and each is integral and complete. Since stereo tuners require more sensitivity and selectivity than do monaural FM tuners and since the equipment must function within the Federal Communications Radiation limits, it was felt that these goals could be best achieved by having the FM-RF tuner separate from the AM-RF tuner. In this manner, all long leads, band switching and other associated circuitry that contribute to radiation problems, and reduce each tuner's performance, will be eliminated.

AM–RF TUNER

The AM tuner used 3-gang tuning with separate RF mixer and oscillator transistors See Figure 2-4. The RF-tuned input terminates in a low impedance antenna loop. There are also provisions for the connection of a long wire external AM antenna. The gain of the RF and mixer transistors is controlled with Reverse AGC voltage.

FM–RF TUNERS

Since the FM tuner must function within the Federal Communication Commission's Radiation limits, it is completely shielded. The AGC, AFC, collector and bias voltages are all supplied to the tuner through feed-thru type condensers. The RF amplifier, oscillator and mixer transistors are of the shielded 4-pin type, with the shield being grounded. At the shaft end of the tuner, the 4-iron core tuning slugs for the Antenna, RF input, RF output and Oscillator are all accessible See Figure 2-5. The 3 transistors are accessible at the back end of the tuner, and since they are of the plug-in type, they are easily replaceable See Figure 2-6. The FM antenna input jack is at the top of the tuner and with an extension cable connects to the FM terminals, at the back of

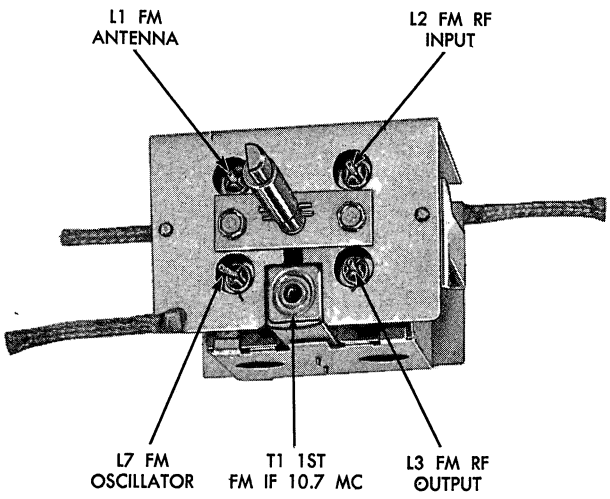


FIG. 2-5
FM Tuner Tuning Slugs

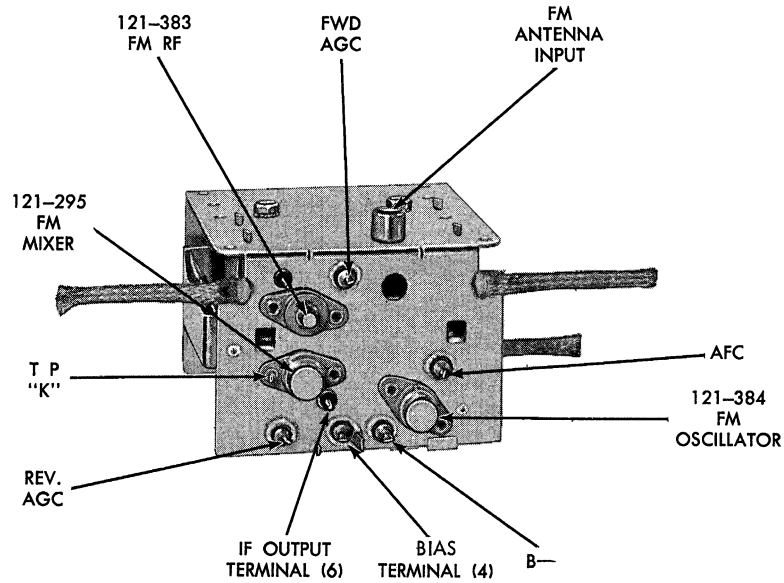


FIG. 2-6
FM Tuner Input & Output

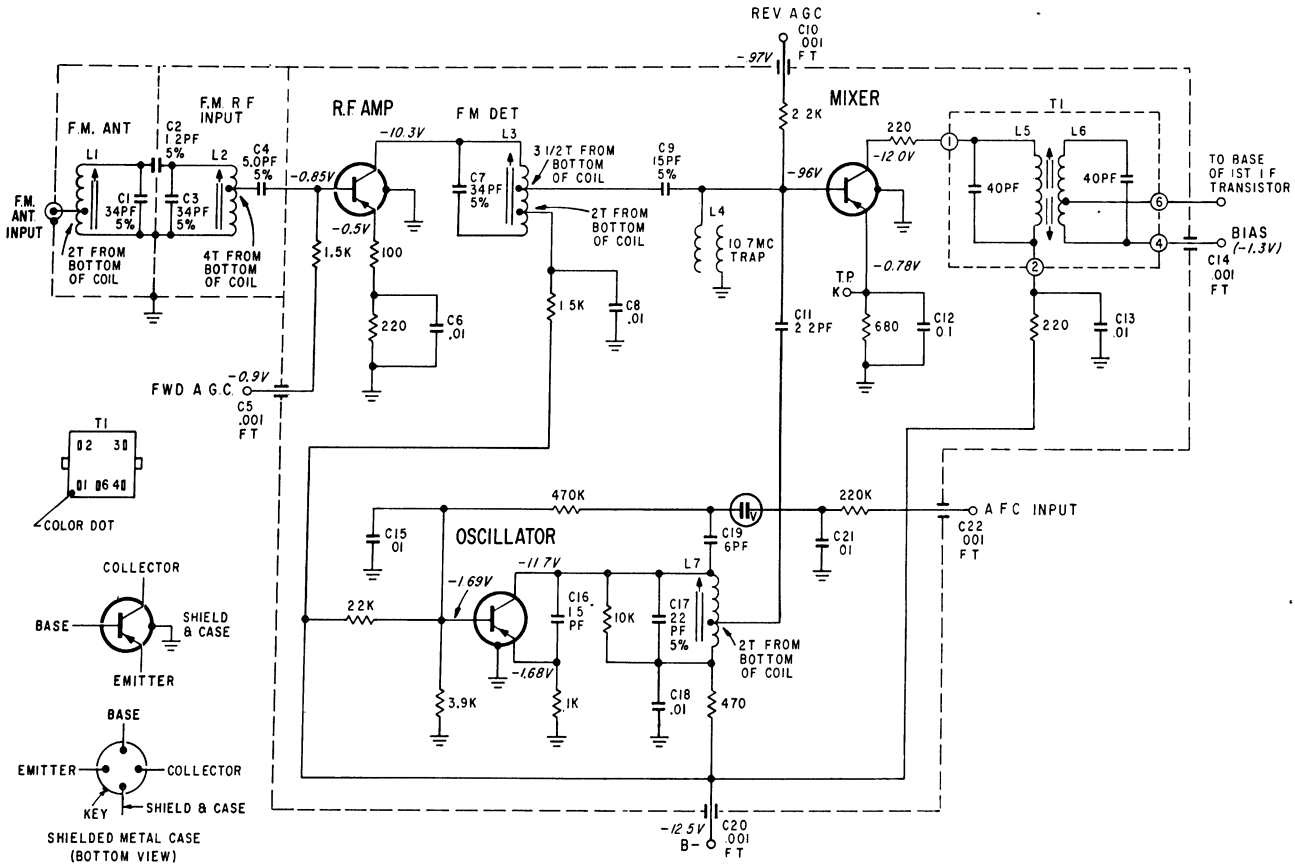


FIG. 2-7 FM-RF Tuner

the receiver. To insure that this transistorized RF tuner's performance would be equal or better than Zenith's tube type RF tuner, it was necessary to incorporate 4 very high "Q" tuned circuits.

The FM antenna coil L1, and both the RF input L2, and RF output L3, coils are tuned as well as the oscillator coil L7 See Figure 2-7. These preciseley tuned circuits also insure that the tuner will reject any unwanted and undesireable combination of RF signals present in many areas, resulting from our complex communications systems. L4 is a 10.7 megacycle trap in the base of the mixer and has 6 DB of attenuation. The mixer base has reverse AGC voltage applied to it and the RF amplifier has forward AGC voltage applied to it, to reduce the amplification of these stages on strong RF signals.

FORWARD AGC: If transistor gain is strongly dependent on collector voltage, then gain may be reduced by reducing the collector voltage. Usually this is accomplished by increasing the emitter current with more forward bias voltage, and including a large dropping resistor in the collector circuit. At high current conditions, the IR drop across the 1.5K collector resistor reduces the collector voltage, thus reducing the gain.

REVERSE AGC: For those transistors whose gain is not a strong function of collector voltage, gain is reduced by reducing emitter current to a low value. This is accomplished by reducing the forward bias of the transistor.

FM–AFC

As with all high frequency oscillators, stability is important and as a feature it is desireable to provide Automatic Frequency Control which is guided by voltage directly related to oscillator frequency shift. This is accomplished by taking a DC voltage from the ratio detector and feeding it back to a varicap "V" which is a voltage controlled variable capacitor See Figure 2-8. This varicap is connected across the oscillator tuned circuit and acts as a frequency controlling device. If the oscillator should shift frequency this causes ratio detector unbalance and a DC voltage is fed back to the varicap so its changing capacity will automatically adjust the frequency of the oscillator circuit to compensate for the original oscillator shift. In this manner we have achieved automatic oscillator frequency control which eliminates drift and simplifies FM tuning. There is a possibility that some component may fail in the oscillator circuit, that will shift the frequency beyond the ±.8 megacycle control range of the varicap. This would then require analysis and replacement of the component. Should you desire to receive a weak FM station within the AFC pull in range of a strong FM station ±.8MC an AFC disabling switch has been provided in the receiver circuitry. The AFC source voltage is removed from the oscillator circuit when switching from FM-AFC to FM, and the oscillator circuit functions without automatic frequency control relying on its inherent stability to stay at the desired tuned frequency.

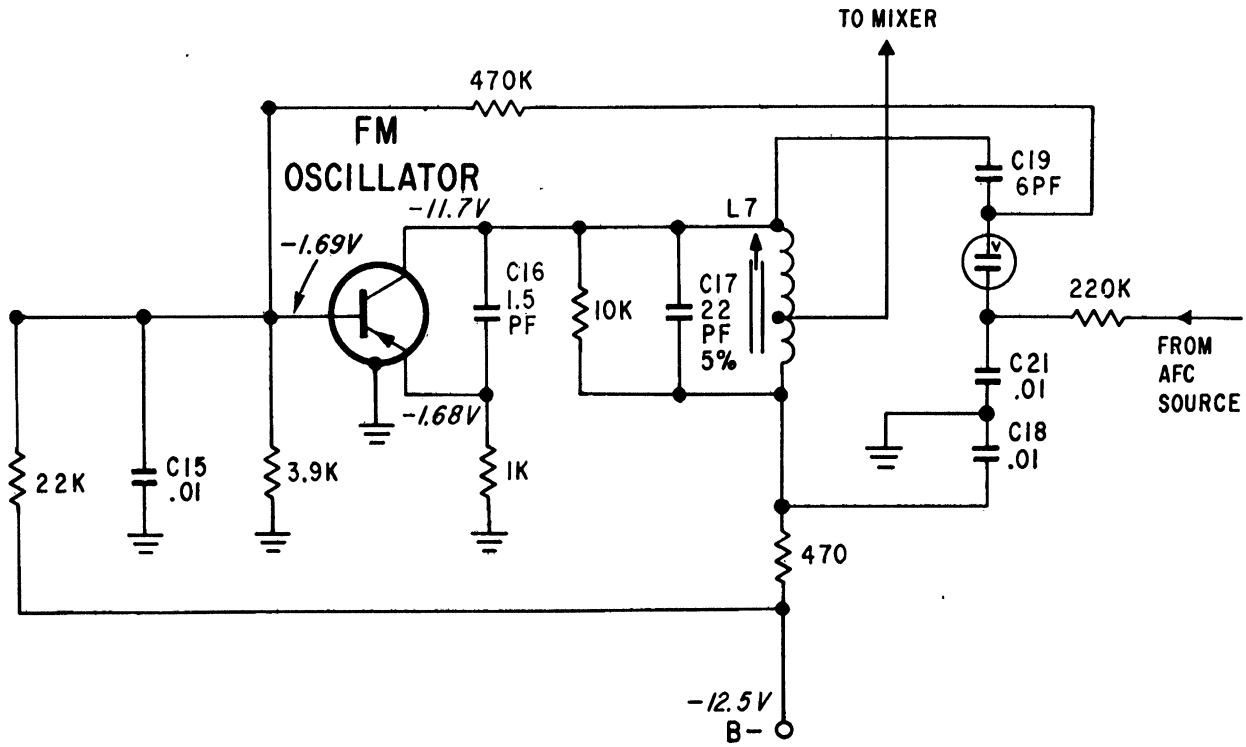


FIG. 2-8 FM-AFC

FM IF AMPLIFIERS

There are four common emitter IF amplifier stages from the output of the RF tuner to the input of ratio detector. The IF base voltages are obtained through two parallel dividing networks, one of them consisting of a 12K and 2.7K resistor in series to ground, See Figure 2-9 and the other arm consists of the 2nd, 3rd and 4th IF transistors. The 2nd IF base has -2.2 volts on it; this was obtained from a voltage at the junction of the 12K and 2.7K and feeds through the secondary of T6 and T2, IF transformers. The 3rd IF transistor receives its base voltage through a 1K dropping resistor connected to the emitter of the 2nd IF transistor. This feeds voltage up through the secondary of T3, 10.7 MC IF transformer and places - 1.85 volts on the base of the 3rd IF transistor. The 4th IF transistor obtains its base voltage in the same manner. A 1K resistor is connected to the emitter of the 3rd IF, goes through the secondary of the T4 10.7 MC IF transformer supplying - 1.5 volts to the base of the 4th IF transistor. It must be remembered that should the second IF transistor fail, both the 3rd and 4th IF transistors will be without base voltage and conversely should the 3rd or 4th IF transistor fail the base voltages ahead would be affected.

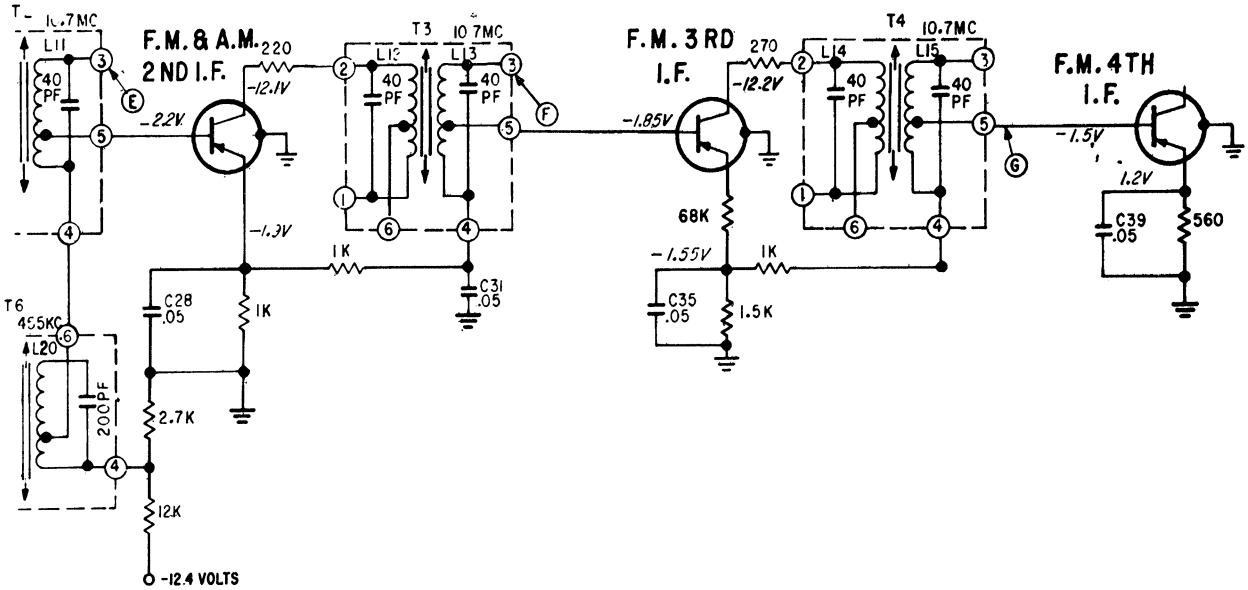


FIG. 2-9 IF Amplifiers

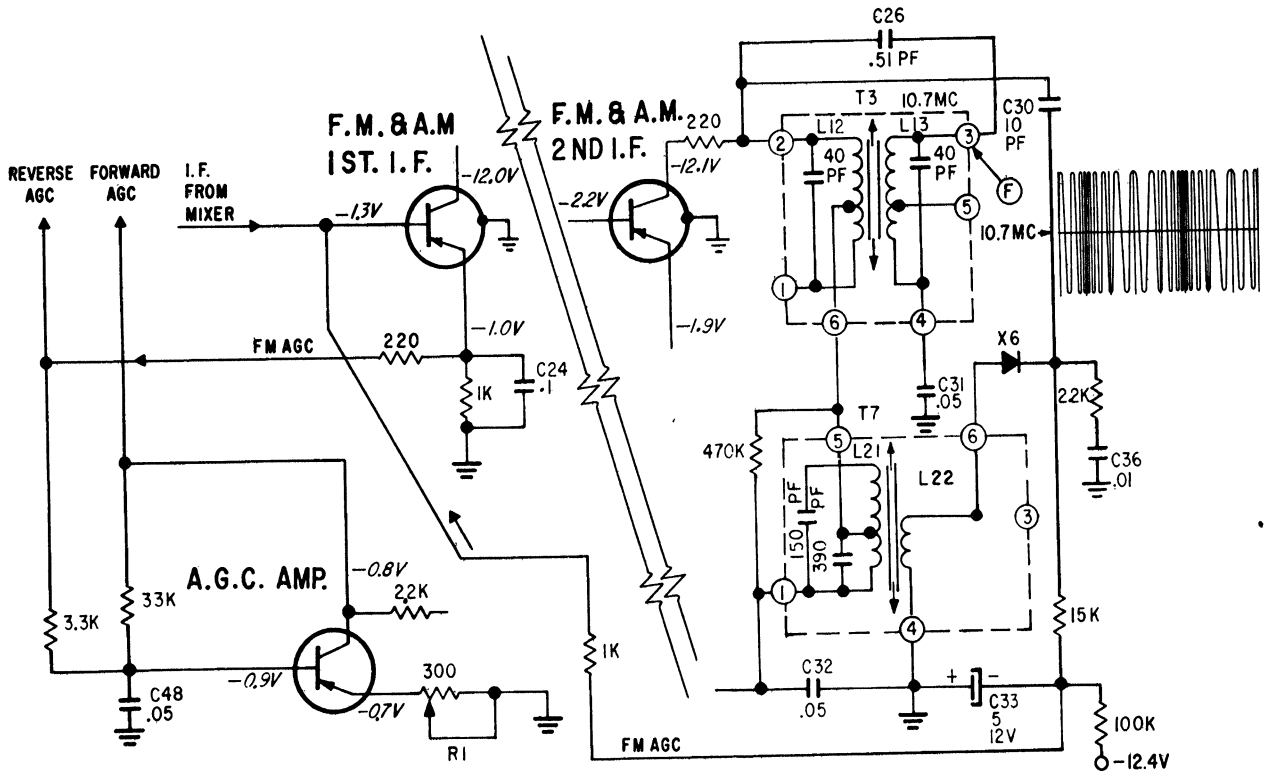


FIG. 2-10 FM-AGC

FM–AGC

Under no signal conditions the 1st IF transistor receives its base voltage of - 1.3 volts through a parallel voltage divider network See Figure 2-10. One leg consists of 120K resistor in series with a 15K resistor, in series with an X6 AGC diode and the secondary of T7, 455 KC IF transformer to ground. The other leg consists of 100K resistor in series with a 1K resistor that connects to the base of the 1st IF transistor. The mixer transistor obtains its base voltage from the emitter of the 1st IF. This feeds through a 220 ohm resistor and a 2.2K ohm resistor in series applying approximately a - .96 volts under no signal conditions at the base of the mixer. In addition the RF amplifier also obtains its base voltage from the emitter of the 1st IF amplifier. The voltage goes through the 220 ohm resistor that is in series with the 3.3K resistor and supplies - .9 volts at the base of the AGC amplifier. The actual RF amplifier base voltage is obtained from the collector of the AGC amplifier; the gain of the AGC amplifier is adjusted by potentiometer R1, this control is adjusted so that under no signal conditions the voltage on the collector will be -1.0 volts.

When an FM signal is received, a 10.7 MC IF signal is available in T3 2nd IF transformer. A portion of this signal is removed from the 2nd IF transistor collector through C30 the 10 pf capacitor. This FM modulated signal is detected by diode X6 and produces a voltage that reduces the forward bias on X6. This reduces current flow which in turn reduces the negative voltage at the junction of the 15K and 100K resistors. With a power supply voltage of 13.2 volts and with no RF signal at the FM Tuner, one could expect a base voltage at the first IF of approximately -1.43 volts. With 60 microvolts of RF signal, into the FM Tuner, this would be reduced to approximately -1.3 volts and with 100 thousand microvolts at the input of the RF Tuner, the voltage would be approximately -.56 volts. Even with extremely strong signals the voltage on the 1st IF amplifier will always be negative. This voltage can be considered as a positive going negative voltage. This IF transistor can then be considered to be controlled by a Reverse AGC voltage. In other words, the forward bias of this transistor is being reduced. As the bias is reduced on the base of a PNP transistor the gain of the transistor is also reduced and so will be the magnitude of the IF signal at the collector. IF amplifier overload with resulting distortion will be eliminated. To prevent other sources of overload, with resulting distortion, AGC must also be applied to both the RF amplifier and mixer transistors. Since the mixer transistor obtains its base voltage from the emitter of the 1st IF transistor then as the gain of the 1st IF is reduced, so will be the negative voltage available at the emitter of the first IF. See Figure 2-7. As a result the -.96 volts at the base of the mixer will be reduced to something less than this. Again we have a positive going negative voltage being controlled by the developed AGC. If we reduce the forward bias of a transistor we reduce its gain. The base of the AGC amplifier receives its voltage from the 1st IF emitter and since this is now a positive going negative voltage, See Figure 2-10, then -.9 volts on the base of the AGC amplifier will also be reduced. When this occurs we are reverse biasing this AGC amplifier, the gain of the amplifier is reduced and the current in the collector circuit is also reduced. When the collector current is reduced the voltage at the collector rises to comething greater than a -.8 volts and we now have a negative going negative voltage applied to the base of the RF amplifier. See Figure 2-7. Since we now Forward AGC Bias the RF amplifier we drive it into saturation causing its gain to be reduced. Perhaps at this point, an explanation of Forward Bias will be in order.

The gain of a transistor can be reduced by forward biasing it into saturation. If transistor gain is strongly dependent on collector voltage, then gain may be reduced by lowering the collector voltage. Usually this is done by increasing emitter current and including a large dropping resistor in the collector. At high current, the IR drop across the dropping resistor reduces the collector voltage, thus reducing gain. Forward AGC on the RF amplifier accomplishes several purposes. First, the gain of the RF transistor is reduced. As the current increases in the collector circuit its impedance becomes extremely low and there is a complete mismatch between the collector and its tuned circuit, as a direct result of this mismatch the gain of this circuit is reduced. In the base the current has also become quite high and and its impedance becomes extremely low, in effect, it acts as a swamping device across the FM-RF input coil. It would be the same as putting a short across this coil extremely reducing its "Q".

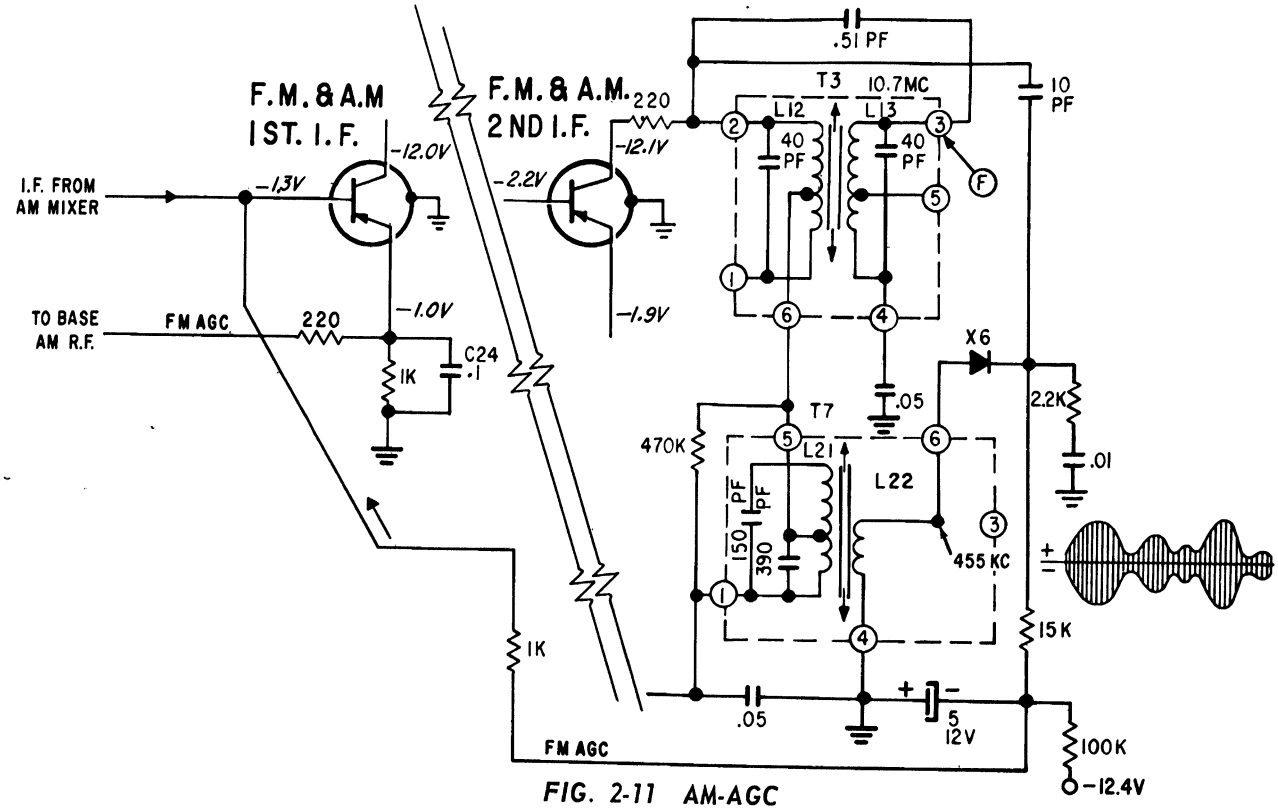


FIG. 2-11 AM-AGC

AM-AGC

With an amplitude modulated signal coming into the RF antenna terminals of the receiver, we would obtain a 455 KC amplitude modulated wave at the secondary of T7, See Figure 2-11, the 3rd AM-IF transformer. We detect the amplitude modulated signal with X6 diode. This reduces the forward bias on the diode reducing the current flowing in this leg of the voltage divider, as a result the voltage going to the base of the 1st IF amplifier is reduced. In this manner we are again applying reverse AGC voltage to this transistor to reduce its gain and eliminate the possibility of distortion and overload as a result of excessively strong RF signals. As the base voltage of the 1st IF is reduced the voltage on the emitter will also be reduced. Here we also have a positive going negative voltage, See Figure 2-4, which in turn is fed through a 220 ohm resistor in series with a 1.8 K ohm resistor to the base of the AM-RF transistor. As we reduce the negative voltage on the base of this transistor we also reduce its gain. Now the AM-RF transistor is also controlled, although indirectly, by the reverse AGC voltage. Since the base voltage on the RF transistor is being reduced, so too will be its emitter voltage and this emitter voltage is the AGC for the mixer. This is fed through a 1 K resistor in series with a 2.2 K resistor to the base of the AM mixer. Since this is also a positive going negative voltage, we will also reduce the mixer gain. Perhaps an explanation of why many of the AGC voltages are obtained from the emitter's of transistors, rather than from the original AGC sources, would now be in order. Since transistors are basically current devices, the current and voltage requirements to properly control these systems would be far greater than the power available. As a result, other sources must be utilized to supply these requirements as long as these sources are directly or indirectly controlled by the original AGC voltage.

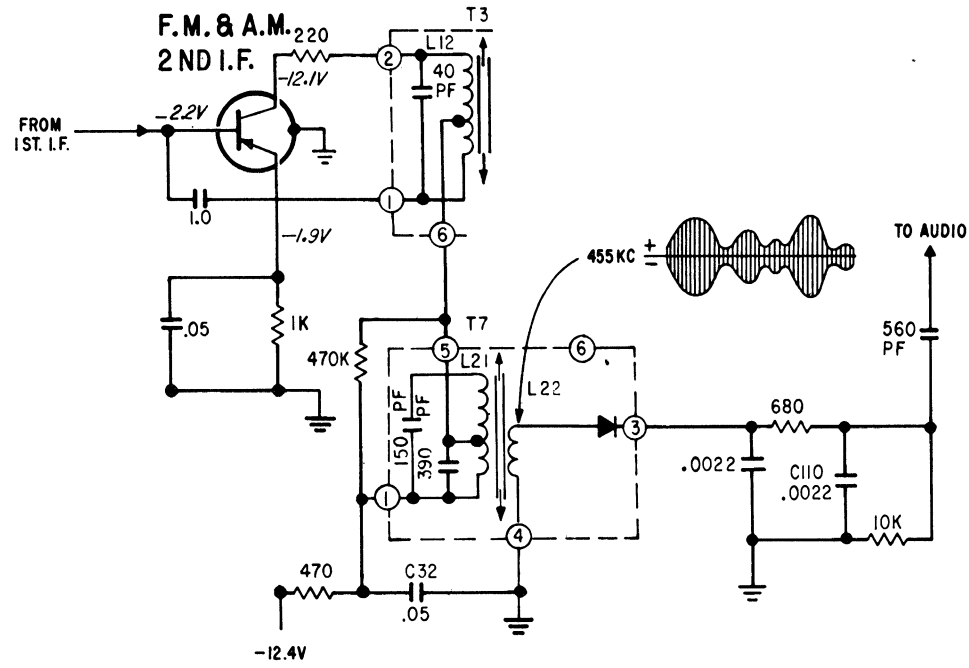


FIG. 2-12 AM Detector

AM DETECTOR

Since the power capabilities of diode X6 are not sufficient to produce both the necessary AM-AGC voltage and the AM audio voltage, See Figure 2-12 a separate diode is used for AM detection. The 455 KC AM modulated wave at the secondary of the T7 3rd IF transformer is detected with the resulting varying DC voltage having the characteristics of the original amplitude modulation. This voltage is fed to the audio amplifier of the system.

RATIO DETECTOR

The output of the 10.7 Mc of the 4th IF is fed to the T5, the ratio detector transformer. See Figure 2-13 This ratio detector circuit may be considered standard and it utilizes 2 solid state diodes for FM demodulation. Assuming that the FM station to which we are tuned is transmitting in the stereo mode and with a SCA sub-carrier store cast program then the composite output from this ratio detector will consist of the following.

1. L + R audio voltage
2. Upper and lower 38 KC side bands
3. A 19 KC pilot signal
4. A 67 KC SCA signal

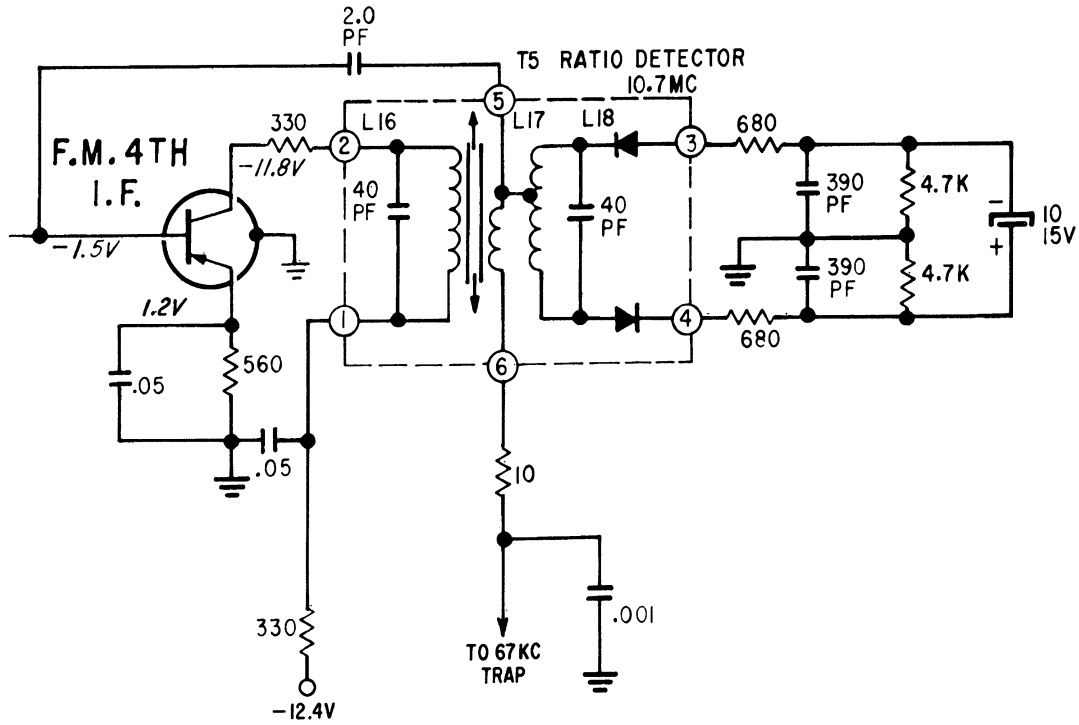


FIG. 2-13 Ratio Detector

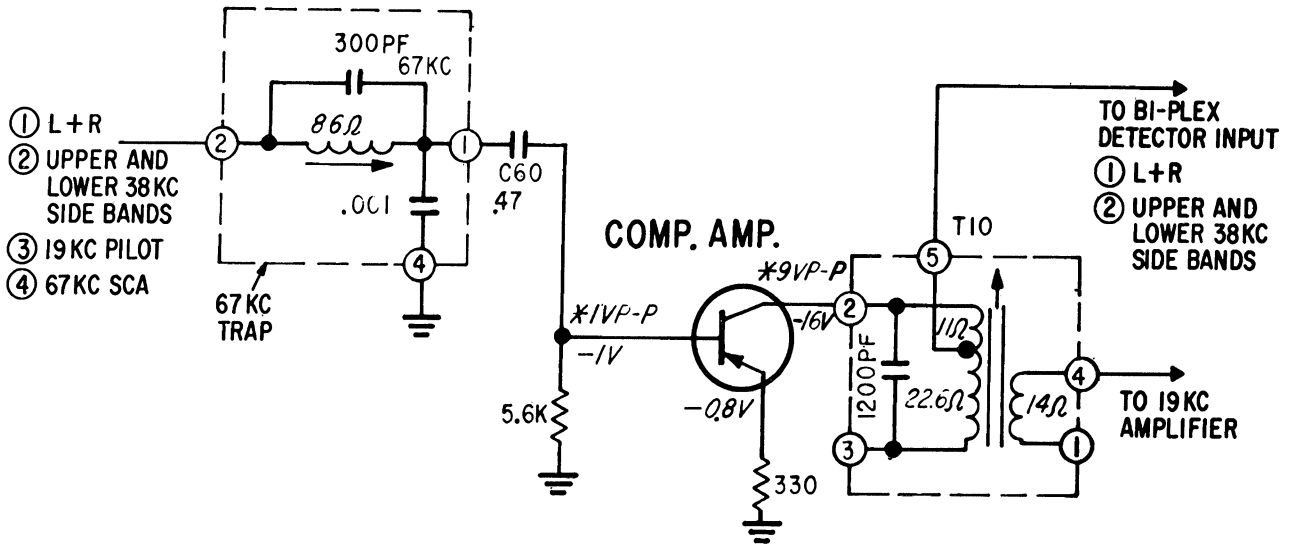


FIG. 2-14 67KC Trap and Composite Amplifier

67 KC TRAP

This composite information is fed to the input of the 67 KC trap, See Figure 2-14. Assuming that this FM multiplex station to which we are tuned is also broadcasting 67 KC store cast material that cannot be allowed to enter the multiplex detector or distortion will result, then a very high "Q" trap with approximately 20 db of attenuation must be placed in the path of composite signal. By tuning this 67 KC trap for minimum output we eliminate all of the 67KC SCA information from being passed on through the multiplex detector where it would cause cross talk and distortion.

COMPOSITE AMPLIFIER

Now that the 67 KC SCA material has been eliminated it is necessary to amplify the remaining three elements of the composite signal. These are then fed into the composite amplifier See Figure 2-14 which has a gain of approximately 9. In the collector circuit, the output of this composite amplifier is fed to two channels. The L + R audio voltage and the 38KC L-R upper and lower sidebands are fed directly to the base of the biplex detector, and await recombination with the developed 38 KC sub-carrier as well as simultaneous detection, into L and R audio voltages. The 19 KC signal is taken off the secondary of T10 and fed to the base of the 19 KC pilot amplifier.

19 KC PILOT AMPLIFIER GATE CONTROL DOUBLER

The 19KC pilot signal from the collector of the composite amplifier is fed into a 19KC amplifier with both input and output circuits sharply tuned to 19KC. This is done to eliminate any undesired signals from triggering the 19KC pilot amplifier. See Figure 2-15. To insure that the 19KC pilot amplifier will only operate on signals of sufficient amplitude for practical noise free stereophonic reception, a mute voltage of approximately -7.0 volts is impressed on the base of this transistor. Under static conditions, the emitter has a -7.6 volts on it. Under these conditions, the transistor is biased at cutoff and is not conducting. The amount of reverse bias or mute voltage on the base of the 19KC amplifier is controlled by the 5,000 ohm mute control. When the incoming 19KC pilot signal peak to peak voltage is sufficient to overcome the back bias or cutoff condition of the 19KC amplifier, then this transistor will conduct. It requires a 19KC pilot signal of approximately 1.8 volts peak to peak to do this. In the meantime the gate control transistor has been in cutoff condition since there is -0.0 volts at both the base and emitter. When the incoming 19KC signal is sufficient to cause the 19KC amplifier to conduct, it amplifies and passes signal on to the secondary of T11. which is center tapped. Two solid state diodes X1, and X2 operates as a full wave unfiltered rectifier across this secondary and act as a frequency doubler. The output of this full wave rectifier is a series of 38 KC DC pulses. These 38KC DC pulses perform two functions. These DC pulses are fed through a 4.7K resistor and are filtered with the 5 mfd filter at the base of the gate control. Since the gate control was previously at cut off it can now begin to conduct since a negative -.4 volt is put on its base by the DC voltage created by the doubler. There is a negactive -.2 volt on the emitter and this transistor is now forward biased into conduction. The gate control now conducts heavily and the previous -7.6 volts that was on the emitter of the 19KC amplifier drops to a -.3 volt under signal conditions. This forward biases the 19KC amplifier into greater condution and it becomes a very high gain amplifier creating larger amplitude 38KC DC pulses.

STEREO INDICATOR SWITCH

The stereo indicator switch transistor and the stereo indicator lamp are in parallel across a voltage See Figure 2-15. The two could be compared to a parallel resistance group with the stereo indicator switch being a variable resistor and the stereo indicator lamp being a large fixed resistor. In the monaural mode there is a -3.3 volts on the emitter a

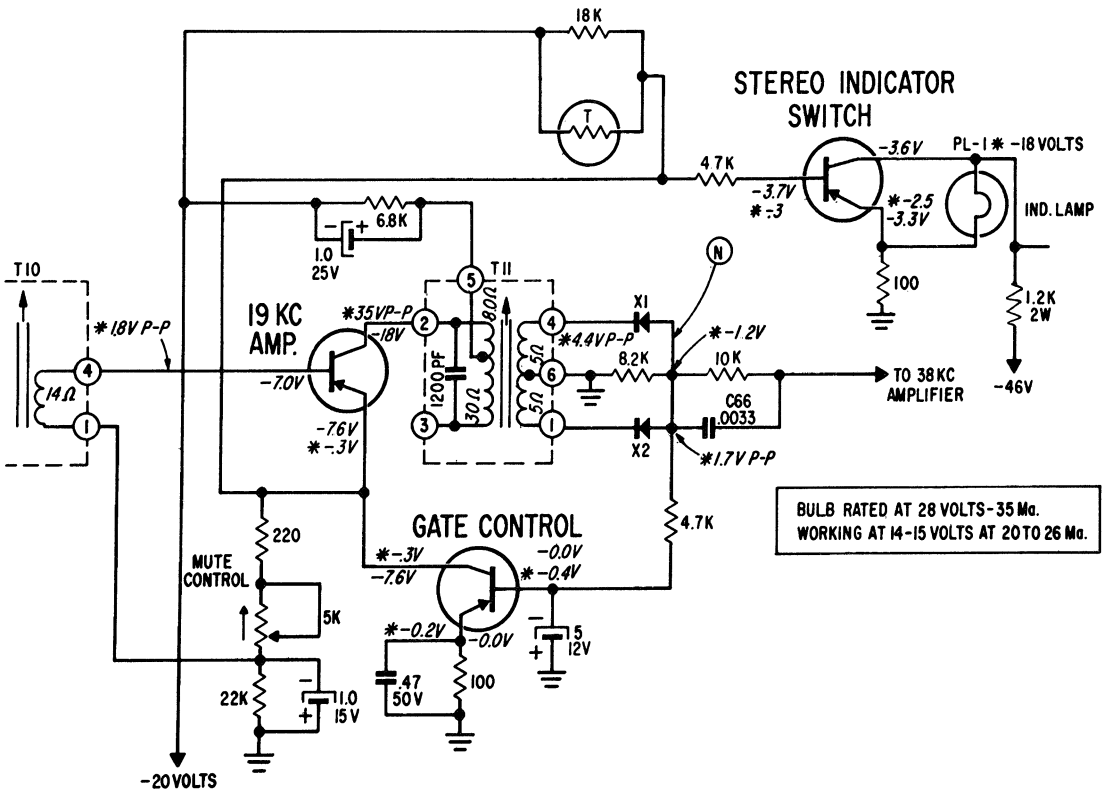


FIG. 2-15 19KC Amplifier, Doubler, Gate Control, Stereo Indicator Switch

-3.7 volts on the base and a -3.6 volts on the collector. In the monaural mode this transistor is forward biased and is conducting very heavily, as a result the impedance of the emitter collector circuit is extremely small and all of the current will be passing through this transistor. The moment a 19KC signal is sufficiently strong to trigger the 19KC amplifier, the gate control transistor begins to conduct and when it does since the emitter collector circuit of the gate control, is in series with the base of the of the stereo indicator switch transistor, the base voltage drops to a -.3 volt and the emitter circuit drops to a -2.5 volts, thus cutting off the stereo indicator transistor end causing its emitter collector impedance to become extremely high. When this occurs all current flows through the stereo indicator lamp and it lights indicating the instrument is operating in the stereo mode.

38 KC SUBCARRIER AMPLIFIER

Another portion of the 38KC DC pulses from the doubler is used to create the 38KC carrier for insertion with the two L – R 38KC sidebands. These pulses are fed to the base of the 38KC amplifier transistor See Figure 2-16. The collector circuit of the 38KC amplifier is tuned to 38KC and when pulses are injected into a resonant circuit so that the pulses and the tuned circuit are of the same frequency, ringing occurs in the tuned circuit. . .in this manner a sine wave is created. Looking at the collector of the 38KC amplifier, you would see a 38 KC sine wave. This 38KC sine wave (subcarrier) is now ready for reinsertion with the two L – R 38KC side bands that were obtained from the output of the composite amplifier.

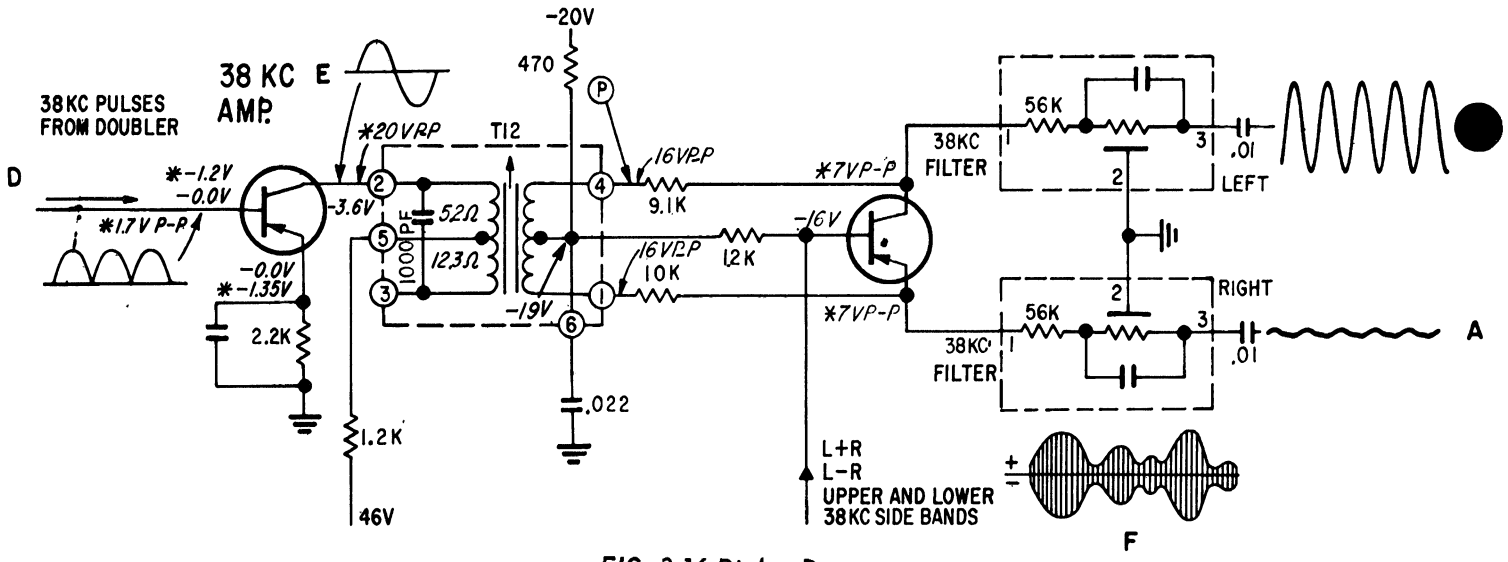


FIG. 2-16 Biplex Detector

THE BIPLEX DETECTOR

The 121-347 PNP transistor used in the Biplex detector circuit of the 27NT20 although not a bilateral transistor exhibits bilateral characteristics. As a result its function can be best explained by the operation of a normal bilateral transistor.

A bilateral transistor is a special type transistor that due to its uniform design, the collector will serve as the emitter and the emitter will serve as the collector under certain conditions. When switched by a properly applied AC voltage, in push-pull, sufficient in value to overcome the cut-off bias normally applied, the bilateral transistor will pass current in both directions in accordance with the alternations of the switching voltage. The switching voltage in this case is the regenerated 38 KC subcarrier signal.

The transistor is not biased in the conventional manner. For the following refer to Figure 2-16. The base is biased at -16 volts, while the collector and emitter are both biased at -19 volts (as shown at the center-tap, terminal No. 6 of transformer 12.) The -19 and -16 are obtained from the voltage divider consisting of the 1.2K & 470 resistors & TR12. Note that the collector and emitter are connected to the opposite ends of the 38KC output transformer secondary winding (part of T12). Under no-switching --voltage conditions, the transistor is biased to cut off due to the 3 volts difference between the 16 volts at the base and the 19 volts at the emitter. To forward bias the transistor, to cause current to flow, the voltage at the emitter must be positive or less negative than the voltage at the base. This required forward bias is supplied by regenerated 38KC subcarrier (a CW signal) when the value of the 38KC voltage exceeds the reverse bias.

Referring to Figure 2-17 showing the input and output waveforms of the 38KC switching signal only, note that the upper 38KC input wave supplies the positive bias from the emitter to the base on the first half-cycle, while at the same time, the lower wave supplies the negative bias from the collector to the

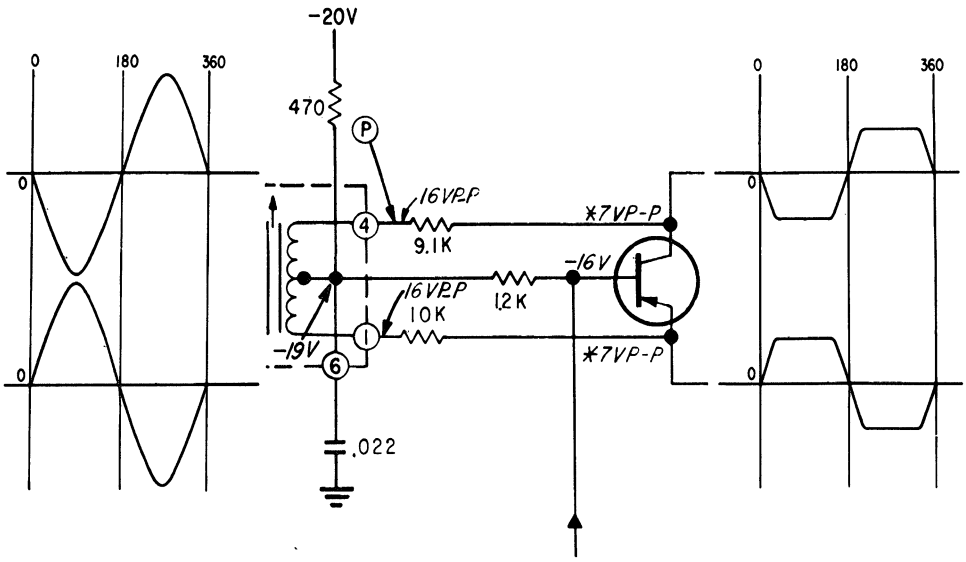


FIG. 2-17 Biplex Detector with Theoretical 38KC Input & Output Waveforms

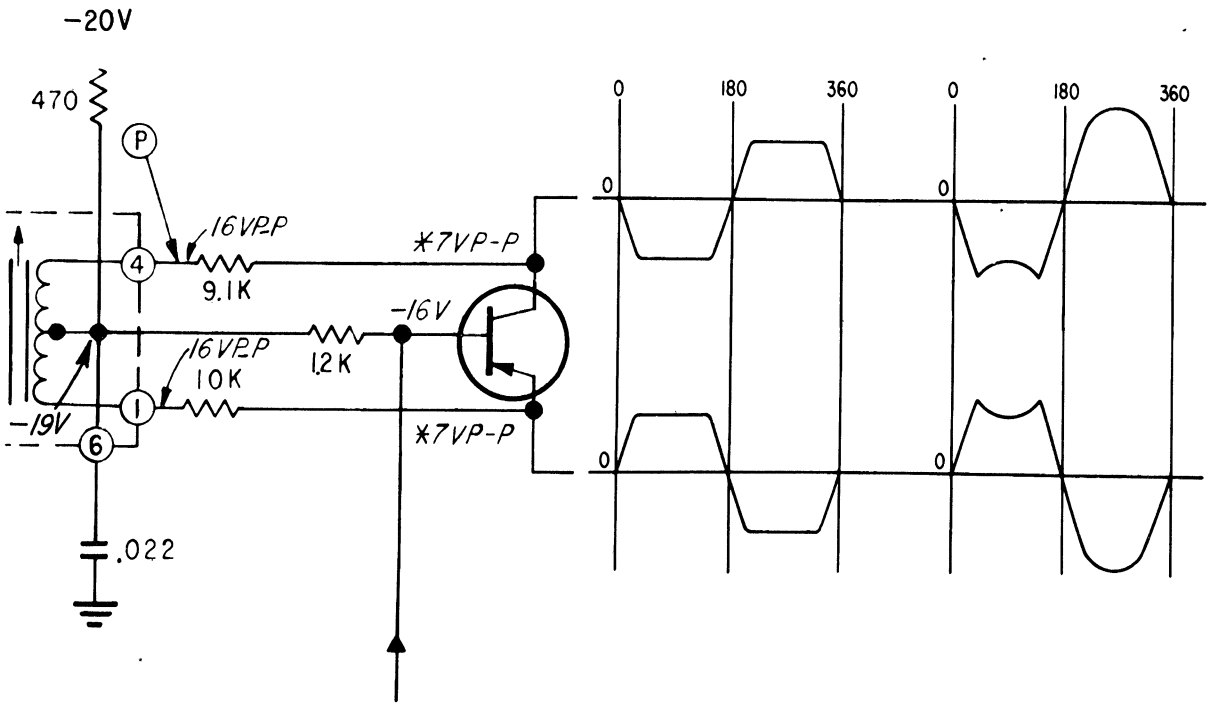


FIG. 2-18 Biplex Detector with Theoretical 38KC & L-R 38KC Side Band Output Waveforms

base. During the second half-cycle just the reverse is true, but the action of the transistor is the same, due to the bilateral effect.

The important point here is that because the transistor has bilateral characteristics, the emitter is as shown in the schematic for the first half-cycle but the emitter and collector change places when the switching signal changes polarity in the second half-cycle. As a result, current flows between the collector and emitter in both half-cycles, reversing directions in accordance with the alternations of the 38KC switching signal. The path of current flow in the external circuit is through the two load resistors (9.1K and 10K) and the secondary winding of T12. The output is taken from across the emitter and collector of the transistor.

Referring to Figure 2-18 showing input and output waveforms for operation of the circuit with 38KC & (L-R) 38KC side band inputs. Note that the composite stereo signal, taken off in the receiver from (T10) the collector load for the composite amplifier and is applied to the base of the transistor while it is being switched at the 38KC rate. The composite signal consists of two interleaved components, the (L + R) or regular audio signal and (L - R) 38KC sidebands. The (L + R) signal can appear at the L and R output terminals only by the way of the T10 transformer secondary, because any (L + R) signal passing through via the base of the transistor is modulated upward and out of the audio range by the 38KC switching signal. The demodulated (L - R) signal can appear at the L and R output terminals only by way of the base circuit of the transistor, because the (L - R) 38KC side bands are greatly attenuated at pin 6 of the transformer (T12) by the network consisting of the 1.2K & 470 ohm resistor to B-, shunted by the .022 MF capacitor to ground.

In operation, the (L + R) audio signal appears at the "L" and "R" output circuits in equal magnitudes of the same polarity. The relatively few turns of wire in the 38KC transformer secondary winding represents a low impedance path for the (L + R) signal. The (L - R) 38KC side bands are demodulated by the action of the transistor into two equal amplitude but opposite polarity (L - R) regular audio signals in the same L and R output circuits. The biplex transistor circuit thus acts to reinsert the 38KC CW (the subcarrier) into the (L - R) 38KC side bands and at the same time demodulates this signal into the (L - R) audio signal and also provides the matrixing of the two sets of audio signal (L + R) and (L - R) according to the formulae:

$$(L - R) + (L + R) = 2L$$
$$-(L - R) + (L + R) = 2R$$

The demodulation efficiency of the Multiplex "average type" detectors used previously was around 30%. The demodulation efficiency of the Biplex Detector circuit is around 60%. Furthermore, the L and R channel separation is improved about 6DB at the higher audio frequencies between 8KC and 15KC. The present circuit is designed to provide about 25 db of separation of the L and R signals at 1000 cycles.

One of the most desirable features of the Biplex detector is that when tuning across the dial, both stereo and non-stereo (monophonic) stations are received at approximately the same volume level.

During monophonic (non-stereo) FM transmissions, the 19KC pilot signal is not transmitted. If the 38KC switching signal is not applied to the transistor, it will remain at cut-off. In this case the (L + R) audio signal will be divided equally in the two channels via the two half-sections of the transformer (the secondary winding of T12).

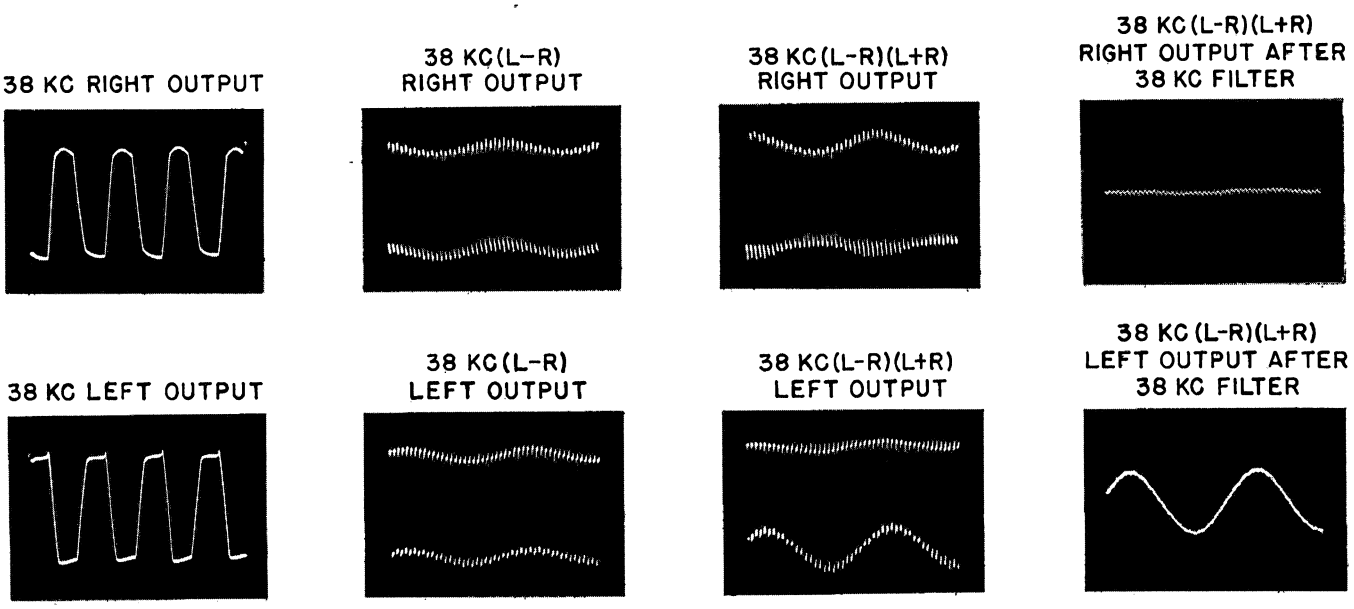


FIG. 2-19 Signal Tracing Biplex Detector

SIMPLIFIEDCHECKOF THE BIPLEX TRANSISTOR

A simple quality check on the biplex transistor can be made as follows:

Connect a large (5-10 MF) capacitor from pin 6 of the transformer T12 to chassis ground, to kill the signal at this point so that only the (L-R) signal is obtained in the output via the base of the transistor.

