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Howard W. Sams

TUBE SUBSTITUTION handbook

COMPLETELY UPDATED & EXPANDED!
Contains Over 11,000 Substitutions

7 BIG Sections

- American Receiving Tubes
- Picture-Tube Substitutes
- Subminiature Tubes
- Industrial Substitutes
- Communications and Special-Purpose Tubes
- Foreign Substitutes for American Types
- American Substitutes for Foreign Types

VOL.

8

\$1.50

Cat. No. TUB-8

Howard W. Sams
TUBE
SUBSTITUTION
handbook

by

The Howard W. Sams Engineering Staff



HOWARD W. SAMS & CO., INC.

THE BOBBS-MERRILL COMPANY, INC.

Indianapolis • New York

EIGHTH EDITION
FIRST PRINTING — OCTOBER, 1964

TUBE SUBSTITUTION HANDBOOK, VOL. 8

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Library of Congress Catalog Card Number: 60-13842

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INTRODUCTION

Although tube substitution should not be performed indiscriminately, there are numerous occasions when it is necessary and feasible. For example, when you don't have the exact tube type with you on a TV service call, you'll either have to take the chassis to the shop (without knowing if a new tube would fix the trouble), or else make a special trip just to get the tube. The same applies if you're working in the shop and need a replacement you don't have—you have to make a special trip to the distributor. Such needless trips waste time and reduce profits.

Also, when a tube is out of production or the distributor does not have it in stock, a substitute is needed. On occasion, too, it is desirable to use an improved version of the tube being replaced. For example, replacing a 6BQ6 with the improved 6CU6 will usually result in better performance.

For your convenience, this handbook is divided into seven sections. The first section lists receiving tubes and their substitutes. The second section lists picture tubes and their substitutes. There are numerous occasions when a picture-tube substitute is necessary: The exact type may be out of production, or it may not be immediately available from the distributor; or in either case it is necessary to use a substitute. Also, in custom installations a shorter-necked picture tube may have to be chosen. On the last page of the picture-tube section is a listing of those tubes requiring odd filament voltages (other than 6.3 volts), or low E_{g2} potentials. This information can be very useful when setting up your picture-tube testing and rejuvenating equipment.

The third section is a cross reference of subminiature tubes. Section 4 lists receiving tubes which can be replaced with industrial types. (Industrial tubes are more rugged than receiving types in that their peak ratings and power-handling characteristics are much higher: therefore it may be desirable to substitute an industrial tube to get more satisfactory results.) Section 5 lists communications and special-purpose tubes.

Sections 6 and 7 list American and foreign equivalents. If you have an American tube and want to know what foreign type will serve as a substitute, refer to Section 6. If you

have a foreign tube and need to know what American type can be used as a substitute, refer to Section 7. This is a very useful section because of the large amount of foreign-made equipment being sold in this country. (Additional substitutes may be obtained by cross-referencing the American substitutes in this section with listings in Section 1.)

For additional information, refer to the introductions to each section. Also pay particular attention to the various notes pertaining to the substitutions.

September, 1964

A handwritten signature in black ink, appearing to read "L. S. Bams". The signature is written in a cursive style with a large initial "L" and a prominent "S".

Section 1

CROSS REFERENCE OF AMERICAN RECEIVING TUBES

This section lists *all* American receiving tubes which have been or are being manufactured. Also included are the latest tube types registered with EIA but not yet in production.

To use this listing, locate the tube type to be replaced in the left-hand column. Then refer to the right-hand column for the substitute. The substitutes are only those tubes which have similar, or improved, characteristics and can be inserted directly into the socket. No rewiring or mechanical changes are needed, although the associated service controls may have to be readjusted.

In some instances, the available space around the tube should be considered. For example, although electrically identical to a 6L6GB, a 6L6G is more than one inch taller and a half inch larger in diameter. Thus, the substitution may be physically impossible in some compact equipment.

Do not replace a tube in the right-hand column with one in the left-hand column because this may result in a tube with lesser qualifications being used. For example, where a high heater-to-cathode potential exists, a 6AX4 will hold up, whereas a 6W4 will not. Thus, you'll find the 6AX4 listed as a substitute for the 6W4, but not vice versa.

When no substitutes are shown, none are recommended. Refer to Section 3 to see if an industrial replacement is recommended.

The meaning of each footnote symbol appears at the bottom of each page.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| OOA | |
| O1A | 12A, 112A |
| OA2 | |
| OA3 | OA3A, VR75 |
| OA3A | OA3, VR75 |
| OA4G | |
| OA5 | |
| OB2 | |
| OB3 | OB3A, VR90 |
| OB3A | OB3, VR90 |
| OC2 | |
| OC3 | OC3A, VR105 |
| OC3A | OC3, VR105 |
| OD3 | OD3A, VR150 |
| OD3A | OD3, VR150 |
| OY4 | OY4G |
| OY4G | OY4 |
| OZ4 | OZ4A, OZ4G (may require shield) |
| OZ4A | OZ4, OZ4G (may require shield) |
| OZ4G | OZ4, OZ4A |
| 1A3 | |
| 1A4 | 1A4P, 1A4T, 1B4, 1B4G, 1B4P, 1B4T, 951, 32, 34, 1C4*, 1K4* |
| 1A4P | 1A4, 1A4T, 1B4, 1B4G, 1B4P, 1B4T, 951, 32, 34, 1C4*, 1K4* |
| 1A4T | 1A4, 1A4P, 1B4, 1B4G, 1B4P, 1B4T, 951, 32, 34, 1C4*, 1K4* |
| 1A5G | 1A5GT, 1A5GT/G, 1T5GT |
| 1A5GT | 1A5G, 1A5GT/G, 1T5GT |
| 1A5GT/G | 1A5G, 1A5GT, 1T5GT |
| 1A6 | 1C6* |
| 1A7G | 1A7GT, 1B7G*, 1B7GT* |
| 1A7GT | 1A7G, 1B7G*, 1B7GT* |
| 1AB5 | |
| 1AB6 | 1AC6* |
| 1AC6 | 1AB6* |
| 1AD2 | |
| 1AE4 | |
| 1AF4 | 1AJ4, 1AM4, 1T4SF, 1AE4*, 1T4*, 1U4* |
| 1AF5 | 1AH5, 1AR5, 1S5* |
| 1AH5 | 1AF5, 1AR5, 1S5* |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 1AJ2-1D5GP ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 1AJ2 | |
| 1AJ4 | 1AF4, 1AM4, 1T4SF, 1AE4*, 1T4* |
| 1AM4 | 1AF4, 1AJ4, 1T4SF, 1AE4*, 1T4* |
| 1AN5 | |
| 1AQ5 | 1R5SF, 1R5* |
| 1AR5 | 1AF5, 1AH5, 1S5* |
| 1AS5 | 1U5SF, 1DN5*, 1U5* |
| 1AU2 | |
| 1AU3 | 1N2, 1N2A |
| 1AX2 | 1S2A |
| 1B3GT | 1AU3, 1G3GT, 1G3GT/1B3GT, 1J3, 1J3A, 1K3, 1N2, 1N2A |
| 1B4 | 1B4G, 1B4P, 1B4T, 951, 1A4, 1A4P, 1A4T, 32, 34, 1C4*, 1K4* |
| 1B4G | 1B4, 1B4P, 1B4T, 951, 1A4, 1A4P, 1A4T, 32, 34, 1C4*, 1K4* |
| 1B4P | 1B4, 1B4G, 1B4T, 32, 951, 1A4, 1A4P, 1A4T, 34, 1C4*, 1K4* |
| 1B4T | 1B4, 1B4G, 1B4T, 32, 951, 1A4, 1A4P, 1A4T, 34, 1C4*, 1K4* |
| 1B5 | 1B5/25S, 25, 25S |
| 1B5/25S | 1B5, 25, 25S |
| 1B6 | |
| 1B7G | 1B7GT, 1A7G*, 1A7GT* |
| 1B7GT | 1B7G, 1A7G*, 1A7GT* |
| 1B8GT | 1D8GT§ |
| 1C3 | |
| 1C4 | 1K4, 1A4*, 1A4P*, 1A4T*, 1B4*, 1B4G*, 1B4P*, 1B4T*, 32*, 34*, 951* |
| 1C5G | 1C5GT, 1C5GT/G, 1Q5G, 1Q5GT, 1Q5GT/G, 1T5GT* |
| 1C5GT | 1C5G, 1C5GT/G, 1Q5G, 1Q5GT, 1Q5GT/G, 1T5GT* |
| 1C5GT/G | 1C5G, 1C5GT, 1Q5G, 1Q5GT, 1Q5GT/G, 1T5GT* |
| 1C6 | 1A6* |
| 1C7G | 1D7G* |
| 1D5G | 1D5GP, 1D5GT, 1E5G, 1E5GP, 1E5GT, 1K5G*, 1M5G* |
| 1D5GP | 1D5G, 1D5GT, 1E5G, 1E5GP, 1E5GT, 1K5G*, 1M5G* |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 1D5GT | 1D5G, 1D5GT, 1E5G, 1E5GP, 1E5GT, 1K5G*, 1M5G* |
| 1D7G | 1C7G* |
| 1D8GT | 1B8GT§ |
| 1DN5 | 1U5, 1AS5*, 1U5SF* |
| 1DY4 | 1DY4A |
| 1DY4A | 1DY4 |
| 1E3 | |
| 1E4G | 1E4GT, 1G4G, 1G4GT, 1G4GT/G |
| 1E4GT | 1E5G, 1E5GP, 1D5G, 1D5GP, 1D5GT, 1E5GP, 1E5GT, 1D5G, 1D5GP, 1D5GT, 1K5G*, 1M5G* |
| 1E5G | 1E5GP, 1E5GT, 1D5G, 1D5GP, 1D5GT, 1K5G*, 1M5G* |
| 1E5GP | 1E5G, 1E5GT, 1D5G, 1D5GP, 1D5GT, 1K5G*, 1M5G* |
| 1E5GT | 1E5G, 1E5GP, 1D5G, 1D5GP, 1D5GT, 1K5G*, 1M5G* |
| 1E7G | 1E7GT |
| 1E7GT | 1E7G |
| 1F4 | |
| 1F5G | 1L5G* |
| 1F6 | |
| 1F7G | 1F7GH, 1F7GT, 1F7GV, 1F7GY |
| 1F7GH | 1F7G, 1F7GT, 1F7GV, 1F7GY |
| 1F7GT | 1F7G, 1F7GH, 1F7GV, 1F7GY |
| 1F7GV | 1F7G, 1F7GH, 1F7GT, 1F7GY |
| 1F7GY | 1F7G, 1F7GH, 1F7GT, 1F7GV |
| 1G3GT | 1AU3, 1B3GT, 1G3GT/1B3GT, 1J3, 1J3A, 1K3, 1N2, 1N2A |
| 1G3GT/1B3GT | 1B3GT, 1G3GT, 1AU3, 1J3, 1J3A, 1K3, 1N2, 1N2A |
| 1G4G | 1G4GT, 1G4GT/G, 1E4G, 1E4GT |
| 1G4GT | 1G4G, 1G4GT/G, 1E4G, 1E4GT |
| 1G4GT/G | 1G4G, 1G4GT, 1E4G, 1E4GT |
| 1G5G | 1G5GT, 1G5GT/G, 1J5G, 1J5GT |
| 1G5GT | 1G5G, 1G5GT/G, 1J5G, 1J5GT |
| 1G5GT/G | 1G5G, 1G5GT, 1J5G, 1J5GT |
| 1G6G | 1G6GT, 1G6GT/G |
| 1G6GT | 1G6G, 1G6GT/G |
| 1G6GT/G | 1G6G, 1G6GT |
| 1H2 | |
| 1H4G | 1H4GT |

● RECEIVING TUBES 1D5GT-1H4G ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 1H4GT-IN2A ●
● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 1H4GT | 1H4G |
| 1H5 | 1H5G, 1H5GT |
| 1H5G | 1H5, 1H5GT |
| 1H5GT | 1H5, 1H5G |
| 1H6G | 1H6GT |
| 1H6GT | 1H6G |
| 1J3 | 1J3A, 1AU3, 1B3GT, 1G3GT, 1G3GT/ 1B3GT, 1K3, 1N2, 1N2A |
| 1J3A | 1AU3, 1N2, 1N2A |
| 1J5G | 1J5GT, 1G5G, 1G5GT, 1G5GT/G |
| 1J5GT | 1J5G, 1G5G, 1G5GT, 1G5GT/G |
| 1J6G | 1J6GT, 1J6GX |
| 1J6GT | 1J6G, 1J6GX |
| 1J6GX | 1J6G, 1J6GT |
| 1K3 | 1AU3, 1B3GT, 1G3GT, 1G3GT/1B3GT, 1J3, 1J3A, 1N2, 1N2A |
| 1K4 | 1C4, 1A4*, 1A4P*, 1A4T*, 1B4*, 1B4G*, 1B4P*, 1B4T*, 32*, 34*, 951* |
| 1K5G | 1M5G, 1D5G*, 1D5GP*, 1D5GT*, 1E5G*, 1E5GP*, 1E5GT* |
| 1K7G | |
| 1L4 | 1AE4* |
| 1L5G | 1F5G* |
| 1L6 | 1U6* |
| 1LA4 | 1LA4E |
| 1LA4E | 1LA4 |
| 1LA6 | 1LC6 |
| 1LB4 | |
| 1LB6 | |
| 1LC5 | 1LN5 |
| 1LC6 | 1LA6 |
| 1LD5 | |
| 1LE3 | 1LF3 |
| 1LF3 | 1LE3 |
| 1LG5 | |
| 1LH4 | |
| 1LN5 | 1LC5 |
| 1M3 | 1N3 |
| 1M5G | 1K5G, 1D5G*, 1D5GP*, 1D5GT*, 1E5G*, 1E5GP*, 1E5GT* |
| 1N2 | 1N2A, 1AU3, 1J3A |
| 1N2A | 1N2, 1AU3, 1J3A |

‡ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 1N3 | 1M3 |
| 1N5G | 1N5GT, 1N5GT/G, 1P5G, 1P5GT |
| 1N5GT | 1N5G, 1N5GT/G, 1P5G, 1P5GT |
| 1N5GT/G | 1N5G, 1N5GT, 1P5G, 1P5GT |
| 1N6G | 1N6GT |
| 1N6GT | 1N6G |
| 1P5G | 1P5GT, 1N5G, 1N5GT, 1N5GT/G |
| 1P5GT | 1P5G, 1N5G, 1N5GT, 1N5GT/G |
| 1Q5G | 1Q5GT, 1Q5GT/G, 1C5G, 1C5GT, 1C5GT/G, 1T5GT* |
| 1Q5GT | 1Q5G, 1Q5GT/G, 1C5G, 1C5GT, 1C5GT/G, 1T5GT* |
| 1Q5GT/G | 1Q5G, 1Q5GT, 1C5G, 1C5GT, 1C5GT/G, 1T5GT* |
| 1R4 | |
| 1R5 | 1R5SF*, 1AQ5* |
| 1R5SF | 1AQ5, 1R5* |
| 1S2 | 1S2A |
| 1S2A | 1S2 |
| 1S4 | |
| 1S5 | 1AF5*, 1AH5*, 1AR5* |
| 1SA6GT | |
| 1SB6GT | |
| 1T4 | 1AE4*, 1AF4*, 1AJ4*, 1AM4*, 1T4SF* |
| 1T4SF | 1AE4*, 1AF4, 1AJ4, 1AM4, 1T4* |
| 1T5GT | 1A5G, 1A5GT, 1A5GT/G, 1C5*, 1C5GT*, 1C5GT/G*, 1Q5G*, 1Q5GT/G* |
| 1U4 | 1AF4* |
| 1U5 | 1DN5, 1AS5*, 1U5SF* |
| 1U5SF | 1AS5, 1DN5*, 1U5* |
| 1U6 | 1L6* |
| 1V | 6Z3 |
| 1V2 | |
| 1W4 | |
| 1X2 | 1X2A, 1X2B |
| 1X2A | 1X2B |
| 1X2B | |
| 1Y2 | |
| 1Z2 | |
| 2A3 | 2A3H |
| 2A3H | 2A3 |
| 2A5 | |

• RECEIVING TUBES 1N3-2A5 •

‡ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 2A6-2HK5 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---------------------------|
| 2A6 | |
| 2A7 | 2A7S |
| 2A7S | 2A7 |
| 2AF4 | 2AF4A, 2AF4B, 2DZ4§, 2T4§ |
| 2AF4A | 2AF4B, 2DZ4§, 2T4§ |
| 2AF4B | 2DZ4§ |
| 2AH2 | |
| 2AS2 | |
| 2AV2 | |
| 2B3 | |
| 2B6 | |
| 2B7 | 2B7S |
| 2B7S | 2B7 |
| 2BN4 | 2BN4A |
| 2BN4A | 2BN4 |
| 2CW4 | 2DS4 |
| 2CY5 | 2EA5, 2EV5 |
| 2DF4 | |
| 2DS4 | 2CW4 |
| 2DV4 | |
| 2DX4 | |
| 2DY4 | 2DY4A |
| 2DY4A | 2DY4 |
| 2DZ4 | 2AF4B§ |
| 2E5 | |
| 2EA5 | 2EV5 |
| 2EN5 | |
| 2ER5 | 2FQ5, 2FQ5A, 2FY5 |
| 2ES5 | |
| 2EV5 | 2EA5 |
| 2FH5 | 2ES5, 2FQ5, 2FQ5A, 2GK5 |
| 2FQ5 | 2FQ5A, 2ES5, 2GK5 |
| 2FQ5A | 2FQ5, 2ES5, 2GK5 |
| 2FS5 | 2GU5 |
| 2FV6 | |
| 2FY5 | 2ER5, 2FQ5, 2FQ5A, 2GK5 |
| 2G5 | |
| 2GK5 | 2FQ5, 2FQ5A |
| 2GU5 | 2FS5 |
| 2GW5 | |
| 2HA5 | 2HK5, 2HM5, 2HQ5 |
| 2HK5 | 2HM5, 2HQ5, 2HA5† |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 2HM5 | 2HK5, 2HQ5, 2HA5† |
| 2HQ5 | 2HK5, 2HM5, 2HA5† |
| 2HR8 | |
| 2J2 | |
| 2S/4S | |
| 2T4 | 2AF4§, 2AF4A§, 2AF4B§, 2DZ4§ |
| 2V2 | 3C2 |
| 2V3G | |
| 2W3 | 2W3GT |
| 2W3GT | 2W3 |
| 2X2 | 2X2A, 2Y2 |
| 2X2A | 2X2, 2Y2 |
| 2X3G | |
| 2Y2 | 2X2, 2X2A |
| 2Z2 | 2Z2/G84, G84 |
| 2Z2/G84 | 2Z2, G84 |
| 3A2 | |
| 3A3 | 3AW3, 3B2, 3CA3 |
| 3A4 | |
| 3A5 | |
| 3A8G | 3A8GT |
| 3A8GT | 3A8G |
| 3AF4A | 3AF4B, 3DZ4§ |
| 3AF4B | 3DZ4§ |
| 3AJ8 | |
| 3AL5 | |
| 3AT2 | |
| 3AU6 | 3BA6, 3BC5§, 3CB6§, 3CE5§, 3CF6§ |
| 3AV6 | |
| 3AW3 | 3A3, 3CA3 |
| 3B2 | 3A3, 3AW3 |
| 3B4 | |
| 3B5 | 3B5GT, 3C5GT, 3Q5, 3Q5G, 3Q5GT, 3Q5GT/G |
| 3B5GT | 3B5, 3C5GT, 3Q5, 3Q5G, 3Q5GT, 3Q5GT/G |
| 3B7 | |
| 3BA6 | 3AU6, 3BZ6§ |
| 3BC5 | 3CE5, 3AU6§, 3CB6§, 3CF6§, 3DK6§ |
| 3BE6 | 3BY6, 3CS6 |
| 3BN4 | 3BN4A |
| 3BN4A | 3BN4 |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 3BN6 | |
| 3BU8 | 3BU8A, 3GS8, 3HS8, 3KF8 |
| 3BU8A | 3BU8, 3GS8, 3HS8, 3KF8 |
| 3BX6 | 3BY7 |
| 3BY6 | 3BE6, 3CS6 |
| 3BY7 | 3BX6 |
| 3BZ6 | 3BA6§, 3CB6§, 3CE6§, 3CF6§, 3DK6§ |
| 3C2 | |
| 3C4 | 3E5, 3V4* |
| 3C5GT | 3B5, 3B5GT, 3Q5G, 3Q5GT, 3Q5GT/G |
| 3C6 | XXB |
| 3CA3 | 3A3, 3AW3 |
| 3CB6 | 3CF6, 3DK6, 3AU6§, 3BC5§, 3BZ6§, 3EC5§ |
| 3CE5 | 3BC5, 3AU6§, 3BZ6§, 3CB6§, 3CF6§, 3DK6§ |
| 3CF6 | 3CB6, 3DK6, 3AU6§, 3BC5§, 3BZ6§, 3CE5§ |
| 3CS6 | 3BE6, 3BY6 |
| 3CY5 | 3EA5, 3EV5 |
| 3D6 | 3LE4*, 3LF4* |
| 3DG4 | |
| 3DK6 | 3CB6, 3CF6, 3BC5§, 3BZ6§, 3CE5§ |
| 3DT6 | 3DT6A |
| 3DT6A | 3DT6 |
| 3DX4 | |
| 3DY4 | 3DY4A |
| 3DY4A | 3DY4 |
| 3DZ4 | 3AF4B§ |
| 3E5 | 3C4, 3V4* |
| 3E6 | |
| 3EA5 | 3EV5 |
| 3EH7 | 3EJ7, 3HM6§, 3HT6§, 3JC6§, 3JD6§ |
| 3EJ7 | 3EH7, 3HM6§, 3HT6§, 3JC6§, 3JD6§ |
| 3ER5 | 3FQ5, 3FQ5A, 3FY5 |
| 3ES5 | |
| 3EV5 | 3EA5 |
| 3FH5 | 3ES5, 3FQ5, 3FQ5A, 3GK5 |
| 3FQ5 | 3FQ5A, 3ES5, 3GK5 |
| 3FQ5A | 3FQ5, 3GK5 |
| 3FS5 | 3GU5 |
| 3FY5 | 3ER5 |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 3GK5 | 3FQ5, 3FQ5A |
| 3GS8 | 3BU8, 3BU8A, 3HS8, 3KF8 |
| 3GU5 | 3FS5 |
| 3GW5 | |
| 3HA5 | 3HK5, 3HM5, 3HQ5 |
| 3HK5 | 3HM5, 3HQ5, 3HA5† |
| 3HM5 | 3HK5, 3HQ5, 3HA5† |
| 3HM6 | 3HT6, 3JC6§, 3JD6§ |
| 3HQ5 | 3HK5, 3HM5, 3HA5† |
| 3HS8 | 3BU8, 3BU8A, 3GS8, 3KF8 |
| 3HT6 | 3HM6, 3JC6§, 3JD6§ |
| 3JC6 | 3HM6§, 3HT6§, 3JD6§ |
| 3JD6 | 3HM6§, 3HT6§, 3JC6§ |
| 3KF8 | 3BU8, 3BU8A, 3GS8, 3HS8 |
| 3LE4 | 3LF4§, 3D6* |
| 3LF4 | 3LE4§, 3D6* |
| 3Q4 | 3S4§, 3S4SF*§, 3W4*§, 3Z4*§ |
| 3Q5 | 3Q5G, 3Q5GT, 3Q5GT/G, 3B5, 3B5GT, 3C5GT |
| 3Q5G | 3Q5, 3Q5GT, 3Q5GT/G, 3B5, 3B5GT, 3C5GT |
| 3Q5GT | 3Q5, 3Q5G, 3Q5GT/G, 3B5, 3B5GT, 3C5GT |
| 3Q5GT/G | 3Q5, 3Q5G, 3Q5GT, 3B5, 3B5GT, 3C5GT |
| 3S4 | 3S4SF*, 3Q4§, 3W4*, 3Z4* |
| 3S4SF | 3W4, 3Z4, 3S4*, 3Q4*§ |
| 3V4 | 3C4*, 3E5* |
| 3W4 | 3S4SF, 3Z4, 3S4*, 3Q4*§ |
| 3Z4 | 3S4SF, 3W4, 3S4*, 3Q4*§ |
| 4A6 | 4A6G |
| 4A6G | 4A6 |
| 4AU6 | 4BA6, 4BC5§, 4BZ6§, 5CB6§, 4CE5§, 4DE6§ |
| 4AV6 | |
| 4BA6 | 4AU6, 4BZ6§ |
| 4BC5 | 4CE5, 4AU6§, 4CB6§, 4DE6§, 4DK6§ |
| 4BC8 | 4BQ7A, 4BS8, 4BX8, 4BZ7, 4BZ8, 5BK7A |
| 4BE6 | 4CS6 |
| 4BL8 | 5EA8, 5U8, 5CQ8§ |
| 4BN4 | |
| 4BN6 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 4BQ7A-4HK5

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 4BQ7A | 4BC8, 4BS8, 4BX8, 4BZ7, 4BZ8, 5BK7A |
| 4BS8 | 4BC8, 4BQ7A, 4BX8, 4BZ7, 4BZ8, 5BK7A |
| 4BU8 | 4GS8, 4HS8, 4KF8 |
| 4BX8 | 4BC8, 4BQ7A, 4BS8, 4BZ7, 4BZ8, 5BK7A |
| 4BZ6 | 4AU6§, 4BA6§, 4CB6§, 4DE6§, 4DK6§ |
| 4BZ7 | 4BC8, 4BQ7A, 4BS8, 4BX8, 4BZ8, 5BK7A |
| 4BZ8 | 4BC8, 4BQ7A, 4BS8, 4BX8, 4BZ7, 5BK7A |
| 4CB6 | 4DE6, 4DK6, 4AU6§, 4BC5§, 4BZ6§, 4CE5§ |
| 4CE5 | 4BC5, 4AU6§, 4BZ6§, 4CB6§, 4DE6§, 4DK6§ |
| 4CF6 | |
| 4CM4 | |
| 4CS6 | 4BE6 |
| 4CX7 | |
| 4CY5 | |
| 4DE6 | 4CB6, 4DK6, 4AU6§, 4BC5§, 4BZ6§, 4CE5§ |
| 4DK6 | 4CB6, 4DE6, 4BC5§, 4BZ6§, 4CE5§ |
| 4DT6 | 4DT6A |
| 4DT6A | 4DT6 |
| 4EH7 | 4EJ7, 4HM6§, 4HT6§, 4JC6§, 4JD6§ |
| 4EJ7 | 4EH7, 4HM6§, 4HT6§, 4JC6§, 4JD6§ |
| 4ES8 | 4KN8 |
| 4EW6 | 4GM6 |
| 4FS7 | 4HG8 |
| 4GK5 | |
| 4GM6 | 4EW6 |
| 4GS8 | 4BU8, 4HS8, 4KF8 |
| 4GW5 | |
| 4GX7 | |
| 4GZ5 | |
| 4HA5 | 4HK5, 4HM5, 4HQ5 |
| 4HA7 | |
| 4HC7 | |
| 4HG8 | |
| 4HK5 | 4HA5, 4HM5, 4HQ5 |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 4HM5 | 4HQ5, 4HA5†, 4HK5† |
| 4HM6 | 4HT6, 4JC6§, 4JD6§ |
| 4HQ5 | 4HM5, 4HA5†, 4HK5† |
| 4HR8 | |
| 4HS8 | 4BU8, 4GS8, 4KF8 |
| 4HT6 | 4HM6, 4JC6§, 4JD6§ |
| 4JC6 | 4HM6§, 4HT6§, 4JD6§ |
| 4JD6 | 4HM6§, 4HT6§, 4JC6§ |
| 4JK6 | 4EW6, 4JL6 |
| 4JL6 | 4EW6, 4JK6 |
| 4KF8 | 4BU8, 4GS8, 4HS8 |
| 4KN8 | |
| 5A6 | |
| 5AF4A | |
| 5AM8 | |
| 5AN8 | |
| 5AQ5 | |
| 5AR4 | |
| 5AS4 | 5AS4A, 5DB4, 5U4GB, 5V3, 5V3A |
| 5AS4A | 5AS4, 5DB4, 5U4GB, 5V3, 5V3A |
| 5AS8 | |
| 5AT4 | |
| 5AT8 | 5BE8§, 5BR8§, 5CG8§, 5CL8§, 5CL8A§, 5DH8§, 5FG7§, 5FV8§ |
| 5AU4 | 5V3, 5V3A |
| 5AV8 | 5B8§ |
| 5AW4 | 5AS4, 5AS4A, 5AU4, 5DB4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5U4GA, 5U4GB, 5V3, 5V3A |
| 5AX4GT | 5AR4, 5AS4, 5AS4A, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5U4G, 5U4GA, 5U4GB, 5V4G, 5V4GA, 5V4GY |
| 5AZ3 | |
| 5AZ4 | |
| 5B8 | 5AV8§ |
| 5BC3 | |
| 5BE8 | 5BR8§, 5CL8§, 5CL8A§, 5FG7§, 5FV8§ |
| 5BK7A | 4BC8, 4BQ7A, 4BS8, 4BX8, 4BZ7, 4BZ8 |
| 5BQ7A | 5BS8, 5BZ7 |
| 5BR8 | 5FV8, 5BE8§, 5CL8§, 5CL8A§ |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 5BS8-5LJ8 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 5BS8 | 5BQ7A, 5BZ7 |
| 5BT8 | |
| 5BW8 | |
| 5BZ7 | 5BQ7A, 5BS8 |
| 5CG4 | 5AR4, 5V4G, 5V4GA, 5V4GY, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5CG8 | 5FG7, 5AT8§, 5BE8§, 5BR8§, 5CL8§, 5CL8A§, 5FV8§ |
| 5CL8 | 5CL8A, 5BE8§, 5BR8§, 5FV8§ |
| 5CL8A | 5CL8, 5BE8§, 5BR8§, 5FV8§ |
| 5CM6 | |
| 5CM8 | 5CR8§ |
| 5CQ8 | 5EA8§, 5U8§ |
| 5CR8 | 5CM8§, 5EA8§, 5GH8§, 5U8§ |
| 5CU4 | |
| 5CZ5 | |
| 5DB4 | 5AS4, 5AS4A, 5U4GB |
| 5DH8 | 5BR8§, 5CL8§, 5CL8A§, 5FG7§, 5FV8§ |
| 5DJ4 | 5DN4 |
| 5DN4 | 5DJ4 |
| 5EA8 | 5U8, 5CQ8§ |
| 5EH8 | 5X8§ |
| 5ES8 | |
| 5EU8 | |
| 5EW6 | 5GM6 |
| 5FG7 | 5BE8§, 5BR8§ |
| 5FV8 | 5BR8, 5BE8§, 5CL8§, 5CL8A§, 5DH8§ |
| 5GH8 | 5EA8, 5U8, 5CQ8§ |
| 5GM6 | 5EW6 |
| 5GX6 | |
| 5GX7 | |
| 5HA7 | |
| 5HB7 | |
| 5HC7 | |
| 5HG8 | |
| 5J6 | |
| 5JK6 | 5EW6, 5JL6 |
| 5JL6 | 5EW6, 5JK6 |
| 5KD8 | |
| 5KE8 | |
| 5LJ8 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 5R4G | 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB |
| 5R4GTY | 5R4G, 5R4GY, 5R4GYA, 5R4GYB |
| 5R4GY | 5R4G, 5R4GTY, 5R4GYA, 5R4GYB |
| 5R4GYA | 5R4G, 5R4GTY, 5R4GY, 5R4GYB |
| 5R4GYB | |
| 5T4 | 5AR4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB |
| 5T8 | |
| 5U4G | 5U4GA, 5U4GB, 5AR4, 5AS4, 5AS4A, 5AU4, 5DB4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V3, 5V3A |
| 5U4GA | 5U4GB, 5AS4, 5AS4A, 5AU4, 5DB4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5V3, 5V3A |
| 5U4GB | 5AS4, 5AS4A, 5DB4 |
| 5U8 | 5EA8, 5CQ8§ |
| 5V3 | 5V3A, 5AU4 |
| 5V3A | |
| 5V4G | 5V4GA, 5V4GY, 5AR4 |
| 5V4GA | 5V4G, 5V4GY, 5AR4 |
| 5V4GY | 5V4G, 5V4GA, 5AR4 |
| 5V6GT | |
| 5W4 | 5W4G, 5W4GT, 5W4GT/G, 5AR4, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4G, 5V4GA, 5V4GY, 5Y3G, 5Y3GA, 5Y3GT, 5Y3GT/G, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5W4G | 5W4, 5W4GT, 5W4GT/G, 5AR4, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4G, 5V4GA, 5V4GY, 5Y3G, 5Y3GA, 5Y3GT, 5Y3GT/G, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5W4GT | 5W4, 5W4G, 5W4GT/G, 5AR4, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4G, 5V4GA, 5V4GY, 5Y3G, 5Y3GA, 5Y3GT, 5Y3GT/G, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |

