

Western Electric
Vacuum Tubes

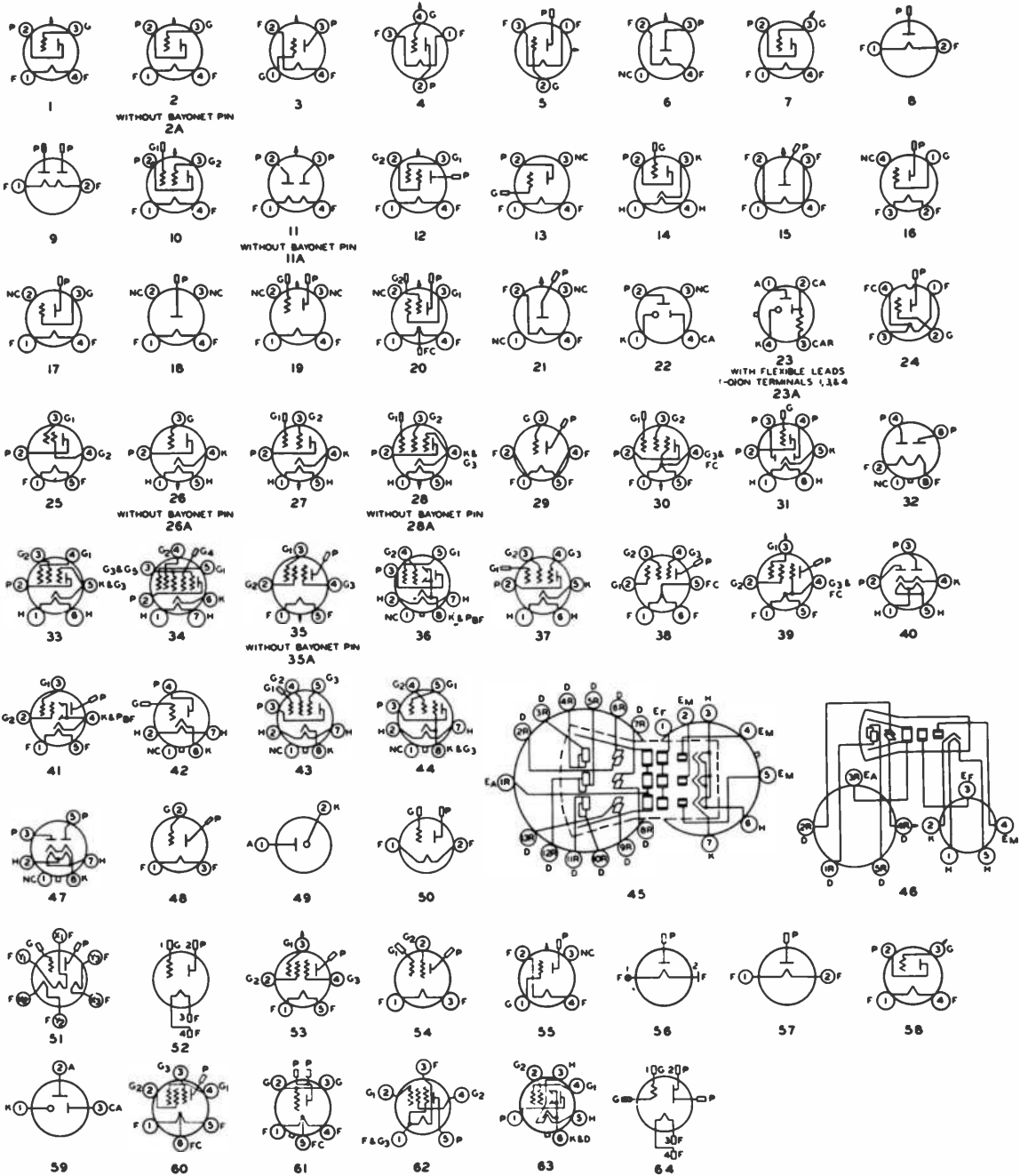
GENERAL BULLETIN

Tabular Characteristic Data
and
Arrangement of Terminal Connections

Western Electric Company

VACUUM TUBES

ARRANGEMENT OF TERMINALS AND CONNECTIONS
VIEWED FROM BOTTOM



| | | |
|--|--|--------------------------------------|
| A-ANODE | EF-FOCUSING ELECTRODE | H-HEATER |
| CA-CONTROL ANODE | EM-MODULATING ELECTRODE | K-CATHODE |
| CAR-CONTROL ANODE THROUGH RESISTANCE | F-FILAMENT | NC-NO CONNECTION |
| D-DEFLECTOR PLATE | FC-FILAMENT CENTER | P-PLATE |
| EA-ACCELERATING ELECTRODE | G-GRID | P _{BF} -BEAM-FORMING PLATES |
| — KEYWAY | — CONNECTION IN BULB | — SOCKET CONNECTIONS |
| — KEY | — BAYONET PIN | — FLEXIBLE LEADS |
| — CONNECTION IN SHELL OF SCREW TYPE BASE | — CENTER CONNECTION IN SCREW TYPE BASE | |

CONTACT PINS THAT ARE NUMBERED ARE ON ONE SIDE OF TUBE

VACUUM TUBES FOR RADIO TELEPHONE BROADCASTING

Issue 8
Mar. 15, 1942
Replaces Issue 7
Oct. 1, 1941

CLASSIFICATION Western Electric Vacuum Tubes — FOR — Radio Telephone Broadcasting

LIST OF TUBES IN CATALOG

NOTE: Data sheets combining information on more than one tube are filed under the code number shown in parenthesis.

| | | | | | | |