The transistor is good, if after tuning across the dial only stereo stations are received. The transistor is defective, if both stereo and non-stereo stations are heard at or near the same volume level. (The stereo stations will light up the stereo indicator lamp.)

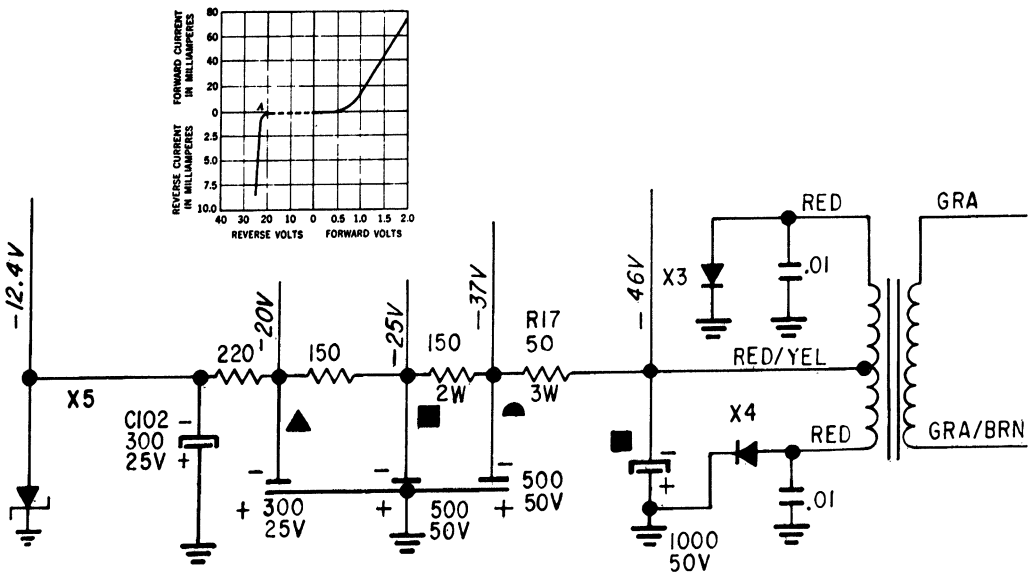


FIG. 2-20 Zener Diode Voltage Regulator

ZENER DIODE VOLTAGE REGULATOR

In transistorized circuits it is extremely important that the voltage not vary more than ± 10% of the normal -12.4 volts. To hold these limits a zener diode is used as a voltage regulator. The characteristic curve of the zener diode is included with the power supply circuitry See Figure 2-20.

When a zener diode is biased in the forward direction, the current flow through the unit will rise quite sharply at fairly low biasing voltages. When it is reverse-biased, however, it will be found that the current is minute, on the order of microamperes, until a certain voltage, called the saturation voltage, is reached. At this point, the electrons or holes which form the leakage current and given sufficient energy to create other electron-hole pairs which add to the initial reverse current. This process builds up rapidly and leads to large increases in current for small further increases in voltage. The diode is now in the saturation region, and any attempt of the reverse voltage to rise is met by an increased current flow which tends to counteract the voltage increase and thus maintain a steady voltage drop across the diode. This is indicated on the curve where the characteristic curve at point A drops almost straight down. At this point any attempt to increase the reverse bias voltage is met by an increase in current, but practically no increase in voltage drop. In this state the Zener diode establishes a fixed voltage.

SECTION 3

MUTING CONTROL

The 5K muting control which supplies a reverse bias voltage to the base of the 19KC amplifier is factory adjusted, and should not require readjustment. However, if the receiver is operated in an extremely noisy area, there is a possibility that there may be noise bursts of sufficient magnitude to overcome this mute voltage . . . when this occurs, the Stereophonic FM Indicator will light up. To further cut off the 19KC amplifier, carefully rotate the 5K muting control in a clockwise direction. This should only be done when a stereo signal is on the air since the mute control must only be advanced to a point where the Stereo Indicator does not light up on noise, but it should not be advanced to a point where the desired stereo signal is cut off.

More precise adjustment of the mute control can be made by using the SPTE-1 multiplex generator. This procedure is described in the multiplex alignment procedure included in this manual.

MULTIPLEX ALIGNMENT

These receivers have been properly aligned at the factory and will not require further adjustment. As a result, it is not recommended that any attempt be made to alter the multiplex stages. However, should any major components in these circuits require replacement or should anyone tamper with the multiplex adjustments then, of course, realignment will be necessary.

Zenith has designed and manufactured an SPTE-1 Multiplex Generator that can be used to properly align the multiplex portion of these receivers. The multiplex alignment procedure is included in later pages of this manual. The SPTE-1 Multiplex Generator is available at your Zenith Distributor.

ANTENNAS FOR STEREO FM

Due to the characteristics of the stereo FM system, it will require more signal for proper performance than does monaural FM. As a result, it may be necessary to operate the stereo FM receiver with an external antenna. The necessity for an external antenna will be determined by the signal conditions at each individual installation.

EXTERNAL FM ANTENNA

If the receiver is operated in an area of either low signal strength, high noise, or where multipath (FM ghosts) signals are present, a good external FM antenna will be required. The necessity of an external antenna as a result of weak signal or noise, will be quite evident since the set will not limit, and/or noise will be quite evident. It is extremely difficult to determine if multipath (FM ghosts) signals are present, however, should the program material be distorted, the best manner to decide if multipath signals are the cause of the problem, is to connect an external FM antenna to the receiver. Usually a TV antenna may be available for trial, but even then the results can be misleading, since many TV antennas are of low gain on FM frequencies.

FM CABINET ANTENNA

All models except the LPM95-4 contain an FM antenna built into the cabinet. This antenna consists of a length of wire cut to the desired frequency, and attached to the internal periphery of the cabinet. The LPM95-4 uses a built-in line antenna.

SIGNAL STRENGTH CHART

There are certain minimum voltages necessary for proper stereo FM reception. To help determine if there is sufficient signal available, the following developed AGC voltage versus microvolt input voltage charts have been compiled. Since the desired FM Station may not always be operating in the stereo mode when an installation is made, these AGC voltage measurements have been taken with a monaural FM signal. The point "*" of minimum AGC voltage necessary for good stereo FM reception has been indicated on these charts. For chassis 9M1T22Z1 and 10M9T25 connect a V.T.V.M. to the rear terminal of the FM antenna coil. This is the AGC line connected to Pin #2 of the 6JK8 RF amplifier.

For chassis 7L01, 7L01Z1, 7L01Z2 and 10L02Z connect a V.T.V.M. to the feed-thru condenser on the top of the chassis, 3/8 of an inch to the right of the FM antenna coil. A green wire is connected to this feed-thru condenser.

For chassis 27NT20 and 1N26T24 connect a V.T.V.M. to the forward AGC input feed-thru terminal at the rear of the FM-RF tuner. On the 27NT20 this is a blue wire and on the 1N26T24 this is a white wire.

Chassis 9M1T22Z1

Micro-volts Input	AGC Voltage at RF Coil
0	.8
25	.95
50	1.27
100	1.6
200	1.95
500	2.35
1 K	*2.7
5 K	3.6
10 K	4.0
20 K	4.5
50 K	5.1
100 K	5.6

Chassis 7L01, 7L01Z1 and 7L01Z2

Micro-volts Input	AGC Voltage at RG Grid
0	0.35 V
20	1.50
50	1.99
100	2.32
200	2.62
500	3.00
1 K	*3.30
5 K	5.40
10 K	7.20
20 K	9.0
50 K	12.0
100 K	14.0

Chassis 10L02Z

Micro-volts Input	AGC Voltage at RF Coil
0	.46
20	.85
50	1.34
100	1.71
200	2.0
500	2.43
1 K	*2.73
5 K	3.45
10 K	3.9
20 K	4.4
50 K	5.2
100 K	6.1

Chassis 10M9T25

Micro-volts Input	AGC Voltage at RF Coil
0	.75
10	.82
20	.9
50	1.32
100	1.72
200	2.1
500	2.6
1 K	*2.95
2 K	3.3
5 K	3.85
10 K	4.3
20 K	4.8
50 K	5.3
100 K	6.0

Chassis 27NT20 and 1N26T24

Micro-volts Input	Forward AGC Voltage At Tuner Forward AGC Input Feed-Thru Terminal
100	1.35
500	2.0
1 K	*2.18
5 K	2.25
10 K	3.3
50 K	4.1
100 K	4.45

AUTOMATIC FREQUENCY CONTROL AFC

These receivers feature an automatic frequency control which automatically keeps your receiver on the exact station frequency when you are tuned to an FM station. To utilize this feature tune the receiver as instructed and then turn the band switch to AFC position.

When the desired FM station is a weak station, adjacent in frequency to a strong station, the AFC may pull the tuning into the stronger station. Under these conditions, place the bandswitch in FM position and tune the receiver as instructed.

Tuning the receivers on the frequency modulation band will require more care than on the broadcast band. A hissing sound may be noted when tuning between Frequency Modulation stations. This is normal, and will disappear as the station is tuned in. After a station is located, the pointer should be moved back and forth over it until the point of quietest reception and best tone quality is found. Correct tuning is indicated by the disappearance of background noise.

SPEAKER PHASING

It is most important that coded speaker leads be connected to coded terminals on speakers for proper polarity within each speaker group. It is also then most important that the speaker groups be in phase with each other. One excellent method is to play a monaural record as described under Automatic Balance Control.

Under these conditions the sound should appear to come from a point midway between the two speaker groups. If the sound comes from any other point than midpoint, then one speaker group is out of phase with the other and you should check polarity. One of the easiest methods of checking polarity within the speaker group is to momentarily place a 4½ volt battery across the speaker feed terminals. All the speaker cones should simultaneously move in the same direction.

POWER AMPLIFIERS

Power transistors and their circuits are unique in operation, therefore, repair procedure differs from those steps followed when repairing tube type circuits.

1. Each channel of the 8NT02, 8NT04, 8NT24, 8MT25, 10MT26 and 27NT20 amplifiers use a pair of matched power transistors in the final output state. Therefore, should one transistor fail, both transistors must be replaced simultaneously, since they will not perform properly unless matched.
2. When a power transistor is replaced the insulator between the transistor and the heat sink should also be replaced. On chassis 2NT20, 4NT20, 8NT24, 8NT25, 10MT26 and 27NT20 be certain to apply Dow Corning #340 heat conductive grease between the transistor and the insulator. Also between the insulator and the chassis. The Dow Corning grease can be obtained in 1 c.c. quantities by ordering part #205-51.
3. On chassis 8NT02 and 8NT04 place the heat conductive grease in the detent of the chassis, all around the transistor and also into the detent in the combination heat sink and retaining bracket.
4. Do not operate these amplifiers without their proper speaker load.
5. Do not short out the audio output of either channel when the amplifier is operating.
6. Should a power transistor fail (short) be certain to replace the emitter resistors for the specific channel. Also be certain to check the condition of the silicon diode rectifiers.
7. Remove transistors from their sockets before doing any soldering to the socket lugs.

FM, RF, AND IF ALIGNMENT - CHASSIS 9M1T22Z1, 8L1T20Z, 9M1T22Z1 AND 10M9T25

Alignment of these chassis will, in most cases, not be necessary unless an RF or IF transformer is replaced or if someone has tampered with the adjustments.

Because of the wide band pass required in the multiplex FM tuner, it is desirable to use an FM signal generator having a deviation of 400 KC with a sweep rate of 60 cycles as well as an oscilloscope when aligning both the IF and RF FM portions of this receiver. It is not only necessary to obtain maximum amplitude in the IF amplifier stages, but also necessary to maintain symmetry. To help achieve this symmetry, it is desirable to have 10.6, 10.7 and 10.8 megacycle markers in obtaining IF curve symmetry.

The condenser mentioned further on in the alignment procedure should be as small as possible and the ground lead of the generator must be connected to the chassis at the base of the tube socket, where the signal is being injected. Should the signal be injected at some point other than a tube socket, then the ground lead should be connected to ground as closely as possible to this point.

In all alignment procedures, the signal generator output should be kept just high enough to obtain an indication. This is most necessary, since on some chassis we have a zero time constant limiter which will clip the signals if their magnitude is too great, resulting in erroneous waveforms.

A. Connect scope or V.T.V.M. to Pin #1 of the 6AU6 or 12AU6 limiter. The common scope or V.T.V.M. terminal should be connected to chassis.

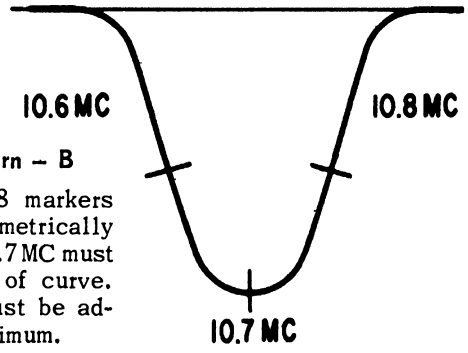
B. On chassis 8L1T20Z, 9M1T22Z1 and 10M9T25 connect scope or V.T.V.M. to junction of 100 ohm and 330 mmf capacitor. This 100 ohm resistor is connected to terminal #6 of the ratio detector transformer.

AM ALIGNMENT

C. An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM, IF and RF adjustments.

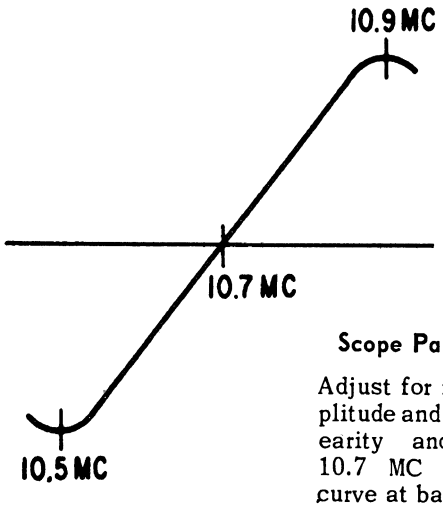
D. On chassis 27NT20 and 1N26T24 connect scope or V.T.V.M. to junction of 10 ohm resistor and .001 mfd capacitor Test Point (H). The 10 ohm resistor is connected to terminal #6 of the ratio detector transformer.

E. On chassis 27NT20 and 1N26T24 connect the scope to the base of the 4th FM IF transistor Test Point (G). The common scope terminal should be connected to chassis.



Scope Pattern – B

10.6 and 10.8 markers must be symmetrically positioned. 10.7 MC must be at center of curve. This point must be adjusted for maximum.



Scope Pattern – A

Adjust for maximum amplitude and maintain linearity and symmetry. 10.7 MC must be on curve at base line.

NEUTRALIZING 6JK8 R.F. AMPLIFIER

Equipment – Bias Supply (Variable 0 to 20 Volts)

1. Tune receiver to 108 mc.
2. Insert a 108 mc R.F. signal at FM-G antenna terminals.
3. Connect V.T.V.M. or scope to Pin #1 grid of the 6AU6 limiter. The common scope or V.T.V.M. terminal should be connected to chassis.
4. Remove the AGC line from the tuner feed through and connect the (–) negative lead of the bias supply to this point. Connect the (+) terminal to chassis.
5. Adjust the bias supply to approximately -10 volts.
6. Carefully vary the position of the two wires adjacent to the body of C5 until minimum output is obtained, from the limiter grid test point.

RF AND IF ALIGNMENT
CHASSIS 6L01, 6L01Z1, 6L01Z2, 7L01, 7L01Z1, 7L01Z2, 7L22Z and 10L02Z

Alignment of these chassis will, in most cases, be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.

FM IF Alignment: Because of the wide band pass, it is desirable to use an FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined in this service note.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

The signal generator output should be kept just high enough to get an indication on the meter.

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL TO	ADJUST	PURPOSE
1(d)	Pin 7 12BE6 Converter	.05 Mfd.	455 Kc. 400 Cycle Modulated	BC	600 Kc.	L16, 17, 14, 15	Align IF channel for maximum output
2(d)	2 turns loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	BC	1600 Kc.	C19D	Set oscillator to dial scale
3(d)	2 turns loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	BC	1400 Kc.	C19B	Align antenna stage
4(a)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L10 coil slug pri. discr.	Align primary of discriminator for maximum reading
5(f)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L11 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading
6(c)	Pin 1 (grid) on 12BA6 2nd I.F.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L8 & L9 pri. & sec. of 3rd IF transf.	Align 3rd IF transf. for max. reading
7(c)	Pin 1 (grid) on 12BA6 1st IF	.05 Mfd.	10.7 Mc. Unmodulated	FM		L6 & L7 2nd IF transf.	Align 2nd IF transf. for max. reading
8(c)	Pin 2 (grid) on 12DT8 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM		L4 & 5 pri. & sec. of 1st IF transf.	Align 1st IF transf. for max. reading
9(c)	Antenna Post FM	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 osc. coil slug	Set osc. to dial scale
10(c)	(Remove line ant.)	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L2 det. coil slug	Align det. stage to max. reading

RF AND IF ALIGNMENT PROCEDURE FOR CHASSIS 6L01, 6L01Z1 AND 6L01Z2

(a) Vacuum Tube Voltmeter Lug 1 on discriminator transformer to chassis (half discriminator load).
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
(d) Vacuum Tube Voltmeter Lug 2 of T6 to Chassis.
(f) Vacuum Tube Voltmeter Pin #1 of 12AL5 Disc. Tube to Chassis (full discriminator load)

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL TO	ADJUST	PURPOSE
1(d)	Pin 7 12BE6 Converter	.05 Mfd.	455 Kc. 400 Cycle Modulated	BC	600 Kc.	L8, 9, 16, 17	Align IF channel for maximum output
2(d)	2 turns loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	BC	1600 Kc.	C32D	Set oscillator to dial scale
3(d)	2 turns loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	BC	1400 Kc.	C32B	Align antenna stage
4(a)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L12 coil slug pri. discr.	Align primary of discriminator for maximum reading
5(f)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L13 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading
6(c)	Pin 1 (grid) on 12BA6 2nd I.F.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L10 & L11 pri. & sec. of 3rd If trans.	Align 3rd IF transf. for max. reading
7(c)	Pin 1 (grid) on 12BA6 1st IF	.05 Mfd.	10.7 Mc. Unmodulated	FM		L6 & L7 2nd IF transf.	Align 2nd IF transf. for max. reading
8(c)	Pin 2 (grid) on 12DT8 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM		L4 & 5 pri. & sec. of 1st IF transf.	Align 1st IF transf. for max. reading
9(c)	Antenna Post FM	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 osc. coil slug	Set osc. to dial scale
10(c)	(Remove line ant.)	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L2 det. coil slug	Align det. stage to max. reading

RF and IF Alignment Procedure for Chassis 7L01, 7L01Z1 and 7L01Z2

(a) Vacuum Tube Voltmeter Lug 1 on discriminator transformer to chassis (half discriminator load).
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
(d) Vacuum Tube Voltmeter Lug 2 of T3 to Chassis.
(f) Vacuum Tube Voltmeter Pin #1 of 19GQ7 Disc. Tube to Chassis (full discriminator load)

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL TO	ADJUST	PURPOSE
1(d)	Pin 7 12BE6 Converter	.05 Mfd.	455 Kc. 400 Cycle Modulated	BC	600 Kc.	L18, 19, 16, 17, 13, 14	Align IF channel for maximum output
2(d)	2 turns loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	BC	1600 Kc.	C28D	Set oscillator to dial scale
3(d)	2 turns loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	BC	1400 Kc.	C28B	Align antenna stage
4(a)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L10 coil slug pri-discr.	Align primary of discriminator for maximum reading
5(f)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L11 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading
6(c)	Pin 1 (grid) on 12BA6 2nd I.F.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L8 & L9 pri. & sec. of 3rd If transf.	Align 3rd IF transf. for max. reading
7(c)	Pin 1 (grid) on 12BA6 1st IF	.05 Mfd.	10.7 Mc. Unmodulated	FM		L6 & L7 2nd IF transf.	Align 2nd IF transf. for max. reading
8(c)	Pin 7 (grid) on 12DT8 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM		L4 & 5 pri. & sec. of 1st IF transf.	Align 1st IF transf. for max. reading
9(c)	Antenna Post FM	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 osc. coil slug	Set osc. to dial scale
10(c)	(Remove line ant.)	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L2 det. coil slug	Align det. stage to max. reading

RF and IF Alignment Procedure for Chassis 7L22Z

(a) Vacuum Tube Voltmeter Lug 1 on discriminator transformer to chassis (half discriminator load).
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
(d) Vacuum Tube Voltmeter Lug 2 of T7 to Chassis.
(f) Vacuum Tube Voltmeter Pin #1 of 19GQ7 Disc. Tube to Chassis (full discriminator load)

OPERATION	CONNECT GENERATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	SET DIAL TO	ADJUST IRON CORES	PURPOSE
1 B	Pin #1 12AU6 Limiter Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L20	Adjust primary and secondary of ratio detector for maximum amplitude and symmetry as shown in Scope Pattern "B"
2 B	Pin #1 12AU6 Limiter Grid	.001 mfd	10.7 Mc 400 Kc. Deviation	88 Mc.	L21	
3 A	Pin #1 12BA6 2nd I.F. Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L16, L17	Align I.F. transformers for maximum output and symmetry; this pattern is not necessarily identical to the over all Scope Pattern "A"
4 A	Pin #1 12BA6 1st I.F. Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L12, L13	
5 A	Test Point "F"	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L4, L5	Align I.F. transformers for maximum output & symmetry as indicated in Scope Pattern "A"
6 A		.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	Readjust L4, L5, L12, L13, L16, L17	
7 A	FM Antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L3	Set Oscillator to dial scale
8 A	FM Antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L2 & L1	Align detector and antenna stages for maximum
9 C	Pin #1 12BE6 Converter Grid	.05	455 Kc. 400 Cycle Modulated	600 Kc.	L18, L19, L14, L15, L10, L11	Align AM, I.F. for maximum
10 C	Two turn loop loosely coupled to Wavemagnet		1600 Kc. 400 Cycle Modulated	1600 Kc.	C22F	Set oscillator to dial scale
11 C	Two turn loop loosely coupled to Wavemagnet		1400 Kc. 400 Cycle Modulated	1400 Kc.	C22D, C22B	Align detector and antenna stages.

For A, B, C See Page 34

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL TO	ADJUST	PURPOSE
1(d)	Pin 7 12BE6 Converter	.05 Mfd.	455 Kc. 400 Cycle Modulated	BC	600 Kc.	L22, 23, 6, 7	Align IF channel for maximum output
2(d)	2 turns loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	BC	1600 Kc.	C32D	Set oscillator to dial scale
3(d)	2 turns loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	BC	1400 Kc.	C32B	Align antenna stage
4(a)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L14 coil slug pri-discr.	Align primary of discriminator for maximum reading
5(f)	Pin 1 (grid) on 12AU6 limiter	.05 Mfd.	10.7 Mc. Unmodulated	FM		L15 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading
6(c)	Pin 1 (grid) on 12BA6 2nd I.F.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L12 & L13 pri. & sec. of 3rd If transf.	Align 3rd IF transf. for max. reading
7(c)	Pin 1 (grid) on 12BA6 1st IF	.05 Mfd.	10.7 Mc. Unmodulated	FM		L10 & L11 2nd IF transf.	Align 2nd IF transf. for max. reading
8(c)	Pin 7 (grid) on 12DT8 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM		L8 & 9 pri. & sec. of 1st IF transf.	Align 1st IF transf. for max. reading
9(c)	Antenna Post FM	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 osc. coil slug	Set osc. to dial scale
10(c)	(Remove line ant.)	270 Ohms	98 Mc. Unmodulated	FM	98 Mc.	L2 det. coil slug	Align det. stage to max. reading

RF and IF Alignment Procedure for Chassis 10L02Z

(a) Vacuum Tube Voltmeter Lug 1 on discriminator transformer to chassis (half discriminator load).
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
(d) Vacuum Tube Voltmeter Lug 2 of T10 to Chassis.
(f) Vacuum Tube Voltmeter Pin #9 of 19GQ7 Disc. Tube to Chassis (full discriminator load)

OPERATION	CONNECT GENERATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	SET DIAL TO	ADJUST IRON CORES	PURPOSE
1 B	Pin #1 12AU6 Limiter Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L15	Adjust primary and secondary of ratio detector for maximum amplitude and symmetry as shown in Scope Pattern "B"
2 B	Pin #1 12AU6 Limiter Grid	.001 mfd	10.7 Mc 400 Kc. Deviation	88 Mc.	L17	
3 A	Pin #1 12BA6 2nd I.F. Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L11, L12	Align I.F. transformers for maximum output and symmetry; this pattern is not necessarily identical to the over all Scope Pattern "A"
4 A	Pin #1 12BA6 1st I.F. Grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L7, L8	
5 A	Test Point "F"	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L4, L5	Align I.F. transformers for maximum out & symmetry as indicated in Scope Pattern "A"
6 A		.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	Readjust L4, L5, L7, L8 L11, L12	
7 A	FM Antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L3	Set Oscillator to dial scale
8 A	FM Antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L2 & L1	Align detector and antenna stages for maximum
9 C	Pin #1 12BE6 Converter Grid	.05	455 Kc. 400 Cycle Modulated	600 Kc.	L21, L22, L9, L10, L13, L14	Align AM, I.F. for maximum
10 C	Two turn loop loosely coupled to Wavemagnet		1600 Kc. 400 Cycle Modulated	1600 Kc.	C44F	Set oscillator to dial scale
11 C	Two turn loop loosely coupled to Wavemagnet		1400 Kc. 400 Cycle Modulated	1400 Kc.	C44B, C44D	Align detector and antenna stages.

For A, B, C See Page 34

OPERATION	CONNECT GENERATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	SET DIAL TO	ADJUST IRON CORES	PURPOSE
1 B	Pin #1 6AU6 2nd limiter grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L11	Adjust primary and secondary of ratio detector for maximum amplitude & symmetry as shown in Scope Pattern "B"
2 B	Pin #1 6AU6 2nd limiter grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L13	
3 A	Pin #2 6BN6 1st limiter grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L10	Align I.F. transformers for maximum output & symmetry This pattern is not necessarily identical to the overall Scope Pattern "A"
4 A	Pin #2 6EQ7 2nd I.F. grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L8, L9	
5 A	Pin #1 6BA6 1st I.F. grid	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L6, L7	
6 A	Test Point "F"	.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	L4, L5	Align I.F. transformers for maximum output & symmetry as indicated in Scope Pattern "A"
7 A		.001 mfd	10.7 Mc. 400 Kc. Deviation	88 Mc.	Readjust L4, L5, L6, L7, L8, L9, L10	
8 A	FM antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L3	Set oscillator to dial scale
9 A	FM antenna post (remove antenna)	300 ohms	98 Mc. 400 Kc. Deviation	98 Mc.	L2 & L1	Align detector and antenna stages for maximum.
10 C	Pin #1 6BE6 converter grid	.05	455 Kc. 400 Cycle Modulated	600 Kc.	L21, L22, L14, L15, L16, L17	Align AM I.F. for maximum
11 C	Two turn loop loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	1600 Kc.	C38F	Set oscillator to dial scale
12 C	Two turn loop loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	1400 Kc.	C38D, C38B	Align detector and antenna stages

For D, E, C See Page 34

RF AND IF ALIGNMENT PROCEDURE FOR CHASSIS 27NT20 AND 1N26T24

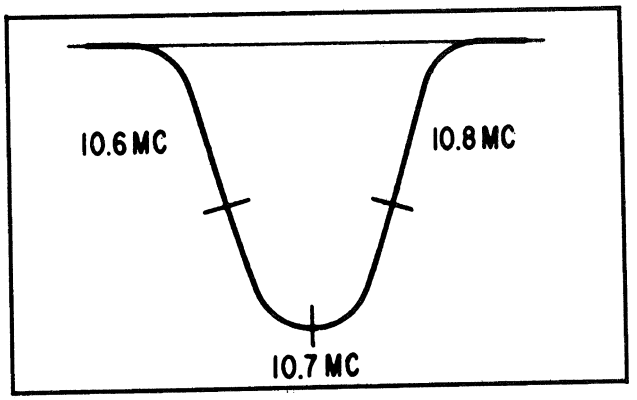
OPERATION	CONNECT GENERATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	SET DIAL TO	ADJUST IRON CORES	PURPOSE
1 D	Term. #3 of T4 4th IF Trans.	47 ohm in shunt with gen. output. Then from hot lead a 27 ohm in series with a .001 MFD capacitor.	10.7 Mc. 400 Kc. Deviation	88 Mc.	L16	Adjust Primary and secondary of ratio detector for maximum amplitude and symmetry as shown in Scope Pattern "B"
2 D	Term. #3 of T4 4th IF Trans.		10.7 Mc. 400 Kc. Deviation	88 Mc.	L17	
3 E	Term #3 of T3 3rd IF Trans.		10.7 Mc. 400 Kc. Deviation	88 Mc.	L14, L15	Align I.F. transformers for maximum output and symmetry. This pattern is not necessarily identical to the overall Scope Pattern "A"
4 E	Term. #3 of T2 2nd IF Trans.		10.7 Mc. 400 Kc. Deviation	88 Mc.	L12, L13	
5 E	Connect to emitter of TR2 Mixer Test Point #K		10.7 Mc. 400 Kc. Deviation	88 Mc.	L10, L11	
6 E	Connect to emitter of TR2 Mixer Test Point #K.		10.7 Mc. 400 Kc. Deviation	88 Mc.	L5, L6	Align I.F. transformers for maximum output and symmetry as indicated in Scope Pattern "A"
7 E	Connect to emitter of TR2 Mixer Test Point #K		10.7 Mc. 400 Kc. Deviation	88 Mc.	Readjust L5, L6, L10, L11, L12, L13, L14, L15	
8 E	FM Antenna Post (Remove Antenna)	300 ohm	98 Mc. 400 Kc. Deviation	98 Mc.	L7	Set oscillator to Dial Scale.
9 E	FM Antenna Post (Remove Antenna)	300 ohm	98 Mc. 400 Kc. Deviation	98 Mc.	L3, L2, L1	Align RF output, RF input and FM Antenna stages for maximum.
10 C	Base of TR8-121-397 AM RF transistor	.05 in series with hot lead of gen.	455 Kc. 400 Cycle Modulated	600 Kc.	L27, L28, L19, L20, L21, L22	Align AM IF for maximum.
11 C	Two turn loop loosely coupled to wavemagnet		1600 Kc. 400 Cycle Modulated	1600 Kc.	27NT20 C47E 1N26T24 C54F	Set oscillator to dial scale.
12 C	Two turn loop loosely coupled to wavemagnet		1400 Kc. 400 Cycle Modulated	1400 Kc.	27NT20 C47D, C47B 1N26T24 C54D, C54B	Align detector and antenna stages.

For A, B, C See Page 34

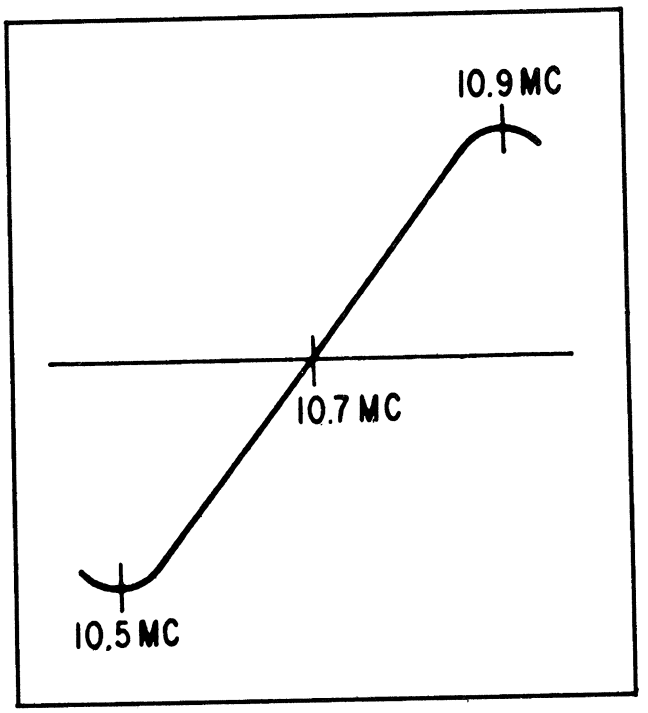
SECTION 4

MULTIPLEX ALIGNMENT PROCEDURE CHASSIS 27NT20 AND 1N26T24

Using the Zenith FM multiplex signal generator, the multiplex portion of Zenith or any FM multiplex receiver can be aligned, but first before any attempt is made to do this it is necessary that the technician be certain that the RF, IF, and ratio detector alignment is correct, and that the receiver operates normally on monaural signals.



IF CURVE



RATIO DETECTOR CURVE

Because of the wide band pass required in the multiplex FM receiver, it is desirable to use an FM signal generator having a deviation of at least 200 KC with a sweep rate of 60 cycles, as well as an oscilloscope. During the IF and ratio detector alignment it is not only necessary to obtain maximum gain, but also extremely important to maintain symmetry.

To help achieve this IF curve symmetry 10.6 and 10.8 megacycle markers must be symmetrically positioned and the 10.7 megacycle marker must be at the center of the curve. When aligning the ratio detector 10.5 and 10.9 megacycle markers are desirable to achieve S curve symmetry. The pattern illustrating marker use to obtain S curve symmetry indicates it is most necessary to adjust for maximum gain and at the same time maintain linearity and symmetry. 10.7 megacycles must be on the curve at the reference line. 10.5 megacycles and 10.9 megacycles must be at the lower and upper turn of the S curve respectively. Only when the I.F. and ratio detector circuitry have been aligned in accordance with these specifications should the technician proceed to align the multiplex portion of the receiver.

Preliminary Procedures

Before using the Zenith FM multiplex signal generator, it is recommended that it be connected to the power source and turned on giving it a 10 to 20 minute warmup period. This will allow ample time for the RF, audio, and 19KC oscillators to stabilize.

The following procedure is only necessary when the generator has been received from the factory, or has been subjected to a great deal of handling or transportation vibration. Although the 19KC pilot generator oscillator is extremely stable, there is always the possibility that it could shift from its precisely assigned frequency. As a result, we have a very simple method to check the 19KC pilot frequency using an FM multiplex receiver and an FM multiplex station as a frequency standard. Proceed as follows:

1. Tune your FM multiplex receiver to an FM multiplex station and when the pilot indicator lights up, this indicates the 19KC pilot amplifier is functioning and the doubler and ringing circuit will be creating a 38KC sine wave. Since this 38KC sine wave is developed from information obtained from the transmitter, it must be on frequency and can be used as a reference standard. With the enclosed cable, connect to the plate terminal of the 38KC subcarrier amplifier (380 volts PP) and connect the other end of this cable to the 38KC input terminal on the FM multiplex generator.

2. Set the pilot carrier amplitude control to 10%, plug in a pair of high impedance earphones into the Beat Frequency Output Jack on the generator, then adjust the pilot carrier frequency with an IF alignment wrench. Watch the 38KC neon zero beat indicator, and listen to the phones. When the zero beat is obtained between the two 38KC signals, the standard from the receiver and the 38KC from the multiplex generator, the 19KC oscillator in the generator will be on the exact frequency. After this zero beat adjustment has been made, disconnect all cables.

This generator provides composite multiplex output as well as an RF signal, FM modulated by the composite multiplex signal. The composite signal is very useful since it is an excellent tool that can be used in trouble-shooting and signal tracing the multiplex portion of a receiver. We do not recommend that multiplex alignment be made using only the composite signal injected at the output terminal of the ratio detector tertiary winding. Since there is always a possibility of some phase shift occurring in the RF,

IF, or ratio detector circuits, multiplex alignment made by signal injection at the ratio detector would not be as correct for each receiver as it would be if the composite signal FM modulated an RF carrier and this signal were injected into the FM antenna terminals. With the signal injected in this manner, the multiplex alignment would be the best that could possibly be achieved, and separation would be the maximum obtainable for this specific receiver.

The RF carrier in this generator is variable from 88 to 108 MC. The RF signal should be injected at a point in the FM band where no other signal is present. If at all possible this should be at a frequency near the middle of the FM band. Tune the FM receiver to this point and adjust the RF frequency adjusting slug on the generator to this same frequency. The AGC voltage developed in the receiver should be maximum. AGC voltage substantially less than this will indicate the RF frequency adjusting slug is tuned to an image.

67 KC Trap Adjustment

1. Connect the stereo generator RF leads to the G and F FM antenna terminals and set the pilot carrier control to zero.
2. Move L + R and L - R switches to OFF position.
3. Move 67KC generator switch from OFF position up to 67KC.
4. Connect the V.T.V.M. (AC scale) and/or scope to terminal #5 of T10 19KC amplifier transformer, and chassis ground.
5. Adjust 67KC trap for minimum output.
6. Move 67KC generator switch to OFF position.

19KC Sub Carrier Amplifier, Doubler and Mute Adjustments

1. Turn generator pilot carrier amplitude control to 10% position.
2. Connect the V.T.V.M. (DC scale) and/or scope to the junction of the two frequency doubling diodes and chassis.
3. Place the stereo-monaural switch in Monaural position. (On 1N26T24 chassis short base of gate control transistor to chassis.)
4. Adjust T10 19KC amplifier transformer and T11 doubler transformer for maximum output. Simultaneously adjust the mute control so the voltage at the junction of the two frequency doubling diodes never exceeds -.2 volt during this operation. The voltage must be kept at this minimum for proper alignment.
5. Place the stereo monaural switch in Stereo position (on 1N26T24, remove the shorting wire from the base of the gate control).
6. Turn generator pilot carrier amplitude control to 5% position.
7. Slowly rotate the mute control to a point where the stereo indicator lights up.

Separation Adjustments

1. Place stereo monaural switch in Stereo position.
2. Turn generator pilot carrier amplitude control to 10% position.
3. Move L-R and L+R generator switches from OFF position up to L-R and L+R positions.
4. Connect a V.T.V.M. (AC scale) and/or scope to the L audio output, after the 38KC filter.
5. Adjust T12 38KC detector transformer for maximum voltage at L output. The magnitude of this signal should be much greater than that at the R output. The voltage at the L output should be approximately 10 times or greater than at the R output.

TROUBLE-SHOOTING

Should a problem arise in aligning the FM multiplex portion of the receiver and the technician does not know whether the difficulty lies in the RF, IF, limiter and ratio detector portions of the receiver, or whether the difficulty lies in the multiplex portion, the multiplex generator can be used as an excellent signal tracing device to determine if the multiplex section of the receiver is functioning properly. The composite output of the multiplex generator can be injected at the output of the ratio detector. To reduce possible extraneous signals coming through the ratio detector, short the ratio detector primary with a jumper lead. The wave forms and their magnitudes may vary slightly from chassis to chassis, however, they are quite indictive of what will be seen when signal tracing the multiplex circuitry.

67KC Signal Tracing

1. Turn generator pilot carrier amplitude control to zero.
2. Move L+R and L-R switches to OFF position.
3. Move 67KC generator switch from OFF position up to 67KC. Sequentially connect an oscilloscope to the input and output of the 67KC trap. The 67KC signal at the output of the trap if it is properly nulled, will be much smaller than at the input. The voltage ratio should be approximately 20 to 1 input to output.

19KC Signal Tracing

1. Move the 67KC generator switch to OFF.
2. Rotate the generator 19KC pilot carrier amplitude control to 10% position.
3. Sequentially connect your scope to the base of composite amplifier, base of 19KC amplifier and collector of 19KC amplifier. The amplitude of the 19KC signal should greatly increase as you proceed along the 19KC chain.

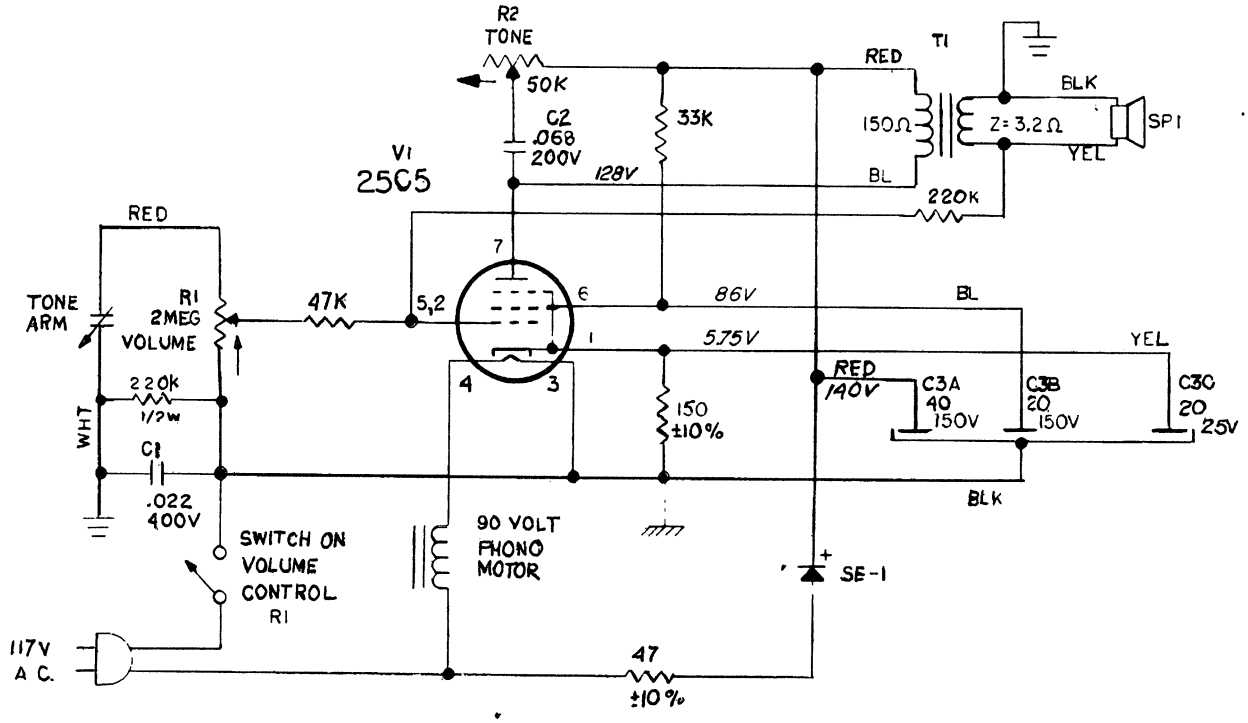
Doubler and Subcarrier Signal Tracing

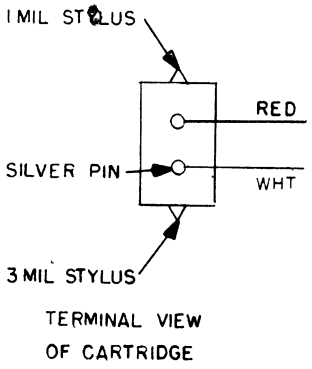
To determine if the doubler is functioning, place your scope at the junction of the two diodes and you will see 38KC DC pulses. Placing the scope at the collector of the subcarrier amplifier, you should see a 38KC sine wave which will indicate that the subcarrier amplifier and associated ringing circuitry is functioning properly.

Multiplex Detector Signal Tracing

1. Leave the 19KC amplitude control at 10%.
2. Move the L - R generator switch from OFF position to L - R position. You should see equal amplitude 1000 cycle sine waves at both L and R outputs.
3. Move the L+R switch from OFF up to L+R and look at the L audio output, and measure the magnitude of the 1000 cycle sine wave. If the multiplex detector and preceeding circuitry are aligned properly, the magnitude of the wave form at L should be greater than at R.

If all the waves are similar in form and magnitude to those indicated, then it can be assumed that the multiplex portion of the receiver is functioning properly and the problem lies ahead of this in the FM receiver. If any of the wave forms are missing at a latter point but are apparent at a previous point, then something is amiss in the circuitry between the two test points.





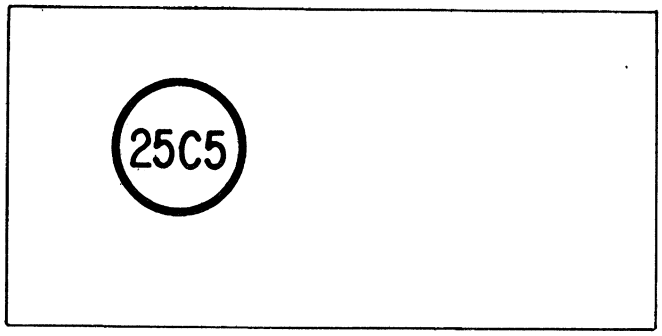
TERMINAL VIEW
OF CARTRIDGE

NOTES:
ARROW ON CONTROLS INDICATES CLOCKWISE ROTATION.
ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C. - D.C. VACUUM TUBE VOLTMETER.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS ARE +20% TOLERANCE, 1/2 ATT CARBON UNLESS OTHERWISE SPECIFIED.

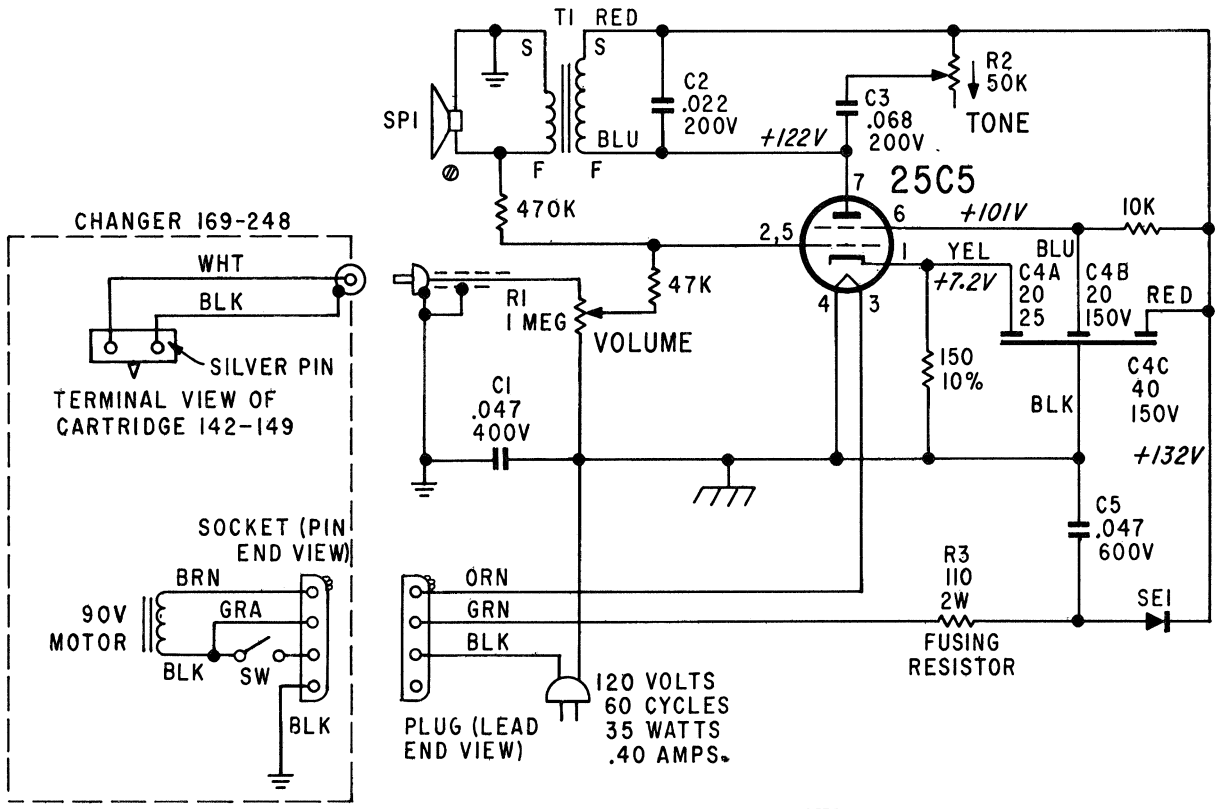
DENOTES COMMON RETURN B-

DENOTES CHASSIS

1L20 SCHEMATIC



1L20 TUBE LAYOUT



NOTES:

ARROW ON CONTROLS INDICATES CLOCKWISE ROTATION.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH A VACUUM TUBE VOLTMETER.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.

ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

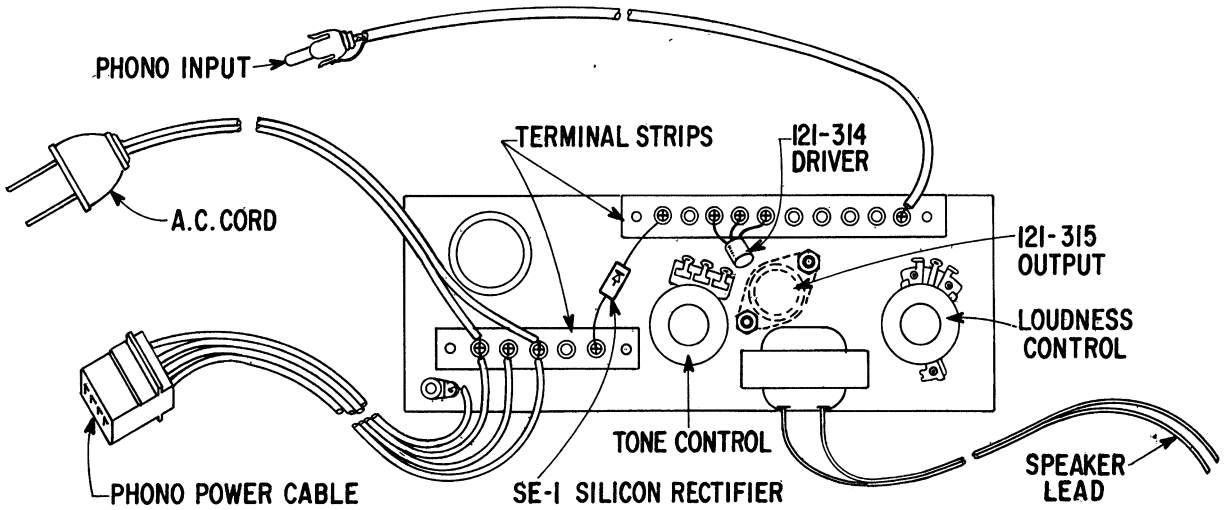
ALL RESISTORS ARE ±20% TOLERANCE, 1/2 WATT CARBON UNLESS OTHERWISE SPECIFIED.

DENOTES COMMON RETURN B-

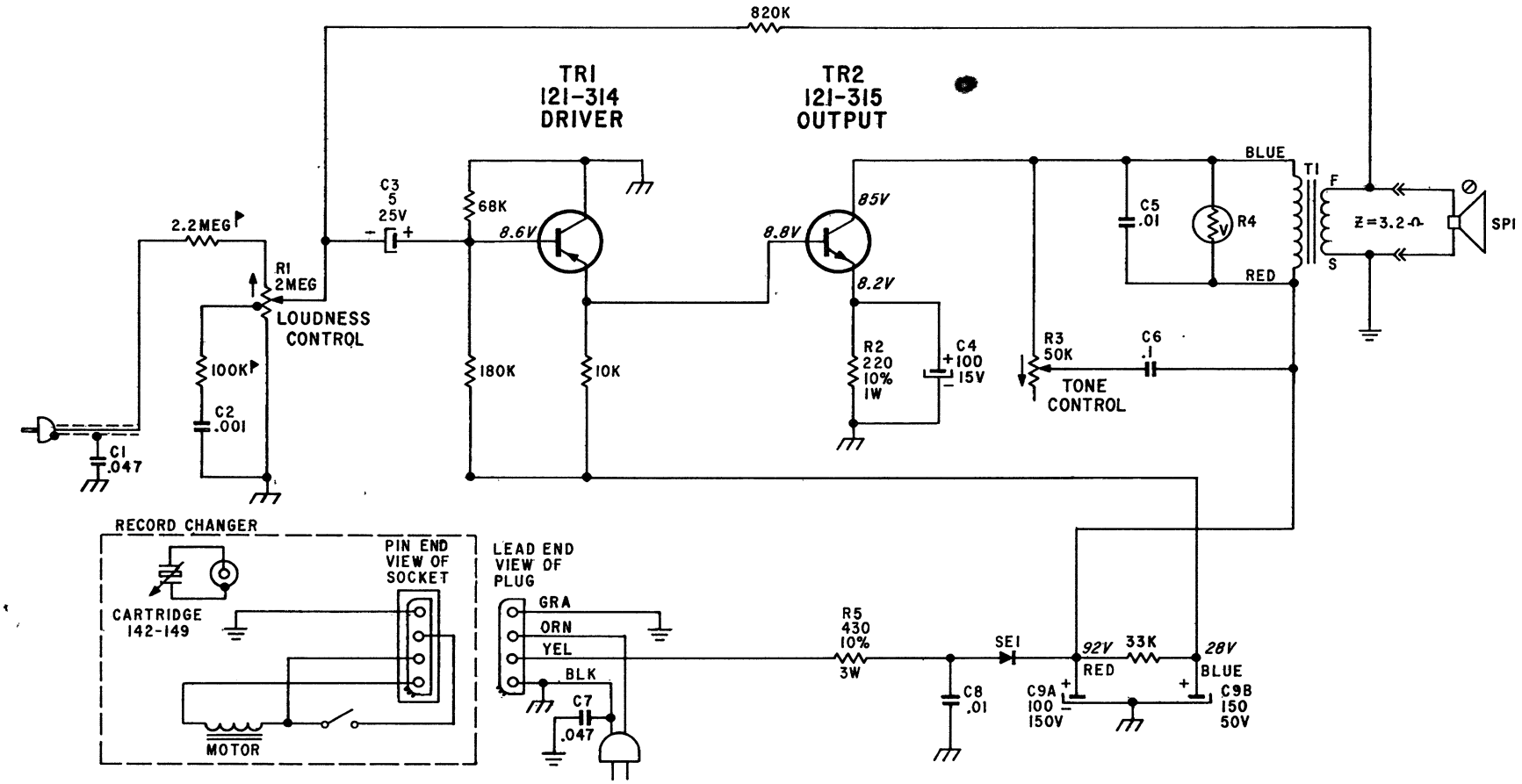
DENOTES CHASSIS

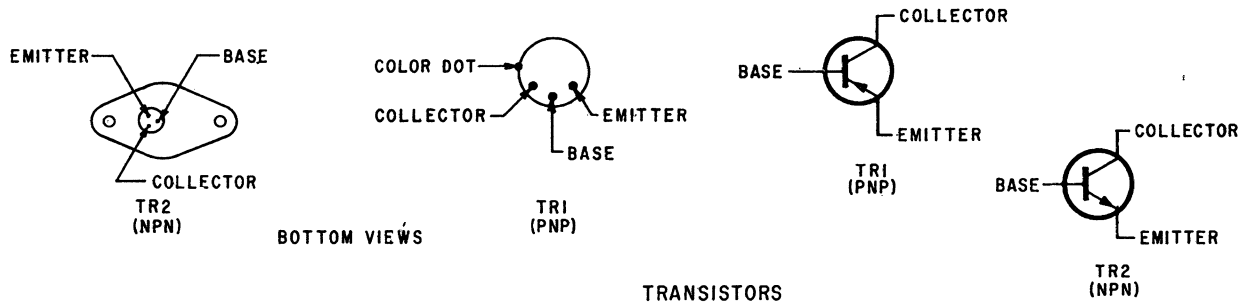
SPEAKER PHASING DOT

1N21 SCHEMATIC



2NT20 SCHEMATIC





NOTES:

ALL RESISTORS ARE 1/2 W ±10% UNLESS OTHERWISE SPECIFIED.

ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.

⊘ INDICATES SPEAKER POLARITY.

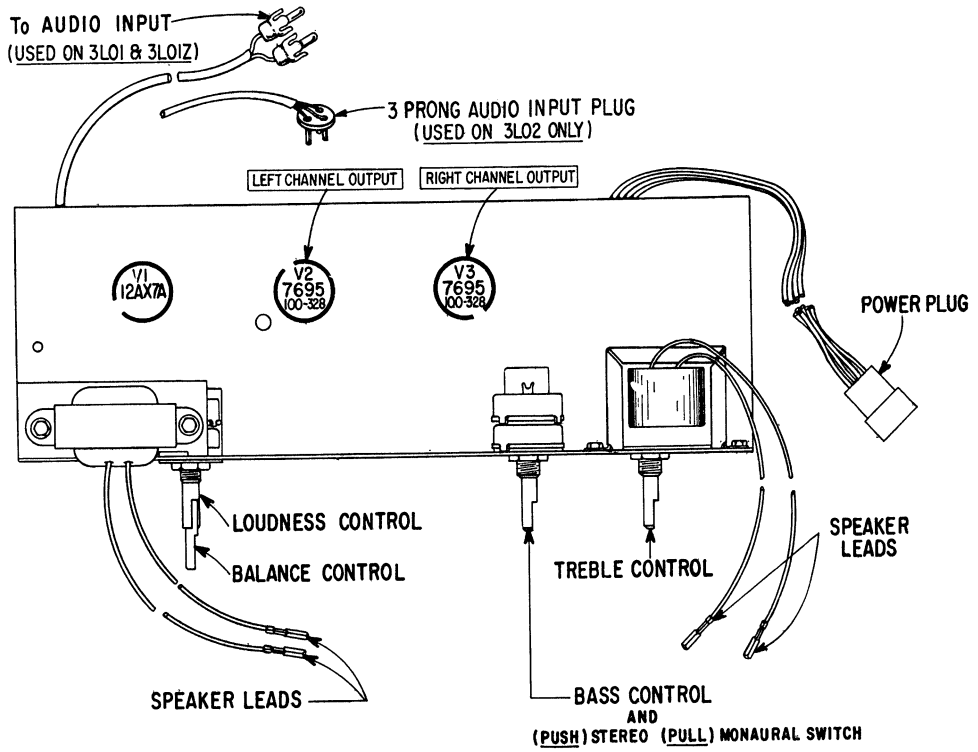
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED AND ARE MEASURED FROM B- TO POINTS INDICATED WITH A V.T.V.M.