● RECEIVING TUBES 5R4G-5W4GT ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 5W4GT/G | 5W4, 5W4G, 5W4GT, 5AR4, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4G, 5V4GA, 5V4GY, 5Y3G, 5Y3GA, 5Y3GT, 5Y3GT/G, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G 5Z4MG |
| 5X3 | 13, 80, 83V, 88 |
| 5X4G | 5X4GA |
| 5X4GA | 5X4G |
| 5X8 | 5EH8§ |
| 5Y3G | 5Y3GA, 5Y3GT, 5Y3GT/G, 5AR4, 5AX4GT, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4, 5V4GA, 5V4GY, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5Y3GA | 5Y3G, 5Y3GT, 5Y3GT/G, 5AR4, 5AX4GT, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4, 5V4GA, 5V4GY, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5Y3GT | 5Y3G, 5Y3GA, 5Y3GT/G, 5AR4, 5AX4GT, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4, 5V4GA, 5V4GY, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5Y3GT/G | 5Y3G, 5Y3GA, 5Y3GT, 5AR4, 5AX4GT, 5CG4, 5R4G, 5R4GTY, 5R4GY, 5R4GYA, 5R4GYB, 5T4, 5V4G, 5V4GA, 5V4GY, 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG |
| 5Y4G | 5Y4GA, 5Y4GT |
| 5Y4GA | 5Y4G, 5Y4GT |
| 5Y4GT | 5Y4G, 5Y4GA |
| 5Z3 | 83 |
| 5Z4 | 5Z4G, 5Z4GT, 5Z4GT/G, 5Z4MG, 5AR4, 5CG4, 5V4G, 5V4GA, 5V4GY |
| 5Z4G | 5Z4, 5Z4GT, 5Z4GT/G, 5Z4MG, 5AR4, 5CG4, 5V4G, 5V4GA, 5V4GY |
| 5Z4GT | 5Z4, 5Z4G, 5Z4GT/G, 5Z4MG, 5AR4, 5CG4, 5V4G, 5V4GA, 5V4GY |
| 5Z4GT/G | 5Z4, 5Z4G, 5Z4GT, 5Z4MG, 5AR4, 5CG4, 5V4G, 5V4GA, 5V4GY |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 5Z4MG | 5Z4, 5Z4G, 5Z4GT, 5Z4GT/G, 5AR4, 5CG4, 5V4G, 5V4GA, 5V4GY |
| 6A3 | |
| 6A4 | 6A4LA§ |
| 6A4LA | 6A4§ |
| 6A5 | 6A5G |
| 6A5G | 6A5 |
| 6A6 | 6A6X |
| 6A6X | 6A6 |
| 6A7 | 6A7S |
| 6A7S | 6A7 |
| 6A8 | 6A8G, 6A8GT, 6A8GTX, 6A8MG, 6D8*, 6D8G* |
| 6A8G | 6A8, 6A8GT, 6A8GTX, 6A8MG, 6D8*, 6D8G* |
| 6A8GT | 6A8, 6A8G, 6A8GTX, 6A8MG, 6D8*, 6D8G* |
| 6A8GTX | 6A8, 6A8G, 6A8GT, 6A8MG, 6D8*, 6D8G* |
| 6A8MG | 6A8, 6A8G, 6A8GT, 6A8GTX, 6D8*, 6D8G* |
| 6AB4 | |
| 6AB5 | 6N5, 6N5G, 6AB5/6N5 |
| 6AB5/6N5 | 6AB5, 6N5, 6N5G |
| 6AB6G | 6N6*, 6N6G*, 6N6MG* |
| 6AB7 | 6AB7Y, 6AC7, 6AC7A, 6AC7Y, 6AJ7, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT* |
| 6AB7Y | 6AB7, 6AC7, 6AC7A, 6AC7Y, 6AJ7, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT* |
| 6AB8 | |
| 6AB9 | |
| 6AC5 | 6AC5G, 6AC5GT, 6AC5GT/G |
| 6AC5G | 6AC5, 6AC5GT, 6AC5GT/G |
| 6AC5GT | 6AC5, 6AC5G, 6AC5GT/G |
| 6AC5GT/G | 6AC5, 6AC5G, 6AC5GT |
| 6AC6G | 6AC6GT |
| 6AC6GT | 6AC6G |
| 6AC7 | 6AC7A, 6AC7Y, 6AB7, 6AB7Y, 6AJ7, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT*§ |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 6AC7A-6AH7GT ●
● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6AC7A | 6AC7, 6AC7Y, 6AB7, 6AB7Y, 6AJ7, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT*§ |
| 6AC7Y | 6AC7, 6AC7A, 6AB7, 6AB7Y, 6AJ7, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT*§ |
| 6AD5G | 6AD5GT |
| 6AD5GT | 6AD5G |
| 6AD6G | 6AF6G, 6AF6GT |
| 6AD7G | |
| 6AD8 | 6DC8, 6N8 |
| 6AE5 | 6AE5G, 6AE5GT, 6AE5GT/G, 6AF5G |
| 6AE5G | 6AE5, 6AE5GT, 6AE5GT/G, 6AF5G |
| 6AE5GT | 6AE5, 6AE5G, 6AE5GT/G, 6AF5G |
| 6AE5GT/G | 6AE5, 6AE5G, 6AE5GT, 6AF5G |
| 6AE6 | 6AE6G |
| 6AE6G | 6AE6 |
| 6AE7G | 6AE7GT |
| 6AE7GT | 6AE7G |
| 6AE8 | |
| 6AF3 | 6BR3, 6AL3* |
| 6AF4 | 6AF4A, 6AN4§, 6T4§ |
| 6AF4A | 6AF4, 6AN4§, 6DZ4§, 6T4§ |
| 6AF5G | 6AE5, 6AE5G, 6AE5GT, 6AE5GT/G |
| 6AF6G | 6AF6GT, 6AD6G |
| 6AF6GT | 6AF6G, 6AD6G |
| 6AF7G | 6CD7* |
| 6AF11 | 6AS11, 6BD11 |
| 6AG5 | 6BC5, 6CE5, 6AK5*, 6AU6§, 6AU6A§, 6AW6§, 6CB6§, 6CB6A§, 6CF6§, 6DC6§, 6DE6§, 6CY5*§, 6EA5*§, 6EV5*§ |
| 6AG6G | 6M6G* |
| 6AG7 | 6AG7Y, 6AK7 |
| 6AG7Y | 6AG7, 6AK7 |
| 6AG11 | |
| 6AH4GT | |
| 6AH5 | 6AH5G |
| 6AH5G | 6AH5 |
| 6AH6 | 6AH6V |
| 6AH6V | 6AH6 |
| 6AH7GT | |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6AJ4 | 6AM4§, 6CR4*§ |
| 6AJ5 | |
| 6AJ7 | 6AB7, 6AB7Y, 6AC7, 6AC7A, 6AC7Y, 6SG7*§, 6SG7GT*§, 6SG7Y*§, 6SH7*§, 6SH7GT*§ |
| 6AJ8 | |
| 6AK5 | 6AG5*, 6BC5*, 6CE5*, 6CY5*§, 6EA5*§, 6EV5*§ |
| 6AK6 | |
| 6AK7 | 6AG7, 6AG7Y |
| 6AK8 | 6T8, 6T8A |
| 6AL3 | |
| 6AL5 | 6EB5 |
| 6AL6 | 6AL6G |
| 6AL6G | 6AL6 |
| 6AL7 | 6AL7GT |
| 6AL7GT | 6AL7 |
| 6AL11 | |
| 6AM4 | 6AJ4§ |
| 6AM5 | |
| 6AM6 | |
| 6AM8 | 6AM8A, 6HJ8 |
| 6AM8A | 6AM8*†, 6HJ8 |
| 6AN4 | 6AF4§, 6AF4A§, 6T4§ |
| 6AN5 | |
| 6AN6 | |
| 6AN7 | |
| 6AN8 | 6AN8A |
| 6AN8A | 6AN8*† |
| 6AQ4 | |
| 6AQ5 | 6AQ5A, 6BM5, 6HG5 |
| 6AQ5A | 6HG5, 6AG5*†, 6BM5*† |
| 6AQ6 | 6AT6*, 6AV6*, 6BK6*, 6BT6* |
| 6AQ7GT | |
| 6AQ8 | 6DT8* |
| 6AR5 | |
| 6AR6 | 6AR6G |
| 6AR6G | 6AR6 |
| 6AR7GT | |
| 6AR8 | |
| 6AR11 | |
| 6AS4GT | 6DM4, 6DM4A, 6DQ4, 6DT4, 6CQ4* |

● RECEIVING TUBES 6AJ4-6AS4GT ●

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

● 6AS5-6AX3 ● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6AS5 | 6CA5* |
| 6AS6 | 6DB6* |
| 6AS7G | 6AS7GA, 6AS7GT, 6080 |
| 6AS7GA | 6AS7G, 6AS7GT, 6080 |
| 6AS7GT | 6AS7G, 6AS7GA, 6080 |
| 6AS8 | |
| 6AS11 | 6AF11, 6BD11 |
| 6AT6 | 6AV6, 6BK6, 6BT6, 6AQ6* |
| 6AT8 | 6AT8A, 6BE8§, 6BE8A§, 6BR8§, 6BR8A§, 6CG8A§, 6CL8§, 6CL8A§, 6FG7§, 6FV8§, 6FV8A§ |
| 6AT8A | 6AT8*†, 6BE8A§, 6BR8A§, 6CG8§, 6CG8A§, 6CL8§, 6CL8A§, 6FG7§, 6FV8§, 6FV8A§ |
| 6AU4GT | 6AU4GTA, 6CQ4*, 6DA4A*, 6DE4*, 6DM4*, 6DM4A*, 6DQ4*, 6DT4* |
| 6AU4GTA | 6DM4A*, 6DT4* |
| 6AU5GT | 6FW5, 6AV5GA*, 6AV5GT* |
| 6AU6 | 6AU6A, 6BA6, 7543, 6AW6§, 6AG5§, 6BC5§, 6CB6§, 6CB6A§, 6CE5§, 6CF6§, 6DE6§, 6DK6§ |
| 6AU6A | 6AU6*†, 7543*†, 6BA6*†, 6CB6A§, 6CE5§ |
| 6AU7 | 7AU7, 6AX7§ |
| 6AU8 | 6AU8A, 6AW8, 6AW8A, 6BA8, 6BA8A, 6BH8, 6CX8*, 6EH8*§, 6X8*, 6X8A* |
| 6AU8A | 6AU8, 6AW8, 6AW8A, 6BA8, 6BA8A, 6BH8, 6CX8*, 6EH8*§, 6X8*, 6X8A* |
| 6AV4 | 6BX4* |
| 6AV5GA | 6AV5GT, 6FW5, 6AU5GT* |
| 6AV5GT | 6AV5GA, 6FW5, 6AU5GT* |
| 6AV6 | 6AT6, 6BK6, 6BT6, 6AQ6* |
| 6AV11 | 6K11§, 6Q11§ |
| 6AW6 | 6CB6, 6CB6A, 6CF6, 6DC6, 6DE6, 6AG5§, 6AU6§, 6AU6A§, 6BC5§, 6BH6*, 6CE5§ |
| 6AW7GT | |
| 6AW8 | 6AW8A, 6AU8, A, 6BA8, A, 6JV8, 6KS8, 6LF8, 6EB8*, 6EH8*§, 6X8*§, A*§ |
| 6AW8A | 6AW8, 6AU8, A, 6BA8, A, 6JV8, 6KS8, 6LF8, 6EB8* 6EH8*§, 6X8*§, A*§ |
| 6AX3 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6AX4GT | 6AX4GTA, 6AX4GTB, 6AS4GT, 6DA4, 6DA4A, 6DM4, 6DM4A, 6DQ4, 6DT4, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4*, |
| 6AX4GTA | 6AX4GTB, 6DA4, 6DA4A, 6DM4, 6DM4A, 6DQ4, 6DT4, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4* |
| 6AX4GTB | 6DM4A, 6CQ4*, 6DA4A*†, 6DE4*, 6DM4*†, 6DQ4*†, 6DT4*† |
| 6AX5GT | |
| 6AX6G | |
| 6AX7 | 6AU7§, 7AU7§ |
| 6AX8 | 6EA8, 6GH8, A, 6LM8, 6U8, A, 6CQ8§, 6GJ8§ |
| 6AY3 | 6AY3A, 6BA3, 6BS3, 6DW4, 6DW4A, 6BH3* |
| 6AY3A | 6AY3, 6BA3, 6BS3, 6DW4, 6DW4A, 6BH3* |
| 6AY11 | |
| 6AZ8 | |
| 6B3 | 6V3*, 6V3A* |
| 6B4G | |
| 6B5 | |
| 6B6 | 6BG6, 6Q7, 6Q7G, 6Q7GT, 6Q7MG, 6T7G* |
| 6B6G | 6B6, 6Q7, 6Q7G, 6Q7GT, 6Q7MG, 6T7G* |
| 6B7 | 6B7S |
| 6B7S | 6B7 |
| 6B8 | 6B8G, 6B8GT |
| 6B8G | 6B8, 6B8GT |
| 6B8GT | 6B8, 6B8G |
| 6B10 | |
| 6BA3 | 6AY3, 6AY3A, 6BS3, 6DW4, 6DW4A, 6BH3* |
| 6BA6 | 6AU6, 6AU6A, 6BD6, 6CG6, 7543, 6BZ6§ |
| 6BA7 | |
| 6BA8 | 6BA8A, 6AU8, 6AU8A, 6AW8, 6AW8A, 6BH8 |
| 6BA8A | 6BA8, 6AU8, 6AU8A, 6AW8, 6AW8A, 6BH8 |
| 6BA11 | |
| 6BC4 | |

● RECEIVING TUBES 6AX4GT-6BC4 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 6BC5-6BK4A ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6BC5 | 6AG5, 6CE5, 6AK5*, 6AU6§, 6AU6A§, 6AW6§, 6CB6§, 6CB6A§, 6CF6§, 6DC6§, 6DE6§, 6DK6§, 6CY5*§, 6EA5*§, 6EV5*§ |
| 6BC7 | |
| 6BC8 | 6BQ7, 6BQ7A, 6BS8, 6BX8, 6BZ7, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BD4 | 6BD4A, 6BK4*§, 6BK4A*§ |
| 6BD4A | 6BK4*§, 6BK4A*§ |
| 6BD5GT | 6AU5GT*, 6AV5GA*, 6AV5GT*, 6FW5* |
| 6BD6 | 6BA6, 6CG6 |
| 6BD7 | |
| 6BD11 | 6AF11 |
| 6BE3 | 6BE3A |
| 6BE3A | 6BE3 |
| 6BE6 | 6BY6, 6CS6 |
| 6BE7 | |
| 6BE8 | 6BE8A, 6BR8§, 6BR8A§, 6CL8§, 6CL8A§, 6FG7§, 6FV8§, 6FV8A§ |
| 6BE8A | 6BE8*†, 6BR8A§, 6CL8§, 6CL8A§, 6FG7§, 6FV8§, 6FV8A§ |
| 6BF5 | |
| 6BF6 | 6BU6 |
| 6BF8 | |
| 6BF11 | |
| 6BG6G | 6BG6GA |
| 6BG6GA | 6BG6G |
| 6BH3 | 6AY3*, 6AY3A*, 6BA3* |
| 6BH5 | |
| 6BH6 | 6AW6*, 6CB6*, 6CB6A*, 6CF6*, 6DC6* |
| 6BH8 | 6AU8, 6AU8A, 6AW8, 6AW8A, 6BA8, 6BA8A |
| 6BH11 | |
| 6BJ3 | 6AX3 |
| 6BJ5 | |
| 6BJ6 | 6BJ6A |
| 6BJ6A | 6BJ6 |
| 6BJ7 | |
| 6BJ8 | 6BN8§ |
| 6BK4 | 6BK4A, 6BD4A*§ |
| 6BK4A | |

§ May not work in all circuits. Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6BK5 | |
| 6BK6 | 6AT6, 6AV6, 6BT6, 6AQ6* |
| 6BK7 | 6BK7A, 6BK7B, 6BC8*, 6BQ7*, 6BQ7A*, 6BS8*, 6BX8*, 6BZ7*, 6BZ8*, 6HK8*, X155* |
| 6BK7A | 6BK7, 6BK7B, 6BC8*, 6BQ7*, 6BQ7A*, 6BS8*, 6BX8*, 6BZ7*, 6BZ8*, 6HK8*, X155* |
| 6BK7B | 6BK7*, 6BK7A*, 6BC8*, 6BQ7*, 6BQ7A*, 6BS8*, 6BX8*, 6BZ7*, 6BZ8*, 6HK8*, X155* |
| 6BK8 | |
| 6BK11 | 6K11§, 6Q11§ |
| 6BL4 | 6AU4GTA*, 6CQ4*, 6DM4A*, 6DT4* |
| 6BL5GT | |
| 6BL7GT | 6BL7GTA, 6BX7GT, 6DN7 |
| 6BL7GTA | 6BL7GT, 6BX7GT, 6DN7 |
| 6BL8 | 6EA8, 6U8, 6U8A |
| 6BM5 | 6AQ5, 6AQ5A, 6DL5*, 6DS5* |
| 6BM8 | |
| 6BN4 | 6BN4A |
| 6BN4A | 6BN4 |
| 6BN5 | |
| 6BN6 | |
| 6BN7 | |
| 6BN8 | 6BJ8§ |
| 6BQ5 | 7189, 7189A |
| 6BQ6G | 6BQ6GA, 6BQ6GT, 6BQ6GTA, 6BQ6GTB, 6BQ6GTB/6CU6, 6CU6, 6DQ6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6BQ6GA | 6BQ6G, 6BQ6GT, 6BQ6GTA, 6BQ6GTB, 6BQ6GTB/6CU6, 6CU6, 6DQ6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6BQ6GT | 6BQ6G, 6BQ6GA, 6BQ6GTA, 6BQ6GTB, 6BQ6GTB/6CU6, 6CU6, 6DQ6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6BQ6GTA | 6BQ6G, 6BQ6GA, 6BQ6GT, 6BQ6GTB, 6BQ6GTB/6CU6, 6CU6, 6DQ6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6BQ6GTB | 6BQ6GTB/6CU6, 6CU6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |

● RECEIVING TUBES 6BK5-6BQ6GTB ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 6BQ6GTB/6CU6-6BY5GA ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6BQ6GTB/6CU6 | 6BQ6GTB, 6CU6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6BQ7 | 6BQ7A, 6BC8, 6BS8, 6BX8, 6BZ7, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BQ7A | 6BQ7, 6BC8, 6BS8, 6BX8, 6BZ7, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BR3 | 6AL3* |
| 6BR5 | 6DA5 |
| 6BR7 | |
| 6BR8 | 6BR8A, 6FV8, 6FV8A, 6JN8, 6BE8§, 6BE8A§, 6CL8§, 6CL8A§ |
| 6BR8A | 6FV8, 6FV8A, 6JN8, 6BR8*†, 6BE8A§, 6CL8§, 6CL8A§ |
| 6BS3 | 6DW4, 6DW4A |
| 6BS5 | |
| 6BS7 | |
| 6BS8 | 6BC8, 6BQ7, 6BQ7A, 6BX8, 6BZ7, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BT4 | |
| 6BT6 | 6AT6, 6AV6, 6BK6, 6AQ6* |
| 6BT8 | |
| 6BU4 | |
| 6BU5 | |
| 6BU6 | 6BF6 |
| 6BU8 | 6BU8A, 6GS8, 6HS8, 6KF8 |
| 6BU8A | 6BU8, 6GS8, 6HS8, 6KF8 |
| 6BV7 | |
| 6BV8 | |
| 6BW4 | |
| 6BW6 | |
| 6BW7 | 6BX6, 6EL7, 6HM6§ |
| 6BW8 | |
| 6BX4 | 6AV4* |
| 6BX6 | 6BW7, 6BY7, 6EL7, 6EC7* |
| 6BX7GT | 6BL7GT, 6BL7GTA, 6DN7 |
| 6BX8 | 6BC8, 6BQ7, 6BQ7A, 6BS8, 6BZ7, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BY5G | 6BY5GA |
| 6BY5GA | 6BY5G |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6BY6 | 6BE6, 6CS6 |
| 6BY7 | 6BX6, 6EC7* |
| 6BY8 | |
| 6BZ6 | 6DC6, 6HQ6, 6JH6, 6BA6§ |
| 6BZ7 | 6BC8, 6BQ7, 6BQ7A, 6BS8, 6BX8, 6BZ8, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6BZ8 | 6BC8, 6BQ7, 6BQ7A, 6BS8, 6BX8, 6BZ7, 6HK8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6C4 | |
| 6C5 | 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6L5G |
| 6C5G | 6C5, 6C5GT, 6C5GT/G, 6C5MG, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6L5G |
| 6C5GT | 6C5, 6C5G, 6C5GT/G, 6C5MG, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6L5G |
| 6C5GT/G | 6C5, 6C5G, 6C5GT, 6C5MG, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6L5G |
| 6C5MG | 6C5, 6C5G, 6C5GT, 6C5GT/G, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6L5G |
| 6C6 | 77, 57A*, 57AS* |
| 6C7 | |
| 6C8G | 6F8G*§ |
| 6C9 | |
| 6C10 | 6AV11†§, 6K11§, 6Q11†§ |
| 6CA4 | |
| 6CA5 | 6EH5, 6AS5* |
| 6CA7 | |
| 6CB5 | 6CB5A, 6CL5 |
| 6CB5A | 6CL5 |
| 6CB6 | 6CB6A, 6AW6, 6CF6, 6DC6, 6DE6, 6DK6, 6HQ6, 6AG5§, 6AU6§, 6AU6A§, 6BC5§, 6CE5§, 6BH6§, 6HS6*§ |
| 6CB6A | 6CB6*†, 6CF6*†, 6DC6*†, 6DE6*†, 6DK6*†, 6HQ6*† 6AU6A§, 6CE5§, 6HS6*§ |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 6CD6G-6CR5 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6CD6G | 6CD6GA, 6DN6, 6EX6 |
| 6CD6GA | 6EX6 |
| 6CD7 | 6AF7G* |
| 6CE5 | 6AG5*†, 6AK5*, 6AU6A§, 6BC5*†, 6CB6A§, 6CY5*§, 6EA5*§, 6EV5*§, 6HS6*§ |
| 6CF6 | 6AW6, 6CB6, 6CB6A, 6DC6, 6DE6, 6DK6, 6AG5§, 6AU6§, 6AU6A§, 6BC5§, 6BH6*, 6CE5§, 6HS6*§ |
| 6CG6 | 6BA6, 6BD6 |
| 6CG7 | 6FQ7§ |
| 6CG8 | 6CG8A, 6FG7, 6AT8§, 6AT8A§, 6BE8§, 6BE8A§, 6BR8§, 6BR8A§, 6FV8§, 6FV8A§ |
| 6CG8A | 6FG7, 6CG8*†, 6AT8A§, 6BE8A§, 6BR8A§, 6FV8§, 6FV8A§ |
| 6CH6 | |
| 6CH7 | 6CX7 |
| 6CH8 | 6CU8§ |
| 6CJ5 | |
| 6CJ6 | 6DR6 |
| 6CK4 | |
| 6CK5 | |
| 6CK6 | |
| 6CL5 | |
| 6CL6 | |
| 6CL8 | 6CL8A, 6BE8A§, 6BR8A§, 6FV8§, 6FV8A§ |
| 6CL8A | 6CL8, 6BE8A§, 6BR8A§, 6FV8§, 6FV8A§ |
| 6CM4 | |
| 6CM5 | |
| 6CM6 | |
| 6CM7 | |
| 6CM8 | 6CR8§, 6CS8§ |
| 6CN6 | |
| 6CN7 | |
| 6CQ4 | 6DT4* |
| 6CQ6 | |
| 6CQ8 | 6EA8§, 6U8A§ |
| 6CR4 | 6AJ4*§ |
| 6CR5 | |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6CR6 | |
| 6CR8 | 6CM8§, 6CS8§ |
| 6CS5 | 6DW5, 6CM6* |
| 6CS6 | 6BE6, 6BY6 |
| 6CS7 | 6DA7* |
| 6CS8 | 6CM8§, 6CR8§ |
| 6CT7 | |
| 6CU5 | 6AS5* |
| 6CU6 | 6BQ6GTB, 6BQ6GTB/6CU6, 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6CU7 | |
| 6CU8 | |
| 6CV7 | |
| 6CW4 | 6DS4 |
| 6CW5 | |
| 6CW7 | 6FC7 |
| 6CX7 | 6CH7 |
| 6CX8 | 6EB8, 6GN8, 6HF8, 6JA8, 6JE8, 6AU8*, 6AU8A*, 6AW8*, 6AW8A*, 6JV8* |
| 6CY5 | 6EA5, 6EV5, 6AG5*§, 6AK5*§, 6BC5*§, 6CE5*§, 6HS6*§ |
| 6CY7 | 6DA7* |
| 6CZ5 | 6DW5* |
| 6D5 | 6D5G, 6D5MG |
| 6D5G | 6D5, 6D5MG |
| 6D5MG | 6D5, 6D5G |
| 6D6 | 78, 58AS* |
| 6D7 | |
| 6D8 | 6D8G, 6A8*, 6A8G*, 6A8GT*, 6A8GTX*, 6A8MG* |
| 6D8G | 6D8, 6A8*, 6A8G*, 6A8GT*, 6A8GTX*, 6A8MG* |
| 6D10 | 6AV11*§, 6C10§, 6K11*§, 6Q11*§ |
| 6DA4 | 6DA4A, 6AX4GTA, 6AX4GTB, 6DM4, 6DM4A, 6DQ4, 6DT4, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4* |
| 6DA4A | 6DM4A, 6DQ4, 6DT4, 6CQ4* |
| 6DA5 | 6BR5 |
| 6DA6 | |
| 6DA7 | |
| 6DB5 | |
| 6DB6 | 6AS6* |

● RECEIVING TUBES 6CR6-6DB6 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 6DC6-6DW4 ● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6DC6 | 6AW6, 6BZ6, 6CB6, 6CB6A, 6CF6, 6DE6, 6DK6, 6AG5§, 6AU6§, 6AU6A§, 6BC5§, 6BH6*, 6CE5§ |
| 6DC8 | 6AD8, 6N8 |
| 6DE4 | 6CQ4, 6DA4A*, 6DM4*, 6DM4A*, 6DQ4*, 6DT4* |
| 6DE6 | 6AW6, 6CB6, 6CB6A, 6CF6, 6DC6, 6DK6, 6HQ6, 6AG5§, 6AU6§, 6AU6A§, 6BC5§, 6BH6*, 6CE5§ |
| 6DE7 | 6EW7 |
| 6DG6GT | 6W6, 6W6GT, 6EF6*, 6EY6*, 6EZ5* |
| 6DG7 | |
| 6DJ8 | 6ES8, 6FW8*, 6KN8* |
| 6DK6 | 6CB6, 6CB6A, 6CF6, 6DC6, 6DE6, 6HQ6, 6BC5§, 6CE5§, 6HS6*§ |
| 6DL4 | |
| 6DL5 | 6BM5* |
| 6DL7 | |
| 6DM4 | 6DM4A, 6DA4A, 6DQ4, 6DT4, 6CQ4*, 6DE4* |
| 6DM4A | 6DT4, 6CQ4* |
| 6DN6 | 6CD6G, 6CD6GA, 6EX6 |
| 6DN7 | |
| 6DQ4 | 6DT4, 6CQ4* |
| 6DQ5 | |
| 6DQ6 | 6DQ6A, 6DQ6B, 6FH6, 6GW6 |
| 6DQ6A | 6DQ6B, 6FH6, 6GW6 |
| 6DQ6B | 6GW6*† |
| 6DR4 | |
| 6DR6 | 6CJ6 |
| 6DR7 | 6FD7, 6FR7 |
| 6DR8 | |
| 6DS4 | 6CW4 |
| 6DS5 | 6AQ5*, 6AQ5A*, 6BM5* |
| 6DS8 | |
| 6DT4 | |
| 6DT5 | 6EM5* |
| 6DT6 | 6DT6A |
| 6DT6A | 6DT6 |
| 6DT8 | |
| 6DV4 | |
| 6DW4 | 6DW4A |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6DW4A | |
| 6DW5 | |
| 6DX4 | 6DY4*§, 6DY4A*§ |
| 6DX8 | |
| 6DY4 | 6DY4A, 6DX4*§ |
| 6DY4A | 6DY4, 6DX4*§ |
| 6DY5 | 6CW5* |
| 6DY7 | 6DZ7§ |
| 6DZ4 | 6AF4§, 6AF4A§, 6T4§ |
| 6DZ7 | 6DY7§ |
| 6DZ8 | 6FY8* |
| 6E5 | 6G5§ |
| 6E6 | |
| 6E7 | |
| 6E8 | 6E8G |
| 6E8G | 6E8 |
| 6EA5 | 6EV5, 6AG5*§, 6AK5*§, 6BC5*§, 6CE5*§ |
| 6EA7 | 6EM7*, 6GL7 |
| 6EA8 | 6U8A, 6CQ8§, 6U8*† |
| 6EB5 | 6AL5 |
| 6EB8 | 6CX8, 6GN8, 6HF8, 6JA8, 6JE8, 6AU8*, 6AU8A*, 6HZ8*, 6JV8* |
| 6EC7 | 6BX6*, 6BY7* |
| 6EF6 | 6EY6*, 6EZ5* |
| 6EH5 | 6CA5 |
| 6EH7 | 6EJ7, 6HM6§, 6HT6§, 6JC6§, 6JD6§ |
| 6EH8 | 6AU8*§, 6AU8A*§, 6AW8*§, 6AW8A*§, 6X8A§ |
| 6EJ7 | 6EH7, 6HM6§, 6HT6§, 6JC6§, 6JD6§ |
| 6EL7 | 6BW7, 6BX6, 6HM6§ |
| 6EM5 | |
| 6EM7 | 6EA7*, 6GL7* |
| 6EQ7 | 6KL8§ |
| 6ER5 | 6FY5* |
| 6ES5 | |
| 6ES6 | 6ET6, 6FD6 |
| 6ES8 | 6DJ8, 6FW8*, 6KN8* |
| 6ET6 | 6ES6, 6FD6 |
| 6ET7 | |
| 6EU7 | |
| 6EU8 | |
| 6EV5 | 6EA5, 6AG5*§, 6AK5*§, 6BC5*§, 6CE5*§ |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|-----------------------------|
| 6EV7 | |
| 6EW6 | 6GM6, 6HS6*§ |
| 6EW7 | |
| 6EX6 | 6CD6GA |
| 6EY6 | 6EZ5* |
| 6EZ5 | |
| 6EZ8 | |
| 6F4 | 6L4 |
| 6F5 | 6F5G, 6F5GT, 6F5MG |
| 6F5G | 6F5, 6F5GT, 6F5MG |
| 6F5GT | 6F5, 6F5G, 6F5MG |
| 6F5MG | 6F5, 6F5G, 6F5GT |
| 6F6 | 6F6G, 6F6GT, 6F6GT/G, 6F6MG |
| 6F6G | 6F6, 6F6GT, 6F6GT/G, 6F6MG |
| 6F6GT | 6F6, 6F6G, 6F6GT/G, 6F6MG |
| 6F6GT/G | 6F6, 6F6G, 6F6GT, 6F6MG |
| 6F6MG | 6F6, 6F6G, 6F6GT, 6F6GT/G |
| 6F7 | 6F7S |
| 6F7S | 6F7 |
| 6F8G | 6C8G*§ |
| 6FA7 | |
| 6FC7 | 6CW7 |
| 6FD6 | 6ES6, 6ET6 |
| 6FD7 | 6FR7 |
| 6FE5 | |
| 6FE8 | |
| 6FG5 | 6HS6*§ |
| 6FG6 | |
| 6FG7 | 6BE8A§, 6BR8A§ |
| 6FH5 | 6ES5, 6FQ5*, 6FQ5A*, 6GK5* |
| 6FH6 | 6DQ6B, 6GW6 |
| 6FH8 | |
| 6FJ7 | |
| 6FM7 | |
| 6FM8 | |
| 6FN5 | |
| 6FQ5 | 6FQ5A, 6GK5, 6ES5* |
| 6FQ5A | 6FQ5, 6GK5, 6ES5* |
| 6FQ7 | |
| 6FR7 | 6FD7 |
| 6FS5 | 6FG5, 6GU5* |
| 6FV6 | |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6FV8 | 6FV8A, 6BR8A, 6BE8A§, 6BR8*†, 6CL8§, 6CL8A§ |
| 6FV8A | 6FV8, 6BR8A, 6BE8A, 6BR8*†, 6CL8§, 6CL8A§ |
| 6FW5 | |
| 6FW8 | 6KN8, 6DJ8*, 6ES8* |
| 6FY5 | 6ER5* |
| 6FY7 | |
| 6FY8 | |
| 6G5 | 6G5/6H5, 6H5, 6T5, 6U5/6G5, 6U5 |
| 6G5/6H5 | 6G5, 6H5, 6U5, 6U5/6G5 |
| 6G6G | 6G6GT |
| 6G6GT | 6G6G |
| 6G11 | |
| 6GA7 | |
| 6GA8 | 6CG7* |
| 6GB5 | |
| 6GC5 | |
| 6GC6 | |
| 6GD7 | 6LJ8§ |
| 6GE5 | |
| 6GE8 | |
| 6GF5 | 6GE5 |
| 6GF7 | |
| 6GH8 | 6GH8A, 6EA8, 6U8A, 6AX8*†, 6CQ8§, 6GJ8*, 6LM8*†, 6U8*† |
| 6GH8A | 6GH8, 6EA8, 6U8A, 6AX8*†, 6CQ8§, 6GJ8*, 6LM8*†, 6U8*† |
| 6GJ5 | |
| 6GJ7 | |
| 6GJ8 | 6AX8*, 6CQ8*§, 6EA8*, 6GH8*, 6GH8A*, 6U8*, 6U8A* |
| 6GK5 | 6FQ5, 6FQ5A |
| 6GK6 | |
| 6GK7 | |
| 6GL7 | 6EA7 |
| 6GM5 | |
| 6GM6 | 6EW6, 6HQ6*, 6JH6* |
| 6GM8 | |
| 6GN6 | |
| 6GN8 | 6CX8, 6EB8, 6JA8, 6JE8, 6AU8*, A*, 6AW8*, A*, 6HZ8*, 6JV8§, 6LF8* |

● RECEIVING TUBES 6FV8-6GN8 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 6GQ7-6HK5 ●
● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6GQ7 | 6BC7§ |
| 6GS8 | 6BU8, 6BU8A, 6HS8, 6KF8 |
| 6GT5 | |
| 6GU5 | 6FS5* |
| 6GU7 | |
| 6GV5 | |
| 6GV7 | |
| 6GV8 | |
| 6GW5 | |
| 6GW6 | 6DQ6B |
| 6GW8 | |
| 6GX6 | 6GY6, 6HZ6 |
| 6GX7 | |
| 6GY5 | |
| 6GY6 | 6GX6, 6HZ6 |
| 6GY8 | |
| 6GZ5 | |
| 6H4 | 6H4GT |
| 6H4GT | 6H4 |
| 6H5 | 6G5, 6G5/6H5, 6T5, 6U5, 6U5/6G5 |
| 6H6 | 6H6G, 6H6GT, 6H6GT/G, 6H6MG |
| 6H6G | 6H6, 6H6GT, 6H6GT/G, 6H6MG |
| 6H6GT | 6H6, 6H6G, 6H6GT/G, 6H6MG |
| 6H6GT/G | 6H6, 6H6G, 6H6GT, 6H6MG |
| 6H6MG | 6H6, 6H6G, 6H6GT, 6H6GT/G |
| 6H8G | |
| 6HA5 | 6HK5, 6HM5, 6HQ5 |
| 6HB5 | |
| 6HB7 | |
| 6HD5 | |
| 6HE5 | 6BM8* |
| 6HF5 | |
| 6HB6 | |
| 6HC8 | |
| 6HF8 | 6CX8, 6EB8, 6GN8, 6JA8, 6JE8, 6HZ8*, 6JV8*, 6LF8* |
| 6HG5 | 6AQ5A, 6AQ5*† |
| 6HG8 | |
| 6HJ5 | |
| 6HJ8 | 6AM8A, 6AM8*† |
| 6HK5 | 6HA5, 6HM5, 6HQ5 |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6HK8 | 6BC8, 6BQ7, 6BQ7A, 6BS8, 6BX8, 6BZ7, 6BZ8, X155, 6BK7*, 6BK7A*, 6BK7B* |
| 6HL8 | 6BL8 |
| 6HM5 | 6HA5, 6HK5, 6HQ5 |
| 6HM6 | 6HT6, 6JC6§, 6JD6§ |
| 6HQ5 | 6HA5, 6HK5, 6HM5 |
| 6HQ6 | 6BZ6, 6CB6, 6CB6A, 6DE6, 6DK6, 6JK6, 6GM6* |
| 6HR6 | |
| 6HS6 | 6CB6*§, 6CB6A*§, 6CE5*§, 6CF6*§, 6CY5*§, 6DK6*§, 6EW6*§, 6FG5*§ |
| 6HS8 | 6BU8, 6BU8A, 6GS8, 6KF8 |
| 6HT6 | 6HM6, 6JC6§, 6JD6§ |
| 6HU6 | |
| 6HU8 | |
| 6HW8 | |
| 6HZ6 | 6GX6, 6GY6 |
| 6HZ8 | 6EB8*, 6GN8*, 6HF8*, 6JE8*, 6JV8*, 6LF8* |
| 6J4 | |
| 6J5 | 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6C5, 6C5G, 6C5GT/G, 6C5MG, 6L5G |
| 6J5G | 6J5, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J5GT | 6J5, 6J5G, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J5GT/G | 6J5, 6J5G, 6J5GT, 6J5GTX, 6J5GX, 6J5MG, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J5GTX | 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GX, 6J5MG, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J5GX | 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5MG, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J5MG | 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6L5G |
| 6J6 | 6J6A |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 6J6A-6K5G ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6J6A | 6J6*† |
| 6J7 | 6J7G, 6J7GT, 6J7GTX, 6J7MG, 6W7G* |
| 6J7G | 6J7, 6J7GT, 6J7GTX, 6J7MG, 6W7G* |
| 6J7GT | 6J7, 6J7G, 6J7GTX, 6J7MG, 6W7G* |
| 6J7GTX | 6J7, 6J7G, 6J7GT, 6J7MG, 6W7G* |
| 6J7MG | 6J7, 6J7G, 6J7GT, 6J7GTX, 6W7G* |
| 6J8G | |
| 6J9 | |
| 6J10 | |
| 6J11 | |
| 6JA8 | 6CX8, 6EB8, 6GN8, 6HF8, 6JE8, 6JT8, 6HZ8*, 6JV8*, 6LF8* |
| 6JB6 | |
| 6JB8 | |
| 6JC6 | 6HM6§, 6HT6§, 6JD6§ |
| 6JC8 | |
| 6JD6 | 6HM6§, 6HT6§, 6JC6§ |
| 6JE6 | |
| 6JE8 | 6EB8, 6GN8, 6HF8, 6JA8, 6HZ8*, 6LF8* |
| 6JF8 | |
| 6JG6 | |
| 6JH6 | 6BZ6, 6HQ6, 6GM6* |
| 6JH8 | |
| 6JK6 | 6EW6, 6JL6 |
| 6JK8 | |
| 6JL6 | 6EW6, 6JK6 |
| 6JL8 | |
| 6JM6 | |
| 6JN6 | |
| 6JN8 | 6BR8A, 6FV8, 6FV8A, 6BR8*† |
| 6JS6 | |
| 6JT6 | 6JG6* |
| 6JT8 | 6JA8 |
| 6JU8 | 6JU8A |
| 6JU8A | 6JU8 |
| 6JV8 | 6AW8, A, 6KS8, 6LF8, 6CX8*, 6EB8*, 6GN8*, 6HF8*, 6HZ8*, 6JA8*, 6JE8* |
| 6JW6 | |
| 6JX8 | |
| 6JZ8 | |
| 6K5 | 6K5G, 6K5GT |
| 6K5G | 6K5, 6K5GT |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6K5GT | 6K5, 6K5G |
| 6K6 | 6K6G, 6K6GT, 6K6GT/G, 6K6MG |
| 6K6G | 6K6, 6K6GT, 6K6GT/G, 6K6MG |
| 6K6GT | 6K6, 6K6G, 6K6GT/G, 6K6MG |
| 6K6GT/G | 6K6, 6K6G, 6K6GT, 6K6MG |
| 6K6MG | 6K6, 6K6G, 6K6GT, 6K6GT/G |
| 6K7 | 6K7G, 6K7GT, 6K7GTX, 6K7MG, 6U7G |
| 6K7G | 6K7, 6K7GT, 6K7GTX, 6K7MG, 6U7G |
| 6K7GT | 6K7, 6K7G, 6K7GTX, 6K7MG, 6U7G |
| 6K7GTX | 6K7, 6K7G, 6K7GT, 6K7MG, 6U7G |
| 6K7MG | 6K7, 6K7G, 6K7GT, 6K7GTX, 6U7G |
| 6K8 | 6K8G, 6K8GT, 6K8GTX |
| 6K8G | 6K8, 6K8GT, 6K8GTX |
| 6K8GT | 6K8, 6K8G, 6K8GTX |
| 6K8GTX | 6K8, 6K8G, 6K8GT |
| 6K11 | 6Q11 |
| 6KA8 | |
| 6KD8 | 6GH8, 6GH8A |
| 6KE8 | |
| 6KF8 | 6BU8, 6BU8A, 6GS8, 6HS8 |
| 6KL8 | 6EQ7§ |
| 6KM8 | |
| 6KN8 | |
| 6KR8 | |
| 6KS8 | 6AU8, A, 6AW8, A, 6JV8, 6LF8, 6CX8*, 6EB8*, 6GN8*, 6HF8*, 6HZ8*, 6JA8*, 6JE8* |
| 6KT8 | |
| 6KU8 | |
| 6KV8 | |
| 6KY8 | |
| 6KZ8 | |
| 6L4 | |
| 6L5G | 6C5, 6C5G, 6C5GT, 6C5GT/G, 6C5MG, 6J5, 6J5G, 6J5GT, 6J5GT/G, 6J5GTX, 6J5GX, 6J5MG |
| 6L6 | 6L6A, 6L6G, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6A | 6L6, 6L6G, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |

• RECEIVING TUBES 6K5GT-6L6A •

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 6L6G-6N5G ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6L6G | 6L6, 6L6A, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6GA | 6L6, 6L6A, 6L6G, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6GAY | 6L6, 6L6A, 6L6G, 6L6GA, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6GB | 6L6, 6L6A, 6L6G, 6L6GA, 6L6GAY, 6L6GC, 6L6GT, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6GC | 7581, 7581A |
| 6L6GT | 6L6, 6L6A, 6L6G, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GX, 6L6Y, 5881, 7581, 7581A |
| 6L6GX | 6L6, 6L6A, 6L6G, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6Y, 5881, 7581, 7581A |
| 6L6Y | 6L6, 6L6A, 6L6G, 6L6GA, 6L6GAY, 6L6GB, 6L6GC, 6L6GT, 6L6GX, 5881, 7581, 7581A |
| 6L7 | 6L7G |
| 6L7G | 6L7 |
| 6LB8 | |
| 6LC8 | |
| 6LE8 | |
| 6LF8 | 6AW8, A, 6JV8, 6KS8, 6CX8*, 6GN8*, 6HF8*, 6HZ8*, 6JA8*, 6JE8* |
| 6LJ8 | 6GD7§ |
| 6LM8 | 6AX8, 6GH8, A, 6CQ8§ |
| 6M3 | |
| 6M5 | 6CK6§ |
| 6M6G | 6AG6G* |
| 6M7G | 6K7§, 6K7G§, 6K7GT§, 6K7GTX§, 6K7MG§ |
| 6M8GT | |
| 6M11 | |
| 6N3 | 6U3 |
| 6N4 | |
| 6N5 | 6N5G, 6AB5, 6AB5/6N5 |
| 6N5G | 6N5, 6AB5, 6AB5/6N5 |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6N6 | 6N6G, 6N6MG, 6AB6G* |
| 6N6G | 6N6, 6N6MG, 6AB6G* |
| 6N6MG | 6N6, 6N6G, 6AB6G* |
| 6N7 | 6N7G, 6N7GT, 6N7GT/G, 6N7MG |
| 6N7G | 6N7, 6N7GT, 6N7GT/G, 6N7MG |
| 6N7GT | 6N7, 6N7G, 6N7GT/G, 6N7MG |
| 6N7GT/G | 6N7, 6N7G, 6N7GT, 6N7MG |
| 6N7MG | 6N7, 6N7G, 6N7GT, 6N7GT/G |
| 6N8 | 6AD8, 6DC8 |
| 6P5G | 6P5GT, 6P5GT/G |
| 6P5GT | 6P5G, 6P5GT/G |
| 6P5GT/G | 6P5G, 6P5GT |
| 6P6 | |
| 6P7G | |
| 6Q4 | |
| 6Q6 | 6Q6G |
| 6Q6G | 6Q6 |
| 6Q7 | 6Q7G, 6Q7GT, 6Q7MG, 6B6, 6B6G, 6T7G* |
| 6Q7G | 6Q7, 6Q7GT, 6Q7MG, 6B6, 6B6G, 6T7G* |
| 6Q7GT | 6Q7, 6Q7G, 6Q7MG, 6B6, 6B6G, 6T7G* |
| 6Q7MG | 6Q7, 6Q7G, 6Q7GT, 6B6, 6B6G, 6T7G* |
| 6Q11 | |
| 6R3 | 6AF3*, 6AL3*, 6BR3* |
| 6R4 | |
| 6R6G | |
| 6R7 | 6R7G, 6R7GT, 6R7GT/G, 6R7MG |
| 6R7G | 6R7, 6R7GT, 6R7GT/G, 6R7MG |
| 6R7GT | 6R7, 6R7G, 6R7GT/G, 6R7MG |
| 6R7GT/G | 6R7, 6R7G, 6R7GT, 6R7MG |
| 6R7MG | 6R7, 6R7G, 6R7GT, 6R7GT/G |
| 6R8 | 6T8, 6T8A |
| 6S2 | 6S2A |
| 6S2A | 6S2 |
| 6S4 | 6S4A |
| 6S4A | |
| 6S6GT | |
| 6S7 | 6S7G, 6K7*, 6K7G*, 6K7GT*, 6K7GTX*, 6K7MG* |
| 6S7G | 6S7, 6K7*, 6K7G*, 6K7GT*, 6K7GTX*, 6K7MG* |
| 6S8GT | |

‡ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 6SA7-6SG7Y ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6SA7 | 6SA7G, 6SA7GT, 6SA7GT/G, 6SA7GTX, 6SA7GTY, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7G | 6SA7, 6SA7GT, 6SA7GT/G, 6SA7GTX, 6SA7GTY, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7GT | 6SA7, 6SA7G, 6SA7GT/G, 6SA7GTX, 6SA7GTY, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7GT/G | 6SA7, 6SA7G, 6SA7GT, 6SA7GTX, 6SA7GTY, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7GTX | 6SA7, 6SA7G, 6SA7GT, 6SA7GT/G, 6SA7GTY, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7GTY | 6SA7, 6SA7G, 6SA7GT, 6SA7GT/G, 6SA7GTX, 6SA7Y, 6SB7, 6SB7Y, 6SB7GTY |
| 6SA7Y | 6SA7, 6SA7G, 6SA7GT, 6SA7GT/G, 6SA7GTX, 6SA7GTY, 6SB7, 6SB7Y, 6SB7GTY |
| 6SB7 | 6SB7GTY, 6SB7Y |
| 6SB7GTY | 6SB7, 6SB7Y |
| 6SB7Y | 6SB7, 6SB7GTY |
| 6SC7 | 6SC7GT, 6SC7GTY |
| 6SC7GT | 6SC7, 6SC7GTY |
| 6SC7GTY | 6SC7, 6SC7GT |
| 6SD7GT | 6SE7GT |
| 6SE7GT | 6SD7GT |
| 6SF5 | 6SF5GT |
| 6SF5GT | 6SF5 |
| 6SF7 | 6SF7GT |
| 6SF7GT | 6SF7 |
| 6SG7 | 6SH7GT, 6SG7Y, 6SH7, 6SH7GT, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |
| 6SG7GT | 6SG7, 6SG7Y, 6SH7, 6SH7GT, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |
| 6SG7Y | 6SG7, 6SG7GT, 6SH7, 6SH7GT, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| To Replace | Use |
|------------|---|
| 6SH7 | 6SH7GT, 6SH7L, 6SG7, 6SG7GT, 6SG7Y, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |
| 6SH7GT | 6SH7, 6SH7L, 6SG7, 6SG7GT, 6SG7Y, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |
| 6SH7L | 6SH7, 6SH7GT, 6SG7, 6SG7GT, 6SG7Y, 6AB7*§, 6AB7Y*§, 6AC7*§, 6AC7A*§, 6AC7Y*§, 6AJ7*§ |
| 6SJ7 | 6SJ7GT, 6SJ7GTX, 6SJ7GTY, 6SJ7Y |
| 6SJ7GT | 6SJ7, 6SJ7GTX, 6SJ7GTY, 6SJ7Y |
| 6SJ7GTX | 6SJ7, 6SJ7GT, 6SJ7GTY, 6SJ7Y |
| 6SJ7GTY | 6SJ7, 6SJ7GT, 6SJ7GTX, 6SJ7Y |
| 6SJ7Y | 6SJ7, 6SJ7GT, 6SJ7GTX, 6SJ7GTY |
| 6SK7 | 6SK7, 6SK7GT, 6SK7GT/G, 6SK7GTX, 6SK7GTY, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7G | 6SK7, 6SK7GT, 6SK7GT/G, 6SK7GTX, 6SK7GTY, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7GT | 6SK7, 6SK7G, 6SK7GT/G, 6SK7GTX, 6SK7GTY, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7GT/G | 6SK7, 6SK7G, 6SK7GT, 6SK7GTX, 6SK7GTY, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7GTX | 6SK7, 6SK7G, 6SK7GT, 6SK7GT/G, 6SK7GTY, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7GTY | 6SK7, 6SK7G, 6SK7GT, 6SK7GT/G, 6SK7GTX, 6SK7Y, 6SS7*, 6SS7GT* |
| 6SK7Y | 6SK7, 6SK7G, 6SK7GT, 6SK7GT/G, 6SK7GTX, 6SK7GTY, 6SS7*, 6SS7GT* |
| 6SL7A | 6SL7GT, 6SL7GTY, 6SL7L |
| 6SL7GT | 6SL7A, 6SL7GTY, 6SL7L |
| 6SL7GTY | 6SL7A, 6SL7GT, 6SL7L |
| 6SL7L | 6SL7A, 6SL7GT, 6SL7GTY |
| 6SN7A | 6SN7GT, 6SN7GTA, 6SN7GTB, 6SN7GTY, 6SN7L |
| 6SN7GT | 6SN7A, 6SN7L, 6SN7GTA, 6SN7GTB, 6SN7GTY |
| 6SN7GTA | 6SN7GTB |
| 6SN7GTB | 6SN7GTA*† |
| 6SN7GTY | 6SN7A, 6SN7L, 6SN7GT, 6SN7GTA, 6SN7GTB |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 6SN7L-6U7GT RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6SN7L | 6SN7A, 6SN7GT, 6SN7GTA, 6SN7GTB, 6SN7GTY |
| 6SQ7 | 6SQ7G, 6SQ7GT, 6SQ7GT/G, 6SZ7* |
| 6SQ7G | 6SQ7, 6SQ7GT, 6SQ7GT/G, 6SZ7* |
| 6SQ7GT | 6SQ7, 6SQ7G, 6SQ7GT/G, 6SZ7* |
| 6SQ7GT/G | 6SQ7, 6SQ7G, 6SQ7GT, 6SZ7* |
| 6SR7 | 6SR7G, 6SR7GT, 6ST7* |
| 6SR7G | 6SR7, 6SR7GT, 6ST7* |
| 6SR7GT | 6SR7, 6SR7G, 6ST7* |
| 6SS7 | 6SS7GT, 6SK7*, 6SK7G*, 6SK7GT*, 6SK7GT/G*, 6SK7GTX*, 6SK7GTY*, 6SK7Y* |
| 6SS7GT | 6SS7, 6SK7*, 6SK7G*, 6SK7GT*, 6SK7GT/G*, 6SK7GTX*, 6SK7GTY*, 6SK7Y* |
| 6ST7 | 6SR7, 6SR7G*, 6SR7GT* |
| 6SU7GT | 6SU7GTX, 6SU7GTY |
| 6SU7GTX | 6SU7GT, 6SU7GTY |
| 6SU7GTY | 6SU7GT, 6SU7GTX |
| 6SV7 | 6SV7GT |
| 6SV7GT | 6SV7 |
| 6SZ7 | 6SQ7*, 6SQ7G, 6SQ7GT*, 6SQ7GT/G* |
| 6T4 | 6AF4§, 6AF4A§, 6AN4§, 6DZ4§ |
| 6T5 | 6G5, 6G5/6H5, 6H5, 6U5, 6U5/6G5 |
| 6T6 | |
| 6T7G | 6B6*, 6B6G*, 6Q7*, 6Q7G*, 6Q7GT*, 6Q7MG* |
| 6T8 | 6T8A, 6AK8 |
| 6T8A | 6T8*†, 6AK8*† |
| 6T9 | |
| 6T10 | |
| 6U3 | |
| 6U4GT | 6AS4GT, 6AX4GT, 6AX4GTA, 6AX4GTB, 6DA4, 6DA4A, 6DM4, 6DM4A, 6DQ4, 6DT4, 6W4GT, 6W4GTA, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4* |
| 6U5 | 6G5, 6G5/6H5, 6H5, 6T5, 6U5/6G5 |
| 6U5/6G5 | 6U5, 6G5, 6G5/6H5, 6H5, 6T5 |
| 6U6GT | 6Y6G*, 6Y6GA*, 6Y6GT* |
| 6U7GT | 6K7, 6K7G, 6K7GT, 6K7GTX, 6K7MG, 6S7*, 6S7G* |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 6U8 | 6U8A, 6EA8, 6CQ8§ |
| 6U8A | 6U8*†, 6EA8, 6CQ8§ |
| 6U10 | |
| 6V3 | 6V3A |
| 6V3A | 6V3 |
| 6V4 | 6CA4* |
| 6V5G | 6V5GT |
| 6V5GT | 6V5G |
| 6V6 | 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTX, 6V6GTY, 6V6GX, 6V6Y, 7408 |
| 6V6G | 6V6, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTX, 6V6GTY, 6V6GX, 6V6Y, 7408 |
| 6V6GT | 6V6, 6V6G, 6V6GTA, 6V6GT/G, 6V6GTX, 6V6GTY, 6V6GX, 6V6Y, 7408 |
| 6V6GTA | 6V6*†, 6V6G*†, 6V6GT*†, 6V6GT/G*†, 6V6GTX*†, 6V6GTY*†, 6V6GX*†, 6V6Y*†, 7408*† |
| 6V6GT/G | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GTX, 6V6GTY, 6V6GX, 6V6Y, 7408 |
| 6V6GTX | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTY, 6V6GX, 6V6Y, 7408 |
| 6V6GTY | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTX, 6V6GX, 6V6GY, 7408 |
| 6V6GX | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTY, 6V6GTX, 6V6Y, 7408 |
| 6V6Y | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTX, 6V6GTY, 6V6GX, 7408 |
| 6V7G | |
| 6V8 | |
| 6W4GT | 6W4GTA, 6AS4GT, 6AX4GT, 6AX4GTA, 6AX4GTB, 6DA4, 6DA4A, 6DM4, 6DM4A, 6DQ4, 6DT4, 6U4GT, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4* |
| 6W4GTA | 6AX4GTA, 6AX4GTB, 6DA4, 6DA4A, 6DM4, 6DM4A, 6DQ4, 6DT4, 6U4GT, 6AU4GT*, 6AU4GTA*, 6CQ4*, 6DE4* |
| 6W5G | 6W5GT, 6AX5GT* |
| 6W5GT | 6W5G, 6AX5GT* |
| 6W6 | 6W6GT, 6DG6GT, 6EF6*, 6EY6*, 6EZ5* |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 6W6GT | 6W6, 6DG6GT, 6EF6*, 6EY6*, 6EZ5* |
| 6W7G | 6J7*, 6J7G*, 6J7GT*, 6J7GTX*, 6J7MG* |
| 6X4 | 6BX4, 6AV4* |
| 6X5 | 6X5G, 6X5GT, 6X5GT/G, 6X5L, 6X5MG, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X5G | 6X5, 6X5GT, 6X5GT/G, 6X5L, 6X5MG, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X5GT | 6X5, 6X5G, 6X5GT/G, 6X5L, 6X5MG, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X5GT/G | 6X5, 6X5G, 6X5GT, 6X5L, 6X5MG, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X5L | 6X5, 6X5G, 6X5GT, 6X5GT/G, 6X5MG, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X5MG | 6X5, 6X5G, 6X5GT, 6X5L, 6X5GT/G, 6AX5GT*, 6W5G*, 6W5GT* |
| 6X8 | 6X8A, 6AU8*§, 6AU8A*§, 6AW8*§, 6AW8A*§, 6EH8§ |
| 6X8A | 6X8*†, 6AU8*§, 6AU8A*§, 6AW8*§, 6AW8A*§, 6EH8§ |
| 6Y3 | 6Y3G |
| 6Y3G | 6Y3 |
| 6Y5 | 6Y5G, 6Y5GT, 6Y5V |
| 6Y5G | 6Y5, 6Y5GT, 6Y5V |
| 6Y5GT | 6Y5, 6Y5G, 6Y5V |
| 6Y5V | 6Y5, 6Y5G, 6Y5GT |
| 6Y6G | 6Y6GA, 6Y6GT, 6U6GT* |
| 6Y6GA | 6Y6G, 6Y6GT, 6U6GT* |
| 6Y6GT | 6Y6G, 6Y6GA, 6U6GT* |
| 6Y7G | |
| 6Z3 | 1V |
| 6Z4 | 84/6Z4, 98 |
| 6Z5 | 12Z5, 6Z5/12Z5 |
| 6Z5/12Z5 | 6Z5, 12Z5 |
| 6Z6G | 6Z6GT, 6Z6MG |
| 6Z6GT | 6Z6G, 6Z6MG |
| 6Z6MG | 6Z6G, 6Z6GT |
| 6Z7G | |
| 6ZY5G | 6X5*, 6X5G*, 6X5GT*, 6X5GT/G*, 6X5L*, 6X5MG* |
| 7A4 | XXL |
| 7A5 | |
| 7A6 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--------------------------|
| 7A7 | 7A7LM, 7H7, 7B7* |
| 7A7LM | 7A7, 7H7, 7B7* |
| 7A8 | 7B8*, 7B8LM* |
| 7AB7 | |
| 7AD7 | |
| 7AF7 | |
| 7AG7 | 7AH7, 7G7*, 7T7* |
| 7AH7 | 7AG7, 7B7, 7H7* |
| 7AJ7 | 7C7* |
| 7AK7 | |
| 7AN7 | 7EK7 |
| 7AU7 | 6AU7, 6AX7§ |
| 7B4 | 7A4§, XXL§ |
| 7B5 | 7B5LT, 7C5*, 7C5LT* |
| 7B5LT | 7B5, 7C5*, 7C5LT* |
| 7B6 | 7B6LM, 7C6* |
| 7B6LM | 7B6, 7C6* |
| 7B7 | 7AH7, 7A7*, 7A7LM*, 7H7* |
| 7B8 | 7B8LM, 7A8* |
| 7B8LM | 7B8, 7A8* |
| 7C4 | |
| 7C5 | 7C5LT, 7B5*, 7B5LT* |
| 7C5LT | 7C5, 7B5*, 7B5LT* |
| 7C6 | 7B6*, 7B6LM* |
| 7C7 | 7AJ7*, 7G7*, 7L7* |
| 7D7 | |
| 7DJ8 | 7ES8 |
| 7E5 | |
| 7E6 | |
| 7E7 | 7R7 |
| 7ED7 | |
| 7EK7 | 7AN7 |
| 7ES8 | 7DJ8 |
| 7EY6 | |
| 7F7 | |
| 7F8 | |
| 7FC7 | 7EK7 |
| 7G7 | 7V7, 7AG7*, 7C7*, 7L7* |
| 7G8 | |
| 7GS7 | |
| 7GV7 | |
| 7H7 | 7A7, 7A7LM, 7AH7*, 7B7* |

● RECEIVING TUBES 7A7-7H7 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 7HG8-8HG8 ●

● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 7HG8 | 8HG8 |
| 7J7 | 7S7 |
| 7K7 | |
| 7L7 | 7C7*, 7G7*, 7V7* |
| 7N7 | 7AF7* |
| 7Q7 | |
| 7R7 | 7E7 |
| 7S7 | 7J7 |
| 7T7 | 7AG7*, 7V7* |
| 7V7 | 7G7, 7L7*, 7T7* |
| 7W7 | |
| 7X6 | |
| 7X7 | XXFM |
| 7Y4 | 7Z4* |
| 7Z4 | |
| 8A8 | 9A8, 9EA8, 9U8, 9U8A |
| 8AU8 | 8AU8A, 8AW8A, 8BA8A, 8BH8 |
| 8AU8A | 8AU8, 8AW8A, 8BA8A, 8BH8 |
| 8AW8A | 8AU8, 8AU8A, 8BA8A, 8BH8, 8KS8, 8JV8 |
| 8B8 | |
| 8B10 | |
| 8BA8A | 8AU8, 8AU8A, 8AW8A, 8BH8 |
| 8BH8 | 8AU8, 8AU8A, 8AW8A, 8BA8A |
| 8BN8 | |
| 8BQ5 | |
| 8BQ7A | |
| 8CG7 | 8FQ7§ |
| 8CM7 | |
| 8CN7 | |
| 8CS7 | |
| 8CW5 | |
| 8CX8 | 8EB8, 8GN8, 8JE8 |
| 8CY7 | |
| 8EB8 | 8CX8, 8GN8, 8JE8 |
| 8EM5 | |
| 8ET7 | |
| 8FQ7 | |
| 8GK6 | |
| 8GN8 | 8CX8, 8EB8, 8JE8 |
| 8GX7 | |
| 8HG8 | 7HG8 |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|----------------------------|
| 8JE8 | 8CX8, 8EB8, 8GN8 |
| 8JK8 | |
| 8JL8 | |
| 8JT8 | |
| 8JV8 | 8AW8A, 8KS8 |
| 8KA8 | |
| 8KS8 | 8AU8, 8AU8A, 8AW8A, 8JV8 |
| 8LC8 | |
| 8LE8 | |
| 8SN7GTB | |
| 9A8 | 8A8, 9EA8, 9U8, 9U8A |
| 9AK8 | |
| 9AQ8 | |
| 9AU7 | |
| 9BM5 | |
| 9BR7 | |
| 9BR8 | 9CL8§ |
| 9BW6 | |
| 9CG8A | |
| 9CL8 | 9BR8§† |
| 9DZ8 | |
| 9EA8 | 8A8, 9U8A, 9A8†, 9U8† |
| 9EF6 | |
| 9EN7 | |
| 9GB8 | |
| 9GV8 | |
| 9KZ8 | |
| 9U8 | 8A8, 9U8A, 9A8, 9EA8 |
| 9U8A | 8A8, 9U8†, 9A8†, 9EA8 |
| 9X8 | |
| 10 | 10X, 10Y |
| 10AL11 | |
| 10BQ5 | |
| 10C8 | |
| 10DA7 | |
| 10DE7 | 10EW7 |
| 10DR7 | 10FD7, 10FR7 |
| 10DX8 | |
| 10EB8 | 10GN8, 10HF8, 10JA8, 11JE8 |
| 10EG7 | 10EM7 |
| 10EM7 | 10EG7 |
| 10EW7 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 10FD7-12A8GT ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 10FD7 | 10FR7 |
| 10FR7 | 10FD7 |
| 10GF7 | |
| 10GK6 | |
| 10GN8 | 10EB8, 10HF8, 10JA8, 11JE8 |
| 10HF8 | 10EB8, 10GN8, 10JA8, 11JE8 |
| 10J10 | |
| 10JA8 | 10EB8, 10GN8, 10HF8, 10JT8, 11JE8 |
| 10JT8 | 10JA8 |
| 10JY8 | |
| 10KR8 | |
| 10KU8 | |
| 10LB8 | |
| 10LE8 | |
| 10X | 10, 10Y |
| 10Y | 10, 10X |
| 11 | |
| 11AR11 | |
| 11C5 | 12DM5 |
| 11CY7 | |
| 11JE8 | 10EB8, 10GN8, 10HF8, 10JA8 |
| 11KV8 | |
| 11LQ8 | |
| 12 | |
| 12A | 12A/112A, 112A |
| 12A/112A | 12A, 112A |
| 12A4 | |
| 12A5 | |
| 12A6 | 12A6G, 12A6GT, 12A6GTY, 12A6Y, 12V6GT*§ |
| 12A6G | 12A6, 12A6GT, 12A6GTY, 12A6Y, 12V6GT*§ |
| 12A6GT | 12A6, 12A6G, 12A6GTY, 12A6Y 12V6GT*§ |
| 12A6GTY | 12A6, 12A6G, 12A6GT, 12A6Y, 12V6GT*§ |
| 12AGY | 12A6, 12A6G, 12A6GT, 12A6GTY, 12V6GT*§ |
| 12A7 | |
| 12A8 | 12A8G, 12A8GT |
| 12A8G | 12A8, 12A8GT |
| 12A8GT | 12A8, 12A8G |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 12AB5 | |
| 12AC5 | |
| 12AC6 | 12AF6§ |
| 12AD5 | |
| 12AD6 | 12AG6 |
| 12AD7 | 12AX7*, 12AX7A*, 12BZ7*, 12DF7*, 12DM7*, 12DT7*, 7025*, 7025A* |
| 12AE6 | 12AE6A, 12FT6 |
| 12AE6A | 12AE6, 12FT6 |
| 12AE7 | |
| 12AF3 | 12BR3 |
| 12AF6 | 12BL6, 12AC6, 12EK6§ |
| 12AG6 | 12AD6 |
| 12AH6 | |
| 12AH7GT | |
| 12AH8 | |
| 12AJ6 | |
| 12AJ7 | |
| 12AL5 | |
| 12AL8 | |
| 12AL11 | |
| 12AQ5 | 12BM5* |
| 12AS5 | 12CA5*, 12R5* |
| 12AT6 | 12AT6A, 12AV6, 12AV6A, 12BK6, 12BT6 |
| 12AT6A | 12AV6A, 12AT6*†, 12AV6*†, 12BK6*†, 12BT6*† |
| 12AT7 | 12AZ7*, 12AZ7A* |
| 12AU6 | 12AU6A, 12BA6, 12BA6A, 12AW6§ |
| 12AU6A | 12BA6A, 12AU6*†, 12BA6*† |
| 12AU7 | 12AU7A, 12AX7§, 12AX7A§ |
| 12AU7A | 12AU7, 12AX7§, 12AX7A§ |
| 12AU8 | |
| 12AV5GA | 12AV5GT*† |
| 12AV5GT | 12AV5GA |
| 12AV6 | 12AV6A, 12AT6, 12AT6A, 12BK6, 12BT6 |
| 12AV6A | 12AT6A, 12AV6*†, 12AT6*†, 12BK6*†, 12BT6*† |
| 12AV7 | |
| 12AW6 | 12AU6§, 12AU6A§ |
| 12AX3 | |

● RECEIVING TUBES 12AB5-12AX3 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 12AX4GT-12BN6 ● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 12AX4GT | 12AX4GTA, 12AX4GTB, 12D4, 12D4A, 12DM4, 12DM4A, 12DQ4 |
| 12AX4GTA | 12AX4GTB, 12D4, 12D4A, 12DM4, 12DM4A, 12DQ4, 12AX4GT*† |
| 12AX4GTB | 12D4A, 12DM4, 12DM4A, 12DQ4 |
| 12AX7 | 12AX7A, 12DF7, 12DT7, 7025, 7025A, 12AD7*, 12AU7§, 12AU7A§, 12BZ7*, 12DM7* |
| 12AX7A | 12AX7, 12DF7, 12DT7, 7025, 7025A, 12AD7*, 12AU7§, 12AU7A§, 12BZ7*, 12DM7* |
| 12AY3 | 12BS3 |
| 12AY7 | |
| 12AZ7 | 12AZ7A, 12AT7* |
| 12AZ7A | 12AZ7*†, 12AT7* |
| 12B3 | |
| 12B4 | 12B4A |
| 12B4A | 12B4*† |
| 12B6M | |
| 12B7 | 12B7ML, 14A7, 14H7, 14A7/12B7, 14A7ML, 14A7ML/12B7ML |
| 12B7ML | 12B7, 14A7, 14H7, 14A7/12B7, 14A7ML, 14A7ML/12B7ML |
| 12B8 | 12B8GT |
| 12B8GT | 12B8 |
| 12BA6 | 12BA6A, 12AU6, 12AU6A, 12BZ6§ |
| 12BA6A | 12AU6A, 12AU6*†, 12BA6*† |
| 12BA7 | |
| 12BD6 | 12BA6, 12BA6A |
| 12BE3 | 12BE3A |
| 12BE3A | 12BE3 |
| 12BE6 | 12BE6A, 12CS6 |
| 12BE6A | 12BE6*†, 12CS6*† |
| 12BF6 | 12BU6 |
| 12BH7 | 12BH7A |
| 12BH7A | 12BH7*† |
| 12BK5 | |
| 12BK6 | 12AT6, 12AT6A, 12AV6, 12AV6A, 12BT6 |
| 12BL6 | 12AF6, 12EK6§ |
| 12BM5 | 12AQ5* |
| 12BN6 | 12BN6A |

§ May not work in all circuits.

* Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|--------------------|--|
| 12BN6A | 12BN6*† |
| 12BQ6GA | 12BQ6GTA, 12BQ6GTB, 12BQ6GTB/ 12CU6, 12CU6, 12DQ6, 12DQ6A, 12DQ6B, 12GW6 |
| 12BQ6GT | 12BQ6GA, 12BQ6GTA, 12BQ6GTB, 12BQ6GTB/12CU6, 12CU6, 12DQ6, 12DQ6A, 12DQ6B, 12GW6 |
| 12BQ6GTA | 12BQ6GA, 12BQ6GTB, 12BQ6GTB/ 12CU6, 12CU6, 12DQ6, 12DQ6A, 12DQ6B, 12GW6 |
| 12BQ6GTB | 12BQ6GTB/12CU6, 12CU6, 12DQ6A, 12DQ6B, 12GW6 |
| 12BQ6GTB/ 12CU6 | 12BQ6GTB, 12CU6, 12DQ6A, 12DQ6B, 12GW6 |
| 12BR3 | |
| 12BR7 | 12BR7A |
| 12BR7A | 12BR7*† |
| 12BS3 | |
| 12BT3 | |
| 12BT6 | 12AT6, 12AT6A, 12AV6, 12AV6A, 12BK6 |
| 12BU6 | 12BF6 |
| 12BV7 | 12BY7, 12BY7A, 12DQ7 |
| 12BW4 | |
| 12BX6 | 13EC7* |
| 12BY3 | |
| 12BY7 | 12BY7A, 12BV7, 12DQ7 |
| 12BY7A | 12DQ7, 12BY7*†, 12BV7*† |
| 12BZ6 | 12BA6§, 12BA6A§ |
| 12BZ7 | |
| 12C5 | 12C5/12CU5, 12CU5, 12R5, 12AS5*, 12DM5* |
| 12C5/12CU5 | 12C5, 12CU5, 12R5, 12AS5*, 12DM5* |
| 12C8 | 12C8Y |
| 12C8Y | 12C8 |
| 12CA5 | 12EH5, 12AS5*, 12ED5*, 12FX5* |
| 12CM6 | |
| 12CN5 | |
| 12CR5 | |
| 12CR6 | |
| 12CS5 | 12DW5, 12CM6* |
| 12CS6 | 12BE6, 12BE6A |

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

● 12CT8-12DW5 ●
● RECEIVING TUBES

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 12CT8 | |
| 12CU5 | 12C5, 12C5/12CU5, 12R5, 12AS5*, 12DM5* |
| 12CU6 | 12BQ6GTB, 12BQ6GTB/12CU6, 12DQ6A, 12DQ6B, 12GW6 |
| 12CX6 | 12EZ6 |
| 12CY6 | |
| 12D4 | 12D4A, 12AX4GTB, 12DM4, 12DM4A, 12DQ4 |
| 12D4A | 12DM4, 12DM4A, 12DQ4 |
| 12DB5 | |
| 12DE8 | |
| 12DF5 | |
| 12DF7 | 12AX7, 12AX7A, 12DT7, 7025, 7025A, 12AD7*, 12BZ7*, 12DM7* |
| 12DJ8 | |
| 12DK5 | |
| 12DK6 | |
| 12DK7 | |
| 12DL8 | 12DS7§, 12DS7A§ |
| 12DM4 | 12DM4A, 12D4A, 12DQ4 |
| 12DM4A | |
| 12DM5 | 11C5, 12AS5*, 12C5*, 12C5/12CU5*, 12CU5*, 12R5* |
| 12DM7 | 12AD7*, 12AX7*, 12AX7A*, 12BZ7*, 12DF7*, 12DT7*, 7025*, 7025A* |
| 12DQ4 | |
| 12DQ6 | 12DQ6A, 12DQ6B, 12GW6 |
| 12DQ6A | 12DQ6B, 12GW6 |
| 12DQ6B | 12GW6 |
| 12DQ7 | 12BY7A, 12BY7*†, 12BV7*† |
| 12DS7 | 12DS7A |
| 12DS7A | 12DS7 |
| 12DT5 | |
| 12DT6 | |
| 12DT7 | 12AX7, 12AX7A, 12DF7, 7025, 7025A, 12AD7*, 12BZ7*, 12DM7* |
| 12DT8 | |
| 12DU7 | |
| 12DV7 | |
| 12DV8 | |
| 12DW5 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|-----------------------|
| 12DW7 | 7247 |
| 12DW8 | |
| 12DY8 | |
| 12DZ6 | 12EA6, 12EK6 |
| 12DZ8 | 12FY8* |
| 12E5GT | 12J5, 12J5GT |
| 12EA6 | 12DZ6, 12EK6 |
| 12EC8 | |
| 12ED5 | 12FX5, 12CA5*, 12EH5* |
| 12EF6 | |
| 12EG6 | |
| 12EH5 | 12CA5, 12ED5*, 12FX5* |
| 12EK6 | 12DZ6, 12EA6 |
| 12EL6 | |
| 12EM6 | |
| 12EN6 | 12L6GT, 12W6GT |
| 12EQ7 | 12KL8§ |
| 12EZ6 | 12CX6 |
| 12F5 | 12F5GT |
| 12F5GT | 12F5 |
| 12F8 | |
| 12FA6 | |
| 12FB5 | |
| 12FK6 | 12FM6 |
| 12FM6 | 12FK6 |
| 12FQ8 | |
| 12FR8 | |
| 12FT6 | 12AE6, 12AE6A |
| 12FV7 | |
| 12FX5 | 12ED5, 12EH5* |
| 12FX8 | 12FX8A |
| 12FX8A | 12FX8 |
| 12FY8 | |
| 12G4 | 12H4 |
| 12G8 | |
| 12G11 | |
| 12GA6 | |
| 12GC6 | |
| 12GE5 | |
| 12GJ5 | |
| 12GN6 | |
| 12GN7 | |

● RECEIVING TUBES 12DW7-12GN7 ●

§ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 12GT5-12SA7GT ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 12GT5 | |
| 12GW6 | 12DQ6B |
| 12H4 | |
| 12H6 | |
| 12HE7 | |
| 12HU8 | |
| 12J5 | 12J5GT |
| 12J5GT | 12J5 |
| 12J7 | 12J7G, 12J7GT |
| 12J7G | 12J7, 12J7GT |
| 12J7GT | 12J7, 12J7G |
| 12J8 | |
| 12JB6 | |
| 12JN6 | |
| 12JN8 | |
| 12JT6 | |
| 12K5 | |
| 12K7G | 12K7GT |
| 12K7GT | 12K7G |
| 12K8 | 12K8GT, 12K8Y |
| 12K8GT | 12K8, 12K8Y |
| 12K8Y | 12K8, 12K8GT |
| 12KL8 | |
| 12L6GT | 12EN6, 12W6GT |
| 12L8GT | |
| 12Q7 | 12Q7G, 12Q7GT |
| 12Q7G | 12Q7, 12Q7GT |
| 12Q7GT | 12Q7, 12Q7G |
| 12R5 | |
| 12S7 | |
| 12S8 | 12S8G, 12S8GT |
| 12S8G | 12S8, 12S8GT |
| 12S8GT | 12S8, 12S8G |
| 12SA7 | 12SA7G, 12SA7GT, 12SA7GT/G, 12SA7GTY, 12SA7Y, 12SY7, 12SY7GT |
| 12SA7G | 12SA7, 12SA7GT, 12SA7GT/G, 12SA7GTY, 12SA7Y, 12SY7, 12SY7GT |
| 12SA7GT | 12SA7, 12SA7G, 12SA7GT/G, 12SA7GTY, 12SA7Y, 12SY7, 12SY7GT |

‡ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 12SA7GT/G | 12SA7, 12SA7G, 12SA7GT, 12SA7GTY, 12SA7Y, 12SY7, 12SY7GT |
| 12SA7GTY | 12SA7, 12SA7G, 12SA7GT, 12SA7GT/G, 12SA7Y, 12SY7, 12SY7GT |
| 12SA7Y | 12SA7, 12SA7G, 12SA7GT, 12SA7GT/G, 12SA7GTY, 12SY7, 12SY7GT |
| 12SC7 | |
| 12SF5 | 12SF5GT |
| 12SF5GT | 12SF5 |
| 12SF7 | 12SF7GT, 12SF7Y |
| 12SF7GT | 12SF7, 12SF7Y |
| 12SF7Y | 12SF7, 12SF7GT |
| 12SG7 | 12SG7GT, 12SG7Y |
| 12SG7GT | 12SG7, 12SG7Y |
| 12SG7Y | 12SG7, 12SG7GT |
| 12SH7 | 12SH7GT |
| 12SH7GT | 12SH7 |
| 12SJ7 | 12SJ7GT |
| 12SJ7GT | 12SJ7 |
| 12SK7 | 12SK7G, 12SK7GT, 12SK7GT/G, 12SK7GTY, 12SK7Y |
| 12SK7G | 12SK7, 12SK7GT, 12SK7GT/G, 12SK7GTY, 12SK7Y |
| 12SK7GT | 12SK7, 12SK7G, 12SK7GT/G, 12SK7GTY, 12SK7Y |
| 12SK7GT/G | 12SK7, 12SK7G, 12SK7GT, 12SK7GTY, 12SK7Y |
| 12SK7GTY | 12SK7, 12SK7G, 12SK7GT, 12SK7GT/G, 12SK7Y |
| 12SK7Y | 12SK7, 12SK7G, 12SK7GT, 12SK7GT/G, 12SK7GTY |
| 12SL7GT | |
| 12SN7GT | 12SN7GTA, 12SX7GT |
| 12SN7GTA | |
| 12SQ7 | 12SQ7G, 12SQ7GT, 12SQ7GT/G |
| 12SQ7G | 12SQ7, 12SQ7GT, 12SQ7GT/G |
| 12SQ7GT | 12SQ7, 12SQ7G, 12SQ7GT/G |
| 12SQ7GT/G | 12SQ7, 12SQ7G, 12SQ7GT |
| 12SR7 | 12SR7GT, 12SW7, 12SW7GT |
| 12SR7GT | 12SR7, 12SW7, 12SW7GT |
| 12SW7 | 12SW7GT, 12SR7, 12SR7GT |
| 12SW7GT | 12SW7, 12SR7, 12SR7GT |

● RECEIVING TUBES 12SA7GT/G-12SW7GT ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 12SX7GT-14C5 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 12SX7GT | 12SN7GT, 12SN7GTA |
| 12SY7 | 12SY7GT, 12SA7, 12SA7G, 12SA7GT, 12SA7GT/G, 12SA7GTY, 12SA7Y |
| 12SY7GT | 12SY7, 12SA7, 12SA7G, 12SA7GT, 12SA7GT/G, 12SA7GTY, 12SA7Y |
| 12U7 | |
| 12V6GT | 12A6*§, 12A6G*§, 12A6GT*§, 12A6GTY*§, 12A6Y*§ |
| 12W6GT | 12EN6, 12L6GT |
| 12X3 | |
| 12X4 | |
| 12Z3 | 14Z3 |
| 12Z5 | 6Z5, 6Z5/12Z5 |
| 13 | 5X3, 80, 83V, 88 |
| 13CM5 | |
| 13CW4 | |
| 13DE7 | 15EW7 |
| 13DR7 | 13FD7, 13FR7 |
| 13EC7 | 12BX6* |
| 13EM7 | 15EA7 |
| 13FD7 | 13FR7 |
| 13FM7 | |
| 13FR7 | 13FD7 |
| 13GB5 | |
| 13GC8 | |
| 13GF7 | |
| 13J10 | |
| 14 | |
| 14A4 | |
| 14A5 | |
| 14A7 | 12B7, 12B7ML, 14H7, 14A7/12B7, 14A7ML, 14A7ML/12B7ML |
| 14A7ML | 14A7, 14A7/12B7, 14A7ML/12B7ML, 12B7, 12B7ML, 14H7 |
| 14A7/12B7 | 12B7, 12B7ML, 14A7, 14H7, 14A7ML, 14A7ML/12B7ML |
| 14A7ML/12B7ML | 14A7, 14A7ML, 14A7/12B7, 12B7, 12B7ML, 14H7 |
| 14AF7 | XXD, 14N7* |
| 14B6 | |
| 14B8 | |
| 14C5 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 14C7 | |
| 14DA7 | |
| 14E6 | |
| 14E7 | 14R7 |
| 14F7 | |
| 14F8 | |
| 14G6 | |
| 14GT8 | 14GT8A, 14JG8 |
| 14GT8A | 14GT8†, 14JG8† |
| 14H7 | 12B7, 12B7ML, 14A7, 14A7/12B7, 14A7ML, 14A7ML/12B7ML |
| 14J7 | 14S7 |
| 14JG8 | 14GT8, 14GT8A |
| 14K7 | |
| 14L7 | |
| 14N7 | 14AF7* |
| 14Q7 | |
| 14R7 | 14E7 |
| 14S7 | 14J7 |
| 14V7 | |
| 14W7 | |
| 14X7 | |
| 14Y4 | |
| 14Y7 | |
| 14Z3 | 12Z3 |
| 15 | |
| 15A6 | |
| 15A8 | |
| 15AF11 | 15BD11 |
| 15BD11 | 15AF11 |
| 15CW5 | |
| 15DQ8 | |
| 15EA7 | 13EM7 |
| 15EW6 | |
| 15EW7 | |
| 15FM7 | |
| 15FY7 | |
| 15HB6 | |
| 15KY8 | |
| 15LE8 | |
| 16 | 16B, 81 |
| 16A5 | 15CW5 |

● RECEIVING TUBES 14C7-16A5 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 16A8-17GJ5 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 16A8 | |
| 16AQ3 | |
| 16B | 16, 81 |
| 16GK6 | 15HB6 |
| 16GK8 | |
| 16GY5 | |
| 17 | |
| 17A8 | 19EA8, 19EA8A |
| 17AB9 | |
| 17AV5GA | |
| 17AX3 | |
| 17AX4GT | 17AX4GTA, 17D4, 17D4A, 17DM4, 17DM4A, 17DQ4 |
| 17AX4GTA | 17D4, 17D4A, 17DM4, 17DM4A, 17DQ4 |
| 17AY3 | 17BS3 |
| 17BE3 | 17BE3A |
| 17BE3A | 17BE3 |
| 17BF11 | |
| 17BH3 | |
| 17BQ6GTB | 17DQ6A, 17DQ6B, 17GW6 |
| 17BR3 | |
| 17BS3 | |
| 17C5 | 17CU5, 17R5 |
| 17C8 | |
| 17C9 | 17C9A |
| 17C9A | 17C9† |
| 17CA5 | |
| 17CQ4 | |
| 17CU5 | 17C5, 17R5 |
| 17D4 | 17D4A, 17AX4GTA, 17DM4, 17DM4A, 17DQ4 |
| 17D4A | 17DM4, 17DM4A, 17DQ4 |
| 17DE4 | 17CQ4 |
| 17DM4 | 17DM4A, 17D4A, 17DQ4 |
| 17DM4A | |
| 17DQ4 | |
| 17DQ6 | 17DQ6A, 17DQ6B, 17GW6 |
| 17DQ6A | 17DQ6B, 17GW6 |
| 17DQ6B | 17GW6 |
| 17EW8 | |
| 17GE5 | |
| 17GJ5 | |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---------------------------------|
| 17GT5 | |
| 17GV5 | |
| 17GW6 | 17DQ6B |
| 17H3 | |
| 17HC8 | |
| 17JB6 | |
| 17JG6 | |
| 17JK8 | |
| 17JM6 | |
| 17JN6 | |
| 17JT6 | |
| 17JZ8 | |
| 17L6GT | 17W6GT |
| 17LD8 | |
| 17R5 | |
| 17W6GT | 17L6GT |
| 17X10 | |
| 17Z3 | |
| 18 | |
| 18A5 | |
| 18DZ8 | |
| 18FW6 | 18FW6A, 18GD6, 18GD6A |
| 18FW6A | 18GD6A, 18FW6†, 18GD6† |
| 18FX6 | 18FX6A |
| 18FX6A | 18FX6† |
| 18FY6 | 18FY6A, 18GE6, 18GE6A |
| 18FY6A | 18GE6A, 18FY6†, 18GE6† |
| 18GB5 | |
| 18GD6 | 18GD6A, 18FW6, 18FW6A |
| 18GD6A | 18FW6A, 18GD6†, 18FW6† |
| 18GE6 | 18GE6A, 18FY6, 18FY6A |
| 18GE6A | 18FY6A, 18GE6†, 18FY6† |
| 18HB8 | |
| 19 | |
| 19AQ5 | |
| 19AU4 | 19AU4GT, 19AU4GTA, 17CQ4, 17DE4 |
| 19AU4GT | 19AU4, 19AU4GTA, 17CQ4, 17DE4 |
| 19AU4GTA | |
| 19BG6G | 19BG6GA |
| 19BG6GA | 19BG6G |
| 19C8 | 19T8, 19T8A |
| 19CL8A | 19CL8B, 19JN8 |

● RECEIVING TUBES 17GT5-19CL8A ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES ● 19CL8B-22JG6 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|-----------------|
| 19CL8B | 19CL8A†, 19JN8† |
| 19CS4 | |
| 19D8 | |
| 19DE7 | 19EW7, 20EW7 |
| 19EA8 | 19EA8A, 17A8 |
| 19EA8A | 19EA8†, 17A8† |
| 19EW7 | 20EW7 |
| 19EZ8 | |
| 19GQ7 | |
| 19HR6 | |
| 19HS6 | |
| 19HV8 | |
| 19J6 | |
| 19JN8 | 19CL8A, 19CL8B |
| 19KG8 | |
| 19Q9 | |
| 19T8 | 19T8A, 19C8 |
| 19T8A | 19T8†, 19C8† |
| 19V8 | |
| 19X3 | |
| 19X8 | |
| 19Y3 | 19X3 |
| 20 | |
| 20EQ7 | |
| 20EW7 | 19EW7 |
| 20EZ7 | |
| 20J8 | |
| 21A6 | 21B6 |
| 21A7 | |
| 21B6 | 21A6 |
| 21EX6 | 25CD6GB |
| 21GY5 | |
| 21HB5 | 21HB5A |
| 21HB5A | 21HB5 |
| 21HD5 | |
| 21HJ5 | |
| 21LR8 | |
| 22 | |
| 22BH3 | |
| 22BW3 | |
| 22DE4 | |
| 22JG6 | |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|----------------------|---|
| 22JU6 | |
| 23Z9 | |
| 24A | 24S, 35§, 35/51§, 51§, 35S§, 51S§, 35S/51S§ |
| 24GA7 | |
| 24S | 24A, 35§, 35/51§, 51§, 35S§, 51S§, 35S/51S§ |
| 25 | 25S, 1B5, 1B5/25S |
| 25A6 | 25A6G, 25A6GT, 25A6GT/G, 25A6MG |
| 25A6G | 25A6, 25A6GT, 25A6GT/G, 25A6MG |
| 25A6GT | 25A6, 25A6G, 25A6GT/G, 25A6MG |
| 25A6GT/G | 25A6, 25A6G, 25A6GT, 25A6MG |
| 25A6MG | 25A6, 25A6G, 25A6GT, 25A6GT/G |
| 25A7G | 25A7GT, 25A7GT/G |
| 25A7GT | 25A7G, 25A7GT/G |
| 25A7GT/G | 25A7G, 25A7GT |
| 25AC5G | 25AC5GT, 25AC5GT/G |
| 25AC5GT | 25AC5G, 25AC5GT/G |
| 25AC5GT/G | 25AC5G, 25AC5GT |
| 25AV5GA | 25AV5GT |
| 25AV5GT | 25AV5GA |
| 25AX4GT | 25D4 |
| 25B5 | |
| 25B6 | 25B6G, 25B6GT |
| 25B6G | 25B6, 25B6GT |
| 25B6GT | 25B6, 25B6G |
| 25B8 | 25B8GT |
| 25B8GT | 25B8 |
| 25BK5 | |
| 25BQ6GA | 25BQ6GTB, 25BQ6GTB/25CU6, 25CU6, 25DQ6, 25DQ6A |
| 25BQ6GT | 25BQ6GA, 25BQ6GTB, 25BQ6GTB/ 25CU6, 25CU6, 25DQ6, 25DQ6A |
| 25BQ6GTB | 25BQ6GTB/25CU6, 25CU6, 25DQ6A |
| 25BQ6GTB/ . 25CU6 | 25BQ6GTB, 25CU6, 25DQ6A |
| 25BR3 | |
| 25C5 | |
| 25C6G | 25C6GA |
| 25C6GA | 25C6G |
| 25CA5 | 25C5, 25EH5 |
| 25CD6G | 25CD6GA, 25CD6GB, 25DN6, 21EX6 |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|----------------------------------|
| 25CD6GA | 25CD6GB, 25DN6, 21EX6 |
| 25CD6GB | 21EX6 |
| 25CR5 | |
| 25CU6 | 25BQ6GTB, 25BQ6GTB/25CU6, 25DQ6A |
| 25D4 | |
| 25D8GT | |
| 25DK4 | |
| 25DN6 | 25CD6GB, 21EX6 |
| 25DQ6 | 25DQ6A |
| 25DQ6A | |
| 25DT5 | |
| 25E5 | |
| 25EC6 | 25CD6GB, 21EX6 |
| 25EH5 | 25CA5 |
| 25F5 | 25F5A |
| 25F5A | 25F5† |
| 25FY8 | |
| 25GF6 | |
| 25L6 | 25L6G, 25L6GT, 25L6GT/G, 25W6GT |
| 25L6G | 25L6, 25L6GT, 25L6GT/G, 25W6GT |
| 25L6GT | 25L6, 25L6G, 25L6GT/G, 25W6GT |
| 25L6GT/G | 25L6, 25L6G, 25L6GT, 25W6GT |
| 25L7G | 25L7GT, 25L7GT/G |
| 25L7GT | 25L7G, 25L7GT/G |
| 25L7GT/G | 25L7G, 25L7GT |
| 25N6 | 25N6G |
| 25N6G | 25N6 |
| 25S | 25, 1B5, 1B5/25S |
| 25U4GT | 25AX4GT, 25D4, 25W4GT |
| 25W4GT | 25AX4GT, 25D4, 25U4GT |
| 25W6GT | 25L6, 25L6G, 25L6GT, 25L6GT/G |
| 25X6GT | |
| 25Y4 | 25Y4GT |
| 25Y4GT | 25Y4 |
| 25Y5 | 25Z5, 25Z5MG |
| 25Z3 | |
| 25Z4 | 25Z4GT |
| 25Z4GT | 25Z4 |
| 25Z5 | 25Z5MG, 25Y5 |
| 25Z5MG | 25Z5, 25Y5 |
| 25Z6 | 25Z6G, 25Z6GT, 25Z6GT/G, 25Z6MG |
| 25Z6G | 25Z6, 25Z6GT, 25Z6GT/G, 25Z6MG |

‡ May not work in all circuits. * Parallel-filament circuits.

† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 25Z6GT | 25Z6, 25Z6G, 25Z6GT/G, 25Z6MG |
| 25Z6GT/G | 25Z6, 25Z6G, 25Z6GT, 25Z6MG |
| 25Z6MG | 25Z6, 25Z6G, 25Z6GT, 25Z6GT/G |
| 26 | |
| 26A6 | 26CG6 |
| 26A7 | 26A7GT |
| 26A7GT | 26A7 |
| 26B6 | 26D6 |
| 26BK6 | |
| 26C6 | |
| 26CG6 | 26A6 |
| 26D6 | 26B6 |
| 26E6G | |
| 26Z5 | |
| 27 | 27S, 56, 56S, 27A* |
| 27A | 27*, 27S* |
| 27GB5 | 28GB5 |
| 27S | 27, 56, 56S, 27A* |
| 28D7 | |
| 28GB5 | 27GB5 |
| 28HD5 | |
| 28Z5 | |
| 29 | |
| 29GK6 | |
| 30 | |
| 30A5 | 35C5, 35C5A |
| 30AE3 | |
| 30AG11 | |
| 30CW5 | |
| 30HD5 | |
| 30HJ5 | |
| 31 | |
| 31A3 | |
| 31BX7GT | |
| 32 | 1A4, 1A4P, 1A4T, 1B4, 1B4G, 1B4P, 1B4T, 34, 951, 1C4*, 1K4* |
| 32A8 | |
| 32ET5 | 32ET5A, 34GD5, 34GD5A |
| 32ET5A | 32ET5†, 34GD5A |
| 32GA7 | |
| 32L7GT | |
| 33 | |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● 33GT7-35Z6G ● RECEIVING TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 33GT7 | |
| 33GY7 | |
| 33JV6 | |
| 34 | 1A4, 1A4P, 1A4T, 1B4, 1B4G, 1B4P, 1B4T, 32, 951, 1C4*, 1K4* |
| 34GD5 | 34GD5A, 32ET5, 32ET5A |
| 34GD5A | 32ET5A, 34GD5†, 32ET5† |
| 34R3 | |
| 35 | 35S, 35/51, 35S/51S, 51, 51S, 24A§, 24S§ |
| 35/51 | 35, 35S/51S, 51, 35S, 51S, 24A§, 24S§ |
| 35A3 | 35C3 |
| 35A5 | 35A5LT |
| 35A5LT | 35A5 |
| 35B5 | |
| 35C3 | 35A3 |
| 35C5 | 35C5A, 30A5 |
| 35C5A | 35C5†, 30A5† |
| 35CD6GA | |
| 35D5 | |
| 35DZ8 | |
| 35EH5 | 35EH5A |
| 35EH5A | 35EH5†° |
| 35FN5 | |
| 35GL6 | |
| 35HB8 | |
| 35L6G | 35L6GT, 35L6GT/G |
| 35L6GT | 35L6G, 35L6GT/G |
| 35L6GT/G | 35L6G, 35L6GT |
| 35S | 35S/51S, 51S, 35/51, 35, 51, 24A§, 24S§ |
| 35S/51S | 35S, 51S, 35/51, 35, 51, 24A§, 24S§ |
| 35W4 | 35W4A |
| 35W4A | 35W4† |
| 35Y4 | |
| 35Z3 | 35Z3LT |
| 35Z3LT | 35Z3 |
| 35Z4 | 35Z4GT |
| 35Z4GT | 35Z4 |
| 35Z5 | 35Z5G, 35Z5GT, 35Z5GT/G |
| 35Z5G | 35Z5, 35Z5GT, 35Z5GT/G |
| 35Z5GT | 35Z5, 35Z5G, 35Z5GT/G |
| 35Z5GT/G | 35Z5, 35Z5G, 35Z5GT |
| 35Z6G | 35Z6GT |

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---------------------------------|
| 35Z6GT | 35Z5 |
| 36 | 36A, 64*, 64A* |
| 36A | 36, 64*, 64A* |
| 36AM3 | 36AM3A, 36AM3B |
| 36AM3A | 36AM3, 36AM3B |
| 36AM3B | 36AM3†, 36AM3A† |
| 37 | 37A, 76, 56A*, 56AS*, 67*, 67A* |
| 37A | 37, 76, 56A*, 56AS*, 67*, 67A* |
| 38 | 38A |
| 38A | 38 |
| 38A3 | |
| 38HE7 | |
| 39 | 39/44, 44 |
| 39/44 | 39, 44 |
| 40 | |
| 40A1 | |
| 40B2 | |
| 40FR5 | |
| 40Z5 | 40Z5GT, 40Z5/45Z5GT, 45Z5GT |
| 40Z5/45Z5GT | 40Z5, 40Z5GT, 45Z5GT |
| 40Z5GT | 40Z5, 40Z5/45Z5GT, 45Z5GT |
| 41 | 42* |
| 42 | 41* |
| 43 | 43MG |
| 43MG | 43 |
| 44 | 39, 39/44 |
| 45 | 45A |
| 45A | 45 |
| 45A5 | |
| 45B5 | |
| 45Z3 | |
| 45Z5GT | 40Z5, 40Z5/45Z5GT, 40Z5GT |
| 46 | |
| 47 | |
| 48 | |
| 49 | |
| 50 | |
| 50A1 | |
| 50A5 | |
| 50AX6G | 50AX6GT |
| 50AX6GT | 50AX6G |
| 50B5 | |

● RECEIVING TUBES 35Z6GT-50B5 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

● RECEIVING TUBES 50BK5-57 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 50BK5 | |
| 50BM8 | |
| 50C5 | 50C5A |
| 50C5A | 50C5† |
| 50C6G | 50C6GA |
| 50C6GA | 50C6G |
| 50CA5 | 50EH5, 50EH5A |
| 50CD6G | |
| 50DC4 | |
| 50E5 | |
| 50EH5 | 50EH5A, 50CA5 |
| 50EH5A | 50EH5†, 50CA5† |
| 50FA5 | |
| 50FE5 | |
| 50FK5 | |
| 50FY8 | |
| 50HC6 | |
| 50HK6 | 50HC6 |
| 50HN5 | |
| 50L6G | 50L6GT |
| 50L6GT | 50L6G |
| 50X6 | |
| 50Y6G | 50Y6GT, 50Y6GT/G |
| 50Y6GT | 50Y6G, 50Y6GT/G |
| 50Y6GT/G | 50Y6G, 50Y6GT |
| 50Y7GT | 50Z7G, 50Z7GT |
| 50Z6G | 50AX6G, 50AX6GT |
| 50Z7G | 50Z7GT, 50Y7GT |
| 50Z7GT | 50Z7G, 50Y7GT |
| 51 | 51S, 35, 35/51, 35S/51S, 35S, 24A§, 24S§ |
| 51S | 51, 35, 35/51, 35S/51S, 35S, 24A§, 24S§ |
| 52 | |
| 53 | |
| 55 | 55S |
| 55N3 | |
| 55S | 55 |
| 56 | 56S, 27, 27S |
| 56A | 56AS, 67, 67A, 37*, 37A*, 76* |
| 56AS | 56A, 67, 67A, 37*, 37A*, 76* |
| 56R9 | |
| 56S | 56, 27, 27S |
| 57 | 57S |

§ May not work in all circuits. * Parallel-filament circuits.
 † Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---------------------------------|
| 57A | 57AS, 6C6*, 77* |
| 57AS | 57A, 6C6*, 77* |
| 57S | 57 |
| 58 | 58S |
| 58AS | 6D6*, 78* |
| 58S | 58 |
| 59 | |
| 59B | |
| 60E3 | |
| 60EH5 | |
| 60FX5 | |
| 64 | 64A, 65, 65A, 36*, 36A* |
| 64A | 64, 65, 65A, 36*, 36A* |
| 65 | 65A, 64, 64A |
| 65A | 65, 64, 64A |
| 67 | 67A, 56A, 56AS, 37*, 37A*, 76* |
| 67A | 67, 56A, 56AS, 37*, 37A*, 76* |
| 68 | 68A |
| 68A | 68 |
| 70A7GT | |
| 70L7GT | |
| 71 | 71A* 71B* |
| 71A | 71*, 71B* |
| 71B | 71*, 71A* |
| 75 | 75S |
| 75S | 75 |
| VR75 | OA3, OA3A |
| 76 | 37, 37A, 56A*, 56AS*, 67*, 67A* |
| 77 | 6C6, 57A*, 57AS* |
| 78 | 6D6, 58AS |
| 79 | |
| 80 | 5X3, 13, 83V, 88 |
| 81 | 16, 16B |
| 82 | 82V |
| 82V | 82 |
| 83 | 5Z3 |
| 83V | |
| 84/6Z4 | 6Z4, 98 |
| G84 | 2Z2, 2Z2/G84 |
| 85 | 85S |
| 85AS | |
| 85S | 85 |

‡ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 88 | 82, 82V |
| 89 | 89Y |
| 89Y | 89 |
| VR90 | OB3, OB3A |
| 95 | 2A5 |
| 96 | |
| 98 | 84/6Z4, 6Z4 |
| V99 | |
| X99 | |
| VR105 | OC3, OC3A |
| 112A | 12A, 112A |
| 117L7GT | 117L7/M7GT, 117M7GT |
| 117L7/M7GT | 117L7GT, 117M7GT |
| 117M7GT | 117L7GT, 117L7/M7GT |
| 117N7GT | 117P7GT |
| 117P7GT | 117N7GT |
| 117Z3 | |
| 117Z4GT | |
| 117Z6G | 117Z6GT, 117Z6GT/G |
| 117Z6GT | 117Z6G, 117Z6GT/G |
| 117Z6GT/G | 117Z6G, 117Z6GT |
| VR150 | OD3, OD3A |
| 182B/482B | 71*, 71A*, 71B* |
| 183/483 | |
| 485 | |
| 807 | |
| 950 | |
| 951 | 1A4, 1A4P, 1A4T, 1B4P 1B4G, 1B4T, 32, 34, 1C4*, 1K4* |
| 5642 | |
| 5879 | |
| 5881 | 6L6GC, 7581, 7581A |
| 6080 | 6AS7G, 6AS7GA, 6AS7GT |
| 6267 | |
| 6550 | |
| 6973 | |
| 7025 | 7025A, 12AX7, 12AX7A, 12DF7, 12DT7, 12AD7*, 12BZ7*, 12DM7* |
| 7025A | 7025, 12AX7, 12AX7A, 12DF7, 12DT7, 12AD7*, 12BZ7*, 12DM7* |
| 7027 | 7027A |
| 7189 | 7189A |

‡ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warm-up time.

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 7189A | |
| 7199 | |
| 7247 | 12DW7 |
| 7355 | |
| 7408 | 6V6, 6V6G, 6V6GT, 6V6GTA, 6V6GT/G, 6V6GTY, 6V6GTX, 6V6GX, 6V6Y |
| 7534 | |
| 7543 | 6AU6, 6AU6A |
| 7581 | 7581A, 6L6GC |
| 7581A | |
| 7591 | 7591A |
| 7591A | |
| 7687 | |
| 7695 | |
| 7754 | |
| 7867 | 6EX6* |
| 7868 | |
| 8278 | |
| 9001 | |
| 9002 | |
| 9003 | |
| BA | |
| BH | BA |
| BR | |
| XXB | 3C6 |
| XXD | 14AF7 |
| XXFM | 7X7 |
| XXL | 7A4 |
| X155 | 6BC8, 6BQ7, 6BQ7A, 6BS8, 6BX8, 6BZ7, 6BZ8, 6BK7*, 6BK7A*, 6BK7B* |

● RECEIVING TUBES 7189A-X155 ●

§ May not work in all circuits. * Parallel-filament circuits.
† Series circuit not requiring controlled warmup time.

Section 2

PICTURE-TUBE SUBSTITUTES

This listing is numerical-alphabetical, with the substitutes shown in the right-hand column. Substitutes are not recommended for some types and, for this reason are not shown in many instances. The listing of a certain tube type as a substitute for another one does not necessarily mean the reverse is true. Always refer to the left-hand column for the original type number. Then find the substitute in the right-hand column.

Minor changes may be necessary when a picture tube is substituted. These changes are indicated by various symbols following the type number. The key to these symbols is given below. *Be absolutely certain* to refer to this key.

At the end of this section is a listing of those tubes that require odd filament voltages (other than 6.3 volts), or low E_{r2} potentials. This is a handy reference when setting up your picture-tube testing and rejuvenating equipment.

Key to Footnotes:

- * Omit ion trap.
- ** Add ion trap.
- † If G_1 lead is to pin 2.
- ‡ If G_1 lead is to pin 6.
- # Connect pin 6 to pin 2 or pin 10.
- ^a May require longer or shorter H.V. lead.
- 1 Parallel-filament circuits only.
- 2 Mechanical changes may be required.
- 3 A change of accelerator-grid voltage may be required.
- 4 A change of focusing voltage may be required.
- 5 A change of brightness-control voltage may be required.
- 6 Add high-voltage filter capacitor.
- 7 Ground the *Aquadag* coating.
- 8 Change the anode connector.
- 9 Change the ion trap.

