

M. O. Zigler



**TUBE SUBSTITUTION
DIRECTORY**
FOR EMERGENCY SERVICING
of Civilian Receivers



COMMERCIAL ENGINEERING SECTION
RCA Victor Division
RADIO CORPORATION OF AMERICA
HARRISON, NEW JERSEY



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This Directory

lists over 2000 tube substitutions having replacement possibilities for emergency servicing of civilian receivers. Including all RCA Receiving Tubes and arranged for easy reference, the list will greatly assist radio service men in quickly selecting a suitable substitute type.

EXPLANATION OF NUMBERS INDICATING CHANGES

In making such substitutions, it may be necessary to make certain basic changes in every receiver. Such changes are indicated by numbers shown in the "change" column of the list. Their significance is explained below.

Some substitutions will require circuit changes or adjustments additional to those indicated in the "change" column. Before making any substitutions, the service man should, therefore, check the ratings and characteristics of the proposed substitute against the operating conditions of the circuit. Convenient references for tube ratings and characteristics are the RCA Receiving Tube Manual RC-14*, and the RCA Receiving Tube Characteristic Booklet (Form 1275-B)*.

Many of the suggested substitutions may cause lowered receiver sensitivity and lowered power output with increased distortion, but such substitutions may be desirable on the basis that they provide the only method by which broadcast receivers can be put in useable condition under existing circumstances.

1 signifies that **space limitations** must be considered, because the substitute type is appreciably larger in size than the type to be replaced. Small differences in overall length or diameter have been disregarded since, ordinarily, such differences do not in themselves affect interchangeability. They may, however, affect some shielding changes.

2 indicates that **wiring changes** will be required. Such changes may include any of the following items: (1) lengthening of top-cap lead; (2) changing from top-cap connection to a socket-terminal connection, or vice versa (if change is from single-ended metal type to a top-cap type, it may be necessary to use a suitably shielded lead to the top-cap); or (3) rewiring of socket (except for filament- or heater-circuit changes which are considered under "change number" 3). CAUTION: When wiring changes are made, it may also be necessary to remove wiring connections utilizing spare terminals of the socket. Special attention should also be given to the pin No. 1 connection of octal-base types, because in different circuits this pin may be used to ground the

* Available through RCA Tube Distributors or direct from Commercial Engineering Section, Radio Corporation of America, Harrison, N. J. The RC-14 is \$0.25 postpaid. Single copy of Form 1275-B is free on request.

shield, left floating, or made a high-potential common tie. The particular arrangement used in the receiver and its relation to the substitute tube will determine what has to be changed in order that proper connections for the substitute type can be made.

3 indicates that **filament- or heater-circuit changes** will be required to provide the proper voltage or current for the substitute type. When heaters are connected in parallel, a substitute type with lower heater voltage than the type to be replaced may be used if a series resistor of proper value is inserted in one of the heater leads. When heaters are operated in series, a substitute type with different heater rating than the type to be replaced may be used by adding series and/or shunt resistors to the heater string. Sample calculations of series- and shunt-resistor values are shown on page 16. When shunt or series resistors are added to the heater circuit, leave ample space around them for adequate ventilation. The practice of using shunt resistors is suggested only as an emergency measure, because the heater-string current during the warm-up period does not always divide proportionately between the heater and its shunt resistor. As a result, the heater may be temporarily but seriously overloaded.

4 indicates that **socket changes** will be required unless suitable adaptors can be procured. The use of adaptors may be restricted in some receivers by lack of space or other considerations such as alignment difficulties caused by capacitances added to the input and output circuits by the adaptor.

Supplemental Notes

In making substitutions for Power Output Types, the service man may find that the load resistance for the tube to be replaced is not suitable for use with the substitute type. When it is impractical to change the load resistance to the required value, some benefit may be obtained by adjusting the grid bias to give lowest distortion, but in so doing, care should be taken to not exceed the dissipation ratings of the tube. Also, if the substitute type has greater power-handling capability than the tube to be replaced, the current drain of the substitute tube must be kept within the current-delivering ability of the power supply in the receiver.

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TUBE SUBSTITUTION DIRECTORY



To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
OZ4	OZ4-G		1D7-G—Continued			1LB4—Continued		
	6X5	1, 2, 3		1C7-G	3		3Q5-GT/G	3, 4
	6X5-GT/G	1, 2, 3		See pp. 14-15: Key 20			3S4	3, 4
	7Y4	1, 2, 3, 4					See pp. 14-15: Key 12, 14, 17	
	See pp. 14-15: Key 2, 4		1D8-GT	See pp. 14-15: Key 17, 31		1LH4	1H5-GT/G	2, 4
OZ4-G	OZ4						See pp. 14-15: Key 39	
	6X5	1, 2, 3	1E5-GP	1B4-P	4	1LN5	1L4	4
	6X5-GT/G	1, 2, 3		15	3, 4		1N5-GT/G	2, 3, 4
	7Y4	1, 2, 3, 4		32	1, 4		1S5	4
	See pp. 14-15: Key 2, 4			See pp. 14-15: Key 42-44, 50			3A8-GT	2, 3, 4
1A3	See pp. 14-15: Key 6		1E7-G	See pp. 14-15: Key 19		1N5-GT/G	1L4	2, 4
1A4-P	1D5-GP	4					1LN5	2, 4
	1D5-GT	4	1F4	1E7-G	3, 4		1S5	2, 4
	34	1		1F5-G	4		3A8-GT	2, 3
	See pp. 14-15: Key 42-44, 50			See pp. 14-15: Key 14, 19			See pp. 14-15: Key 44, 50-52	
1A5-GT/G	1LA4	4	1F5-G	1E7-G	2, 3	1N6-G	See pp. 14-15: Key 16	
	1N6-G	1, 2		1F4	4	1P5-GT	1T4	2, 4
	See pp. 14-15: Key 12, 14, 16			1G5-G	4		See pp. 14-15: Key 44, 50-52	
1A6	1C6	3		1J5-G	4	1Q5-GT/G	1C5-GT/G	1
	1C7-G	3, 4	1F6	See pp. 14-15: Key 14, 19			1D8-GT	2
	1D7-G	4					1LB4	3, 4
	See pp. 14-15: Key 20		1F7-G	1F6	4		1S4	4
1A7-GT/G	1B7-GT	3		See pp. 14-15: Key 53			1T5-GT	3
	1LA6	2, 4	1G4-GT/G	See pp. 14-15: Key 28, 31, 38, 39			3Q4	3, 4
	1R5	2, 4					3Q5-GT/G	3
	See pp. 14-15: Key 20		1G5-G	1E7-G	2, 3		3S4	3, 4
1B4-P	1E5-GP	4		1F4	4		See pp. 14-15: Key 12, 14, 17	
	15	3, 4		1F5-G	4	1R5	1A7-GT/G	1, 2, 4
	32	1		1J5-G	4		1B7-GT	1, 2, 3, 4
	See pp. 14-15: Key 42-44, 50			See pp. 14-15: Key 14			1LA6	1, 4
1B5	1H6-G	4	1G8-GT/G	See pp. 14-15: Key 10			See pp. 14-15: Key 20	
	See pp. 14-15: Key 32		1H4-G	30	4	1S4	1C5-GT/G	1, 4
1B7-GT	1A7-GT/G	3		See pp. 14-15: Key 28			1D8-GT	1, 4
	1LA6	2, 3, 4	1H5-GT/G	1LH4	2, 4		1LB4	1, 3, 4
	1R5	2, 3, 4		See pp. 14-15: Key 39			1Q5-GT/G	1, 4
	See pp. 14-15: Key 20		1H6-G	1B5	4		1T5-GT	1, 3, 4
1C5-GT/G	1D8-GT	2		See pp. 14-15: Key 32		1S5	3A8-GT	1, 2, 3, 4
	1LB4	3, 4	1J5-G	1E7-G	2, 3		See pp. 14-15: Key 51, 52	
	1Q5-GT/G	4		1F4	4	1T4	1P5-GT	1, 2, 4
	1S4	4		1F5-G	4		See pp. 14-15: Key 44, 50-52	
	1T5-GT	3		1G5-G	4	1T5-GT	1C5-GT/G	3
	3Q4	3, 4		See pp. 14-15: Key 14			1D8-GT	2, 3
	3Q5-GT/G	3	1J6-G	19	3, 4		1LB4	4
	3S4	3, 4		See pp. 14-15: Key 10, 19			1Q5-GT/G	3
	See pp. 14-15: Key 12, 14, 16, 17		1L4				1S4	3, 4
1C6	1A6	3		1LN5	1, 4		3Q4	3, 4
	1C7-G	4		1N5-GT/G	1, 2, 4		3Q5-GT/G	3
	1D7-G	3, 4		1S5	2		3S4	3
	See pp. 14-15: Key 20			3A8-GT	1, 2, 3, 4		See pp. 14-15: Key 12, 14, 17	
1C7-G	1A6	3, 4	1LA4	1A5-GT/G	4	1S5	3A8-GT	1, 2, 3, 4
	1C6	4		1N6-G	1, 4		See pp. 14-15: Key 51, 52	
	1D7-G	3		See pp. 14-15: Key 12, 14, 16		1T4	1P5-GT	1, 2, 4
	See pp. 14-15: Key 20		1LA6	1A7-GT/G	2, 4		See pp. 14-15: Key 44, 50-52	
1D5-GP	1A4-P	4		1B7-GT	2, 3, 4	1T5-GT	1C5-GT/G	3
	1D5-GT	4		1R5	4		1D8-GT	2, 3
	34	1, 4		See pp. 14-15: Key 20			1LB4	4
	See pp. 14-15: Key 42-44, 50		1LB4	1C5-GT/G	3, 4		1Q5-GT/G	3
1D5-GT	1A4-P	4		1D8-GT	3, 4		1S4	3, 4
	1D5-GP	4		1Q5-GT/G	3, 4		3Q4	3, 4
	34	1, 4		1S4	3, 4		3Q5-GT/G	3
	See pp. 14-15: Key 42-44, 50			1T5-GT	4		3S4	3, 4
1D7-G	1A6	4		3Q4	3, 4	1-v	See pp. 14-15: Key 1, 2	
	1C6	3, 4				2A3	45	
							See pp. 14-15: Key 8	
						2A5	46	1, 4
							47	1, 4
							59	1, 3, 4
							See pp. 14-15: Key 14	
						2A6	See pp. 14-15: Key 32, 40	