DENOTES AMPLIFIER CHASSIS BASE

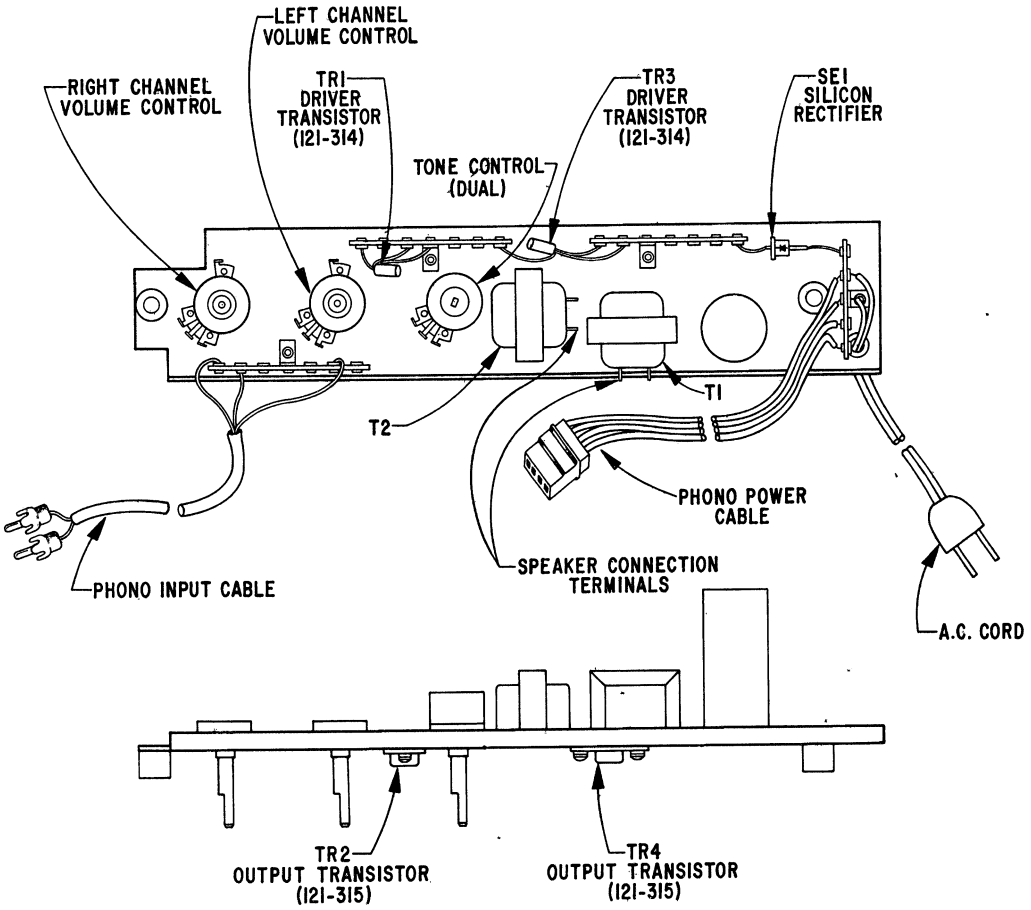
DENOTES B-

▶ INDICATES 20% MAY BE USED.

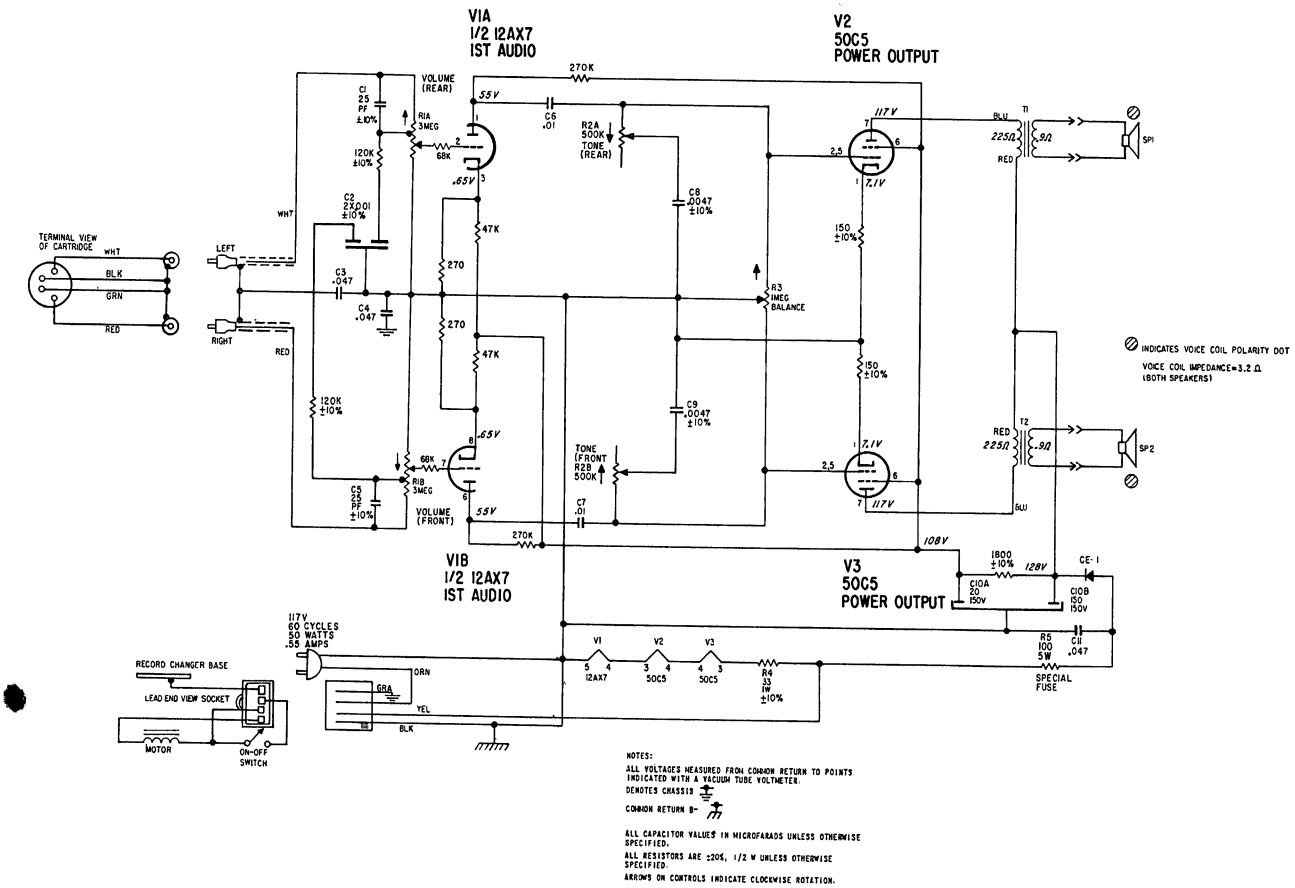
2NT20 SCHEMATIC



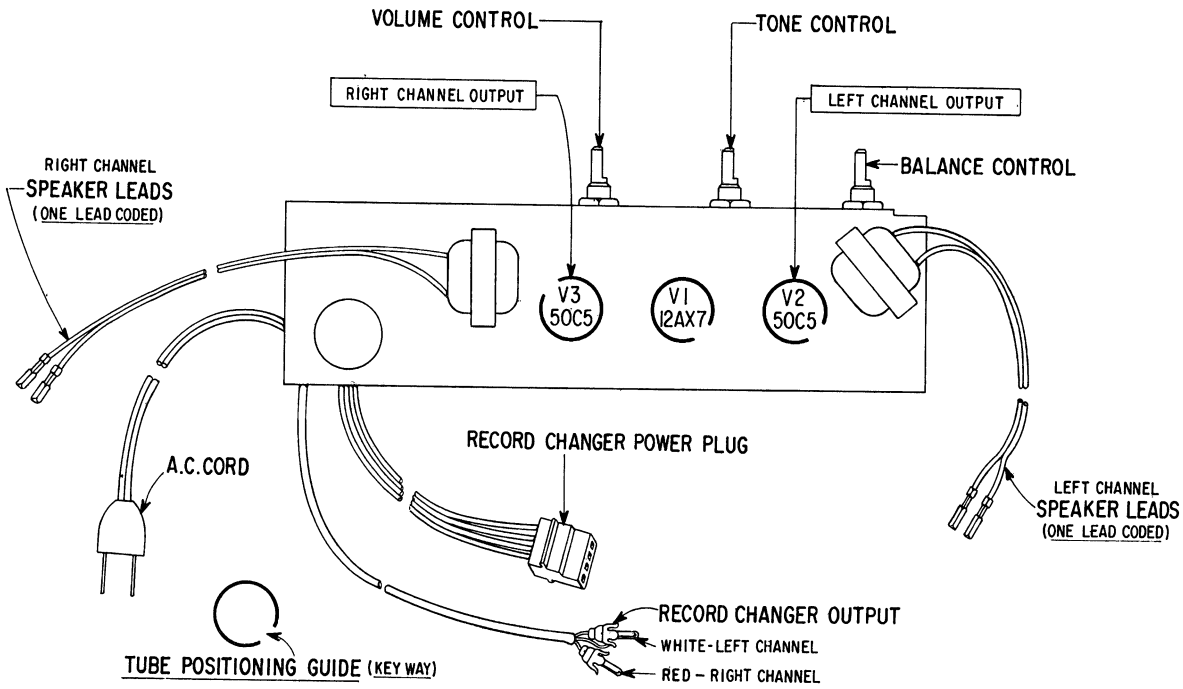
3L02 AND 3L04 CHASSIS LAYOUT



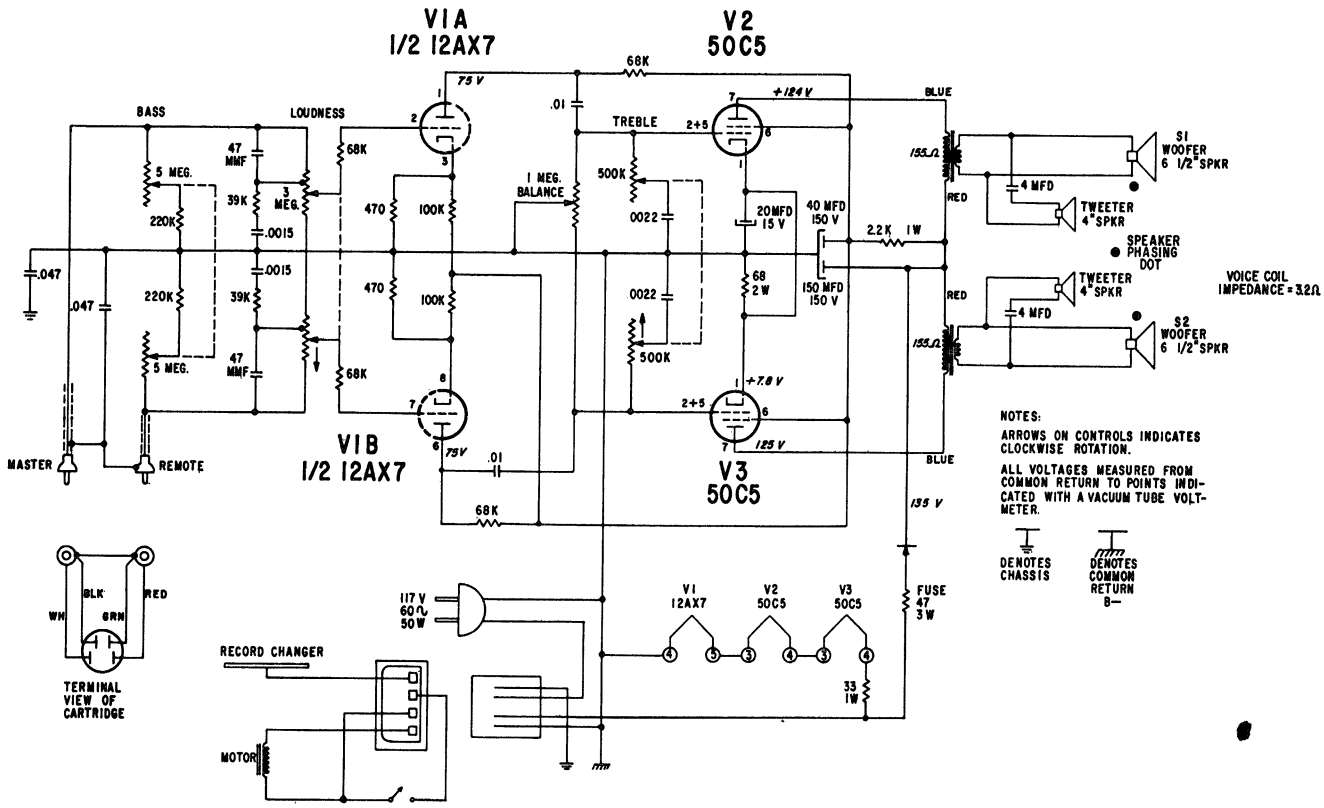
4NT20 CHASSIS LAYOUT



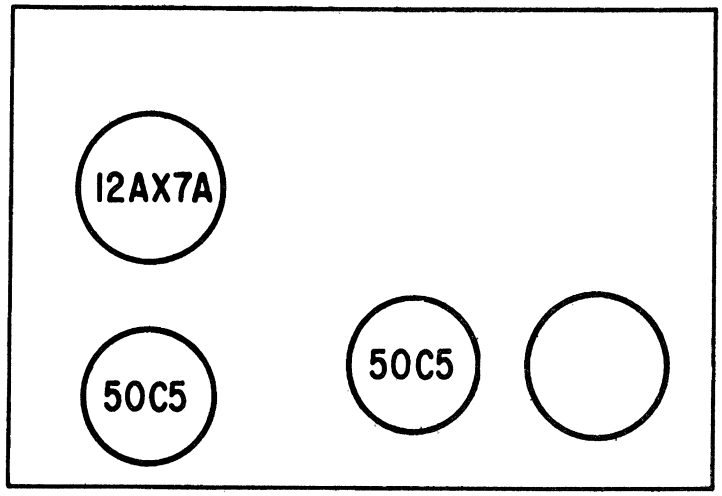
3L03 SCHEMATIC



3L03 TUBE LAYOUT

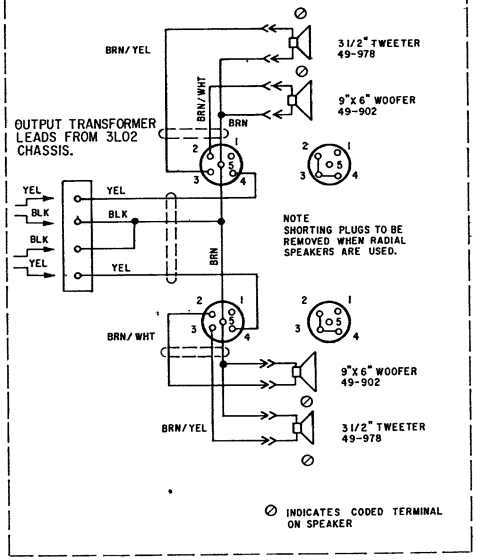


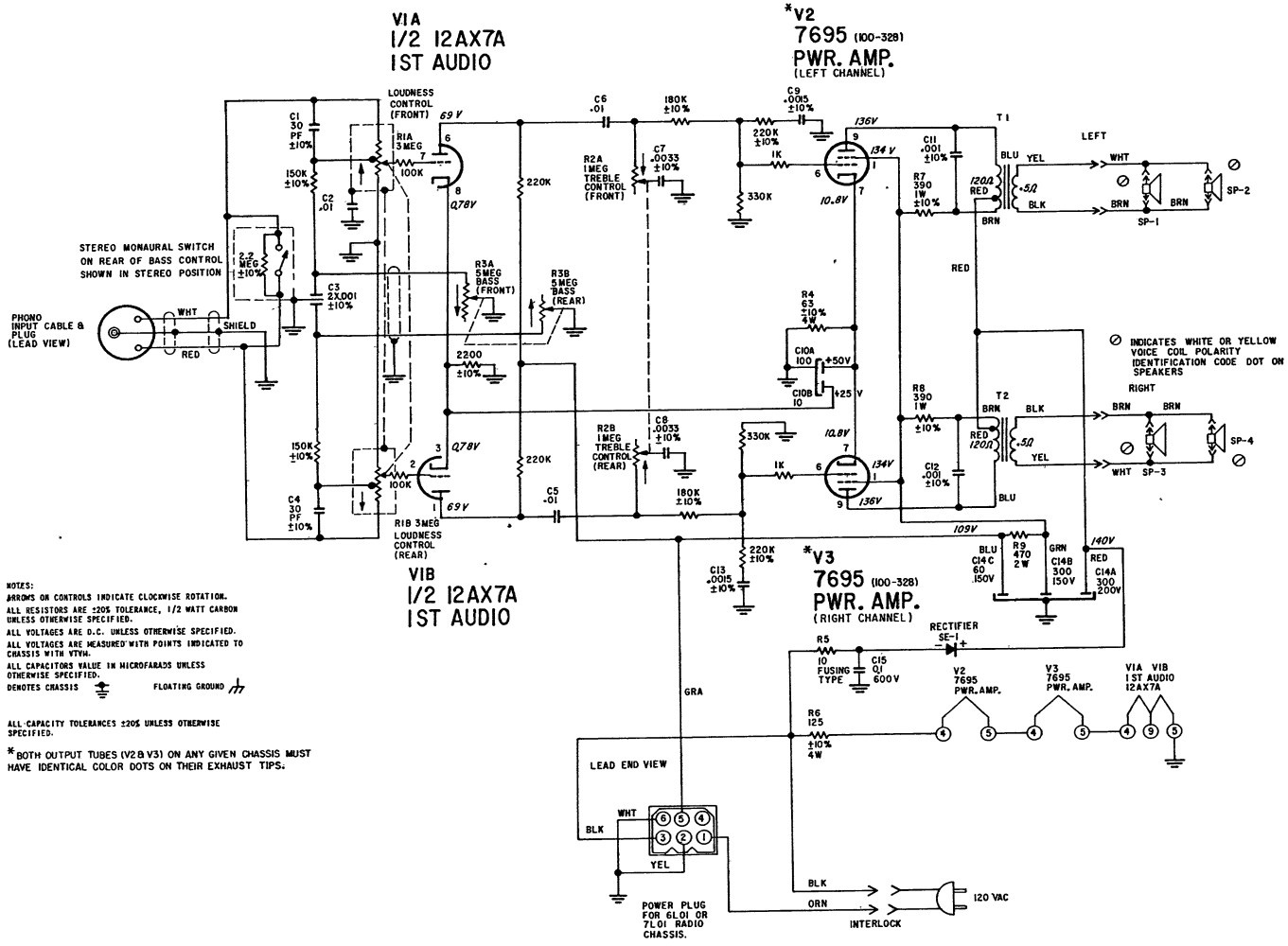
SCHEMATIC FOR LPS70-2



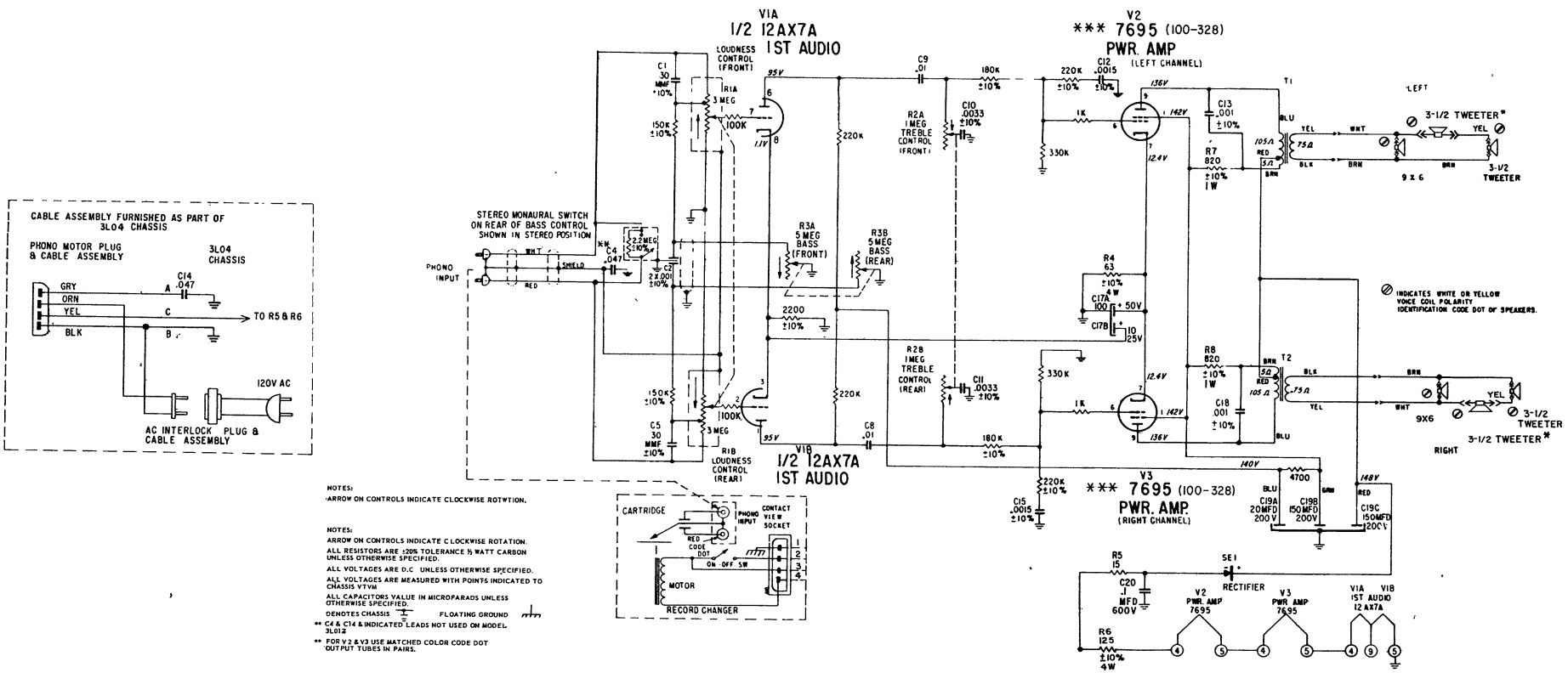
TUBE LAYOUT FOR LPS70-2

S-62259
RADIAL SPEAKER CABLE ASSEMBLY SOLD AS A SEPARATE ITEM AVAILABLE ONLY AT ZENITH DISTRIBUTORS





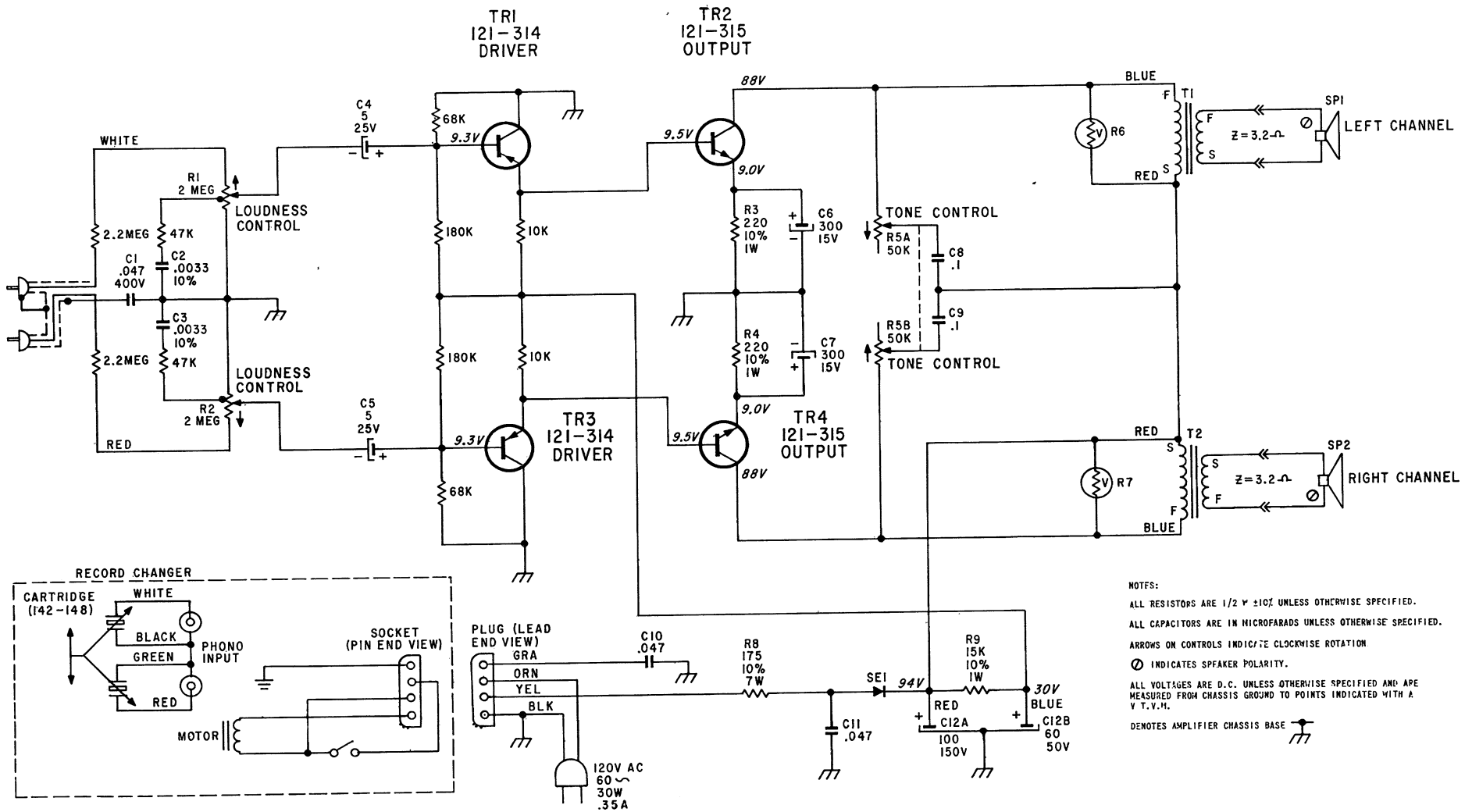
3L02 SCHEMATIC



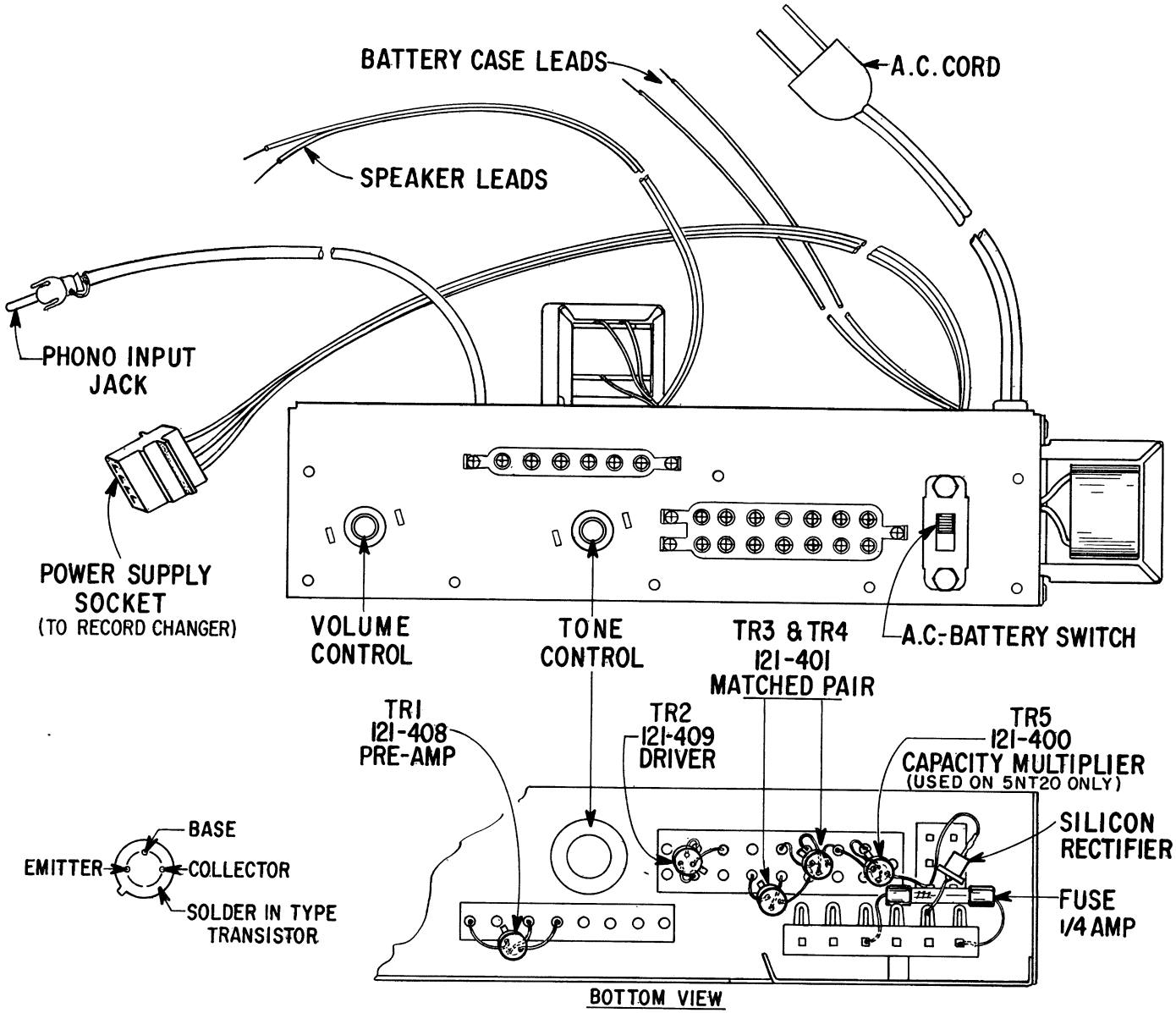
NOTES:
ARROW ON CONTROLS INDICATE CLOCKWISE ROTWTION.

NOTES:
ARROW ON CONTROLS INDICATE C LOCKWISE ROTATION.
ALL RESISTORS ARE ±20% TOLERANCE ½ WATT CARBON UNLESS OTHERWISE SPECIFIED.
ALL VOLTAGES ARE D.C UNLESS OTHERWISE SPECIFIED.
ALL VOLTAGES ARE MEASURED WITH POINTS INDICATED TO CHASSIS VTVM
ALL CAPACITORS VALUE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
DENOTES CHASSIS ⏚ FLOATING GROUND
** C4 & C14 & INDICATED LEADS NOT USED ON MODEL 3L012
** FOR V2 & V3 USE MATCHED COLOR CODE DOT OUTPUT TUBES IN PAIRS.