● PICTURE TUBES 2EP4-12KP4A ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 2EP4 | |
| 7RP4 | 7RP4A |
| 7RP4A | 7RP4 |
| 8AP4 | 8AP4A |
| 8AP4A | 8AP4 |
| 9QP4 | 9QP4A |
| 9QP4A | 9QP4 |
| 10ABP4 | 10ABP4A, B, C, 10AEP4' |
| 10ABP4A | 10ABP4, B, C, 10AEP4' |
| 10ABP4B | 10ABP4, A, C, 10AEP4' |
| 10ABP4C | 10ABP4, A, B, 10AEP4' |
| 10ADP4 | |
| 10AEP4 | 10ABP4', A', B', C' |
| 10AJP4 | |
| 10BP4 | 10BPA, C°, D°, 10FP4*, A* |
| 10BP4A | 10BP4, C°, D°, 10FP4*, A* |
| 10BP4C | 10BP4D, 10BP4°, A°, 10FP4*, A* |
| 10BP4D | 10BP4C, 10BP4°, A°, 10FP4*, A* |
| 10CP4 | |
| 10DP4 | |
| 10EP4 | 10BP4A ⁸ , 10CP4*, 10FP4* ⁸ , A* ⁸ |
| 10FP4 | 10FP4A, 10BP4**, A**, C**, D** |
| 10FP4A | 10FP4, 10BP4**, A**, C**, D* |
| 10HP4 | |
| 10MP4 | 10MP4A |
| 10MP4A | 10MP4 |
| 10RP4 | |
| 11AP4 | |
| 11BP4 | |
| 11CP4 | |
| 11DP4 | |
| 11EP4 | 11FP4' |
| 11FP4 | 11EP4' |
| 11GP4 | |
| 12AP4 | |
| 12AYP4 | 12AZP4', 12BAP4' |
| 12AZP4 | 12BAP4', 12AYP4' |
| 12BAP4 | 12AZP4', 12AYP4' |
| 12CP4 | |
| 12JP4 | 12RP4**, 12QP4**, 12QP4A** |
| 12KP4 | 12KP4A, 12JP4 ^{6,8} , 12ZP4**, 12ZP4A** |
| 12KP4A | 12KP4, 12JP4 ^{6,8} , 12ZP4**, 12ZP4A** |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 12LP4 | 12LP4A, 12LP4C, 12TP4 ⁶ , 12KP4*, 12KP4A*, 12ZP4 ⁹ , 12ZP4A ⁹ |
| 12LP4A | 12LP4, 12LP4C, 12KP4*, 12KP4A*, 12TP4 ⁶ , 12ZP4 ⁹ , 12ZP4A ⁹ |
| 12LP4C | 12LP4, 12LP4A, 12KP4*, 12KP4A*, 12TP4 ⁶ , 12ZP4 ⁹ , 12ZP4A ⁹ |
| 12QP4 | 12QP4A, 12RP4, 12JP4* |
| 12QP4A | 12QP4, 12RP4, 12JP4* |
| 12RP4 | 12QP4, 12QP4A, 12JP4* |
| 12TP4 | 12LP4 ⁷ , A ⁷ , C ⁷ , 12KP4* ⁷ , A* ⁷ |
| 12UP4 | 12UP4A, 12UP4B ⁹ |
| 12UP4A | 12UP4, 12UP4B ⁹ |
| 12UP4B | 12UP4 ⁹ , 12UP4A ⁹ |
| 12VP4 | 12VP4A |
| 12VP4A | 12VP4 |
| 12WP4 | |
| 12XP4 | 12ZP4, 12ZP4A, 12KP4* ¹ , A* ¹ |
| 12YP4 | |
| 12ZP4 | 12ZP4A, 12JP4 ^{6,8} , 12KP4*, 12KP4A* |
| 12ZP4A | 12ZP4, 12JP4 ^{6,8} , 12KP4*, 12KP4A* |
| 14ACP4 | 14AEP4*, 14ARP4* ^{3,5} |
| 14AEP4 | |
| 14AJP4 | 14ASP4*, 14AVP4* |
| 14ARP4 | 14AEP4 ^{3,5} , 14AUP4 ¹ , 14AWP4 ¹ |
| 14ASP4 | 14AVP4 |
| 14ATP4 | |
| 14AUP4 | 14AWP4, 14ARP4 ¹ |
| 14AVP4 | 14ASP4 |
| 14AWP4 | 14AUP4, 14ARP4 ¹ |
| 14BCP22 | |
| 14BP4 | 14BP4A, 14CP4, 14CP4A, 14EP4, 14DP4 ^{6,9} , 14UP4* ⁶ |
| 14BP4A | 14BP4, 14CP4, 14CP4A, 14EP4, 14DP4 ^{6,9} , 14UP4* ⁶ |
| 14CP4 | 14CP4A, 14BP4, 14BP4A, 14EP4, 14DP4 ^{6,9} , 14UP4* ⁶ |
| 14CP4A | 14CP4, 14BP4, 14BP4A, 14EP4, 14DP4 ^{6,9} , 14UP4* ⁶ |
| 14DP4 | 14UP4*, 14CP4 ^{7,9} , 14CP4A ^{7,9} , 14EP4 ^{7,9} , 14FP4 ⁹ |
| 14EP4 | 14BP4, A, 14CP4, A, 14DP4 ^{6,9} , 14UP4* ⁶ |
| 14FP4 | 14UP4*, 14CP4 ⁷ , A ⁷ , 14DP4 ⁹ , 14EP4 ⁷ |

● 14GP4-16AQP4 ●
● PICTURE TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 14GP4 | |
| 14HP4 | |
| 14KP4 | 14KP4A, 14BP4 ^{1,8} , A ^{1,8} , 14CP4 ^{1,8} , A ^{1,8} , 14EP4 ^{1,8} |
| 14KP4A | 14CP4 ^{1,8} , A ^{1,8} , 14EP4 ^{1,8} |
| 14NP4 | 14NP4, 14SP4, 14WP4*, 14ZP4*, 14XP4 ¹ , A ¹ |
| 14NP4A | 14NP4, 14SP4, 14WP4*, 14ZP4*, 14XP4 ¹ , A ¹ |
| 14QP4 | 14QP4A, 14QP4B*, 14HP4 |
| 14QP4A | 14QP4, 14QP4B*, 14HP4 |
| 14QP4B | 14QP4**, 14QP4A**, 14HP4** |
| 14RP4 | 14RP4A, 14NP4, 14NP4A, 14SP4, 14WP4*, 14ZP4*, 14XP4 ¹ , A ¹ |
| 14RP4A | 14RP4, 14NP4, 14NP4A, 14SP4, 14WP4*, 14ZP4*, 14XP4 ¹ , A ¹ |
| 14SP4 | 14NP4, 14NP4A, 14WP4*, 14ZP4*, 14XP4 ¹ , A ¹ |
| 14UP4 | 14FP4**, 14CP4**7, 14CP4A**7, 14DP4**, 14EP4**7 |
| 14WP4 | 14ZP4 |
| 14XP4 | 14XP4A, 14NP4 ¹ , A ¹ , 14SP4 ¹ , 14WP4* ¹ , 14ZP4* ¹ |
| 14XP4A | 14XP4, 14NP4 ¹ , A ¹ , 14SP4 ¹ , 14WP4* ¹ , 14ZP4* ¹ |
| 14ZP4 | 14WP4 |
| 15AP4 | 15DP4**, A** |
| 15CP4 | 15AP4*, 15DP4°, A° |
| 15DP4 | 15DP4A, 15AP4* |
| 15DP4A | 15DP4, 15AP4* |
| 15EP4 | |
| 15GP22 | |
| 15HP22 | |
| 16ABP4 | 16AEP4# |
| 16ACP4 | |
| 16AEP4 | 16ABP4 |
| 16AFP4 | |
| 16ANP4 | 16AQP4, 16ASP4 ¹ , 16AXP4 ¹ |
| 16AP4 | 16AP4A, 16AP4B |
| 16AP4A | 16AP4, B |
| 16AP4B | 16AP4, A |
| 16AQP4 | 16ANP4, 16ASP4 ¹ , 16AXP4 ¹ |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 16ASP4 | 16ANP4', 16AQP4', 16AXP4' |
| 16ATP4 | |
| 16AUP4 | 16BFP4 ^{a1} , 16BMP4' |
| 16AVP4 | |
| 16AWP4 | 16AZP4' |
| 16AXP4 | 16ASP4, 16ANP4', 16AQP4' |
| 16AYP4 | 16BDP4' |
| 16AZP4 | 16AWP4' |
| 16BAP4 | 16BEP4' |
| 16BDP4 | 16AYP4' |
| 16BEP4 | 16BAP4' |
| 16BFP4 | 16AUP4 ^{a1} , 16BMP4 ^a |
| 16BMP4 | 16AUP4', 16BFP4 ^a |
| 16BNP4 | |
| 16BRP4 | |
| 16BSP4 | |
| 16CP4 | |
| 16DP4 | 16DP4A |
| 16DP4A | 16DP4 |
| 16EP4 | 16EP4A, 16EP4B |
| 16EP4A | 16EP4, 16EP4B |
| 16EP4B | 16EP4, 16EP4A |
| 16FP4 | |
| 16GP4 | 16GP4A, 16GP4B, 16GP4C |
| 16GP4A | 16GP4, 16GP4B, 16GP4C |
| 16GP4B | 16GP4, 16GP4A, 16GP4C |
| 16GP4C | 16GP4, 16GP4A, 16GP4B |
| 16HP4 | 16HP4A |
| 16HP4A | 16HP4 |
| 16JP4 | 16JP4A, 16HP4, 16HP4A |
| 16JP4A | 16JP4, 16HP4, 16HP4A |
| 16KP4 | 16KPA4A, 16RP4, A, B* |
| 16KP4A | 16KP4, 16RP4, A, B* |
| 16LP4 | 16LP4A, 16ZP4, 16CP4 ⁶ |
| 16LP4A | 16LP4, 16ZP4, 16CP4 ⁶ |
| 16MP4 | 16MP4A, 16JP4, A, 16HP4, A |
| 16MP4A | 16MP4, 16JP4, A, 16HP4, A |
| 16QP4 | 16XP4, 16KP4 ^{7,9} , A ^{7,9} , 16RP4 ^{7,9} , A ^{7,9} , 16UP4 ⁹ |
| 16RP4 | 16RP4A, 16KP4, A, 16RP4B* |
| 16RP4A | 16RP4, 16KP4, A, 16RP4B* |
| 16RP4B | 16KP4**, A**, 16RP4**, A** |

● PICTURE TUBES 16ASP4-16RP4B ●

● PICTURE TUBES 16SP4-17BP4A ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 16SP4 | 16SP4A, 16VP4 ^{6,9} , 16WP4 ⁶ , A, B, 16YP4 ⁹ |
| 16SP4A | 16SP4, 16VP4 ^{6,9} , 16WP4 ⁶ , A, B, 16YP4 ⁹ |
| 16TP4 | 16UP4 ^{5,6} |
| 16UP4 | 16KP4 ⁷ , A ⁷ , 16RP4 ⁷ , A ⁷ , 16TP4 ^{5,7} , 16XP4 ⁹ |
| 16VP4 | 16SP4 ^{7,9} , A ^{7,9} , 16WP4 ⁹ , A ^{7,9} , B ^{7,9} , 16YP4 ⁷ |
| 16WP4 | 16WP4A ⁷ , B ⁷ , 16SP4 ⁷ , A ⁷ , 16VP4 ⁹ 16YP4 ^{7,9} |
| 16WP4A | 16WP4 ⁶ , B, 16VP4 ^{6,9} |
| 16WP4B | 16WP4 ⁶ , A, 16VP4 ^{6,9} |
| 16XP4 | 16QP4, 16KP4 ^{7,9} , A ^{7,9} , 16RP4 ^{7,9} , A ^{7,9} , 16TP4 ^{7,9} , 16UP4 ⁹ |
| 16YP4 | 16WP4 ^{6,9} , A ⁹ , B ⁹ , 16SP4 ⁹ , A ⁹ , 16VP4 ⁶ |
| 16ZP4 | 16CP4 ⁶ |
| 17AP4 | |
| 17ASP4 | 17AP4 ^{1,8} , 17BP4A ^{1,8} , B ^{1,8} , C ^{1,8} |
| 17ATP4 | 17ATP4A, 17AVP4, A, 17BUP4, 17CBP4, 17CLP4, 17BJP4*, 17BKP4 ¹ , A ¹ , 17DCP4*, 17DJP4 ¹ |
| 17ATP4A | 17ATP4, 17AVP4, A, 17BUP4, 17CBP4, 17CLP4, 17BJP4*, 17BKP4 ¹ , A ¹ , 17DCP4*, 17DJP4 ¹ |
| 17AVP4 | 17AVP4A, 17ATP4, A, 17BUP4, 17CBP4, 17CLP4, 17BJP4*, 17BKP4 ¹ , A ¹ , 17DCP4*, 17DJP4 ¹ |
| 17AVP4A | 17AVP4, 17ATP4, A, 17BUP4, 17CBP4, 17CLP4, 17BJP4*, 17BKP4 ¹ , A ¹ , 17DCP4*, 17DPJ4 ¹ |
| 17BJP4 | 17CZP4, 17BSP4 ¹ , 17CUP4 ¹ , 17DCP4 ¹ |
| 17BKP4 | 17BKP4A, 17ATP4 ¹ , A ¹ , 17AVP4 ¹ , A ¹ , 17BJP4* ¹ , 17BSP4* ¹ , 17BUP4 ¹ , 17CBP4 ¹ , 17CLP4 ¹ , 17CUP4* ¹ , 17DCP4* ¹ , 17DJP4 ¹ |
| 17BKP4A | 17BKP4, 17ATP4 ¹ , A ¹ , 17AVP4 ¹ , A ¹ , 17BJP4* ¹ , 17BSP4* ¹ , 17BUP4 ¹ , 17CBP4 ¹ , 17CLP4 ¹ , 17CUP4* ¹ , 17DCP4* ¹ , 17DJP4 ¹ |
| 17BMP4 | 17BNP4* |
| 17BNP4 | |
| 17BP4 | 17BP4A ⁷ , B ⁷ , C ⁷ , D* ⁷ , 17AP4 ⁷ , 17JP4 ⁷ |
| 17BP4A | 17BP4 ⁶ , B, C, D*, 17AP4, 17JP4 |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 17BP4B | 17BP4 ⁶ , A, C, D*, 17AP4, 17JP4 |
| 17BP4C | 17BP4 ⁶ , A, B, D*, 17AP4, 17JP4 |
| 17BP4D | 17BP4 ^{**6} , A**, B**, C**, 17AP4**, 17JP4** |
| 17BRP4 | 17BZP4* ¹ , 17CAP4* ¹ , 17CKP4*, 17CTP4* ¹ , 17CVP4* ¹ , 17CWP4* ¹ , 17DSP4*, 17DTP* ¹ |
| 17BSP4 | 17BJP4 ¹ , 17CUP4 ¹ , 17DCP4 ¹ |
| 17BTP4 | |
| 17BUP4 | 17CBP4 |
| 17BVP4 | 17BWP4*, 17BYP4* ¹ , 17CSP4* |
| 17BWP4 | 17CSP4, 17BYP4 ¹ |
| 17BYP4 | 17BWP4 ¹ , 17CSP4 ¹ |
| 17BZP4 | 17CAP4, 17CKP4, 17CWP4, 17DSP4, 17BRP4**, 17CTP4 ¹ , 17CVP4 ¹ , 17DHP4 ¹ , 17DTP4 ¹ , 17EBP4 ¹ |
| 17CAP4 | 17BZP4, 17CKP4, 17DSP4, 17BRP4**, 17CTP4 ¹ , 17CVP4 ¹ , 17CWP4 ¹ , 17DHP4 ¹ , 17DTP4 ¹ , 17EBP4 ¹ |
| 17CBP4 | 17BUP4 |
| 17CDP4 | |
| 17CEP4 | 17CFP4 ¹ , 17CYP4 ¹ |
| 17CFP4 | 17CYP4, 17CEP4 ¹ |
| 17CGP4 | |
| 17CKP4 | 17CAP4, 17DSP4, 17BRP4**, 17BZP4 ¹ , 17CTP4 ¹ , 17CVP4 ¹ , 17CWP4 ¹ , 17DHP4 ¹ , 17DTP4 ¹ , 17EBP4 ¹ |
| 17CLP4 | 17ATP4, A, 17AVP4, A, 17BUP4, 17CBP4, 17BJP4*, 17BKP4 ¹ , A ¹ , 17BSP4* ¹ , 17CUP4* ¹ , 17DCP4* ¹ , 17DJP4 ¹ |
| 17CMP4 | 17BNP4 ^{1,3} , 17CXP4 ¹ |
| 17CNP4 | |
| 17CP4 | 17CP4A |
| 17CP4A | 17CP4 |
| 17CRP4 | 17CXP4, 17BNP4 ^{1,3} , 17CMP4 ¹ |
| 17CSP4 | 17BWP4, 17BYP4 ¹ |
| 17CTP4 | 17DHP4, 17EBP4, 17BRP4** ¹ , 17BZP4 ¹ , 17CAP4 ¹ , 17CKP4 ¹ , 17CVP4 ¹ , 17CWP4 ¹ , 17DTP4 ¹ |
| 17CUP4 | 17DCP4, 17BJP4 ¹ , 17BSP4 ¹ |

● PICTURE TUBES 17BP4B-17CUP4 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 17CVP4 | 17BRP4** ¹ , 17BZP4 ¹ , 17CAP4 ¹ , 17CKP4 ¹ , 17CTP4 ¹ , 17CWP4 ¹ , 17DSP4 ¹ , 17DTP4 ¹ |
| 17CWP4 | 17DSP4, 17DTP4, 17DHP4 ¹ , 17DZP4 ¹ , 17EBP4 ¹ |
| 17CXP4 | 17CRP4, 17BNP4 ^{1,3} , 17CMP4 ¹ |
| 17CYP4 | 17CFP4, 17CEP4 ¹ |
| 17CZP4 | |
| 17DAP4 | 17DRP4 |
| 17DBP4 | 17DWP4* ¹ , 17HP4 ¹ , A ¹ , B ¹ , C* ¹ , 17KP4 ¹ , A ¹ , 17RP4 ¹ , C ¹ |
| 17DCP4 | 17CUP4, 17BJP4 ¹ , 17BSP4 ¹ , 17CZP4 ¹ |
| 17DEP4 | |
| 17DHP4 | 17EBP4, 17CWP4 ¹ , 17DSP4 ¹ , 17DTP4 ¹ , 17DZP4 ¹ |
| 17DJP4 | 17ATP4 ¹ , A ¹ , 17AVP4 ¹ , A ¹ , 17BJP4* ¹ , 17BKP4 ¹ , A ¹ , 17BSP4* ¹ , 17BUP4 ¹ , 17CBP4, 17CLP4 ¹ , 17CUP4* ¹ , 17DCP4* |
| 17DKP4 | |
| 17DLP4 | 17DSP4, 17EBP4 ¹ |
| 17DQP4 | |
| 17DRP4 | 17DAP4 |
| 17DSP4 | 17DTP4 ¹ , 17EBP4 ¹ |
| 17DTP4 | |
| 17DWP4 | |
| 17DXP4 | 17DKP4 ¹ , 17DTP4 ¹ , 17DZP4 ¹ |
| 17DZP4 | 17DTP4 ¹ |
| 17EAP4 | |
| 17EBP4 | 17DSP4 ¹ , 17DTP4 ¹ |
| 17EHP4 | |
| 17FP4 | 17FP4A |
| 17FP4A | 17FP4 |
| 17GP4 | |
| 17HP4 | 17HP4A, B, C*, 17KP4, A, 17RP4, C, 17DBP4 ¹ , 17DWP4* |
| 17HP4A | 17HP4, B, C*, 17KP4, A, 17RP4, C, 17DBP4 ¹ , 17DWP4* |
| 17HP4B | 17HP4, A, C*, 17KP4, A, 17RP4, C, 17DBP4 ¹ , 17DWP4* |
| 17HP4C | 17HP4**, A**, B**, 17DWP4, 17KP4**, A**, 17RP4**, C** |
| 17JP4 | 17AP4, 17BP4 ⁶ , A, B, C, D* |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 17KP4 | 17KP4A, 17HP4#, A#, B#, C*#, 17RP4#, C#, 17DBP4# ¹ , 17DWP#* |
| 17KP4A | 17KP4, 17HP4#, A#, B#, C*#, 17RP4#, C#, 17DBP4# ¹ , 17DWP4*# |
| 17LP4 | 17LP4A, B*, 17VP4, 17VP4B |
| 17LP4A | 17LP4, B*, 17VP4, 17VP4B |
| 17LP4B | 17LP4**, A**, 17VP4**, B** |
| 17QCP4 | |
| 17QP4 | 17QP4A, B*, 17YP4 |
| 17QP4A | 17QP4, B*, 17YP4 |
| 17QP4B | 17QP4**, A**, 17YP4** |
| 17RP4 | 17RP4C, 17HP4, A, B, C*, 17KP4, A, 17DBP4 ¹ , 17DWP4* |
| 17RP4C | 17RP4, 17HP4, A, B, C*, 17KP4, A, 17DBP4 ¹ , 17DWP4* |
| 17SP4 | 17LP4#, A#, 17VP4#, B# |
| 17TP4 | |
| 17UP4 | 17QP4, 17QP4A, 17YP4 |
| 17VP4 | 17VP4B, 17LP4, A, B* |
| 17VP4B | 17VP4, 17LP4, A, B* |
| 17YP4 | 17QP4A, B* |
| 19ABP4 | |
| 19ACP4 | 19CHP4, 19CKP4, 19DFP4, 19CUP4 ¹ |
| 19AEP4 | |
| 19AFP4 | 19AUP4, 19BAP4 ¹ , 19BCP4 ¹ , 19BMP4 ¹ , 19CEP4 ¹ |
| 19AHP4 | 19AXP4, 19CJP4 ¹ , 19XP4 |
| 19AJP4 | 19CDP4 ¹ , 19CXP4 ¹ |
| 19ALP4 | 19AVP4 ¹ , 19AXP4 ¹ , 19AYP4 ¹ , 19BVP4 ¹ , 19BWP4 ¹ , 19CJP4 ¹ , 19XP4 ¹ |
| 19ANP4 | 19BTP4 ¹ , 19YP4 ¹ |
| 19AP4 | 19AP4A, 19AP4B, 19AP4C, 19AP4D |
| 19AP4A | 19AP4, 19AP4B, 19AP4C, 19AP4D |
| 19AP4B | 19AP4, 19AP4A, 19AP4C, 19AP4D |
| 19AP4C | 19AP4, 19AP4A, 19AP4B, 19AP4D |
| 19AP4D | 19AP4, 19AP4A, 19AP4B, 19AP4C |
| 19AQP4 | 19AVP4 ¹ , 19AXP4 ¹ , 19AYP4 ¹ , 19BHP4 ¹ , 19BLP4 ¹ , 19CJP4 ¹ , 19XP4 ¹ , 19ZP4 ^{1,‡} |
| 19ARP4 | 19AFP4, 19AUP4, 19ASP4 ¹ , 19BAP4 ¹ , 19BCP4 ¹ , 19BMP4 ¹ , 19CEP4 ¹ |
| 19ASP4 | 19BAP4, 19BCP4, 19CEP4, 19AFP4 ¹ , 19ARP4 ¹ , 19AUP4 ¹ , 19BMP4 ¹ |

● PICTURE TUBES 19A7P4-19CKP4 ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 19ATP4 | |
| 19AUP4 | 19AFP4, 19BAP4', 19BCP4', 19BMP4', 19CEP4' |
| 19AVP4 | 19CYP4, 19AYP4', 19BHP4' |
| 19AXP4 | 19AYP4, 19AQP4', 19AVP4', 19BHP4', 19BLP4', 19CJP4', 19CYP4', 19XP4', 19ZP4‡' |
| 19AYP4 | 19AVP4', 19BHP4', 19CYP4' |
| 19BAP4 | 19BCP4, 19CEP4, 19AFP4', 19AUP4', 19BMP4' |
| 19BCP4 | 19BAP4, 19CEP4, 19AFP4', 19AUP4', 19BMP4' |
| 19BDP4 | 19CLP4 |
| 19BEP4 | 19BSP4' |
| 19BFP4 | |
| 19BHP4 | 19AVP4, 19BLP4, 19CJP4, 19CYP4, 19XP4, 19AQP4', 19AXP4', 19AYP4', 19ZP4‡ |
| 19BLP4 | 19AVP4, 19BHP4, 19CJP4, 19CYP4, 19XP4, 19AQP4', 19AXP4', 19AYP4', 19ZP4‡ |
| 19BMP4 | 19AFP4, 19AUP4, 19BAP4', 19BCP4', 19CEP4' |
| 19BNP4 | 19BQP4, 19CVP4', 19DYP4' |
| 19BQP4 | 19BNP4, 19CVP4', 19DYP4' |
| 19BRP4 | 19DKP4, 19CZP4', 19DAP4' |
| 19BSP4 | 19BEP4' |
| 19BTP4 | 19CYP4 |
| 19BVP4 | 19AVP4, 19AYP4', 19BWP4' |
| 19BWP4 | 19AYP4, 19AVP4', 19BVP4' |
| 19CAP4 | |
| 19CDP4 | 19CXP4, 19AJP4' |
| 19CEP4 | 19AFP4', 19AUP4', 19BAP4', 19BCP4', 19BMP4' |
| 19CFP4 | 19CHP4, 19CKP4 |
| 19CGP4 | |
| 19CHP4 | 19CKP4 |
| 19CJP4 | 19AVP4, 19BHP4, 19BLP4, 19CYP4, 19XP4, 19AQP4', 19AXP4', 19AYP4', 19ZP4‡ |
| 19CKP4 | 19CHP4 |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 19CLP4 | 19BDP4 |
| 19CMP4 | 19CHP4 ¹ , 19CKP4 ¹ |
| 19CQP4 | 19CDP4, 19CXP4, 19AJP4 ¹ |
| 19CUP4 | 19DFP4 ¹ |
| 19CVP4 | 19DYP4 |
| 19CXP4 | 19CDP4, 19CQP4, 19AJP4 ¹ |
| 19CYP4 | |
| 19CZP4 | 19DAP4, 19DKP4 ¹ |
| 19DAP4 | 19CZP4, 19DKP4 ¹ |
| 19DBP4 | 19CVP4, 19DYP4 |
| 19DCP4 | 19EHP4 |
| 19DEP4 | 19AVP4, 19BVP4, 19CJP4, 19XP4, 19ALP4 ¹ , 19AXP4 ¹ , 19AYP4 ¹ , 19BWP4 ¹ |
| 19DFP4 | 19CUP4 ¹ |
| 19DHP4 | 19DSP4, 19EFP4, 19DUP4 ¹ , 19ENP4 ¹ |
| 19DKP4 | 19CZP4, 19DKP4 ¹ |
| 19DLP4 | |
| 19DNP4 | 19DKP4, 19CZP4 ¹ , 19DAP4 ¹ |
| 19DP4 | 19DP4A, 19FP4 ⁶ , 19GP4 ⁶ |
| 19DP4A | 19DP4, 19FP4 ⁶ , 19GP4 ⁶ |
| 19DQP4 | 19DRP4 ¹ , 19EDP4 ¹ |
| 19DRP4 | 19EDP4, 19DQP4 ¹ |
| 19DSP4 | 19DHP4, 19EFP4, 19DUP4 ¹ , 19ENP4 ¹ |
| 19DUP4 | 19ENP4, 19DHP4 ¹ , 19DSP4 ¹ , 19EFP4 ¹ |
| 19DVP4 | 19DZP4 |
| 19DYP4 | 19CVP4 |
| 19DZP4 | 19DVP4 |
| 19EBP4 | |
| 19ECP4 | |
| 19EDP4 | 19DCP4, 19DRP4, 19DQP4 ¹ |
| 19EFP4 | |
| 19EGP4 | |
| 19EHP4 | 19DCP4, 19DRP4, 19EDP4, 19DQP4 ¹ |
| 19ENP4 | 19DUP4, 19DHP4 ¹ , 19DSP4 ¹ , 19EFP4 ¹ |
| 19EP4 | 19JP4 |
| 19ETP4 | |
| 19FP4 | 19GP4, 19DP4 ⁷ , A ⁷ |
| 19GP4 | 19DP4 ⁷ , A ⁷ , 19FP4 ⁹ |
| 19JP4 | 19EP4 |
| 19QP4 | |

● PICTURE TUBES 19CLP4-19QP4 ●

● PICTURE TUBES 19TP22-20HP4E ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 19TP22 | |
| 19VP22 | |
| 19XP4 | 19AVP4, 19CJP4, 19CYP4, 19AQP4', 19AXP4', 19AYP4', 19BHP4', 19BLP4', 19ZP4‡' |
| 19YP4 | 19BTP4, 19CYP4, 19ANP4' |
| 19ZP4 | 19AVP4, 19BHP4, 19BLP4, 19CJP4, 19CYP4, 19XP4, 19AQP4', 19AXP4', 19AYP4' |
| 20BP4 | |
| 20CP4 | 20CP4B, C, 20DP4, B, 20CP4A ⁷ , D ⁷ , 20DP4A ⁷ , C ⁷ , D ^{*7} |
| 20CP4A | 20CP4D, 20DP4A, C, 20CP4 ⁶ B ⁶ , C ⁶ , 20DP4 ⁶ , B ⁶ , D [*] |
| 20CP4B | 20CP4, C, 20DP4, B, 20CP4A ⁷ , D ⁷ , 20DP4A ⁷ , C ⁷ , D ^{*7} |
| 20CP4C | 20CP4, B, 20DP4, B, 20CP4A ⁷ , D ⁷ , 20DP4A ⁷ , C ⁷ , D ^{*7} |
| 20CP4D | 20CP4A, 20DP4A, C, 20CP4 ⁶ , B ⁶ , C ⁶ , 20DP4 ⁶ , B ⁶ , D [*] |
| 20DP4 | 20DP4B, 20CP4, B, C, 20DP4A ⁷ , C ⁷ , D ^{*7} , 20CP4A ⁷ , D ⁷ |
| 20DP4A | 20DP4C, 20CP4A, D, 20DP4 ⁶ , B ⁶ , D [*] , 20CP4 ⁶ , B ⁶ , C ⁶ |
| 20DP4B | 20DP4, 20CP4, B, C, 20DP4A ⁷ , C ⁷ , D ^{*7} , 20CP4A ⁷ , D ⁷ |
| 20DP4C | 20DP4A, 20CP4A, D, 20DP4 ⁶ , B ⁶ , D [*] , 20CP4 ⁶ , B ⁶ , C ⁶ |
| 20DP4D | 20DP4A ^{**} , D ^{**} , 20CP4A ^{**} , D ^{**} |
| 20FP4 | 20GP4 ⁷ |
| 20GP4 | 20FP4 ⁶ |
| 20HP4 | 20HP4B, C, A ⁷ , D ⁷ , E ^{*7} , 20JP4 ⁷ , 20LP4 ⁷ , 20MP4 ⁷ |
| 20HP4A | 20HP4D, 20LP4, 20MP4, 20JP4, 20HP4 ⁶ , B ⁶ , C ⁶ , E [*] |
| 20HP4B | 20HP4, C, A ⁷ , D ⁷ , E ^{*7} , 20JP4 ⁷ , 20LP4 ⁷ , 20MP4 ⁷ |
| 20HP4C | 20HP4, B, A ⁷ , D ⁷ , E ^{*7} , 20JP4 ⁷ , 20LP4 ⁷ , 20MP4 ⁷ |
| 20HP4D | 20HP4A, 20JP4, 20LP4, 20MP4, 20HP4 ⁶ , B ⁶ , C ⁶ , E [*] |
| 20HP4E | 20HP4A ^{**} , 20JP4 ^{**} , 20LP4 ^{**} , 20MP4 ^{**} |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 20JP4 | 20HP4#7, A#, B#7, C#7, D#, E*#, 20LP4#, 20MP4# |
| 20LP4 | 20HP4A, D, 20JP4, 20MP4, 20HP4 ⁶ , B ⁶ , C ⁶ , E* |
| 20MP4 | 20HP4A, D, 20JP4, 20LP4, 20HP4 ⁶ , B ⁶ , C ⁶ , E* |
| 21ACP4 | 21ACP4A, 21BSP4, 21CUP4 |
| 21ACP4A | 21ACP4, 21BSP4, 21CUP4 |
| 21AFP4 | 21BCP4*7, 21YP47, A7, B*7 |
| 21ALP4 | 21ALP4A, B, 21ATP4, A, B, 21BTP4, 21CWP4, 21ANP4 ⁶ , A ⁶ , 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21ALP4A | 21ALP4, B, 21ATP4, A, B, 21BTP4, 21CWP4, 21ANP4 ⁶ , A ⁶ , 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21ALP4B | 21ATP4A, B, 21BTP4, 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21AMP4 | 21AMP4A, 21ACP4, 21ACP4A, 21BSP4, 21CUP4, 21AMP4B*, 21AQP4 ⁶ , A ⁶ |
| 21AMP4A | 21AMP4, 21ACP4, 21ACP4A, 21BSP4, 21CUP4, 21AMP4B*, 21AQP4 ⁶ , A ⁶ |
| 21AMP4B | 21AMP4**, A**, 21ACP4**, A**, 21BSP4**, 21CUP4** |
| 21ANP4 | 21ANP4A, 21ALP47, A7, B7, 21ATP47, A7, B7, 21BAP4*7, 21BNP4*7, 21BTP47, 21CDP4 ^{1,7} , A ^{1,7} , 21CVP4*7, 21CWP47, 21DVP4 ^{1,7} |
| 21ANP4A | 21ANP4, 21ALP47, A7, B7, 21ATP47, A7, B7, 21BAP4*7, 21BNP4*7, 21BTP47, 21CDP4 ^{1,7} , A ^{1,7} , 21CVP4*7, 21CWP47, 21DVP4 ^{1,7} |
| 21AP4 | |
| 21AQP4 | 21AQP4A, 21ACP47, A7, 21AMP47, A7, B*7, 21BSP47, 21CUP47 |
| 21AQP4A | 21AQP4, 21ACP47, A7, 21AMP47, A7, B*7, 21BSP47, 21CUP47 |
| 21ARP4 | 21ARP4A |
| 21ARP4A | 21ARP4 |
| 21ASP4 | 21AYP47, 21XP47, A7, B*7 |

● 21ATP4-21BSP4 ●
● PICTURE TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 21ATP4 | 21ATP4A, B, 21ALP4, A, B, 21BTP4, 21CWP4, 21ANP4 ⁶ , A ⁶ , 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21ATP4A | 21ATP4B, 21ALP4B, 21BTP4, 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21ATP4B | 21ATP4A, 21ALP4A, B, 21BTP4, 21CWP4, 21ANP4 ⁶ , A ⁶ , 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21AUP4 | 21AUP4A, B, C*, 21AVP4, A, B, C*, 21BDP4* |
| 21AUP4A | 21AUP4, B, C*, 21AVP4, A, B, C*, 21BDP4* |
| 21AUP4B | 21AUP4, A, C*, 21AVP4, A, B, C*, 21BDP4* |
| 21AUP4C | 21AUP4**, A**, C**, 21AVP4**, A**, B**, 21BDP4 |
| 21AVP4 | 21AVP4A, B, C*, 21AUP4, A, B, C*, 21BDP4* |
| 21AVP4A | 21AVP4, B, C*, 21AUP4, A, B, C*, 21BDP4* |
| 21AVP4B | 21AVP4, A, C*, 21AUP4, A, B, C*, 21BDP4* |
| 21AVP4C | 21AUP4C, 21BDP4, 21AUP4B**, 21AVP4B** |
| 21AWP4 | 21AWP4A*, 21ZP4 ⁶ , A, B, C* |
| 21AWP4A | 21AWP4**, 21ZP4** ⁶ , A**, B**, C |
| 21AXP22 | |
| 21AXP22A | |
| 21AYP4 | 21XP4, A, B*, 21ASP4 ⁶ |
| 21BAP4 | 21BNP4, 21CVP4, 21ALP4B**, 21ATP4A**, 21BTP4**, 21CDP4** ¹ , A** ¹ , 21CWP4**, 21DVP4** ¹ |
| 21BCP4 | |
| 21BDP4 | 21AUP4A**, B**, C, 21AVP4**, B**, C |
| 21BNP4 | 21BAP4, 21CVP4, 21ALP4B**, 21ATP4A**, 21BTP4**, 21CDP4** ¹ , A** ¹ , 21CWP4**, 21DVP4** ¹ |
| 21BRP4 | |
| 21BSP4 | 21ACP4, 21ACP4A, 21CUP4 |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 21BTP4 | 21ALP4B, 21ATP4A, 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21CBP4 | 21CBP4A, B, 21DQP4, 21DRP4, 21FLP4, 21CKP4 ¹ , 21DJP4 ¹ |
| 21CBP4A | 21CBP4B, 21DRP4, 21FLP4, 21CKP4 ¹ , 21DJP4 ¹ |
| 21CBP4B | 21CBP4A, 21DRP4, 21FLP4, 21CKP4 ¹ , 21DJP4 ¹ |
| 21CDP4 | 21CDP4A, 21ALP4B ¹ , 21ATP4A ¹ , B ¹ , 21BAP4* ¹ , 21BNP4* ¹ , 21BTP4 ¹ , 21CVP4* ¹ , 21CWP4 ¹ , 21DVP4 ¹ |
| 21CDP4A | 21CDP4, 21ALP4B ¹ , 21ATP4A ¹ , B ¹ , 21BAP4* ¹ , 21BNP4* ¹ , 21BTP4 ¹ , 21CVP4* ¹ , 21CWP4 ¹ , 21DVP4 ¹ |
| 21CEP4 | 21CEP4A, 21DFP4 ¹ |
| 21CEP4A | |
| 21CGP4 | 21CHP4* |
| 21CHP4 | |
| 21CKP4 | 21CBP4A, B, 21DJP4 ¹ , 21DRP4 ¹ , 21FLP4 ¹ |
| 21CLP4 | |
| 21CMP4 | 21DNP4, 21CBP4A*, B*, 21CKP4* ¹ , 21DJP4* ¹ , 21DRP4*, 21ELP4* ¹ , 21ENP4 ¹ , 21FLP4* |
| 21CQP4 | 21CSP4 ¹ |
| 21CSP4 | 21CQP4 ¹ |
| 21CUP4 | 21ACP4, 21ACP4A, 21BSP4 |
| 21CVP4 | 21BAP4, 21BNP4, 21ATP4A**, B**, 21BTP4**, 21CDP4*** ¹ , A*** ¹ , 21CWP4**, 21DVP4*** ¹ |
| 21CWP4 | 21ALP4A, B, 21ATP4, A, B, 21BTP4, 21ANP4 ⁶ , A ⁶ , 21BAP4*, 21BNP4*, 21CDP4 ¹ , A ¹ , 21CVP4*, 21DVP4 ¹ |
| 21CXP4 | 21DSP4, 21CHP4 ³ |
| 21CYP22 | |
| 21CYP22A | |
| 21CZP4 | 21DAP4*, 21DEP4*, 21DEP4A*, 21DHP4 ¹ *, 21DKP4 ¹ *, 21DKP4A ¹ * |
| 21DAP4 | 21DEP4, 21DEP4A, 21CZP4**, 21DHP4 ¹ , 21DKP4 ¹ , 21DKP4A ¹ |