|---------------|---------------------|---------------------|--------|---------------------|-------------|--------------|
| 101D | 233B | 257A | 275A | 306A | 328A | 352A |
| 101F (Iss. 2) | 236A | 258B (249B) | 276A | 307A | 329A (311A) | 353A |
| 101FA | 240B | 259A | 279A | 308B | 331A | 354A (287A) |
| 101J | 241B | 259B | 281A | 309A | 332A (322A) | 355A (287A) |
| 102D | 242C | 262B | 282A | 310A | 333A | 356A |
| 102F (Iss. 2) | 244A | 263A | 283A | 310B | 336A | 357A |
| 102G | 245A | 263B | 284D | 311A | 338A | 363A |
| 104D | 246A | 264C | 285A | 312A | 340A | 364A |
| 205D | 247A | 266B (249B, Iss. 2) | 286A | 313C | 342A | 368A |
| 205E | 249B (Iss. 2) | 266C (249B, Iss. 2) | 287A | 314A | 343A | 368AS (368A) |
| 212E | 251A | 267B (249B, Iss. 2) | 295A | 315A (249B, Iss. 2) | 343AA | 371A |
| 215A | 252A | 268A | 297A | 316A | 345A | 378A (371A) |
| 220C (Iss. 2) | 253A (249B, Iss. 2) | 269A | 298A&B | 319A (249B, Iss. 2) | 346A | 380A |
| 222A | 254A | 270A | 300A&B | 321A (249B, Iss. 2) | 347A (262B) | 381A (380A) |
| 228A | 254B | 271A | 301A | 322A | 348A (310B) | 384A |
| 231D | 255B (249B, Iss. 2) | 272A | 303A | 323A (287A) | 349A (336A) | 385A (384A) |
| 232B | 256A | 274A | 305A | 325-326 (Iss. 2) | 351A (345A) | 388A (368A) |