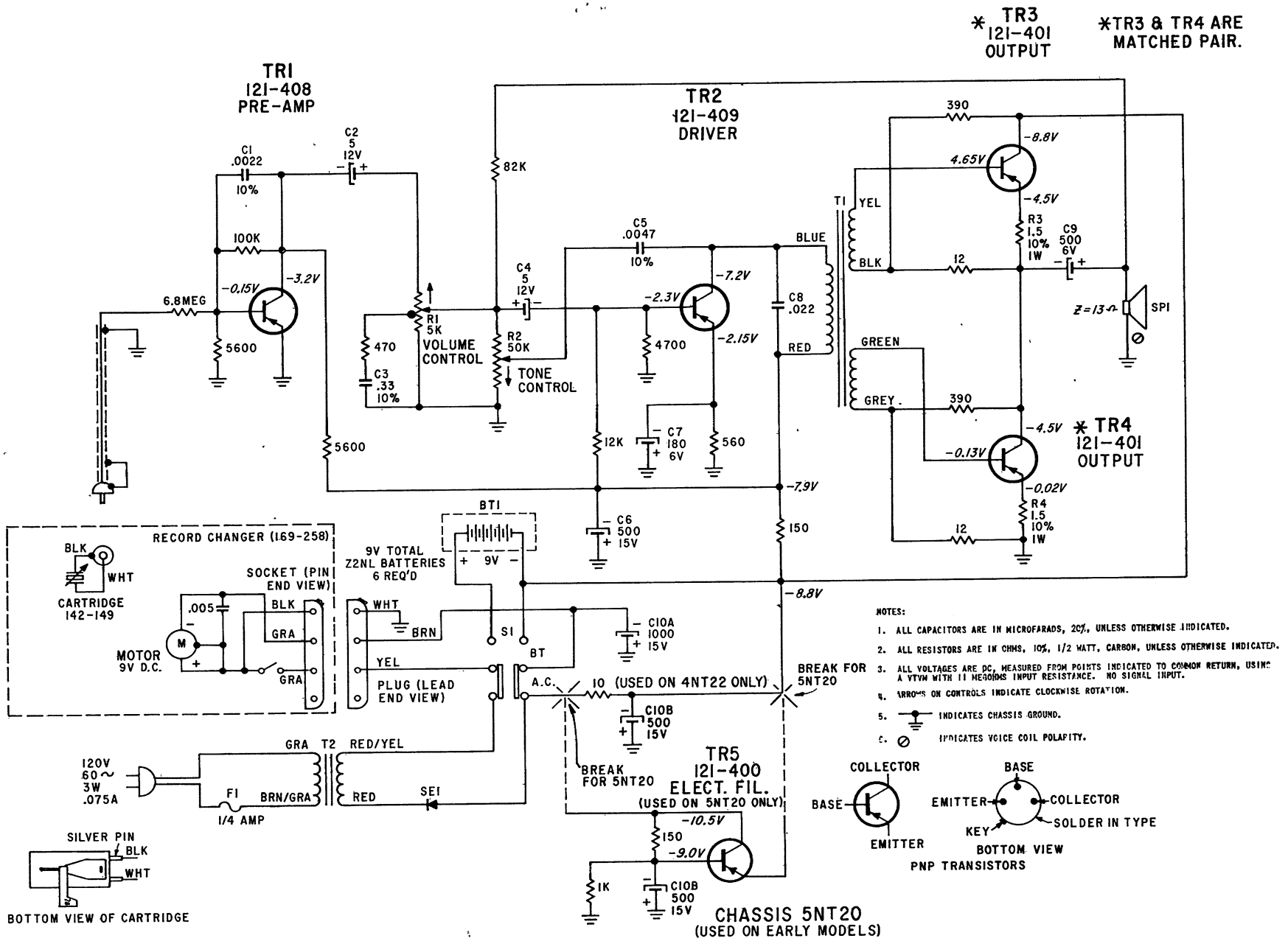
3L04 SCHEMATIC



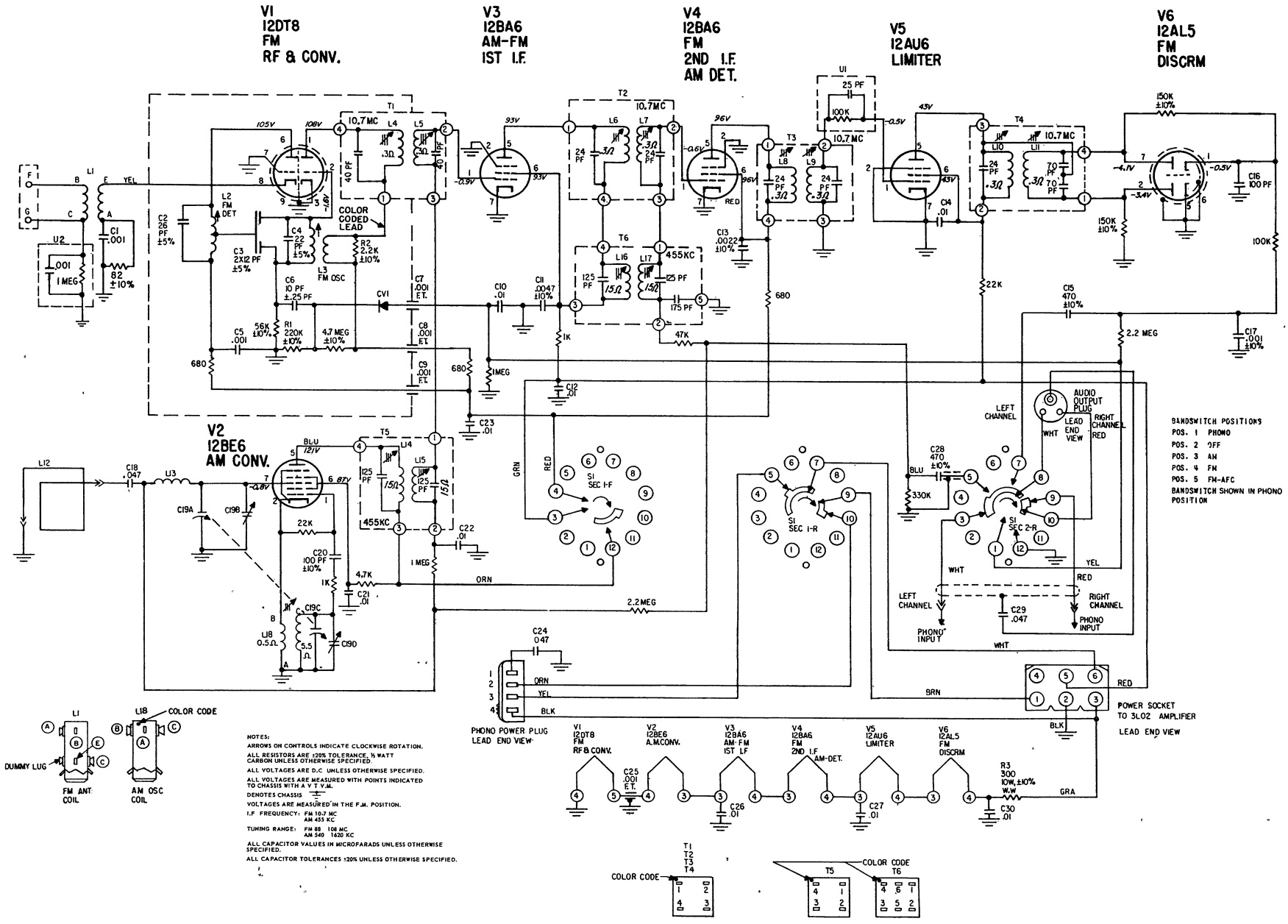
4NT20 SCHEMATIC



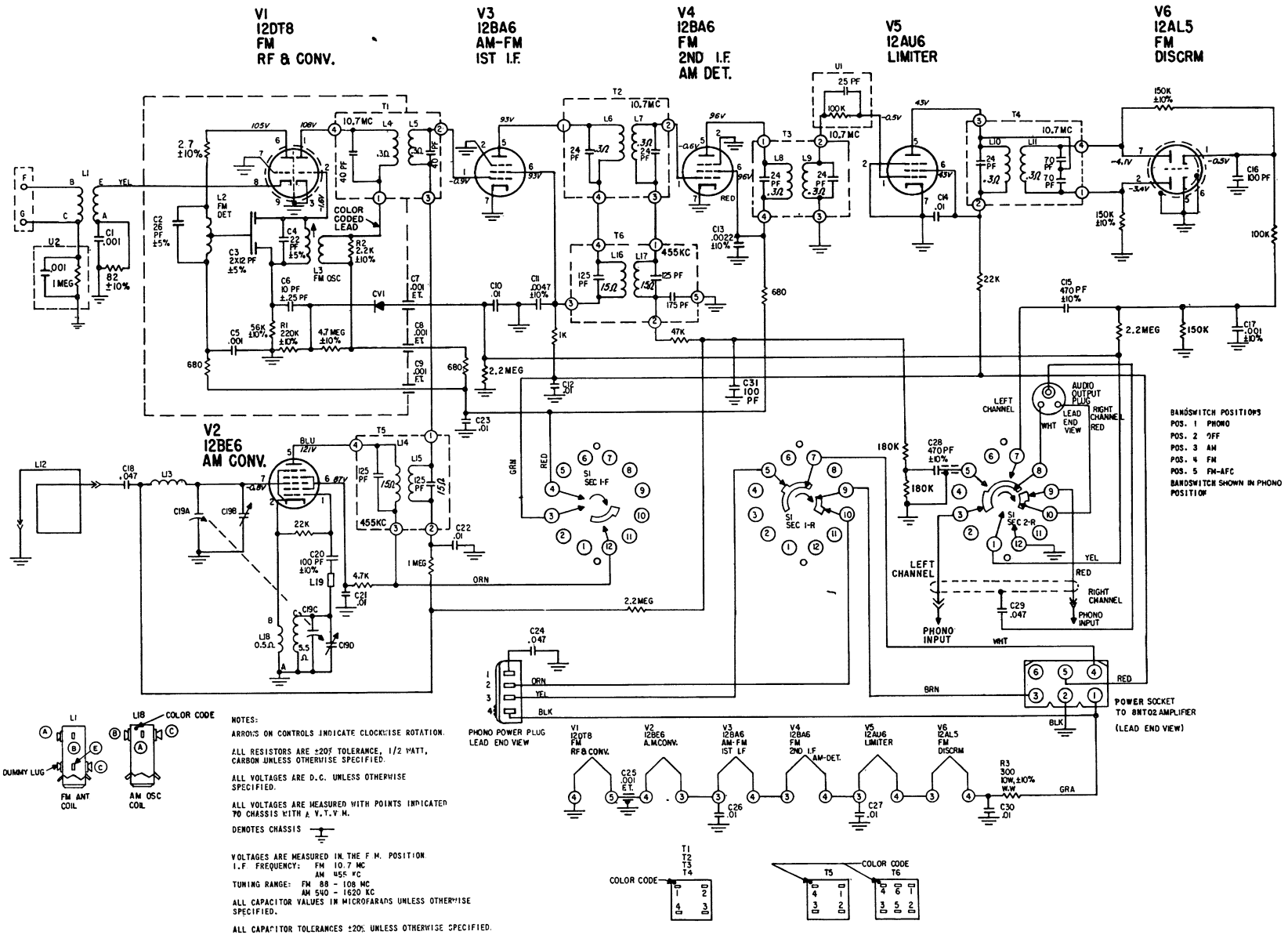
4NT22 - 5NT20 CHASSIS LAYOUT



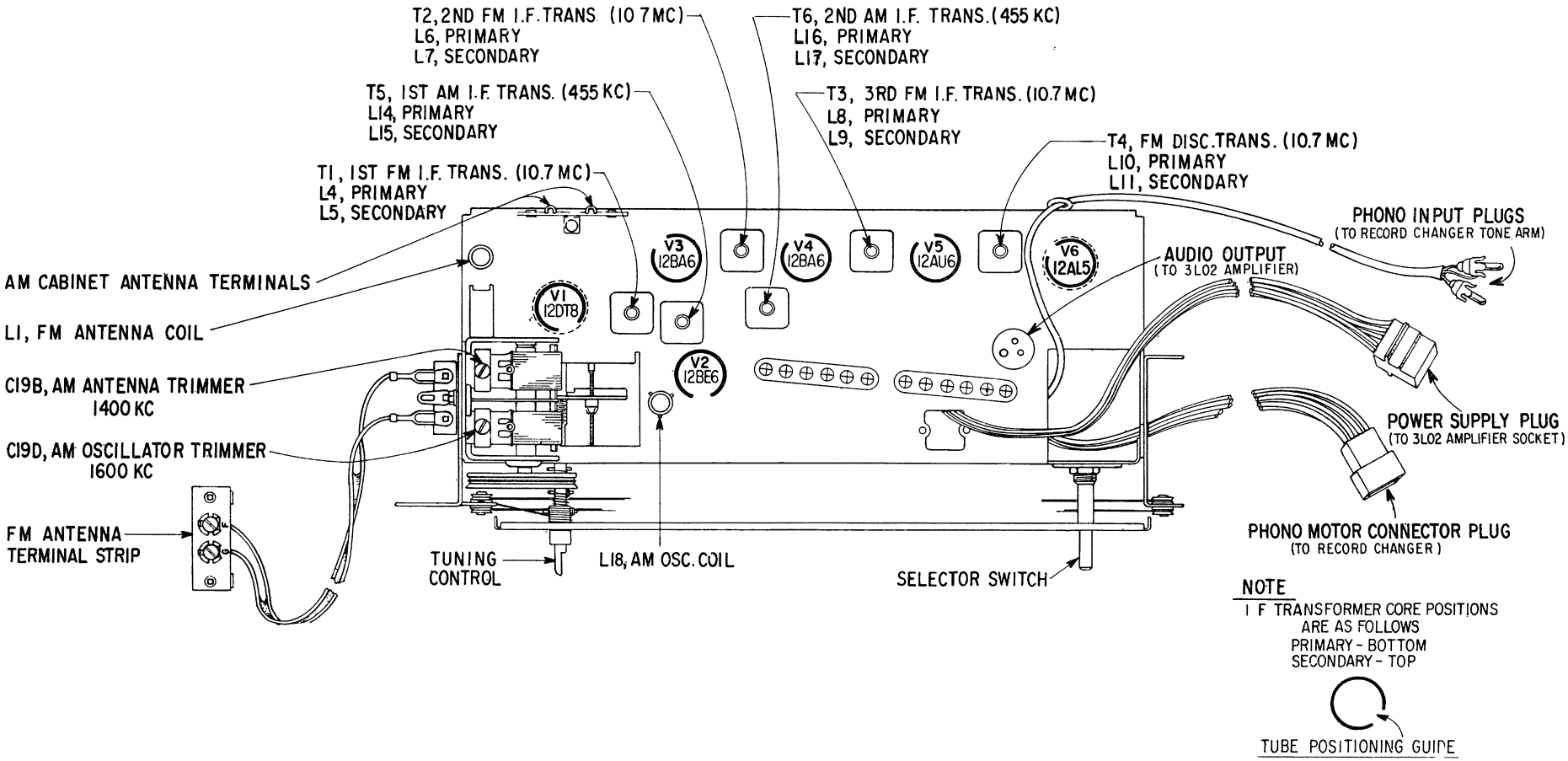
4NT22 - 5NT20 SCHEMATIC



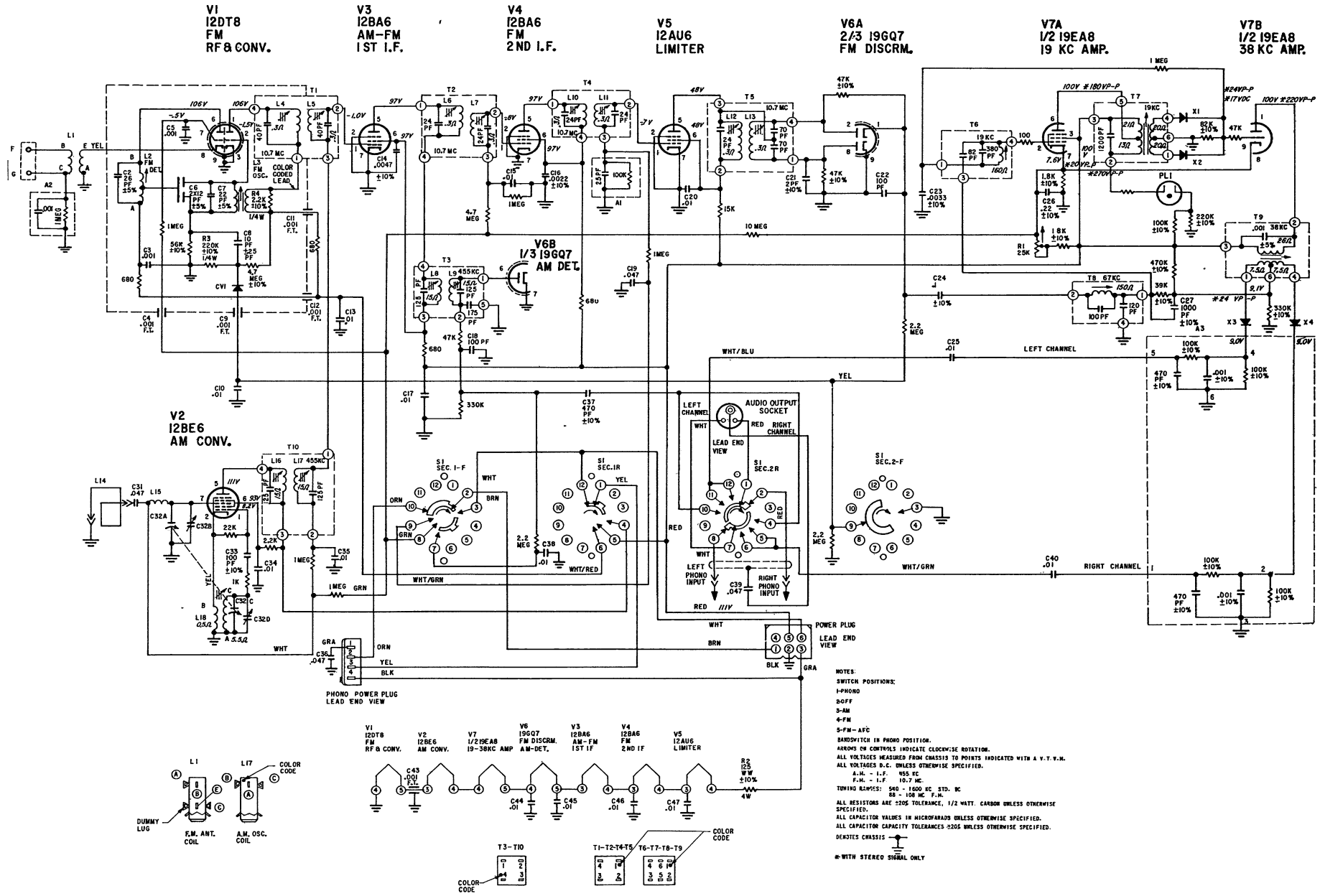
6L01 SCHEMATIC



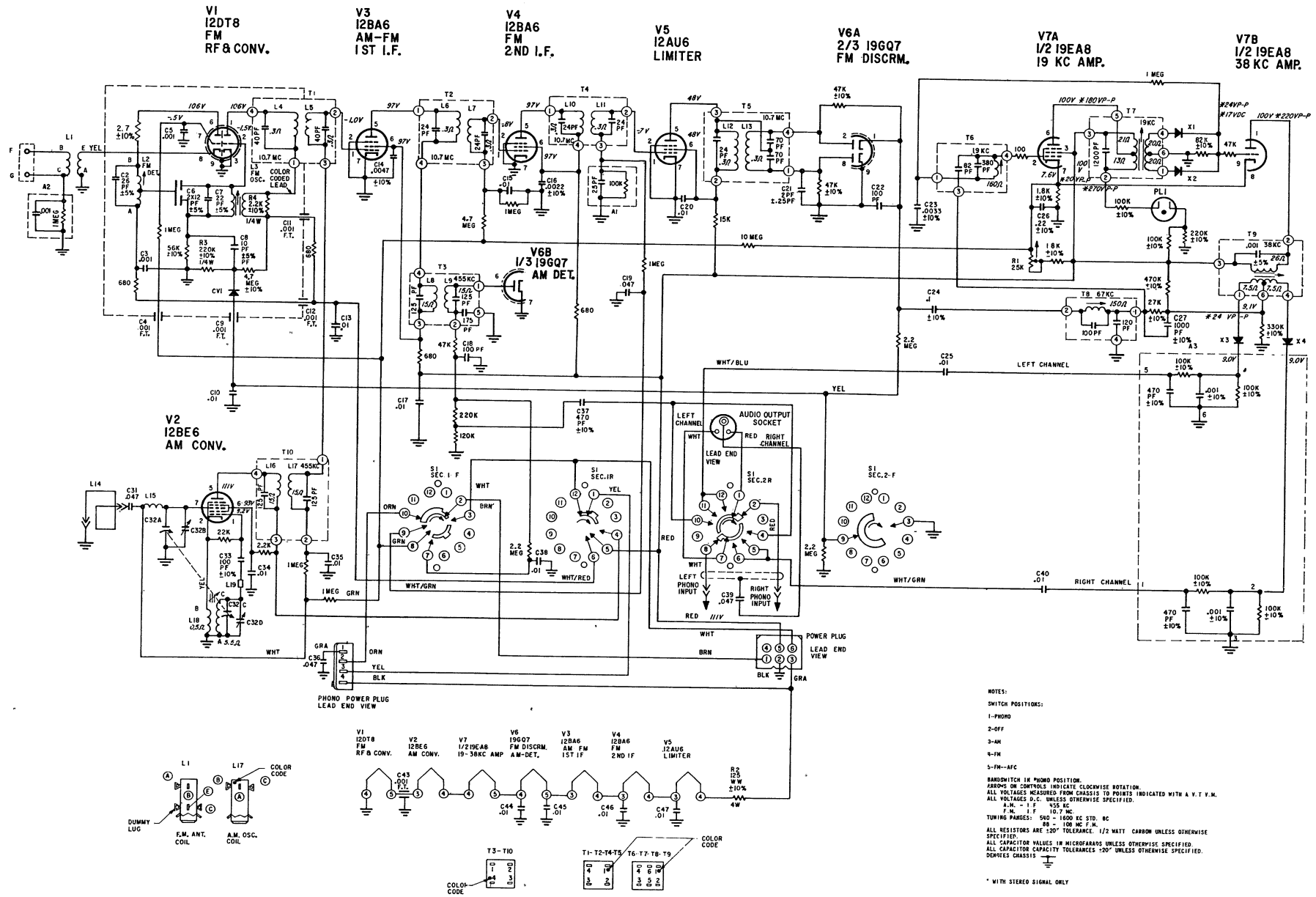
6L01Z1 AND 6L01Z2 SCHEMATIC



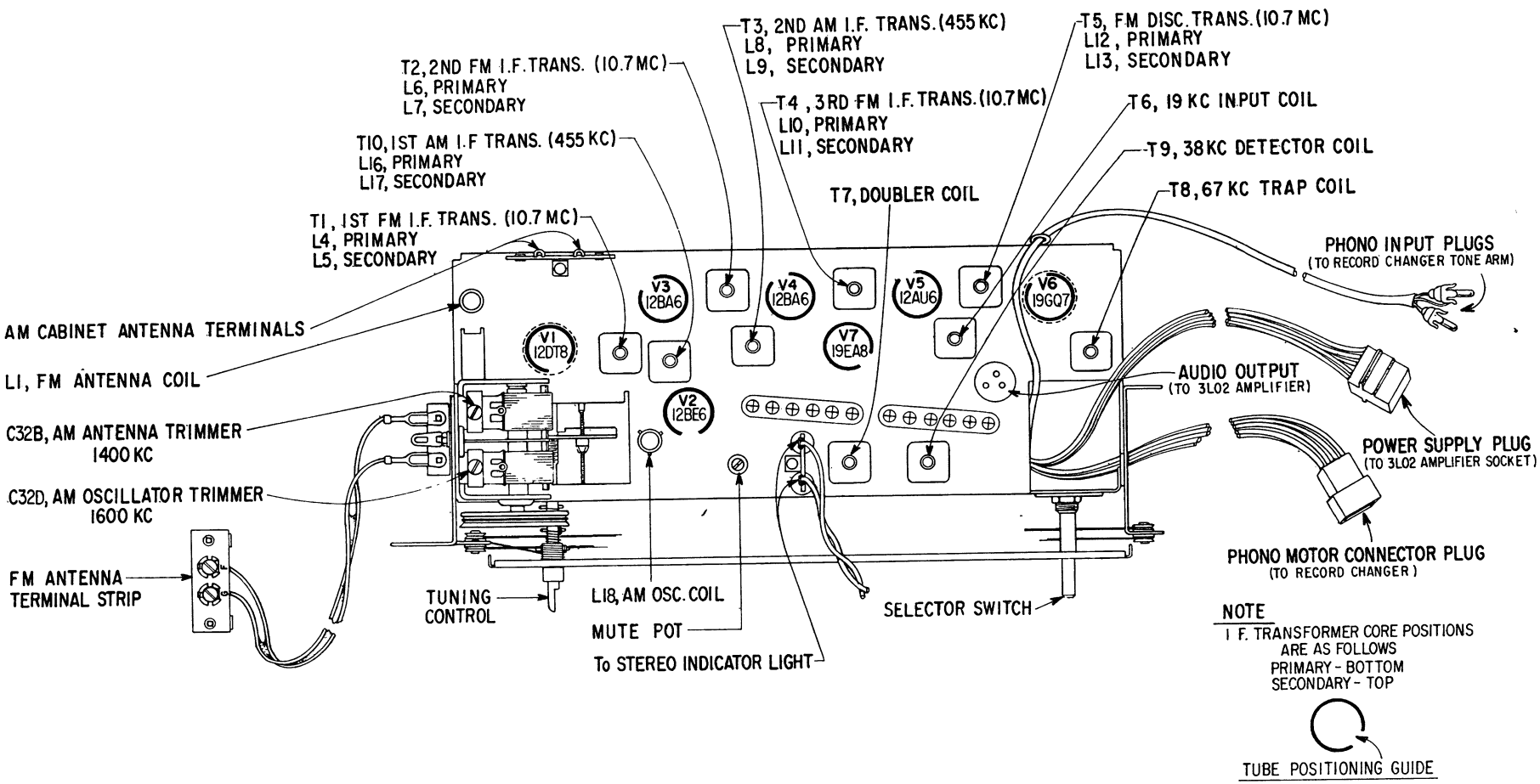
6L01, 6L01Z1 AND 6L01Z2 CHASSIS LAYOUT



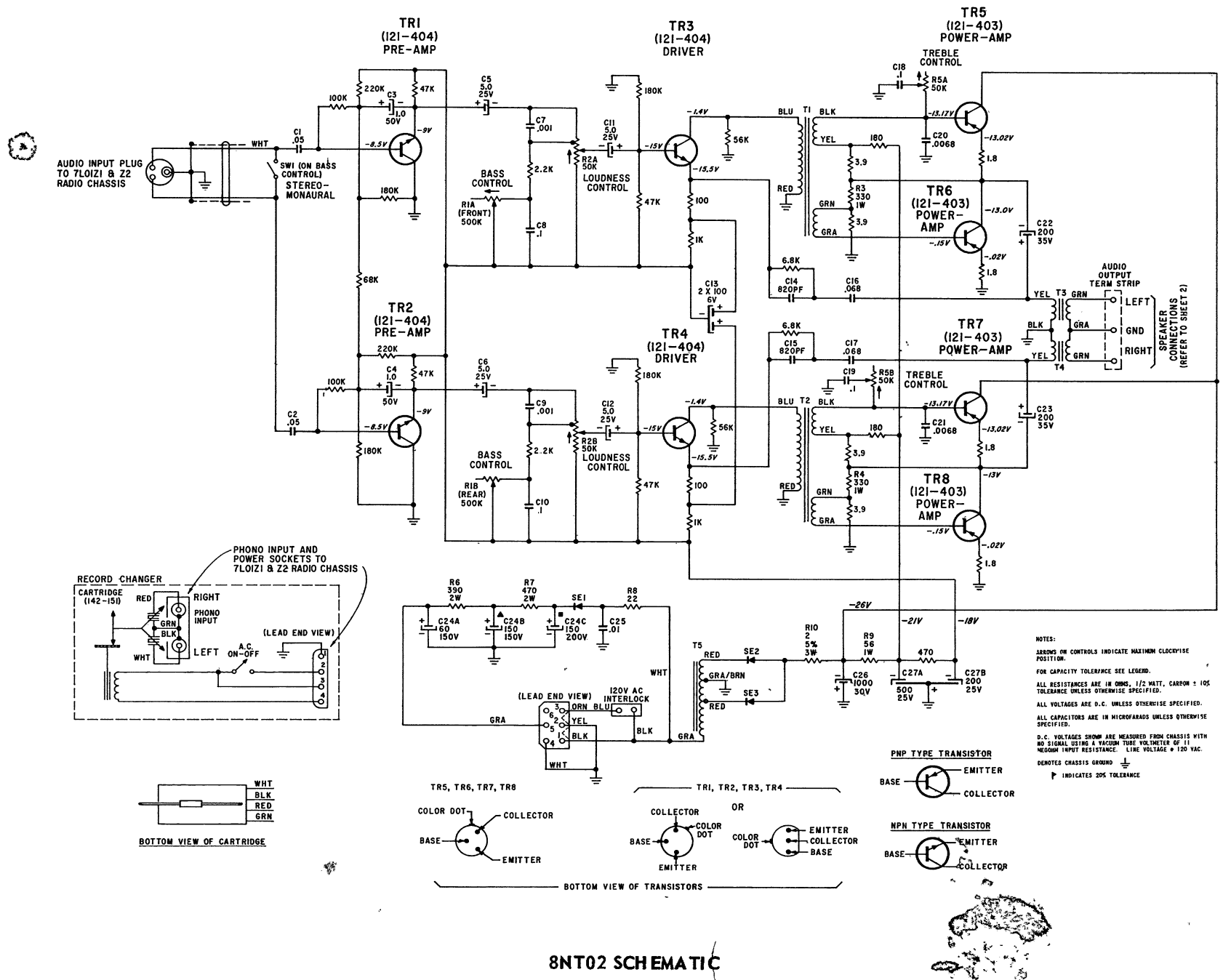
7L01 SCHEMATIC



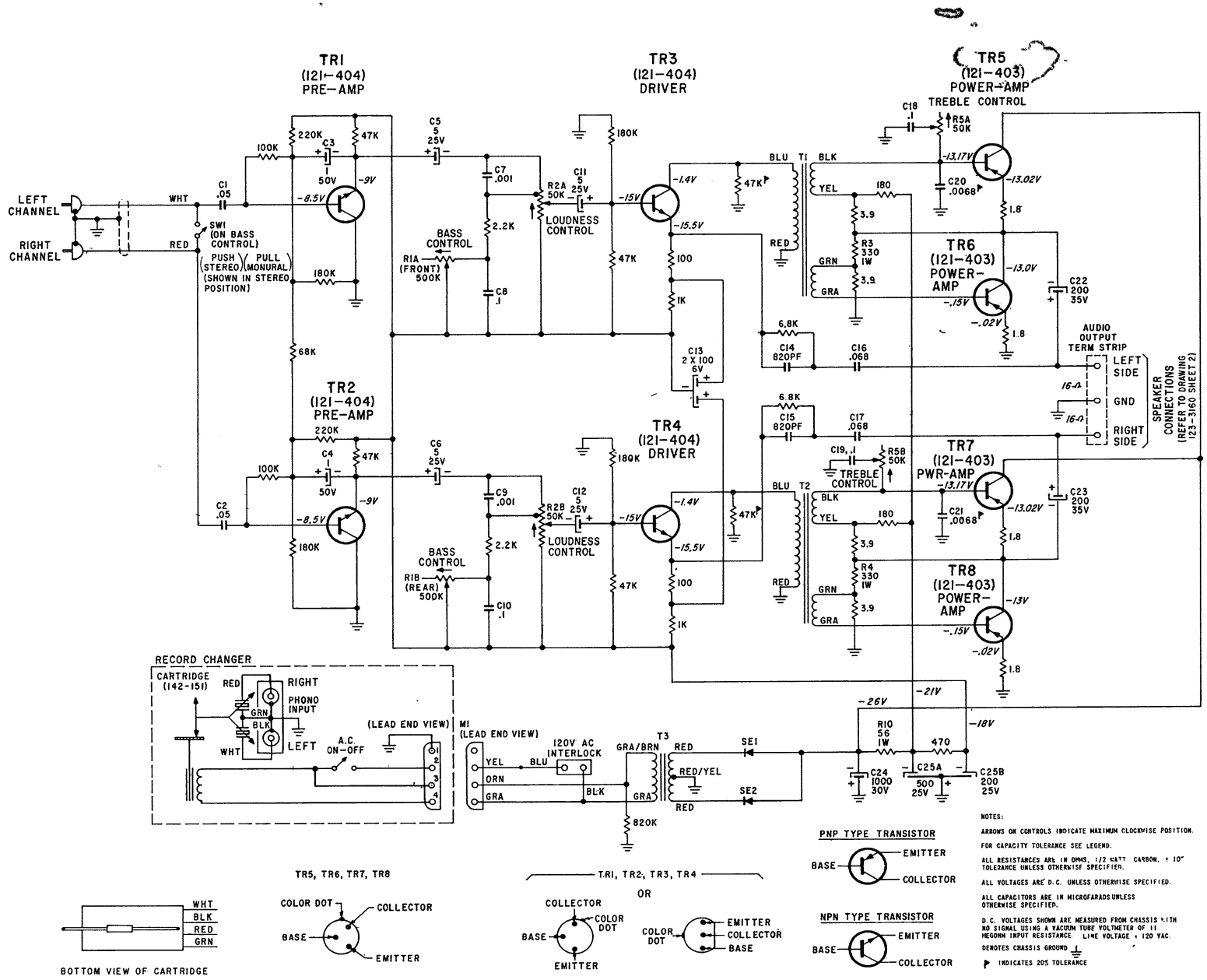
7L01Z1 AND 7L01Z2 SCHEMATIC



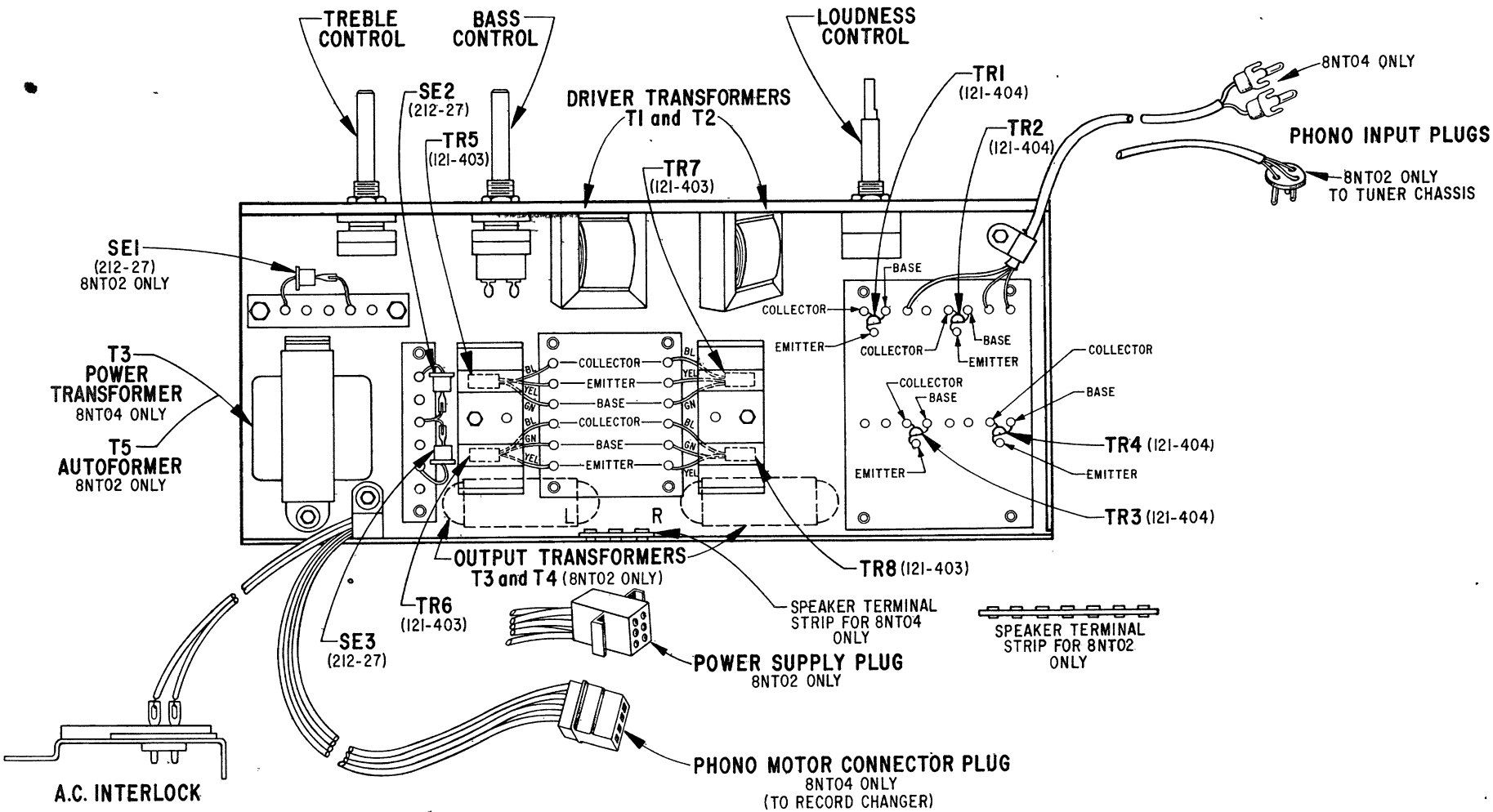
7L01, 7L01Z1 AND 7L01Z2 CHASSIS LAYOUT



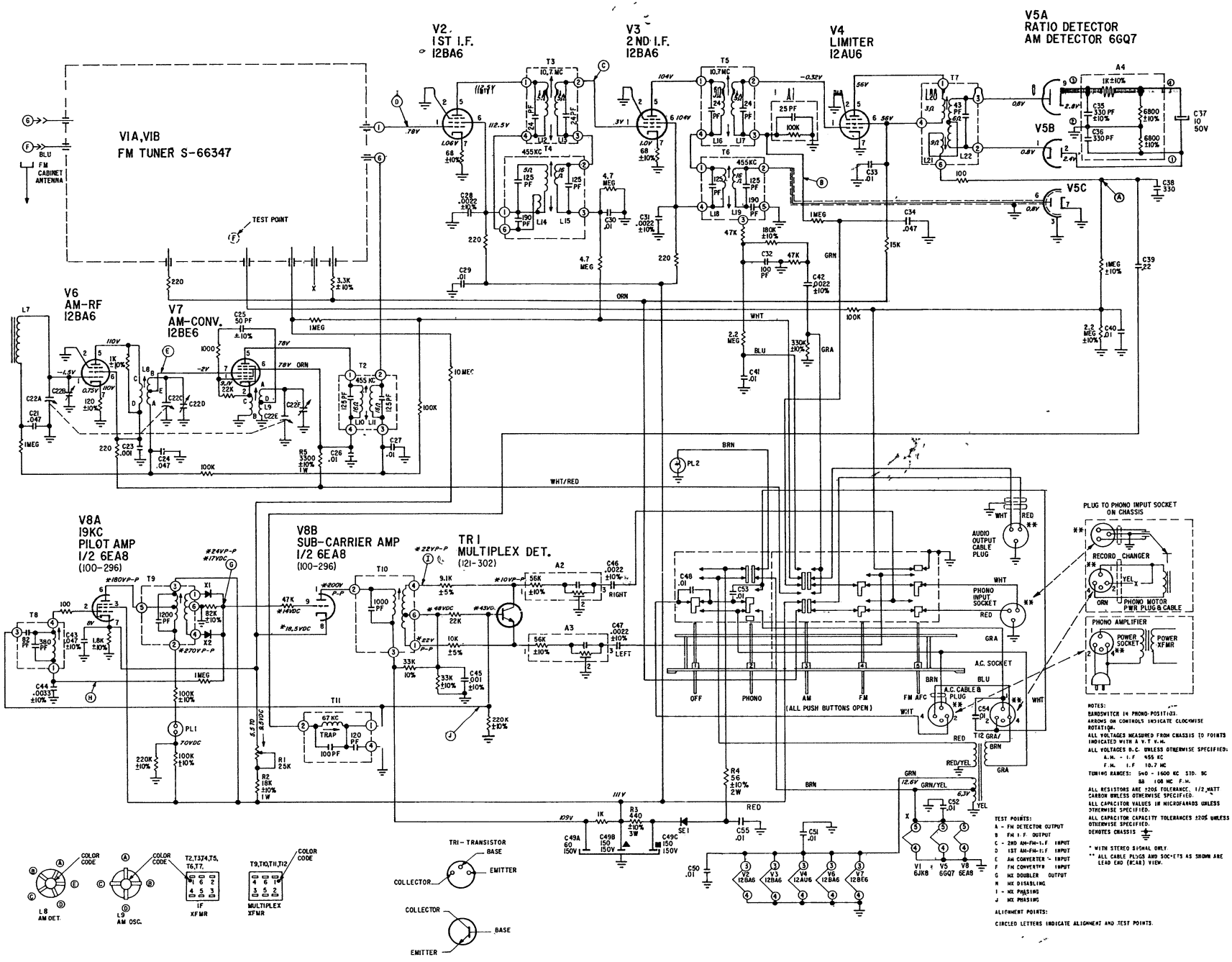
8NT02 SCHEMATIC



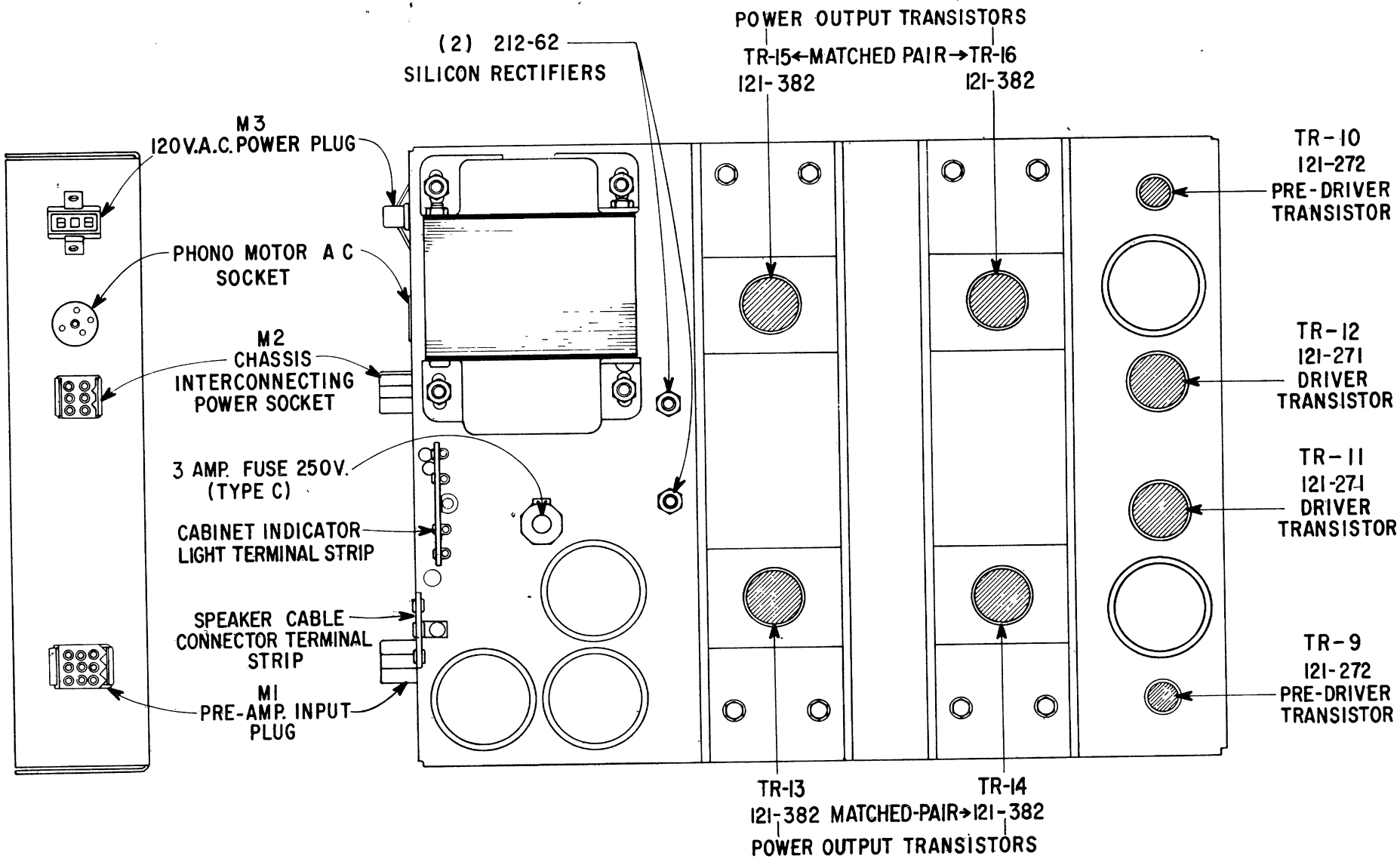
8NT04 SCHEMATIC



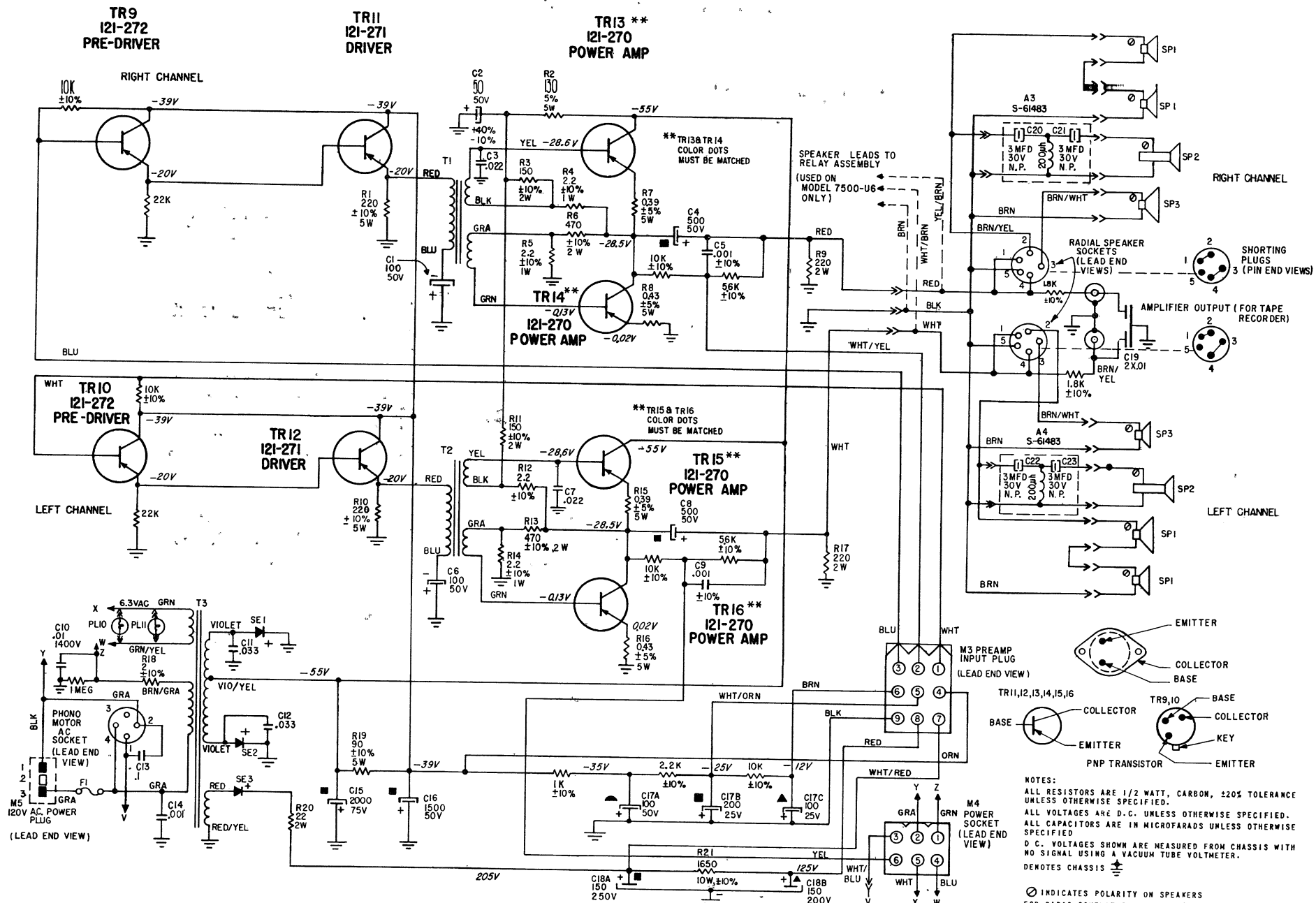
8NT02 AND 8NT04 CHASSIS LAYOUT



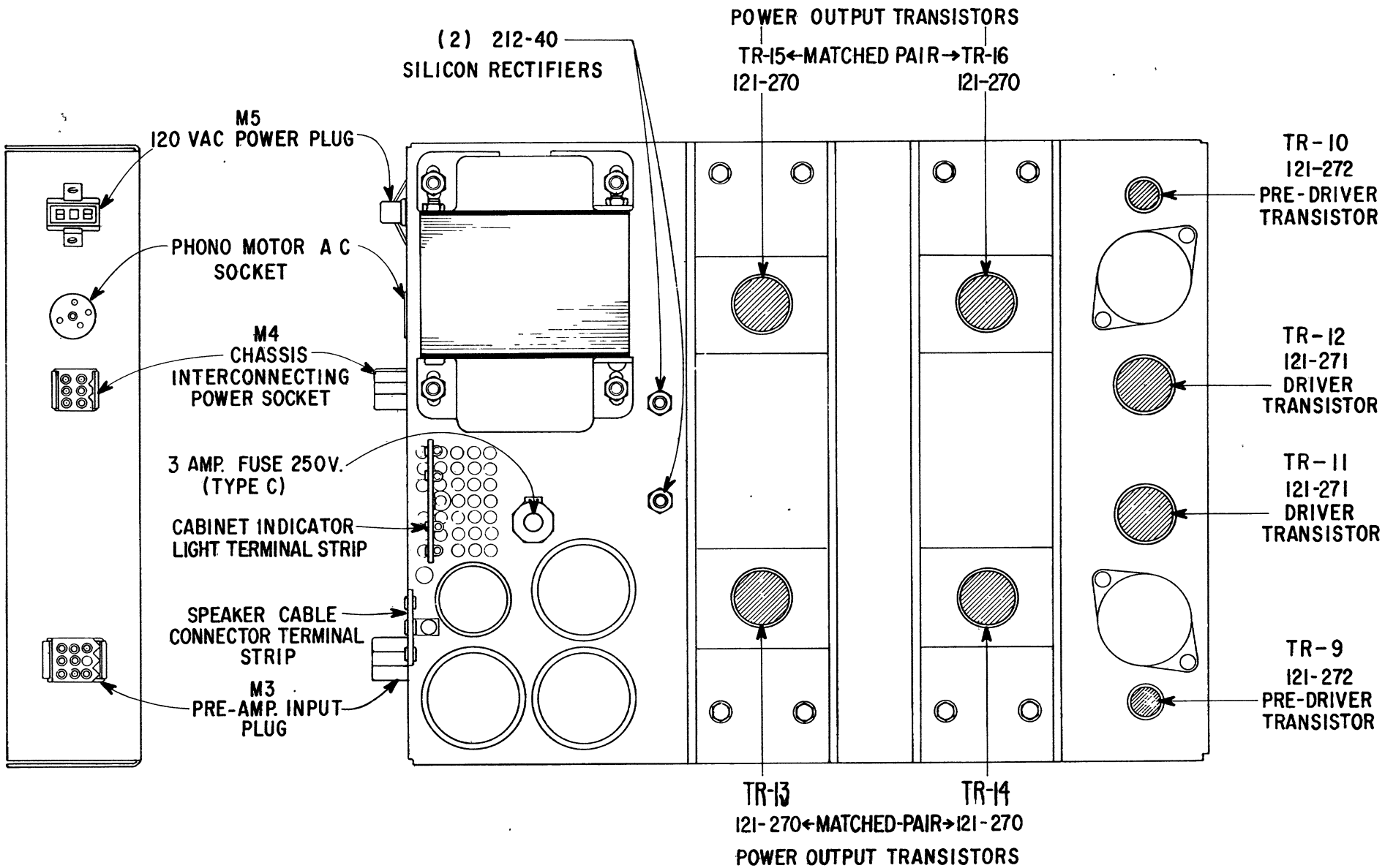
8L1T20Z SCHEMATIC



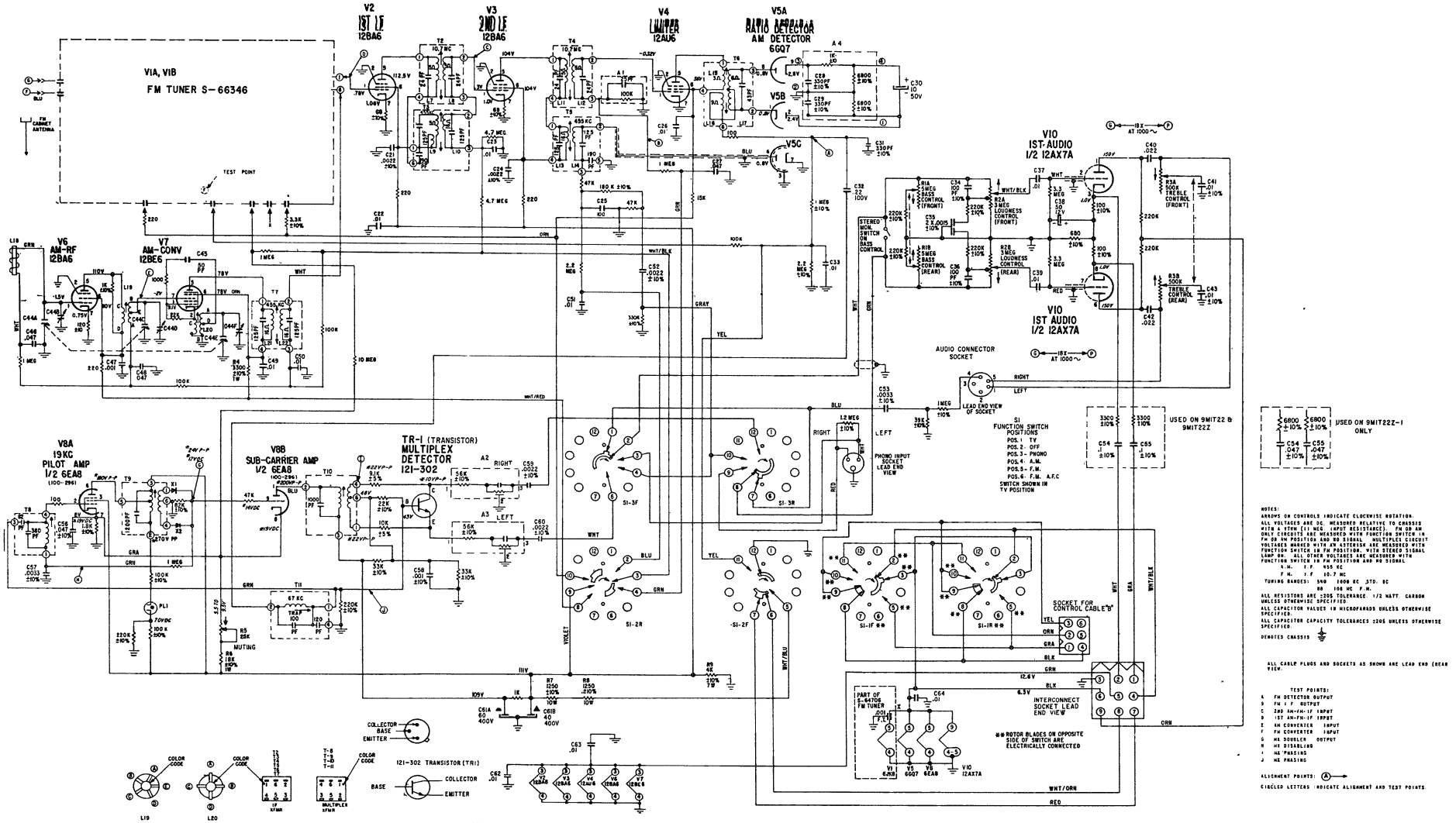
8NT24 CHASSIS LAYOUT



8MT25 SCHEMATIC



8MT25 TRANSISTOR LAYOUT



NOTES:
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.
ALL VOLTAGES ARE DC. MEASURED RELATIVE TO CHASSIS WITH A VTVM (11 MEG. INPUT RESISTANCE). FM OR AM ONLY CIRCUITS ARE MEASURED WITH FUNCTION SWITCH IN FM OR AM POSITION AND NO SIGNAL. MULTIPLEX CIRCUIT VOLTAGES MARKED WITH AN ASTERISK ARE MEASURED WITH FUNCTION SWITCH IN FM POSITION, WITH STEREO SIGNAL LAMP ON. ALL OTHER VOLTAGES ARE MEASURED WITH FUNCTION SWITCH IN FM POSITION AND NO SIGNAL.

	A.M.	I.F.	455 KC
	F.M.	I.F.	10.7 MC

TUNING RANGES: 540 - 1600 KC STD. BC
88 - 108 MC F.M.

ALL RESISTORS ARE ±20% TOLERANCE 1/2 WATT CARBON UNLESS OTHERWISE SPECIFIED.
ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL CAPACITOR CAPACITY TOLERANCES ±20% UNLESS OTHERWISE SPECIFIED.
DENOTES CHASSIS

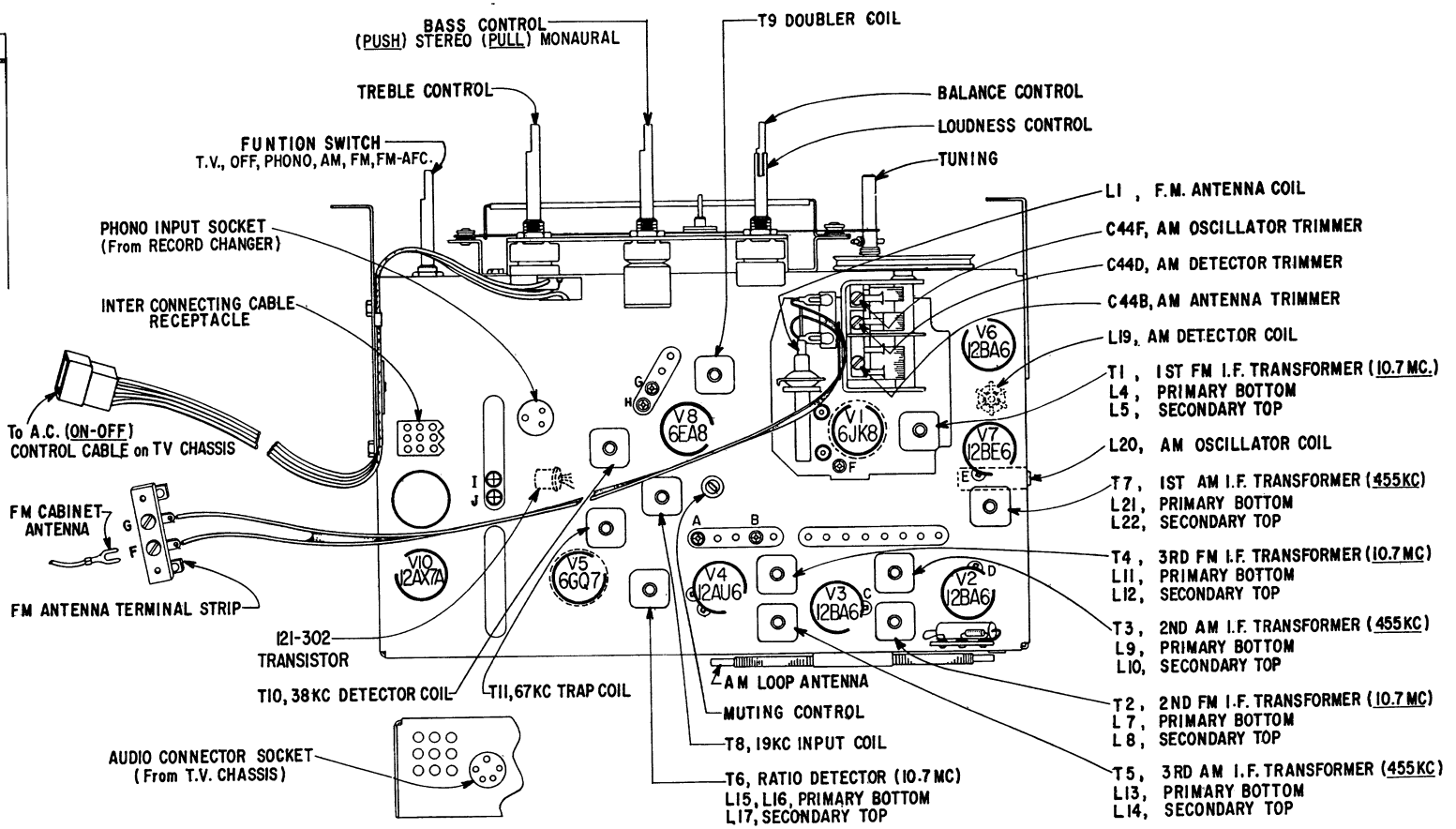
ALL CABLE PLUGS AND SOCKETS AS SHOWN ARE LEAD END (REAR VIEW.

TEST POINTS:
A FM DETECTOR OUTPUT
B FM I.F. OUTPUT
C 2ND AM-FM-IF INPUT
D 1ST AM-FM-IF INPUT
E AM CONVERTER INPUT
F FM CONVERTER INPUT
G MX DOUBLER OUTPUT
H MX DISABLING
I MX PHASING
J MX PHASING

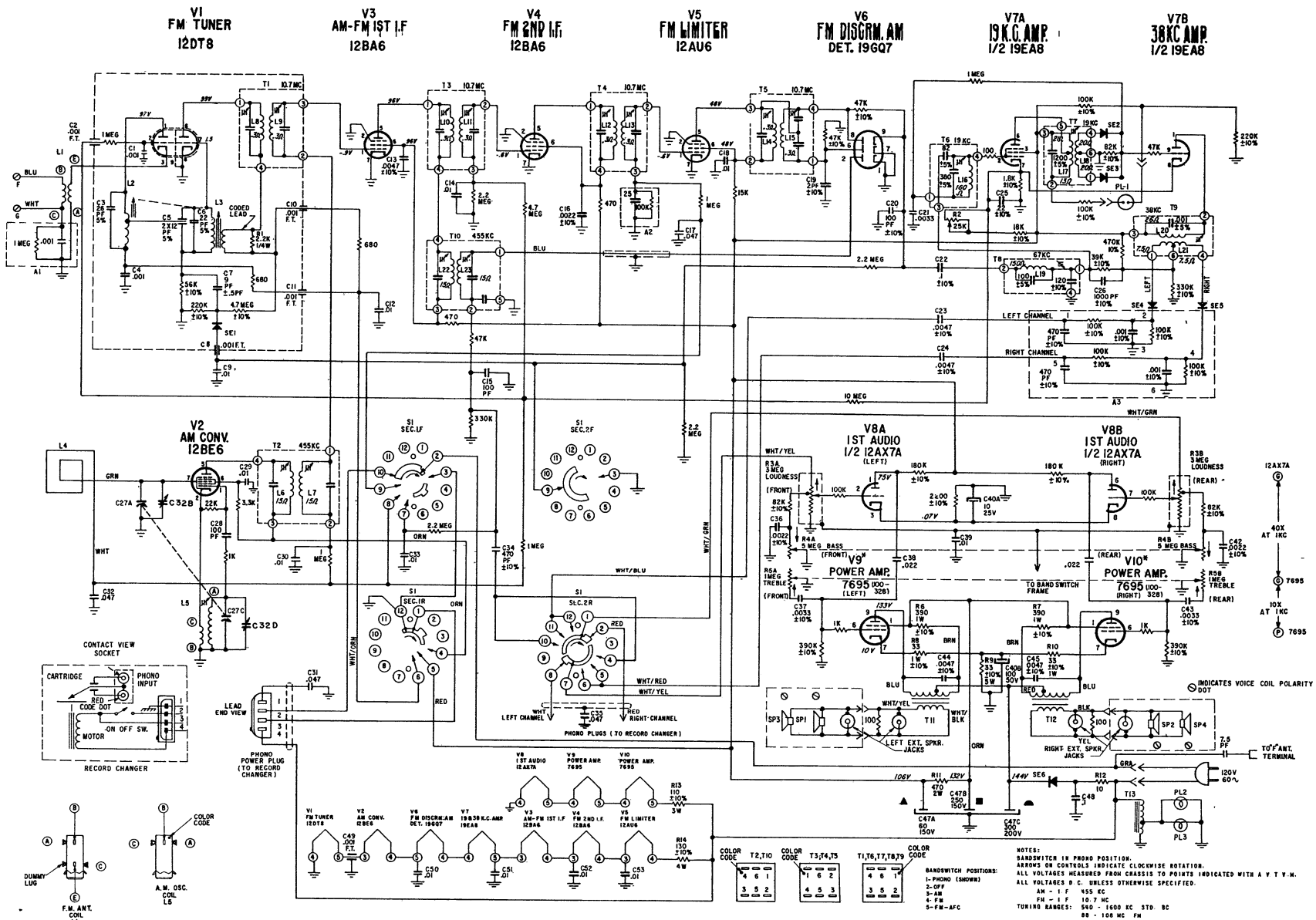
ALIGNMENT POINTS: (A)→
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS.

9M1T22Z1 SCHEMATIC

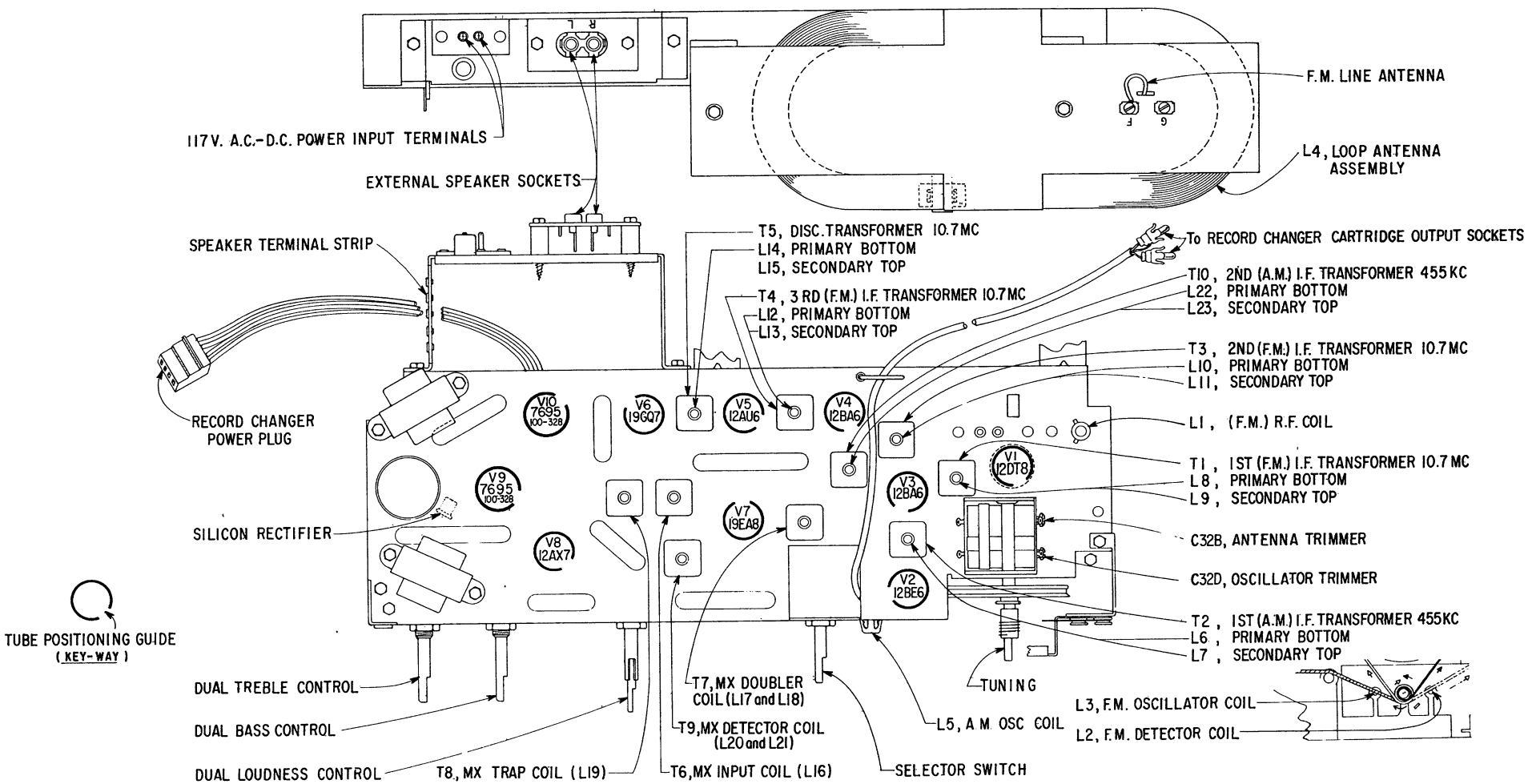
TEST POINTS	
A	FM DETECTOR OUTPUT
B	FM I.F. OUTPUT
C	2ND AM-FM I.F. INPUT
D	IST AM-FM I.F. INPUT
E	AM CONVERTER INPUT
F	FM CONVERTER INPUT
G	MX DOUBLER OUTPUT
H	MX DISABLING TEST POINT
I	MX PHASING
J	MX PHASING



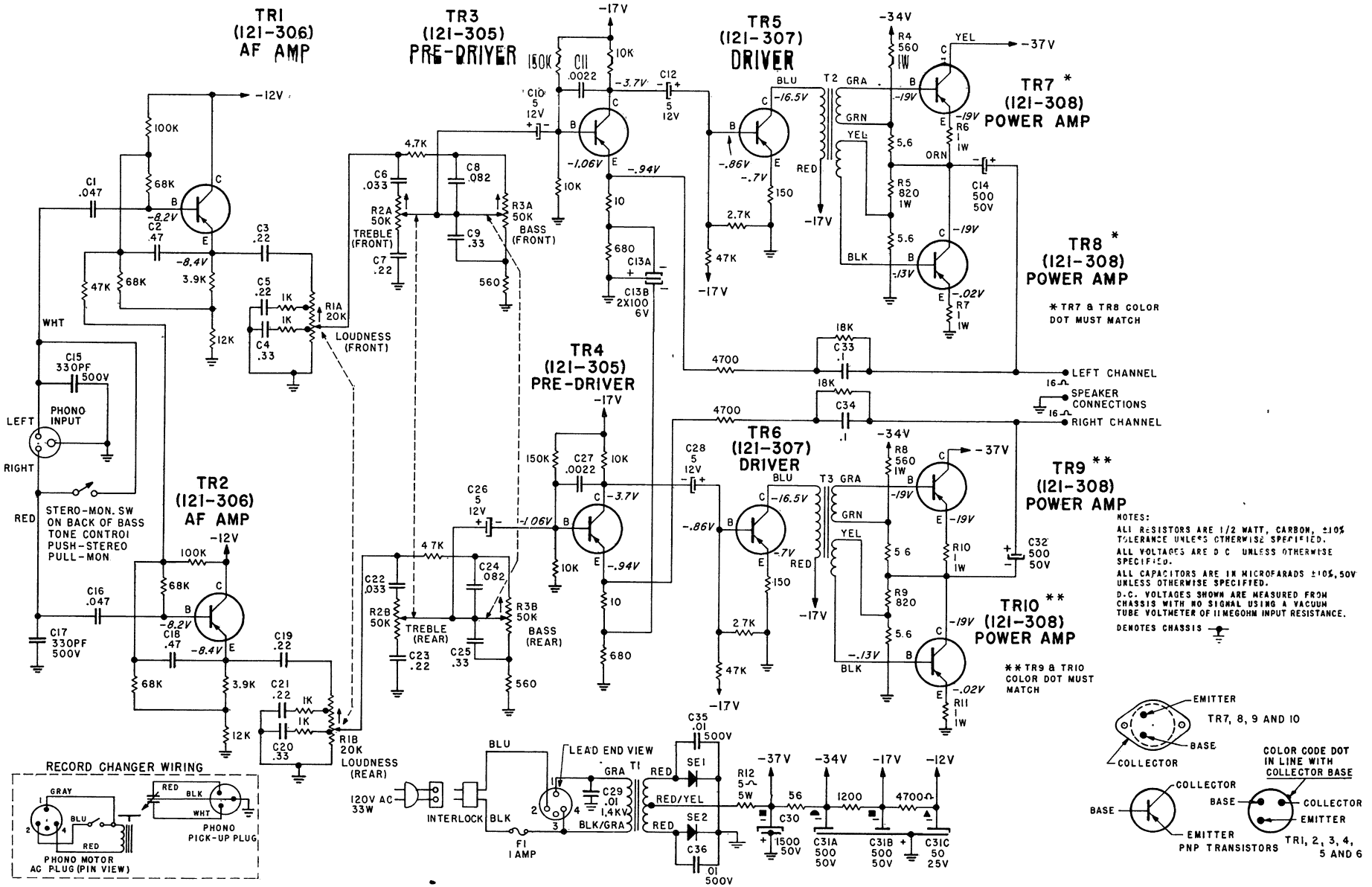
9M1T22Z1 CHASSIS LAYOUT



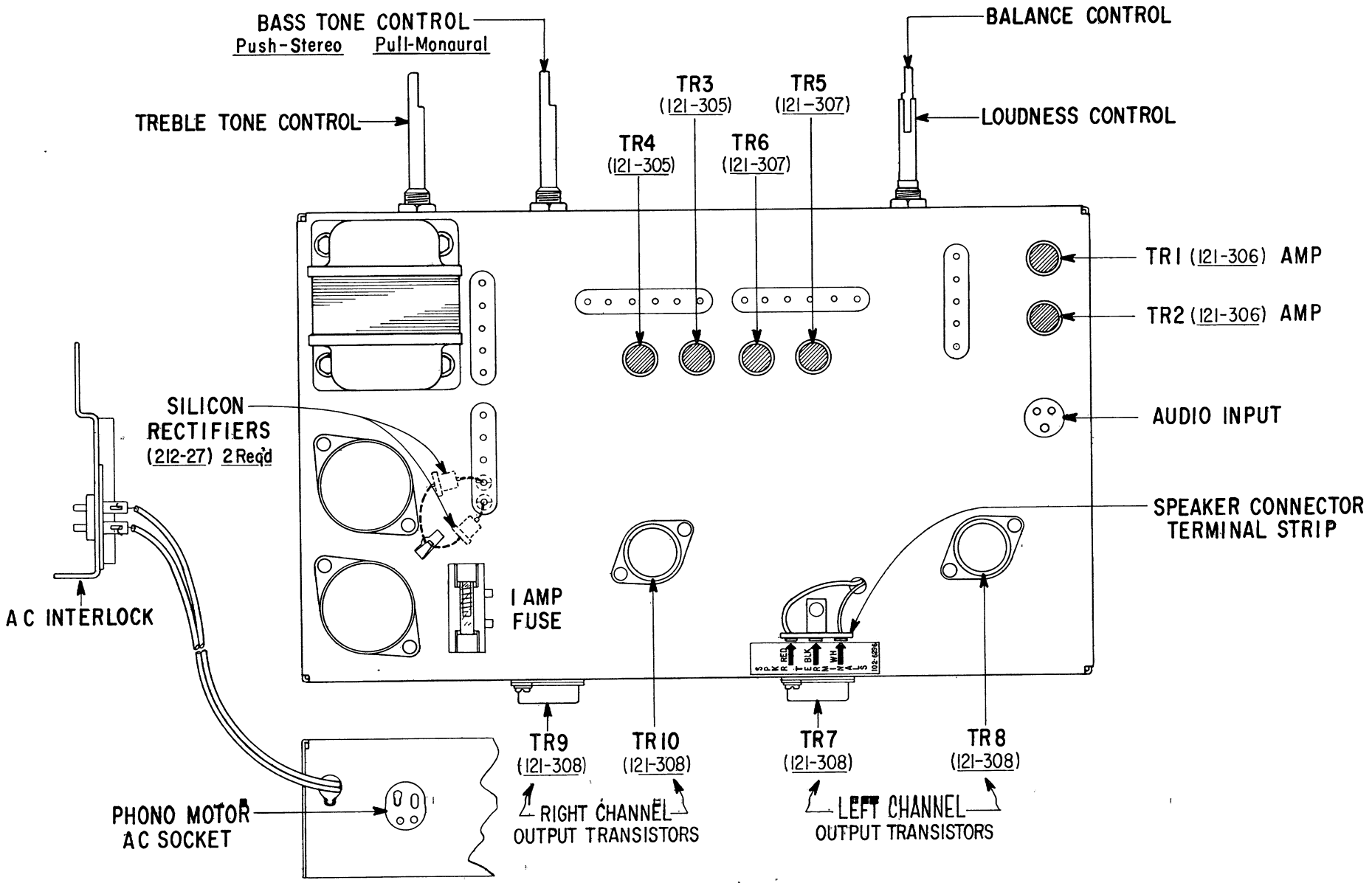
10L02Z SCHEMATIC



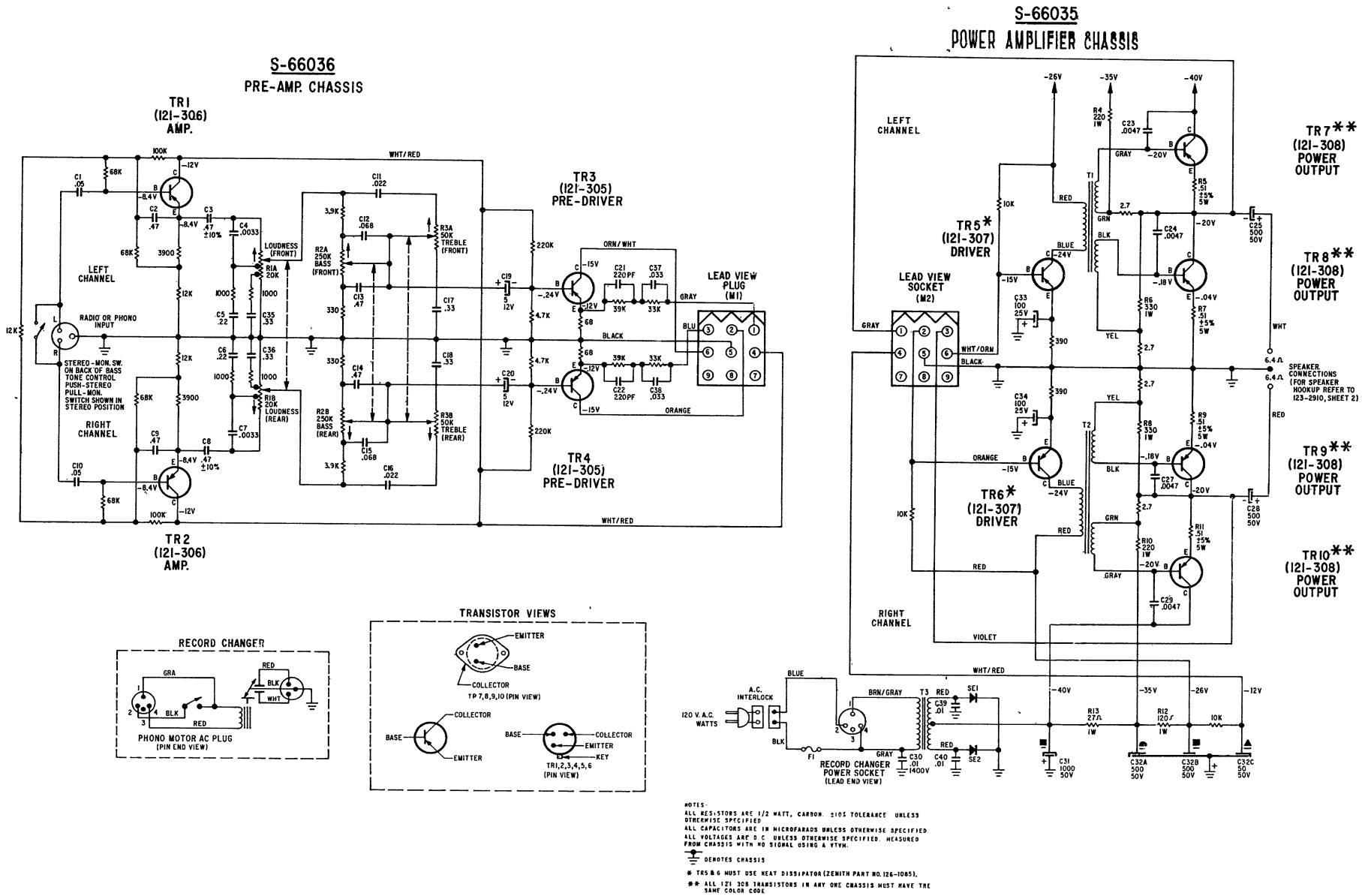
10L02Z CHASSIS LAYOUT



10MT25 SCHEMATIC

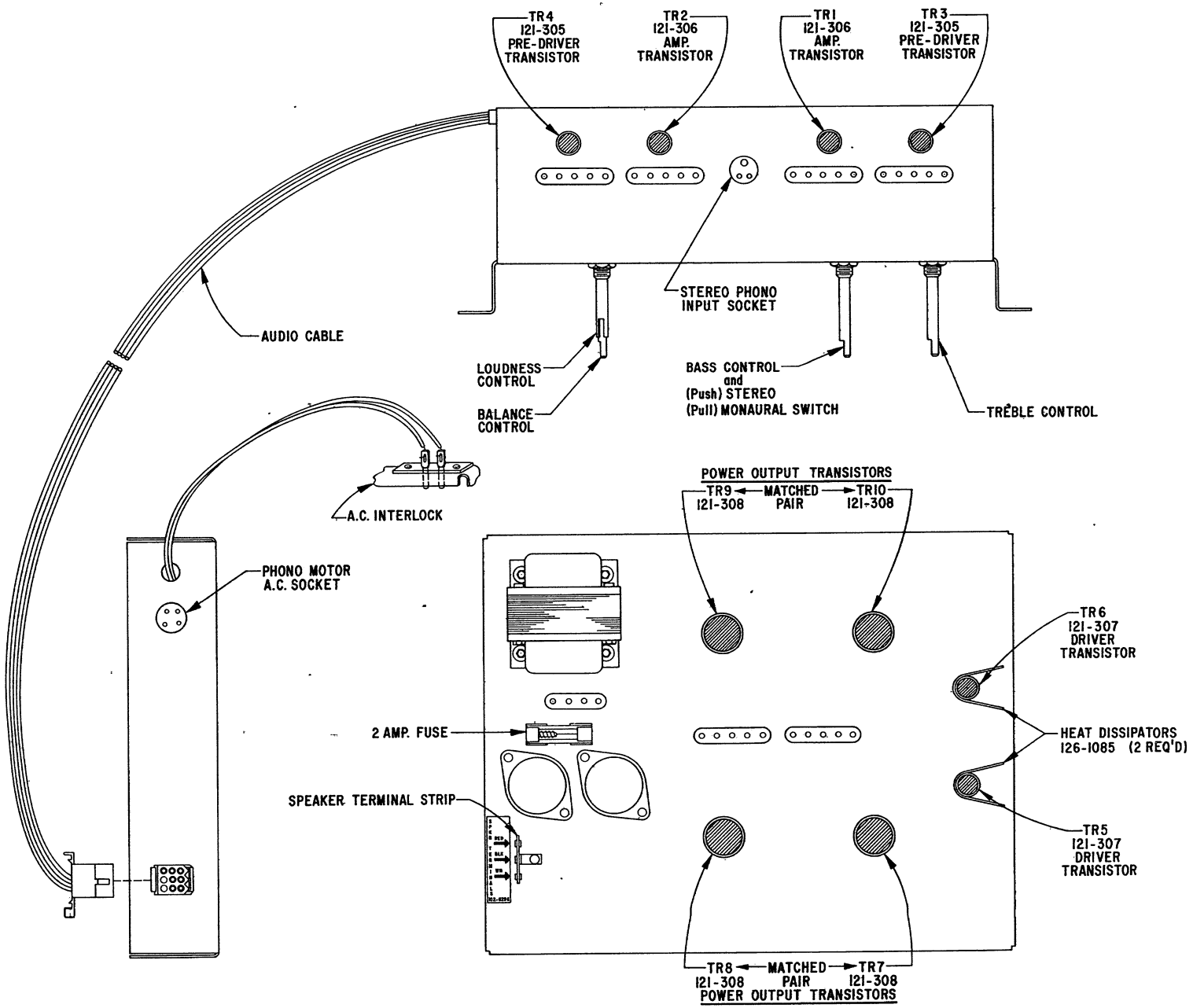


10MT25 CHASSIS LAYOUT

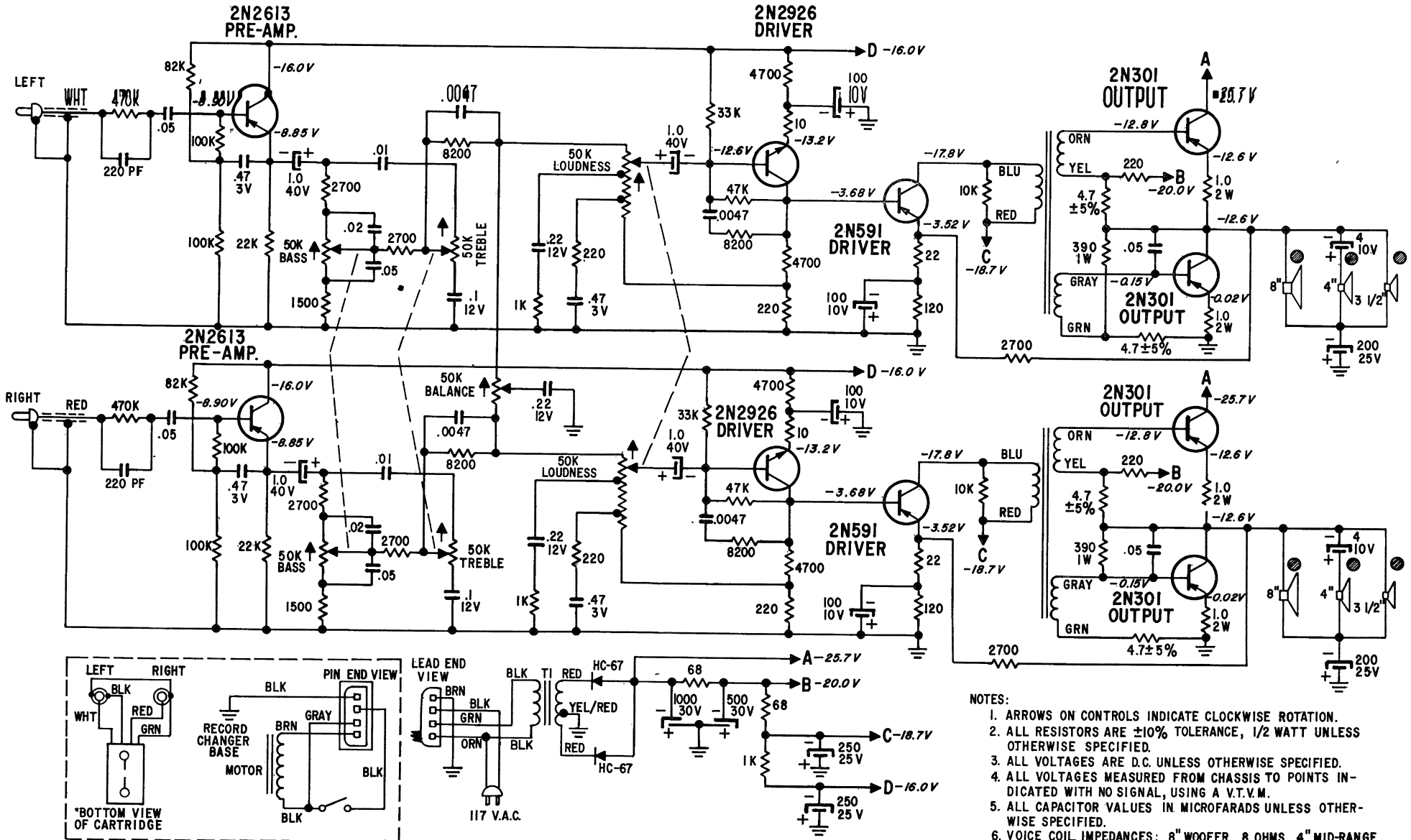


NOTES:
ALL RESISTORS ARE 1/2 WATT, CARBON. ±10% TOLERANCE UNLESS OTHERWISE SPECIFIED
ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED. MEASURED FROM CHASSIS WITH NO SIGNAL USING A VTVM.
⏚ DENOTES CHASSIS
* TR5 & 6 MUST USE HEAT DISSIPATOR (ZENITH PART NO. 126-1085).
** ALL 121 308 TRANSISTORS IN ANY ONE CHASSIS MUST HAVE THE SAME COLOR CODE

10MT26 SCHEMATIC



10MT26 CHASSIS LAYOUT



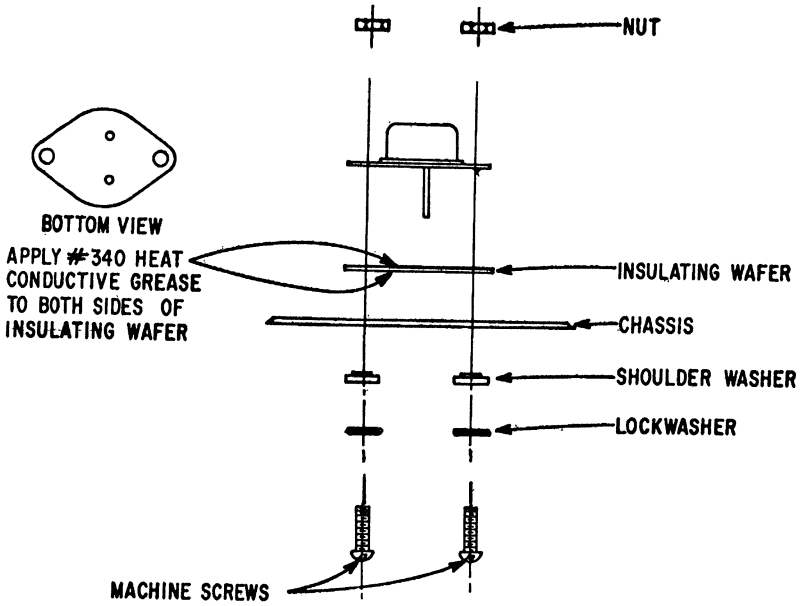
NOTES:

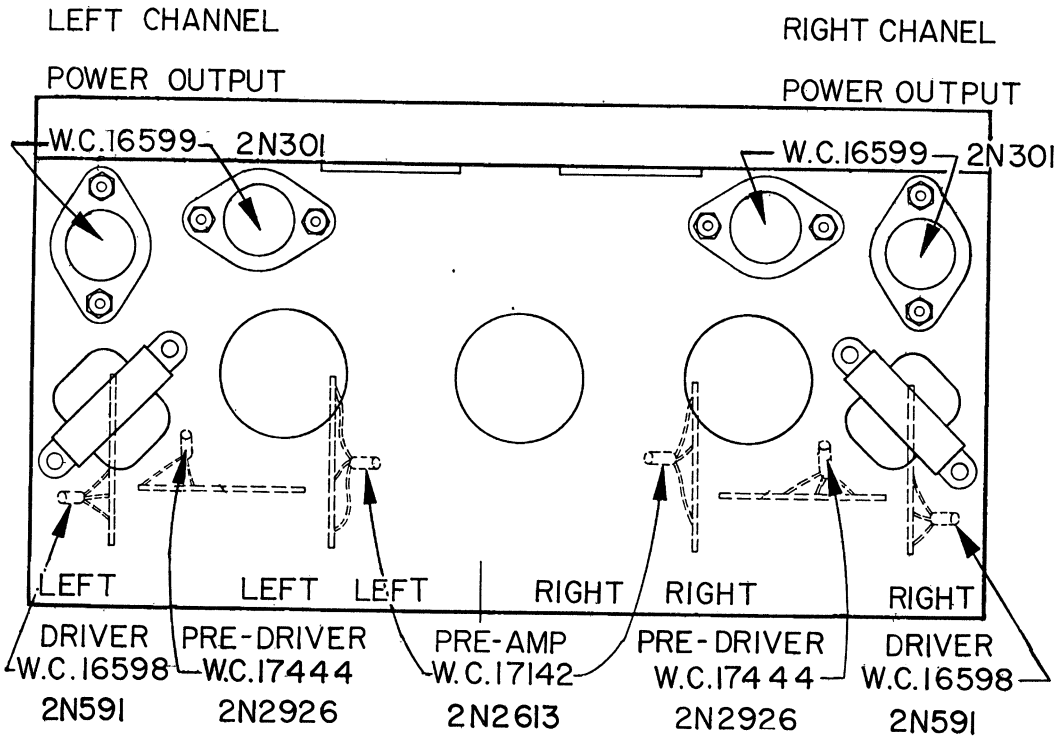
1. ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.
2. ALL RESISTORS ARE ±10% TOLERANCE, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
3. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
4. ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED WITH NO SIGNAL, USING A V.T.V.M.
5. ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
6. VOICE COIL IMPEDANCES: 8" WOOFER 8 OHMS, 4" MID-RANGE 6.4 OHMS AND 3 1/2" TWEETER 45 OHMS.
7. ⊛ INDICATES VOICE COIL POLARITY.
8. ⏚ INDICATES CHASSIS GROUND.