● 21DEP4-21EVP4 ●
● PICTURE TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 21DEP4 | 21DEP4A, 21DAP4, 21CZP4**, 21DHP4 ¹ , 21DKP4 ¹ , 21DKP4A ¹ |
| 21DEP4A | |
| 21DFP4 | 21CEP4, A |
| 21DHP4 | 21CZP4** ¹ , 21DAP4 ¹ , 21DEP4 ¹ , 21DEP4A ¹ , 21DKP4 ¹ , 21DKP4A ¹ |
| 21DJP4 | 21CBP4A ¹ , B ¹ , 21CKP4 ¹ , 21DRP4 ¹ , 21FLP4 ¹ |
| 21DKP4 | 21DKP4A ¹ , 21CZP4** ¹ , 21DAP4 ¹ 21DEP4 ¹ , 21DEP4A ¹ , 21DHP4 ¹ |
| 21DKP4A | 21DKP4 ¹ , 21CZP4** ¹ , 21DAP4 ¹ , 21DEP4 ¹ , 21DEP4A ¹ , 21DHP4 ¹ |
| 21DLP4 | 21DQP4 |
| 21DMP4 | 21FAP4 [†] |
| 21DNP4 | 21CBP4A* ¹ , B* ¹ , 21CKP4* ¹ , 21CMP4 ¹ , 21DJP4* ¹ , 21DRP4* ¹ , 21ELP4* ¹ , 21ENP4 ¹ , 21FLP4* ¹ |
| 21DP4 | |
| 21DQP4 | 21DLP4 ¹ |
| 21DRP4 | 21CBP4A, B, 21FLP4, 21CKP4 ¹ 21DJP4 ¹ |
| 21DSP4 | 21CXP4, 21CHP4 ³ |
| 21DVP4 | 21ALP4B ¹ , 21ATP4A ¹ , 21BAP4* ¹ , 21BNP4* ¹ , 21BTP4 ¹ , 21CDP4 ¹ , A ¹ , 21CVP4* ¹ , 21CWP4 ¹ |
| 21DWP4 | 21CEP4 ¹ , 21CEP4A ¹ , 21DFP4 ¹ |
| 21EAP4 | |
| 21ELP4 | 21DJP4, 21CBP4A ¹ , B ¹ , 21CKP4 ¹ , 21CMP4** ¹ , 21DNP4** ¹ , 21DRP4 ¹ , 21FLP4 ¹ |
| 21EMP4 | 21EQP4 [†] , 21ESP4 [‡] , 21EXP4 ^{1,†} , 21FAP4 [†] |
| 21ENP4 | 21CBP4A* ¹ , B* ¹ , 21CKP4* ¹ , 21CMP4 ¹ , 21DJP4* ¹ , 21DNP4 ¹ , 21DRP4* ¹ , 21ELP4* ¹ , 21FLP4* ¹ |
| 21EP4 | 21EP4A ⁷ , B ⁷ , C* ⁷ |
| 21EP4A | 21EP4 ⁶ , B, C* |
| 21EP4B | 21EP4 ⁶ , A, C* |
| 21EP4C | 21EP4A** ¹ , B** ¹ |
| 21EQP4 | 21EXP4 ¹ |
| 21ERP4 | |
| 21ESP4 | 21EMP4 |
| 21EVP4 | |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 21EXP4 | 21EQP4 ¹ |
| 21EZP4 | |
| 21FAP4 | |
| 21FBP22 | |
| 21FCP4 | 21EZP4 [†] |
| 21FDP4 | |
| 21FJP22 | 21FKP22 |
| 21FKP22 | 21FJP22 |
| 21FLP4 | 21CBP4A, B, 21DRP4, 21CKP4 ¹ , 21DJP4 ¹ |
| 21FMP4 | |
| 21FP4 | 21FP4A ⁷ , 21FP4C ⁷ , D ^{*7} , 21KP4, A ⁷ |
| 21FP4A | 21FP4 ⁶ , 21FP4C, D [*] , 21KP4 ⁶ , A |
| 21FP4C | 21FP4 ⁶ , 21FP4A, D [*] , 21KP4 ⁶ , A |
| 21FP4D | 21FP4A ^{**} , C ^{**} |
| 21JP4 | 21JP4A |
| 21JP4A | 21JP4 |
| 21KP4 | 21KP4A ⁷ , 21FP4 [#] , A ^{#7} , C ^{#7} |
| 21KP4A | 21KP4 ⁶ , 21FP4 ^{#6} , A [#] , C [#] |
| 21MP4 | |
| 21WP4 | 21WP4A, B [*] |
| 21WP4A | 21WP4, B [*] |
| 21WP4B | 21WP4 ^{**} , A ^{**} |
| 21XP4 | 21XP4A, 21AYP4, 21XP4B [*] , 21ASP4 ⁶ |
| 21XP4A | 21XP4, 21AYP4, 21XP4B [*] , 21ASP4 ⁶ |
| 21XP4B | 21XP4 ^{**} , A ^{**} , 21AYP4 ^{**} |
| 21YP4 | 21YP4A, B [*] , 21AFP4 ⁶ |
| 21YP4A | 21YP4, B [*] , 21AFP4 ⁶ |
| 21YP4B | 21YP4 ^{**} , A ^{**} |
| 21ZP4 | 21ZP4A ⁷ , B ⁷ , C ^{*7} , 21AWP4 ⁷ , A ^{*7} |
| 21ZP4A | 21ZP4B, 21AWP4, A [*] , 21ZP4 ⁶ , C [*] |
| 21ZP4B | 21ZP4A, 21AWP4, A [*] , 21ZP4 ⁶ , C [*] |
| 21ZP4C | 21AWP4A, 21ZP4A ^{**} , B ^{**} , 21AWP4 ^{**} |
| 22AP4 | 22AP4A |
| 22AP4A | 22AP4 |
| 23ACP4 | 23TP4 |
| 23AFP4 | 23BDP4, 23BMP4, 23BTP4, 23YP4, 23BVP4 ¹ , 23CDP4 ¹ , 23CTP4 ¹ , 23EAP4 ¹ |
| 23AHP4 | 23ASP4, 23AUP4, 23CZP4, 23AZP4 ¹ |
| 23AKP4 | 23CVP4 ¹ |
| 23ALP4 | 23AMP4 ¹ , 23AQP4 ¹ , 23FP4 ¹ , A ¹ , 23MP4 ¹ , A ¹ , 23VP4 ¹ |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 23AMP4 | 23ALP4 ¹ , 23AQP4 ¹ , 23FP4 ¹ , A ¹ , 23MP4 ¹ , A ¹ , 23VP4 ¹ |
| 23ANP4 | 23ATP4, 23BKP4, 23BLP4 |
| 23AQP4 | 23AMP4, 23VP4, 23ALP4 ¹ , 23FP4 ¹ , A ¹ , 23MP4 ¹ , A ¹ |
| 23ARP4 | 23BCP4 ¹ , 23CEP4 ¹ , 23CMP4 ¹ |
| 23ASP4 | |
| 23ATP4 | 23ANP4, 23BKP4, 23BLP4 |
| 23AUP4 | 23AHP4, 23ASP4, 23CZP4, 23AZP4 ¹ |
| 23AVP4 | 23BAP4, 23BNP4, 23BP4, 23CP4, A, 23GP4, 23AYP4 ¹ , 23BEP4 ¹ , A ¹ , 23BQP4 ¹ , 23BSP4 ¹ , 23CBP4 ¹ , 23SP4 ¹ , 23UP4 ¹ |
| 23AWP4 | 23BJP4 |
| 23AXP4 | 23DFP4 |
| 23AYP4 | 23BEP4, A, 23BSP4, 23SP4, 23ADP4 ¹ , 23AVP4 ¹ , 23BAP4 ¹ , 23BNP4 ¹ , 23BP4 ¹ , 23BQP4 ¹ , 23CBP4 ¹ , 23CP4 ¹ , 23GP4 ¹ , 23UP4 ¹ |
| 23AZP4 | 23AHP4 ¹ , 23ASP4 ¹ , 23AUP4 ¹ , 23CZP4 ¹ |
| 23BAP4 | 23BP4, 23BRP4 ^{1,†} , 23BYP4 ^{1,†} , 23CSP4 ^{1,†} , 23CUP4 ^{1,†} , 23DP4 [†] , 23RP4 ^{1,†} |
| 23BCP4 | 23CMP4, 23ARP4 ¹ , 23CEP4 ¹ |
| 23BDP4 | 23AFP4, 23BMP4, 23BTP4, 23YP4, 23BVP4 ¹ , 23CDP4 ¹ , 23CTP4 ¹ , 23EAP4 ¹ |
| 23BEP4 | 23AYP4, 23BEP4A, 23BSP4, 23SP4, 23AVP4 ¹ , 23BAP4 ¹ , 23BNP4 ¹ , 23BP4 ¹ , 23BQP4 ¹ , 23CBP4 ¹ , 23CP4 ¹ , A ¹ , 23GP4 ¹ , 23UP4 ¹ |
| 23BEP4A | 23AYP4, 23BEP4, 23BSP4, 23SP4, 23AVP4 ¹ , 23BAP4 ¹ , 23BNP4 ¹ , 23BP4 ¹ , 23BQP4 ¹ , 23CBP4 ¹ , 23CP4 ¹ , A ¹ , 23GP4 ¹ , 23UP4 ¹ |
| 23BGP4 | 23BHP4 |
| 23BHP4 | 23BGP4 |
| 23BJP4 | 23AWP4 |
| 23BKP4 | 23BLP4, 23ANP4 ¹ , 23ATP4 ¹ |
| 23BLP4 | 23BKP4, 23ANP4 ¹ , 23ATP4 ¹ |
| 23BMP4 | 23AFP4, 23BDP4, 23BJP4, 23YP4, 23BVP4 ¹ , 23CDP4 ¹ , 23CTP4 ¹ , 23EAP4 ¹ |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 23BNP4 | 23ADP4, 23AVP4, 23BAP4, 23BP4, 23CP4, A, 23GP4, 23AYP4', 23BEP4', A', 23BQP4', 23BSP4', 23CBP4', 23SP4', 23UP4' |
| 23BP4 | 23BAP4, 23BRP4 ^{1,†} , 23BYP4 ^{1,†} , 23CSP4 ^{1,†} , 23CUP4 ^{1,†} , 23DP4 [†] , 23RP4 ^{1,†} |
| 23BQP4 | 23CBP4, 23UP4, 23ADP4', 23AVP4', 23AYP4', 23BAP4', 23BEP4', A', 23BNP4', 23BP4', 23BSP4', 23CP4', A', 23GP4', 23SP4' |
| 23BRP4 | 23BYP4, 23CSP4, 23RP4, 23CUP4', 23DP4' |
| 23BSP4 | 23AYP4, 23BEP4, A, 23SP4, 23ADP4', 23AVP4', 23BAP4', 23BNP4', 23BP4', 23BQP4', 23CBP4', 23CP4', A', 23GP4', 23UP4' |
| 23BTP4 | 23AFP4, 23BDP4, 23BMP4, 23YP4, 23BVP4', 23CDP4', 23CTP4', 23EAP4' |
| 23BVP4 | 23AFP4, 23BDP4, 23BMP4, 23BTP4, 23YP4, 23CDP4', 23CTP4', 23EAP4' |
| 23BXP4 | |
| 23BYP4 | 23BRP4, 23CSP4, 23RP4, 23CUP4', 23DP4' |
| 23BZP4 | |
| 23CAP4 | |
| 23CBP4 | 23BQP4, 23UP4, 23ADP4', 23AVP4', 23AYP4', 23BAP4', 23BEP4', A', 23BNP4', 23BP4', 23BSP4', 23CP4', A', 23GP4', 23SP4' |
| 23CDP4 | 23AFP4', 23BDP4', 23BMP4', 23BTP4', 23BVP4', 23CTP4', 23EAP4', 23YP4' |
| 23CEP4 | 23ARP4', 23BCP4', 23CMP4' |
| 23CGP4 | 23ASP4', 23CZP4' |
| 23CMP4 | 23BCP4, 23ARP4', 23CEP4' |
| 23CP4 | 23ADP4, 23AVP4, 23BAP4, 23BNP4, 23BP4, 23CP4A, 23AYP4', 23BEP4', A', 23BQP4', 23BSP4', 23CBP4', 23GP4', 23SP4', 23UP4' |

● **PICTURE TUBES** **23CP4A-23EFP4** ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|---|
| 23CP4A | 23ADP4, 23AVP4, 23BAP4, 23BNP4, 23BP4, 23CP4, 23AYP4', 23BEP4', A', 23BQP4', 23BSP4', 23CBP4', 23GP4', 23SP4', 23UP4', |
| 23CQP4 | 23FP4', A', 23VP4' |
| 23CSP4 | 23BRP4, 23BYP4, 23RP4, 23CUP4', 23DP4' |
| 23CTP4 | 23EAP4, 23AFP4', 23BDP4', 23BMP4', 23BTP4', 23BVP4', 23CDP4', 23YP4' |
| 23CUP4 | 23DP4, 23BRP4', 23BYP4', 23CSP4', 23RP4' |
| 23CVP4 | 23AKP4' |
| 23CWP4 | 23CXP4' |
| 23CXP4 | 23CWP4' |
| 23CZP4 | 23AHP4, 23ASP4, 23AUP4, 23AZP4', 23CGP4' |
| 23DAP4 | 23DCP4' |
| 23DBP4 | |
| 23DCP4 | 23DAP4' |
| 23DEP4 | |
| 23DFP4 | 23AXP4 |
| 23DHP4 | 23DJP4 |
| 23DJP4 | 23DHP4 |
| 23DKP4 | 23DTP4, 23EKP4' |
| 23DLP4 | 23DLP4A, 23ENP4, 23FBP4, 23FWP4', A' |
| 23DLP4A | 23DLP4, 23ENP4, 23FBP4, 23FWP4', A' |
| 23DNP4 | |
| 23DP4 | 23CUP4, 23BRP4', 23BYP4', 23CSP4', 23RP4' |
| 23DSP4 | 23DSP4A |
| 23DSP4A | 23DSP4 |
| 23DTP4 | 23DKP4, 23EKP4' |
| 23DVP4 | 23DVP4A, 23DZP4', 23EWP4' |
| 23DVP4A | 23DVP4, 23DZP4', 23EWP4' |
| 23DWP4 | |
| 23DYP4 | 23ESP4, 23ETP4, 23FMP4' |
| 23DZP4 | 23EWP4, 23DVP4', A' |
| 23EAP4 | 23CTP4, 23AFP4', 23BDP4', 23BMP4', 23BTP4', 23BVP4', 23CDP4', 23YP4' |
| 23EFP4 | 23FCP4', 23FDP4', 23GJP4' |

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 23EGP22 | |
| 23EKP4 | 23DKP4 ¹ , 23DTP4 ¹ |
| 23ENP4 | 23DLP4, A, 23FBP4, 23FWP4 ¹ , A ¹ |
| 23EP4 | |
| 23ESP4 | 23DYP4, 23ETP4, 23FMP4 ¹ |
| 23ETP4 | 23DYP4, 23ESP4, 23FMP4 ¹ |
| 23EWP4 | 23DZP4, 23DVP4 ¹ , A ¹ |
| 23FBP4 | 23DLP4, 23ENP4, 23FWP4 ¹ , A ¹ |
| 23FCP4 | 23FDP4, 23GJP4, 23EFP4 ¹ |
| 23FDP4 | 23FCP4, 23GJP4, 23EFP4 ¹ |
| 23FMP4 | 23DYP4 ¹ , 23ESP4 ¹ , 23ETP4 ¹ |
| 23FP4 | 23FP4A, 23AQP4 ¹ , 23KP4 ^{‡1} , A ^{‡1} , 23VP4 ¹ |
| 23FP4A | 23FP4, 23AQP4 ¹ , 23KP4 ^{‡1} , A ^{‡1} , 23VP4 ¹ |
| 23FWP4 | 23FWP4A, 23DLP4 ¹ , A ¹ , 23ENP4 ¹ , 23FBP4 ¹ |
| 23FWP4A | 23FWP4, 23DLP4 ¹ , A ¹ , 23ENP4 ¹ , 23FBP4 ¹ |
| 23GBP4 | |
| 23GJP4 | 23FCP4, 23FDP4, 12EFP4 ¹ |
| 23GP4 | 23ADP4, 23AVP4, 23BAP4, 23BNP4, 23BP4, 23CP4, A, 23AYP4 ¹ , 23BEP4 ¹ , A ¹ , 23BQP4 ¹ , 23BSP4 ¹ , 23CBP4 ¹ , 23SP4 ¹ , 23UP4 ¹ |
| 23HP4 | 23AVP4, 23BAP4, 23BNP4, 23BP4, 23CP4, A, 23GP4, 23ADP4 ¹ , 23AYP4 ¹ , 23BEP4 ¹ , A ¹ , 23BQP4 ¹ , 23BSP4 ¹ , 23CBP4 ¹ , 23SP4 ¹ , 23UP4 ¹ |
| 23JP4 | |
| 23KP4 | 23KP4A |
| 23KP4A | 23KP4 |
| 23MP4 | 23MP4A, 23FP4, A, 23ALP4 ¹ , 23AMP4 ¹ , 23AQP4 ¹ , 23VP4 ¹ |
| 23MP4A | 23FP4, A, 23MP4, 23ALP4 ¹ , 23AMP4 ¹ , 23AQP4 ¹ , 23VP4 ¹ |
| 23NP4 | |
| 23RP4 | 23BRP4, 23BYP4, 23CSP4, 23CUP4 ¹ , 23DP4 ¹ |
| 23SP4 | 23A YP4, 23BEP4, A, 23BSP4, 23ADP4 ¹ , 23A VP4 ¹ , 23BAP4 ¹ , 23BNP4 ¹ , 23BP4 ¹ , 23BQP4 ¹ , 23CBP4 ¹ , 23CP4 ¹ , A ¹ , 23GP4 ¹ , 23UP4 ¹ |
| 23TP4 | |

● 23UP4-24DP4A ●
● PICTURE TUBES ●

| <i>To Replace</i> | <i>Use</i> |
|-------------------|--|
| 23UP4 | 23BQP4, 23CBP4, 23ADP4 ¹ , 23AVP4 ¹ , 23AYP4 ¹ , 23BAP4 ¹ , 23BEP4 ¹ , A ¹ , 23BNP4 ¹ , 23BP4 ¹ , 23BQP4 ¹ , 23BSP4 ¹ , 23CP4 ¹ , A ¹ , 23GP4 ¹ , 23SP4 ¹ |
| 23VP4 | 23AQP4, 23FP4 ¹ , A ¹ , 23KP4 ^{‡1} , A ^{‡1} |
| 23WP4 | 23FP4, A, 23MP4, A, 23ALP4 ¹ , 23AMP4 ¹ , 23AQP4 ¹ , 23VP4 ¹ |
| 23XP4 | 23AFP4, 23BDP4, 23BMP4, 23BTP4, 23BVP4, 23YP4, 23CDP4 ¹ , 23CTP4 ¹ , 23EAP4 ¹ |
| 23YP4 | 23AFP4, 23BDP4, 23BMP4, 23BTP4, 23BVP4, 23CDP4 ¹ , 23CTP4 ¹ , 23EAP4 ¹ |
| 23ZP4 | |
| 24ADP4 | 24VP4, A |
| 24AEP4 | 24AUP4, 24ASP4 ¹ |
| 24AHP4 | 24ALP4, 24AQP4 ¹ , 24AXP4 ¹ |
| 24AJP4 | 24ATP4 |
| 24ALP4 | 24AHP4, 24AQP4 ¹ , 24AXP4 ¹ |
| 24AMP4 | |
| 24ANP4 | 24AEP4 ^{*1} , 24ASP4 ^{*1} , 24AUP4 [*] |
| 24AP4 | 24AP4A, 24AP4B |
| 24AP4A | 24AP4, 24AP4B |
| 24AP4B | 24AP4, 24AP4A |
| 24AQP4 | 24AHP4 ¹ , 24ALP4 ¹ , 24AXP4 ¹ |
| 24ASP4 | 24AEP4 ¹ , 24AUP4 ¹ |
| 24ATP4 | 24AJP4 ¹ |
| 24AUP4 | |
| 24AVP4 | |
| 24AWP4 | |
| 24AXP4 | 24AHP4 ¹ , 24ALP4 ¹ , 24AQP4 ¹ |
| 24BAP4 | |
| 24BCP4 | |
| 24BEP4 | |
| 24BP4 | |
| 24CP4 | 24CP4A, 24ADP4, 24TP4, 24VP4, 24VP4A, 24CP4B [*] , 24XP4 ⁶ |
| 24CP4A | 24CP4, 24ADP4, 24TP4, 24VP4, A, 24CP4B [*] , 24XP4 ⁶ |
| 24CP4B | 24CP4 ^{**} , A ^{**} , 24ADP4 ^{**} , 24TP4 ^{**} , |
| 24DP4 | 24DP4A, 24ANP4, 24YP4, 24AEP4 [*] , 24ASP4 ^{*1} , 24ZP4 [*] |
| 24DP4A | 24DP4, 24ANP4, 24YP4, 24AEP4 [*] , |

| To Replace | Use |
|-------------------|--|
| 24QP4 | 24ADP4, 24CP4, A, 24TP4, 24VP4, A, |
| 24TP4 | 24ADP4, 24CP4, A, 24VP4, 24VP4A, 24CP4B*, 24XP4 ⁶ |
| 24VP4 | 24VP4A, 24ADP4 |
| 24VP4A | 24VP4, 24ADP4 |
| 24XP4 | 24ADP4 ⁷ , 24CP4 ⁷ , A ⁷ , B* ⁷ 24TP4 ⁷ , 24VP4 ⁷ , 24VP4A ⁷ |
| 24YP4 | 24ANP4, 24DP4, 24DP4A, 24AEP4*, |
| 24ZP4 | 24EP4, 24ANP**, 24DP4**, 24DP4A**, |
| 27ABP4 | 27AGP4 |
| 27ACP4 | 27YP4 |
| 27ADP4 | 27AFP4 ¹ |
| 27AEP4 | 27ZP4 ¹ |
| 27AFP4 | 27ADP4 ¹ |
| 27AGP4 | 27ABP4 |
| 27AP4 | |
| 27EP4 | 27GP4, 27RP4 ⁷ |
| 27GP4 | 27EP4, 27RP4 ⁷ |
| 27LP4 | |
| 27MP4 | |
| 27NP4 | 27RP4, 27EP4 ⁶ , 27GP4 ⁶ |
| 27RP4 | 27RP4A*, 27EP4 ⁶ , 27GP4 ⁶ |
| 27RP4A | 27RP4** |
| 27SP4 | 27UP4 |
| 27UP4 | 27SP4 |
| 27VP4 | 27XP4 |
| 27WP4 | |
| 27XP4 | |
| 27YP4 | 27ACP4 |
| 27ZP4 | 27ABP4, 27AEP4 ¹ |
| 30BP4 | |

● PICTURE TUBES 24QP4-30BP4 ●

ODD FILAMENT VOLTAGES

| <i>Type</i> | <i>Voltage</i> | <i>Type</i> | <i>Voltage</i> |
|-------------|----------------|-------------|----------------|
| 9QP4,A | 4.7V | 19ABP4 | 2.68V |
| 10ADP4 | 8.4V | 19AEP4 | 12.6V |
| 12AP4 | 2.5V | 19BUP4 | 2.2V |
| 12CP4 | 2.5V | 21EAP4 | 2.35V |
| 14ATP4 | 8.4V | 21EVP4 | 2.68V |
| 17CDP4 | 8.4V | 23BZP4 | 8.4V |
| 17DAP4 | 2.68V | 23CAP4 | 8.4V |
| 17DEP4 | 2.35V | 23EHP4 | 8.4V |
| 17DRP4 | 2.68V | 24AVP4 | 2.35V |

LOW E_{g2}

| | | | |
|--------|--------|--------|---------|
| 11BP4 | 17EHP4 | 19DZP4 | 23DLP4A |
| 11DP4 | 19ACP4 | 19ECP4 | 23DNP4 |
| 11GP4 | 19AEP4 | 19EFP4 | 23DQP4 |
| 14ACP4 | 19AJP4 | 19EGP4 | 23DSP4 |
| 14AEP4 | 19BDP4 | 19ENP4 | 23DSP4A |
| 14ARP4 | 19BNP4 | 19ETP4 | 23DWP4 |
| 14AUP4 | 19BQP4 | 21CGP4 | 23EFP4 |
| 14AWP4 | 19CDP4 | 21CHP4 | 23ENP4 |
| 16ATP4 | 19CFP4 | 21CXP4 | 23EP4 |
| 16AVP4 | 19CHP4 | 21DSP4 | 23FBP4 |
| 16AWP4 | 19CKP4 | 21FMP4 | 23FCP4 |
| 16AZP4 | 19CLP4 | 23ANP4 | 23FDP4 |
| 16BAP4 | 19CMP4 | 23ATP4 | 23FRP4 |
| 16BEP4 | 19CQP4 | 23AWP4 | 23FNP4 |
| 16BNP4 | 19CUP4 | 23BGP4 | 23FWP4A |
| 16BSP4 | 19CVP4 | 23BHP4 | 23GJP4 |
| 17BMP4 | 19CXP4 | 23BJP4 | 23JP4 |
| 17BNP4 | 19DBP4 | 23BKP4 | 23NP4 |
| 17CMP4 | 19DFP4 | 23BLP4 | 23ZP4 |
| 17CNP4 | 19DHP4 | 23DAP4 | 24AJP4 |
| 17CRP4 | 19DSP4 | 23DBP4 | 24ATP4 |
| 17CXP4 | 19DVP4 | 23DCP4 | 24BAP4 |
| 17DQP4 | 19DYP4 | 23DLP4 | |

Section 3

CROSS REFERENCE OF SUBMINIATURE TUBES

This section lists subminiature tubes and recommended substitutes. Tubes are listed in numerical-alphabetical order, with the substitutes shown in the right-hand column.

To use this section, locate the tube type to be replaced in the left-hand column. Then refer to the right-hand column for the substitute. The substitutes listed include only those tubes which have similar, or improved, characteristics and can be inserted directly into the socket. No rewiring or mechanical changes are needed, although the associated service controls may have to be readjusted. When no substitutes are shown, none are recommended.

Substitutes marked with an asterisk (*) should be used only when the filament of the original tube is wired in a parallel circuit. Those tubes marked with a section symbol (§) may not work in all circuits.

| To Replace | Use |
|------------|--|
| 1AC5 | 1V5 |
| 1AD4 | |
| 1AD5 | 1W5 |
| 1AE5 | |
| 1AG4 | |
| 1AG5 | 2E41, 2E42, CK551AXA, 1AJ5*, 1AK5* |
| 1AH4 | 1AK4* |
| 1AJ5 | 1AG5*, 1AK5* |
| 1AK4 | 1AH4* |
| 1AK5 | 1AG5*, 1AJ5* |
| 1C8 | 1E8 |
| 1D3 | |
| 1E8 | 1C8 |
| 1Q6 | |
| 1S6 | 1T6 |
| 1T2 | |
| 1T6 | 1S6 |
| 1V5 | 1AC5 |
| 1V6 | |
| 1W5 | 1AD5 |
| 2B5 | |
| 2B24 | 2B24A |
| 2B24A | |
| 2C27 | |
| 2C28 | |
| 2E27 | |
| 2E29 | |
| 2E31 | 2E32, CK553AXA |
| 2E32 | 2E31, CK553AXA |
| 2E35 | 2E36, CK502AX |
| 2E36 | 2E35, CK502AX |
| 2E41 | 1AG5, 2E42 |
| 2E42 | 1AG5, 2E41 |
| 2G21 | 2G22, CK555AX |
| 2G22 | 2G21, CK555AX |
| 2L2 | |
| 3FW7 | |
| 3FX7 | |
| 6AD4 | 5637, 5719, 5719A, 5898 |
| 6AK4 | |
| 6AZ5 | |
| 6AZ6 | |
| 6BA5 | |
| 6BF7 | 6BF7A, 6BF7W, 6BG7, 6021, 6021A, 6021WA |
| 6BF7A | 6BF7, 6BF7W, 6BG7, 6021, 6021A, 6021WA |
| 6BF7W | 6021, 6021A, 6021WA |
| 6BG7 | 6BF7, 6BF7A, 6BF7W, 6021, 6021A, 6021WA |
| 6FW7 | |
| 6FX7 | |
| 6K4 | 6K4A, 6778 |
| 6K4A | 6778 |
| 6W2 | |
| 6X2 | 6W2* |
| RK61 | CK1054 |
| CK501 | |

| To Replace | Use |
|------------|--|
| CK501AX | |
| CK502AX | 2E35, 2E36 |
| CK503AX | CK518AX, 5854 |
| CK505AX | |
| CK506AX | |
| CK507AX | |
| CK509AX | CK515BX |
| CK510AX | |
| CK511X | |
| CK512AX | CK574AX, 6281 |
| CK515BX | CK509AX |
| CK516AX | |
| CK518AX | CK503AX |
| CK520AX | |
| CK521AX | |
| CK522AX | CK528AX, 6088 |
| CK523AX | |
| CK524AX | |
| CK525AX | |
| CK526AX | CK537AX |
| CK527AX | |
| CK528AX | CK522AX, 6088 |
| CK529AX | CK535AX |
| CK531DX | |
| CK532DX | |
| CK533AX | CK536AX |
| CK534AX | |
| CK535AX | CK529AX |
| CK536AX | CK533AX |
| CK537AX | CK526AX |
| CK538DX | |
| CK539DX | |
| CK541DX | |
| CK542DX | CK542DXS |
| CK542DXS | CK542DX |
| CK543DX | |
| CK544DX | |
| CK545DX | |
| CK546DX | 6519 |
| CK547DX | |
| CK548DX | 6418 |
| CK549DX | 6419 |
| CK551AXA | 1AG5 |
| CK553AXA | 2E31, 2E32 |
| CK555AX | 2G21, 2G22 |
| CK556AX | 5676, 6050 |
| CK568AX | 5677 |
| CK569AX | 5678 |
| CK570AX | 5697 |
| CK571AX | 5886 |
| CK573AX | 6029 |
| CK574AX | CK512AX, 6281 |
| CK600AX | |
| CK605CX | CK623CX, 5702, 5702WA, 5702WB, 6148, 6540 |
| CK606BX | 5704, 5704WA |
| CK608CX | 5703, 5703WA, 5703WB, 6149 |
| CK619CX | 5744, 5744WA, 5744WB, 6151 |

● SUBMINIATURE TUBES 1AC5-CK619CX ●

* Parallel-filament circuits.

§ May not work in all circuits.

● SUBMINIATURE TUBES CK623CX-5968 ●

| To Replace | Use |
|------------|--|
| CK623CX | CK605CX, 5702, 5702WA, 5702WB, 6148, 6540 |
| CK628 | 6247, 6247WA |
| CK1036 | 6436 |
| CK1037 | 6437, 5950§ |
| CK1038 | 5841§ |
| CK1039 | 6438 |
| CK1042 | 6659 |
| CK1045 | 6542 |
| CK1050 | CK1050A, 7323, 7979 |
| CK1050A | CK1050, 7323, 7979 |
| CK1054 | |
| CK1061 | |
| CK1068 | |
| CK1069 | |
| CK1089 | |
| CK1301 | CK1301A |
| CK1301A | CK1301 |
| CK1362 | |
| CK1363 | |
| 5633 | 5634 |
| 5634 | 5633 |
| 5635 | |
| 5636 | 5636A |
| 5636A | |
| 5637 | 5719, 5719A, 5898 |
| 5638 | |
| 5639 | 5639A, 5639WA |
| 5639A | 5639WA |
| 5639WA | |
| 5640 | 5902, 5902A, 5902WA |
| 5641 | 5641A, 7436* |
| 5641A | 7436* |
| 5642 | |
| 5643 | |
| 5644 | 5644A |
| 5644A | |
| 5645 | |
| 5646 | |
| 5647 | 5647A |
| 5647A | |
| 5672 | |
| 5676 | CK556AX, 6050 |
| 5677 | CK568AX |
| 5678 | CK569AX |
| 5697 | CK570AX |
| 5702 | 5702WA, 5702WB, 6148, CK605CX, CK623CX, 6540 |
| 5702WA | 5702WB, 6148, 6540 |
| 5702WB | |
| 5703 | 5703WA, 5703WB, 6149, CK608CX |
| 5703WA | 5703WB, 6149 |
| 5703WB | |
| 5704 | 5704WA, CK606BX |
| 5704WA | |
| 5718 | 5718A |
| 5718A | 5718 |
| 5719 | 5719A |

| To Replace | Use |
|------------|-------------------------------|
| 5719A | 5719 |
| 5744 | 5744WA, 5744WB, 6151, CK619CX |
| 5744WA | 5744WB, 6151 |
| 5744WB | |
| 5783 | 5783WA, 5783WB |
| 5783WA | 5783WB |
| 5783WB | |
| 5784 | 5784WA, 5784WB, 6150 |
| 5784WA | 5784WB, 6150 |
| 5784WB | |
| 5785 | |
| 5787 | 5787WA, 5787WB |
| 5787WA | 5787WB |
| 5787WB | |
| 5797 | |
| 5798 | |
| 5799 | |
| 5800 | |
| 5801 | |
| 5802 | |
| 5828 | |
| 5829 | 5829WA |
| 5829WA | |
| 5840 | 5840A |
| 5840A | |
| 5841 | CK1038§ |
| 5851 | 6397* |
| 5854 | CK503AX |
| 5873 | |
| 5875 | |
| 5884 | |
| 5885 | |
| 5886 | CK571AX |
| 5889 | |
| 5896 | 5896A, 6052 |
| 5896A | 6052 |
| 5897 | 5718, 5718A |
| 5898 | 5637, 5719, 5719A |
| 5899 | 5899A |
| 5899A | 5899 |
| 5900 | 5899, 5899A |
| 5901 | 5840, 5840A |
| 5902 | 5902A, 5902WA |
| 5902A | 5902WA |
| 5902WA | |
| 5903 | 6053 |
| 5904 | 6055 |
| 5905 | |
| 5906 | |
| 5907 | 6056 |
| 5908 | |
| 5911 | 6008 |
| 5913 | 6007 |
| 5916 | |
| 5935 | |
| 5947 | |
| 5950 | CK1037§, 6437§ |
| 5967 | |
| 5968 | |

| To Replace | Use |
|------------|----------------------|
| 5969 | |
| 5970 | |
| 5971 | |
| 5972 | |
| 5975 | |
| 5977 | 5977A |
| 5977A | |
| 5987 | |
| 5995 | |
| 6007 | 5913 |
| 6008 | 5911 |
| 6021 | 6021A, 6021WA |
| 6021A | 6021WA |
| 6021WA | |
| 6026 | |
| 6029 | CK573AX |
| 6049 | |
| 6050 | 5676, CK556AX |
| 6051 | |
| 6052 | 5896, 5896A |
| 6053 | 5903 |
| 6055 | 5904 |
| 6056 | 5907 |
| 6088 | CK522AX, CK528AX |
| 6092 | |
| 6110 | |
| 6111 | 6111A, 6111WA |
| 6111A | 6111WA |
| 6111WA | |
| 6112 | 6112A, 6112WA |
| 6112A | 6112WA |
| 6112WA | |
| 6119 | |
| 6121 | |
| 6143 | |
| 6147 | 6397 |
| 6148 | 5702WA, 5702WB, 6540 |
| 6149 | 5703WA, 5703WB |
| 6150 | 5784WA, 5784WB |
| 6151 | 5744WA, 5744WB |
| 6152 | |
| 6169 | |
| 6193 | |
| 6195 | |
| 6205 | 6205A |
| 6205A | |
| 6206 | 6206A |
| 6206A | |
| 6213 | |
| 6221 | |
| 6222 | |
| 6223 | 6225, 7432 |
| 6224 | |
| 6225 | 6223, 7432 |
| 6245 | |
| 6247 | 6247WA |
| 6247WA | |
| 6281 | CK574AX |
| 6286 | |
| 6308 | |

| To Replace | Use |
|------------|----------------------|
| 6320 | 6321 |
| 6321 | 6320 |
| 6352 | |
| 6373 | |
| 6375 | |
| 6391 | 7434 |
| 6397 | 6147, 5851* |
| 6418 | |
| 6419 | |
| 6436 | CK1036 |
| 6437 | CK1037, 5950§ |
| 6438 | CK1039 |
| 6487 | |
| 6488 | 7433 |
| 6489 | |
| 6519 | |
| 6526 | |
| 6533 | 6533WA |
| 6533WA | |
| 6540 | 5702WA, 5702WB, 6148 |
| 6542 | |
| 6611 | |
| 6612 | |
| 6659 | CK1042 |
| 6690 | |
| 6778 | |
| 6788 | |
| 6814 | |
| 6832 | |
| 6872 | |
| 6943 | |
| 6944 | |
| 6945 | |
| 6946 | |
| 6947 | |
| 6948 | |
| 6977 | |
| 6999 | |
| 7079 | |
| 7083 | |
| 7099 | |
| 7231 | |
| 7232 | |
| 7246 | |
| 7323 | |
| 7327 | |
| 7401 | |
| 7432 | |
| 7433 | |
| 7434 | |
| 7435 | |
| 7436 | |
| 7437 | |
| 7438 | |
| 7550 | |
| 7626 | |
| 7759 | |
| 7760 | |
| 7761 | |
| 7762 | |

● SUBMINIATURE TUBES 5969-7762 ●

* Parallel-filament circuits.