1. Space limitations.
2. Wiring changes.
3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

RCA TUBES

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
2A7	See pp. 14-15: Key 20		5X4-G	5T4 5U4-G	2 2	6A7S—Continued		
2B7	See pp. 14-15: Key 49			5Z3	4	6A8	6A8	2, 4
2E5	See pp. 14-15: Key 26			See pp. 14-15: Key 2		6A8-G	6A8-G	4
3A8-GT	See pp. 14-15: Key 38, 51		5Y3-GT/G	5T4 5U4-G 5V4-G	1 1, 3 1	6A8-GT	6A8-GT	2, 4
3Q4	1C5-GT/G 1, 3, 4 1D8-GT 1, 3, 4 1LB4 1, 3, 4 1Q5-GT/G 1, 3, 4 1S4 3 1T5-GT 1, 3, 4 3Q5-GT/G 1, 4 3S4 See pp. 14-15: Key 12, 14, 17			5X4-G 5Y4-G	1, 2, 3 1, 2	6D8-G	6D8-G	3, 4
3Q5-GT/G	1C5-GT/G 3 1D8-GT 2, 3 1LB4 3, 4 1Q5-GT/G 3 1S4 3, 4 1T5-GT 3 3Q4 4 3S4 4 See pp. 14-15: Key 12, 14, 17			5Z3 5Z4 80 83-v	1, 3, 4 1, 3, 4 1, 4 1, 4	7A8	7A8	2, 3, 4
3S4	1C5-GT/G 1, 3, 4 1D8-GT 1, 3, 4 1LB4 1, 3, 4 1Q5-GT/G 1, 3, 4 1S4 3 1T5-GT 1, 3, 4 3Q4 3S4 See pp. 14-15: Key 12, 14, 17			See pp. 14-15: Key 2		7B8	7B8	2, 4
5T4	5U4-G 1, 3 5X4-G 1, 2, 3 5Z3 1, 3, 4 See pp. 14-15: Key 2			5X4-G 5Y3-GT/G	1, 2, 3 2	12A8-GT/G	12A8-GT/G	2, 3, 4
5U4-G	5T4 5X4-G 2 5Z3 4 See pp. 14-15: Key 2			5Y4-G 5Z3 80 83-v	1, 2 1, 3, 4 1, 4 1, 4	See pp. 14-15: Key 20-24	See pp. 14-15: Key 20-24	
5V4-G	5T4 5U4-G 1, 3 5X4-G 1, 2, 3 5Z3 1, 3, 4 83-v 4 See pp. 14-15: Key 2			See pp. 14-15: Key 2		6A8	6A8	1, 2, 3, 4
5W4	5T4 1, 3 5U4-G 1, 3 5V4-G 1, 3 5W4-GT/G 5X4-G 1, 2, 3 5Y3-GT/G 3 5Y4-G 1, 2, 3 5Z3 1, 3, 4 5Z4 3 80 1, 3, 4 83-v 1, 3, 4 See pp. 14-15: Key 2			5Z4 80 83-v	1, 3, 4 1, 3, 4 1, 4	6A7	6A7	1, 2, 4
5W4-GT/G	5T4 1, 3 5U4-G 1, 3 5V4-G 1, 3 5W4 5X4-G 1, 2, 3 5Y3-GT/G 3 5Y4-G 1, 2, 3 5Z3 1, 3, 4 5Z4 3 80 1, 3, 4 83-v 1, 3, 4 See pp. 14-15: Key 2			See pp. 14-15: Key 2		6A7S	6A7S	1, 2, 4
						6A8	6A8	1, 2
						6A8-G	6A8-G	1, 2
						6A8-GT	6A8-GT	1, 2, 3
						6D8-G	6D8-G	1, 2, 3
						7A8	7A8	2, 3, 4
						7B8	7B8	2, 4
						12A8-GT/G	12A8-GT/G	3
						See pp. 14-15: Key 20-24	See pp. 14-15: Key 20-24	
						6A85/6N5	6U5/6G5	3
						See pp. 14-15: Key 25, 26	See pp. 14-15: Key 25, 26	
						6AB7	6SG7	2
						7H7	7H7	4
						See pp. 14-15: Key 44, 48, 50	See pp. 14-15: Key 44, 48, 50	
						6AC5-GT/G	25AC5-GT/G	3
						See pp. 14-15: Key 10	See pp. 14-15: Key 10	
						6AC7	6AG5	4
						6SH7	6SH7	2
						7G7	7G7	4
						See pp. 14-15: Key 44, 48, 50	See pp. 14-15: Key 44, 48, 50	
						6AD6-G	6AF6-G	
						See pp. 14-15: Key 27	See pp. 14-15: Key 27	
						6AD7-G	See pp. 14-15: Key 15	
						6AE5-GT/G*	6C5	
						6C5-GT/G	6C5-GT/G	
						6F8-G	6F8-G	1, 2, 3
						6J5	6J5	
						6J5-GT/G	6J5-GT/G	
						6L5-G	6L5-G	1, 3
						6PS-GT/G	6PS-GT/G	
						6SN7-GT	6SN7-GT	2, 3
						7A4	7A4	4
						12J5-GT	12J5-GT	3
						12SN7-GT	12SN7-GT	2, 3
						27	27	1, 3, 4
						37	37	1, 4
						56	56	1, 3, 4
						76	76	1, 4
						See pp. 14-15: Key 28-41	See pp. 14-15: Key 28-41	
						6AE6-G	See pp. 14-15: Key 35	
						6AE7-GT	See pp. 14-15: Key 34	
						6AF6-G	6AD6-G	1
						See pp. 14-15: Key 27	See pp. 14-15: Key 27	
						6AG5	6AC7	1, 3, 4
						6SH7	6SH7	1, 4
						7G7	7G7	1, 3, 4
						12SH7	12SH7	1, 3, 4
						See pp. 14-15: Key 44, 48, 50	See pp. 14-15: Key 44, 48, 50	
						6AG7	See pp. 14-15: Key 14	
						6A7	6A7	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below		
6B4-G	2A3	3, 4	6C5-GT/G* —Continued	37	1, 4	6D8-G —Continued	6A8-G	3		
	6A3	4		56	1, 3, 4		6A8-GT	2, 3		
	45	3, 4		76	1, 4		7A8	2, 4		
	See pp. 14-15: Key 8			See pp. 14-15: Key 28-41			7B8	2, 3, 4		
6B5	6N6-G	4		6C6	6D7		4	12A8-GT/G	2, 3	
	See pp. 14-15: Key 11, 12, 14				6J7		2, 4	See pp. 14-15: Key 20-24		
6B6-G	2A6	3, 4			6J7-G		4	6E5	2E5	3
	6Q7	2			6J7-GT		2, 4	See pp. 14-15: Key 25, 26		
	6Q7-G	2			6SJ7		2, 4	6E6	See pp. 14-15: Key 9, 10	
	6Q7-GT	2			6SJ7-GT		2, 4	6E7	6D6	4
	6SQ7	2			6W7-G		3, 4		6K7	2, 4
	6SQ7-GT/G	2			7C7		2, 3, 4		6K7-G	4
	6T7-G	3			12J7-GT/G		2, 3, 4		6K7-GT	2, 4
	7B6	2, 4			12SJ7		2, 3, 4		6S7	2, 3, 4
	7C6	2, 3, 4			12SJ7-GT		2, 3, 4		6S7-G	3, 4
	12Q7-GT/G	2, 3	57		3	6SK7	2, 4			
	12SQ7	2, 3	77			6SK7-GT/G	2, 4			
	12SQ7-GT/G	2, 3	See pp. 14-15: Key 44-50			6SS7	2, 3, 4			
	75	4	6C7		6R7	2, 4	6U7-G		4	
	See pp. 14-15: Key 32, 40			6R7-GT/G	2, 4	7A7	2, 4			
6B7	2B7	3		6SR7	2, 4	7B7	2, 3, 4			
	6B7S			6ST7	2, 3, 4	12K7-GT/G	2, 3, 4			
	6B8	2, 4		6V7-G	4	12SK7	2, 3, 4			
	6B8-G	4		7E6	2, 4	12SK7-GT/G	2, 3, 4			
	12C8	2, 3, 4		12SR7	2, 3, 4	14A7	2, 3, 4			
	See pp. 14-15: Key 49			55	3, 4	39/44	4			
6B7S	2B7	3		85	4	58	3, 4			
	6B7			See pp. 14-15: Key 32, 40		78	4			
	6B8	2, 4		6C8-G	6F8-G	3	See pp. 14-15: Key 44-50			
	6B8-G	4			6SN7-GT	2, 3	6F5	6F5-GT/G		
	12C8	2, 3, 4			12AH7-GT	2, 3	6SF5	2		
	See pp. 14-15: Key 49				12SN7-GT	2, 3	6SF5-GT	2		
6B8	2B7	1, 2, 3, 4			See pp. 14-15: Key 10, 33, 41		6K5-GT/G	2		
	6B7	1, 2, 4	6D6		6E7	4	7B4	2, 4		
	6B7S	1, 2, 4			6K7	2, 4	12F5-GT	3		
	6B8-G	1, 2			6K7-G	4	12SF5	2, 3		
	12C8	3			6K7-GT	2, 4	12SF5-GT	2, 3		
	See pp. 14-15: Key 49				6S7	2, 3, 4	See pp. 14-15: Key 28-41			
6B8-G	2B7	3, 4			6S7-G	3, 4	6F5-GT/G	6F5		
	6B7	4			6SK7	2, 4		6SF5	2	
	6B7S	4			6SK7-GT/G	2, 4		6SF5-GT	2	
	6B8	2			6SS7	2, 3, 4		6K5-GT/G	2	
	12C8	2, 3			6U7-G	4		7B4	2, 4	
	See pp. 14-15: Key 49			7A7	2, 4	12F5-GT		3		
6C5*	6AE5-GT/G			7B7	2, 3, 4	12SF5		2, 3		
	6C5-GT/G			12K7-GT/G	2, 3, 4	12SF5-GT		2, 3		
	6F8-G	1, 2, 3		12SK7	2, 3, 4	See pp. 14-15: Key 28-41				
	6J5			12SK7-GT/G	2, 3, 4	6F6		6AD7-G	1, 2, 3	
	6J5-GT/G		14A7	2, 3, 4	6F6-G	1				
	6L5-G	1, 3	39/44	4	6K6-GT/G					
	6P5-GT/G		58	3	6L6	1, 3				
	6SN7-GT	2, 3	78		6L6-G	1, 3				
	7A4	4	See pp. 14-15: Key 44-50		6V6					
	12J5-GT	3	6D7	6C6	4	6V6-GT/G				
	12SN7-GT	2, 3		6J7	2, 4	7B5	4			
	27	1, 3, 4		6J7-G	4	7C5	4			
	37	1, 4		6J7-GT	2, 4	12A5	1, 4			
	56	1, 3, 4		6SJ7	2, 4	38	1, 2, 4			
	76	1, 4		6SJ7-GT	2, 4	41	1, 4			
	See pp. 14-15: Key 28-41			6W7-G	3, 4	42	1, 4			
6C5-GT/G*	6AE5-GT/G			7C7	2, 3, 4	89	1, 2, 4			
	6C5			12J7-GT/G	2, 3, 4	See pp. 14-15: Key 12, 14, 15				
	6F8-G	1, 2, 3		12SJ7	2, 3, 4	6F6-G	6AD7-G	2, 3		
	6J5			12SJ7-GT	2, 3, 4		6F6			
	6J5-GT/G			57	3, 4		6K6-GT/G			
	6L5-G	1, 3		77	4		6L6	3		
	6P5-GT/G			See pp. 14-15: Key 44-50			6L6-G	1, 3		
	6SN7-GT	2, 3		6D8-G	2A7		3, 4	6V6		
	7A4	4	6A7		3, 4		6V6-GT/G			
	12J5-GT	3	6A7S		3, 4		7B5	4		
	12SN7-GT	2, 3	6A8		2, 3					
	27	1, 3, 4								