MPS90-1 SCHEMATIC

NOTES

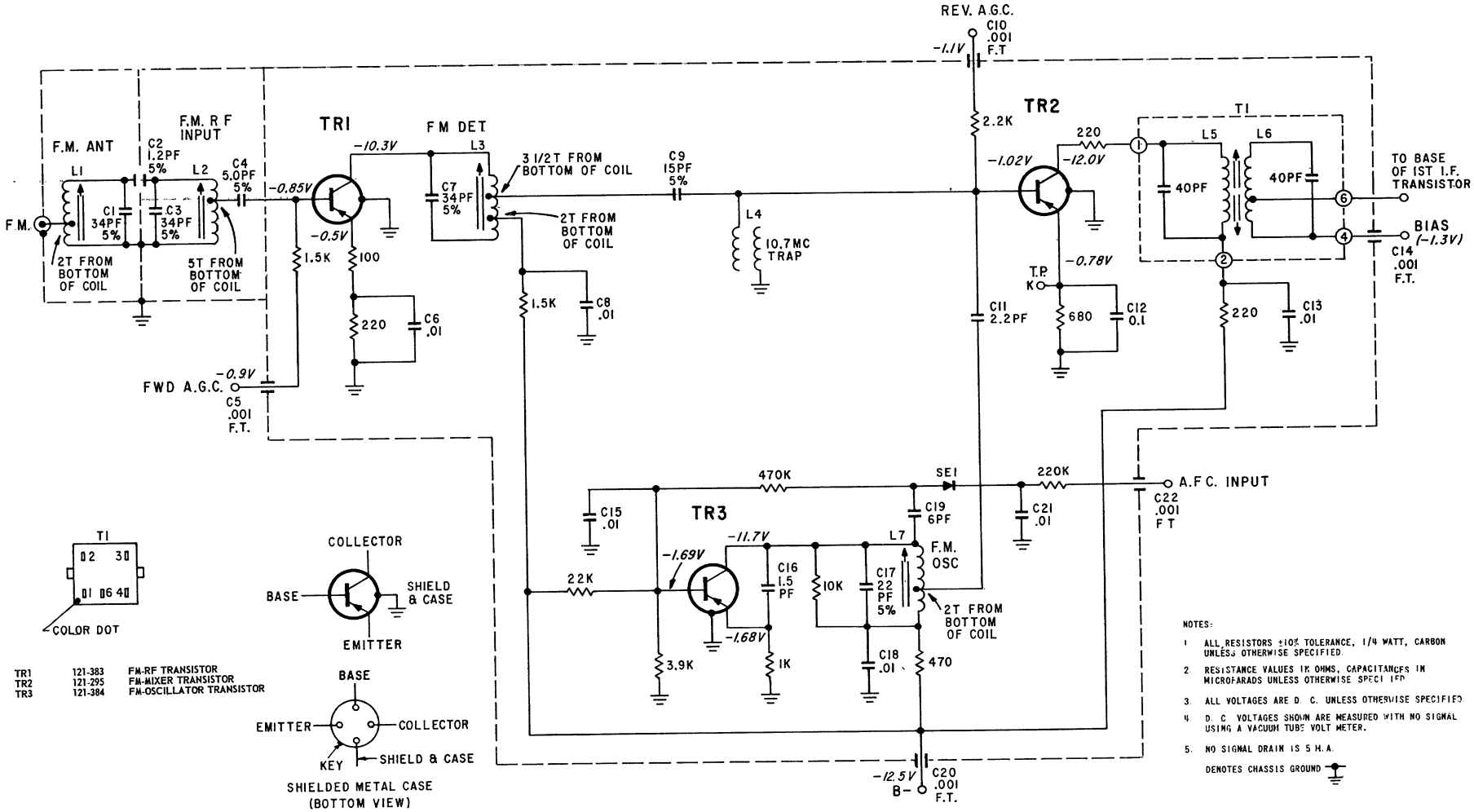
1. When replacing a power transistor the insulating wafer between the chassis and transistor should also be replaced. Be certain to apply Dow Corning #340 heat conductive grease to both sides of insulating washer.
2. Do not operate this amplifier without pr oper speaker load.
3. Do not short out the audio output when the amplifier is operating.
4. Should a power transistor fail (short ou t) be certain to replace the emitter resistor. Also , check the condition of the silicone diode rectifier.



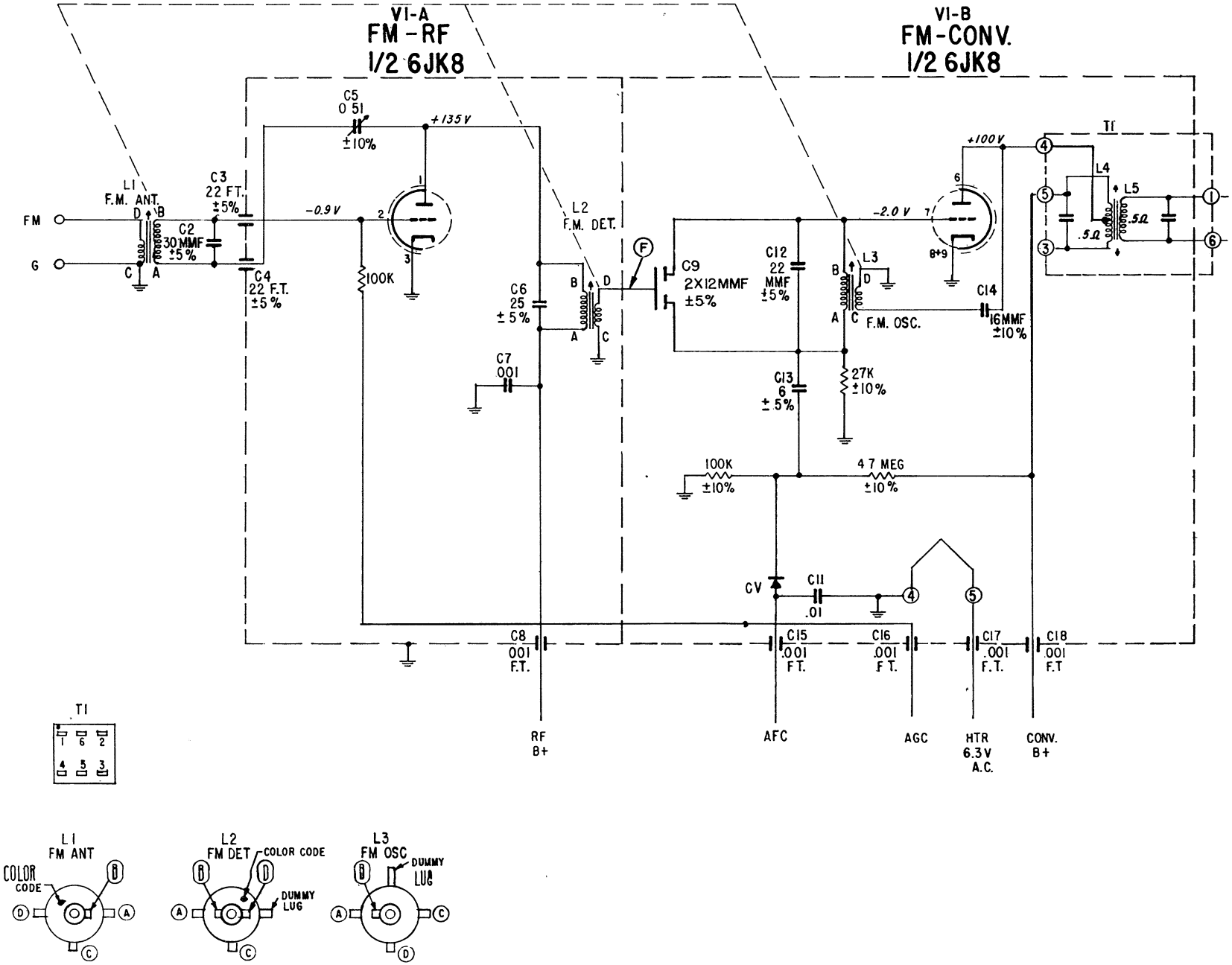


TOP VIEW

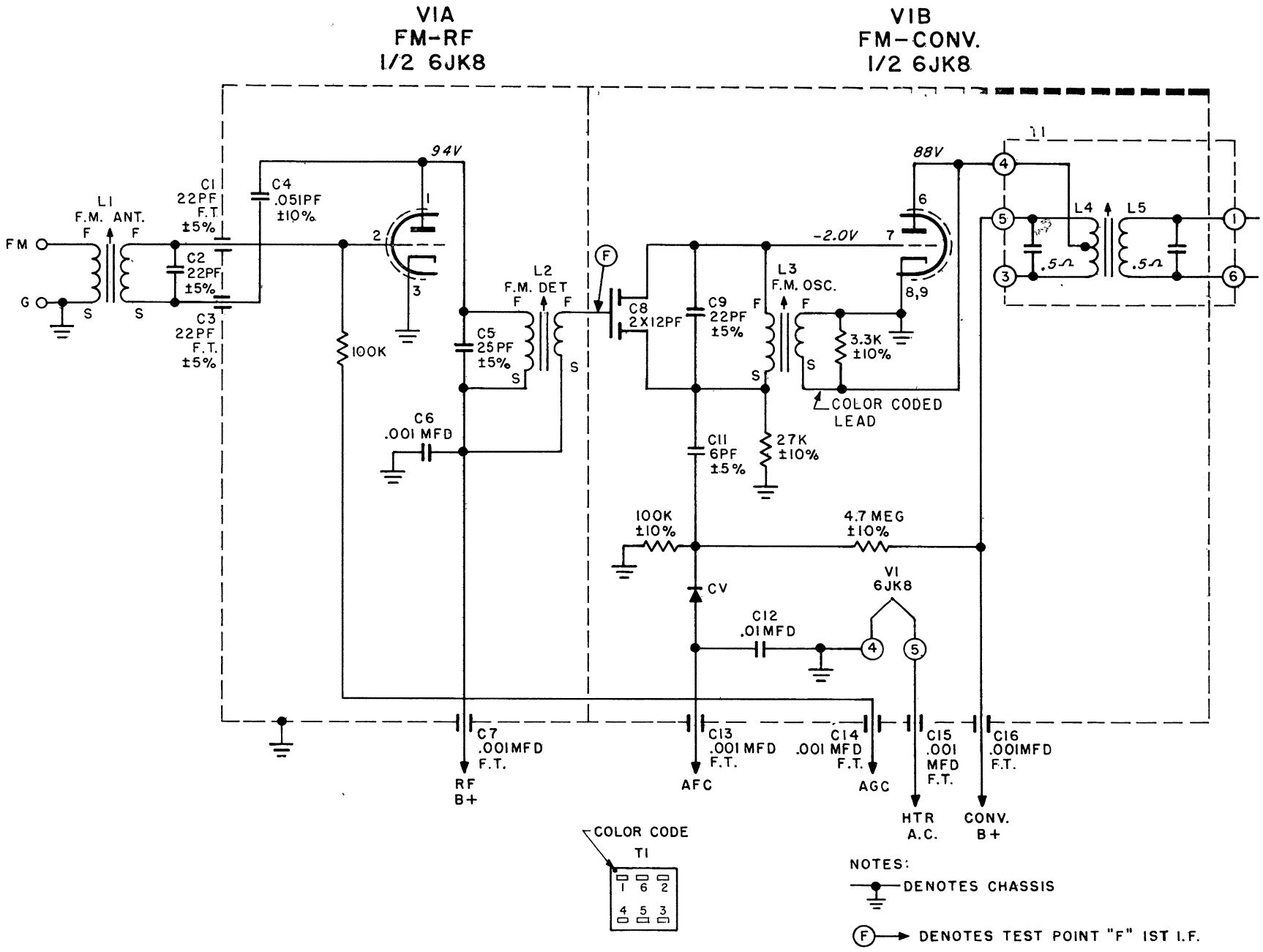
MPS90-1 CHASSIS LAYOUT



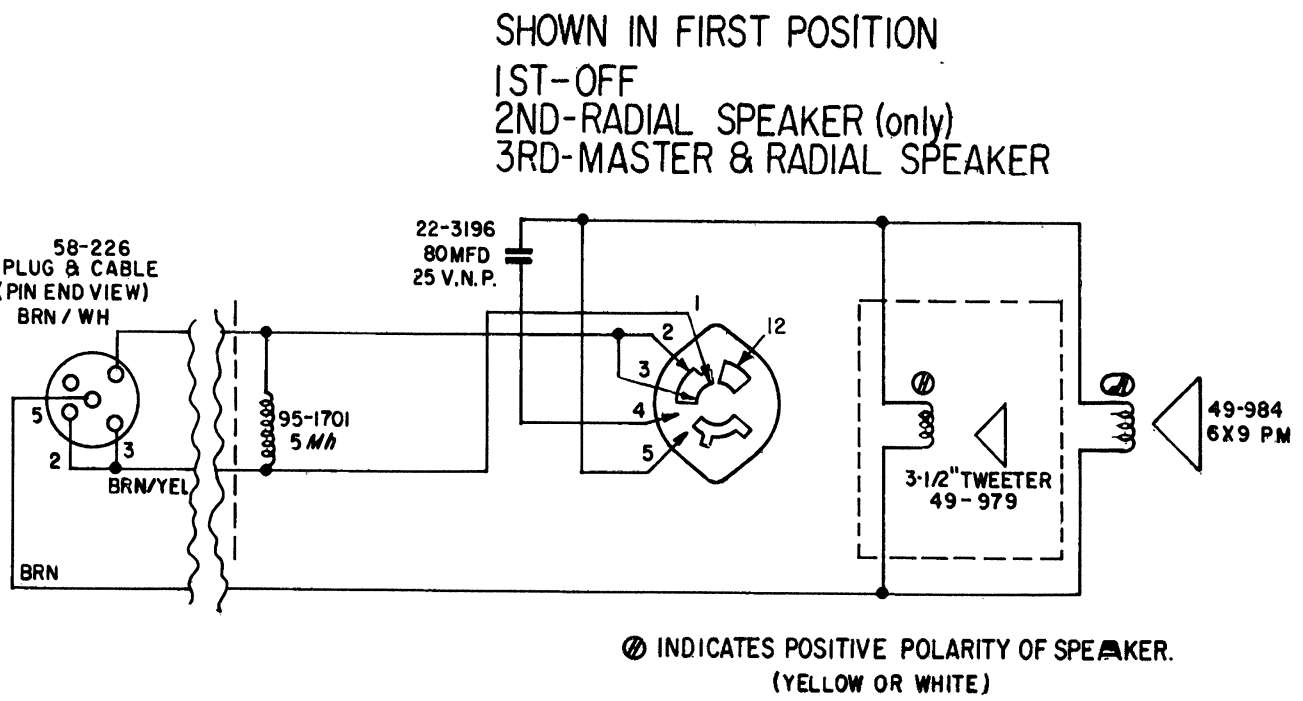
S69017 FM-RF TUNER SCHEMATIC FOR CHASSIS 27NT20 - 1N26T24



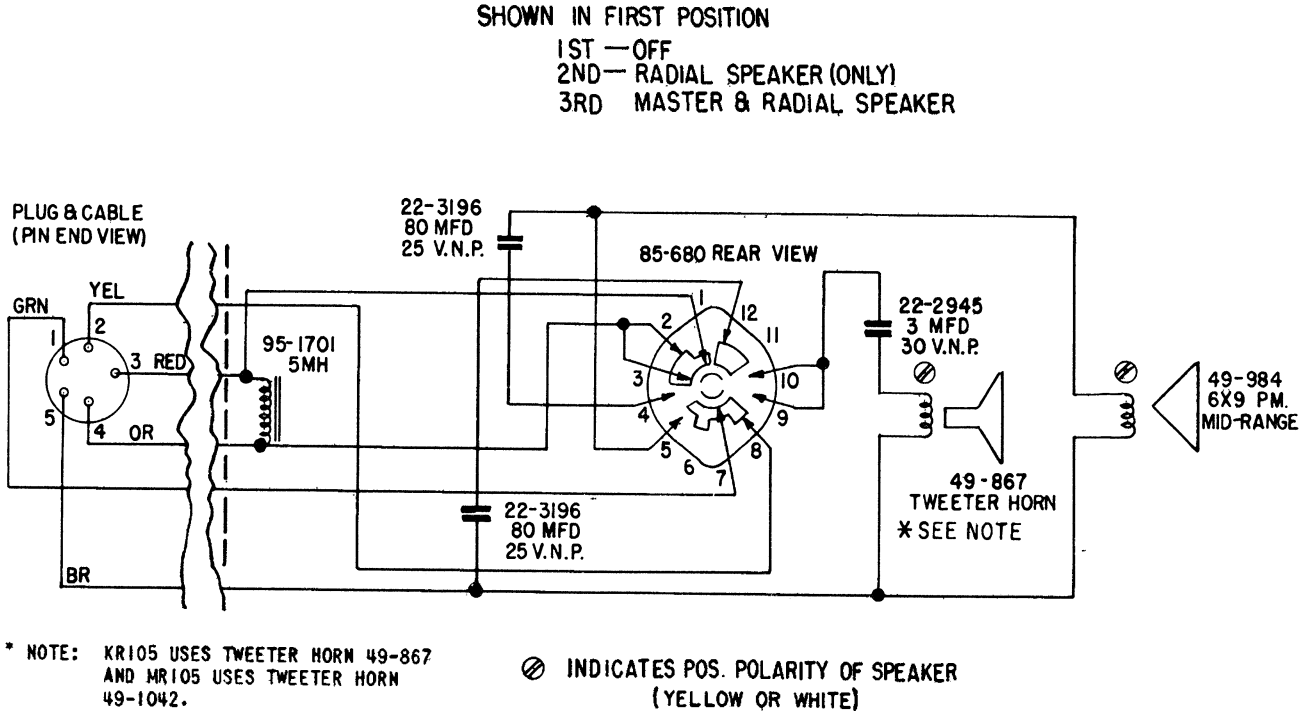
S64706 FM-RF TUNER SCHEMATIC FOR CHASSIS 9M1T22Z1



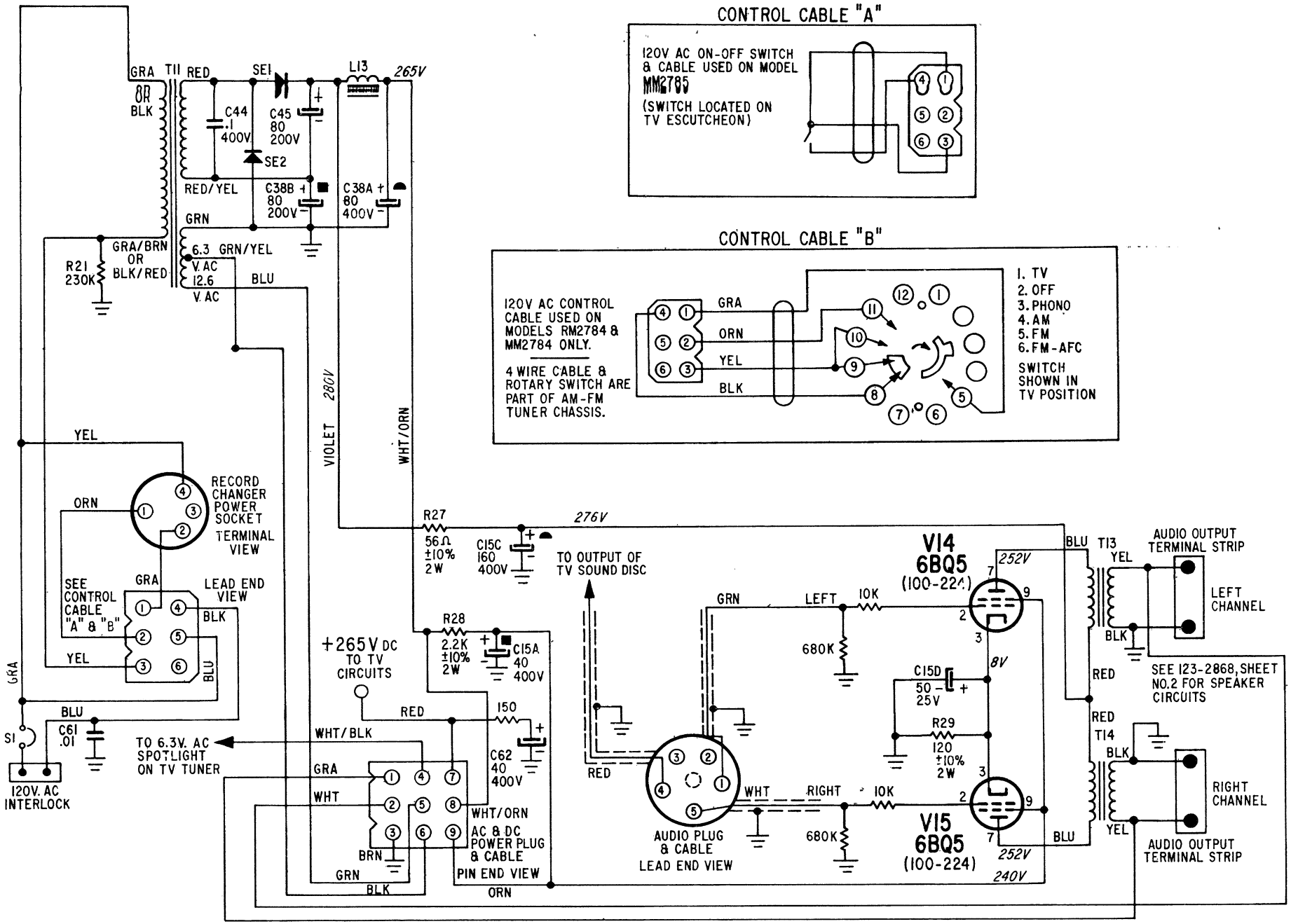
S-66347 FM-RF TUNER SCHEMATIC FOR CHASSIS 8L1T20Z



SCHEMATIC MR102

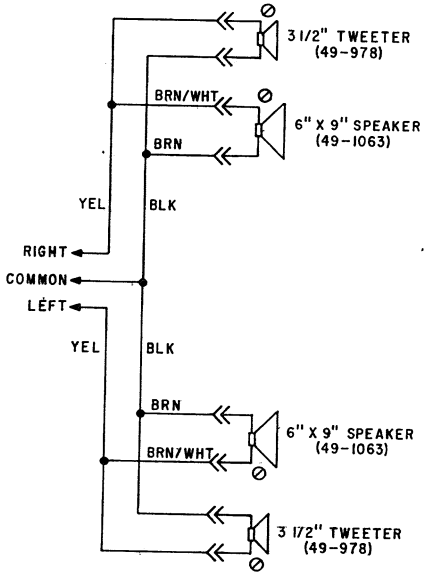


SCHEMATIC MR105

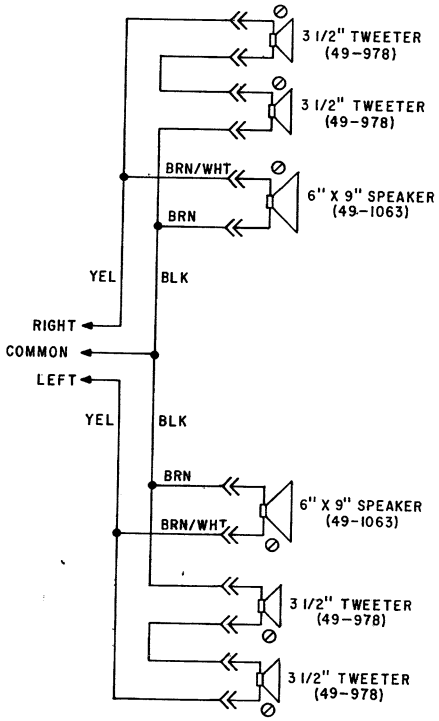


AUDIO, POWER & SWITCHING SECTIONS OF 16M24

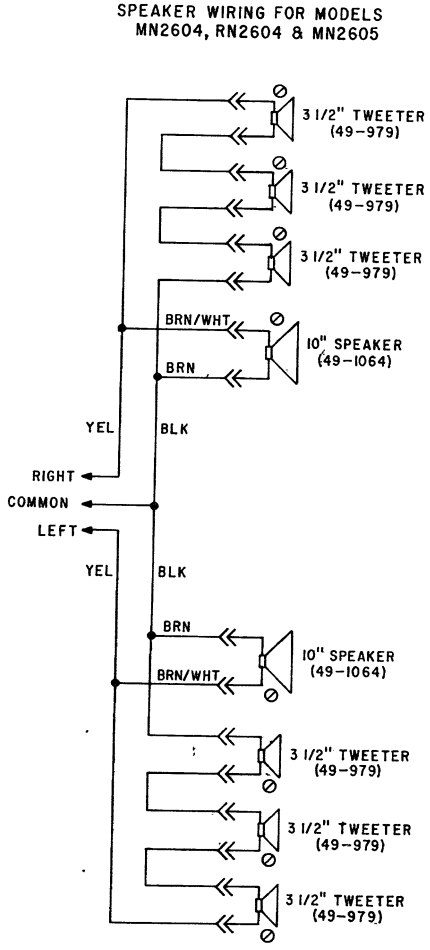
SPEAKER WIRING FOR MODELS
SN2420, RN2420, MN2420
SN2425, RN2425, MN2425
SN2430, RN2430 & MN2430



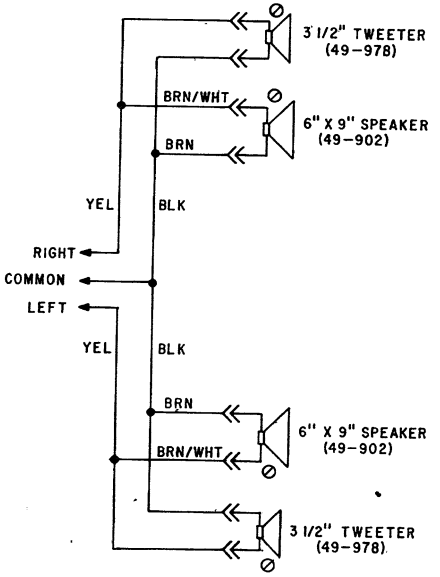
SPEAKER WIRING FOR MODELS
SN2501, RN2601, MN2601
MN2602, RN2602
SN2503, RN2603, MN2603
STI960, RTI960 & MTI960



SPEAKER WIRING FOR MODELS
MN2604, RN2604 & MN2605



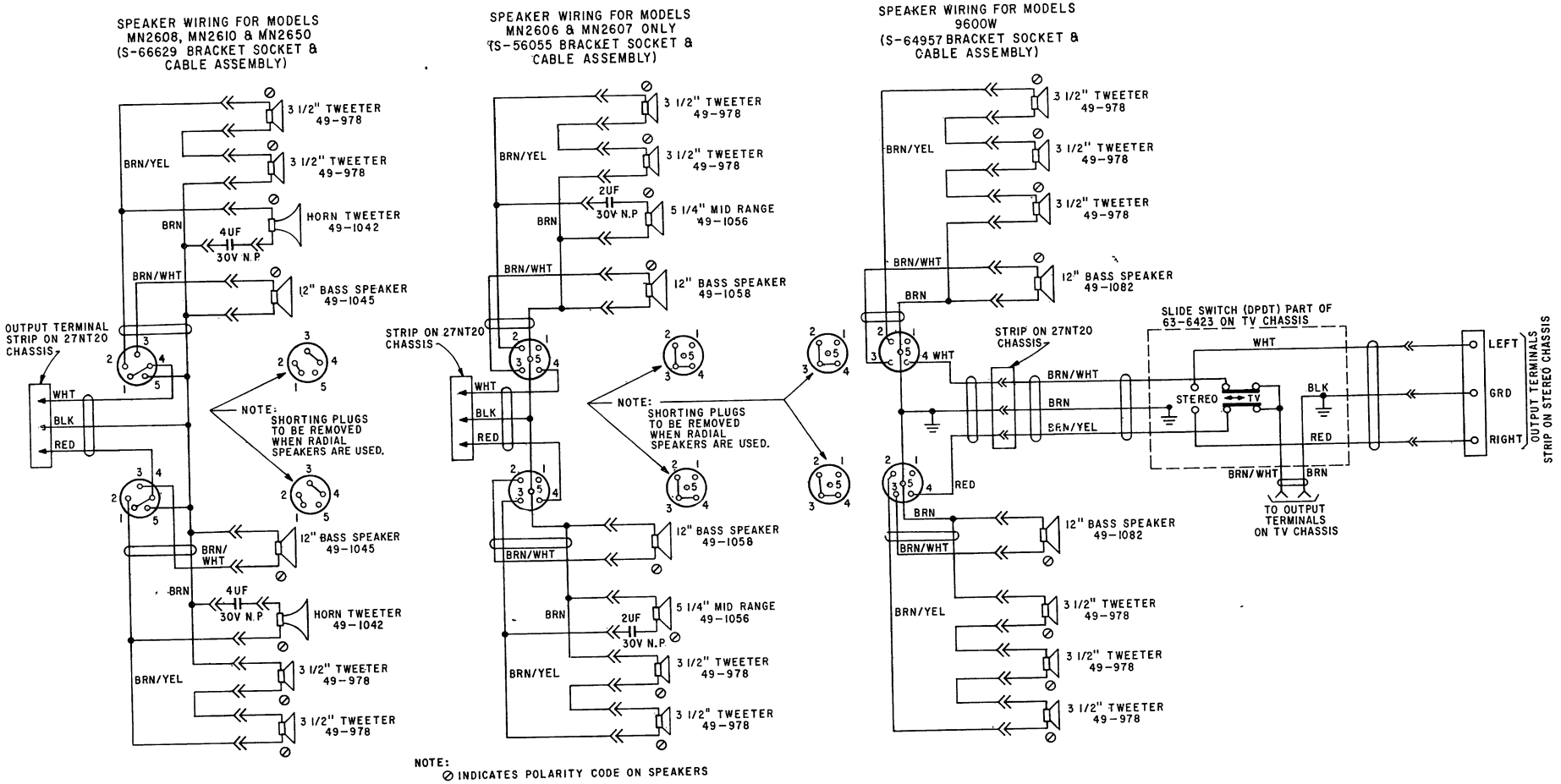
SPEAKER WIRING FOR MODELS
SN2410, RN2410 & MN2410



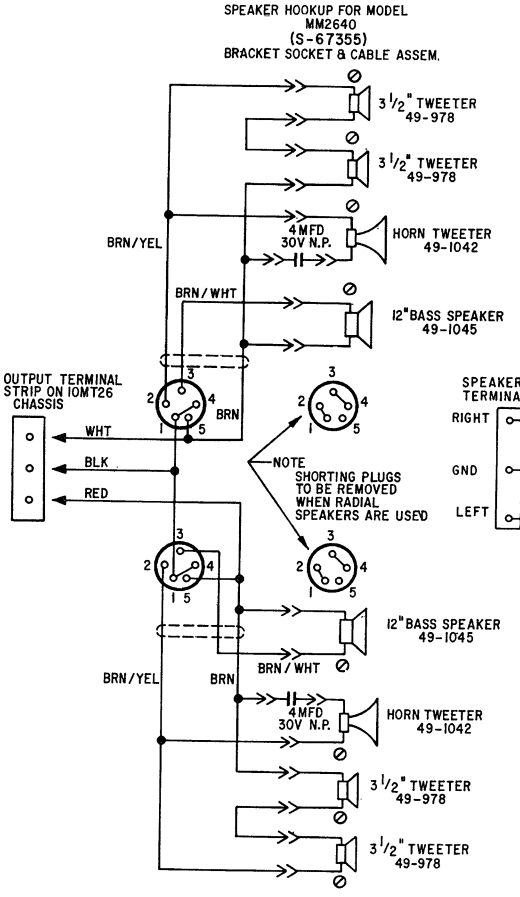
NOTE:
⊘ INDICATES WHITE OR YELLOW VOICE COIL POLARITY IDENTIFICATION DOT ON SPEAKER.

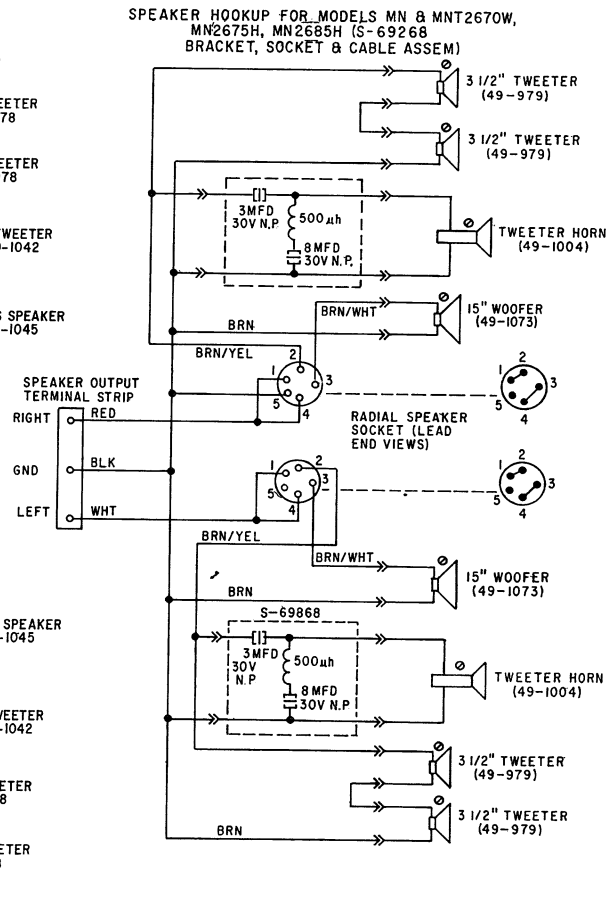
123-3160
SH 2 OF 2 SH

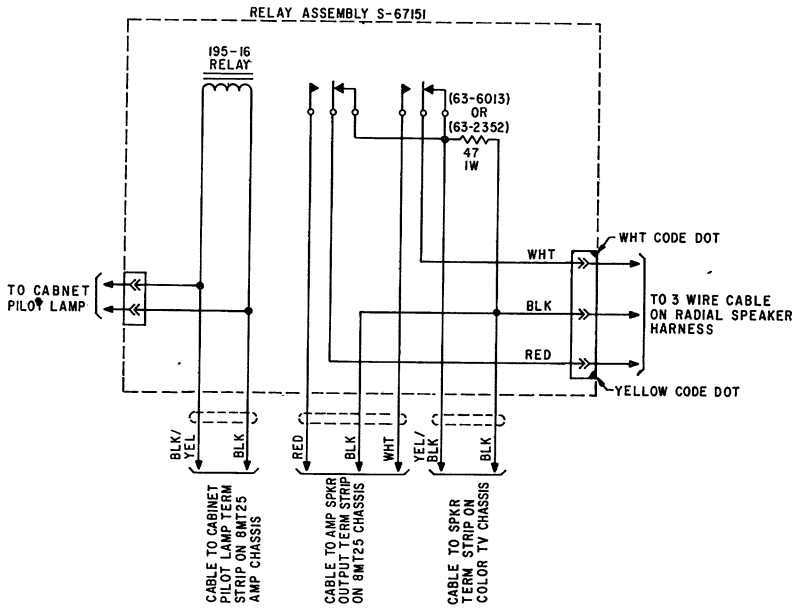
SPEAKER SCHEMATICS



SPEAKER SCHEMATICS







NOTES:

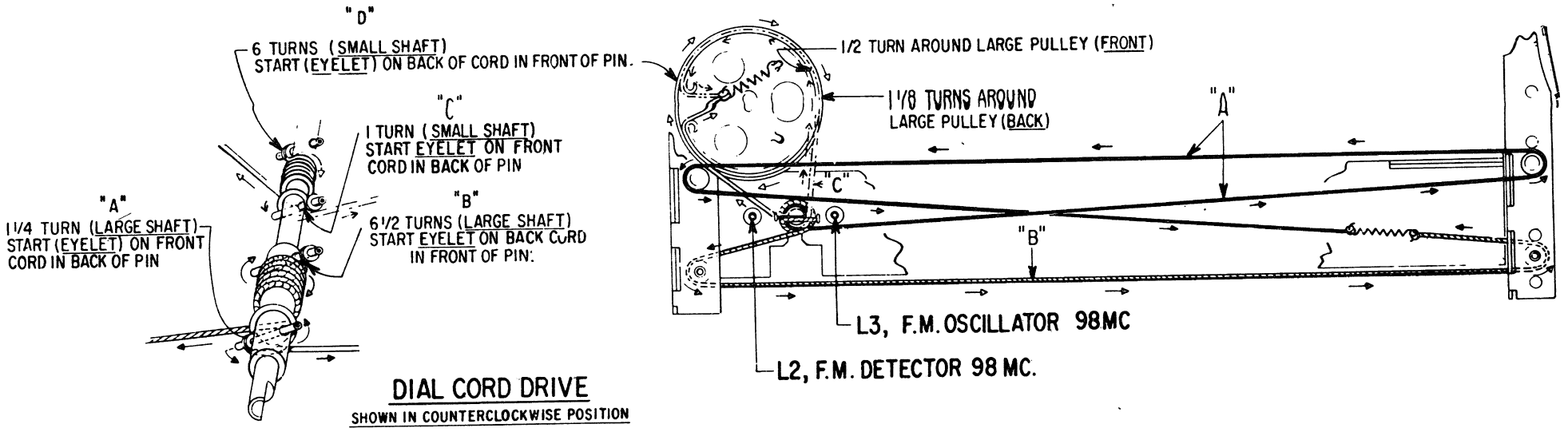
RELAY FUNCTIONS:

RELAY OPEN (NORMAL) - CONNECTS LEFT &ND RIGHT SPEAKERS IN PARALLEL FOR T.V. OPERATION.

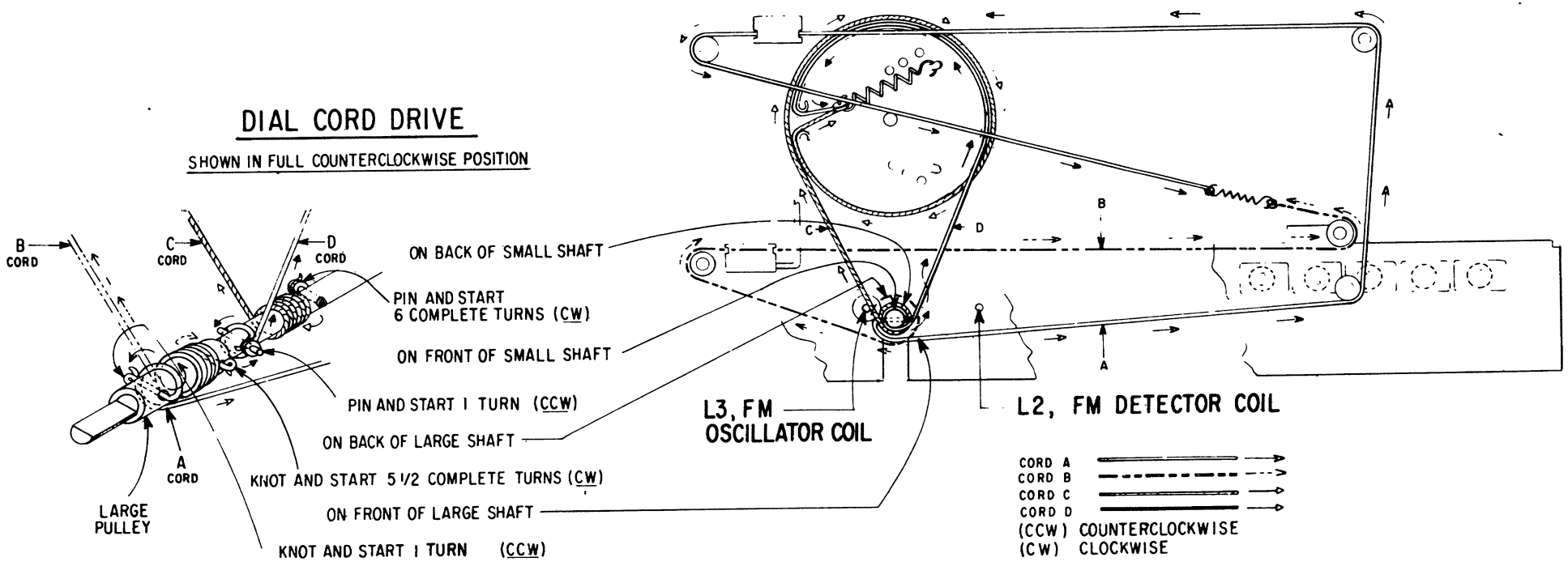
RELAY CLOSED - DISCONNECTS LEFT AND RIGHT SPEAKERS TO OPERATE INDIVIDUALLY FOR STEREO OPERATION.

RELAY OPERATES ON 6.3V AC FIL VOLTAGE WHEN RADIO SWITCH IS TURNED ON.

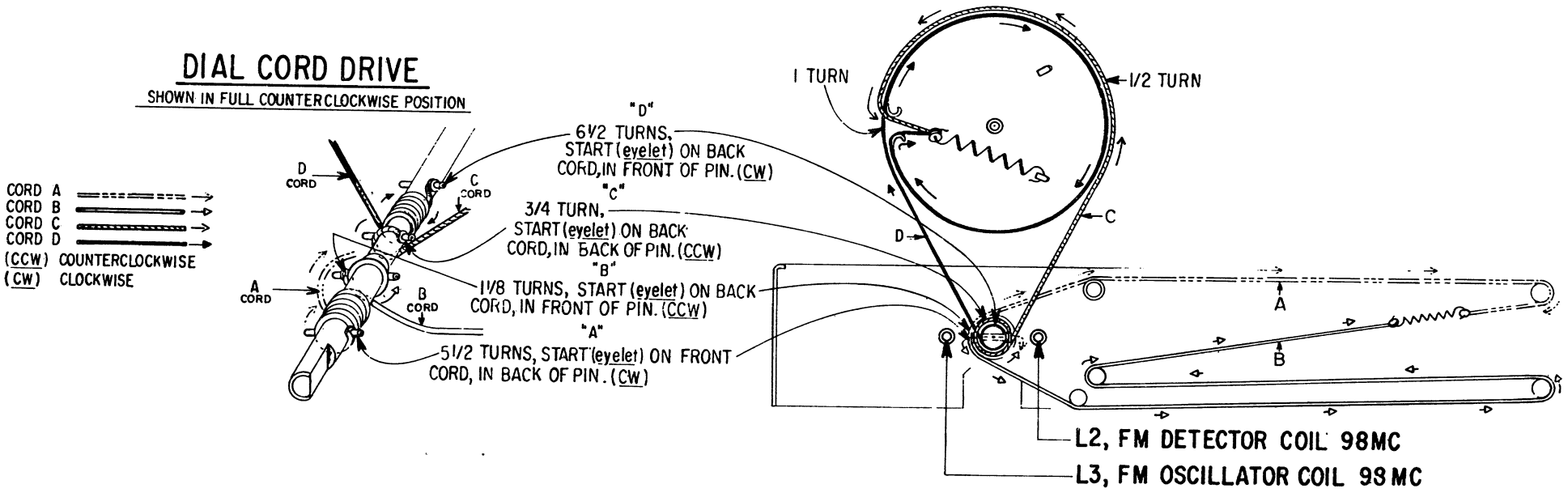
SPEAKER SCHEMATICS



DIAL CORD DRIVE FOR CHASSIS
6L01, 6L01Z1 AND 6L01Z2



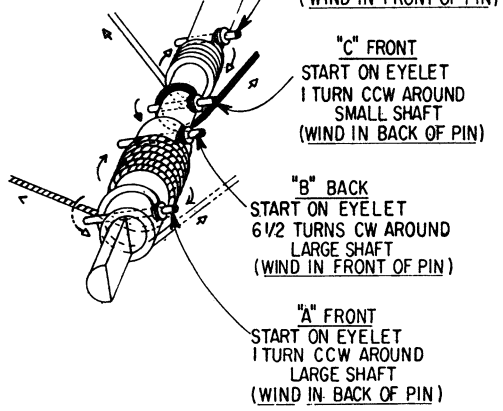
DIAL CORD DRIVE FOR CHASSIS 8L1T20Z

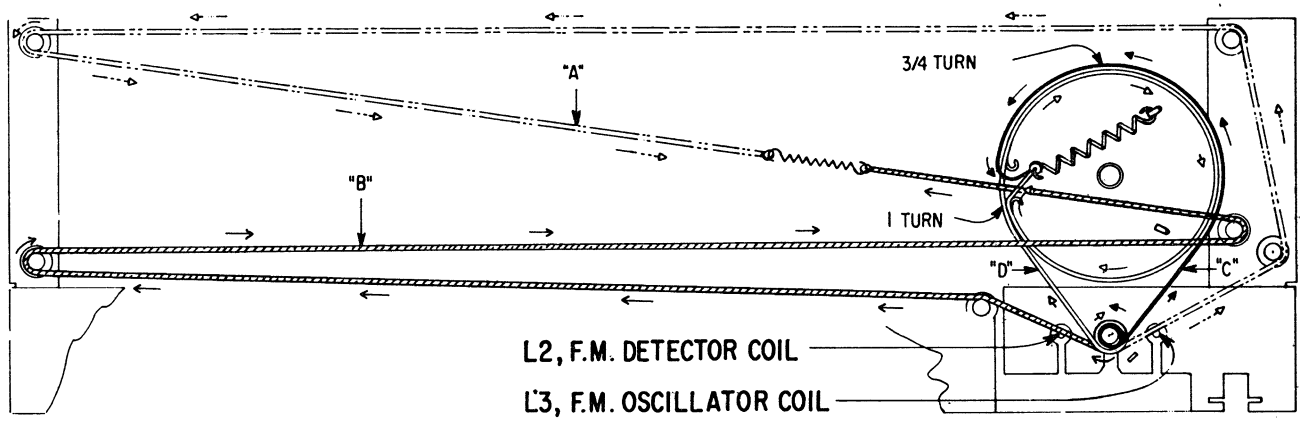


DIAL CORD DRIVE FOR CHASSIS 7L22Z AND 9M1T22Z1

DIAL CORD DRIVE

SHOWN IN FULL COUNTERCLOCKWISE POSITION





DIAL CORD DRIVE FOR CHASSIS 10L02Z

PARTS LIST

CHASSIS 1L20

PART NO.	DESCRIPTION	PRICE
22-2786	.068 Mfd. Molded - 200V.	.45
22-2805	.022 Mfd. Molded - 400V.	.25
22-2762	Electrolytic 40/150 20/150 20/25	
54-139	3/8 - 32 x 9/16 Palnut (1 used on each 63-5035 and 5036)	.03
63-1729	47 ohm - 1/2W. 10%	.17
63-1750	150 ohm - 1/2W. 10%	.17
63-1849	33K ohm - 1/2W. 20%	.17
63-4747	47K ohm Resistor - 1/2W. 10%	.17
63-4481	220K ohm Resistor - 1/2W 10%	.17
63-1897	470K ohm - 1W. 10%	.25
63-5035	Tone Control	1.40
63-5036	Volume Control and Switch	2.05
78-1542	Wafer Tube Socket	.20
93-1576	Steel Washer (2 required)	
95-2041	Output Transformer	
212-38	Selenium Rectifier	1.00

CHASSIS 1N21

PART NO.	DESCRIPTION	PRICE
11-145	Line Cord and Plug	.80
22-2786	.068 Mf. Capacitor - 200V.	.25
22-2793	.047 Mf. Capacitor - 400V.	
22-2794	.047 Mf. Capacitor - 600V.	
22-2804	.022 Mf. Capacitor - 200V.	
22-4600	Electrolytic Capacitor	
43-519	Socket Contact Housing	.20
52-1202	Phono Cable & Plug	
63-1750	150 ohm Resistor - 1/2W. 10%	.17
63-1828	10K ohm Resistor - 1/2W. 20%	.17
63-1856	47K ohm Resistor - 1/2W. 20%	
63-1898	470K ohm Resistor - 1/2W. 20%	.17
63-5374	110 ohm Fusing Type Resistor	
63-6318	Volume Control	
63-6319	Tone Control	
78-1410	Molded Tube Socket (25C5S)	.25
83-5305	Seven Lug Terminal Strip	
83-5306	Insulating Strip	
86-328	Wire Retaining Terminal	.03
86-334	Terminal (3 used on 43-519)	.10
95-2312	Output Transformer	
212-58	Rectifier	

CHASSIS 2NT20

PART NO.	DESCRIPTION	PRICE
11-87	A.C. Line Cord	
22-3	.01 Mf. Disc Capacitor	.30
22-17	.001 Mf. Disc Capacitor - 1000V.	.25
22-3317	.1 Mf. Capacitor - 200V.	.35
22-3659	.047 Mf. Capacitor - 400V. (2 required)	
22-3896	5 Mf. Electrolytic Capacitor - 25V.	1.00
22-4568	100 Mf. Electrolytic Capacitor	
22-4644	Electrolytic Capacitor	
43-519	Socket Contact Housing	.20
52-1218	Single Conductor Shielded Lead & Plug	
52-1222	Four Conductor Cable	
54-384	4-40 Palnut Type Cadmium (1 used on each 114-940)	.03
63-1827	10K ohm Resistor - 1/2W. 10%	.17
63-1848	33K ohm Resistor - 1/2W. 10%	
63-1862	68K ohm Resistor - 1/2W. 10%	.17
63-1870	100K ohm Resistor - 1/2W. 20%	
63-1880	180K ohm Resistor - 1/2W. 10%	
63-1908	820K ohm Resistor - 1/2W. 10%	.17
63-1926	2.2 megohm Resistor - 1/2W. 20%	.17
63-5440	Voltage Dependent Resistor	.50
63-6042	220 ohm Resistor - 1W. 10%	.25
63-6319	Tone Control	
63-6406	430 ohm Fusing Type Resistor	
63-6407	Loudness Control	
79-174-8	No. 18 Sleeving - Yellow - 1"	
79-209-8	No. 22 Sleeving - Yellow - 1" (part of S-67794)	
79-210-8	No. 22 Sleeving - Green - 1" (part of S-67794)	
79-211-8	No. 22 Sleeving - Blue - 1" (part of S-67794)	
83-4871	Transistor Insulating Strip (part of S-67794)	.03
83-5147	10 Lug Terminal Strip - Grip Type	.25
83-5284	5 Lug Terminal Strip	
83-5291	Insulating Strip	
83-5436	10 Lug Terminal Strip	
83-5437	Insulating Strip	
86-199	Terminal	.03
86-334	Socket Terminal (4 used on 43-519)	.10
94-1287	Shoulder Bushing (2 part of S-67794)	.10
95-2341	Output Transformer	
114-940	4-40 x 5/16 x 3/16 Af. Hex Hd. Mach. Screw - Cadmium (2 mount S-67794)	
121-314	Transistor (Driver)	
212-58	Rectifier	
S-67794	Transistor, Strip & Grease Assembly	