§ May not work in all circuits.

● SUBMINIATURE TUBES 7813-8530 ●

| To Replace | Use |
|------------|-----|
| 7813 | |
| 7887 | |
| 7888 | |
| 7889 | |
| 7962 | |
| 7963 | |
| 7979 | |
| 7994 | |
| 7995 | |
| 8064 | |
| 8070 | |
| 8071 | |
| 8096 | |
| 8103 | |
| 8185 | |
| 8186 | |
| 8210 | |

| To Replace | Use |
|------------|-----|
| 8211 | |
| 8213 | |
| 8216 | |
| 8254 | |
| 8319 | |
| 8414 | |
| 8417 | |
| 8444 | |
| 8517 | |
| 8522 | |
| 8524 | |
| 8525 | |
| 8526 | |
| 8527 | |
| 8528 | |
| 8529 | |
| 8530 | |

* Parallel-filament circuits.

§ May not work in all circuits.

Section 4

INDUSTRIAL SUBSTITUTES FOR RECEIVING TUBES

In this section are those American receiving tubes that can be replaced by industrial types. The receiving tubes are listed in the left-hand column and their industrial substitutes in the right-hand column. Each tube listed has one or more substitutes. If a tube type does not appear in the listing, an industrial substitute is not recommended.

This substitution list should be used in one direction only—that is, an industrial type to replace a standard type. If the equipment is already designed for an industrial tube, a standard receiving tube will not usually work as efficiently or as long as the original.

Substitutes marked with an asterisk (*) should be used only when the filament of the original tube is wired in a parallel circuit.

| To Replace | Use |
|------------|--|
| OA2 | OA2WA, 6073, 6626 |
| OA4G | 1267, WTT132 |
| OB2 | OB2WA, 6074, 6627 |
| OC3 | OC3W, VR105W, WT269 |
| OD3 | OD3W, VR150W, WT294 |
| OZ4 | 1003, WTT114 |
| OZ4A | 1003 |
| 1F4 | 2101 |
| 1R4 | 1294 |
| 1R5 | 1R5WA |
| 1T4 | 1T4WA |
| 1U4 | 1U4WA, 5910 |
| 1U5 | 1U5WA |
| 2A3 | 2A3W, 5930 |
| 2A6 | 1659 |
| 2X2 | 2B21, 879 |
| 2X2A | 2B21 |
| 3B4 | 3B4WA |
| 3B7 | 1291 |
| 3D6 | 1299 |
| 3Q5GT | WT389 |
| 3V4 | 3V4WA |
| 5R4GY | 5R4WGA, WGB, WGY, WGYA, 274B |
| 5U4G | 5U4WG, WGB, 5931, WTT135 |
| 5V4G | 274 |
| 5Y3GT | 5Y3WGT, WGTA, WGTB, 6087, 6106, 6853, WTT202 |
| 5Z3 | 1275, WT270X |
| 5Z4 | 6087 |
| 6AB4 | 6664 |
| 6AB7 | 1853 |
| 6AC7 | 6AC7W, 6AC7WA, 6AC7Y, 1852, 6134 |
| 6AG5 | 6AG5WA, 6186 |
| 6AG7 | 6AG7W |
| 6AH6 | 6AH6WA, 6485 |
| 6AJ5 | 7755 |
| 6AK5 | 6AK5W, WA, WB, 403A, 1220, 5654, 5591*, 6096, 6968 |
| 6AL5 | 6AL5W, 5726, 6058, 6097, 6663, 7631, D27 |
| 6AM5 | 6516 |
| 6AM6 | 6054, 7498 |
| 6AN5 | 6AN5WA |
| 6AQ5 | 6AQ5W, 6005, 6095, 6669 |
| 6AR6 | 6AR6WA, 6098, 6384, 7756 |
| 6AS6 | 6AS6W, 409A, 5725, 6187*, 7752 |
| 6AS7G | 6AS7GYB, 6080WA, 6080WB, 6520 |
| 6AT6 | 6066 |
| 6AU6 | 6AU6WA, 6AU6WB, 6136 |
| 6AV6 | 6066 |
| 6BA6 | 6BA6W, 6BA6WA, 5749, 6660, 7496 |

| To Replace | Use |
|------------|---|
| 6BE6 | 6BE6W, 5750, 7502* |
| 6BH6 | 6265*, 6661, 7693 |
| 6BJ6 | 6662, 7694 |
| 6BL8 | 7643* |
| 6BQ5 | 7320 |
| 6BR7 | 6059 |
| 6BW6 | 6061 |
| 6C4 | 6C4W, 6C4WA, 6100, 6135* |
| 6C5 | WT390 |
| 6C6 | 1221, 1223, 7700, WTT131 |
| 6CB6 | 6676, 7732 |
| 6CH6 | 6132, 7499 |
| 6CL6 | 2014, 6197, 6297, 6677 |
| 6CQ6 | 6065 |
| 6CW4 | 7895 |
| 6CY5 | 7717, 8113 |
| 6DB6 | 6954 |
| 6DJ8 | 6922* |
| 6DK6 | 8136 |
| 6DS4 | 7895 |
| 6F6 | 1611, 1621 |
| 6G6G | WTT130 |
| 6GE8 | 7734 |
| 6H6 | 6H6WGT, WTT103, WT261 |
| 6J4 | 6J4W, WA, 8532 |
| 6J5 | 6J5WGT, WTT129 |
| 6J6 | 6J6W, 6J6WA, 5964, 6030, 6045*, 6099, 6101, 6927* |
| 6J7 | 1223, 1620, 7000 |
| 6K5 | 6K5WGT |
| 6K7 | 5732 |
| 6K8 | WTT128 |
| 6L6 | 6L6W, WA, WGA, WGB, WGT, 1622, 5932, WT6 |
| 6L7 | 1612, 1620 |
| 6N7GT | WTT125 |
| 6Q5G | 884, WT245 |
| 6Q7 | 6118 |
| 6SA7 | 6SA7WGT, 5961 |
| 6SC7 | 1655 |
| 6SG7 | 6006 |
| 6SJ7 | 6SJ7W, WGT, WGTY, 5693, WTT122 |
| 6SK7 | 6SK7W, 6SK7WA, 6SK7WGT, 6137 |
| 6SL7 | 6SL7W, 6SL7WGT, 5691*, 6113 |
| 6SN7 | 6SN7W, 6SN7WGT, 6SN7WGTA, 5692 |
| 6SQ7 | 6SQ7W |
| 6SU7 | 6SU7WGT, 6188 |
| 6U6 | 6U6WT |
| 6U8 | 1252, 6678, 7731 |
| 6V6 | 5871, 7184, WTT123 |
| 6X4 | 6X4W, WA, 6063, 6202, WTT100 |
| 6X5 | 6X5W, WGT, 5852*, WT308 |

● RECEIVING-INDUSTRIAL OA2-6X5 ●

* Parallel-filament circuits.

● RECEIVING-INDUSTRIAL 6Y7G-807 ●

| To Replace | Use |
|------------|---|
| 6Y7G | 1635 |
| 6Z4 | WT263 |
| 7AB7 | 1204 |
| 7AJ7 | 1273 |
| 7C4 | 1203, 1203A |
| 7E5 | 1201 |
| 7F8 | 7F8W |
| 7G7 | 1232 |
| 7G8 | 1206 |
| 7K7 | WTT124 |
| 7Y4 | 1274* |
| 12A6 | 12A6GTY, 5659 |
| 12AT7 | 12AT7WA, 12AT7WB, 6060, 6201, 6671, 6679, 7492, 7728, A2900 |
| 12AU7 | 12AU7W, 12AU7WA, 5814*, 5814A*, 5814WA*, 5963, 6067, 6189, 6680, 7316, 7489, 7730 |
| 12AX7 | 12AX7WA, 5721, 5751*, 5751WA*, 6057, 6681, 7494, 7729 |
| 12AY7 | 6072* |
| 12BH7 | 6913 |
| 12BR7 | 8447 |

| To Replace | Use |
|------------|----------------------|
| 12BY7 | 7733 |
| 12C8 | 1664, 5660 |
| 12J5 | 12J5WGT |
| 12L6GT | 1632* |
| 12L8GT | 1644 |
| 12SC7 | 1634 |
| 12SK7 | 5661 |
| 12SL7GT | 2C52* |
| 12Z3 | H250 |
| 14C7 | 1280 |
| 14GT8 | 7724 |
| 25B6G | 5824 |
| 25L6GT | 6046 |
| 25W6GT | 6046 |
| 25Z6 | 25Z6WGT |
| 26E6G | 26E6WG, 26E6WGB |
| 26Z5 | 26Z5W |
| 28D7 | 28D7W, 1238 |
| 50B5 | WTT126 |
| 80 | 213B, RE1, WT270 |
| 81 | RE2 |
| 83 | WT301 |
| 117N7GT | WTT115 |
| 117Z6GT | WT377 |
| 807 | 807W, 5933, WA, 8018 |

Section 5

COMMUNICATIONS AND SPECIAL-PURPOSE TUBES

This section lists communications and special-purpose tubes. The listing is numerical instead of numerical-alphabetical. The tubes to be replaced are listed in the left-hand column and the recommended substitutes in the right-hand column.

The listing of a certain tube type as a substitute for another one does not necessarily mean the reverse is true. Always refer to the left-hand column for the original tube number. Then find the substitute in the right-hand column.

Substitutes marked with an asterisk (*) should be used only when the filament of the original tube is wired in a parallel circuit.

| To Replace | Use |
|------------|---|
| RE1 | 80 |
| 2-15A/15R | 4B30, 15R, 8022 |
| 2A3W | 5930 |
| 2B21 | 2X2A |
| 2C21 | 1642 |
| 2C22 | 7193 |
| 2C51 | 2C51W*, 396A, 1219, 5670*, 5670WA*, 6185, 6385* |
| 2C51W | 1219, 5670, 5670WA, 6185 |
| 2D21 | 2D21W, 5727 |
| 2D21W | 5727 |
| 2RA3 | 213, 213A |
| 2RA5 | 205 |
| 2RA6 | 206, 619 |
| 2RA15 | 203, 215 |
| RE2 | 81 |
| EL3B | 6013 |
| EL3C | 4B24, 6484 |
| 4-125A | 4D21, 4D21A, 6155 |
| 4-250A | 4-250/5D22, 5D22, 6156 |
| SN4 | 1D21, 631P1 |
| 5R4WGA | 5R4WGB, 5R4WGY, 5R4WGYA |
| 5R4WGB | 5R4WGYA |
| 5R4WGY | 5R4WGA, 5R4WGB, 5R4WGYA |
| 5R4WGYA | 5R4WGB |
| 5U4WG | 5U4WGB, 5931 |
| 5U4WGB | 5931 |
| 5Y3WGT | 5Y3WGTA, 5Y3WGTB, 6087, 6106, 6853 |
| 5Y3WGTA | 5Y3WGTA, 6087, 6106, 6853 |
| 5Y3WGTB | 5Y4WGTA, 6087, 6106, 6853 |
| ELC5F14 | 6278 |
| 6AC7W | 6AC7WA, 6134 |
| 6AC7WA | 6AC7W, 6134 |
| 6AG5WA | 6186 |
| 6AK5W | 6AK5WB, 5654 |
| 6AL5W | 5726, 6097 |
| 6AQ5W | 6005, 6095 |
| 6AR6WA | 6098 |
| 6AS6W | 5725, 6187 |
| 6AS7GYB | 6080, 6080WA, 6080WB |
| 6AU6WA | 6AU6WB, 6136 |
| 6AU6WB | 6136 |
| 6BA6W | 5749 |
| 6BE6W | 5750 |
| 6C4W | 6C4WA, 6100, 6135* |
| 6C4WA | 6100, 6135* |
| 6J6W | 6J6WA, 6099, 6101 |
| 6J6WA | 6099, 6101 |
| 6L6W | 6L6WA, 6L6WGA, 6L6WGB, 5932 |
| 6L6WA | 6L6WGA, 6L6WGB, 5932 |
| 6L6WGA | 6L6WGB, 5932 |
| 6L6WGB | 5881 |

| To Replace | Use |
|------------|------------------------|
| 6L6WGT | 5932 |
| 6Q5G | 884, 884W |
| 6SJ7W | 6SJ7WGT, 6SJ7WGTY |
| 6SJ7WGT | 6SJ7W, 6SJ7WGTY |
| 6SJ7WGTY | 6SJ7W, 6SJ7WGT |
| 6SK7W | 6SK7WA, 6SK7WGT |
| 6SK7WA | 6SK7W, 6SK7WGT |
| 6SK7WGT | 6SK7W, 6SK7WA |
| 6SL7W | 6SL7WGT, 6113 |
| 6SL7WGT | 6SL7W, 6113 |
| 6SN7W | 6SN7WGT, 6SN7WGTA |
| 6SN7WGT | 6SN7W, 6SN7WGTA |
| 6SN7WGTA | 6SN7W, 6SN7WGT |
| 6SU7WGT | 6188 |
| 6X4W | 6X4WA |
| 6X5W | 6X5WGT |
| 6X5WGT | 6X5W |
| EL6B | 618, 618P, 5892 |
| WT6 | 6L6 |
| 12AT7WA | 6201 |
| 12AT7WB | 6201 |
| 12AU7WA | 6189 |
| 12AX7WA | 5721, 6057, 7494, 7729 |
| D27 | 6AL5 |
| RK28 | 803 |
| 31Z | 1231Z |
| RK31 | 830B |
| TE36 | 6754 |
| RK39 | 807 |
| TE40 | 6888 |
| HZ50 | 1223 |
| RK57 | 805 |
| RK58 | 838 |
| T60 | 8005 |
| HY61 | 807 |
| WTT100 | 6X4 |
| WTT102 | 5Y3GT |
| WTT103 | 6H6 |
| CK108 | 77 |
| HY113 | HY123 |
| WTT114 | OZ4 |
| HY115 | HY145 |
| WTT115 | 117N7GT |
| WTT117 | 5557 |
| WTT118 | 105 |
| WTT119 | 172 |
| WTT122 | 6SJ7 |
| HY123 | HY113 |
| WTT123 | 6V6 |
| WTT124 | 7K7 |
| HF125 | 203H |
| HY125 | HY155 |
| WTT125 | 6N7GT |
| WTT126 | 50B5 |
| WTT127 | 833A |
| WTT128 | 6K8 |
| WTT129 | 6J5GT |
| WTT130 | 6G6G |
| WTT131 | 6C6 |
| WTT132 | OA4G |

● COMMUNICATIONS & SPECIAL PURPOSE REI-WTT132 ●

* Parallel-filament circuits.

● **COMMUNICATIONS & SPECIAL PURPOSE** **WTT135-1299** ●

| To Replace | Use |
|-------------|------------|
| WTT135 | 5U4G |
| HY145 | HY115 |
| WTT149 | 172 |
| VR150W | OD3W |
| HY155 | HY125 |
| WT210-0001 | 2D21 |
| WT210-0003 | 884 |
| WT210-0004 | 2050 |
| WT210-0006 | 6H6 |
| WT210-0009 | 6Z4 |
| WT210-0011 | OC3 |
| WT210-0012 | 80 |
| WT210-0013 | 5Z3 |
| WT210-0018 | OD3 |
| WT210-0019 | 83 |
| WT210-0021 | 6X5 |
| WT210-0025 | 117Z6GT |
| WT210-0028 | 3Q5GT |
| WT210-0029 | 6C5 |
| WT210-0037 | 117L7/M7GT |
| WT210-0040 | 6X4 |
| WT210-0042 | 5Y3GT |
| WT210-0048 | 5U4G |
| WT210-0060 | OZ4 |
| WTT210-0062 | 5557 |
| WTT210-0069 | 5557 |
| WT210-0081 | 6SJ7 |
| WT210-0082 | 6V6 |
| WT210-0083 | 7K7 |
| WT210-0084 | 6N7 |
| WT210-0085 | 50B5 |
| WT210-0087 | 6K8 |
| WT210-0088 | 6J5 |
| WT210-0089 | 6G6G |
| WT210-0090 | 6C6 |
| WT210-0091 | OA4G |
| 2138 | 80 |
| UV216 | 81 |
| UX2168 | 81 |
| WT245 | 884 |
| WT246 | 2050 |
| H250 | 6C6 |
| 259A | 259B |
| 2598 | 259A |
| WT261 | 6H6 |
| WT263 | 6Z4 |
| 264 | 864 |
| WT269 | OC3 |
| WT270 | 80 |
| WT270X | 5Z3 |
| 274 | 5V4G |
| 274B | 5R4GY |
| WT294 | OD3 |
| WT301 | 83 |
| WT308 | 6X5GT |
| 310A | 310B |
| 3108 | 310A |
| S340 | 5960 |
| WT377 | 117Z6GT |
| WT389 | 3Q5GT |

| To Replace | Use |
|------------|--|
| WT390 | 6C5 |
| 396A | 2C51, 2C51W*, 1219*, 5670*, 5670WA*, 6185, 6385* |
| 398A | 5603 |
| 401A | 5590 |
| 403A | 6AK5 |
| 403B | 5591 |
| 404A | 5847 |
| 408A | 6028 |
| 409A | 6AS6 |
| 412A | 6754 |
| 417A | 417B, 5842 |
| 420A | 5755 |
| 421A | 5998 |
| 423A | 6140 |
| WT606 | 2D21 |
| WL630 | 2050 |
| WL630A | 2050 |
| 731A | 6AK5 |
| 807 | 807W, 807WA, RK39, HY61, 5933, 5933WA, 8018 |
| 807W | 807WA, 5933, 5933WA |
| 807WA | 807W, 5933, 5933WA |
| 879 | 2X2 |
| 884 | 884W, 6Q5G |
| 885 | 2B4 |
| 932 | 1229 |
| CK1003 | OZ4A |
| CK1009 | CK1009A, BA |
| C1106 | 6AZ6 |
| NU1106 | 6AZ6 |
| 1201 | 7E5, 1201A |
| 1201A | 7E5, 1201A |
| 1203 | 7C4, 1203A |
| 1203A | 7C4, 1203 |
| 1204 | 7AB7 |
| 1206 | 7G8 |
| 1216 | 5844 |
| 1217 | 68E6, 5915, 5915A, 7036 |
| 1219 | 2C51W, 5670, 5670WA, 6185, 6385* |
| 1221 | 6C6 |
| 1223 | 6J7, 1620, 7000 |
| 1225 | 6L7 |
| 1229 | 932 |
| 1231 | 7V7 |
| 1231Z | 31Z |
| 1232 | 7G7 |
| 1273 | 7AJ7 |
| 1274 | 7Y4* |
| 1275 | 5Z3 |
| 1280 | 14C7 |
| 1282 | 7W7 |
| 1288 | 387, 1291, 1292 |
| 1291 | 387, 1288, 1292 |
| 1292 | 387, 1288, 1291 |
| 1294 | 1R4 |
| 1299 | 3D6 |

| To Replace | Use |
|------------|-------------------------------------|
| 1381HQ | 6AK5 |
| 1603 | 6C6, 7700 |
| 1611 | 6F6 |
| 1612 | 6L7 |
| 1613 | 6F6 |
| 1614 | 6L6 |
| 1620 | 6J7, 1223, 7000 |
| 1621 | 6F6 |
| 1622 | 6L6 |
| 1632 | 12L6 |
| 1634 | 12SC7 |
| 1642 | 2C21 |
| 1644 | 12L8GT |
| 1649 | 6AC7 |
| 1650 | 955 |
| 1655 | 6SC7 |
| 1657 | 2050, 2050A, 2050W |
| 1659 | 2A6 |
| 1662 | 3A4 |
| 1664 | 12C8 |
| 1665 | 2050, 2050A, 2050W |
| 1852 | 6AC7 |
| 1853 | 6AB7 |
| 2013 | 6211 |
| 2014 | 6CL6, 6197 |
| 2050 | 1657, 1665, 2050A, 2050W |
| 2050A | 1657, 1665, 2050, 2050W |
| 2935A | 81 |
| 3841 | 80 |
| 3871 | 50 |
| 3872 | 30 |
| 3873 | 32 |
| 3921 | 45 |
| 3924 | 24A |
| 4465 | 35 |
| 4610 | 36 |
| 4611 | 37 |
| 4612 | 38 |
| 5517 | 1B48, CK1013 |
| 5556 | PJ8 |
| 5588 | 6161 |
| 5590 | 401A |
| 5591 | 403B |
| 5603 | 398A |
| 5654 | 6AK5W, 6AK5WB, 1220, 6096 |
| 5659 | 12A6 |
| 5660 | 12C8 |
| 5661 | 12SK7 |
| 5667 | 889RA |
| 5670 | 2C51W, 1219, 5670WA, 6185, 6385* |
| 5687 | 5687WA |
| 5721 | 12AX7WA, 6057, 7494, 7729 |
| 5725 | 6AS6W, 6187 |
| 5726 | 6AL5W, 6097 |
| 5727 | 2D21W |
| 5731 | 955 |
| 5742 | PJ7 |

| To Replace | Use |
|------------|-----------------------------------|
| 5743 | PJ21 |
| 5749 | 68A6W |
| 5750 | 6BE6W |
| 5751 | 5751WA |
| 5755 | 420A |
| 5759 | 501R |
| 5762 | 7C24, 5762A |
| 5763 | 6062 |
| 5767 | 6481 |
| 5771 | 356 |
| 5794 | 5794A, 6562 |
| 5794A | 6562 |
| 5814 | 5814A, 5814WA |
| 5814A | 5814WA |
| 5824 | 25B6G |
| 5842 | 417A, 417B |
| 5844 | 1216 |
| 5847 | 404A |
| 5871 | 6V6GT |
| 5881 | 6L6WGB, 7581, 7581A |
| 5894 | 9903 |
| 5910 | 1U4, 1U4WA |
| 5915 | 6BE6, 1217, 5915A, 7036 |
| 5915A | 6BE6, 1217, 5915, 7036 |
| 5923 | 9904 |
| 5930 | 2A3W |
| 5931 | 5U4WGB |
| 5932 | 6L6WGA, 6L6WGB |
| 5933 | 807, 807W, 807WA, 5933WA |
| 5933WA | 807, 807W, 807WA, 5933 |
| 5992 | 6V6GT* |
| 6005 | 6AQ5W, 6095 |
| 6028 | 408A |
| 6058 | 6AL5W, 5726, 6097 |
| 6063 | 6X4, 6X4W, 6X4WA |
| 6073 | OA2WA, 6626 |
| 6074 | OB2WA, 6627 |
| 6075 | 9907 |
| 6076 | 9907R |
| 6077 | 9906 |
| 6078 | 9906R |
| 6079 | 9908 |
| 6080 | 6080WA, 6080WB |
| 6080WA | 6080WB |
| 6080WB | 6080WA |
| 6083 | 9909 |
| 6087 | 5Y3WG7B, 6106, 6853 |
| 6095 | 6AQ5W, 6005 |
| 6096 | 6AK5W, 5654 |
| 6097 | 6AL5W, 5726 |
| 6098 | 6AR6WA |
| 6099 | 6J6WA, 6101 |
| 6100 | 6C4WA, 6135* |
| 6101 | 6J6WA, 6099 |
| 6106 | 5Y3WGT, 5Y3WGTA, 5Y3WG7B, 6853 |
| 6113 | 6SL7W, 6SL7WGT |
| 6134 | 6AC7W, 6AC7WA |
| 6135 | 6C4WA*, 6100* |

● COMMUNICATIONS & SPECIAL PURPOSE 1381HQ-6135 ●

* Parallel-filament circuits.

● **COMMUNICATIONS & SPECIAL PURPOSE 6136-8077** ●

| To Replace | Use |
|------------|---|
| 6136 | 6AU6WA, 6AU6WB |
| 6146 | 8042 |
| 6146B | 8298A |
| 6155 | 4-125A, 4D21 |
| 6161 | 5588 |
| 6166A | 7007 |
| 6185 | 2C51W, 1219, 5670, WA |
| 6186 | 6AG5WA |
| 6187 | 6AS6W, 5725* |
| 6188 | 6SU7WGT |
| 6189 | 12AU7WA |
| 6197 | 2014 |
| 6201 | 12AT7WA, 12AT7WB |
| 6211 | 2013 |
| 6252 | 9910 |
| 6485 | 6AH6WA |
| 6582 | TE35 |
| 6626 | OA2WA, 6073 |
| 6627 | OB2WA, 6074 |
| 6660 | 6BA6, 6BA6W, 5749 |
| 6661 | 6BH6 |
| 6662 | 6BJ6 |
| 6663 | 6AL5, 6AL5W, 5726, 6058, 6097 |
| 6664 | 6AB4 |
| 6669 | 6AQ5A, 6AQ5W, 6005, 6095 |
| 6676 | 6CB6 |
| 6677 | 6CL6 |
| 6678 | 6U8A |
| 6679 | 12AT7, 12AT7WA, 12AT7WB, 6201 |
| 6680 | 12AU7A, 12AU7WA, 6189, 7730 |
| 6681 | 12AX7, 12AX7WA, 5721, 6057, 7494, 7729 |
| 6754 | TE36, 412A |

| To Replace | Use |
|------------|---|
| 6853 | 5Y3WGT, 5Y3WGTA, 5Y3WGTB, 6087, 6106 |
| 6888 | TE40 |
| 6939 | 7645 |
| 6968 | 6AK5 |
| 6979 | 4X250B |
| 7000 | 6J7, 1223, 1620 |
| 7007 | 6166A |
| 7025 | 12AX7, 7025A |
| 7025A | 12AX7, 7025 |
| 7027 | 7027A |
| 7034 | 4X150A |
| 7035 | 4X150D, 7609 |
| 7036 | 6BE6, 1217, 5915, 5915A |
| 7054 | 8077 |
| 7184 | 6V6 |
| 7189 | 7189A |
| 7247 | 12DW7 |
| 7408 | 6V6GT |
| 7494 | 12AX7WA, 5721, 6057, 7729 |
| 7543 | 6AU6, 6AU6WA, 6AU6WB, 6136 |
| 7581 | 7581A |
| 7645 | 6939 |
| 7700 | 6C6, 1603 |
| 7729 | 12AX7WA, 5721, 6057, 7494 |
| 7730 | 12AU7WA, 6189 |
| 7752 | 6AS6 |
| 7755 | 6AJ5 |
| 7756 | 6AR6 |
| 7867 | 6EX6* |
| 8016 | 1B3GT |
| 8018 | 807 |
| 8077 | 7054 |

Section 6

FOREIGN SUBSTITUTES FOR AMERICAN TYPES

This section lists foreign substitutes for American tubes. Refer to this section only after checking for an American substitute in Sections 1, 3, 4, and 5.

American tubes are shown in the left-hand column; foreign equivalents are in the right-hand column. Only those American types which can be replaced with foreign brands have been included. For a list of foreign types with American equivalents, refer to Section 7.

Substitutes marked with an asterisk (*) should be used only when the filament of the original tube is wired in a parallel circuit. Those tubes marked with a section symbol (§) may not work in all circuits.

| To Replace | Use |
|------------|----------------------------|
| OA2 | 150C2, M8223, STV150/30 |
| OA4G | PL1267, Z300T |
| OB2 | 108C1, M8224, STV108/30 |
| OD3 | 150C3 |
| 1A3 | 1D13, DA90 |
| 1A5G | DL31 |
| 1A7GT | DK32, X14 |
| 1AB6 | 1C3, 1H35, DK96, X25 |
| 1AC6 | 1C2, DK92, X18, X20 |
| 1AD4 | DF62 |
| 1AF4 | 1F1, DF96, W25 |
| 1AF5 | 1FD1, DAF96, 2D25 |
| 1AH5 | 1FD1, DAF96, ZD25 |
| 1AJ4 | 1F1, DF96, W25 |
| 1AM4 | 1F1, DF96, W25 |
| 1AN5 | DF97 |
| 1AR5 | 1FD1, DAF96, ZD25 |
| 1AS5 | DAF92* |
| 1B3GT | DY30, U41 |
| 1C5GT | DL35, DL36, N14 |
| 1DN5 | DAF92 |
| 1E3 | DC80 |
| 1F5G | KL35* |
| 1G3GT | DY30, U41 |
| 1H5GT | DAC32, HD14 |
| 1J3 | DY30, U41 |
| 1K3 | DY30, U41 |
| 1L4 | 1F2, DF92 |
| 1M3 | DM70, DM71, Y25 |
| 1N3 | DM71, DM70, Y25 |
| 1N5GT | DF33, Z14 |
| 1Q5GT | DL35, DL36, N14 |
| 1R5 | 1C1, DK91, X17 |
| 1S2 | DY86, DY87 |
| 1S2A | DY87 |
| 1S5 | 1FD9, DAF91, ZD17 |
| 1T2 | R16, U37 |
| 1T4 | 1F3, DF91, W17 |
| 1T4SF | 1F1, DF96, W25 |
| 1T5GT | DL31 |
| 1U4 | DF904 |
| 1U5 | DAF92 |
| 1V | AD |
| 1V6 | DCF60 |
| 1X2 | DY80, R19 |
| 1X2A | DY80, R19 |
| 2B35 | 6D1, EA50, T6D |
| 2D21 | RL21 |
| 2ER5 | XC95, XC97 |
| 2FY5 | XC95, XC97 |
| 2J2 | U26, U49 |
| 3A4 | DL93 |
| 3A5 | DCC90 |
| 3AJ8 | XCH81 |
| 3B4 | DL98 |
| 3B5GT | DL33, N15, N16 |
| 3BX6 | XF80, XF85 |
| 3BY7 | XF80, XF85 |

| To Replace | Use |
|------------|--|
| 3C4 | 1P1, DL96, N25 |
| 3C5GT | DL33, N15, N16 |
| 3D6 | DL29 |
| 3E5 | 1P1, DL96, N25 |
| 3EH7 | XF183, XF184 |
| 3EJ7 | XF183, XF184 |
| 3ER5 | YC95 |
| 3FY5 | YC95 |
| 3Q4 | DL95, N18 |
| 3Q5GT | DL33, N15, N16 |
| 3S4 | 1P10, DL92, N17 |
| 3V4 | 1P11, DL94, N19 |
| 4BC8 | 4R-HH2 |
| 4BL8 | XCF80 |
| 4BS8 | 4R-HH2 |
| 4CM4 | PC86 |
| 4EH7 | YF183, YF184 |
| 4EJ7 | YF183, YF184 |
| 4ES8 | 4R-HH8, XCC189 |
| 4GK5 | PC95 |
| 4HA5 | PC900 |
| 4KN8 | 4R-HH8 |
| 5AR4 | GZ34, U77 |
| 5BK7A | 4R-HH2 |
| 5EA8 | XCF80 |
| 5J6 | 5M-HH3 |
| 5T4 | U52 |
| 5U4G | 5Z10, U52 |
| 5U8 | XCF80 |
| 5V4G | 53KU, 54KU, GZ32, GZ33, U77 |
| 5Y3GT | U50, U52 |
| 5Z4G | 52KU, GZ30, R52, U77 |
| 6A6 | B63 |
| 6A8 | PH4, X63 |
| 6AB4 | EC92 |
| 6AB7 | 6F10, OSW2190, OSW2600 |
| 6AB8 | 63TP, ECL80, LN152 |
| 6AC7 | 6F10, OSW2190, OSW2600 |
| 6AD8 | 6FD12, EBF80, EBF81, EBF89, WD709, ZD152 |
| 6AF3 | EY88* |
| 6AF4 | EC94 |
| 6AF7G | 64ME*, EM34* |
| 6AG5 | EF96 |
| 6AG7 | 6L10, OSW2192, OSW2601 |
| 6AH6 | 6F36 |
| 6AJ4 | EC84 |
| 6AJ7 | 6F10, OSW2190, OSW2600 |
| 6AJ8 | 6C12, 20D4, ECH81, X719 |
| 6AK5 | DP61, EF95§, EF905, PM05§, M8100§ |
| 6AK7 | 6L10, OSW2192, OSW2601 |
| 6AK8 | 6LD12, DH719, EABC80 |
| 6AL3 | EY88 |
| 6AL5 | 6B32, 6D2, D2M9, D77, D152, D717, DD6, EAA91, EB91, EAA901, EAA901S |

● AMERICAN-FOREIGN OAJ-6ALS ●

* Parallel-filament circuits.

§ May not work in all circuits.