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

RCA TUBES

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6F6-G—Continued			6J7—Continued			6K7—Continued		
	7C5	4		6W7-G	1, 2, 3		7A7	2, 4
	12A5	4		7C7	2, 3, 4		7B7	2, 3, 4
	38	2, 4		12J7-GT/G	3		12K7-GT/G	3
	41	4		12SJ7	2, 3		12SK7	2, 3
	42	4		12SJ7-GT	2, 3		12SK7-GT/G	2, 3
	89	2, 4		57	1, 2, 3, 4		14A7	2, 3, 4
	See pp. 14-15: Key 12, 14, 15			77	1, 2, 4		39/44	1, 2, 4
				See pp. 14-15: Key 44-50			58	1, 2, 3, 4
6F7	6P7-G	4	6J7-G	6C6	4	6K7-G	6D6	4
	See pp. 14-15: Key 29, 45			6D7	4		6E7	4
6F8-G	6C8-G			6J7	2		6K7	2
	6SN7-GT	2		6J7-GT	2		6K7-GT	2
	12AH7-GT	2, 3		6SJ7	2		6S7	2, 3
	12SN7-GT	2, 3		6SJ7-GT	2		6S7-G	3
	See pp. 14-15: Key 33, 41			6W7-G	3		6SK7	2
6G6-G	6A4	1, 3, 4		7C7	2, 3, 4		6SK7-GT/G	2
	6K6-GT/G	3		12J7-GT/G	2, 3		6SS7	2, 3
	6V6	3		12SJ7	2, 3		6U7-G	
	6V6-GT/G	3		12SJ7-GT	2, 3		7A7	2, 4
	7B5	3, 4		57	3, 4		7B7	2, 3, 4
	7C5	3, 4		77	4		12K7-GT/G	2, 3
	38	2, 3, 4		See pp. 14-15: Key 44-50			12SK7	2, 3
	41	3, 4	6J7-GT	6C6	1, 2, 4		12SK7-GT/G	2, 3
	89	2, 3, 4		6D7	1, 2, 4		14A7/12B7	2, 3, 4
	See pp. 14-15: Key 12, 14			6J7			39/44	4
6H6	6H6-GT/G	1		6J7-G	1, 2		58	3, 4
	7A6	1, 3, 4		6SJ7	2		78	4
	12H6	3		6SJ7-GT	2		See pp. 14-15: Key 44-50	
	See pp. 14-15: Key 7			6W7-G	1, 2, 3	6K7-GT	6D6	1, 2, 4
6H6-GT/G	6H6			7C7	2, 3, 4		6E7	1, 2, 4
	7A6	3, 4		12J7-GT/G	3		6K7	
	12H6	3		12SJ7	2, 3		6K7-G	1, 2
	See pp. 14-15: Key 6			12SJ7-GT	2, 3		6S7	3
6J5*	6AE5-GT/G			57	1, 2, 3, 4		6S7-G	1, 2, 3
	6C5			77	1, 2, 4		6SK7	2
	6C5-GT/G			See pp. 14-15: Key 44-50			6SK7-GT/G	2
	6F8-G	1, 2, 3	6J8-G	7J7	2, 4		6SS7	2, 3
	6J5-GT/G			See pp. 14-15: Key 20-24			6U7-G	1, 2
	6L5-G	1, 3	6K5-GT/G	6F5	2		7A7	2, 4
	6P5-GT/G			6F5-GT/G	2		7B7	2, 3, 4
	6SN7-GT	2, 3		6SF5	2		12K7-GT/G	3
	7A4	4		6SF5-GT/G	2		12SK7	2, 3
	12J5-GT	3		7B4	2, 4		12SK7-GT/G	2, 3
	12SN7-GT	2, 3		12F5-GT	2, 3		14A7/12B7	2, 3, 4
	27	1, 3, 4		12SF5	2, 3		39/44	1, 2, 4
	37	1, 4		12SF5-GT	2, 3		58	1, 2, 3, 4
	56	1, 3, 4		See pp. 14-15: Key 28-41			78	1, 2, 4
	76	1, 4	6K6-GT/G	6AD7-G	1, 2, 3		See pp. 14-15: Key 44-50	
	See pp. 14-15: Key 28-41			6F6	3	6K8	6K8-G	1, 2
6J5-GT/G*	6AE5-GT/G			6F6-G	1, 3		6K8-GT	
	6C5			6L6	1, 3		12K8	3
	6C5-GT/G			6L6-G	1, 3		See pp. 14-15: Key 20-24	
	6F8-G	1, 2, 3		6V6		6K8-G	6K8	2
	6J5			6V6-GT/G			6K8-GT	2
	6L5-G	1, 3		7B5	4		12K8	2, 3
	6P5-GT/G			7C5	4		See pp. 14-15: Key 20-24	
	6SN7-GT	2, 3		38	1, 2, 4	6K8-GT	6K8	
	7A4	4		41	1, 4		6K8-G	1, 2
	12J5-GT	3		42	1, 3, 4		12K8	3
	12SN7-GT	2, 3		89	1, 2, 4		See pp. 14-15: Key 20-24	
	27	1, 3, 4		See pp. 14-15: Key 12, 14, 15		6L5-G*	6AE5-GT/G	3
	37	1, 4	6K7	6D6	1, 2, 4		6C5	3
	56	1, 3, 4		6E7	1, 2, 4		6C5-GT/G	3
	76	1, 4		6K7-G	1, 2		6F8-G	2, 3
	See pp. 14-15: Key 28-41			6K7-GT			6J5	3
6J7	6C6	1, 2, 4		6S7	3		6J5-GT/G	3
	6D7	1, 2, 4		6S7-G	1, 2, 3		6P5-GT/G	3
	6J7-G	1, 2		6SK7	2		6SN7-GT	2, 3
	6J7-GT			6SK7-GT/G	2		7A4	3, 4
	6SJ7	2		6SS7	2, 3		12J5-GT	3
	6SJ7-GT	2		6U7-G	1, 2			