CHASSIS 3L02

PART NO.	DESCRIPTION	PRICE
22-3	.01 Mfd. Disc Capacitor - 500V. (2 required)	.30
22-12	.0015 Mfd. Disc Capacitor - 500V. (2 required)	.25
22-13	.0033 Mfd. Disc Capacitor - 500V. (2 required)	.25
22-17	.001 Mfd. Disc Capacitor - 1000V. (2 required)	.25
22-21	2 x .001 Mfd. Disc Capacitor - 500V.	.40
22-2655	.01 Mfd. Disc Capacitor - 1400V. - (used on 63-5123)	.50
22-3125	.1 Mfd. Capacitor - 600V.	.45
22-3327	30 Mmf. Disc Capacitor - 500V. (2 used on 63-5123)	.25
22-3859	Dual Electrolytic Capacitor 100/50V. 10/25V.	2.25
22-5039	Electrolytic Capacitor 60/150V. 300/150V. 300/200V.	
24-1201	Control Cover (use with 63-5122)	.25
43-573	Socket Contact Housing Female (used on 52-1100)	.45
52-1100	Four Conductor Cable	.50
54-139	3/8 - 32 x 9/16 Palnut Cadmium (1 used on each 63-5122, 63-5123 & 63-5124)	.03
58-238	Three Prong Plug (part of S-63542)	.10
58-246	Two Prong Plug - A.C. (part of S-59959)	.15
63-1786	1000 ohm Resistor 1/2W. 20% (2 required)	.17
63-1799	2200 ohm Resistor 1/2W. 10%	.17
63-1856	47K ohm Resistor 1/2W. 10% (2 required)	.17
63-1876	150K ohm Resistor - 1/2W. 10% (2 used on 63-5123)	.17
63-1880	180K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1883	220K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1884	220K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1891	330K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1925	2.2 megohm Resistor - 1/2W. 10%	.17
63-4843	63 ohm Resistor - 4W. 10%	
63-4851	125 ohm Resistor - 4W. 10%	
63-5122	Dual Bass Control & Stereo-Monaural Switch	3.50
63-5123	Dual Loudness Control	3.00
63-5124	Dual Treble Control	2.75
63-5243	Fusing Type Resistor	.50
63-5655	470 ohm Resistor - 2W. 20%	.34
63-6052	390 ohm Resistor - 1W. 10% (2 required)	.25
78-1139	Noval Wafer Socket (12A x 7A)	.20
78-1156	Noval Molded Socket (7695) (2 required)	.25
83-1635	Insulating Strip (used on 63-5123)	.03
83-2639	Three Lug Terminal Strip	.05
83-2715	Three Lug Terminal Strip	.05
83-3675	Twelve Lug Terminal Strip	.30
83-3676	Four Lug Terminal Strip	.10
83-4232	Felt Strip	.03
86-328	Terminal Wire Retaining (5 required)	.03
86-371	Socket Terminal (5 required)	.03
93-993	Insulating Washer (used on 63-5123)	.03.
93-1183	Fibre Washer (4 required)	.03
94-1171	Insulating Bushing (3 required)	.10
95-2138	Audio Output Transformer (2 required)	
114-26	8-18 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (1 used on each 95-2138)	.03
125-26	Rubber Grommet (4 required	.03

CHASSIS 3L03

PART NO.	DESCRIPTION	PRICE
11-87	Line Cord and Plug	1.00
22-3	.01 Mfd. Disc - 500V. (2 required)	.30
22-14	.0047 Mfd. Disc - 500V. (2 required)	.25
22-21	2X.001 Mfd. Disc - 500V.	.40
22-2671	25 Pf. Disc - 500V. (2 required)	.25
22-2792	.047 Mfd. Tubular - 200V. (2 required)	.30
22-2794	.047 Mfd. Tubular-600V.	.30
22-3962	20 x 150 Mfd. Electrolytic - 150V.	
43-519	Socket Contact Housing - Male	.20
52-1076	Conductor Cable	
54-139	3/8 - 32 x 9/16 Palnut (1 mts. each 63-5225, 63-5226 and 63-5227)	.03
58-214	Connector Plug (2 pt. of S-62599)	.10
63-1750	150 ohm Resistor 1/2W. Ins. 10% (2 required)	.17
63-1761	270 ohm Resistor - 1/2W. Ins. 10% (2 required)	.17
63-1796	1800 ohm Resistor - 1/2W. Ins. 10%	.17
63-1856	47K ohm Resistor - 1/2W. Ins. 20% (2 required)	.17
63-1863	68K ohm Resistor - 1/2W. Ins. 20% (2 required)	.17
63-1873	120K ohm Resistor - 1/2W. Ins. 10% (2 required)	.17
63-1887	270K ohm Resistor - 1/2W. Ins. 10% (2 required)	.17

PART NO.	DESCRIPTION	PRICE
63-5225	Dual Volume Control	
63-5226	Balance Control	
63-5227	Dual Tone Control	
63-5266	Fusing Type Resistor	
63-6007	33 ohm Resistor - 1W. Ins. 10%	.25
78-781	Molded Tube Socket (2 required)	
78-846	Wafer Tube Socket	.25
83-2984	5 Lug Terminal Strip	.10
83-3239	8 Lug Terminal Strip	.15
86-328	Wire Retaining Terminal	.03
86-334	Terminal (4 used on 52-1076)	.10
95-2136	Output Transformer	
95-2137	Output Transformer.	
212-27	Silicon Rectifier	2.00
S-62599	Cable & Phono Plug Assembly	

CHASSIS 3L04
LATER PRODUCTION

PART NO.	DESCRIPTION	PRICE
22-3	.01 Mfd Disc Capacitor 500 V (2 required)	.30
22-12	.0015 Mfd Disc Capacitor 500 V (2 required)	.25
22-13	.0033 Mfd Disc Capacitor 500 V (2 required)	.25
22-17	.001 Mfd Disc Capacitor 1000 V (2 required)	.25
22-21	2 x .001 Mfd Disc Capacitor 500 V	.40
22-2569	.047 Mfd Capacitor 600 V (2 required)	
22-2782	.1 Mfd Capacitor 600 V	.45
22-3327	30 Mmf Disc Capacitor 500 V (2 required)	.25
22-3859	Dual Electrolytic Capacitor 100/50 V 10/25V	2.25
22-5191	Electrolytic Capacitor	
24-1201	Control Cover (used with 63-5122)	.25
43-519	Socket Contact Housing	.20
52-979	Two Conductor Shielded Lead	
52-1109	Four Conductor Cable	
52-1125	Four Conductor Cable	
54-139	3/8-32 x 9/16 Palnut (1 used on each 63-5122, 63-5123 and 63-5124)	.03
63-1786	1 K Ohm Resistor 1/2 W 20% (2 required)	.17
63-1799	2200 Ohm Resistor 1/2 W 10%	.17
63-1814	4700 Ohm Resistor 1/2 W 10%	.17
63-1870	100 K Ohm 1/2 W 20% (2 required)	.17
63-1876	150 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-1880	180 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-1883	220 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-1884	220 K Ohm Resistor 1/2 W 20% (2 required)	.17
63-1891	330 K Ohm Resistor 1/2 W 20% (2 required)	.17
63-1925	2.2 Megohm Resistor 1/2 W 10%	.17
63-4843	63 Ohm Resistor 4 W 10%	.65
63-4851	125 Ohm Resistor 4 W 10%	.65
63-5122	Dual Bass Control & Stereo - Monaural Switch	3.50
63-5123	Dual Loudness Control	3.00
63-5124	Dual Treble Control	2.75
63-5196	Fusing Type Resistor	.40
63-6066	820 Ohm Resistor 1 W 10% (2 required)	.25
78-1139	Noval Wafer Socket 12AX7A	.20
78-1156	Noval Molded Socket 7695 - (2 required)	.25
83-2639	Three Lug Terminal Strip	.05
83-2715	Three Lug Terminal Strip	
83-3675	Twelve Lug Terminal Strip	.30
83-3676	Four Lug Terminal Strip	.10
83-4232	Felt Strip	.03
83-5256	Insulating Strip (used on 63-5123)	
86-328	Terminal (5 required)	.03
86-334	Socket Terminal (4 used on 43-519)	.10
93-993	Insulating Washer	.03
93-1183	Fibre Washer (4 required)	.03
94-1171	Insulating Bushing (3 required)	.10
95-1956	Audio Output Transformer (2 required)	3.00
114-26	8-18 x 1/4 x 1/4 AF Hex Hd Self-Tapping Screw - Statuary Bronze (1 mounts each 95-1956)	.03
125-26	Rubber Grommet (4 required)	
199-198	Shielded Sleeve	.05
199-350	Spacer Sleeve (1 used on each 94-1171)	.03
212-27	Silicon Rectifier	2.00
S-59959	AC Plug & Bracket Assembly	.40

CHASSIS 4NT20

PART NO.	DESCRIPTION
11-183	AC Line Cord
22-13	.0033 Mf. Disc Capacitor (2 required)
22-3317	.1 Mf. Capacitor - 200V. (2 required)
22-3659	.047 Mf. Capacitor - 400V. (3 required)
22-3896	5 Mf. Electrolytic - 25V. (2 required)
22-4636	Dual Electrolytic Capaci tor
22-5192	300 Mf. Electrolytic Capacitor - 15V. (2 required)
43-519	Socket Contact Housing
52-1222	Four Conductor Cable
52-1223	Two Conductor Shielded Lead
54-384	4-40 Palnut Cadmium (1 used on each 114-940)
58-214	Single Prong Plug (2 part of S-69705)

PART NO.	DESCRIPTION	PRICE
63-1862	68K ohm Resistor - 1/2W. 10% (2 required)	
63-1880	180K ohm Resistor - 1/2W. 10% (2 required)	
63-1925	2.2 megohm Resistor - 1/2W. 10% (2 required)	
63-5440	Voltage Dependent Resistor (2 required)	
63-6042	220 ohm Resistor - 1W. 10% (2 required)	
63-6119	15K ohm Resistor - 1W. 10%	
63-6380	Dual Tone Control	
63-6405	175 ohm Fusing Type Resistor	
63-6407	Control - Loudness - Balance (2 required)	
79-174-10	No. 18 Sleeving - Yellow - 1 1/4"	
79-209-10	No. 22 Sleeving - Yellow - 1 1/4" (part of S-67794)	
79-210-10	No. 22 Sleeving - Green - 1 1/4" (part of S-67794)	
79-211-10	No. 22 Sleeving - Blue - 1 1/4" (part of S-67794)	
83-2965	7 Lug Terminal Strip (2 required)	
83-3265	5 Lug Terminal Strip	
83-3937	7 Lug Terminal Strip	
83-4871	Transistor Insulating Strip (part of S-67794)	
86-328	Terminal - Wire Retaining	
86-334	Socket Terminal (4 used on 43-519)	
90-699	Spacer Sleeve (1 used on each 94-1171)	
94-1171	Insulating Bushing (2 required)	
94-1287	Shoulder Bushing (2 part of S-67794)	
95-2341	Output Transformer (2 required)	
114-940	4-40 x 5/16 x 3/16 AF Hex Hd. Mach. Screw - Cadmium (2 mount each S-67794)	
121-314	Transistor - Driver (2 required)	
125-140	Strain Relief Grommet (1 used on 11-183)	
212-58	Rectifier	
205-51	Heat Conductive Grease (furnished as part of S-67794)	
S-67794	Power Transistor Kit Assembly - 121-315 (2 required)	
S-69705	Phono Input Cable Assembly	

CHASSIS 4NT22 & 5NT20

PART NO.	DESCRIPTION	PRICE
11-87	Line Cord & Plug	
22-14	.0047 Mf. Disc Capacitor	.25
22-18	.0022 Mf. Disc Capacitor	.25
22-2884	5 Mf. Electrolytic Capacitor - 12V. (2 required)	1.50
22-3994	500 Mf. Electrolytic Capacitor - 15V.	1.75
22-4097	.022 Mf. Mylar Capacitor - 200V.	
22-4182	.33 Mf. Mylar Capacitor - 200V.	
22-5171	180 Mf. Electrolytic Capacitor - 6V.	
22-5172	500 Mf. Electrolytic Capacitor - 6V.	
22-5173	Dual Electrolytic Capacitor	
44-519	Socket Contact Housing	.20
52-1218	Phono Cable & Plug	
52-1219	Three Conductor Cable	
63-1701	10 ohm 1/2 Watt 10%	
63-1705	12 ohm Resistor - 1/2W. 10% (2 required)	
63-1750	150 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1768	390 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1771	470 ohm Resistor - 1/2W 10%	.17
63-1775	560 ohm Resistor - 1/2W. 10%	.17
63-1785	1K ohm Resistor - 1/2W. 10%	
63-1813	4700 ohm Resistor - 1/2W. 10%	
63-1718	5600 ohm Resistor - 1/2W. 10% (2 required)	
63-1831	12K ohm Resistor - 1/2W 10%	
63-1866	82K ohm Resistor - 1/2W. 10%	.17
63-1869	100K ohm Resistor - 1/2W. 10%	
63-1946	6.8 megohm Resistor - 1/2W. 10%	
63-5951	1.5 ohm Resistor - 1W. 10% (2 required)	
63-6319	Tone Control	
63-6379	Volume Control	
79-174-18	No. 18 Sleeving - Yellow - 2 1/4"	
83-2964	Six Lug Terminal Strip	
83-5286	Eight Lug Terminal Strip	
83-5325	Seventeen Lug Terminal Strip	
85-889	Battery Switch	
86-334	Socket Terminal (3 used on 43-519)	.10
90-697	Spacer (2 used on 85-889)	
95-2336	Driver Transformer	
95-2337	Power Transformer	
114-47	6-20 x 7/16 x 1/4 AF Hex Hd. Self-Tap. Screw - Statuary Bronze (2 mount 85-889)	.03
121-400	Transistor - Capacity Multiplier	
121-401	Transistor - Output - Matched Pair	
121-408	Transistor Pre-Amp.	
121-409	Transistor - Driver	
125-140	Strain Relief Grommet	.10
136-64	Fuse - 1/4 Amp.	
212-27	Rectifier	2.00

CHASSIS 6L01
LATER PRODUCTION

PART NO.	DESCRIPTION	PRICE
12-3385	Tuner Bracket	.40
12-4199	Support Bracket	.20
17-170	Cable Clamp	.06
19-238	Coil Mounting Clip (1 pt. of ea. S-52362 & S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mfd Disc Capacitor - 500 V (9 required)	.30
22-5	100 Mmf Disc Capacitor - 500 V	.25
22-9	100 Mmf Disc Capacitor - 500 V 10%	.25
22-14	.0047 Mfd Disc Capacitor - 500 V	.25
22-16	470 Mmf Disc Capacitor - 500 V (2 required)	.25
22-17	.001 Mmf Disc Capacitor - 1000 V	.25
22-18	.0022 Mfd Disc Capacitor - 500 V	.25
22-21	2x.001 Mmf Disc Capacitor 500 V (used on S-52362)	.40
22-1888	.001 Mfd Ceramic Capacitor - 500 V (used on S-62887)	.25
22-2569	.047 Mfd Capacitor - 600 V (2 required)	.40
22-2732	Feed-Thru Capacitor - 500 V (4 required)	.30
22-3456	2x12 Mmf Disc Capacitor - 500 V (used on S-64580)	.30
22-3621	22 Mmf Disc Capacitor - 500 V (used on S-64580)	.25
22-3627	.047 Mfd Capacitor - 100 V	.35
22-3675	10 Mmf Disc Capacitor - 500 V (used on S-64580)	.25
22-3939	26 Mmf Disc Capacitor - 500 V (used on S-62887)	
22-3961	Variable Capacitor	
24-1239	Tuner Cover	
26-862	Dial Scale	
43-519	Socket Contact Housing (used on 52-996)	.20
43-570	Socket Contact Housing (Male)	.45
52-1109	Four Conductor Cable	
54-139	3/8-32 x 9/16 Palnut - Cadmium (used on 85-802)	.03
56-426	Roll Pin (4 used on 76-1398)	.05
56-512	Roll Pin (2 used on 76-1399)	
57-4806	Dial Background Plate	
58-214	Single Prong Plug (2 pt. of S-54511)	.10
59-653	Dial Pointer	
63-1740	82 Ohm Resistor 1/2 W 10% (used on S-52362)	.17
63-1779	680 Ohm Resistor 1/2 W 20% (3 required)	.17
63-1786	1000 Ohm Resistor 1/2 W 20%	.17
63-1814	4700 Ohm Resistor 1/2 W 20%	.17
63-1842	22 K Ohm Resistor 1/2 W 20% (2 required)	.17
63-1856	47 K Ohm Resistor 1/2 W 20%	.17
63-1859	56 K Ohm Resistor 1/2 W 10% (used on S-64580)	.17
63-1870	100K Ohm Resistor 1/2 W 20%	.17
63-1876	150K Ohm Resistor 1/2 W 10% (2 required)	.17
63-1891	330K Ohm Resistor 1/2 W 20%	.17
63-1912	1 Megohm Resistor 1-2 W 20% (2 required)	.17
63-1926	2.2 Megohm Resistor 1/2 W 20% (2 required)	.17
63-1939	4.7 Megohm Resistor 1/2 W 10%	.17
63-4199	2200 Ohm Resistor 1/4 W 10%	.17
63-4283	220K Ohm Resistor 1/4 W 10%	.17
63-4519	2.7 Ohm Resistor 1/2 W 10%	
63-5238	300 Ohm Resistor 10 W 10%	
76-1398	Drive Shaft - Tuner	
76-1399	Extension Shaft - Tuner	
76-1403	Guide Shaft	
78-1099	Three Contact Socket	.20
78-1314	Wafer Socket (12AU6 - 12BA6) (3 required)	.20
78-1357	Wafer Socket (12BE6)	
78-1364	Noval Wafer Socket (12DT8)	
78-1590	Wafer Socket (12AL5)	
80-209	Drive Cord Tension Spring	.03
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-2612	Two Lug Terminal Strip	.05
83-3561	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (1 pt. of ea. S-57222)	.20
83-4086	Insulating Strip	.03
83-4751	Special Terminal Strip	
83-5256	Insulating Strip (used on 85-802)	
85-802	Bandswitch	
86-328	Wire Retaining Terminal (3 required)	.03
86-370	Socket Terminal (5 required)	.03
90-664	Spacer Sleeve (4 required)	
93-993	Bakelite Washer (used on 85-802)	.03
94-613	Iron Core Busingh (2 required)	.10
94-976	Insulating Bushing (4 required)	.05
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer (FM) (2 required)	
95-2120	1st I.F. Transformer (FM)	
103-47	Diode	3.75
105-42	R/C Network	.50
105-79	Integnet	
113-8	6-32 x 1/4 x 1/4 Hex Hd Mach Screw - Steel - Internal Lockwasher Attached (3 mt. 22-3961)	.03
114-809	8-18 x 3/16 Hex Hd Self-Tapping Screw - Statuary Bronze (2 used on ea. S-64123, S-64124 & 57-4806)	.03
126-937	Tube Shield & Base	.10
126-1031	Tube Shield & Base	
126-1063	Shield	
149-211	Iron Core (pt. S-61505)	.10
149-311	Ferrite Sleeving	
149-335	Iron Core & Spring	
149-336	Iron Core & Spring	
188-232	Retaining Ring (4 required)	.03

PART NO.	DESCRIPTION	PRICE
199-381	Shielded Paper Sleeve	
S-52362	FM Antenna Coil	.60
S-54511	Shielded Lead & Plug	1.25
S-57222	Pointer Support Strip & Ring (2 required)	
S-61505	AM Oscillator Coil & Wire	1.00
S-62836	Drive Cord & Eyelet 25 3/8"	
S-62887	FM Detector Coil	
S-63622	Drive Cord & Eyelet 7"	
S-63623	Drive Cord & Eyelet 13"	
S-63625	Drive Cord & Eyelet 35"	
S-64123	Bracket & Pulley - L.H.	
S-64124	Bracket & Pulley - R.H.	
S-64572	Loop Loading Coil	
S-64580	FM Oscillator Coil	

CHASSIS 6L01Z1

PART NO.	DESCRIPTION	PRICE
12-3385	Tuner Bracket	.40
12-4199	Support Bracket	.20
17-170	Cable Clamp	.10
19-238	Coil Mounting Clip (1 pt. of each S-52362 & S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mf. Disc Capacitor - 500V. (9 required)	.30
22-5	100 Pf. Disc Capacitor - 500V.	.25
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-14	.0047 Mf. Disc Capacitor - 500V.	.25
22-16	470 Pf. Disc Capacitor - 500V. (2 required)	.25
22-17	.001 Mf. Disc Capacitor - 1000V. (2 required)	.25
22-18	.0022 Mf. Disc Capacitor - 500V.	.25
22-1888	.001 Mf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2569	.047 Mf. Capacitor - 600V. (2 required)	.40
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (4 required)	.30
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-64580)	.30
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3627	.047 Mf. Capacitor - 100V.	.35
22-3675	10 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-3961	Variable Capacitor	3.75
24-1239	Tuner Cover	.35
26-1075	Dial Scale	
43-519	Socket Contact Housing (used on 52-1109)	.20
43-570	Socket Contact Housing (Male)	.45
52-1109	Four Conductor Cable	.75
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (used on 85-802)	.03
56-426	Roll Pin (4 required)	.05
56-512	Roll Pin (2 required)	.03
57-4806	Dial Background Plate	.25
58-214	Single Prong Plug (2 pt. of S-54511)	.10
59-654	Dial Pointer	
63-1740	82 ohm Resistor 1/2W. 10% (used on S-52362)	.17
63-1779	680 ohm Resistor - 1/2W. 20% (3 required)	.17
63-1786	1000 ohm Resistor - 1/2W. 20%	.17
63-1814	4700 ohm Resistor 1/2W. 20%	.17
63-1842	22K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1856	47K ohm Resistor - 1/2W. 20%	.17
63-1859	56K ohm Resistor 1/2W. 10% (used on S-64580)	.17
63-1870	100 ohm Resistor 1/2W. 20%	.17
63-1876	150K ohm Resistor 1/2W. 10% (2 required)	.17
63-1877	150K ohm Resistor - 1/2W. 20%	.17
63-1880	180K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-1926	2.2 megohm Resistor - 1/2W. 20% (3 required)	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4283	220K ohm Resistor - 1/4W. 10%	.17
63-4519	2.7 ohm Resistor - 1/2W. 10%	.17
63-5238	300 ohm Resistor - 10W. 10%	.80
76-1398	Drive Shaft	1.00
76-1399	Extension Shaft	.25
76-1403	Guide Shaft	.10
78-1099	Three Contact Socket	.20
78-1314	Wafer Socket (12AU6) (12BA6) (3 required)	.30
78-1318	Wafer Socket (12BE6)	.35
78-1364	Noval Wafer Socket (12DT8)	.35
78-1590	Wafer Socket (12AL5)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
79-205-8	No. 16 Sleeving - Yellow - 1"	
80-209	Drive Cord Tension	.10
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-2612	Two Lug Terminal Strip	.05
83-3561	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (1 pt. of each S-57222)	.20
83-4086	Insulating Strip	.03
83-4751	Special Terminal Strip	.15
83-5256	Insulating Strip (used on 85-802)	
85-802	Bandswitch	7.25

PART NO.	DESCRIPTION	PRICE
86-328	Wire Retaining Terminal (3 required)	.03
86-334	Socket Terminal (4 used on 52-1109)	.10
86-370	Socket Terminal (1 used on each White, Black Gray, Brown and Red Wire)	.03
90-664	Spacer Sleeve (4 required)	.03
93-993	Bakelite Washer (used on 85-802)	.03
94-613	Iron Core Bushing (2 required)	.10
94-976	Insulating Bushing (4 required)	.05
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st. I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer - FM (2 required)	2.50
95-2120	1st I.F. Transformer (FM)	2.50
103-47	Diode	3.75
105-42	R/C Network	.50
105-79	R/C Network	.50
113-8	6-32 x 1/4 x 1/4 Hex Hd. Mach. Screw-Nickel Plate - Internal Lockwasher Attached (3 used on 22-3961)	.03
114-344	6-20 x 1/4 Hex Hd. Self-Tap. - Screw - Statuary Bronze (2 used on 12-4199)	.03
114-564	8-18 x 5/16 Hex Hd. Self-Tap. - Screw - Statuary Bronze - Flat Washer attached (used on S-64124)	.03
114-809	8-18 x 3/16 Hex Hd. Self-Tap Screw Statuary Bronze (1 used on S-64124, and 2 used on each 57-4806 and S-64123)	.03
126-937	Tube Shield & Base	.10
126-1031	Tube Shield & Base	.10
126-1063	Shield	.15
149-211	Iron Core (part of S-61505)	.10
149-311	Ferrite Sleeve	.10
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25
188-232	Retaining Ring (1 part of each S-57222, and 1 used on each 76-1399)	.03
199-381	Shielded Paper Sleeve	.05
S-52362	FM Antenna Coil Assembly	.60
S-54511	Shielded Lead & Plug Assembly	1.25
S-57222	Pointer Support Strip & Ring Assembly (2 required)	.15
S-61505	AM Oscillator Coil Assembly	1.00
S-62836	Drive Cord & Eyelet Assembly - Approximate 25 3/8"	.15
S-62887	FM Detector Coil Assembly	.60
S-63622	Drive Cord & Eyelet Assembly - Approximate 7 7/8"	.15
S-63623	Drive Cord & Eyelet Assembly - Approximate 13 7/8"	.15
S-63625	Drive Cord & Eyelet Assembly - Approximate 35 5/8"	.15
S-64123	Bracket & Pulley Assembly - LH	.50
S-64124	Bracket & Pulley Assembly - RH	.50
S-64572	Loop Loading Coil Assembly	1.00
S-64580	FM Oscillator Coil Assembly	1.00

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12-3385	Tuner Bracket	.40
12-4199	Support Bracket	.20
17-170	Cable Clamp	.10
19-238	Coil Mounting Clip (1 part of each S-52362 and S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mf. Disc Capacitor - 500V. (9 required)	.30
22-5	100 Pf. Disc Capacitor - 500V.	.25
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-14	.0047 Mf. Disc Capacitor . 500V.	.25
22-16	470 Pf. Disc Capacitor - 500V. (2 required)	.25
22-17	.001 Mf. Disc Capacitor - 1000V. (2 required)	.25
22-18	.0022 Mf. Disc Capacitor - 500V.	.25
22-1888	.001 Mf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2569	.047 Mf. Capacitor - 600V. (2 required)	.40
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (4 required)	.30
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-64580)	.30
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3627	.047 Mf. Capacitor - 100V.	.35
22-3675	10 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-3961	Variable Capacitor	3.75
24-1239	Tuner Cover	.35
26-1076	Dial Scale	
43-519	Socket Contact Housing (used on 52-1109)	.20
43-570	Socket Contact Housing (male)	.45
52-1109	Four Conductor Cable	.75
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (used on 85-802)	.03

PART NO.	DESCRIPTION	PRICE
56-426	Roll Pin (4 required)	.05
56-512	Roll Pin (2 required)	.03
57-4806	Dial Background Plate	.25
58-214	Single Prong Plug (2 part of S-54511)	.10
59-654	Dial Pointer	
63-1740	82 ohm Resistor 1/2W. 10% (used on S-52362)	.17
63-1779	680 ohm Resistor 1/2W. 20% (3 required)	.17
63-1786	1000 ohm Resistor 1/2W. 20%	.17
63-1814	4700 ohm Resistor 1/2W. 20%	.17
63-1842	22K ohm Resistor 1/2W. 20% (2 required)	.17
63-1856	47K ohm Resistor 1/2W. 20%	.17
63-1859	56K ohm Resistor 1/2W. 10% (used on S-64580)	.17
63-1870	100K ohm Resistor 1/2W. 20%	.17
63-1876	150K ohm Resistor 1/2W. 10% (2 required)	.17
63-1877	150K ohm Resistor 1/2W. 20%	.17
63-1880	180K ohm Resistor 1/2W. 10% (2 required)	.17
63-1912	1 megohm Resistor 1/2W. 20%	.17
63-1926	2.2 megohm Resistor 1/2W. 20% (3 required)	.17
63-1939	4.7 megohm Resistor 1/2W. 10%	.17
63-4199	2200 ohm Resistor 1/4W. 10%	.17
63-4283	220K ohm Resistor 1/4W. 10%	.17
63-4519	2.7 ohm Resistor 1/2W. 10%	.17
63-5238	300 ohm Resistor 10W. 10%	.80
76-1398	Drive Shaft	1.00
76-1399	Extension Shaft	.25
76-1403	Guide Shaft	.10
78-1099	Three Contact Socket	.20
78-1314	Wafer Socket (12AU6) (12BA6) (3 required)	.30
78-1318	Wafer Socket (12BE6)	.35
78-1364	Noval Wafer Socket (12DT8)	.35
78-1590	Wafer Socket (12AL5)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
79-205-8	No. 16 Sleeving - Yellow - 1"	
80-209	Drive Cord Tension Spring	.10
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-2612	Two Lug Terminal Strip	.05
83-3561	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (1 part of each S-57222)	.20
83-4086	Insulating Strip	.03
83-4751	Special Terminal Strip	.15
83-5256	Insulating Strip (used on 85-802)	
85-802	Bandswitch	7.25
86-328	Wire Retaining Terminal (3 required)	.03
86-334	Socket Terminal (4 used on 52-1109)	.10
86-370	Socket Terminal (1 used on each white, black, gray, brown and red wire)	.03
90-664	Spacer Sleeve (4 required)	.03
93-993	Bakelite Washer (used on 85-802)	.03
94-613	Iron Core Bushing (2 required)	.10
94-976	Insulating Bushing (4 required)	.05
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer - FM (2 required)	2.50
95-2120	1st I.F. Transformer (FM)	2.50
103-47	Diode	3.75
105-42	R/C Network	.50
105-79	R/C Network	.50
113-8	6-32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Nickel Plate - Internal Lockwasher Attached (3 used on 22-2961)	.03
114-564	8-18 x 5/16 Hex Hd. Self-Tap Screw - Statuary Bronze - Flat Washer Attached (used on S-64124)	.03
114-809	8-18 x 3/16 Hex Hd. Self-Tap Screw - Statuary Bronze (1 used on S-64124, and 2 used on each 57-4806 and S-64123)	.03
126-937	Tube Shield and Base	.10
126-1031	Tube Shield and Base	.10
126-1063	Shield	.15
149-211	Iron Core (part of S-61505)	.10
149-311	Ferrite Sleeve	.10
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25
188-232	Retaining Ring (1 part of each S-57222, and 1 used on each 76-1398 and 76-1399)	.03
199-381	Shielded Paper Sleeve	.05
S-52362	FM Antenna Coil Assembly	.60
S-54511	Shielded Lead & Plug Assembly	1.25
S-57222	Pointer Support Strip & Ring Assembly (2 required)	.15
S-61505	AM Oscillator Coil Assembly	1.00
S-62836	Drive Cord & Eyelet Assembly - Approx. 25 3/8"	.15
S-62887	FM Detector Coil Assembly	.60
S-63622	Drive Cord & Eyelet Assembly - Approx. 7 7/8"	.15
S-63623	Drive Cord & Eyelet Assembly - Approx. 13 7/8"	.15
S-63625	Drive Cord & Eyelet Assembly - Approx. 35 5/8"	.15
S-64123	Bracket & Pulley Assembly - LH	.50
S-64124	Bracket & Pulley Assembly - RH	.50
S-64572	Loop Loading Coil Assembly	1.00
S-64580	FM Oscillator Coil Assembly	1.00

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PART NO.	DESCRIPTION	PRICE
12-3385	Tuner Bracket	.40
17-181	Cable Clamp	
19-238	Coil Mounting Clip (part of each S-52362 and S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mfd. Disc Capacitor - 500V. (14 required)	.30
22-5	100 Mmfd. Disc Capacitor - 500V. (2 required)	.25
22-9	100 Mmfd. Disc Capacitor - 500V.	.25
22-13	.0033 Mfd. Disc Capacitor - 500V.	.25
22-14	.0047 Mfd. Disc Capacitor - 500V.	.25
22-16	470 Mmfd. Disc Capacitor - 500V. (3 required)	.25
22-17	.001 Mmfd. Disc Capacitor - 1000V. (2 required)	.25
22-18	.0022 Mfd. Disc Capacitor - 500V.	.25
22-21	2 x .001 Mmfd. Disc Capacitor - 500V. (used on S-52362)	.40
22-1888	.001 Mfd. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2569	.047 Mfd. Capacitor - 600V. (2 required)	.40
22-2732	Feed-Thru Capacitor - 500V. (5 required)	.30
22-3318	.001 Mfd. Disc Capacitor - 25V.	.25
22-3456	2 x 12 Mmfd. Disc Capacitor - 500V. (used on S-64580)	.30
22-3527	.047 Mfd. Capacitor - 200V.	.30
22-3591	.1 Mfd. Capacitor - 200V.	.30
22-3621	22 Mmfd. Disc Capacitor - 500V. (used on S-64580)	.25
22-3626	.22 Mfd. Capacitor - 100V. (2 required)	.50
22-3627	.047 Mfd. Capacitor - 100V.	.35
22-3645	1000 Mmfd. Mica Capacitor - 100V.	.75
22-3675	10 Mmfd Disc Capacitor - 500V. (used on S-64580)	.25
22-3774	2 Mmfd. Disc Capacitor - 500V.	.25
22-3939	26 Mmfd. Disc Capacitor - 500V. (used on S-62887)	
22-3961	Variable Capacitor	
24-1239	Tuner Cover	
26-862	Dial Scale	
43-519	Socket Contact Housing (used on 52-996)	.20
43-570	Socket Contact Housing	.45
52-996	Four Conductor Cable	.65
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (used on 85-800)	.03
56-426	Roll Pin (4 used on 76-1398)	.05
56-512	Roll Pin (2 used on 76-1399)	
57-4806	Dial Background Plate	
58-214	Single Prong (2 part of S-54511)	.10
59-568	Dial Pointer	
63-1740	82 ohm Resistor - 1/2W. 10% (used on S-52362)	.17
63-1744	100 ohm Resistor - 1/2W. 20%	.17
63-1779	680 ohm Resistor - 1/2W. 20% (4 required)	.17
63-1786	1K ohm Resistor - 1/2W. 20%	.17
63-1799	2200 ohm Resistor - 1/2W. 10%	.17
63-1800	2200 ohm Resistor - 1/2W. 20%	.17
63-1824	8200 ohm Resistor - 1/2W. 10%	.17
63-1841	22K ohm Resistor - 1/2W. 10%	.17
63-1842	22K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1852	39K ohm Resistor - 1/2W. 10%	.17
63-1855	47K ohm Resistor 1/2W. 10% (3 required)	.17
63-1856	47K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1859	56K ohm Resistor - 1/2W. 10% (used on S-64580)	.17
63-1869	100K ohm Resistor - 1/2W. 10% (6 required)	.17
63-1883	220K ohm Resistor - 1/2W. 10%	.17
63-1890	330K ohm Resistor - 1/2W. 10%	.17
63-1891	330K ohm Resistor - 1/2W. 20%	.17
63-1897	470K ohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20% (7 required)	.17
63-1926	2.2 megohm Resistor - 1/2W. 20% (3 required)	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-1940	4.7 megohm Resistor - 1/2W. 20%	.17
63-1954	10 megohm Resistor - 1/2W. 20%	.17
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4283	220Kohm Resistor - 1/4W. 10%	.17
63-4851	125 ohm Resistor - 4W. 10%	.65
63-4880	Potentiometer	1.40
76-1398	Drive Shaft - Tuner	
76-1399	Extension Shaft - Tuner	
76-1402	Guide Shaft	
76-1403	Guide Shaft	
78-1099	Three Contact Socket	.20
78-1314	Wafer Socket (12AU6 - 12 BA6) (3 required)	
78-1319	Noval Wafer Socket (19EA8)	
78-1357	Wafer Socket (12BE6)	
78-1591	Noval Wafer Socket (19GQ7)	
78-1595	Noval Wafer Socket (23DT8)	
80-209	Drive Cord Tension Spring	.03
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-1475	Cable Insulating Strip (used on 17-181)	.03
83-1635	Insulating Strip (used on 85-800)	.03
83-1693	Two Lug Terminal Strip	
83-2145	Five Lug Terminal Strip (part of S-64261)	.10
83-2307	Four Lug Terminal Strip	.10
83-2612	Two Lug Terminal Strip	.05

PART NO.	DESCRIPTION	PRICE
83-3561	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (1 part of each S-57222)	.20
83-4086	Insulating Strip	.03
83-4751	Special Terminal Strip	
85-800	Bandswitch	
86-328	Wire Retaining Terminal (2 required)	.03
86-334	Socket Terminal (4 used on 52-996)	.10
86-370	Socket Terminal (5 required)	.03
90-664	Spacer Sleeve (4 required)	
93-993	Bakelite Washer (used on 85-800)	.03
94-613	Iron Core Bushing (2 required) (used to mount FM Osc. to Det. Coils)	.10
94-976	Insulating Bushing (4 required) (used to mount FM Osc. to Det. Coils)	.05
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer (FM) (2 required)	2.50
95-2073	Input Mixer Transformer	2.50
95-2076	Doubler Mixer Transformer	4.50
95-2077	Detector Mixer Transformer	3.00
95-2078	Trap Coil Transformer	
95-2120	1st I.F. Transformer (FM)	
103-23	Diode (2 required)	.75
103-34	Diode (2 required)	1.00
103-47	Diode	3.75
105-42	R/C Network	.50
113-10	6 - 32 x 3/16 x 1/4 Hex Hd. (Internal Lockwasher Attached) (3 used on 22-3961)	.03
114-809	8 - 18 x 3/16 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on each S-64123, S-64261 and 57-4806)	.03
126-937	Tube Shield & Base	.10
126-1063	Shield	
126-1067	Tube Shield & Base	
149-211	Iron Core (part of S-61505)	.10
149-335	Iron Core & Spring (used on S-64580 Osc.)	
149-336	Iron Core & Spring (used on S-62887 Det.)	
188-232	Retaining Ring (4 required)	.03
S-52362	FM Antenna Coil Assembly	.60
S-57222	Pointer Support Strip & Ring Assembly (2 required)	
S-61505	AM Oscillator Coil & Wire Assembly	1.00
S-62836	Drive Cord & Eyelet Assembly 25 3/8"	
S-62887	FM Detector Coil Assembly	
S-64123	Bracket & Pulley Assembly - LH	
S-64261	Bracket & Pulley Assembly - RH	
S-63622	Drive Cord & Eyelet Assembly 7"	
S-63623	Drive Cord & Eyelet Assembly 13"	
S-63625	Drive Cord & Eyelet Assembly 35"	
S-64572	Loop Loading Coil Assembly	
S-64580	FM Oscillator Coil Assembly	

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12-3385	Tuner Bracket	.40
12-4199	Support Bracket	.20
17-170	Cable Clamp	.05
19-238	Coil Mounting Clip (1 part of each S-52362 & S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mf. Disc Capacitor - 500V. (14 required)	.30
22-5	100 Pf. Disc Capacitor - 500V. (2 required)	.25
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-13	.0033 Mf. Disc Capacitor - 500V.	.25
22-14	.0047 Mf. Disc Capacitor - 500V.	.25
22-16	470 Pf. Disc Capacitor - 500V.	.25
22-18	.0022 Mf. Disc Capacitor - 500V.	.25
22-1888	1000 Pf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2569	.047 Mf. Capacitor - 600V. (2 required)	.40
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (5 required)	.30
22-3318	.001 Mf. Disc Capacitor - 25V.	.25
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-64580)	.30
22-3537	.047 Mf. Capacitor - 200V.	.30
22-3591	.1 Mf. Capacitor - 200V.	
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3626	.22 Mf. Capacitor - 100V.	.50
22-3627	.047 Mf. Capacitor - 100V.	.35
22-3645	1000 Pf. Mica Capacitor - 100V.	.75
22-3675	10 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3774	2 Pf. Disc Capacitor - 500V.	.25
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-3961	Variable Capacitor	3.75
24-1239	Tuner Cover	.35
26-1075	Dial Scale	
43-519	Socket Contact Housing (used on 52-996)	.20
43-570	Socket Contact Housing	.45
52-996	Four Conductor Cable	.65
52-1242	Two Conductor Shielded Lead	

PART NO.	DESCRIPTION	PRICE
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (used on 85-800)	.03
56-426	Roll Pin (4 required)	.05
56-512	Roll Pin (2 required)	.03
57-4806	Dial Background Plate	.25
58-214	Single Prong Plug (2 used on 52-1242)	.10
59-654	Dial Pointer	
63-1744	100 ohm Resistor - 1/2W. 20%	.17
63-1779	680 ohm Resistor - 1/2W. 20% (4 required)	.17
63-1796	1800 ohm Resistor - 1/2W. 10%	.17
63-1800	2200 ohm Resistor - 1/2W. 20%	.17
63-1835	15K ohm Resistor - 1/2W. 20%	.17
63-1838	18K ohm Resistor - 1/2W. 10%	.17
63-1842	22K ohm Resistor - 1/2W. 20%	.17
63-1852	39K ohm Resistor - 1/2W. 10%.	.17
63-1855	47K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1856	47K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1859	56K ohm Resistor - 1/2W. 10% (used on S-64580)	.17
63-1866	82K ohm Resistor - 1/2W. 10%	.17
63-1869	100K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1873	120K ohm Resistor - 1/2W. 10%	.17
63-1883	220K ohm Resistor - 1/2W. 10%	.17
63-1884	220K ohm Resistor - 1/2W. 20%	.17
63-1890	330K ohm Resistor - 1/2W. 10%	.17
63-1897	470K ohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-1926	2.2 megohm Resistor - 1/2W. 20% (3 required)	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-1940	4.7 megohm Resistor - 1/2W. 20%	.17
63-1954	10 megohm Resistor - 1/2W. 20%	.17
63-4199	2200 ohm Resistor - 1.4W. 10%	.17
63-4283	220K ohm Resistor - 1/4W. 10%	.17
63-4519	2.7 ohm Resistor - 1/2W. 10%	.17
63-4851	125 ohm Resistor - 4W. 10%	.65
63-4880	Potentiometer	1.40
76-1398	Drive Shaft	1.00
76-1399	Extension Shaft	.25
76-1403	Guide Shaft	.10
78-1099	Three Contact Socket	.20
78-1314	Wafer Socket (12AU6) (12BA6) (3 required)	.30
78-1318	Wafer Socket (12BE6)	.35
78-1319	Noval Wafer Socket (19EA8)	.35
78-1591	Noval Wafer Socket (12GZ7)	.35
78-1595	Noval Wafer Socket (12DT8)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
79-205-8	No. 16 Sleeving - Yellow - 1"	
80-209	Drive Cord Tension Spring	.10
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-1693	Two Lug Terminal Strip	.10
83-2307	Four Lug Terminal Strip	.10
83-3265	Five Lug Terminal Strip (part of S-64261)	.10
83-3651	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (part of each S-57222)	.20
83-4086	Insulating Strip	.03
83-4125	Two Lug Terminal Strip	.10
83-4751	Special Terminal Strip	.15
83-5256	Insulating Strip (used on 8 5-800)	
85-800	Bandswitch	5.80
86-328	Wire Retaining Terminal (2 required)	.03
86-334	Socket Terminal (4 used on 52-996)	.10
86-370	Socket Terminal (5 required)	.03
90-664	Spacer Sleeve (4 required)	.03
93-993	Bakelite Washer (used on 85-800)	.03
94-613	Iron Core Bushing (2 required)	.10
94-976	Insulating Bushing (4 required)	.05
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer (FM) (2 required)	2.50
95-2073	Input Mixer Transformer	2.50
95-2076	Doubler Mixer Transformer	4.50
95-2077	Detector Mixer Transformer	3.00
95-2078	Trap Coil Transformer	2.50
95-2120	1st I.F. Transformer (FM)	2.50
103-23	Diode (2 required)	.75
103-47	A.F.C. Diode	3.75
105-42	R/C Network	.50
105-78	R/C Network	1.00
105-79	R/C (used on S-52362)	.50
113-8	6-32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Nickel Plate - Internal Lockwasher Attached (3 used on 22-3961)	.03
114-344	6-20 x 1/4 Hex Hd. Self-Tap Screw - Statuary Bronze (2 used on 12-4199)	.03
114-564	8-18 x 5/16 Hex Hd. Self-Tap Screw - Statuary Bronze - Flat Washer Attached (used on 17-170)	.03
114-809	8-18 x 3/16 Hex Hd. Self-Tap Screw - Statuary Bronze 1 used 64261 & 2 used on 57-4806 & S-64123	.03
126-937	Tube Shield & Base	.10
126-1063	Shield	.15
126-1067	Tube Shield & Base	.10
149-211	Iron Core (part of S-61505)	.10
149-311	Ferrite Sleeve	.10
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25

PART NO.	DESCRIPTION	PRICE
188-232	Retaining Ring (1 pt. of ea. S-57222, & 1 used on ea. 76-1398 & 76-1399)	.03
S-52362	FM Antenna Coil Assembly	.60
S-57222	Pointer Support Strip & Ring Assembly (2 required)	.15
S-61505	AM Oscillator Coil Assembly	1.00
S-62836	Drive Cord & Eyelet Assembly - Approx. 25 3/8"	.15
S-62887	FM Detector Coil Assembly	.60
S-63622	Drive Cord & Eyelet Assembly - Approx. 7 7/8"	.15
S-63623	Drive Cord & Eyelet Assembly - Approx. 13 7/8"	.15
S-63625	Drive Cord & Eyelet Assembly - Approx. 35 5/8"	.15
S-64123	Bracket & Pulley Assembly (LH)	.50
S-64261	Bracket & Pulley Assembly (RH)	.65
S-64572	Loop Loading Coil Assembly	1.00
S-64580	FM Oscillator Coil Assembly	1.00

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54-139	3/8 - 9/16 Palnut - Cadmium (used on 85-800)	.03
56-426	Roll Pin (4 required)	.05
56-512	Roll Pin (2 required)	.03
57-4806	Dial Background Plate	.25
58-214	Single Prong Plug (2 used on 52-1242)	.10
59-654	Dial Pointer	
63-1744	100 ohm Resistor - 1/2W. 20%	.17
63-1779	680 ohm Resistor - 1/2W. 20% (4 required)	.17
63-1796	1800 ohm Resistor - 1/2W. 10%	.17
63-1800	2200 ohm Resistor - 1/2W. 20%	.17
63-1835	15K ohm Resistor - 1/2W. 20%	.17
63-1838	18K ohm Resistor - 1/2W. 10%	.17
63-1842	22K ohm Resistor - 1/2W. 20%	.17
63-1852	39K ohm Resistor - 1/2W. 10%	.17
63-1855	47K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1856	47K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1859	56K ohm Resistor - 1/2W. 10% (used on S-64580)	.17
63-1866	82K ohm Resistor - 1/2W. 10%	.17
63-1869	100K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1873	120K ohm Resistor - 1/2W. 10%	.17
63-1883	220K ohm Resistor - 1/2W. 10%	.17
63-1884	220K ohm Resistor - 1/2W. 20%	.17
63-1890	330K ohm Resistor - 1/2W. 10%	.17
63-1897	470K ohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-1926	2.2 megohm Resistor - 1/2W. 20% (3 required)	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-1940	4.7 megohm Resistor - 1/2W. 20%	.17
63-1954	10 megohm Resistor - 1/2W. 20%	.17
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4283	220K ohm Resistor - 1/4W. 10%	.17
63-4519	2.7 ohm Resistor - 1/2W. 10%	.17
63-4851	125 ohm Resistor - 4W. 10%	.65
63-4880	Potentiometer	1.40
76-1398	Drive Shaft	1.00
76-1399	Extension Shaft	.25
76-1403	Guide Shaft	.10
78-1099	Three Contact Socket	.20
12-3385	Tuner Bracket	.40
12-4199	Support Bracket	.20
17-170	Cable Clamp	.05
19-238	Coil Mounting Clip (1 part of each S-52362 & S-61505)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mf. Disc Capacitor - 500V. (14 required)	.30
22-5	100 Pf. Disc Capacitor - 500V. (2 required)	.25
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-13	.0033 Mf. Disc Capacitor - 500V.	.25
22-14	.0047 Mf. Disc Capacitor - 500V.	.25
22-16	470 Pf. Disc Capacitor - 500V.	.25
22-18	.0022 Mf. Disc Capacitor - 500V.	.25
22-1888	1000 Pf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2569	.047 Mf. Capacitor - 600V. (2 required)	.40
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (5 required)	.30
22-3318	.001 Mf. Disc Capacitor - 25V.	.25
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-64580)	.30
22-3537	.047 Mf. Capacitor - 200V.	.30
22-3591	.1 Mf. Capacitor - 200V.	
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-64580)	.25
22-3626	.22 Mf. Capacitor - 100V.	.50
22-3627	.047 Mf. Capacitor - 100V.	.35
22-3645	1000 Pf. Mica Capacitor - 100V.	.75
22-3675	10 Pf.Disc Capacitor - 500V. (used on S-64580)	.25
22-3774	2 Pf. Disc Capacitor - 500V.	.25
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-3961	Variable Capacitor	3.75
24-1239	Tuner Cover	.35
26-1076	Dial Scale	
43-519	Socket Contact Housing (used on 52-996)	.20
43-570	Socket Contact Housing	.45
52-996	Four Conductor Scale	.65
52-1242	Two Conductor Shielded Lead	

PART NO.	DESCRIPTION	PRICE
78-1314	Wafer Socket (12AU6) (12BA6) (3 required)	.30
78-1318	Wafer Socket (12BE6)	.35
78-1319	Noval Wafer Socket (19EA8)	.35
78-1591	Noval Wafer Socket (12GQ7)	.35
78-1595	Noval Wafer Socket (12DT8)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
79-207-8	No. 16 Sleeving - Yellow - 1"	
80-209	Drive Cord Tension Spring	.10
80-1140	Drive Cord Tension Spring	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
83-1693	Two Lug Terminal Strip	.10
83-2307	Four Lug Terminal Strip	.10
83-3265	Five Lug Terminal Strip (part of S-64261)	.10
83-3561	Cable Retaining Strip	.05
83-3783	Single Lug Terminal Strip	.05
83-3843	Twelve Lug Terminal Strip	.35
83-3862	Pointer Support Strip (1 part of each S-57222)	.20
83-4086	Insulating Strip	.03
83-4125	Two Lug Terminal Strip	.10
83-4751	Special Terminal Strip	.15
83-5256	Insulating Strip (used on 85-800)	
85-800	Bandswitch	5.80
86-328	Wire Retaining Terminal (2 required)	.03
86-334	Socket Terminal (4 used on 52-996)	.10
86-370	Socket Terminal (5 required)	.03
90-664	Spacer Sleeve (4 required)	.03
93-993	Bakelite Washer (used on 85-800)	.03
94-613	Iron Core Bushing (2 required)	.10
94-976	Insulating Bushing (4 required)	.05
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer - FM (2 required)	2.50
95-2073	Input Mixer Transformer	2.50
95-2076	Doubler Mixer Transformer	4.50
95-2077	Detector Mixer Transformer	3.00
95-2078	Trap Coil Transformer	2.50
95-2120	1st I.F. Transformer (FM)	2.50
96-1505	2nd I.F. Transformer (AM)	2.50
103-23	Diode (2 required)	.75
103-47	A.F.C. Diode	3.75
105-42	R/C Network	.50
105-78	R/C Network	1.00
105-79	R/C Network (used on S-52362)	.50
113-8	6 - 32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Nickel Plate - Internal Lockwasher Attached (3 used on 22-2961)	.03
114-344	6 - 20 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 12-4199)	.03
114-564	8 - 18 x 5/16 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (used on 17-170)	.03
114-809	8 - 18 x 3/16 Hex Hd. Self-Tap Screw - Statuary Bronze (1 used on S-64261, and 2 used on each 57-4806 & S-64123)	.03
126-937	Tube Shield & Base	.10
126-1063	Shield	.15
126-1067	Tube Shield & Base	.10
149-211	Iron Core (part of S-61505)	.10
149-311	Ferrite Sleeve	.10
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25
188-232	Retaining Ring (1 part of each S-57222 and 1 used on each 76-1398 & 76-1399)	.03
S-52362	FM Antenna Coil Assembly	.60
S-57222	Pointer Support Strip & Ring Assembly (2 required)	.15
S-61505	AM Oscillator Coil Assembly	1.00
S-62836	Drive Cord & Eyelet Assembly - Approx. 25 3/8"	.15
S-62887	FM Detector Coil Assembly	.60
S-63622	Drive Cord & Eyelet Assembly - Approx. 7 7/8"	.15
S-63623	Drive Cord & Eyelet Assembly - Approx. 13 7/8"	.15
S-63625	Drive Cord & Eyelet Assembly - Approx. 35 5/8"	.15
S-64123	Bracket & Pulley Assembly (LH)	.50
S-64261	Bracket & Pulley Assembly (RH)	.65
S-64572	Loop Loading Coil Assembly	1.00
S-64580	FM Oscillator Coil Assembly	1.00

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12-3385	Tuner Bracket	.40
12-3501	Bottom Plate Mounting Bracket (8 required)	.03
12-3698	Capacitor Mounting Bracket (mounts 22-3864)	.20
12-3888	Dial Background Bracket	.25
12-4006	Chassis Mounting Bracket (LH)	.50
19-238	Coil Mounting Clip (1 part of each S-61505 & S-52362)	.10
19-322	Coil Mounting Clip (2 required)	.05
22-3	.01 Mf. Disc Capacitor - 500V. (9 required)	.30
22-9	.0001 Mf. Disc Capacitor - 500V. (3 required)	.25
22-12	.0015 Mf. Disc Capacitor - 500V.	.25
22-13	.0033 Mf. Disc Capacitor - 500V.	.25
22-17	.001 Mf. Disc Capacitor - 1000V. (3 required)	.25
22-18	.0022 Mf. Disc Capacitor - 500V. (2 required)	.25

PART NO.	DESCRIPTION	PRICE
22-26	2 x .0015 Mf. Disc Capacitor - 500V.	.40
22-1669	100 Pf. Ceramic Capacitor - 500V.	
22-1778	.047 Mf. Capacitor - 500V.	.30
22-1888	.001 Mf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2072	.022 Mf. Capacitor - 400V. (2 required)	
22-2514	9 Pf. Disc Capacitor - 500V. (used on S-62889)	.25
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (4 required)	.30
22-2883	50 Mf. Electrolytic Capacitor - 12V.	1.10
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-62889)	.30
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-62889)	.25
22-3763	.01 Mf. Capacitor - 200V.) (2 required)	.30
22-3808	40 Mf. Electrolytic Capacitor - 400V.	2.50
22-3864	Two Section Variable Capacitor	4.00
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-5159	.047 Mf. Capacitor - 100V. (2 required)	.30
24-1268	Tuner Cover	.50
43-570	Housing (used on 52-996)	.45
43-574	Housing (used with bare, black, orange, green, gray, white, white/black, white/orange & red)	.35
52-996	Four Conductor Cable	.65
52-1113	Two Conductor Shielded Lead	.50
54-139	3/8 - 32 x 9/16 Hex Palnut - Cadmium (1 used on each 63-5268, 63-5269, 63-5270 & 85-808)	.03
56-426	Roll Pin (6 required)	.05
57-3519	Antenna Mounting Plate	.10
63-1740	82 ohm Resistor - 1/2W. 10% (used on S-52362)	.17
63-1743	100 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1758	220 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1778	680 ohm Resistor - 1/2W. 10%	.17
63-1779	680 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1786	1000 ohm Resistor - 1/2W. 20%	.17
63-1820	6800 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1835	15K ohm Resistor - 1/2W. 20%	.17
63-1842	22K ohm Resistor - 1/2W. 20%	.17
63-1852	39K ohm Resistor - 1/2W. 10%	.17
63-1856	47K ohm Resistor - 1/2W. 20%	.17
63-1859	56K ohm Resistor - 1/2W. 10% (used on S-62889)	.17
63-1870	100K ohm Resistor - 1/2W. 20%	.17
63-1876	150K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1883	220K ohm Resistor - 1/2W. 10% (6 required)	.17
63-1884	220K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1890	330K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1911	1 megohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20% (2 required)	.17
63-1915	1.2 megohm Resistor - 1/2W. 10%	.17
63-1933	3.3 megohm Resistor - 1/2W. 20% (2 required)	.17
63-1926	2.2 megohm Resistor - 1/2W. 20%	.17
63-1929	2.7 megohm Resistor - 1/2W. 10%	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4395	2200 ohm Resistor - 10W. 10%	.90
63-4519	2.7 ohm Resistor - 10W. 10%	.17
63-5268	Loudness Control	3.50
63-5269	Bass Control	4.25
63-5270	Treble Control	3.00
63-5715	12K ohm Resistor - 2W. 10%	.34
76-1377	Guide Shaft	.15
76-1451	Drive Shaft	2.00
76-1453	Guide Shaft	.50
78-346	Five Contact Socket	.20
78-1099	Three Contact Socket	.20
78-1323	Wafer Socket (12AU6)	
78-1324	Noval Wafer Socket (12BA6)	
78-1372	Wafer Socket (12BE6)	
78-1373	Noval Wafer Socket (12DT8)	.35
78-1599	Wafer Socket (12BA6)	.30
78-1600	Noval Wafer Socket (6GQ7)	.30
78-1602	Noval Wafer Socket (12AX7A)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
80-1140	Tension Spring (pointer)	.10
80-1188	Tension Spring (gang)	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
80-1763	Retaining Spring (1 part of each S-61711)	.03
83-1475	Armite Strip (2 required)	.03
83-2145	Five Lug Terminal Strip (part of S-66574)	.10
83-2964	Six Lug Terminal Strip	
83-3265	Five Lug Terminal (part of S-64624)	.10
83-3561	Cable Retaining Strip	.05
83-3660	Two Lug Terminal Strip	.03
83-3677	Sixteen Lug Terminal Strip	.40
83-3889	Single Lug Terminal Strip	.05
83-4125	Two Lug Terminal Strip (used on 12-3698)	.10
83-4655	Two Lug Terminal Strip	.05
85-808	Bandswitch	7.25
86-328	Wire Retaining Terminal (2 required)	.03