● AMERICAN-FOREIGN 6AM5-6ET6 ●

| To Replace | Use |
|------------|---|
| 6AM5 | 6P17, 7D9, DD7, DDR7, EL91, M8082* |
| 6AM6 | 6F12, 8D3, EF91, HP6, M8083, PM07, QA2403, QZ77, R144, S6F12, SP6, Z77 |
| 6AN7 | ECH80 |
| 6AQ4 | 6L34, EC91, M8099 |
| 6AQ5 | 6L31, BPM04, EL90, M8245, N727 |
| 6AQ8 | 6L12, B719, ECC85 |
| 6AS6 | 6F33, M8196 |
| 6AS7G | A1834, ECC230 |
| 6AT6 | 6BC32, DH77, EBC90, EBC91 |
| 6AU4GT | 6G-K17 |
| 6AU6 | EF94 |
| 6AV4 | 6FX4*, EZ91 |
| 6AV6 | 6BC32, DH77, EBC90, EBC91 |
| 6AW6 | EF190 |
| 6B8 | EBF32* |
| 6BA6 | 6F31, EF93, M8101, PM04, W727 |
| 6BC5 | EF96 |
| 6BD7 | 6LD13*, EBC81 |
| 6BE6 | 6H31, EK90, HM04, X77, X727 |
| 6BE7 | EQ80 |
| 6BH5 | EF81 |
| 6BH6 | E90F |
| 6BJ5 | N78 |
| 6BJ6 | E99F |
| 6BK6 | 6BC32, DH77, EBC90, EBC91 |
| 6BL8 | 6C16, ECF80, ECF82 |
| 6BM5 | 6L31, 6P9, EL90, N727 |
| 6BM8 | ECL82 |
| 6BN5 | EL85 |
| 6BQ5 | 6P15, EL84, EL84L, N709 |
| 6BQ6GT | 6G-B6 |
| 6BQ7A | ECC180 |
| 6BR3 | EY88* |
| 6BR5 | 65ME, EM80, EM81 |
| 6BR7 | 8D5 |
| 6BS7 | 8D7 |
| 6BS8 | 6R-HH2 |
| 6BT4 | 66KU, EZ40, U150, U718*, UU9*, V61 |
| 6BT6 | 6BC32, DH77, EBC90, EBC91 |
| 6BW7 | 6F23, 8D6, EF80 |
| 6BX4 | EZ91* |
| 6BX6 | 8D6, 64SPT, EF80, Z152, Z719 |
| 6BX8 | 6R-HH2, ECC180 |
| 6BY6 | 6H31, EH90, EK90 |
| 6BY7 | 6F19, 6F26, EF85, W719 |
| 6C4 | EC90, L77, M8080, QA2401, QL77 |

| To Replace | Use |
|------------|---|
| 6C5 | L63, OSW3112 |
| 6CA4 | EZ81, U709*, UU12 |
| 6CA7 | EL34, KT77 |
| 6CB6 | EF190 |
| 6CD7 | 64ME, EM34 |
| 6CE5 | EF96 |
| 6CF6 | EF190 |
| 6CH6 | 7D10, EF82, EL821, EL822 |
| 6CJ5 | 6F16, 7F16, 62VP, EF41, HF61, W150§ |
| 6CJ6 | EL81, EL820 |
| 6CK5 | 67PT, BF61, EL41, N150 |
| 6CK6 | EL83, EL803§ |
| 6CL6 | 6L43 |
| 6CM4 | EC86 |
| 6CM5 | EL36 |
| 6CN6 | 5P29, EL38 |
| 6CQ6 | 6F21, 9D6, EF92, M8161, QA2400 |
| 6CS6 | 6H31, EH90, EK90 |
| 6CT7 | D61§, EAF42, WD150 |
| 6CU6 | 6G-B9 |
| 6CU7 | 6C9*, 6C10*, 62TH, ECH42, ECH43, X150* |
| 6CV7 | 6LD3, 62DDT, DH150, DH718, E8C41 |
| 6CW5 | EL86 |
| 6CW7 | ECC84 |
| 6D8 | X73* |
| 6DA5 | 65ME, EM80, EM81 |
| 6DA6 | EF89 |
| 6DC6 | EF190 |
| 6DC8 | 6FD12, EBF80, EBF81, EBF89, WD709, ZD152 |
| 6DG7 | EF89F |
| 6DJ8 | ECC88, ECC189, E88CC* |
| 6DL4 | EC88 |
| 6DL5 | EL95 |
| 6DQ6A | 6G-B9 |
| 6DR6 | EL81, EL820 |
| 6DR8 | EBF83 |
| 6DS8 | ECH83 |
| 6DT8 | 6AT7N |
| 6DX8 | ECL84 |
| 6DY5 | EL82 |
| 6E5 | 6S5G, OSW3110 |
| 6EBG | ECH35*, X147 |
| 6EB5 | 6B32, 6D2, D2M9, D77, D152, D717, DD6, EAA91, EB91, EAA901, EAA901S |
| 6EC7 | 6F18, W739 |
| 6EH7 | 6F24, 6F25, 6F29, 6F30, EF183, EF184 |
| 6EJ7 | 6F24, 6F25, 6F29, 6F30, EF183, EF184 |
| 6EL7 | 6F23, 8D6, EF80 |
| 6ER5 | EC95, EC97* |
| 6ES6 | EF97, EF98 |
| 6ES8 | ECC88, ECC189 |
| 6ET6 | EF97, EF98 |

| To Replace | Use |
|------------|---------------------------------------|
| 6F5GT | H63 |
| 6F6G | KT63 |
| 6FC7 | ECC89 |
| 6FD6 | EF97, EF98 |
| 6FG6 | EM84, EM840 |
| 6FW8 | 6R-HH8, ECC88*, ECC189* |
| 6FY5 | EC95*, EC97 |
| 6GA8 | 6/30L2, 8729 |
| 6G85 | EL500 |
| 6GJ7 | ECF801 |
| 6GM8 | ECC86 |
| 6GV8 | ECL85 |
| 6GW8 | ECL86 |
| 6H6 | D63, E834*, OSW3109 |
| 6HA5 | EC900 |
| 6HC8 | ECL82* |
| 6HG5 | 6L31, 6P9, EL90, N727 |
| 6HG8 | ECF86 |
| 6HL8 | 6C16, ECF80 |
| 6HM5 | EC900 |
| 6HQ5 | EC900 |
| 6HQ6 | EF190 |
| 6HU6 | EM87 |
| 6HU8 | ELL80 |
| 6J4 | M8232, TM12 |
| 6J5 | L63, OSW3112 |
| 6J6 | 6CC31, 6M-HH3, ECC91, M8081, T2M05 |
| 6J7 | A863, EF37*, Z63 |
| 6JX8 | ECH84 |
| 6K7 | EF39*, OM6*, PF9, W61, W63 |
| 6KN8 | 6R-HH8, ECC88*, ECC189* |
| 6L6 | EL37 |
| 6L6GC | KT66 |
| 6L7 | X64 |
| 6M5 | EL80 |
| 6M6G | EL33*, KT61*, N147* |
| 6N3 | EY80, EY82 |
| 6N8 | E8F80, E8F81, WD709, ZD152 |
| 6Q4 | EC80 |
| 6Q7 | DH63 |
| 6R3 | 63VP*, EY81, EY83*, EY88* |
| 6R4 | EC81 |
| 6R8 | 6LD12, DH719, EA8C80 |
| 6S2 | EY86, EY87 |
| 6S2A | EY87 |
| 6S7 | KTW61, OF1 |
| 6SA7 | OSW3104 |
| 6SK7 | OSW3111 |
| 6SL7 | ECC35* |
| 6SN7GT | 13D2, 865, ECC32*, QA2408, Q865 |
| 6SQ7 | OSW3105 |
| 6T8 | 6LD12, DH719, EA8C80 |
| 6U3 | EY80 |
| 6U8 | ECF82 |
| 6V3 | EY81F |

| To Replace | Use |
|------------|--|
| 6V4 | EZ80 |
| 6V6GT | OSW3106 |
| 6W7G | 8D4* |
| 6X2 | EY51, R12, SU61, U43, U45, U151 |
| 6X4 | 6Z31, EZ90, EZ900, QA2407*, U78* |
| 6X5G | EZ35, U70, U147 |
| 6Z3 | AD |
| 7A7 | EF22*, W143*, W148 |
| 7AN7 | 30L1, 30L15, 8319, PCC84 |
| 7AU7 | XCC82 |
| 786 | DH81 |
| 787 | W149 |
| 7C6 | DH149 |
| 7DJ8 | PCC88, PCC189 |
| 7ED7 | 30F5, Z329 |
| 7EK7 | 30L1, 30L15, 8319, PCC84 |
| 7ES8 | PCC88, PCC189 |
| 7FC7 | PCC84, PCC89 |
| 7H7 | EF22*, W143*, W148 |
| 7S7 | X81, X148 |
| 7Y4 | U82*, U149 |
| 8A8 | 30C1, LZ319, LZ329, PCF80 PCF82 |
| 888 | 8R-HP1, XCL82 |
| 88Q5 | XL84 |
| 8CW5 | XL86 |
| 8HG8 | PCF86 |
| 9A8 | 30C1, LZ319, LZ329, PCF80 |
| 9AK8 | PA8C80 |
| 9AQ8 | PCC85 |
| 98M5 | 9P9 |
| 9EA8 | 30C1, LZ319, LZ329, PCF80, PCF82 |
| 9EN7 | 30C15 |
| 9GV8 | XCL85 |
| 9U8 | 30C1, LZ319, LZ329, PCF80, PCF82 |
| 12A8 | OH4 |
| 12AC5 | 121VP, HF121, W142 |
| 12AD7 | 6L13* |
| 12AH8 | 20D3 |
| 12AJ7 | HCH81 |
| 12AL5 | HAA91 |
| 12AT6 | 128C32, H8C90, H8C91 |
| 12AT7 | 8152, 8309, 8739, ECC81, ECC801, ECC801S, MB162, QA2406, Q8309 |
| 12AU6 | 12F31, HF93, HF94 |
| 12AU7 | 8329, 8749, ECC82, ECC186, ECC802, ECC802S, MB136 |
| 12AV6 | 128C32, H8C90, H8C91 |
| 12AX7 | 6L13, 8339, 8759, ECC83, ECC803 |
| 12BA6 | 12F31, HF93, HF94 |
| 128E6 | 12H31, HK90 |
| 128K6 | 128C32, H8C90, H8C91 |

● AMERICAN-FOREIGN 6F5GT-12BK6 ●

* Parallel-filament circuits.

‡ May not work in all circuits.

● AMERICAN-FOREIGN 12BQ6GT-9910 ●

| To Replace | Use |
|------------|--|
| 12BQ6GT | 12G-B6 |
| 12BT6 | 12BC32, HBC90, HBC91 |
| 12BX6 | 10F18*, W119* |
| 12BY7 | EL180 |
| 12C8 | VP12D |
| 12CS6 | 12H31, HK90 |
| 12DF7 | 6L13, B339, B759, ECC83, ECC803 |
| 12DT7 | 6L13, B339, B759, ECC83, ECC803 |
| 12FB5 | 30P12 |
| 12HU8 | PLL80 |
| 12K7 | W76 |
| 12Q7GT | DH74, DH76 |
| 12S7 | UAF42§, WD142§ |
| 12SN7GT | B36 |
| 12SQ7 | OBC3 |
| 12SX7GT | B36 |
| 13CM5 | XL36 |
| 13EC7 | 10F18, W119 |
| 13GC8 | 30PL1 |
| 14G6 | DH119, UBC81 |
| 14K7 | 141 TH, UCH42, UCH43, X142 |
| 14L7 | 10LD3, 141DDT, DH118, DH142, UBC41 |
| 15A6 | N153, N309, PL83 |
| 15CW5 | 30P18, N379, PL84 |
| 15DQ8 | PCL84 |
| 16A5 | 30P16, 30P18, 163PEN, N154, N329, N379, PL82, PL84 |
| 16A8 | N369, PCL82 |
| 16AQ3 | XY88 |
| 16GK8 | 30PL13, 30PL14 |
| 17C8 | 17N8, 171DDP, UBF80 |
| 17EW8 | HCC85 |
| 17Z3 | PY81, PY83, U153, U193 |
| 18FW6 | 19M-R9 |
| 18GD6 | 19M-R9 |
| 19AQ5 | HL90 |
| 19C8 | HABC80 |
| 19CS4 | U191 |
| 19D8 | 10C14, 19AJ8, UCH81, X119 |
| 19T8 | HABC80 |
| 19X3 | 19BD, 19U3, 19W3, PY80, U152, U309 |
| 19Y3 | 19SU, PY82, U154, U192, U319 |
| 21A6 | 213PEN, N152, N359, PL81, PL820 |
| 258Q6GT | 25G-B6 |
| 25E5 | N308, PL36 |
| 25GF6 | 30P4 |
| 25W6GT | KT32 |
| 27G85 | PL500 |
| 28GB5 | PL500 |
| 30A5 | HL94 |
| 30AE3 | PY88 |

| To Replace | Use |
|------------|---|
| 31A3 | 311SU, U142, UY41, UY42, V311, V312 |
| 35C5 | HL94 |
| 35W4 | HY90 |
| 35Z4GT | U76 |
| 38A3 | U119, U381, UY85 |
| 45A5 | 451PT, BF451, N142, UL41 |
| 45B5 | 10P18, N119, UL84 |
| 50BM8 | 10PL12, LN119, UCL82 |
| 50C5 | HL92 |
| 50L6GT | KT71 |
| 55N3 | UY82 |
| 807 | 4Y25, 5S1, P17A, QE06/50, QV05-25 |
| 954 | EIF, ZA2* |
| 955 | UN955 |
| 956 | E2F |
| 957 | D1C |
| 958A | D2C |
| 959 | D3F |
| 5642 | DY70 |
| 5678 | DF60 |
| 5763 | QE03/10, QV03-12 |
| 5840 | EF732, M8121 |
| 5847 | 6R-R8C |
| 5861 | EC55 |
| 5899 | EF731 |
| 5911 | DF67 |
| 5920 | E90CC |
| 6008 | DF67 |
| 6063 | EZ900 |
| 6080 | A1834, ECC230 |
| 6084 | E80F |
| 6085 | E80CC |
| 6146 | QE05/40, QV06-20 |
| 6158 | 13D3 |
| 6159 | QE05/40H |
| 6252 | QQE03/20, QQV03-20 |
| 6267 | 8D8, 6F22, EF86, EF87, EF806S, M8195 |
| 6360 | QQE03/12, QQV03-10 |
| 6374 | EY84 |
| 6443 | EY84 |
| 6550 | KT88 |
| 6688 | E180F |
| 6922 | E88CC |
| 6939 | QQE02/5, QQV02-6 |
| 7025 | 8339, 8759, ECC83, M8137 |
| 7027 | KT66 |
| 7027A | KT88 |
| 7308 | E188CC |
| 7408 | OSW3106 |
| 7543 | EF94 |
| 7581 | KT66, KT77 |
| 8223 | E288CC |
| 9905 | QQC04/15 |
| 9910 | QQE03/20, QQV03-20 |

Section 7

AMERICAN SUBSTITUTES FOR FOREIGN TYPES

This section lists American substitutes for foreign tubes. Foreign tubes are shown in the left-hand column; American equivalents are in the right-hand column. Only those foreign types which can be replaced with American brands have been listed. For a list of foreign equivalents for American types, refer to Section 6.

In most cases, there is only one American replacement shown as a direct equivalent to the foreign type. Other equivalents for the American replacement are listed in Sections 1, 3, 4, and 5. For example, the American replacement for the 6F10 is the 6AC7. If a 6AC7 is not available, Section 1 shows that a 6AJ7 can be used as a substitute. Therefore, the 6AJ7 can be used as a substitute for the 6F10.

Substitutes marked with an asterisk (*) should be used only when the filament of the original tube is wired in a parallel circuit. Those tubes marked with a section symbol (§) may not work in all circuits.

To Replace Use

| | |
|--------|--------|
| 1C1 | 1R5 |
| 1C2 | 1AC6 |
| 1C3 | 1AB6 |
| 1D13 | 1A3 |
| 1F1 | 1AJ4 |
| 1F2 | 1L4 |
| 1F3 | 1T4 |
| 1FD1 | 1AH5 |
| 1FD9 | 1S5 |
| 1H35 | 1AB6 |
| 1P1 | 3C4 |
| 1P10 | 3S4 |
| 1P11 | 3V4 |
| 4R-HH2 | 4BS8 |
| 4R-HH8 | 4KN8 |
| 4Y25 | 807 |
| 5M-HH3 | 5J6 |
| 5P29 | 6CN6 |
| 5S1 | 807 |
| 5Z10 | 5U4G |
| 6/30L2 | 6GA8 |
| 6AT7N | 6DT8 |
| 6B32 | 6AL5 |
| 6BC32 | 6AV6 |
| 6C9 | 6CU7* |
| 6C10 | 6CU7* |
| 6C12 | 6AJ8 |
| 6C16 | 6BL8 |
| 6CC10 | 5692 |
| 6CC31 | 6J6 |
| 6CC42 | 5670 |
| 6CF8 | 6267 |
| 6D1 | 2B35 |
| 6D2 | 6AL5 |
| 6F10 | 6AC7 |
| 6F12 | 6AM6 |
| 6F16 | 6CJ5 |
| 6F18 | 6EC7 |
| 6F19 | 6BY7 |
| 6F21 | 6CQ6 |
| 6F22 | 6267 |
| 6F23 | 6EL7 |
| 6F24 | 6EJ7 |
| 6F25 | 6EH7 |
| 6F26 | 6BY7 |
| 6F29 | 6EH7 |
| 6F30 | 6EJ7 |
| 6F31 | 6BA6 |
| 6F33 | 6AS6 |
| 6F36 | 6AH6 |
| 6FD12 | 6DC8 |
| 6FX4 | 6AV4* |
| 6G-B3A | 6GW6 |
| 6G-B6 | 6BQ6GT |
| 6G-B9 | 6DQ6A |
| 6G-K17 | 6AU4GT |
| 6H31 | 6BE6 |
| 6L10 | 6AG7 |
| 6L12 | 6AQ8 |
| 6L13 | 12AX7 |

To Replace Use

| | |
|---------|---------|
| 6L31 | 6AQ5 |
| 6L34 | 6AQ4 |
| 6L43 | 6CL6 |
| 6LD3 | 6CV7 |
| 6LD12 | 6AK8 |
| 6LD13 | 6BD7 |
| 6M-HH3 | 6J6 |
| 6P9 | 6BM5 |
| 6P15 | 6BQ5 |
| 6P17 | 6AM5 |
| 6R-HH2 | 6BS8 |
| 6R-HH8 | 6KN8 |
| 6R-R8C | 5847 |
| 6S5G | 6E5 |
| 6V3P | 6R3* |
| 6Z4 | 6BX4 |
| 6Z31 | 6X4 |
| 7D9 | 6AM5 |
| 7D10 | 6CH6 |
| 7F16 | 6CJ5 |
| 8D3 | 6AM6 |
| 8D4 | 6W7G* |
| 8D5 | 6BR7 |
| 8D6 | 6BW7 |
| 8D7 | 6BS7 |
| 8D8 | 6267 |
| 8R-HP1 | 8B8 |
| 9D6 | 6CQ6 |
| 9P9 | 9BM5 |
| 10C14 | 19D8 |
| 10F18 | 13EC7 |
| 10LD3 | 14L7 |
| 10P18 | 45B5 |
| 10PL12 | 50BM8 |
| 12BC32 | 12AV6 |
| 12F31 | 12BA6 |
| 12G-B3 | 12GW6 |
| 12G-B6 | 12BQ6GT |
| 12G-K17 | 12D4A |
| 12H31 | 12BE6 |
| 13D2 | 6SN7GT |
| 13D3 | 6158 |
| 17N8 | 17C8 |
| 18AK5 | 6028 |
| 19AJ8 | 19D8 |
| 19BD | 19X3 |
| 19M-R9 | 18GD6 |
| 19SU | 19Y3 |
| 19U3 | 19X3 |
| 19W3 | 19X3 |
| 20D3 | 12AH8 |
| 20D4 | 6AJ8 |
| 25G-B6 | 25BQ6GT |
| 30C1 | 9A8 |
| 30F5 | 7ED7 |
| 30L1 | 7AN7 |
| 30L15 | 7EK7 |
| 30P4 | 25GF6 |
| 30P12 | 12FB5 |
| 30P16 | 16A5 |

To Replace Use

| | |
|--------|---------|
| 30P18 | 15CW5 |
| 30P19 | 25GF6 |
| 30PL1 | 13GC8 |
| 30PL13 | 16GK8 |
| 52KU | 5Z4G |
| 62DDT | 6CV7 |
| 62TH | 6CU7 |
| 62VP | 6CJ5 |
| 63TP | 6AB8 |
| 64ME | 6CD7 |
| 64SPT | 6BX6 |
| 65ME | 6BR5 |
| 66KU | 6BT4 |
| 67PT | 6CK5 |
| 108C1 | OB2 |
| 121VP | 12AC5 |
| 141DDT | 14L7 |
| 141TH | 14K7 |
| 150C2 | OA2 |
| 150C3 | OD3 |
| 163PEN | 16A5 |
| 171DDP | 17C8 |
| 213PEN | 21A6 |
| 311SU | 31A3 |
| 451PT | 45A5 |
| A863 | 6J7GT |
| A1834 | 6AS7G |
| AD | 6Z3 |
| B36 | 12SN7GT |
| B53 | 6A6 |
| B152 | 12AT7 |
| B309 | 12AT7 |
| B319 | 7AN7 |
| B329 | 12AU7 |
| B339 | 12AX7 |
| B719 | 6AQ8 |
| B729 | 6GA8 |
| B739 | 12AT7 |
| B749 | 12AU7 |
| B759 | 12AX7 |
| BF61 | 6CK5 |
| BF451 | 45A5 |
| BPM04 | 6AQ5 |
| D1C | 957 |
| D2C | 958A |
| D2M9 | 6AL5 |
| D3F | 959 |
| D61 | 6CT7§ |
| D63 | 6H6 |
| D77 | 6AL5 |
| D152 | 6AL5 |
| D717 | 6AL5 |
| DA90 | 1A3 |
| DAC32 | 1H5GT |
| DAF91 | 1S5 |
| DAF92 | 1U5 |
| DAF96 | 1AH5 |
| DC80 | 1E3 |
| DCC90 | 3A5 |
| DCF60 | 1V6 |

• FOREIGN-AMERICAN 1C1-DCF60 •

* Parallel-filament circuits.

§ May not work in all circuits.

● FOREIGN-AMERICAN DD6-EY83 ●

To Replace Use

| | |
|--------|------------|
| DD6 | 6AL5 |
| DD7 | 6AM5 |
| DDR7 | 6AM5 |
| DF33 | 1N5GT |
| DF60 | 5678 |
| DF62 | 1AD4 |
| DF67 | 5911, 6008 |
| DF91 | 1T4 |
| DF92 | 1L4 |
| DF96 | 1AJ4 |
| DF97 | 1AN5 |
| DF904 | 1U4 |
| DH63 | 6Q7 |
| DH74 | 12Q7GT |
| DH76 | 12Q7GT |
| DH77 | 6AT6 |
| DH81 | 7B6 |
| DH118 | 14L7 |
| DH119 | 14G6 |
| DH142 | 14L7 |
| DH149 | 7C6 |
| DH150 | 6CV7 |
| DH718 | 6CV7 |
| DH719 | 6AK8 |
| DK32 | 1A7GT |
| DK91 | 1R5 |
| DK92 | 1AC6 |
| DK96 | 1AB6 |
| DL29 | 3D6 |
| DL31 | 1A5G |
| DL33 | 3Q5GT |
| DL35 | 1C5GT |
| DL36 | 1Q5GT |
| DL92 | 3S4 |
| DL93 | 3A4 |
| DL94 | 3V4 |
| DL95 | 3Q4 |
| DL96 | 3C4 |
| DL98 | 3B4 |
| DM70 | 1M3 |
| DM71 | 1N3 |
| DP61 | 6AK5 |
| DY30 | 1B3GT |
| DY70 | 5642 |
| DY80 | 1X2A |
| DY86 | 1S2 |
| DY87 | 1S2A |
| E1F | 954 |
| E2F | 956 |
| E80CC | 6085 |
| E80F | 6084 |
| E88CC | 6922 |
| E90CC | 5920 |
| E180F | 6688 |
| E188CC | 7308 |
| E288CC | 8223 |
| EA50 | 2B35 |
| EAA91 | 6AL5 |
| EABC80 | 6AK8 |
| EAF41 | 6CT7§ |

To Replace Use

| | |
|--------|--------|
| EAF42 | 6CT7 |
| EB34 | 6H6* |
| EB91 | 6AL5 |
| EBC41 | 6CV7 |
| EBC80 | 6BD7 |
| EBC90 | 6AT6 |
| EBC91 | 6AV6 |
| EBF32 | 6B8* |
| EBF80 | 6N8 |
| EBF81 | 6AD8 |
| EBF83 | 6DR8 |
| EBF89 | 6DC8 |
| EC55 | 5861 |
| EC80 | 6Q4 |
| EC81 | 6R4 |
| EC84 | 6AJ4 |
| EC86 | 6CM4 |
| EC88 | 6DL4 |
| EC90 | 6C4 |
| EC91 | 6AQ4 |
| EC92 | 6AB4 |
| EC94 | 6AF4 |
| EC95 | 6ER5 |
| EC97 | 6FY5 |
| EC900 | 6HA5 |
| ECC32 | 6SN7GT |
| ECC35 | 6SL7* |
| ECC70 | 6021 |
| ECC81 | 12AT7 |
| ECC82 | 12AU7 |
| ECC83 | 12AX7 |
| ECC84 | 6CW7 |
| ECC85 | 6AQ8 |
| ECC86 | 6GM8 |
| ECC88 | 6DJ8 |
| ECC89 | 6FC7 |
| ECC91 | 6J6 |
| ECC180 | 6BQ7A |
| ECC186 | 12AU7 |
| ECC189 | 6ES8 |
| ECC230 | 6080 |
| ECF80 | 6BL8 |
| ECF82 | 6U8 |
| ECF86 | 6HG8 |
| ECF801 | 6GJ7 |
| ECH35 | 6E8G* |
| ECH42 | 6CU7 |
| ECH80 | 6AN7 |
| ECH81 | 6AJ8 |
| ECH83 | 6DS8 |
| ECH84 | 6JX8 |
| ECL80 | 6AB8 |
| ECL82 | 6BM8 |
| ECL84 | 6DX8 |
| ECL85 | 6GV8 |
| ECL86 | 6GW8 |
| EF22 | 7A7* |
| EF37 | 6J7GT |
| EF39 | 6K7* |
| EF41 | 6CJ5 |

To Replace Use

| | |
|-------|-------|
| EF71 | 5899 |
| EF72 | 5840 |
| EF80 | 6BX6 |
| EF81 | 6BH5 |
| EF82 | 6CH6 |
| EF85 | 6BY7 |
| EF86 | 6267 |
| EF87 | 6267 |
| EF89 | 6DA6 |
| EF89F | 6DG7 |
| EF91 | 6AM6 |
| EF92 | 6CQ6 |
| EF93 | 6BA6 |
| EF94 | 6AU6 |
| EF95 | 6AK5 |
| EF96 | 6AG5 |
| EF97 | 6ES6 |
| EF98 | 6ET6 |
| EF183 | 6EH7 |
| EF184 | 6EJ7 |
| EF190 | 6CB6 |
| EF731 | 5899 |
| EF732 | 5840 |
| EH90 | 6CS6 |
| EK90 | 6BE6 |
| EL33 | 6M6G* |
| EL34 | 6CA7 |
| EL36 | 6CM5 |
| EL37 | 6L6 |
| EL38 | 6CN6 |
| EL41 | 6CK5 |
| EL80 | 6M5 |
| EL81 | 6CJ6 |
| EL82 | 6DY5 |
| EL83 | 6CK6 |
| EL84 | 6BQ5 |
| EL85 | 6BN5 |
| EL86 | 6CW5 |
| EL90 | 6AQ5 |
| EL91 | 6AM5 |
| EL95 | 6DL5 |
| EL180 | 12BY7 |
| EL500 | 6GB5 |
| EL803 | 6CK6§ |
| EL821 | 6CH6 |
| EL822 | 6CH6 |
| ELL80 | 6HU8 |
| EM34 | 6CD7 |
| EM80 | 6BR5 |
| EM81 | 6DA5 |
| EM84 | 6FG6 |
| EM87 | 6HU6 |
| EM840 | 6FG6 |
| EQ80 | 6BE7 |
| EY51 | 6X2 |
| EY80 | 6U3 |
| EY81 | 6R3 |
| EY81F | 6V3 |
| EY82 | 6N3 |
| EY83 | 6AL3* |

To Replace Use

| | |
|--------|--------|
| EY84 | 6374 |
| EY86 | 6S2 |
| EY87 | 6S2A |
| EY88 | 6AL3 |
| EZ35 | 6X5G |
| EZ40 | 6BT4 |
| EZ80 | 6V4 |
| EZ81 | 6CA4 |
| EZ90 | 6X4 |
| EZ91 | 6AV4 |
| EZ900 | 6063 |
| GZ30 | 5Z4G |
| GZ34 | 5AR4 |
| H63 | 6F5GT |
| HAA91 | 12AL5 |
| HABC80 | 19T8 |
| HBC90 | 12AT6 |
| HBC91 | 12AV6 |
| HCC85 | 17EW8 |
| HCH81 | 12AJ7 |
| HD14 | 1H5GT |
| HF61 | 6CJ5 |
| HF93 | 12BA6 |
| HF94 | 12AU6 |
| HF121 | 12AC5 |
| HK90 | 12BE6 |
| HL90 | 19AQ5 |
| HL92 | 50C5 |
| HL94 | 30A5 |
| HM04 | 6BE6 |
| HP6 | 6AM6 |
| HY90 | 35W4 |
| KL35 | 1F5G* |
| KT32 | 25W6GT |
| KT61 | 6M6G* |
| KT63 | 6F6G |
| KT66 | 6L6GC |
| KT71 | 50L6GT |
| KT77 | 6CA7 |
| KT88 | 6550 |
| KTW61 | 6S7 |
| L63 | 6J5 |
| L77 | 6C4 |
| LN119 | 508M8 |
| LN152 | 6AB8 |
| LZ319 | 9A8 |
| LZ329 | 9A8 |
| M8121 | 5840 |
| N14 | 1C5GT |
| N15 | 3Q5GT |
| N16 | 3Q5GT |
| N17 | 3S4 |
| N18 | 3Q4 |
| N19 | 3V4 |
| N25 | 3C4 |
| N77 | 6AM5 |
| N78 | 6BJ5 |
| N119 | 45B5 |
| N142 | 45A5 |
| N144 | 6AM5 |

To Replace Use

| | |
|---------|-------|
| N147 | 6M6G* |
| N150 | 6CK5 |
| N152 | 21A6 |
| N153 | 15A6 |
| N154 | 16A5 |
| N308 | 25E5 |
| N309 | 15A6 |
| N329 | 16A5 |
| N359 | 21A6 |
| N369 | 16A8 |
| N379 | 15CW5 |
| N709 | 6BQ5 |
| N727 | 6AQ5 |
| OBC3 | 12SQ7 |
| OF1 | 6S7 |
| OH4 | 12A8 |
| OM6 | 6K7 |
| OSW2190 | 6AC7 |
| OSW2192 | 6AG7 |
| OSW2600 | 6AC7 |
| OSW2601 | 6AG7 |
| OSW3104 | 6SA7 |
| OSW3105 | 6SQ7 |
| OSW3106 | 6V6GT |
| OSW3109 | 6H6 |
| OSW3110 | 6E5 |
| OSW3111 | 6SK7 |
| OSW3112 | 6J5 |
| P17A | 807 |
| PA8C80 | 9AK8 |
| PC86 | 4CM4 |
| PC95 | 4GK5 |
| PC900 | 4HA5 |
| PCC84 | 7AN7 |
| PCC85 | 9AQ8 |
| PCC88 | 7DJ8 |
| PCC89 | 7FC7 |
| PCC189 | 7ES8 |
| PCF80 | 9A8 |
| PCF82 | 9U8 |
| PCF86 | 8HG8 |
| PCL82 | 16A8 |
| PCL84 | 15DQ8 |
| PF9 | 6K7 |
| PH4 | 6A8 |
| PL36 | 25E5 |
| PL81 | 21A6 |
| PL82 | 16A5 |
| PL83 | 15A6 |
| PL84 | 15CW5 |
| PL500 | 27GB5 |
| PL820 | 21A6 |
| PL1267 | OA4G |
| PLL80 | 12HU8 |
| PM04 | 6BA6 |
| PM07 | 6AM6 |
| PY80 | 19X3 |
| PY81 | 17Z3 |
| PY82 | 19Y3 |
| PY83 | 17Z3 |

To Replace Use

| | |
|-----------|--------|
| PY88 | 30AE3 |
| QB65 | 6SN7GT |
| QB309 | 12AT7 |
| QE03/10 | 5763 |
| QE05/40 | 6146 |
| QE05/40H | 6159 |
| QE06/50 | 807 |
| QL77 | 6C4 |
| QN77 | 6AM5* |
| QQE02/5 | 6939 |
| QQE03/12 | 6360 |
| QQE03/20 | 6252 |
| QQV02-6 | 6939 |
| QQV03-20 | 6252 |
| QQV03-10 | 6360 |
| QV03-12 | 5763 |
| QV05-25 | 807 |
| QV06-20 | 6146 |
| QW77 | 6CQ6 |
| QZ77 | 6AM6 |
| R12 | 6X2 |
| R16 | 1T2 |
| R19 | 1X2A |
| R52 | 5Z4G |
| R144 | 6AM6 |
| RL21 | 2D21 |
| S6F12 | 6AM6 |
| SP6 | 6AM6 |
| STV108/30 | OB2 |
| STV150/30 | OA2 |
| SU61 | 6X2 |
| T6D | 2835 |
| T2M05 | 6J6 |
| TM12 | 6J4 |
| U26 | 2J2 |
| U37 | 1T2 |
| U41 | 1B3GT |
| U43 | 6X2 |
| U45 | 6X2* |
| U49 | 2J2 |
| U50 | 5Y3GT |
| U52 | 5U4G |
| U70 | 6X5G |
| U76 | 35Z4GT |
| U78 | 6X4* |
| U82 | 7Y4* |
| U119 | 38A3 |
| U142 | 31A3 |
| U147 | 6X5G |
| U149 | 7Y4 |
| U150 | 6BT4 |
| U151 | 6X2 |
| U152 | 19X3 |
| U153 | 17Z3 |
| U154 | 19Y3 |
| U192 | 19Y3 |
| U193 | 17Z3 |
| U309 | 19X3 |
| U319 | 19Y3 |
| U381 | 38A3 |

● FOREIGN-AMERICAN EY84-U381 ●

* Parallel-filament circuits.

‡ May not work in all circuits.

• FOREIGN-AMERICAN U707-ZD152 •

| <i>To Replace Use</i> | | <i>To Replace Use</i> | | <i>To Replace Use</i> | |
|-----------------------|-------|-----------------------|-------|-----------------------|-------|
| U707 | 6X4 | W76 | 12K7 | XC97 | 2FY5 |
| U709 | 6CA4* | W77 | 6CQ6 | XCC82 | 7AU7 |
| U718 | 6BT4* | W119 | 13EC7 | XCC189 | 4ES8 |
| UAF42 | 12S7 | W142 | 12AC5 | XCF80 | 4BL8 |
| UBC41 | 14L7 | W143 | 7A7* | XCH81 | 3AJ8 |
| UBC81 | 14G6 | W148 | 7A7 | XCL82 | 8B8 |
| UBF80 | 17C8 | W149 | 7B7 | XCL85 | 9GV8 |
| UCH42 | 14K7 | W719 | 6BY7 | XF80 | 3BX6 |
| UCH81 | 19D8 | W727 | 6BA6 | XF85 | 3BY7 |
| UCL82 | 50BM8 | W739 | 6EC7 | XF183 | 3EH7 |
| UL41 | 45A5 | WD142 | 12S7 | XF184 | 3EJ7 |
| UL84 | 45B5 | WD150 | 6CT7 | XL36 | 13CM5 |
| UN955 | 955 | WD709 | 6N8 | XL84 | 8BQ5 |
| UU9 | 6BT4* | X14 | 1A7GT | XL86 | 8CW5 |
| UU12 | 6CA4 | X17 | 1R5 | XY88 | 16AQ3 |
| UY41 | 31A3 | X18 | 1AC6 | Y25 | 1M3 |
| UY42 | 31A3 | X20 | 1AC6 | YC95 | 3ER5 |
| UY82 | 55N3 | X25 | 1AB6 | YF183 | 4EH7 |
| UY85 | 38A3 | X63 | 6A8 | YF184 | 4EJ7 |
| UY89 | 38A3 | X64 | 6L7 | Z14 | 1N5GT |
| V2M70 | 6X4 | X73 | 6D8* | Z63 | 6J7 |
| V61 | 6BT4 | X77 | 6BE6 | Z77 | 6AM6 |
| V177 | 6CQ6 | X81 | 7S7 | Z152 | 6BX6 |
| V311 | 31A3 | X119 | 19D8 | Z300T | OA4G |
| V312 | 31A3 | X142 | 14K7 | Z329 | 7ED7 |
| V884 | 6CQ6 | X147 | 6E8G | Z719 | 6BX6 |
| VP6 | 6CQ6 | X148 | 7S7 | Z729 | 6267 |
| VP12D | 12C8 | X150 | 6CU7* | ZA2 | 954* |
| W17 | 1T4 | X719 | 6AJ8 | ZD17 | 1S5 |
| W25 | 1AJ4 | X727 | 6BE6 | ZD25 | 1AH5 |
| W61 | 6K7 | XC95 | 2ER5 | ZD152 | 6N8 |
| W63 | 6K7 | | | | |

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8th EDITION!**

Howard W. Sams

TUBE SUBSTITUTION handbook

Here is the most complete, up-to-date DIRECT tube substitution guide available, now including over 11,000 substitutions for all types of receiving tubes and picture tubes.

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