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6L5-G*—Continued	12SN7-GT 2, 3		6Q7-GT	2A6 1, 2, 3, 4		6S7-G—Continued	78 3, 4	
	27 3, 4			6B6-G 1, 2			See pp. 14-15: Key 44-50	
	37 3, 4			6Q7 1, 2		6SA7	6SA7-GT/G	
	56 3, 4			6SQ7 2			7Q7 4	
	76 3, 4			6SQ7-GT/G 2			12SA7 3	
	See pp. 14-15: Key 28-41			6T7-G 1, 2, 3			12SA7-GT/G 3	
6L6	6L6-G 1			7B6 2, 4			See pp. 14-15: Key 20-24	
	See pp. 14-15: Key 12, 14, 15			7C6 2, 3, 4		6SA7-GT/G	6SA7	
6L6-G	6L6			12Q7-GT/G 3			7Q7 4	
	See pp. 14-15: Key 12, 14, 15			12SQ7 2, 3			12SA7 3	
6L7	6L7-G 1, 2			12SQ7-GT/G 2, 3			12SA7-GT/G 3	
	See pp. 14-15: Key 20-24			75 1, 2, 4			See pp. 14-15: Key 20-24	
6L7-G	6L7 2		6R7	6C7 1, 2, 4		6SC7	6SL7-GT 2	
	See pp. 14-15: Key 20-24			6R7-GT/G			7F7 4	
6N6-G	6B5 4			6SR7 2			12SC7 3	
	See pp. 14-15: Key 11, 12, 14			6ST7 2, 3			12SL7-GT 2, 3	
6N7 or 6N7-GT/G	6A6 1, 4			6V7-G 1, 2		6SF5	6F5 2	
	6N7, 6N7-GT/G			7E6 2, 4			6F5-GT/G 2	
	6Y7-G 1			12SR7 2, 3			6SF5-GT	
	6Z7-G 1			55 1, 2, 3, 4			6K5-GT/G 2	
	53 1, 3, 4			85 1, 2, 4			7B4 4	
	79 1, 2, 4			See pp. 14-15: Key 32, 40			12F5-GT 2, 3	
	See pp. 14-15: Key 10		6R7-GT/G	6C7 1, 2, 4			12SF5 3	
6P5-GT/G*	6A65-GT/G			6R7			12SF5-GT 3	
	6C5			6SR7 2		6SF5-GT	6F5 2	
	6C5-GT/G			6ST7 2, 3			6F5-GT/G 2	
	6F8-G 1, 2, 3			6V7-G 1, 2			6SF5	
	6J5			7E6 2, 4			6K5-GT/G 2	
	6J5-GT/G			12SR7 2, 3			7B4 4	
	6L5-G 1, 3			55 1, 2, 3, 4			12F5-GT 2, 3	
	6SN7-GT 2, 3			85 1, 2, 4			12SF5 3	
	7A4 4			See pp. 14-15: Key 32, 40			12SF5-GT 3	
	12J5-GT 3		6S7	6D6 1, 2, 3, 4			See pp. 14-15: Key 28-41	
	12SN7-GT 2, 3			6E7 1, 2, 3, 4		6SF7	12SF7 3	
	27 1, 3, 4			6K7 3			See pp. 14-15: Key 46	
	37 1, 4			6K7-G 1, 2, 3		6SG7	6AB7 2, 3	
	56 1, 3, 4			6K7-GT 3			7H7 4	
	76 1, 4			6S7-G 1, 2			12SG7 3	
	See pp. 14-15: Key 28-41			6SK7-GT/G 2, 3			See pp. 14-15: Key 44-50	
6P7-G	6F7 4			6SS7 2		6SH7	6AC7 2, 3	
	See pp. 14-15: Key 29, 45			6U7-G 1, 2, 3			6AG5 4	
6Q7	2A6 1, 2, 3, 4			7A7 2, 3, 4			7G7 3, 4	
	6B6-G 1, 2			7B7 2, 4			12SH7 3	
	6Q7-G 1, 2			12K7-GT/G 3			See pp. 14-15: Key 44-50	
	6Q7-GT			12SK7 2, 3		6SJ7	6C6 1, 2, 4	
	6SQ7 2			12SK7-GT/G 2, 3			6D7 1, 2, 4	
	6SQ7-GT/G 2			14A7/12B7 2, 3, 4			6J7 2	
	6T7-G 1, 2, 3			39/44 1, 2, 3, 4			6J7-G 1, 2	
	7B6 2, 4			58 1, 2, 3, 4			6J7-GT 2	
	7C6 2, 3, 4			78 1, 2, 3, 4			6SJ7-GT	
	12Q7-GT/G 3			See pp. 14-15: Key 44-50			6W7-G 1, 2, 3	
	12SQ7 2, 3		6S7-G	6D6 3, 4			7C7 3, 4	
	12SQ7-GT/G 2, 3			6E7 3, 4			12J7-GT/G 2, 3	
	75 1, 2, 4			6K7 2, 3			12SJ7 3	
	See pp. 14-15: Key 32, 40			6K7-G 3			12SJ7-GT 3	
6Q7-G	2A6 3, 4			6K7-GT 2, 3			57 1, 2, 3, 4	
	6B6-G			6S7 2			77 1, 2, 4	
	6Q7 2			6SK7 2, 3			See pp. 14-15: Key 44-50	
	6Q7-GT 2			6SK7-GT/G 2, 3		6SJ7-GT	6C6 1, 2, 4	
	6SQ7 2			6SS7 2			6D7 1, 2, 4	
	6SQ7-GT/G 2			6U7-G 3			6J7 2	
	6T7-G 3			7A7 2, 3, 4			6J7-G 1, 2	
	7B6 2, 4			7B7 2, 4			6J7-GT 2	
	7C6 2, 3, 4			12K7-GT/G 2, 3			6SJ7	
	12Q7-GT/G 2, 3			12SK7 2, 3			6W7-G 1, 2, 3	
	12SQ7 2, 3			12SK7-GT/G 2, 3			7C7 3, 4	
	12SQ7-GT/G 2, 3			14A7/12B7 2, 3, 4			12J7-GT/G 2, 3	
	75 4			39/44 3, 4			12SJ7 3	
	See pp. 14-15: Key 32, 40			58 3, 4				

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

RCA TUBES

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
6SJ7-GT—Continued			6SQ7-GT/G—Continued			6U7-G—Continued		
	12SJ7-GT	3		6SQ7			6S7	2, 3
	57	1, 2, 3, 4		6T7-G	1, 2, 3		6S7-G	3
	77	1, 2, 4		7B6	4		6SK7	2
	See pp. 14-15: Key	44-50		7C6	3, 4		6SK7-GT/G	2
6SK7	6D6	1, 2, 4		12Q7-GT/G	2, 3		6SS7	2, 3
	6E7	1, 2, 4		12SQ7	3		7A7	2, 4
	6K7	2		12SQ7-GT/G	3		7B7	2, 3, 4
	6K7-G	1, 2		75	1, 2, 4		12K7-GT/G	2, 3
	6K7-GT	2		See pp. 14-15: Key	32, 40		12SK7	2, 3
	6S7	2, 3	6SR7	6C7	1, 2, 4		12SK7-GT/G	2, 3
	6S7-G	1, 2, 3		6R7	2		14A7/12B7	2, 3, 4
	6SK7-GT/G			6R7-GT/G	2		39/44	4
	6SS7	3		6ST7	3		58	3, 4
	6U7-G	1, 2		6V7-G	1, 2		78	4
	7A7	4		7E6	4		See pp. 14-15: Key	44-50
	7B7	3, 4		12SR7	3	6V6	6AD7-G	1, 2, 3
	12K7-GT/G	2, 3		55	1, 2, 3, 4		6F6	3
	12SK7	3		85	1, 2, 4		6F6-G	1, 3
	12SK7-GT/G	3		See pp. 14-15: Key	32, 40		6K6-GT/G	
	14A7/12B7	3, 4	6SS7	6D6	1, 2, 3, 4		6L6	1, 3
	39/44	1, 2, 4		6E7	1, 2, 3, 4		6L6-G	1, 3
	58	1, 2, 3, 4		6K7	2, 3		6V6-GT/G	
	78	1, 2, 4		6K7-G	1, 2, 3		6Y6-G	1, 3
	See pp. 14-15: Key	44-50		6K7-GT	2, 3		7B5	4
6SK7-GT/G	6D6	1, 2, 4		6S7	2		7C5	4
	6E7	1, 2, 4		6S7-G	1, 2		12A5	1, 3, 4
	6K7	2		6SK7	3		38	1, 2, 4
	6K7-G	1, 2		6SK7-GT/G	3		41	1, 4
	6K7-GT	2		6U7-G	1, 2, 3		42	1, 3, 4
	6S7	2, 3		7A7	3, 4		89	1, 2, 4
	6S7-G	1, 2, 3		7B7	4		See pp. 14-15: Key	12, 14, 15
	6SK7			12K7-GT/G	2, 3	6V6-GT/G	6AD7-G	1, 2, 3
	6SS7	3		12SK7	3		6F6	3
	6U7-G	1, 2		12SK7-GT/G	3		6F6-G	1, 3
	7A7	4		14A7/12B7	3, 4		6K6-GT/G	
	7B7	3, 4		39/44	1, 2, 3, 4		6L6	1, 3
	12K7-GT/G	2, 3		58	1, 2, 3, 4		6L6-G	1, 3
	12SK7	3		78	1, 2, 3, 4		6V6	
	12SK7-GT/G	3		See pp. 14-15: Key	44-50		6Y6-G	1, 3
	14A7/12B7	3, 4	6ST7	6C7	1, 2, 3, 4		7B5	4
	39/44	1, 2, 4		6R7	2, 3		7C5	4
	58	1, 2, 3, 4		6R7-GT/G	2, 3		12A5	1, 3, 4
	78	1, 2, 4		6SR7	3		38	1, 2, 4
	See pp. 14-15: Key	44-50		6V7-G	1, 2, 3		41	1, 4
6SL7-GT	7F7	4		7E6	3, 4		42	1, 3, 4
	12SL7-GT	3		12SR7	3		89	1, 2, 4
	See pp. 14-15: Key	33, 41		55	1, 2, 3, 4		See pp. 14-15: Key	12, 14, 15
6SN7-GT	6C8-G	1, 2		85	1, 2, 3, 4	6V7-G	6C7	4
	6F8-G	1, 2		See pp. 14-15: Key	32, 40		6R7	2
	12AH7-GT	2, 3	6T7-G	2A6	3, 4		6R7-GT/G	2
	12SN7-GT	3		6B6-G	3		6SR7	2
	See pp. 14-15: Key	33, 41		6Q7	2, 3		6ST7	2, 3
6SQ7	2A6	1, 2, 3, 4		6Q7-G	3		7E6	2, 4
	6B6-G	1, 2		6Q7-GT	2, 3		12SR7	2, 3
	6Q7	2		6SQ7	2, 3		55	3, 4
	6Q7-G	1, 2		6SQ7-GT/G	2, 3		85	4
	6Q7-GT	2		7B6	2, 3, 4		See pp. 14-15: Key	32, 40
	6SQ7-GT/G			7C6	2, 4	6W7-G	6C6	3, 4
	6T7-G	1, 2, 3		12Q7-GT/G	2, 3		6D7	3, 4
	7B6	4		12SQ7	2, 3		6J7	2, 3
	7C6	3, 4		12SQ7-GT/G	2, 3		6J7-G	3
	12Q7-GT/G	2, 3		75	3, 4		6J7-GT	2, 3
	12SQ7	3		See pp. 14-15: Key	32, 40		6SJ7	2, 3
	12SQ7-GT/G	3	6U5/6G5	6AB5/6N5	3		6SJ7-GT	2, 3
	75	1, 2, 4		See pp. 14-15: Key	25, 26		7C7	2, 4
	See pp. 14-15: Key	32, 40	6U7-G	6D6	4		12J7-GT/G	2, 3
6SQ7-GT/G	2A6	1, 2, 3, 4		6E7	4		12SJ7	2, 3
	6B6-G	1, 2		6K7	2		12SJ7-GT	2, 3
	6Q7	2		6K7-G	2		57	3, 4
	6Q7-G	1, 2		6K7-GT	2		77	3, 4
	6Q7-GT	2					See pp. 14-15: Key	44-50