PART NO.	DESCRIPTION	PRICE
86-389	Terminal (1 used on each bare, black, orange, green, gray, white, white/black, white/ orange & red wire)	.03
86-390	Terminal (4 used on 52-996)	.03
94-613	Iron Core Bushing (2 required)	.10
95-1505	3rd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer (FM)	2.50
95-1919	2nd & 3rd I.F. Transformer - FM (2 required)	2.50
95-1922	2nd I.F. Transformer (AM)	2.50
95-2120	1st I.F. Transformer (FM)	2.50
103-47	AFC Diode	3.75
105-42	R/C Network	.50
113-8	6 - 32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Nickel Plate - Internal Lockwasher Attached (3 used on 22-3864	.03
114-26	8 - 18 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (used on 57-3519)	.03
114-77	6 - 20 x 5/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 12-3698)	.03
114-564	8 - 18 x 5/16 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached(2 used on S-61348)	.03
114-801	8 - 18 x 5/16 x 1/4 Hex Hd. Self-Tap Screw - Statuary Bronze (2 used on each 12-3888, S-64625, S-66574, & S-66575; and 4 used on each 12-4006 & S-64624)	.03
126-937	Tube Shield & Base (3 required)	.10
126-1077	Shield	.15
149-211	Iron Core (used on S-61505)	.10
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25
188-232	Clamping Ring (2 used on 76-1451)	.03
199-171	Shielded Paper Sleeve	.03
S-52362	FM Antenna Coil Assembly	.60
S-61348	Antenna Assembly	2.50
S-61505	AM Oscillator Coil Assembly	1.00
S-61711	Pointer Support Strip & Ring Assembly (2 required)	.10
S-62551	Drive Cord & Eyelet Assembly - Approx. 18 1/2"	.15
S-62887	FM Detector Coil Assembly	.60
S-62889	FM Oscillator Coil Assembly	1.00
S-64624	Chassis Mounting Bracket Assembly (RH)	.50
S-64625	Bracket & Pulley Assembly	.50
S-64643	Drive Cord & Eyelet Assembly - Approx. 10 1/4"	.20
S-64645	Drive Cord & Eyelet Assembly - Approx. 23 5/8"	.20
S-65356	Drive Cord & Eyelet Assembly - Approx. 16"	.15
S-66574	Tone Control Bracket Assembly	.40
S-66575	Bracket & Pulley Assembly	.75

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12-4228	Heat Sink
12-5273	Electrolytic Mtg. Bracket
17-126	Cable Clamp (joins 52-1100 & 52-1103)
17-141	Cable Clamp (used on S-63542)
22-3	.01 Mf. Disc Capacitor
22-14	.0047 Mfd. Disc Capacitor (2 required)
22-17	.001 Mf. Disc Capacitor (2 required)
22-3014	820 Pf. Mica Capacitor (2 required)
22-3034	.05 Mf. Disc Capacitor - 25V. (2 required)
22-3630	.068 Mf. Capacitor - 50V. (2 required)
22-3687	1 Mf. Electrolytic Capacitor - 50V. (2 required)
22-3693	Electrolytic Capacitor
22-3694	.1 Mf. Capacitor - 100V. (4 required)
22-3721	Electrolytic Capacitor (2 required)
22-3896	5 Mf. Electrolytic Capacitor (4 required)
22-4619	2 x 100 Mf. Electrolytic Capacitor
22-4620	Dual Electrolytic Capacitor
22-5167	Electrolytic Capacitor
43-573	Socket Contact Housing
52-1100	Four Conductor Cable
52-1103	Two Conductor Cable
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (1 mounts each 63-6371, 6.3-6372 & 63-6373)
58-238	Three Prong Plug (part of S -63542)
58-246	Two Prong A.C. Plug (part of S-59959)
63-1743	100 ohm Resistor - 1/2W. 10% (2 required)
63-1754	180 ohm Resistor - 1/2W. 10% (2 required)
63-1771	470 ohm Resistor - 1/2W. 10%
63-1785	1K ohm Resistor - 1/2W. 10% (2 required)
63-1799	2200 ohm Resistor - 1/2W. 10% (2 required)

PART NO.	DESCRIPTION	PRICE
63-1820	6800 ohm Resistor - 1/2W. 10% (2 required)	
63-1855	47K ohm Resistor - 1/2W. 10% (4 required)	
63-1862	68K ohm Resistor - 1/2W. 10%	
63-1869	100K ohm Resistor - 1/2W. 10% (2 required)	
63-1880	180K ohm Resistor - 1/2W. 10% (4 required)	
63-1883	220K ohm Resistor - 1/2W. 10% (2 required)	
63-4512	3.9 ohm Resistor - 1/2W. 10% (4 required)	
63-5193	22 Fusing Type Resistor	
63-5652	390 ohm Resistor - 2W. 10%	
63-5656	470 ohm Resistor - 2W. 10%	
63-6017	56 ohm Resistor - 1W. 10%	
63-6049	330 ohm Resistor - 1W. 10% (2 required)	
63-6371	Dual Treble Control	
63-6372	Dual Bass Control and Switch	
63-6373	Dual Loudness Control	
63-6408	1.2 ohm Wire Wound Resistor - 1W. 5% (4 required)	
79-1741-12	No. 18 Sleeving - 1 1/2"	
79-2009-8	Sleeving - Yellow - 1"	
79-2100-8	Sleeving - Green - 1"	
79-2101-8	Sleeving - Blue - 1"	
83-3042	Rubber Strip (3 required)	
83-5052	6 Lug Terminal Strip - Grip Type	
83-5054	Insulating Strip	
83-5256	Insulating Strip	
83-5284	5 Lug Terminal Strip - Grip Type	
83-5291	Insulating Strip	
83-5326	24 Lug Terminal Strip - Grip Type	
83-5327	52 Lug Terminal Strip - Grip Type	
83-5449	7 Lug Terminal Strip	
86-371	Socket Terminal (5 used on 43-573)	
93-993	Insulating Washer (used on 63-6373)	
94-1171	Insulating Bushing (3 required)	
95-2339	Autoformer	
95-2340	Driver Transformer (2 required)	
95-2356	Output Transformer (2 required)	
114-801	8 - 18 x 5/16 x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze (1 mounts each 95-2339 and 95-2340, 4 mount 95-2356)	
114-802	8 - 18 x 5/16 x 1/4 Af. Hex Washer Hd. Self-Tap. Screw - Statuary Bronze (2 mount 12-4228)	
114-816	8 - 18 x 5/16 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (1 mounts each 17-126 & 17-141)	
121-503	Transistor (4 required)	
121-404	Transistor (4 required)	
199-350	Spacer Sleeve (1 used on each 94-1171)	
199-353	Shielded Paper Sleeve	
212-27	Rectifier	
S-59959	AC Plug and Bracket Assembly	
S-63542	Phono Input Cable Assembly	

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PART NO.	DESCRIPTION	PRICE
12-4228	Heat Sink (2 required)	.35
17-126	Cable Clamp (1 joins 52-1103 & 52-1241)	
17-141	Cable Clamp (used on S-53660)	.20
22-14	.0047 Mfd. Disc Capacitor (2 required)	.25
22-17	.001 Mf. Disc Capacitor (2 required)	.25
22-3014	820 Pf. Mica Capacitor - 25V. (2 required)	.35
22-3034	.05 Mf. Disc Capacitor - 25V. (2 required)	.45
22-3630	.068 Mf. Capacitor - 50V. (2 required)	
22-3687	1 Mf. Electrolytic Capacitor - 50V. (2 required)	.90
22-3694	.1 Mf. Capacitor - 100V. (4 required)	.35
22-3721	Electrolytic Capacitor (2 required)	2.25
22-3896	5 Mf. Electrolytic Capacitor (4 required)	1.00
22-4619	2 x 100 Mf. Electrolytic Capacitor	
22-4620	Dual Electrolytic Capacitor	
22-5167	Electrolytic Capacitor	
43-519	Socket Contact Housing	.20
52-1103	Two Conductor Cable	
52-1241	4 Conductor Cable	
54-139	3/8 - 32 x 9/16 Palnut Cadmium (1 mounts each 63-6371, 63-6372 & 63-6373)	.03
58-246	Two Prong AC Plug (part of S-59959)	.15
58-214	Single Prong Plug (2 part of S-53660)	.10
63-1743	100 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1754	180 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1771	470 ohm Resistor - 1/2W. 10%	.17
63-1785	1K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1799	2200 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1820	6800 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1855	47K ohm Resistor - 1/2W. 10% (4 required)	.17
63-1862	68K ohm Resistor - 1/2W. 10%	.17
63-1869	100K ohm Resistor - 1/2W. 10% (2 required)	.17

PART NO.	DESCRIPTION	PRICE
63-1880	180K ohm Resistor - 1/2W. 10% (4 required)	.17
63-1883	220K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1908	820K ohm Resistor - 1/2W. 10%	.17
63-4526	3.9 ohm Resistor - 1/2W. 10%	
63-6017	56 ohm Resistor - 1W. 20%	
63-6049	330 ohm Resistor - 1W. 10%	
63-6371	Dual Treble Control	
63-6372	Dual Base Control & Switch	
63-6373	Dual Loudness Control	
63-6408	1.2 ohm Wire Wound Resistor - 1W. 5% (4 required)	
79-174-12	No. 18 Sleeving - 1/2"	
79-209-8	Sleeving - Yellow - 1" (furnished as part of 121-403)	
79-210-8	Sleeving - Green - 1" (furnished as part of 121-403)	
79-211-8	Sleeving - Blue - 1" (Furnished as part of 121-403)	
83-3042	Rubber Strip (2 required)	
83-5052	6 Lug Terminal Strip - Grip Type	
83-5054	Insulating Strip	
83-5256	Insulating Strip	
83-5326	24 Lug Terminal Strip - Grip Type	
83-5327	52 Lug Terminal Strip - Grip Type	
83-5345	3 Lug Terminal Strip	
86-334	Socket Terminal (3 used on 43-519)	
93-993	Insulating Washer (used on 6 3-6373)	
94-1171	Insulating Bushing (3 required)	
95-2340	Driver Transformer (2 required)	
95-2353	Power Transformer	
114-801	8 - 18 x 5/16 x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze (1 mounts each 95-2340 & 95-2353)	
114-802	8 - 18 x 5/16 x 1/4 Af. Hex Washer Hd. Self-Tap. Screw - Statuary Bronze (1 mounts each 12-4228)	
114-816	8 - 18 x 5/16 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (1 mounts each 17-126 & 17-141)	
121-403	Transistor (4 required)	
121-404	Transistor (4 required)	
199-350	Spacer Sleeve (1 used on each 94-1171)	
199-353	Shielded Paper Sleeve	
205-51	Heat Conductive Grease (furnished as part of 121-403)	
212-27	Rectifier (2 required)	
S-53660	Phono Input Cable Assembly	
S-59959	AC Plug & Bracket Assembly	

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PART NO.	DESCRIPTION	PRICE
22-17	.001 Mf. Disc Capacitor - 1000V.	.25
22-2939	680 Pf. Disc Capacitor - 500V. (2 required)	.25
22-3235	.1 Mf. Capacitor - 400V.	
22-3241	100 Mf. Electrolytic Capacitor (2 required)	1.50
22-3630	.068 Mf. Capacitor - 50V. (2 required)	
22-3878	2000 Mf. Electrolytic Capacitor	6.50
22-3881	1500 Mf. Electrolytic Capacitor	5.00
22-3883	50 Mf. Electrolytic Capacitor	1.25
22-4109	.033 Mf. Capacitor - 200V. (2 required)	
22-4601	.01 Mf. Disc Capacitor - 1000V.	.20
22-5052	500 Mf. Electrolytic Capacitor	2.75
22-5162	Three Section Electrolytic Capacitor	
22-5163	1 Mf. Electrolytic Capacitor - 250V.	
43-333	Three Contact Housing (male)	.20
43-573	Six Contact Housing (Female)	.45
43-574	Nine Contact Housing (Female)	.35
54-579	10-32 x 3/8 x 3/16 Hex Nut - Cadmium (1 used on each 212-62)	.03
62-30	Fuse Holder	.40
63-1715	22 ohm Resistor - 1/2W. 10%	.17
63-1750	150 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1764	330 ohm Resistor - 1/2W. 10%	.17
63-1813	4700 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1824	8200 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1827	10K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-5217	2 ohm Resistor - 10W. 10%	.80
63-5282	.39 ohm Resistor - 5W. 5% (2 required)	.75
63-5367	.43 ohm Resistor - 5W. 5% (2 required)	.75
63-5369	220 ohm Resistor - 5W. 10% (3 required)	.75
63-5638	180 ohm Resistor - 2W. 10% (2 required)	
63-5641	220 ohm Resistor - 2W. 20% (2 required)	.35
63-5961	2.7 ohm Resistor - 1W. 10% (4 required)	.25
63-6442	560 ohm Resistor - 3W. 10%	.45
78-402	Four Contact Socket	.15
78-1223	Three Contact Transistor Socket (2 required)	.35
78-1347	Electrolytic Socket (5 required)	.10
78-1568	Two Contact Transistor Socket (6 required)	.35
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
83-3881	Four Lug Terminal Strip	.20
83-4203	Three Lug Terminal Strip	.05
83-4633	Felt Strip	.03

PART NO.	DESCRIPTION	PRICE
83-5277	Insulating Strip (1 part of each 121-271 & 121-382)	
83-5278	Three Lug Terminal Strip	
83-5284	Five Lug Terminal Strip (6 required)	
83-5291	Insulating Strip (1 used on each 83-5284)	
86-328	Wire Retaining Terminal (2 required)	.03
86-303	Terminal - Male (2 required)	.04
86-389	Terminal - Female (14 required)	.03
93-2	Rivet Washer (2 required)	.03
93-369	No. 10 Internal Shakeproof Lockwasher No. 12.10 (1 used on each 212-62)	.03
93-1179	Rubber Washer	.03
95-2108	Driver Transformer	3.25
95-2217	Driver Transformer	
95-2321	Power Transformer	
113-156	6 - 32 x 9/16 Phillips Pan Hd. Mach. Screw - Cadmium - Internal Lockwasher (2 used on each 121-271 & 121-382)	.03
114-699	10-16 x 3/8 Hex Washer Hd. Self-Tap. Screw - Statuary Bronze (4 used on 95-2321)	.03
114-801	8 - 18 x 5/16 x 1/4 Hex Hd. Self-Tap Screw - Statuary Bronze (4 used on each S-61233)	.03
121-271	Transistor - Driver (2 required)	
121-272	Transistor - Pre Driver (2 required)	
121-382	Transistor - Power (4 required)	
136-61	Fuse - 3 Amp.	.35
212-37	Rectifier	2.75
212-62	Rectifier (2 required)	
205-51	Dow Corning No. 340 Silicon Grease (part of each 121-271 & 121-382)	
S-61233	Heat Sink Assembly (2 required)	4.00

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12-3249	Variable Capacitor Mounting Bracket	.05
12-3888	Dial Background Bracket	.25
12-4006	Chassis Mounting Bracket (LH)	
19-306	Coil Mounting Clip (2 required)	.10
22-3	.01 Mfd. Disc Capacitor - 500V. (13 required)	.30
22-5	100 Mmfd. Disc Capacitor - 500V.	.25
22-7	.001 Mfd. Disc Capacitor - 500V.	.26
22-9	100 Pf. Disc Capacitor - 500V. (2 required)	.25
22-13	.0033 Mfd. Disc Capacitor - 500V. (2 required)	.25
22-17	.001 Mfd. Disc Capacitor - 500V.	.25
22-18	.0022 Mfd. Disc Capacitor - 500V. (5 required)	.25
22-26	2 x .0015 Disc Capacitor - 500V.	.40
22-2072	.022 Mfd. Capacitor - 400V. (2 required)	.26
22-2370	50 Mmfd. Disc Capacitor - 500V.	.25
22-2883	50 Mfd. Electrolytic Capacitor - 12V.	1.10
22-3255	330 Mmfd. Disc Capacitor - 500V. (3 required)	.25
22-3537	.047 Mfd. Capacitor - 200V. (3 required)	.30
22-3618	10 Mfd. Electrolytic Capacitor - 50V.	1.25
22-3763	.01 Mf. Capacitor - 200V. (2 required)	.30
22-3862	Three Section Variable Capacitor	4.50
22-3996	Electrolytic Capacitor	4.50
22-5015	.047 Mf. Capacitor - 200V.	
22-5058	.22 Mfd. Capacitor - 100V.	
22-5159	.047 Mf. Capacitor - 100V. (2 required)	
43-570	Housing	.45
43-574	Housing	.35
52-996	Four Conductor Cable	.65
52-1113	Two Conductor Shielded Cable	.50
52-1114	Two Conductor Shielded Cable	.50
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (4 required)	.03
57-3519	Antenna Mounting Plate	.10
59-622	Dial Pointer	.35
63-1736	68 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1743	100 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1744	100 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1747	120 ohm Resistor - 1/2W. 10%	.17
63-1758	220 ohm Resistor - 1/2W. 20% (4 required)	.17
63-1778	680 ohm Resistor - 1/2W. 10%	.17
63-1785	1000 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1786	1000 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1796	1800 ohm Resistor - 1/2W. 10%	.17
63-1820	6800 ohm Resistor - 1/2W. 10% (4 required)	.17
63-1825	9100 ohm Resistor - 1/2W. 5%	.34
63-1826	10K ohm Resistor - 1/2W. 5%	.34
63-1835	15K ohm Resistor - 1/2W. 20%	.17
63-1841	22K ohm Resistor - 1/2W. 10%	.17
63-1842	22K ohm Resistor - 1/2W. 20%	.17
63-1848	33K ohm Resistor - 1/2. 10% (2 required)	.17
63-1852	39K ohm Resistor - 1/2W. 10%	.17
63-1856	47K ohm Resistor - 1/2W. 20% (3 required)	.17

PART NO.	DESCRIPTION	PRICE
63-1859	56K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1866	82K ohm Resistor - 1/2W. 10%	.17
63-1869	100K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1870	100K ohm Resistor - 1/2W. 20% (3 required)	.17
63-1880	180K ohm Resistor - 1/2W. 10%	.17
63-1883	220K ohm Resistor - 1/2W. 10% (6 required)	.17
63-1884	220K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1890	330K ohm Resistor - 1/2W. 10%	.17
63-1911	1 megohm Resistor - 1/2W. 10% (2 required)	.17
63-1912	1 megohm Resistor - 1/2W. 20% (4 required)	.17
63-1915	1.2 megohm Resistor - 1/2W. 10%	.17
63-1925	2.2 megohm Resistor - 1/2W. 10%	.17
63-1926	2.2 megohm Resistor - 1/2W. 20%	.17
63-1933	3.3 megohm Resistor - 1/2W. 20%	.17
63-1940	4.7 megohm Resistor - 1/2W. 20% (2 required)	.17
63-1954	10 megohm Resistor - 1/2W. 20%	.17
63-4880	Potentiometer	1.40
63-5268	Loudness Control	3.50
63-5269	Bass Control	4.25
63-5270	Treble Control	3.00
63-5272	1250 ohm Resistor 10W. 10% (2 required)	.90
63-5273	4K ohm Resistor - 7W. 10%	.90
63-6091	3300 ohm Resistor - 1W. 10%	.25
63-6122	18K ohm Resistor - 1W. 10%	.25
78-346	Five Contact Socket	.20
78-1099	Three Contact Socket	.20
78-1311	Wafer Socket (12BA6-V6)	.35
78-1333	Noval Wafer Socket (6GQ7)	.35
78-1561	Wafer Socket (12AU6)	.35
78-1562	Noval Wafer Socket (6EA8-12AX7A)	.35
78-1564	Wafer Socket (12BE6)	.35
78-1602	Noval Wafer Socket (12AX7A)	.35
80-1140	Tension Spring (Pointer)	.10
80-1188	Tension Spring (Gang)	.10
80-1763	Retaining Spring (2 part of S-61711)	
83-1475	Armite Strip (3 required)	.03
83-2145	Five Lug Terminal Strip	.10
83-2538	Three Lug Terminal Strip	.10
83-2639	Three Lug Terminal Strip (2 required)	.05
83-3265	Five Lug Terminal Strip (2 required)	.10
83-3561	Antenna Cable Retaining Strip	.05
83-3660	Two Lug Terminal Strip	.03
83-3675	Twelve Lug Terminal Strip	.30
83-3676	Four Lug Terminal Strip	.10
83-4125	Two Lug Terminal Strip	.10
83-4530	Thirteen Lug Terminal Strip	.35
83-4950	Five Lug Terminal Strip	

PART NO.	DESCRIPTION	PRICE
85-808	Bandswitch	7.25
86-312	Terminal	.03
86-389	Terminal (9 required)	.03
86-390	Terminal (4 required)	.03
93-127	Internal Shakeproof Lockwasher (2 required)	.03
93-1522	Spring Washer (Used on 100-325)	.03
94-812	Coil Insert (1 part of each S-54155 & S-54156)	.05
95-1915	1st I.F. Transformer (AM)	2.50
95-1917	3rd I.F. Transformer (AM)	2.50
95-1919	2nd & 3rd I.F. Transformer (FM) (2 required)	2.50
95-1920	Ratio Detector Transformer (FM)	2.50
95-1924	2nd I.F. Transformer (AM)	2.50
95-2073	Input Mixer Transformer (FM)	2.50
95-2076	Doubler Mixer Transformer	4.50
95-2077	Detector Mixer Transformer	3.00
95-2078	Trap Coil	2.50
100-325	Neon Bulb & Wire	1.50
103-23	Diode (2 required)	.75
105-42	R/C Network	.50
105-50	R/C Network	.90
113-8	6 - 32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Internal Lockwasher Attached (2 used on 22-3862, and 1 joins 22-3862 & 83-4125)	.03
114-26	8 - 18 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 12-3249)	.03
114-77	6 - 20 x 5/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 12-3888)	.03
114-564	8 - 18 x 5/16 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (2 join S-54500 & 57-3519)	.03
114-801	8 - 18 x 5/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (15 required)	.03
114-804	8 - 18 x 1/2 Hex Hd. Self-Tap. Screw - Statuary Bronze (4 mount S-66436)	.03
121-302	Transistor	
125-117	Rubber Grommet (4 required)	.03
126-797	Tube Shield (6GQ7)	.10
149-211	Iron Core (2 part of each S-54155 & S-54156)	.10
199-183	Shielded Paper Sleeve	.03
S-54155	AM Oscillator Coil Assembly	1.25
S-54156	Detector Coil Assembly	1.25
S-54500	Antenna Assembly	2.50
S-61711	Pointer Support Strip & Ring Assembly (2 required)	.10
S-64624	Chassis Mounting Bracket Assembly	
S-64625	Bracket & Pulley Assembly	
S-64644	Drive Cord & Eyelet Assembly (Gang)	.20

PART NO.	DESCRIPTION	PRICE
S-65111	Drive Cord & Eyelet Assembly	
S-65173	Drive Cord & Eyelet Assembly	
S-65174	Drive Cord & Eyelet Assembly	
S-66346	FM Tuner Assembly (see FM Tuner Parts List for components)	
S-66574	Tone Control Bracket Assembly	
S-66575	Bracket & Pulley Assembly	

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PART NO.	DESCRIPTION	PRICE
12-3385	Tuner Bracket	.40
12-3799	Coil Support Bracket	.25
12-3842	Antenna Mounting Bracket (2 required)	.25
12-4008	Dial Light Mounting Bracket	
17-135	Cable Clamp	
19-238	Coil Mounting Clip (1 part of each S-52362 & S-50127)	.10
19-322	Coil Mounting Clip (2 used on 12-3799)	.05
20-1144	FM Coil (1 part of each S-62887 & S-62889)	
22-3	.01 Mf. Disc Capacitor - 500V. (11 required)	.30
22-5	100 Pf. Disc Capacitor - 500V. (2 required)	.25
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-13	.0033 Mf. Disc Capacitor - 500V. (3 required)	.25
22-14	.0047 Mf. Disc Capacitor - 500V. (5 required)	.25
22-16	470 Pf. Disc Capacitor - 500V.	.25
22-18	.0022 Mf. Disc Capacitor - 500V. (3 required)	.25
22-1813	.022 Mf. Capacitor - 600V.	.30
22-1852	7.5 Pf. Ceramic Capacitor - 500V.	.25
22-1888	.001 Mf. Ceramic Capacitor - 500V. (used on S-62887)	.25
22-2514	9 Pf. Disc Capacitor - 500V. (used on S-62889)	.25
22-2569	.047 Mf. Capacitor - 600V. (2 required)	.40
22-2655	.01 Mf. Disc Capacitor - 1400V. (used on 63-5232)	.50
22-2732	.001 Mf. Feed-Thru Capacitor - 500V. (5 required)	.30
22-3318	.001 Mf. Disc Capacitor - 25V.	.25
22-3366	1000 Pf. Mica Capacitor - 500V.	.40
22-3456	2 x 12 Pf. Disc Capacitor - 500V. (used on S-62889)	.30
22-3577	.1 Mf. Capacitor - 600V.	.40
22-3621	22 Pf. Disc Capacitor - 500V. (used on S-62889)	.25
22-3626	.22 Mf. Capacitor - 100V.	.50
22-3627	.047 Mf. Capacitor - 100V. (2 required)	.35
22-3694	.1 Mf. Capacitor - 100V.	.35
22-3774	2 Pf. Disc Capacitor - 500V.	.25
22-3809	Variable Capacitor	3.75
22-3859	Electrolytic 10/25 100/50	2.25
22-3939	26 Pf. Disc Capacitor - 500V. (used on S-62887)	.25
22-3971	Electrolytic 60/160 250/150 300/200	5.50
24-1068	Tuner Cover	.50
26-966	Dial Scale	
44-46	Dual Connector Jack (part of S-59722)	.20
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (1 used on each 63-5232, 63-5234, 63-5235 & 85-803)	.03
56-426	Roll Pin (4 required)	.05
56-512	Roll Pin (2 required)	.03
57-5077	Dial Background Plate	
58-209	A.C. Plug (part of S-66709)	.35
58-214	Single Prong Plug (2 parts of S-54511)	.10
59-614	Dial Pointer (2 required)	.25
63-1744	100 ohm Resistor - 1/2W. 20% (3 required)	.17
63-1772	470 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1779	680 ohm Resistor - 1/2W. 20% (2 required)	.17
63-1786	1000 ohm Resistor - 1/2W. 20% (3 required)	.17
63-1796	1800 ohm Resistor - 1/2W. 10%	.17
63-1799	2200 ohm Resistor - 1/2W. 10%	.17
63-1807	3300 ohm Resistor - 1/2W. 20%	.17
63-1835	15K ohm Resistor - 1/2W. 20%	.17
63-1838	18K ohm Resistor - 1/2W. 10%	.17
63-1842	22K ohm Resistor - 1/2W. 20%	.17
63-1852	39K ohm Resistor - 1/2W. 10%	.17
63-1855	47K ohm Resistor - 1/2W. 10%	.17
63-1856	47K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1859	56K ohm Resistor - 1/2W. 10% (used on S-62889)	.17
63-1866	82K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1869	100K ohm Resistor - 1/2W. (2 required)	.17
63-1870	100K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1880	180K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1883	220K ohm Resistor - 1/2W. 10%	.17
63-1891	330K ohm Resistor - 1/2W. 20% (2 required)	.17
63-1894	390K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1897	470K ohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20% (5 required)	.17

PART NO.	DESCRIPTION	PRICE
63-1926	2.2 megohm Resistor - 1/2W. 20% (4 required)	.17
63-1939	4.7 megohm Resistor - 1/2W. 10%	.17
63-1940	4.7 megohm Resistor - 1/2W. 20%	.17
63-1954	10 megohm Resistor - 1/2W. 20%	.17
63-3983	33 ohm Resistor - 5W. 10%	.75
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4828	130 ohm Resistor - 4W. 10%	.65
63-4880	Potentiometer	1.40
63-5232	Dual Loudness Control	3.50
63-5234	Dual Bass Tone Control	3.00
63-5235	Dual Treble Tone Control	3.00
63-5243	Fusing Type Resistor	.50
63-5245	110 ohm Resistor - 3W. 10%	.45
63-5655	470 ohm Resistor - 2W. 20%	.34
63-6007	33 ohm Resistor - 1W. 10% (2 required)	.25
63-6052	330 ohm Resistor - 1W. 10% (2 required)	.25
76-1141	Guide Shaft	.10
76-1399	Extension Shaft	.25
76-1418	Drive Shaft	1.00
78-1156	Molded Socket (7695) (2 required)	.25
78-1314	Wafer Socket (12AU6-12BA6) (3 required)	.30
78-1319	Noval Wafer Socket (19EA8-29GQ7) (2 required)	.35
78-1357	Wafer Socket (12BE6)	.35
78-1365	Noval Wafer Socket (12DT8)	.35
78-1397	Pilot Light Socket & Wire	
78-1562	Noval Wafer Socket (12AX7A)	.35
80-1188	Tension Spring (Gang)	.10
80-1467	Retaining Spring	.05
80-1468	Grounding Spring	.05
80-1718	Tension Spring (pointer)	.15
80-1763	Retaining Spring (1 part of each S-61711)	.03
83-1635	Insulating Strip (1 used on each 63-5232 & 85-803)	.03
83-2715	Three Lug Terminal Strip	.05
83-3265	Five Lug Terminal Strip	.10
83-3670	Six Lug Terminal Strip	.15
83-3671	Five Lug Terminal Strip	.15
83-3674	Seven Lug Terminal Strip (2 required)	.20
83-3676	Four Lug Terminal Strip (3 required)	.10
83-3889	Single Lug Terminal Strip	.05
83-4764	Six Lug Terminal Strip (part of S-66709)	.20
85-803	Bandswitch	4.50
86-255	Spade Terminal	.03
86-312	Terminal	.03
86-328	Wire Retaining Terminal (2 required)	.03
86-413	Terminal & Screw (2 used on S-63474)	.10
90-665	Spacer (2 used on S-59722)	.03
90-667	Spacer (2 used on 63-3252)	.03

PART NO.	DESCRIPTION	PRICE
93-993	Bakelite Washer (1 used on each 63-5232 & 85-803)	.03
93-1183	Fibre Washer (2 used on each 78-1156)	.03
94-613	Iron Core Bushing (2 used on 12-3385)	.10
94-1274	Nylon Bushing (used on S-6-6709)	.10
95-1505	2nd I.F. Transformer (AM)	2.50
95-1718	1st I.F. Transformer (AM)	2.50
95-1866	Discriminator Transformer	2.50
95-1919	Limiter & 2nd I.F. Transformer (FM) (2 required)	2.50
95-1073	Input Coil	2.50
95-2076	Doubler Coil	4.50
95-2077	Detector Coil	3.00
95-2078	Trap Coil	2.50
95-2120	1st I.F. Transformer (FM)	2.50
95-2143	Audio Output Transformer	
95-2229	Autoformer	
95-2232	Audio Output Transformer	
97-607	Chassis Mounting Stud (4 required)	.10
100-249	Pilot Light Bulb (2 required)	.18
103-23	Crystal Diode (2 required)	.75
103-34	Crystal Diode (2 required)	1.35
103-47	Silicon Diode	3.75
105-42	R/C Network	.50
105-78	Integnet	1.00
105-79	Integnet (used on S-52362)	.50
112-1608	8 - 18 5/16 Phillips Pan Hd. Self-Tap. Screw - Black Oxide (2 used on 12-4008)	
113-26	6-32 x 1/4 x 1/4 Hex Hd. Mach. Screw - External Lockwasher (2 used on 12-3799)	.03
113-160	6 - 32 x 11/16 x 1/4 Hex Hd. Mach. Screw - Cadmium - Internal Lockwasher (2 used on 63-5232)	.03
114-26	8 - 18 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 126-1074)	.03
114-352	6 - 20 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on S-59722)	.03
114-594	8 - 18 x 3/8 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (2 used on S-63474)	.03
114-801	8 - 18 x 5/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on each S-63814, S-63815, S-66709, 12-3842, 95-2232, & 95-2143, and 4 used on 57-4644)	.03
125-26	Rubber Grommet (2 used on each 78-1156)	.03
126-937	Tube Shield & Base	.10
126-1065	Shield	.10
126-1074	Chassis Heat Shield	.15
149-211	Iron Core (part of S-50127)	.10

PART NO.	DESCRIPTION	PRICE
149-335	Iron Core & Spring (used on 12-3385)	.25
149-336	Iron Core & Spring (used on 12-3385)	.25
188-232	Clamping Ring (2 required)	.03
199-396	Shielded Paper Sleeve	.05
212-27	Silicon Rectifier	2.00
S-50127	AM Oscillator Coil Assembly	1.25
S-52362	FM Antenna Coil Assembly	.60
S-54511	Shielded Lead & Plug Assembly	1.25
S-5954-1	Drive Cord & Eyelet Assembly	.15
S-5954-3	Drive Cord & Eyelet Assembly	.15
S-59722	Connector Jack & Mounting Strip Assembly	.40
S-61711	Pointer Support Strip & Ring Assembly	.10
S-62887	Detector Coil Assembly (FM)	.60
S-62889	Oscillator Coil Assembly (FM)	1.00
S-63474	Wavemagnet Assembly	1.50
S-63489	Drive Cord & Eyelet Assembly (Pointer)	.15
S-63814	Bracket & Pulley Assembly (LH)	.35
S-63815	Bracket & Pulley Assembly (RH)	.55
S-65475	Record Changer Power Cable Assembly	1.25
S-66709	A.C. Plug Mounting Bracket Assembly	
S-66710	Drive Cord & Eyelet Assembly (Pointer)	

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12-3685	Pulley Bearing Bracket	.50
12-3686	Front Bracket - Indicator Light (3 required)	.10
12-3691	Switch Mounting Bracket	.75
12-3979	Light Reflection Bracket	.75
12-4120	Variable Capacitor Mounting Bracket	
17-149	Cable Clamp	.05
19-238	Coil Mounting Clip (1 part of each S-69164 & S-69165)	.10
19-464	Coil Mounting Clip (part of S-69163)	.05
20-2033	Peaking Coil (2 required)	
22-9	100 Pf. Disc Capacitor - 500V.	.25
22-12	.0015 Mf. Disc Capacitor - 500V. (2 required)	.25
22-13	.0033 Mf. Disc Capacitor - 500V.	.25
22-17	.001 Mf. Disc Capacitor - 1000V. (4 required)	.25
22-18	.0022 Mf. Disc Capacitor - 500V.	.25
22-2424	1.5 Pf. Gimmick Capacitor - 500V.	.20
22-2434	2 Pf. Gimmick Capacitor - 500V.	.25
22-2676	.51 Pf. Disc Capacitor - 500V.	.40
22-2720	1 Pf. Gimmick Capacitor - 500V. (3 required)	.20
22-2726	50 Mf. Electrolytic Capacitor - 10V. (4 required)	1.50
22-2729	.001 Mf. Disc Capacitor - 25V. (2 required)	.25
22-2884	5 Mf. Electrolytic Capacitor - 10V. (2 required)	1.50
22-3010	.01 Mf. Disc Capacitor - 25V. (7 required)	.45
22-3034	.05 Mf. Disc Capacitor - 500V.	.45
22-3255	330 Pf. Disc Capacitor - 500V. (2 required)	.25
22-3362	560 Pf. Disc Capacitor - 500V.	.25
22-3443	.47 Mf. Mylar Capacitor - 50V. (2 required)	
22-3448	10 Mf. Electrolytic Capacitor - 15V.	1.00
22-3527	.22 Mf. Disc Capacitor - 12V.	.40
22-3535	390 Pf. Disc Capacitor - 500V. (2 required)	.25
22-3652	.1 Mf. Disc Capacitor - 10V.	.30
22-3670	2 Mf. Electrolytic Capacitor - 6V. (2 required)	1.00
22-3675	10 Pf. Disc Capacitor - 500V.	.25
22-3687	1 Mf. Electrolytic Capacitor - 50V. (6 required)	.90
22-3826	.022 Mf. Mylar Capacitor - 100V. (7 required)	.30
22-3865	Three Section Variable Capacitor	4.50
22-3891	.0068 Mf. Capacitor - 100V. (4 required)	.30
22-5012	.15 Mf. Mylar Capacitor - 50V.	.40
22-5168	300 Mf. Electrolytic Capacitor - 25V.	
22-5184	.047 Mf. Capacitor - 100V.	
24-1373	Chassis Bottom Cover	
24-1374	Balance & Volume Reflection Cover	
26-993	Dial Scale (FM)	
26-994	Dial Scale (AM)	
26-995	Log Scale	
43-570	Male Contact Housing (6 contact)	.45
43-571	Male Contact Housing (9 contact)	.30
46-4276	Push Button (Push On-Push Off)	
46-4376	Push Button (Tape)	
46-4377	Push Button (FM)	
46-4378	Push Button (AM)	
46-4379	Push Button (FM-AFC)	
46-4380	Push Button (Ext. Bass)	
46-4381	Push Button (Monaural)	
46-5382	Push Button (Stereo)	
46-4383	Push Button (Phono)	
52-1067	Two Conductor Shielded Lead (Bandswitch)	.50
52-1211	Single Conductor Shielded Lead	

PART NO.	DESCRIPTION	PRICE
52-1214	Two Conductor Shielded Lead (used on 43-571)	
52-1215	Two Conductor Shielded Lead	
52-1216	Two Conductor Shielded Lead	
54-139	3/8 - 32 x 9/16 Palnut - Cadmium - Regular Type (1 mounts each 63-5147, 63-5213, 63-5372 & 63-6346)	.03
54-541	Palnut (2 used on 24-1374 and 4 used on 57-5221)	.03
54-633	Transistor Socket Mounting Nut (22 required)	
56-426	Roll Pin (2 used on 94-1344)	.05
57-4431	Indicator Light Backing Plate (3 required)	.05
57-5221	Die-Cast Escutcheon	
59-688	Dial Pointer	
61-256	Tone Control Pulley (3 required)	.30
63-1701	10 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1743	100 ohm Resistor - 1/2W. 10% (5 required)	.17
63-1754	180 ohm Resistor - 1/2W. 10%	.17
63-1757	220 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1761	270 ohm Resistor - 1/2W. 10%	.17
63-1764	330 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1766	360 ohm Resistor - 1/2W. 5% (2 required)	.34
63-1771	470 ohm Resistor - 1/2W. 10% (8 required)	.17
63-1775	560 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1778	680 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1785	1000 ohm Resistor - 1/2W. 10% (9 required)	.17
63-1789	1200 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1792	1500 ohm Resistor - 1/2W. 10%	.17
63-1796	1800 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1799	2200 ohm Resistor - 1/2W. 10% (4 required)	.17
63-1803	2700 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1806	3300 ohm Resistor - 1/2W. 10%	.17
63-1810	3900 ohm Resistor - 1/2W. 10% (5 required)	.17
63-1813	4700 ohm Resistor - 1/2W. 10% (8 required)	.17
63-1817	5600 ohm Resistor - 1/2W. 10%	.17
63-1820	6800 ohm Resistor - 1/2W. 10%	.17
63-1824	8200 ohm Resistor - 1/2W. 10%	.17
63-1825	9100 ohm Resistor - 1/2W. 5%	.34
63-1826	10K ohm Resistor - 1/2W. 5%	.34
63-1827	10K ohm Resistor - 1/2W. 10% (12 required)	.17
63-1831	12K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1834	15K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1838	18K ohm Resistor - 1/2W. 10%	.17
63-1841	22K ohm Resistor - 1/2W. 10% (5 required)	.17
63-1845	27K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1848	33K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1852	39K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1855	47K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1861	68K ohm Resistor - 1/2W. 5%	.34
63-1862	68K ohm Resistor - 1/2W. 10% (4 required)	.17
63-1869	100K ohm Resistor - 1/2W. 10% (3 required)	.17
63-1873	120K ohm Resistor - 1/2W. 10%	.17
63-1876	150K ohm Resistor - 1/2W. 10% (7 required)	.17
63-1897	470K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1898	470K ohm Resistor - 1/2W. 20%	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-1925	2.2 megohm Resistor - 1/2W. 10%	.17
63-1960	15 megohm Resistor - 1/2W. 10% (2 required)	.17
63-4897	2200 ohm Resistor - 3W. 10%	.45
63-5147	Dual Bass Control	2.75
63-5165	Potentiometer	1.40
63-5213	Dual Presence Control	3.00
63-5372	Dual Treble Control	3.00
63-6346	Dual Loudness Control	
63-6375	Thermistor	
63-6376	Potentiometer	
78-1089	Molded Tube Socket	.25
78-1099	Three Contact Socket	.20
78-1416	Dial Light Socket & Wire	
78-1444	Stereo Indicator Light Socket & Wire	
78-1445	Loudness Indicator Light Socket & Wire	
78-1569	Tone Indicator Light & Wire (3 required)	.50
78-1620	Transistor Socket (4 required)	
78-1621	Transistor Socket (18 required)	
80-1188	Tension Spring (Gang)	.10
80-1683	Tone Pulley Tension Spring (3 required)	.20
80-1718	Tension Spring (Pointer)	.15
80-1763	Retaining Spring (1 part of each S-61711)	.03
80-1819	Tuning Tube Retaining Springs	
83-1475	Cable Retaining Strip	.03
83-3829	Two Lug Terminal Strip	.05
83-4543	Center Bar Rubber Strip (3 required)	.03

PART NO.	DESCRIPTION	PRICE
83-4565	Rubber Channel Strip (2 required)	.05
83-4566	Rubber Channel Strip (2 required)	.20
83-4635	Switch Shock Mounting Strip (2 required)	.05
83-4850	Five Contact Strip (part of S-69168)	.35
83-5052	Six Lug Terminal Strip	.20
83-5054	Insulating Strip (used on 83-5052)	.03
83-5075	Two Lug Terminal Strip	.05
83-5152	Trim Strip (Escutcheon)	
83-5268	Eight Lug Terminal Strip	
83-5287	Ten Lug Terminal Strip	
83-5288	Thirteen Lug Terminal Strip (2 required)	
83-5289	Fifteen Lug Terminal Strip	
83-5290	Ninteen Lug Terminal Strip (2 required)	
83-5398	Insulating Strip (AC Switch)	
83-5399	Four Lug Terminal Strip (part of S-69169)	
83-5410	Three Lug Terminal Strip	
85-863	Push Button Bandswitch	
85-864	AC Switch	
86-344	Connector Terminal (used on 78-1416)	.03
86-388	Connector Terminal (2 used on 78-1444)	.05
86-390	Connector Terminal - Male (14 required)	.03
93-1674	Diffusion Washer	
94-1344	Shaft Bushing	
95-2313	Doubler Mixer Transformer	
95-2314	Detector Mixer Transformer	
95-2315	Input Mixer Transformer	
95-2316	Trap Coil	
95-2324	Ratio Detector Transformer	
95-2325	1st I.F. Transformer (AM)	
95-2326	2nd I.F. Transformer (AM)	
95-2327	3rd I.F. Transformer (AM)	
95-2328	2nd & 4th I.F. Transformer (FM) (2 required)	
95-2329	3rd I.F. Transformer (FM)	
100-249	Pilot Light Bulb (9 required)	.18
100-362	Stereo Indicator Bulb	
103-19	Diode	.75
103-23	Diode (3 required)	.75
103-85	Diode	
113-8	6 - 32 x 1/4 x 1/4 Hex Hd. Mach. Screw - Nickel Plate - Internal Shakeproof Lockwasher (3 used on 22-3865)	.03
114-26	8 - 18 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (used on 85-864)	.03
114-344	6 - 20 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on each 12-3979, 126-1050 & 126-1051; 4 used on 12-3685; & 5 used on24-1373)	.03
114-390	8 - 18 x 7/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (6 used on 57-5221)	.03
114-801	8 - 18 x 5/16 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 used on 22-3865; 4 used on each 12-3691, S-69168 & S-69169; and 5 used on 85-863)	.03
114-804	8 - 18 x 1/2 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (4 used on S-69017)	.03
121-272	Transistor - Pre-Amp. (2 required)	1.50
121-273	Transistor - Pre-Amp. (5 required)	.80
121-274	Transistor - Pre-Amp. (2 required)	.80
121-295	Transistor (4 required)	1.20
121-347	Transistor	
121-348	Transistor (5 required)	
121-396	Transistor	
121-397	Transistor - 1N2672 (3 required)	
125-117	Rubber Grommet (4 used on S-69017)	.03
126-1050	Tone Indicator Background Shield	.50
126-1051	Transistor Shield	.50
126-1091	Hum Shield	1.00
126-1128	Radiation Shield	
149-211	Iron Core (1 part of each S-69164 & S-69165)	.10
149-370	Iron Core (part of S-69163)	
171-35	Stereo Indicator Lens	
188-54	Knob Clamping Ring (part of S-69159)	.03
188-120	Knob Clamping Ring (part of S-69160)	.03
188-177	Knob Clamping Ring (1 part of each S-69156 & S-69402)	.03
188-367	Clamping Ring (4 part of S-61712)	.03
192-320	Dial Crystal	.60
199-398	Shielded Paper Sleeve	
S-47742	Drive Cord & Eyelet Assembly (Treble)	.20
S-61709	Idler Pulley Mounting Bracket Assembly	
S-61711	Pointer Support & Ring Assembly (2 required)	.10
S-61712	Tone Indicator & Ring Assembly	3.50
S-61714	Tone Indicator Mounting Bracket Assembly	1.50
S-61727	Drive Cord & Eyelet Assembly (Gang)	.15
S-61728	Drive Cord & Eyelet Assembly (Gang)	.15
S-61729	Drive Cord & Eyelet Assembly (Treble)	.15
S-61730	Drive Cord & Eyelet Assembly (Bass)	.15
S-61731	Drive Cord & Eyelet Assembly (Presence)	.15
S-62371	Drive Cord & Eyelet Assembly (Pointer)	.15

PART NO.	DESCRIPTION	PRICE
S-69017	FM Tuner Assembly (See FM Tuner Parts List for Components)	
S-69047	Dial Plate & Backing Plate Assembly	
S-69156	Knob & Ring Assembly - Bass, Treble & Presence (3 required)	
S-69158	Bracket & Socket Assembly	
S-69159	Knob & Ring Assembly (Loudness)	
S-69160	Knob & Ring Assembly (Balance)	
S-69163	Antenna Coil Assembly (AM)	
S-69164	Oscillator Coil Assembly (AM)	
S-69165	Detector Coil Assembly (AM)	
S-69168	Escutcheon Mounting Bracket Assembly (RH)	
S-69169	Escutcheon Mounting Bracket Assembly (LH)	
S-69402	Knob & Ring Assembly (Tuning)	
S-71172	Shield & Lens Assembly (Bass)	
S-71173	Shield & Lens Assembly (Treble)	
S-71174	Shield & Lens Assembly (Presence)	

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12-4209	Chassis Mounting Bracket (2 required)	
12-4210	Shutter Bracket	
12-4211	Variable Capacitor Mounting Bracket	
12-4254	Bottom Plate Mounting Bracket (6 required)	
19-238	Coil Mounting Clip (1 part of S-69164 & S-69165)	.10
19-326	Cable Retaining Clip	.05
19-464	Coil Mounting Clip (part of S-69163)	.05
20-2033	Peaking Coil (2 required)	
22-3	.01 Mf. Disc Capacitor - (5 required)	.30
22-9	100 Pf. Disc Capacitor	.25
22-13	.0033 Mf. Disc Capacitor	.25
22-18	.0022 Mf. Disc Capacitor (2 required)	.25
22-2434	2 Pf. Gimmick Capacitor	.25
22-2655	.01 Mf. Disc Capacitor - 1400V.	.50
22-2676	.51 Pf. Gimmick Capacitor	.40
22-2720	1 Pf. Gimmick Capacitor (3 required)	.20
22-2729	.001 Mf. Disc Capacitor - 25V. (2 required)	.25
22-2884	5 Mf. Electrolytic Capacitor - 12V. (4 required)	1.50
22-3010	.01 Mf. Disc Capacitor - 25V. (2 required)	.45
22-3034	.05 Mf. Disc Capacitor - 25V. (23 required)	.45
22-3177	390 Pf. Disc Capacitor (2 required)	.25
22-3255	330 Pf. Disc Capacitor (4 required)	.25
22-3362	560 Pf. Disc Capacitor	.25
22-3448	10 Mf. Electrolytic Capacitor - 15V.	1.00
22-3527	.22 Mf. Disc Capacitor - 12V.	.40
22-3595	.33 Mf. Mylar Capacitor - 50V. (4 required)	.60
22-3615	1 Mf. Electrolytic Capacitor - 25V. (2 required)	1.25
22-3630	.068 Mf. Mylar Capacitor - 50V. (2 required)	
22-3652	.1 Mf. Disc Capacitor - 10V.	.30
22-3675	10 Pf. Disc Capacitor	.25
22-3678	.047 Mf. Capacitor - 100V. (2 required)	
22-3710	.22 Mf. Mylar Capacitor - 50V. (2 required)	
22-3826	.022 Mf. Capacitor - 100V. (3 required)	.30
22-3879	1000 Mf. Electrolytic Capacitor - 50V.	3.50
22-4110	.033 Mf. Mylar Capacitor - 200V. (2 required)	
22-4618	Three Section Variable Capacitor	
22-4628	2 x 100 Mf. Electrolytic Capacitor	
22-5011	Electrolytic Capacitor (2 required)	3.25
22-5012	15 Mf. Capacitor - 50V. (2 required)	.40
22-5018	47 Mf. Capacitor - 50V. (6 required)	.60
22-5162	3 Section Electrolytic Capacitor	
22-5168	300 Mf. Electrolytic Capacitor - 25V.	
22-5187	.0047 Mf. Disc Capacitor - 1KV.	
26-1059	Dial Scale - AM (part of S-69377)	
26-1061	Dial Scale - FM (part of S-69377)	
44-48	Connector Jack (4 part of S-69382)	.20
46-4491	Push Button-On-Off & Monaural (2 required)	
52-1103	Two Conductor Cable (used on S-59959)	
52-1212	Two Conductor Shield Lead (used on 69382)	
52-1213	Two Conductor Shielded Lead (used on S-69382)	
54-139	3/8 - 32 x 9/16 Palnut - Cadmium (1 used on each 63-6361, 63-6362, 63-6363 & 85-890)	.03
54-549	Tinnerman Speed Nut (8 mount 192-351)	.03

PART NO.	DESCRIPTION	PRICE
54-633	Transistor Socket Retaining Nut (1 used on each 78-1442, 78-1620 & 78-1621) (20 required)	
57-5377	Chassis Bottom Plate	
58-246	Two Prong Plug - AC - (part of S-59959)	.15
59-718	Dial Pointer	
62-28	Fuse Holder	.40
63-1701	10 ohm Resistor - 1/2W. 10%	.17
63-1736	68 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1743	100 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1750	150 ohm Resistor - 1/2W. 10%	.17
63-1754	180 ohm Resistor - 1/2W. 10%	.17
63-1757	220 ohm Resistor - 1/2W. 10% (4 required)	.17
63-1761	270 ohm Resistor - 1/2W. 10%	.17
63-1764	330 ohm Resistor - 1/2W. 10% (5 required)	
63-1771	470 ohm Resistor - 1/2W. 10% (9 required)	.17
63-1775	560 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1778	680 ohm Resistor - 1/2W. 10% (3 required)	.17
63-1785	1K ohm Resistor - 1/2W. 10% (12 required)	
63-1789	1200 ohm Resistor - 1/2W. 10%	.17
63-1792	1500 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1796	1800 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1799	2200 ohm Resistor - 1/2W. 10% (4 required)	.17
63-1803	2700 ohm Resistor - 1/2W. 10% (2 required)	
63-1806	3300 ohm Resistor - 1/2W. 10%	.17
63-1810	3900 ohm Resistor - 1/2W. 10% (4 required)	.17
63-1813	4700 ohm Resistor - 1/2W. 10% (6 required)	
63-1817	5600 ohm Resistor - 1/2W. 10%	
63-1820	6800 ohm Resistor - 1/2W. 10%	
63-1824	8200 ohm Resistor - 1/2W. 10%	.17
63-1825	9100 ohm Resistor - 1/2W. 5%	
63-1826	10K ohm Resistor - 1/2W. 5%	
63-1827	10K ohm Resistor - 1/2W. 10% (4 required)	.17
63-1831	12K ohm Resistor - 1/2W. 10% (4 required)	
63-1834	15K ohm Resistor - 1/2W. 10%	.17
63-1838	18K ohm Resistor - 1/2W. 10%	
63-1841	22K ohm Resistor - 1/2W. 10%	
63-1845	27K ohm Resistor - 1/2W. 10%	.17
63-1848	33K ohm Resistor - 1/2W. 10% (5 required)	
63-1855	47K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1862	68K ohm Resistor - 1/2W. 10% (4 required)	.17
63-1869	100K ohm Resistor - 1/2W. 10% (3 required)	
63-1870	100K ohm Resistor - 1/2W. 20% (2 required)	
63-1873	120K ohm Resistor - 1/2W. 10%	.17
63-1883	220K ohm Resistor - 1/2W. 10% (2 required)	.17
63-1897	470K ohm Resistor - 1/2W. 10%	.17
63-1912	1 megohm Resistor - 1/2W. 20%	.17
63-4519	2.7 ohm Resistor - 1/2W. 10% (4 required)	.17
63-5165	Potentiometer	1.40
63-5305	.51 ohm Resistor - 5W. 10% (2 required)	.75
63-5635	150 ohm Resistor - 2W. 10%	.34
63-5652	390 ohm Resistor - 2W. 10% (2 required)	
63-5673	1200 ohm Resistor - 2W. 10%	.32
63-6042	220 ohm Resistor - 1W. 10% (2 required)	.25
63-6361	Dual Loudness Control	
63-6362	Dual Bass Control	
63-6363	Dual Treble Control	
63-6375	Thermistor	
63-6376	Potentiometer	
63-6377	50 ohm Resistor - 3W. 10%	
63-6378	.56 ohm Resistor - 5W. 10% (2 required)	
78-402	Four Contact Socket	.15
78-1099	Three Contact Socket	.20
78-1347	Electrolytic Socket (2 required)	.10
78-1429	Triple Light Socket & Wire	
78-1442	Three Contact Transistor Socket (6 required)	
78-1443	Stereo Indicator Light Socket & Wire	
78-1568	Power Transistor Socket - 4 required - (part of S-69387)	.35
78-1620	Four Contact Transistor Socket (4 required)	
78-1621	Three Contact Transistor Socket (10 required)	
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	
80-1140	Tension Spring (Pointer)	.10
80-1188	Tension Spring (Gang)	.10
80-1863	Shutter Bracket Return Spring	
83-3641	5 lug Terminal Strip	.10
83-3652	Three Lug Terminal Strip	.05
83-5277	Insulating Strip - Transistor - (4 required)	.03
83-5284	Five Lug Terminal Strip	
83-5286	Eight Lug Terminal Strip	
83-5288	Thirteen Lug Terminal Strip	
83-5289	Fifteen Lug Terminal Strip (2 required)	
83-5291	Insulating Strip	
83-5307	Pointer Support (2 required)	
83-5308	Support Strip	
83-5309	Thirty Lug Terminal Strip	

PART NO.	DESCRIPTION	PRICE
83-5310	Trim Strip (push button)	
83-5311	Trim Strip (tone control)	
83-5312	Trim Strip (Bandswitch)	
83-5328	Eleven Lug Terminal Strip (2 required)	
83-5329	Rubber Channel Strip (4 used on 182-351)	
83-5399	Four Lug Terminal Strip	
83-890	Five Position Bandswitch	
85-891	A.C. Switch	
85-892	Stereo-Monaural-Switch	
86-328	Wire Retaining Terminal	.03
86-388	Connector Terminal (2 used on 78-1443)	.05
93-1179	Rubber Washer (fuse holder)	.03
95-2313	Doubler Mixer Transformer	
95-2314	Detector Mixer Transformer	
95-2315	Input Mixer Transformer	
95-2316	Trap Coil	
95-2324	Ratio Detector Transformer	
95-2325	1st I.F. Transformer (AM)	
95-2326	2nd I.F. Transformer (AM)	
95-2327	3rd I.F. Transformer (AM)	
95-2328	2nd & 4th I.F. Transformer - FM (2 required)	
95-2329	3rd I.F. Transformer (FM)	
95-2330	Driver Transformer (2 required)	
95-2335	Power Transformer	
100-249	Pilot Light Bulb (3 required)	.18
100-362	Stereo Indicator Bulb	
102-6296	Speaker Label	
102-9748	Fuse Label	
103-23	Diode	.75
103-85	Diode	
105-93	38KC Filter (2 required)	
113-8	6 - 32 x 1/4 x 1/4 Af. Hex Hd. Mach. Screw - Steel N.P. - Internal Shakeproof Lock-washer (6 required)	.03
113-156	6 - 32 x 9/16 Phillips Pan Hd. Mach. Screw - Internal Lock-washer attached (2 mount each 121-295)	.03
114-329	6 - 18 x 3/8" Long x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze (1 mounts each 12-4254)	.03
114-335	8 - 18 x 1/2 x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze (4 joins S-69401 & 27NTZ0 Chassis)	.03
114-344	6 - 20 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (2 mounts S-69372 & 3 mounts 126-1150)	.03
114-654	6 - 20 x 3/8 x 1/4 Hex Hd. Self-Tap. Screw - Statuary Bronze (8 mount S-69387 & 2 mount 85-892)	.03
114-709	8 - 18 x 1 1/8 x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze	.03
114-711	4 - 24 x 7/32 Hex Hd. Self-Tap Screw - Statuary Bronze - Flat Washer attached (1 mounts 12-4210)	.05
114-801	8 - 18 x 5/16 x 1/4 Af. Hex Hd. Self-Tap. Screw - Statuary Bronze (1 joins 27NT20 & S-69401, 4 mount S-71213, 2 mount each 12-4209, 2 mount each 95-2330 & 2 mount 12-4211)	.03
114-804	8 - 18 x 1/2 Hex Hd. Self-Tap. Screw - Statuary Bronze - Flat Washer Attached (4 mount S-69017)	.03
114-864	8-- 18 x 3/8 Hex Washer Hd. Self-Tap. Screw - Statuary Bronze (4 mount 95-2335)	.03
121-273	Transistor - A.G.C. Amp.	.80
121-295	Transistor - FM & AM 1st I.F., FM & AM 2nd I.F. FM 3rd I.F. & FM 4th I.F. (4 required)	
121-305	Transistor - Pre-Driver (2 required)	
121-306	Transistor - Pre-Amp. (2 required)	
121-347	Transistor - Plex Detector	
121-348	Transistor - Comp. Amp., 19KC Amp. Stereo Ind. Control & Gate Control (5 required)	
121-397	Transistor - 2N2672 AM Mixer, AM Osc.& AM RF (3 required)	
121-398	Transistor - Power Output (4 required)	
121-399	Transistor Driver (2 required)	
125-117	Rubber Grommet (4 used on S-69017)	.03
126-1106	Heat Dissipator (2 required)	.10
126-1150	Light Shield	
126-1151	I.F. Shield	
136-40	Fuse - 2 Amp.	.35
149-211	Iron Core (1 part of each S-69164 & S-69165)	.10
149-370	Iron Core (part of S-69163)	
159-153	Trimount Stud (4 part of S-69377)	
188-54	Knob Clamping Ring (part of S-68369)	.03
188-120	Knob Clamping Ring (part of S-69406)	.03
188-177	Knob Clamping Ring (1 part of each S-69402, S-69403 & S-69404)	.03
192-351	Dial Crystal	
199-405	Shielded Paper Sleeve	.05
205-51	Heat Conductive Grease (furnished as part of 121-398)	
212-61	Rectifier (2 required)	
S-59959	A.C. Interlock & Bracket Assembly	.40
S-68369	Knob & Ring Assembly - Lou dness	
S-69017	F.M. Tuner Assembly (see FM Tuner parts list for components)	
S-69163	Antenna Coil Assembly (AM)	
S-69164	Oscillator Coil Assembly (AM)	
S-69165	Detector Coil Assembly (AM)	
S-69377	Dial Scale & Shield Assembly	
S-69382	Tape Jack & Bracket Assembly	

PART NO.	DESCRIPTION	PRICE
S-69387	Heat Sink & Socket Assembly (2 required)	
S-69401	Escutcheon Assembly	
S-69402	Knob & Ring Assembly - Tuning	
S-69403	Knob & Ring Assembly - Bass & Treble (2 required)	
S-69404	Knob & Ring Assembly - Bandswitch	
S-69405	Knob & Ring Assembly - Balance	
S-71057	Drive Cord & Eyelet Assembly (Gang)	
S-71058	Drive Cord & Eyelet Assembly (Gang)	
S-71059	Drive Cord & Eyelet Assembly (Pointer)	
S-71060	Drive Cord & Eyelet Assembly (Pointer)	
S-81213	Control Panel Assembly - Riveting	
S-71214	Bracket & Terminal Strip Assembly - Riveting	

MODEL LPS70C2

22-1814	.0022 Mfd. Molded Capacitor - 600V. (2 required)	.30
22-1843	.01 Mfd. Capacitor - 600V. (2 required)	.30
22-2586	.0015 Mfd. Capacitor - 600V. (2 required)	.25
22-2634	.047 Mfd. Capacitor - 400V. (2 required)	.30
22-2766	47 Mmf. Capacitor - 600V. (2 required)	.70
22-2945	3 Mfd. Electrolytic Capacitor - Non-Pole - 30V. (2 required)	1.25
63-1771	470 ohm Resistor - 1/2W. 10% (2 required)	.17
63-1883	220K ohm Resistor 1/2W. 10% (2 required)	.17
63-2808	68 ohm Resistor 2W. 20%	.34
63-3992	68K ohm Resistor - 1/2W. 10% (2 required)	.17
63-4019	39K ohm Resistor 1/2W. 10% (2 required)	.17
63-4482	100K ohm Resistor - 1/2W. 10% (2 required)	.17
63-4738	2200 ohm Resistor - 1W. 10%	.25
WC-12877	33 ohm Resistor - 1W. 10%	.25
WC-13229	Bass Control (5 megohm)	2.50
WC-13501	Balance Control (1 megohm)	1.40
WC-13800	Treble Control (500K ohm)	2.75
WC-14027	Silicon Rectifier	3.80
WC-15730	Loudness Control	3.50
WC-16435	Electrolytic 150/150 40/150 20/15	3.50
WC-16825	Fusing Type Resistor (95 ohm 3W.)	.50
WC-17270	Output Transformer	3.25

CABINET

WC-11792	4" PM Speaker (2 required)	5.00
WC-12963	6" PM Speaker (2 required)	8.00
WC-13004-A	Catch - Remote Speaker	.75
WC-14183-A	Stud - Remote Speaker	.25
WC-14184-A	Eyelet - Locater (Stud)	.20
WC-14195	Lower Door Bumper	.35
WC-14289	8 - 32 x 7/8 Bolt (2 mount WC-16438-P)	.05
WC-14500	Eyelet	.10
WC-14648-8C	Knob Assembly (Bass - Treble - Volume) (3 required)	.75
WC-14649-8C	Knob Assembly (Balance)	.85
WC-15057	Recessed Nut (1 mounts each Control)	.15
WC-15090-X	Logo (Name) Plate	1.00
WC-15101-9	Support Bumper - Main Cabinet (4 required)	.25
WC-15105-9	Support Bumper - Remote Cabinet (4 required)	.25
WC-15484-A	Eyelet (part of WC-16436-L)	.05
WC-15821	Cable Clamp (3 required)	.05
WC-16226	Lockwasher (1 used on each WC-16380)	.03
WC-16374-C	Hole Button	.25
WC-16380	Hinge Bolt (2 required)	.10
WC-16387	Upper Door Bumper (2 required)	.25
WC-16429	Control Panel	1.25
WC-16436-L	Rear Panel (Remote Cabinet)	2.00
WC-16436-R	Rear Panel (Main Cabinet)	2.00
WC-16438-P	Drawer Handle	1.25
WC-16450-A	Hinge - Remote Speaker (2 required)	.45
WC-16451-9A	Cabinet Handle Assembly	1.50
WC-16458	Audio Cable - Input	1.50
WC-16467	Tee Nut (2 required)	.20
WC-16534-A	Handle Hardware Cap (part of WC-16451-9A	.50
WC-16535-A	Trim Strip 30" Length (part of Cabinet)	.75
WC-16539	Grille Cloth - Master Cabinet	.50
WC-16540	Grille Cloth - Remote Cabinet	.60
WC-16580	Eyelet - Hinge (2 required)	.10
WC-17179-5	External Remote Speaker Cord	.75
WC-17404	Case Assembly With Hardware & Motor Board	
19-414	Line Cord Clip (2 used on WC-16436-R)	.10
102-9738	Tube Layout & Patent Label	
142-142	Dual Pickup Cartridge (Sapphire - Sapphire)	
169-265	Record Changer (See Record Changer Parts List For Components)	
202-2421	Instruction Book	
S-62648	Dual Stylus Assembly (.7 Mil Sapphire & 3 Mil Sapphire) (part of 142-142)	3.50

MODEL MPS90W-1 CHASSIS PARTS

PART NO.	DESCRIPTION	PRICE
63-1722	33 Ohm Resistor 1/2 W 10% (2 required)	.17
63-1736	68 Ohm Resistor 1/2 W 10% (2 required)	.17
63-1757	220 Ohm Resistor 1/2 W 10% (10 required)	.17
63-1792	1500 OHM Resistor 1/2 W 10% (2 required)	.17
63-1897	470 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-2111	1 K Ohm Resistor 1/2 W 10% (3 required)	.17
63-2802	2200 Ohm Resistor 1/2 W 10% (2 required)	.17
63-2844	10 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-2848	22 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-2875	82 K Ohm Resistor 1/2 W 10% (4 required)	.17
63-3174	2700 Ohm Resistor 1/2 W 10% (4 required)	.17
63-3633	4700 Ohm Resistor 1/2 W 10% (4 required)	.17
63-4008	33 K Ohm Resistor 1/2 W 10% (2 required)	.17
63-4482	100 K Ohm Resistor 1/2 W 10% (4 required)	.17
63-4528	4700 Ohm Resistor 1/2 W 5% (4 required)	.17
63-4814	8200 Ohm Resistor 1/2 W 10% (4 required)	.17
63-6052	390 Ohm Resistor 1 W 10% (2 required)	.25
83-2383	3 Lug Terminal Strip (2 required)	.05
83-2514	6 Lug Terminal Strip	.10
83-2612	2 Lug Terminal Strip (3 required)	.05
83-3397	3 Lug Terminal Strip (3 required)	.10
83-4838	4 Lug Terminal Strip (5 required)	.15
964-8895	Spacer-Transistor (8 required)	.03
964-9196	Lockwasher-Transistor (8 required)	.03
964-9197	#6-32 Nut-Transistor (8 required)	.03
964-9241	#6-32 Screw-Transistor (8 required)	.03
964-10545	3/8" Palnut (1 Mts. each control)	.03
964-12550	.01 Mfd Capacitor (2 required)	.20
964-12894	.0022 Mfd Capacitor (2 required)	.20
964-12960	.0047 Mfd Capacitor (2 required)	.25
964-13845	220 Mmfd Capacitor (2 required)	.20
964-14264	Solder Lug (2 required)	.05
964-14481	.02 Mfd Capacitor (2 required)	.30
964-14642	Control - Bass-Treble (2 required)	2.50
964-16312	.05 Mfd Capacitor (6 required)	.40
964-16582	Output Transformer (2 required)	3.60
964-16593	Electrolytic Capacitor 1000/30, 500/30, 200/25, 200/25	4.50
964-16594	Electrolytic Capacitor 250/25, 100/10, 100/10 (2 required)	4.50
964-16598	Transistor-Orange (2 required)	2.55
964-16599	Transistor - Output (4 required)	3.95
964-16684	Mica-Washer-Transistor (4 required)	.05
964-16685	Solder Lug (2 required)	.03
964-16686	Audio Cable	1.50
964-17142	Transistor-Orange (2 required)	2.65
964-17216	Remote Cable (2 required)	.90
964-17220	Transistor Clip (2 required)	.05
964-17443	Rectified (2 required)	1.20
964-17444	Transistor (2 required)	2.05
964-18010	Loudness Control	3.55
964-18011	Balance Control	1.35
964-18021	.1/12 Capacitor (2 required)	.40
964-18022	.22/12 Capacitor (3 required)	.60
964-18023	1/40 Capacitor (4 required)	.80
964-18231	Power Transformer	8.55
964-18232	.47/3 Capacitor (4 required)	.60

CHASSIS S-69017

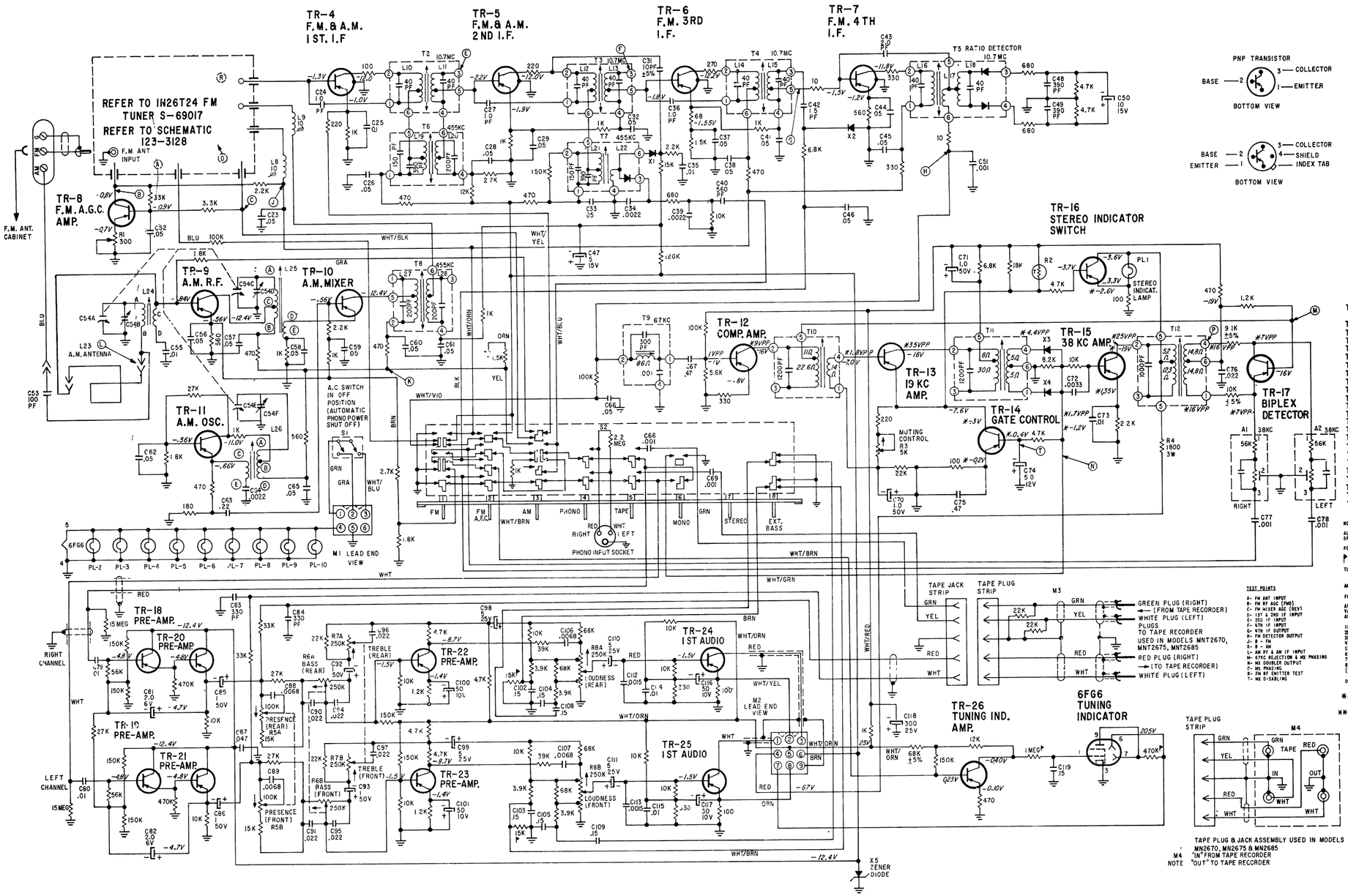
PART NO.	DESCRIPTION	PRICE
12-4192	Tuner Guide Bracket	
12-4193	Coil Mounting Bracket	
19-322	Coil Mounting Clip (4 required)	.05
20-1256	Trap Coil	.50
22-2374	6 Pf. Disc Capacitor	.25
22-2424	1.5 Pf. Gimmick Capacitor	.20
22-2642	15 Pf. Disc Capacitor	.25
22-3258	34 Pf. Disc Capacitor (3 required)	.25
22-3393	.01 Mf. Disc Capacitor - 25V. (6 required)	.25
22-3479	2.2 Pf. Disc Capacitor	
22-3604	5 Pf. Disc Capacitor	.30
22-3621	22 Pf. Disc Capacitor	.25
22-3652	.1 Mf. Disc Capacitor - 10V.	.30
22-4613	Feed-Thru Capacitor (5 required)	
22-5164	1.2 Pf. Gimmick Capacitor	
24-1372	Tuner Cover	
44-48	Antenna Jack	.20
56-426	Roll Pin (4 required)	.05
57-5333	Bearing Plate	
63-4143	100 ohm Resistor - 1/4W. 10%	.17
63-4157	220 ohm Resistor - 1/4W. 10% (3 required)	.17
63-4171	470 ohm Resistor - 1/4W. 10%	.17
63-4178	680 ohm Resistor - 1/4W. 10%	.17
63-4185	1K ohm Resistor - 1/4W. 10%	.17
63-4192	1500 ohm Resistor - 1/4W. 10% (2 required)	.17
63-4199	2200 ohm Resistor - 1/4W. 10%	.17
63-4210	3900 ohm Resistor - 1/4W. 10%	.17
63-4227	10K ohm Resistor - 1/4W. 10%	.17
63-4241	22K ohm Resistor - 1/4W. 10%	.17
63-4283	220K ohm Resistor - 1/4W. 10%	.17
63-4297	470K ohm Resistor - 1/4W. 10%	.17
76-1541	Guide Shaft (2 required)	
76-1542	Drive Shaft	

PART NO.	DESCRIPTION	PRICE
78-1346	Transistor Socket (2 required)	.30
78-1378	Transistor Socket	
79-1741-12	No. 18 Sleeving - Yellow - 1 1/2"	
80-1467	Shaft Retaining Spring	.05
80-1853	Transformer Retaining Spring	
83-3829	2 Lug Terminal Strip	.05
86-331	Insulated Feed-Thru Terminal (3 required)	.05
94-613	Iron Core Bushing (4 used on 12-4192)	.10
95-2322	1st I.F. Transformer (FM)	
103-39	Diode	3.00
113-26	6 - 32 x 1/4 x 1/4 Af. Hex Hd. Mach. Screw - Steel Nickel Plate - External Lockwasher Attached (2 mount 12-4193 & 2 mount 57-5333)	.03

PART NO.	DESCRIPTION	PRICE
121-295	Transistor	
121-383	Transistor	
121-384	Transistor	
126-1141	Coil Shield (Side) (2 required)	
126-1142	Coil Shield (Center)	
149-335	Iron Core & Spring	.25
149-368	Iron Core & Spring (3 required)	
188-232	Retaining Ring (4 used on 94-613)	.03
S-62887	FM Coil Winding Assembly - Detector Coil, Antenna Coil, R.F. Input Coil & Oscillator Coil - (4 required)	
S-69085	Shield & Terminal Strip Assembly	

NOTES

NOTES



TRANSISTOR DESCRIPTION

TR-4 F.M.& A.M. 1ST I.F. (121-295)
TR-5 F.M.& A.M. 2ND I.F. (121-295)
TR-6 F.M. 3RD I.F. (121-295)
TR-7 F.M. 4TH I.F. (121-295)
TR-8 A.G.C. AMP. (121-273)
TR-9 A.M. RF (121-397)
TR-10 A.M. MIXER (121-397)
TR-11 A.M. OSC. (121-397)
TR-12 COMP. AMP. (121-348)
TR-13 19 KC AMP. (121-348)
TR-14 GATE CONTROL (121-348)
TR-15 38 KC AMP (121-348)
TR-16 STEREO INDICATOR SWITCH (121-348)
TR-17 BIPLEX DETECTOR (121-347)
TR-18 PRE AMP. (121-273)
TR-19 PRE AMP. (121-273)
TR-20 PRE AMP. (121-273)
TR-21 PRE AMP. (121-273)
TR-22 PRE AMP. (121-274)
TR-23 PRE AMP. (121-274)
TR-24 1 ST AUDIO (121-272)
TR-25 1 ST AUDIO (121-272)
TR-26 TUNING IND. AMP. (121-396)

NOTES:

ALL RESISTORS ARE 1/2 WATT CARBON, ±10% TOLERANCE UNLESS OTHERWISE SPECIFIED.

FOR CAPACITY TOLERANCES (SEE LEGEND)

▶ INDICATES ±20% TOLERANCE.

TUNING RANGES: 540-1620 KC STD. AM
88-108 MC FM

AMP. MOD. I F FREQ: 455 KC

FREQ. MOD. I F FREQ: 10.7 MC

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH A VACUUM TUBE VOLTMETER. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED. ALL CAPACITOR VALUES IN MFD UNLESS OTHERWISE SPECIFIED.

1ST POSITION F.M.
2ND POSITION F.M.-A.F.C.
3RD POSITION A.M.
4TH POSITION PHONO.
5TH POSITION TAPE
6TH POSITION MONO
7TH POSITION STEREO
8TH POSITION EXT. BASS
(VIEWED FROM FRONT OF CHASSIS)

TEST POINTS
A- FM ANT INPUT
B- FM RF AGC (FWD)
C- FM MIXER AGC (REV)
D- 1ST & 2ND IF INPUT
E- 3RD IF INPUT
F- 4TH IF INPUT
G- 4TH IF OUTPUT
H- FM DETECTOR OUTPUT
J- A - FM
K- B - AM
L- AM RF & AM IF INPUT
M- 67KC REJECTION & MX PHASING
N- MX DOUBLER OUTPUT
P- MX PHASING
R- FM RF EMITTER TEST
T- MX DISABLING

DENOTES CHASSIS ⏚

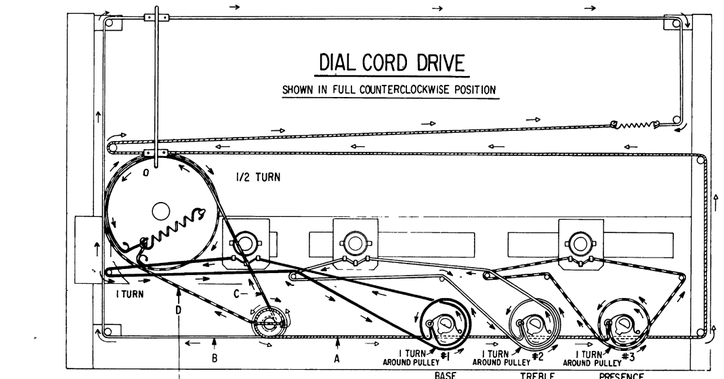
*DENOTES VALUES PRESENT ONLY WITH STEREO SIGNAL. ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.

** ALL CABLE PLUGS AND SOCKETS AS SHOWN ARE LEAD END (REAR) VIEW, FOR AUDIO AND POWER SUPPLY SCHEMATIC, REFER TO 123-312
ALIGNMENT POINTS: (A)

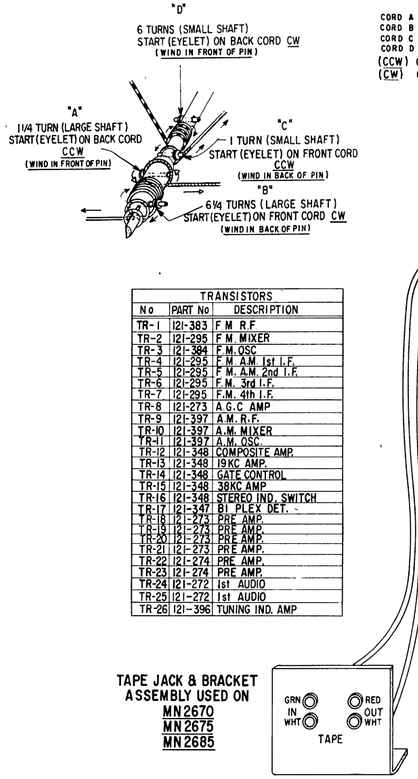
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS.

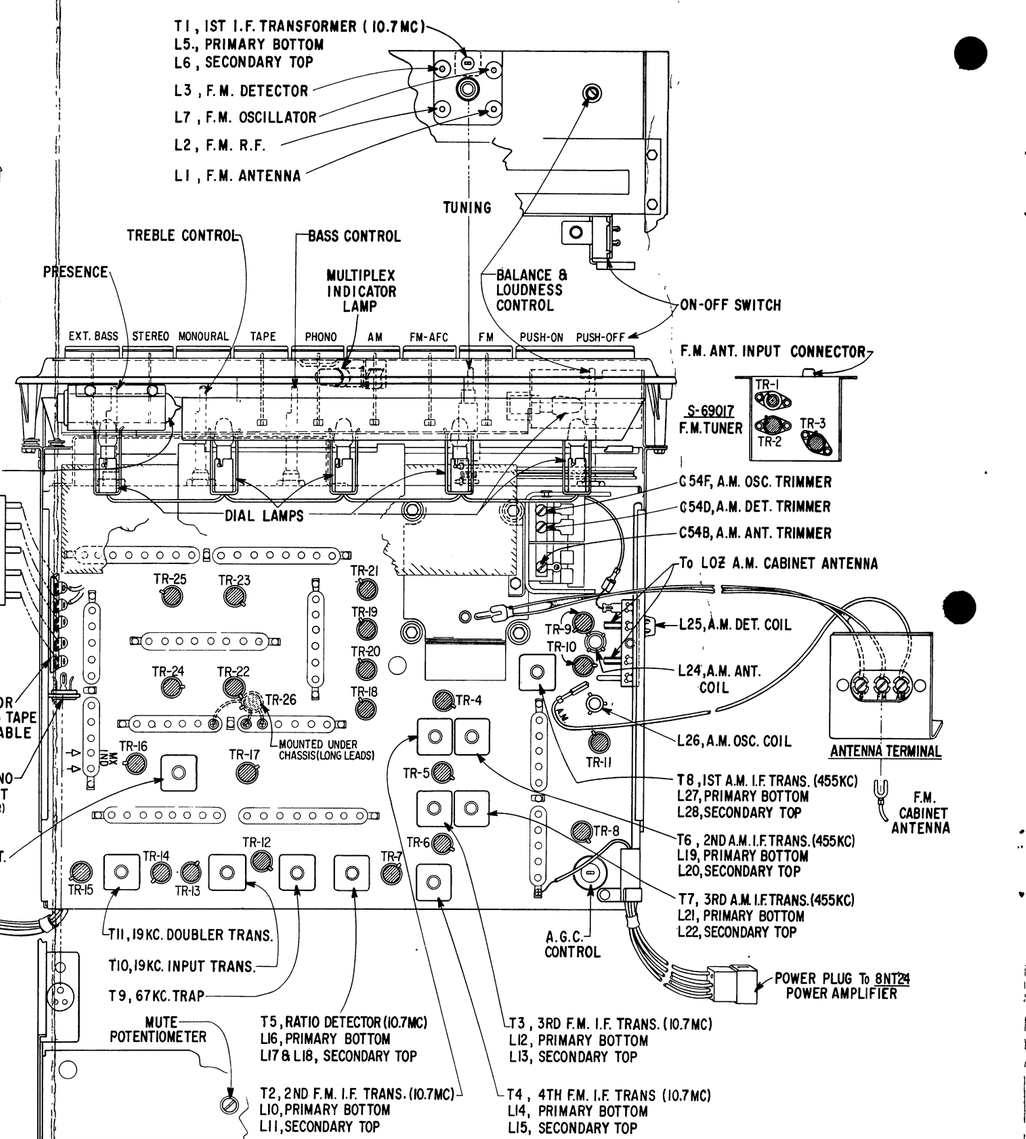
IN26T24 SCHEMATIC

ITEM NO.	PART NO.	DESCRIPTION	
C23	322-20	.05 MFD DISC	25 V
C24	322-47	1.0 PF GIMMICK	500 V
C25	22-3652	0.1 MFD DISC	10 V
C26	322-20	.05 MFD DISC	25 V
C27	322-47	1.0 PF GIMMICK	500 V
C28	322-20	.05 MFD DISC	25 V
C29	322-20	.05 MFD DISC	25 V
C30	322-46	.51 PF GIMMICK	500 V
C31	22-3675	10 PF DISC.	500 V
C32	322-20	.05 MFD DISC	25 V
C33	322-20	.05 MFD DISC	25 V
C34	322-82	.0022 DISC	500 V
C35	322-3	.01 MFD DISC	25 V
C36	322-47	1.0 PF GIMMICK	500 V
C37	322-20	.05 MFD DISC	25 V
C38	322-20	.05 MFD DISC	25 V
C39	322-82	.0022 DISC	500 V
C40	22-3362	560 PF DISC ±10%	500 V
C41	322-20	.05 MFD DISC	25 V
C42	22-44	1.5 PF GIMMICK	500 V
C43	22-2434	2.0 PF GIMMICK	500 V
C44	322-20	.05 MFD DISC	25 V
C45	322-20	.05 MFD DISC	25 V
C46	322-20	.05 MFD DISC	25 V
C47	322-22	5 MFD ELECTROLYTIC	15 V
C48	322-32	390 PF DISC	500 V
C49	322-32	390 PF DISC	500 V
C50	22-3448	10 MFD ELECTROLYTIC	15 V
C51	322-9	.001 MFD DISC	25 V
C52	322-20	.05 MFD DISC	25 V
C53	322-90	100 PF DISC	500 V
C54A		ANTENNA TUNING	
C54B		ANTENNA TRIMMER	
C54C	22-386 5	DETECTOR TUNING	
C54D		DETECTOR TRIMMER	
C54E		OSCILLATOR TUNING	
C54F		OSCILLATOR TRIMMER	
C55	22-511 6	.01 MFD DISC ±10%	25 V
C56	322-20	.05 MFD DISC	25 V
C57	322-20	.05 MFD DISC	25 V
C58	322-20	.05 MFD DISC	25 V
C59	322-20	.05 MFD DISC	25 V
C60	322-20	.05 MFD DISC	25 V
C61	322-20	.05 MFD DISC	25 V
C62	322-20	.05 MFD DISC	25 V
C63	22-3527	.22 MFD DISC	12 V
C64	322-3	.01 MFD DISC	25 V
C65	322-20	.05 MFD DISC	25 V
C66	322-20	.05 MFD DISC	25 V
C67	22-3443	.47 MFD	50 V
C68	322-40	.001 MFD DISC	1000 V
C69	322-40	.001 MFD DISC	1000 V
C70	322-72	1 MFD ELECTROLYTIC	50 V
C71	322-72	1 MFD ELECTROLYTIC	50 V
C72	322-27	.0033 MFD DISC	500 V
C73	322-3	.01 MFD DISC	25 V
C74	322-22	5 MFD ELECTROLYTIC	12 V
C75	22-3443	.47 MFD	50 V
C76	22-3826	.022 MFD	100 V
C77	322-40	.001 MFD DISC	1000 V
C78	322-40	.001 MFD DISC	1000 V
C79	322-3	.01 MFD DISC	25 V
C80	322-3	.01 MFD DISC	25 V
C81	322-26	2 MFD ELECTROLYTIC	6 V
C82	322-26	2 MFD ELECTROLYTIC	6 V
C83	22-3255	330 PF DISC ±10%	500 V
C84	22-3255	330 PF DISC ±10%	500 V
C85	322-72	1 MFD ELECTROLYTIC	50 V
C86	322-72	1 MFD ELECTROLYTIC	50 V
C87	22-5184	.047 MFD ±10%	100 V
C88	22-3897	.0068 MFD ±10%	100 V
C89	22-3897	.0068 MFD ±10%	100 V
C90	22-3826	.022 MFD ±10%	100 V
C91	22-3826	.022 MFD ±10%	100 V
C92	322-72	1 MFD ELECTROLYTIC	50 V
C93	322-72	1 MFD ELECTROLYTIC	50 V
C94	22-3826	.022 MFD ±10%	100 V
C95	22-3826	.022 MFD ±10%	100 V
C96	22-3826	.022 MFD ±10%	100 V
C97	22-3826	.022 MFD ±10%	100 V
C98	322-30	5 MFD ELECTROLYTIC	25 V
C99	322-30	5 MFD ELECTROLYTIC	25 V
C100	322-21	50 MFD ELECTROLYTIC	10 V
C101	322-21	50 MFD ELECTROLYTIC	10 V
C102	322-84	.15 MFD ±10%	50 V
C103	322-84	.15 MFD ±10%	50 V
C104	322-84	.15 MFD ±10%	50 V
C105	322-84	.15 MFD ±10%	50 V
C106	22-3891	.0068 MFD ±10%	100 V
C107	22-3891	.0068 MFD ±10%	100 V
C108	322-84	.15 MFD ±10%	50 V
C109	322-84	.15 MFD ±10%	50 V
C110	322-30	5 MFD ELECTROLYTIC	25 V
C111	322-30	5 MFD ELECTROLYTIC	25 V
C112	322-80	.0015 MFD DISC ±10%	500 V
C113	322-80	.0015 MFD DISC ±10%	500 V
C114	322-3	.01 MFD DISC	25 V
C115	322-3	.01 MFD DISC	25 V
C116	322-21	50 MFD ELECTROLYTIC	10 V
C117	322-21	50 MFD ELECTROLYTIC	10 V
C118	22-5168	300 MFD ELECTROLYTIC	25 V
C119	322-20		25 V
R1	63-6376	POTENTIOMETER	
R2	63-6375	THERMISTER	
R3	63-5165	POTENTIOMETER (MUTING)	
R4	63-6469	1.8 K OHMS ±10%	3 W
R5A	63-5213	PRESENCE CONTROL(REAR)	
R5B		PRESENCE CONTROL (FRONT)	
R6A	63-5147	BASE CONTROL (REAR)	
R6B		BASE CONTROL (FRONT)	
R7A	63-5872	TREBLE CONTROL (REAR)	
R7B		TREBLE CONTROL (FRONT)	
R8A	63-6346	LOUDNESS CONTROL (REAR)	
R8B		LOUDNESS CONTROL (FRONT)	
L8	20-2033	PEAKING COIL	
L9	20-2033	PEAKING COIL	
L10	IN T2	2ND I.F. TRANSF. (FM) PRI.	
L11	IN T2	2ND I.F. TRANSF. (FM) SEC.	
L12	IN T3	3RD I.F. TRANSF. (AM) PRI.	
L13	IN T3	3RD I.F. TRANSF. (AM) SEC.	
L14	IN T4	4TH I F. TRANSF. (FM) PRI.	
L15	IN T4	4TH I.F. TRANSF. (FM) SEC.	
L16	IN T5	RATIO DET. TRANSF. PRI.	
L17	IN T5	RATIO DET. TRANSF.	
L18	IN T5	RATIO DETECTOR TRANSF.	
L19	IN T6	2ND I.F. TRANSF. (AM) PRI.	
L20	IN T6	2ND I.F. TRANSF. (AM) SEC.	
L21	IN T7	3RD I.F. TRANSF. (FM) PRI.	
L22	IN T7	3RD I.F. TRANSF. (FM) SEC.	
L23	S-64803	AM ANTENNA (CABINET)	
L24	S-69163	ANTENNA COIL ASSEMBLY (AM)	
L25	S-69165	DETECTOR COIL ASSEMBLY (AM)	
L26	S-69164	OSCILLATOR COIL ASSEMBLY (AM)	
L27	IN T8	1ST AM I.F. TRANSF. PRI.	
L28	IN T8	1ST AM I.F. TRANSFORMER SEC.	
T2	95-2328	2ND I.F. TRANSFORMER (FM)	
T3	95-2329	3RD I.F. TRANSFORMER (FM)	
T4	95-2328	4TH I.F. TRANSFORMER (FM)	
T5	95-2324	RATIO DETECTOR TRANSF.	
T6	95-2326	2ND I.F. TRANSFORMER (AM)	
T7	95-2327	3RD I.F. TRANSFORMER (AM)	
T8	95-2325	1ST I.F. TRANSFORMER (AM)	
T9	95-2316	TRAP COIL 67KC	
T10	95-2315	19 KC INPUT TRANSFORMER	
T11	95-2313	19 KC DOUBLER TRANSFORMER	
T12	95-2314	38 KC DETECTOR TRANSFORMER	
A1	105-93	38 KC FILTER	
A2	105-93	38 KC FILTER	
M1	S-69172	HOUSING & CABLE ASSEMBLY (6 CONTACT)	
M2	S-69173	HOUSING & CABLE ASSEMBLY (9 CONTACT)	
M3	S-71064	TAPE CONNECTOR AND PLUG ASSEMBLY	
M4	S-	TAPE CONNECTOR & BRACKET ASSEMBLY	
PL1	100-362	STEREO INDICATOR BULBS	
PL2	100-249	PILOT LIGHT #1847	
PL3	100-249	PILOT LIGHT #1847	
PL4	100-249	PILOT LIGHT #1847	
PL5	100-249	PILOT LIGHT #1847	
PL6	100-249	PILOT LIGHT #1847	
PL7	100-249	PILOT LIGHT #1847	
PL8	100-249	PILOT LIGHT #1847	
PL9	100-249	PILOT LIGHT #1847	
PL10	100-249	PILOT LIGHT #1847	
S1	85-864	A.C. SWITCH	
S2	85-863	PUSH BUTTON BANDSWITCH	
X1	103-23	DIODE	
X2	103-19	DIODE	
X3	103-23	DIODE	
X4	103-23	DIODE	
X5	103-96	DIODE (ZENER)	

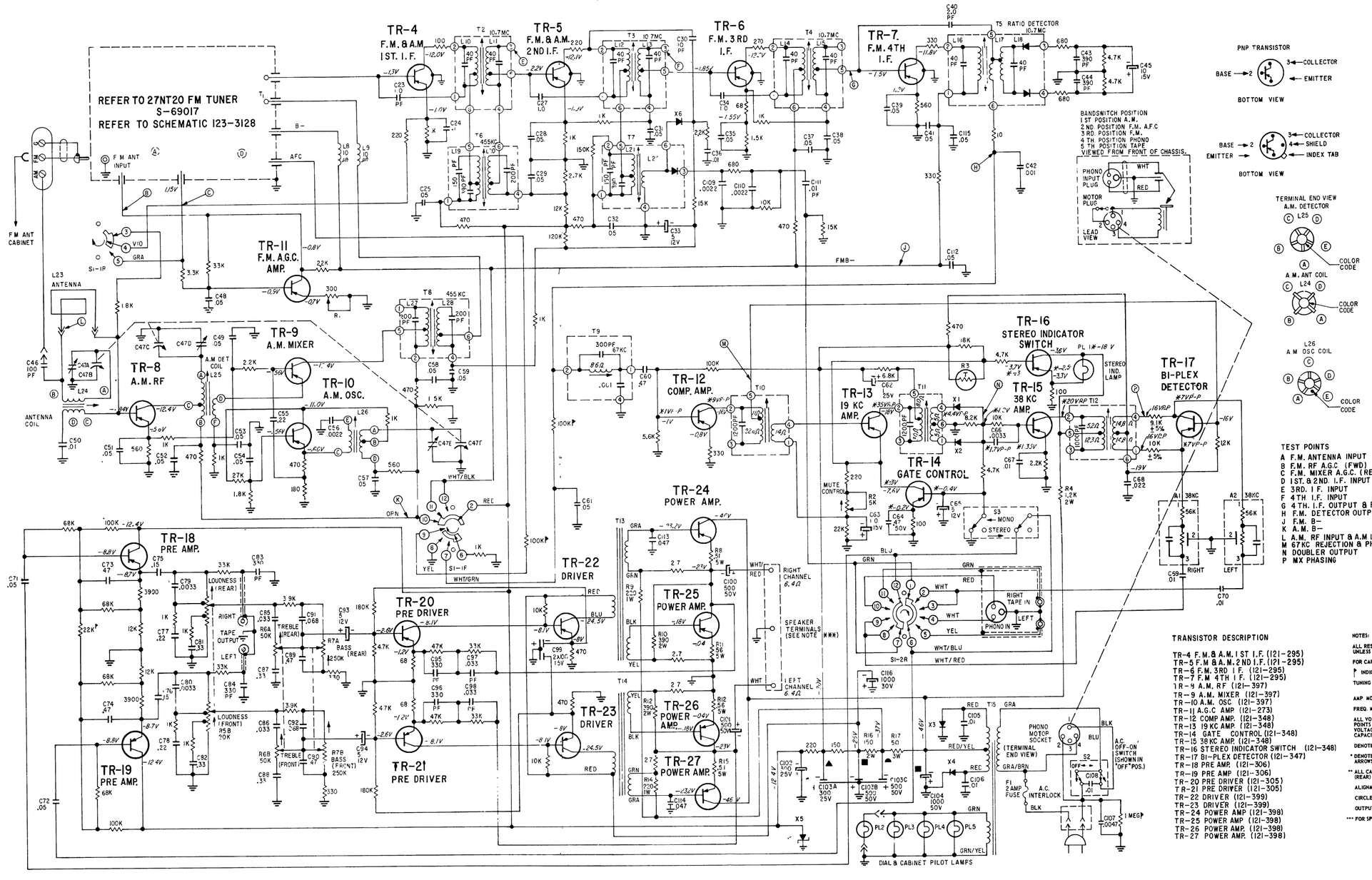


TRANSISTORS		
No	PART No	DESCRIPTION
TR-1	121-383	F M R F
TR-2	121-295	F M MIXER
TR-3	121-384	F M OSC
TR-4	121-295	F M A M 1st I F
TR-5	121-295	F M A M 2nd I F
TR-6	121-295	F M 3rd I F
TR-7	121-295	F M 4th I F
TR-8	121-273	A G C AMP
TR-9	121-397	A M R F
TR-10	121-397	A M MIXER
TR-11	121-337	A M OSC
TR-12	121-348	COMPOSITE AMP
TR-13	121-348	19KC AMP
TR-14	121-348	GATE CONTROL
TR-15	121-348	38KC AMP
TR-16	121-348	STEREO IND SWITCH
TR-17	121-347	BI PLEX DET
TR-18	121-273	PRE AMP
TR-19	121-273	PRE AMP
TR-20	121-273	PRE AMP
TR-21	121-273	PRE AMP
TR-22	121-274	PRE AMP
TR-23	121-274	PRE AMP
TR-24	121-272	1st AUDIO
TR-25	121-272	1st AUDIO
TR-26	121-396	TUNING IND AMP



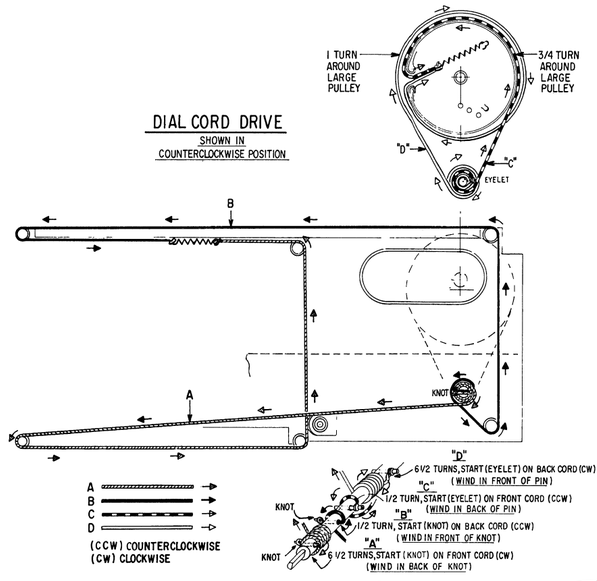


IN26T24 CHASSIS LAYOUT



27NT20 SCHEMATIC

ITEM NO.	PART NO.	DESCRIPTION	
C23	322-47	1 PF GIMMICK ±10%	500 V
C24	22-3652	.1 MFD DISC	10 V
C25	322-20	.05 MFD DISC	25 V
C26	322-46	.51 PF ±10 GIMMICK ±10%	500 V
C27	322-47	1 PF GIMMICK ±10%	500 V
C28	322-20	.05 MFD DISC	25 V
C29	322-20	.05 MFD DISC	25 V
C30	22-3675	10 PF DISC ±5%	500 V
C31	322-20	.05 MFD DISC	25 V
C32	322-20	.05 MFD DISC	25 V
C33	322-22	5 MFD ELECTROLYTIC	12 V
C34	322-47	1 PF GIMMICK ±10%	500 V
C35	322-20	.05 MFD DISC	25 V
C36	322-15	.01 MFD DISC.	500 V
C37	322-20	.05 MFD DISC	25 V
C38	322-20	.05 MFD DISC	25 V
C39	322-20	.05 MFD DISC	25 V
C40	22-2434	2 PF GIMMICK ±10%	500 V
C41	322-20	.05 MFD DISC	25 V
C42	322-9	.001 MFD DISC	25 V
C43	322-32	390 PF DISC ±10%	500 V
C44	322-32	390 PF DISC ±10%	500 V
C45	22-3448	10 MFD ELECTROLYTIC	15 V
C46	322-90	100 PF DISC 10%	500 V
C47A		ANTENNA TUNING	
C47B		ANTENNA TRIMMER	
C47C		DETECTOR TUNING	
C47D	22-4618	DETECTOR TRIMMER	
C47F		OSCILLATOR TUNING	
C47E		OSCILLATOR TRIMMER	
C48	322-20	.05 MFD DISC	25 V
C49	322-20	.05 MFD DISC	25 V
C50	22-5116	.01 MFD DISC	25 V
C51	322-20	.05 MFD DISC	25 V
C52	322-20	.05 MFD DISC	25 V
C53	322-20	.05 MFD DISC	25 V
C54	322-20	.05 MFD DISC	25 V
C55	22-3527	.22 MFD DISC	12 V
C56	322-3	.01 MFD DISC	25 V
C57	322-20	.05 MFD DISC	25 V
C58	322-20	.05 MFD DISC	25 V
C59	322-20	.05 MFD DISC	25 V
C60	322-88	.47 MFD MYLAR ±10%	50 V
C61	322-20	.05 MFD DISC	25 V
C62	22-361.5	1 MFD ELECTROLYTIC	25 V
C63	22-361.5	1 MFD ELECTROLYTIC	25 V
C64	322-88	.47 MFD ±10%	50 V
C65	322-22	5 MFD ELECTROLYTIC	12 V
C66	322-27	.0033 MFD DISC ±10%	500 V
C67	322-3	.01 MFD DISC	25 V
C68	22-3826	.022 MFD MYLAR ±10%	100 V
C69	322-15	.01 MFD DISC	500 V
C70	322-15	.01 MFD DISC	500 V
C71	322-20	.05 MFD DISC	25 V
C72	322-20	.05 MFD DISC	25 V
C73	322-88	.47 MFD MYLAR ±10%	50 V
C74	322-84	.15 MFD MYLAR ±10%	50 V
C75	322-84	.15 MFD MYLAR ±10%	50 V
C76	322-88	.47 MFD MYLAR ±10%	50 V
C77	322-86	.22 MFD MYLAR ±10%	50 V
C78	322-86	.22 MFD MYLAR ±10%	50 V
C79	322-27	.0033 MFD DISC ±10%	500 V
C80	322-27	.0033 MFD DISC ±10%	500 V
C81	322-85	.33 MFD DISC MYLAR ±10%	50 V
C82	322-85	.33 MFD DISC MYLAR ±10%	50 V
C83	22-3255	330 PF DISC ±10%	500 V
C84	22-3255	330 PF DISC +10%	500 V
C85	22-3826	.022 MFD MYLAR ±10%	100 V
C86	22-3826	.022 MFD MYLAR ±10%	100 V
C87	322-85	.33 MFD MYLAR ±10%	50 V
C88	322-85	.33 MFD MYLAR ±10%	50 V
C89	322-88	.47 MFD MYLAR ±10%	50 V
C90	322-88	.47 MFD MYLAR ±10%	50 V
C91	22-3630	.068 MFD MYLAR ±10%	50 V
C92	22-3630	.068 MFD MYLAR ±10%	50 V
C93	322-22	5 MFD ELECTROLYTIC	12 V
C94	322-22	5 MFD ELECTROLYTIC	12 V
C95	22-3255	330 PF DISC ±10%	500 V
C96	22-3255	330 PF DISC ±10%	500 V
C97	22-4110	.033 MFD MYLAR ±10%	200 V
C98	22-4110	.033 MFD MYLAR ±10%	200 V
C99	22-4628	2 X 100 MFD ELECTROLYTIC	15 V
C100	22-5011	500 ELECTROLYTIC	50 V
C101	22-5011	500 ELECTROLYTIC	50 V
C102	22-5168	300 ELECTROLYTIC	25 V
C103A		300 ELECTROLYTIC	25 V
C103B	22-5162	500 ELECTROLYTIC	50 V
C103C		500 ELECTROLYTIC	50 V
C104	22-3879	1000 MFD ELECTROLYTIC	50 V
C105	322-15	.01 MFD DISC	500 V
C106	322-15	.01 MFD DISC	500 V
C107	22-5187	.0047 MFD DISC	1 KV
C108	22-4601	.01 MFD DISC ±10%	1000 V
C109	322-82	.0022 MFD DISC ±10%	500 V
C110	322-82	.0022 MFD DISC ±10%	500 V
C111	322-2	560 PF DISC	500 V
C112	322-20	.05 MFD DISC	25 V
C113	22-3678	.047 MFD DISC ±10%	100 V
C114	22-3678	.047 MFD DISC ±10%	100 V
C115	322-20	.05 MFD DISC	25 V
C116	22-5167	1000 MFD ELECTROLYTIC	30 V
R1	63-6376	POTENTIOMETER	
R2	63-5165	POTENTIOMETER (MUTING)	
R3	63-6375	THERMISTER	
R4	63-5673	1.2 K OHMS ±10%	2 W
R5A	63-6361	LOUDNESS CONTROL (REAR)	
R5B		LOUDNESS CONTROL (FRONT)	
R6A	63-6363	TREBLE CONTROL (REAR)	
R6B		TREBLE CONTROL (FRONT)	
R7A	63-6362	BASS CONTROL (REAR)	
R7B		BASS CONTROL (FRONT)	
R8	63-5305	.51 OHMS ±10%	5 W
R9	63-6042	220 OHMS ±10%	1 W
R10	63-5652	390 OHMS ±10%	2 W
R11	63-6378	.56 OHMS ±10%	5 W
R12	63-5652	390 OHMS ±10%	2 W
R13	63-6378	.56 OHMS ±10%	5 W
R14	63-6042	220 OHMS ±10%	1 W
R15	63-5305	.51 OHMS ±10%	5 W
R16	63-5635	150 OHMS ±10%	2 W
R17	63-6377	50 OHMS ±10%	3 W
L8	20-2033	R.F. CHOKE COIL	
L9	20-2033	R.F. CHOKE COIL	
L10	INT2	2ND I.F. TRANSFORMER (FM) PRI.	
L11	INT2	2ND I.F. TRANSFORMER (FM) SEC.	
L12	INT3	3RD I.F. TRANSFORMER (AM) PRI.	
L13	INT3	3RD I.F. TRANSFORMER (AM) SEC.	
L14	INT4	4TH I.F. TRANSFORMER (FM) PRI.	
L15	INT4	4TH I.F. TRANSFORMER (FM) SEC.	
L16	INT5	RATIO DETECTOR TRANSFORMER PRI.	
L17	INT5	RATIO DETECTOR TRANSFORMER SEC.	
L18	INT5	RATIO DETECTOR TRANSFORMER 3RD	
L19	INT6	2ND I.F. TRANSFORMER (AM) PRI.	
L20	INT6	2ND I.F. TRANSFORMER (AM) SEC.	
L21	INT7	3RD I.F. TRANSFORMER (FM) PRI.	
L22	INT7	3RD I.F. TRANSFORMER (FM) SEC.	
L23	S-64803	A.M. ANTENNA (CABINET)	
L24	S-69163	ANTENNA COIL ASSEMBLY (AM)	
L25	S-69165	DETECTOR COIL ASSEMBLY (AM)	
L26	S-59164	OSCILLATOR COIL ASSEMBLY (AM)	
L27	INT8	1ST I.F. TRANSFORMER (AM) PRI.	
L28	INT8	1ST AM FM TRANSFORMER (AM) SEC.	
A1	105-93	38 KC FILTER	
A2	105-93	38 KC FILTER	
F1	136-40	2 AMP FUSE	
PL1	100-362	STEREO INDICATOR LIGHT	
PL2	100-249	PILOT LIGHT #1847	
PL3	100-249	PILOT LIGHT #1847	
PL4	100-249	PILOT LIGHT #1847	
PL5	100-249	PILOT LIGHT #1847	
S1	85-890	FIVE POSITION BANDSWITCH	
S2	85-891	A.C. SWITCH	
S3	85-892	STEREO-MONAURAL SWITCH	
T2	95-2328	2ND AND 4TH I.F. TRANSFORMER (FM)	
T3	95-2329	3RD I.F. TRANSFORMER (FM)	
T4	95-2328	2ND AND 4TH I.F. TRANSFORMER (FM)	
T5	95-2324	RATIO DETECTOR TRANSFORMER	
T6	95-2326	2ND I.F. TRANSFORMER (AM)	
T7	95-2327	3RD I.F. TRANSFORMER (AM)	
T8	95-2325	1ST AM I.F. TRANSFORMER	
T9	95-2316	TRAP COIL 67 KC	
T10	95-2315	19 KC MULTIPLEX TRANSFORMER	
T11	95-2313	19 KC DOUBLER TRANSFORMER	
T12	95-2314	38 KC DETECTOR TRANSFORMER	
T13	95-2330	DRIVER TRANSFORMER	
T14	95-2330	DRIVER TRANSFORMER	
T15	95-2335	POWER TRANSFORMER	
X1	103-23	DIODE	
X2	103-23	DIODE	
X3	212-61	RECTIFIER	
X4	212-61	RECTIFIER	
X5	103-85	DIODE (ZENER)	
X6	103-23	DIODE	

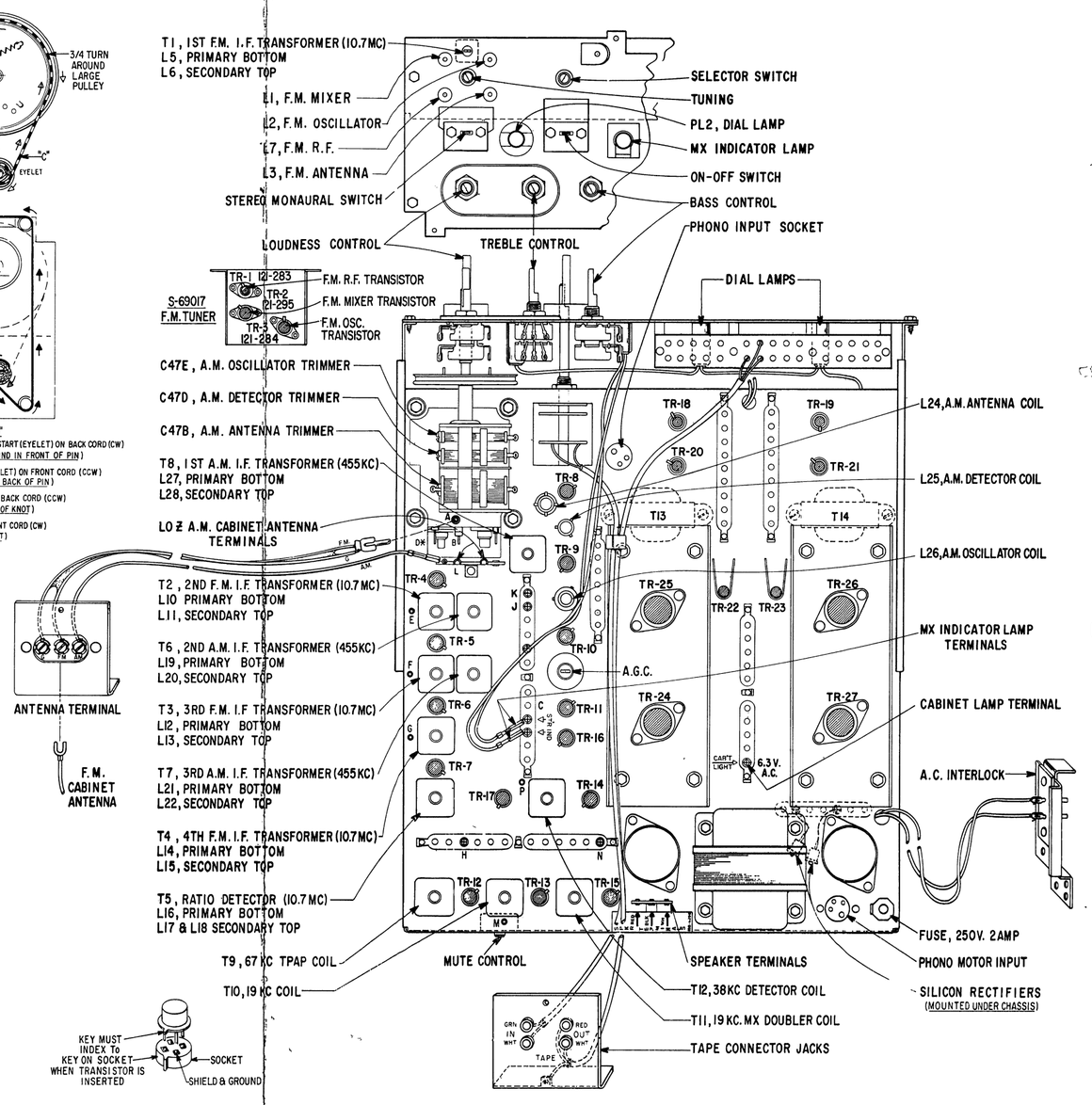


TRANSISTORS			
NO.	PART N	DESCRIPTION	REQ'D
TR-4	121-295	A.M. F.M. I.F.	4
TR-5	121-295	A.M. F.M. I.F.	
TR-6	121-295	—— F.M. I.F.	
TR-7	121-295	—— F.M. I.F.	
TR-8	121-397	A.M. R.F.	3
TR-9	121-397	A.M. MIXER	
TR-10	121-397	A.M. OSCILLATOR	
TR-11	121-273	A.G.C. AMP	1
TR-12	121-348	COMPOSITE AMP	5
TR-13	121-348	19KC AMP	
TR-14	121-348	GATE CONTROL	
TR-15	121-348	38KC AMP	
TR-16	121-348	STEREO IND. CONTROL	
TR-17	121-347	BI-PLEX DET.	1
TR-18	121-306	PRE AMP	2
TR-19	121-306	PRE AMP	
TR-20	121-305	PRE-DRIVER	2
TR-21	121-305	PRE-DRIVER	
TR-22	121-399	DRIVER	1
TR-23	121-399	DRIVER	
TR-24	121-398	POWER AMP	4
TR-25	121-398	POWER AMP	
TR-26	121-398	POWER AMP	
TR-27	121-398	POWER AMP	

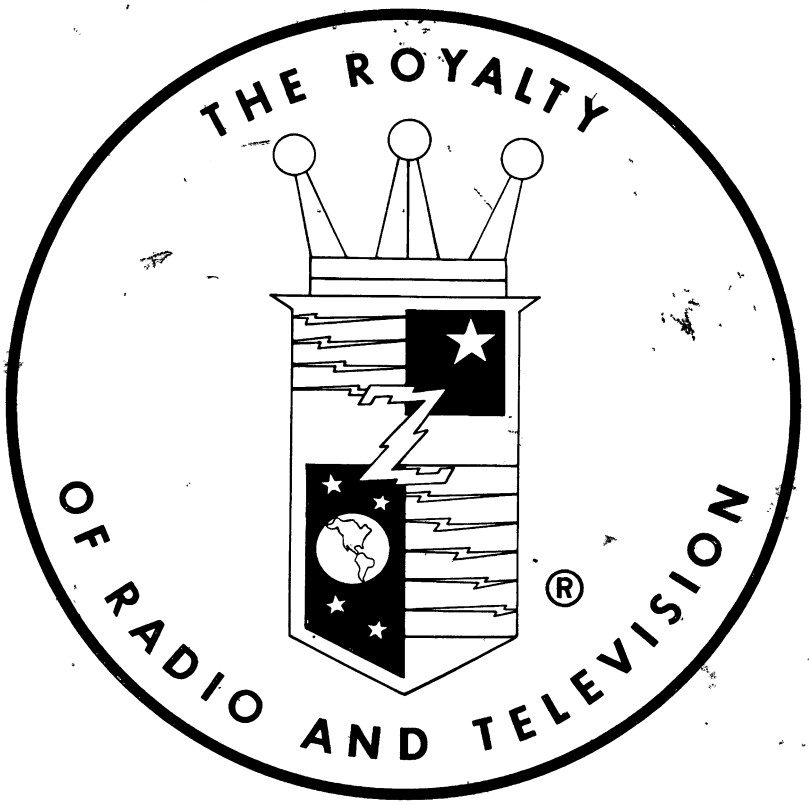
TEST POINTS	
A	F.M. ANTENNA INPUT
B	F.M.-R.F. A.G.C. (FWD)
C	F.M. MIXER A.G.C. (REV)
D	1st & 2nd I.F. INPUT
E	3rd I.F. INPUT
F	4th I.F. INPUT
G	4th I.F. OUTPUT & F.M. DET. INPUT
H	F.M. DET. OUTPUT
J	F.M. B-
K	A.M. B-
L	A.M. R.F. INPUT + and A.M. I.F. INPUT
M	67KC REJECTION and PHASING
N	DOUBLER OUTPUT
P	PHASING

(1st & 2nd I.F. INPUT)

* MIXER EMITTER TEST POINT BROUGHT OUT OF SOCKET EYELET



27NT20 CHASSIS LAYOUT



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