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below		
6X5	6X5-GT/G 84/6Z4 1, 4 See pp. 14-15: Key 2		7A6—Continued	12H6 3, 4 See pp. 14-15: Key 7		7B7—Continued	6K7 2, 3, 4 6K7-G 1, 2, 3, 4 6K7-GT 2, 3, 4 6S7 2, 4 6S7-G 1, 2, 4 6SK7 3, 4 6SK7-GT/G 3, 4 6SS7 4 6U7-G 1, 2, 3, 4 7A7 3 12K7-GT/G 2, 3, 4 12SK7 3, 4 12SK7-GT/G 3, 4 14A7/12B7 3 39/44 1, 2, 4 58 1, 2, 3, 4 78 1, 2, 4 See pp. 14-15: Key 44-50		7B8	2A7 1, 2, 3, 4 6A7 1, 2, 4 6A7S 1, 2, 4 6A8 2, 4 6A8-G 1, 2, 4 6A8-GT 2, 4 6D8-G 1, 2, 3, 4 7A8 3 12A8-GT/G 2, 3, 4 See pp. 14-15: Key 20-24
6X5-GT/G	6X5 84/6Z4 1, 4 See pp. 14-15: Key 2		7A7	6D6 1, 2, 4 6E7 1, 2, 4 6K7 2, 4 6K7-G 1, 2, 4 6K7-GT 2, 4 6S7 2, 3, 4 6S7-G 1, 2, 3, 4 6SK7 4 6SK7-GT/G 4 6SS7 3, 4 6U7-G 1, 2, 4 7B7 3 12K7-GT/G 2, 3, 4 12SK7 3, 4 12SK7-GT/G 3, 4 14A7/12B7 3 39/44 1, 2, 4 58 1, 2, 3, 4 78 1, 2, 4 See pp. 14-15: Key 44-50		7B8	2A7 1, 2, 3, 4 6A7 1, 2, 4 6A7S 1, 2, 4 6A8 2, 4 6A8-G 1, 2, 4 6A8-GT 2, 4 6D8-G 1, 2, 3, 4 7A8 3 12A8-GT/G 2, 3, 4 See pp. 14-15: Key 20-24			
6Y5	6X5 4 6X5-GT/G 4 6Z5 2 7Y4 4 84/6Z4 4 See pp. 14-15: Key 2		7A8	2A7 1, 2, 3, 4 6A7 1, 2, 3, 4 6A7S 1, 2, 3, 4 6A8 2, 3, 4 6A8-G 1, 2, 3, 4 6A8-GT 2, 3, 4 6D8-G 1, 2, 4 7B8 3 12A8-GT/G 2, 3, 4 See pp. 14-15: Key 20-24		7C5	6AD7-G 1, 3, 4 6F6 3, 4 6F6-G 1, 3, 4 6K6-GT/G 4 6L6 1, 3, 4 6L6-G 1, 3, 4 6V6 4 6V6-GT/G 4 6Y6-G 1, 3, 4 7B5 12A5 1, 3, 4 38 1, 2, 4 41 1, 4 42 1, 3, 4 89 1, 2, 4 See pp. 14-15: Key 12, 14, 15			
6Y6-G	6L6 1 6L6-G 1 6V6 6V6-GT/G 7C5 4 12A5 4 See pp. 14-15: Key 12, 14, 15		7B4	6F5 2, 4 6F5-GT/G 2, 4 6SF5 4 6SF5-GT 4 6K5-GT/G 2, 4 12F5-GT 2, 3, 4 12SF5 3, 4 12SF5-GT 3, 4 See pp. 14-15: Key 28-41		7C6	2A6 1, 2, 3, 4 6B6-G 1, 2, 3, 4 6Q7 2, 3, 4 6Q7-G 1, 2, 3, 4 6Q7-GT 2, 3, 4 6SQ7 3, 4 6SQ7-GT/G 3, 4 6T7-G 1, 2, 4 7B6 3 12Q7-GT/G 2, 3, 4 12SQ7 3, 4 12SQ7-GT/G 3, 4 75 1, 2, 3, 4 See pp. 14-15: Key 32, 40			
6Y7-G	6A6 1, 3, 4 6N7 3 6N7-GT/G 3 6Z7-G 53 1, 3, 4 79 2, 4 See pp. 14-15: Key 10		7B5	6AD7-G 1, 3, 4 6F6 3, 4 6F6-G 1, 3, 4 6K6-GT/G 4 6L6 1, 3, 4 6L6-G 1, 3, 4 6V6 4 6V6-GT/G 4 7C5 38 1, 2, 4 41 1, 4 42 1, 3, 4 89 1, 2, 4 See pp. 14-15: Key 12, 14, 15		7C7	6C6 1, 2, 3, 4 6D7 1, 2, 3, 4 6J7 2, 3, 4 6J7-G 1, 2, 3, 4 6J7-GT 2, 3, 4 6SJ7 3, 4 6SJ7-GT 3, 4 6W7-G 1, 2, 4 12J7-GT/G 2, 3, 4 12SJ7 3, 4 12SJ7-GT 3, 4 57 1, 2, 3, 4 77 1, 2, 3, 4 See pp. 14-15: Key 44-50			
6Z5	6X5 4 6X5-GT/G 4 7Y4 4 84/6Z4 4 See pp. 14-15: Key 2		7A6	6H6 3, 4 6H6-GT/G 3, 4		7B7	6D6 1, 2, 3, 4 6E7 1, 2, 3, 4			
6Z7-G	6A6 1, 3, 4 6N7 3 6N7-GT/G 3 6Y7-G 3 53 1, 3, 4 79 2, 3, 4 See pp. 14-15: Key 10		7A5	6L6 1, 3, 4 6L6-G 1, 3, 4 6V6 4 6V6-GT/G 4 6Y6-G 1, 3, 4 7C5 12A5 1, 4 See pp. 14-15: Key 12, 14, 15		7A6	6H6 3, 4 6H6-GT/G 3, 4			
6ZY5-G	6X5 3 6X5-GT/G 3 6Y5 3, 4 6Z5 3, 4 7Y4 3, 4 84/6Z4 3, 4 See pp. 14-15: Key 2		7A4*	6AE5-GT/G 4 6C5 4 6C5-GT/G 4 6F8-G 1, 3, 4 6J5 4 6J5-GT/G 4 6L5-G 1, 3, 4 6P5-GT/G 4 6SN7-GT 3, 4 12J5-GT 3, 4 12SN7-GT 3, 4 27 1, 3, 4 37 1, 4 56 1, 3, 4 76 1, 4 See pp. 14-15: Key 28-41		7A5	6L6 1, 3, 4 6L6-G 1, 3, 4 6V6 4 6V6-GT/G 4 6Y6-G 1, 3, 4 7C5 12A5 1, 4 See pp. 14-15: Key 12, 14, 15			

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

For explanation of these changes, see page 2.

RCA TUBES

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
7E6	6C7 6R7 6R7-GT/G 6SR7 6ST7 6V7-G 12SR7 55 85	1, 2, 4 2, 4 2, 4 4 3, 4 1, 2, 4 3, 4 1, 2, 3, 4 1, 2, 4 See pp. 14-15: Key 32, 40	12F5-GT—Continued	12SF5-GT See pp. 14-15: Key 28-41	2	12SA7—Continued	7Q7 See pp. 14-15: Key 20-24	3, 4 20-24
7E7	See pp. 14-15: Key 47, 48		12H6	6H6 6H6-GT/G 7A6 See pp. 14-15: Key 7	3 1, 3 1, 3, 4	12SA7-GT/G	6SA7 6SA7-GT/G 7Q7 See pp. 14-15: Key 20-24	3 3 3, 4 20-24
7F7	6SL7-GT 12SL7-GT See pp. 14-15: Key 33, 41	4 3, 4	12J5-GT*	6AE5-GT/G 6C5 6C5-GT/G 6F8-G 6J5 6J5-GT/G 6L5-G 6P5-GT/G 6SN7-GT 7A4 12SN7-GT 37 76 See pp. 14-15: Key 28-41	3 3 3 1, 2, 3 3 3 1, 3 2, 3 3, 4 2, 3 1, 3, 4 1, 3, 4 See pp. 14-15: Key 28-41	12SC7	6SC7 6SL7-GT 7F7 12SL7-GT See pp. 14-15: Key 33, 41	3 2, 3 3, 4 2 33, 41
7G7	6AC7 6AG5 6SH7 See pp. 14-15: Key 44-50	4 4 4 44-50	12J7-GT/G	6C6 6D7 6J7-G 6J7-GT 6SJ7 6SJ7-GT 6W7-G 7C7 12SJ7 12SJ7-GT 77 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 1, 2, 3 3 2, 3 2, 3 1, 2, 3 2, 3, 4 2 2 1, 2, 3, 4 See pp. 14-15: Key 44-50	12SF5	6F5 6F5-GT/G 6K5-GT/G 6SF5 6SF5-GT 7B4 12F5-GT 12SF5 See pp. 14-15: Key 28-41	2, 3 2, 3 2, 3 3 3 3, 4 2 28-41
7H7	6AB7 6SG7 12SG7 See pp. 14-15: Key 44-50	3, 4 4 3, 4 44-50	12K7-GT/G	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50	12SF5-GT	6F5 6F5-GT/G 6K5-GT/G 6SF5 6SF5-GT 7B4 12F5-GT 12SF5 See pp. 14-15: Key 28-41	2, 3 2, 3 2, 3 3 3 3, 4 2 28-41
7J7	6J8-G See pp. 14-15: Key 20-24	1, 2, 4 20-24	12K8	6K8 6K8-G 6K8-GT See pp. 14-15: Key 20-24	3 1, 2, 3 3 20-24	12SH7	6AC7 6AG5 6SH7 7G7 See pp. 14-15: Key 44-50	2, 3 3, 4 3 3, 4 44-50
7Q7	6SA7 6SA7-GT/G See pp. 14-15: Key 20-24	4 4 20-24	12Q7-GT/G	6B6-G 6Q7 6Q7-G 6Q7-GT 6SQ7 6SQ7-GT/G 6T7-G 7B6 7C6 12SQ7 12SQ7-GT/G 75 See pp. 14-15: Key 32, 40	1, 2, 3 1, 2, 3 1, 2, 3 3 2, 3 2, 3 1, 2, 3 2, 3, 4 2, 3, 4 2 2 1, 2, 3, 4 2 32, 40	12SJ7	6C6 6D7 6J7-G 6J7-GT 6SJ7 6SJ7-GT 6W7-G 7C7 12J7-GT/G 12SJ7 77 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 1, 2, 3 2, 3 3 3 1, 2, 3 3, 4 2 1, 2, 3, 4 1, 2, 3, 4 44-50
7Y4	6X5 6X5-GT/G 6Z5 84/6Z4 See pp. 14-15: Key 2	3, 4 3, 4 1, 3, 4 1, 4 2	12SA7	6SA7 6SA7-GT/G See pp. 14-15: Key 18	2, 3, 4 2, 3, 4 18	12SJ7-GT	6C6 6D7 6J7-G 6J7-GT 6SJ7 6SJ7-GT 6W7-G 7C7 12J7-GT/G 12SJ7 77 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 1, 2, 3 2, 3 3 3 1, 2, 3 3, 4 2 1, 2, 3, 4 1, 2, 3, 4 44-50
12A5	6L6 6L6-G 6V6 6V6-GT/G 6Y6-G 7C5 See pp. 14-15: Key 12, 14, 15	3, 4 1, 3, 4 4 4 1, 3, 4 4 12, 14, 15	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50
12A7	25A7-GT/G See pp. 14-15: Key 18	2, 3, 4 18	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50
12A8-GT/G	6A7 6A7S 6A8 6A8-G 6A8-GT 6D8-G 7A8 7B8 See pp. 14-15: Key 20-24	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 1, 2, 3 2, 3, 4 2, 3, 4 20-24	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50
12AH7-GT	6C8-G 6F8-G 6SN7-GT 12SN7-GT See pp. 14-15: Key 33, 41	1, 2, 3 1, 2, 3 2, 3 2, 3 33, 41	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50
12C8	6B8 6B7 6B7S 6B8-G See pp. 14-15: Key 49	3 1, 2, 3, 4 1, 2, 3, 4 1, 2, 3 49	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50
12F5-GT	6F5 6F5-GT/G 6K5-GT/G 6SF5 6SF5-GT 7B4 12SF5	3 3 2, 3 2, 3 2, 3 2, 3, 4 2	12SB8-GT	25B8-GT See pp. 14-15: Key 45	3 45	12SK7	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12SK7 12SK7-GT/G 14A7/12B7 39/44 78 See pp. 14-15: Key 44-50	1, 2, 3, 4 1, 2, 3, 4 3 1, 2, 3 3 3 1, 2, 3 2, 3 2, 3 2, 3 1, 2, 3, 4 2, 3, 4 2, 3, 4 2 2 2, 4 1, 2, 3, 4 1, 2, 3, 4 See pp. 14-15: Key 44-50

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

RCA TUBES

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below
25Z6-GT/G	25Y5 25Z5 25Z6 50Y6-GT/G 50Z7-G 117Z6-GT/G	1, 4 1, 4 3 1, 2, 3 3 See pp. 14-15: Key 5	37*	6AE5-GT/G 6C5 6C5-GT/G 6F8-G 6J5 6J5-GT/G 6L5-G 6P5-GT/G 6SN7-GT 7A4 12J5-GT 12SN7-GT 27 56 76	4 4 4 3, 4 4 4 3, 4 4 4 3, 4 3, 4 3 3 See pp. 14-15: Key 28-41	42—Continued	12A5 38 41 89 See pp. 14-15: Key 12, 14, 15	4 2, 4 2 See pp. 14-15: Key 12, 14, 15
27	56	See pp. 14-15: Key 28-41	38	6AD7-G 6F6 6F6-G 6G6-G 6K6-GT/G 6V6 6V6-GT/G 7B5 7C5 41 42 89	1, 2, 3, 4 2, 3, 4 1, 2, 3, 4 2, 3, 4 2, 3, 4 2, 3, 4 2, 3, 4 2, 3, 4 2, 3, 4 1, 2, 3, 4 3, 4 See pp. 14-15: Key 12, 14, 15	43	12A5 25A6 25A6-GT/G 25B6-G 25C6-G 25L6 25L6-GT/G 35L6-GT/G 43 50L6-GT	3, 4 4 4 4 4 4 4 4 1, 3, 4 3, 4 See pp. 14-15: Key 12, 14
30	1H4-G	See pp. 14-15: Key 28, 32	39/44	6D6 6E7 6K7 6K7-G 6K7-GT 6S7 6S7-G 6SK7 6SK7-GT/G 6SS7 6U7-G 7A7 7B7 12K7-GT/G 12SK7 12SK7-GT/G 14A7/12B7 58 78	1, 2, 3, 4 2, 3, 4 2, 4 4 2, 4 2, 3, 4 3, 4 2, 4 2, 4 2, 4 2, 3, 4 4 2, 4 2, 3, 4 2, 3, 4 2, 3, 4 2, 3, 4 3, 4 4 See pp. 14-15: Key 44-50	44	2A3 See pp. 14-15: Key 8	1, 3 See pp. 14-15: Key 8
31	See pp. 14-15: Key 8		41	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	45	2A3 See pp. 14-15: Key 8	1, 3 See pp. 14-15: Key 8
32	1B4-P 1E5-GP 15	4 3, 4 See pp. 14-15: Key 42-44, 50	42	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	45Z3	35Z3 35Z4-GT 35Z5-GT/G 45Z5-GT See pp. 14-15: Key 1	1, 3, 4 1, 3, 4 1, 3, 4 1, 3, 4 See pp. 14-15: Key 1
32L7-GT	25A7-GT/G 70L7-GT 117L7/M7-GT 117N7-GT 117P7-GT	3 2, 3 2, 3 2, 3 2, 3 See pp. 14-15: Key 13, 18	43	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	45Z5-GT	12Z3 35Z3 35Z4-GT 35Z5-GT/G 45Z3 See pp. 14-15: Key 1	1, 3, 4 3, 4 2, 3 3 3, 4 See pp. 14-15: Key 1
33	See pp. 14-15: Key 14, 19		44	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	46	2A5 47 59 See pp. 14-15: Key 10-14	4 2 3, 4 See pp. 14-15: Key 10-14
34	1A4-P 1D5-GP 1D5-GT	4 4 See pp. 14-15: Key 42-44, 50	45	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	47	2A5 46 59 See pp. 14-15: Key 10, 14	4 2 3, 4 See pp. 14-15: Key 10, 14
35	24-A	See pp. 14-15: Key 42-44, 50	46	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	49	See pp. 14-15: Key 10	
35A5	12A5 25A6 25A6-GT/G 25B6-G 25C6-G 25L6 25L6-GT/G 35L6-GT/G 43 50L6-GT	1, 3, 4 3, 4 3, 4 1, 3, 4 1, 3, 4 3, 4 3, 4 4 1, 3, 4 3, 4 See pp. 14-15: Key 12, 14	47	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	49	See pp. 14-15: Key 10	
35L6-GT/G	12A5 25A6 25A6-GT/G 25B6-G 25C6-G 25L6 25L6-GT/G 35A5 43 50L6-GT	1, 3, 4 3 3 1, 3 1, 3 3 3 4 1, 3, 4 3 See pp. 14-15: Key 12, 14	48	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	50L6-GT	12A5 25A6 25A6-GT/G 25B6-G 25C6-G 25L6 25L6-GT/G 35A5 35L6-GT/G 43 See pp. 14-15: Key 12, 14	1, 3, 4 3 3 1, 3 1, 3 3 3 3, 4 3 1, 3, 4 See pp. 14-15: Key 12, 14
35Z3	12Z3 35Z4-GT 35Z5-GT/G 45Z3 45Z5-GT	1, 3, 4 4 4 3, 4 3, 4 See pp. 14-15: Key 1, 5	49	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5 38 42 89	1, 3, 4 3, 4 1, 3, 4 4 3, 4 1, 3, 4 4 4 4 4 4 2, 4 1, 3 2 See pp. 14-15: Key 12, 14, 15	50Y6-GT/G	25Y5 25Z5 25Z6 25Z6-GT/G 50Z7-G 117Z6-GT/G	1, 3, 4 1, 3, 4 3 3 1, 2 3 See pp. 14-15: Key 5
35Z4-GT	12Z3 35Z3 35Z5-GT/G 45Z3 45Z5-GT	1, 3, 4 4 2 3, 4 2, 3 See pp. 14-15: Key 1, 5	50	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5	3, 4 4 4 4 3, 4 3, 4 4 4 4 4 4 See pp. 14-15: Key 12, 14, 15	50Z7-G	25Y5 25Z5 25Z6 25Z6-GT/G 50Y6-GT/G 117Z6-GT/G	3, 4 3, 4 2, 3 2, 3 2 2, 3 See pp. 14-15: Key 5
35Z5-GT/G	12Z3 35Z3 35Z4-GT 45Z3 45Z5-GT	1, 3, 4 4 2 3, 4 3 See pp. 14-15: Key 1, 5	51	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5	3, 4 4 4 4 3, 4 3, 4 4 4 4 4 4 See pp. 14-15: Key 12, 14, 15	51	6A6 6N7 6N7-GT/G 6Y7-G 6Z7-G 79	3 3, 4 3, 4 3, 4 3, 4 2, 3, 4 See pp. 14-15: Key 10
36	See pp. 14-15: Key 43, 50		52	6AD7-G 6F6 6F6-G 6K6-GT/G 6L6 6L6-G 6V6 6V6-GT/G 7B5 7C5	3, 4 4 4 4 3, 4 3, 4 4 4 4 4 4 See pp. 14-15: Key 12, 14, 15	52	See pp. 14-15: Key 10	

*Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

TUBE SUBSTITUTION DIRECTORY

To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	To Replace These RCA Types	Use These RCA Types	With Changes Indicated Below	
55.....	See pp. 14-15: Key 32, 40		77—Continued			83-v—Continued			
56.....	27 3 See pp. 14-15: Key 28-41		6S17-GT 2, 4			5V4-G 4			
57.....	See pp. 14-15: Key 44-50		6W7-G 3, 4			5X4-G 1, 3, 4			
58.....	See pp. 14-15: Key 44-50		7C7 2, 3, 4			5Z3 1, 3			
59.....	2A5 4 46 4 47 4 See pp. 14-15: Key 10, 14		12J7-GT/G 2, 3, 4			See pp. 14-15: Key 2			
70L7-GT.....	25A7-GT/G 2, 3 32L7-GT 2, 3 117L7/M7-GT 2, 3 117N7-GT 2, 3 117P7-GT 2, 3 See pp. 14-15: Key 13, 18		12SJ7 2, 3, 4 12SJ7-GT 2, 3, 4 See pp. 14-15: Key 44-50			84.....	6X5 3, 4 6X5-GT/G 3, 4 6Y5 3, 4 6Z5 3, 4 6ZY5-G 4 7Y4 4 See pp. 14-15: Key 2		
75.....	2A6 3 6B6-G 4 6Q7 2, 4 6Q7-G 4 6Q7-GT 2, 4 6SQ7 2, 4 6SQ7-GT/G 2, 4 6T7-G 3, 4 7B6 2, 4 7C6 2, 3, 4 12Q7-GT/G 2, 3, 4 12SQ7 2, 3, 4 12SQ7-GT/G 2, 3, 4 See pp. 14-15: Key 32, 40		78.....	6D6 4 6E7 2, 4 6K7 4 6K7-G 2, 4 6K7-GT 2, 4 6S7 2, 3, 4 6S7-G 3, 4 6SK7 2, 4 6SK7-GT/G 2, 4 6SS7 2, 3, 4 6U7-G 4 7A7 2, 4 7B7 2, 3, 4 12K7-GT/G 2, 3, 4 12SK7 2, 3, 4 12SK7-GT/G 2, 3, 4 14A7/12B7 2, 3, 4 39/44 4 58 3 See pp. 14-15: Key 44-50		85.....	6C7 4 6R7 4 6R7-GT/G 4 6SR7 4 6ST7 3, 4 6V7-G 4 7E6 4 12SR7 3, 4 55 3 See pp. 14-15: Key 32, 40		
76*.....	6AE5-GT/G 4 6C5 4 6C5-GT/G 4 6F8-G 3, 4 6J5 4 6J5-GT/G 4 6L5-G 3, 4 6P5-GT/G 4 6SN7-GT 3, 4 7A4 4 12J5-GT 3, 4 12SN7-GT 3, 4 27 3 37 3 56 3 See pp. 14-15: Key 28-41		79.....	6A6 1, 2, 3, 4 6N7 2, 3, 4 6N7-GT/G 2, 3, 4 6Y7-G 2, 4 6Z7-G 2, 4 53 1, 2, 3, 4 See pp. 14-15: Key 10		89.....	See pp. 14-15: Key 14		
77.....	6C6 4 6D7 4 6J7 2, 4 6J7-G 4 6J7-GT 2, 4 6SJ7 2, 4		80.....	5T4 4 5U4-G 1, 3, 4 5V4-G 4 5W4 4 5W4-GT/G 4 5X4-G 1, 3, 4 5Y3-GT/G 4 5Y4-G 4 5Z3 1, 3 5Z4 4 83-v 4 See pp. 14-15: Key 2		117L7/M7-GT.....	25A7-GT/G 2, 3 32L7-GT 2, 3 70L7-GT 2, 3 117N7-GT 2 117P7-GT 2 See pp. 14-15: Key 13, 18		
			82.....	See pp. 14-15: Key 3		117N7-GT.....	25A7-GT/G 2, 3 32L7-GT 2, 3 70L7-GT 2, 3 117L7/M7-GT 2 117P7-GT 2 See pp. 14-15: Key 13, 18		
			83.....	See pp. 14-15: Key 3		117P7-GT/G.....	25A7-GT/G 2, 3 32L7-GT 2, 3 70L7-GT 2, 3 117L7/M7-GT 2 117N7-GT 2 See pp. 14-15: Key 13, 18		
			83-v.....	5T4 4 5U4-G 1, 3, 4		117Z6-GT/G.....	25Y5 1, 3, 4 25Z5 1, 3, 4 25Z6 3 25Z6-GT/G 3 50Y6-GT/G 3 50Z7-G 1, 2, 3 See pp. 14-15: Key 5		
						183/483.....	See pp. 14-15: Key 8		
						485.....	See pp. 14-15: Key 28		

* Pentodes under Type 6C6 may also be used as a substitute for this type when they are connected as triodes (screen and suppressor tied to plate).

1. Space limitations.
2. Wiring changes.

3. Filament voltage and/or current changes.
4. Socket change.

EXPLANATION OF NUMBERS INDICATING CHANGES — Concluded

When substitutions are to be made for R-F Amplifier, I-F Amplifier, Converter, Oscillator, and Mixer Types, the substitute type may have a lower or a higher value of transconductance than that of the type to be replaced. If the substitute type has a lower value, it may cause some loss in receiver sensitivity and possibly impaired frequency conversion. In areas relatively close to broadcast stations, satisfactory reception should be obtained, but in remote areas, the diminished receiver sensitivity may be unsatisfactory. If the substitute type has a higher value of transconductance than the type to be

replaced, oscillation difficulties may be experienced. These can sometimes be corrected by additional shielding, filtering, or reduction in the screen voltage. In all such substitutions, realignment of the receiver is recommended.

Substitutions for Audio Voltage Amplifier Types can generally be made with satisfactory results because a wide variation in gain is usually permissible. If necessary, the gain obtained with the substitute type can be changed by choosing the right combination of B-supply voltage, bias, grid resistor, and plate load.

CLASSIFICATION CHART OF RECEIVING TUBES

This chart classifies RCA Receiving Tubes according to their functions and their cathode voltages. It is so arranged as to permit quick determination by the equipment designer or tube user of the type designations of tubes applicable to specific design requirements. Types having similar characteristics and in the same cathode-voltage group are bracketed.

Cathode Volts		1.4	2.0	2.5—5.0	6.3	12.6—117	Key No.	
RECTIFIERS (For rectifiers with amplifier units, see POWER AMPLIFIERS).								
Half-Wave	high-vacuum				1-v	12Z3 35Z3 [3524-GT] [3525-GT/G] 45Z5-GT 45Z3	1	
	mercury-vapor gas			82 83			3	
Full-Wave	high-vacuum			5T4 [5U4-G] [5X4-G] 5Z3 5W4 5W4-GT/G 5Y3-GT/G 5Y4-G 80 5Z4 [5V4-G] [83-v]	[6X5, 6X5-GT/G, 84/6Z4] 6Y5 6Z5 6ZY5-G 7Y4	6Z5	2	
		Cold-Cathode Types: 0Z4, 0Z4-G						4
Doubler	high-vacuum					25Y5 25Z5 25Z6 [25Z6-GT/G] 50Y6-GT/G 50Z7-G 117Z6-GT/G	5	
DIODE DETECTORS (For diode detectors with amplifier units, see VOLTAGE AMPLIFIERS and also POWER AMPLIFIERS).								
One Diode		1A3					6	
Two Diodes					[6H6, 6H6-GT/G]	7A6 12H6	7	
POWER AMPLIFIERS with and without Rectifiers, Diode Detectors, and Voltage Amplifiers								
Triodes	low-mu	single unit		31	2A3 45 183/483	[6A3] [6B4-G]	8	
		twin unit				6E6	9	
	high-mu	single unit		49	46	6AC5-GT/G	25AC5-GT/G	10
		twin unit	1G6-GT/G	[1J6-G] 19	53	[6N7, 6A6] [6N7-GT/G] 6Z7-G [6Y7-G] [79]		
direct-coupled arrangement					[6B5] [6N6-G]	[25B5] [25N6-G]	11	
Beam Tubes	single unit	[1Q5-GT/G] [3Q5-GT/G*] 1T5-GT			[6L6] [6L6-G] 6Y6-G 7A5 7C5	[6V6] [6V6-GT/G] 25C6-G 25L6 [25L6-GT/G] 35A5 35L6-GT/G 50L6-GT	12	
	with rectifier					32L7-GT 70L7-GT [117L/M7-GT] [117P7-GT] 117N7-GT	13	
Pentodes	single unit	1A5-GT/G [1S4, 3S4*] 1C5-GT/G 1LA4 1LB4, 3Q4*	[1F4] [1F5-G] 1G5-G 1J5-G 33	2A5 47 59	[6F6, 6F6-G, 42] 6A4 6G6-G 38 [6K6-GT/G, 41]	7B5 12A5 89	[12A5] [25A6-GT/G] 43 25B6-G	14
	with medium-mu triode				6AD7-G		15	
	with diode	1N6-G					16	
	with diode & triode	1D8-GT					17	
	with rectifier						12A7 25A7-GT/G	18
twin unit			1E7-G★				19	

* , ★: See next page.

CLASSIFICATION CHART OF RCA RECEIVING TUBES

Cathode Volts		1.4	2.0	2.5-5.0	6.3	12.6-117	Key No.		
CONVERTERS & MIXERS (For other types used as Mixers, see VOLTAGE AMPLIFIERS).									
Converters	pentagrid	1A7-GT/G 1B7-GT 1LA6 1R5	[1C6] [1C7-G] [1A6] [1D7-G]	2A7	[6A8, 6A8-G] 6A8-GT, 6A7 6A7S, 6D8-G	7B8 7Q7 [6SA7 6SA7-GT/G]	12A8-GT/G [12SA7 12SA7-GT/G]	20	
	triode-hexode				[6K8, 6K8-G, 6K8-GT]		12K8	21	
	triode-heptode				6J8-G	7J7		22	
	octode					7A8		23	
Mixers	pentagrid				[6L7, 6L7-G]			24	
ELECTRON-RAY TUBES									
Single	with remote cut-off triode				6AB5/6N5	6U5/6G5		25	
	with sharp cut-off triode			2E5		6E5		26	
	Twin	without triode			6AD6-G	6AF6-G		27	
VOLTAGE AMPLIFIERS with and without Diode Detectors, TRIODE, TETRODE & PENTODE DETECTORS, OSCILLATORS									
Triodes	medium-mu	single unit	1G4-GT/G	[1H4-G] 30	27 56 485	[6C5, 6C5-GT/G] 7A4 37 [6J5, 6J5-GT/G] 6L5-G [6P5-GT/G, 76] 6AE5-GT/G	12J5-GT	28	
		with r-f pentode				[6F7, 6P7-G]		29	
		with power pentode					6AD7-G		30
		with power pentode & diode	1D8-GT						31
		with two diodes		[1B5] [1H6-G]	55	[6R7, 6R7-GT/G] 6C7 [85 6SR7, 6ST7] 7E6 [6V7-G]		12SR7	32
		twin unit					6C8-G [6F8-G, 6SN7-GT]	12AH7-GT 12SN7-GT	33
		twin plate					6AE7-GT 6AE6-G		34 35
	high-mu	single unit					[6F5, 6F5-GT/G] 7B4 [6SF5, 6SF5-GT] 6K5-GT/G	[12SF5 12SF5-GT 12F5-GT]	36
		with r-f pentode						12B8-GT 25B8-GT	37
		with diode & r-f pentode	3A8-GT*						38
		with diode	1H5-GT/G 1LH4						39
		with two diodes			2A6	6T7-G, 7B6, 7C6 [6B6-G, 6SQ7] [6SQ7-GT/G, 75]	[6Q7 6Q7-G 6Q7-GT]	12Q7-GT/G 12SQ7 [12SQ7-GT/G]	40
		twin unit					6SC7 7F7 6SL7-GT	12SC7 12SL7-GT	41
	Tetrodes	remote cut-off		1D5-GT	35				42
sharp cut-off			32	24-A		36		43	
Pentodes	remote cut-off	single unit	1T4 1P5-GT	34 [1D5-GP] [1A4-P]	58	[6K7, 6K7-G] 7A7 [6D6 6K7-GT, 78] 7B7 [6E7 6AB7] 7H7 [6U7-G 6SK7] 39/44 [6S7 [6SK7-GT/G] 6SS7 [6S7-G]	[12SK7 12SK7-GT/G] 12K7-GT/G 14A7/12B7	44	
		with triode					[6F7, 6P7-G]	12B8-GT 25B8-GT	45
		with diode					6SF7	12SF7	46
		with two diodes					7E7		47
	semi-remote cut-off	single unit					6SC7	12SG7	48
		with two diodes			2B7		[6B8, 6B8-G] 6B7, 6B7S	12C8	49
	sharp cut-off	single unit	1N5-GT/G 1L4 1LN5	[1E5-GP] [1B4-P] 15	57	[6J7, 6J7-G, 6J7-GT] 7C7 6C6, 6D7, 6W7-G, 77] 7G7 6S7 [6AC7 [6SJ7-GT] 6SH7 6AG5	[12SH7 12SJ7 12SJ7-GT] 12J7-GT/G	50	
		with triode & diode	3A8-GT*						51
		with diode	1S5						52
		with two diodes		[1F6] [1F7-G]					53

* Filament arranged for either 1.4 or 2.8-volt operation.

■ Two 6J5-GT/G's in one bulb. ★ Two 1F5-G's in one bulb.

TYPICAL CALCULATIONS

for Adding Series & Shunt Resistors to a Heater String

In order to determine the proper value of series and shunt resistors in heater strings, use is made of the following formulas in which E = voltage in volts, I = current in amperes, R = resistance in ohms, and W = power in watts.

$$R = \frac{E}{I} \text{ (which may also be written as } E = I R \text{ or as } I = \frac{E}{R} \text{)}$$

$$W = EI \text{ (which may also be written as } W = I^2 R \text{ or as } W = \frac{E^2}{R} \text{)}$$

When the calculated value of resistance is not available in standard fixed-resistor sizes, it is suggested that an adjustable resistor be used in order to obtain the proper value. The wattage rating of either shunt or series resistors should be chosen at about twice the calculated value in order to provide an adequate safety factor under conditions of free circulation of air. A higher factor of safety may be required in compact receivers where air circulation is poor.

As a guide for calculating series- and shunt-resistor values, several examples applying to tube substitutions in 150-milliampere and 300-milliampere heater strings follow.

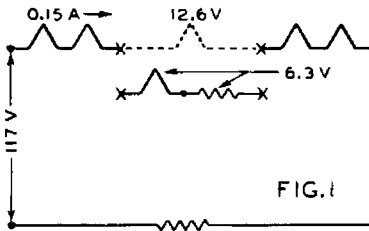


FIG. 1

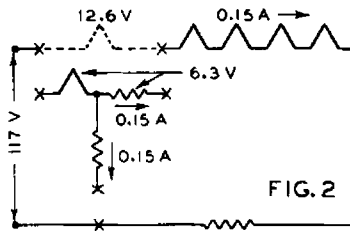


FIG. 2

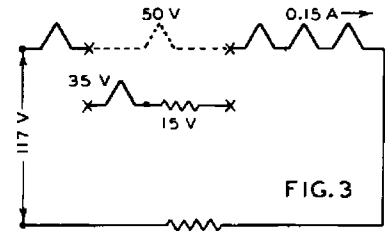


FIG. 3

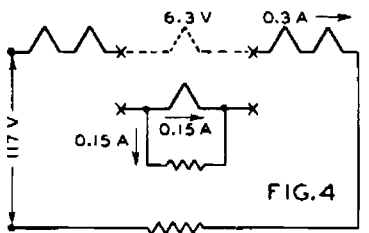


FIG. 4

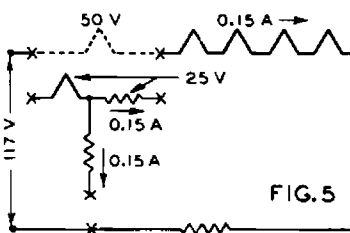


FIG. 5

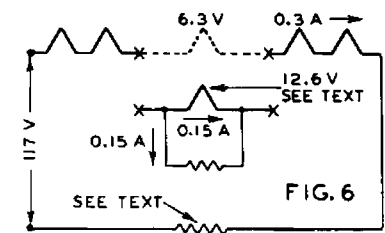


FIG. 6

92CM-6545

FIG. 1—To substitute a 6.3 v. 150 ma. type for a 12.6 v. 150 ma. type, calculate value of the resistor to be added in series with the 6.3-volt heater. Using the formula $R = E/I$, we have

$$\frac{12.6 - 6.3}{0.150} = 42 \text{ ohms.}$$

The calculated wattage is $W = EI$ or $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 2—To substitute a 6.3 v. 300 ma. type for a 12.6 v. 150 ma. type in string position as indicated, calculate value of resistor R which must shunt all components in the heater string except the substitute type. Using the formula $R = E/I$, we have

$$\frac{117 - 6.3}{0.150} = 738 \text{ ohms.}$$

The calculated wattage is $W = EI$ or $(117 - 6.3) \times 0.150 = 17$ watts, but to provide an adequate factor of safety use a 50-watt size. The resistance to be added in series with the 6.3-volt heater is

$$\frac{12.6 - 6.3}{0.150} = 42 \text{ ohms,}$$

and the calculated wattage is $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 3—To substitute a 35 v. 150 ma. type for a 50 v. 150 ma. type, proceed as in discussion for Fig. 1. Value of series resistor is

$$\frac{50 - 35}{0.150} = 100 \text{ ohms,}$$

and the calculated wattage is $(50 - 35) \times 0.150 = 2.3$ watts, but to provide an adequate factor of safety use at least a 5-watt size.

FIG. 4—To substitute a 6.3 v. 150 ma. type for a 6.3 v. 300 ma. type, calculate value of shunt resistor to be added across the 0.150-ampere

heater. Using the formula $R = E/I$, we have

$$\frac{6.3}{0.150} = 42 \text{ ohms.}$$

The calculated wattage is $W = EI$ or $6.3 \times 0.150 = 1$ watt, but to provide an adequate factor of safety use at least a 2-watt size.

FIG. 5—To substitute a 25 v. 300 ma. type for a 50 v. 150 ma. type in string position as indicated, proceed as in discussion for Fig. 2. Value of shunt resistor R is

$$\frac{117 - 25}{0.150} = 613 \text{ ohms.}$$

The calculated wattage is $(117 - 25) \times 0.150 = 14$ watts, but to provide an adequate factor of safety use a 50-watt size. The resistance to be added in series with the 25-volt heater is

$$\frac{50 - 25}{0.150} = 166 \text{ ohms,}$$

and the calculated wattage is $25 \times 0.150 = 3.8$ watts, but to provide an adequate factor of safety use a 10-watt size.

FIG. 6—To substitute a 12.6 v. 150 ma. type for a 6.3 v. 300 ma. type, proceed as in discussion for Fig. 4. Value of shunt resistor is

$$\frac{12.6}{0.150} = 84 \text{ ohms,}$$

and the calculated wattage is $12.6 \times 0.150 = 2$ watts, but to provide an adequate factor of safety use a 5-watt size. Since the substitute type increases the total voltage drop of the string by 6.3 volts, it will be necessary to decrease the voltage drop, and hence the resistance, through the line-voltage dropping device (such as line cord or ballast tube) by 6.3 volts, or $6.3/0.3 = 21$ ohms. To effect this decrease, the practical solution will usually be found in the use of a new line-voltage dropping device whose resistance is 21 ohms less than that of the original component.