Class A—Audio Frequency Amplifier or Modulator

| Typical Output Power Watts | Code No. | Filament | | Plate Volts |
|-------------------------------|----------|----------|-------|-------------|
| | | Volts | Amps. | |
| 0.87 | 205D | 4.5 | 1.6 | 350 |
| 0.87 | 205E | 4.5 | 1.6 | 350 |
| 1.6 | 271A | 5.0 | 2.0 | 350 |
| 4 | 268A | 5.0 | 3.25 | 750 |
| 4.5 | 336A | 10.0 | 0.64 | 250 |
| 4.5 | 349A | 6.3 | 1.0 | 250 |
| 6.2 | 252A | 5.0 | 2.0 | 450 |
| 7.5 | 300A | 5.0 | 1.2 | 350 |
| 9 | 306A | 2.75 | 2.0 | 300 |
| 9 | 307A | 5.5 | 1.0 | 300 |
| 20 | 276A | 10.0 | 3.0 | 1250 |
| 22 | 242C | 10.0 | 3.25 | 1250 |
| 40 | 284D | 10.0 | 3.25 | 1250 |
| 50 | 212E | 14.0 | 6.0 | 1500 |
| 50 | 241B | 14.0 | 6.0 | 1500 |
| 50 | 308B | 14.0 | 6.0 | 1500 |
| 90 | 270A | 10.0 | 9.75 | 2500 |
| 100 | 363A | 10.0 | 10.0 | 2000 |
| 130 | 251A | 10.0 | 16.0 | 2500 |
| 155 | 279A | 10.0 | 21.0 | 2500 |
| 285 | 228A | 21.5 | 41.0 | 6000 |
| 650 | 343A | 21.5 | 57.5 | 12500 |
| 650 | 343AA | 21.5 | 57.5 | 12500 |
| *760 | *220C | 21.5 | 41.0 | 12500 |

Class B—Audio Frequency Amplifier or Modulator—2-Tube Circuit

| Typical Output Power Watts | Code No. | Filament | | Plate Volts |
|-------------------------------|----------|----------|-------|-------------|
| | | Volts | Amps. | |
| 50 | 268A | 5.0 | 3.25 | 750 |
| 140 | 284D | 10.0 | 3.25 | 1250 |
| 175 | 276A | 10.0 | 3.0 | 1250 |
| 200 | 242C | 10.0 | 3.25 | 1250 |
| 200 | 356A | 5.0 | 5.0 | 1500 |
| 200 | 364A | 5.0 | 5.0 | 1500 |
| 250 | 295A | 10.0 | 3.25 | 1250 |
| 370 | 331A | 10.0 | 3.25 | 1500 |
| 575 | 308B | 14.0 | 6.0 | 1750 |
| 650 | 212E | 14.0 | 6.0 | 2000 |
| 650 | 241B | 14.0 | 6.0 | 2000 |
| 1000 | 270A | 10.0 | 9.75 | 2500 |
| 1625 | 357A | 10.0 | 10.0 | 4000 |
| 1650 | 363A | 10.0 | 10.0 | 4000 |
| 2000 | 251A | 10.0 | 16.0 | 3000 |
| 2200 | 279A | 10.0 | 21.0 | 2500 |
| 3750 | 228A | 21.5 | 41.0 | 5000 |
| *14000 | *220C | 21.5 | 41.0 | 10000 |
| 17500 | 240B | 21.5 | 41.0 | 12000 |
| 18000 | 343A | 21.5 | 57.5 | 12500 |
| 18000 | 343AA | 21.5 | 57.5 | 12500 |
| 25000 | 236A | 21.5 | 41.0 | 17500 |
| 30000 | 340A | 20.0 | 72.0 | 15000 |
| 30000 | 342A | 20.0 | 67.0 | 15000 |
| 140000 | 298A | 27.0 | 225.0 | 15000 |

Grid Bias Modulator

| Peak Power Output | Code No. | Filament Volts | Filament Amps. | Plate Volts |
|-------------------|----------|----------------|----------------|-------------|
| 200 | 212E | 14.0 | 6.0 | 3000 |
| 200 | 241B | 14.0 | 6.0 | 3000 |
| 250 | 270A | 10.0 | 9.75 | 3000 |

*Revised ratings in this classification sheet supercede those in data sheet.

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CHARACTERISTIC DATE

CHARACTERISTIC DATA

| Code | Name | Cathode | | Class of Operation | Normal Operating Conditions | | | | | | | | | | Average Characteristic Class A Operation | | | | | | | | | | Mechanical Dimensions | | Socket | Tube Symbol and Base Type | Remarks | Code No. |
|-------|--------|---------|-------|--------------------|-----------------------------|--------------------------|-------------------------|-------------------|--------------------|---------------------------|--------------------------|-----------------------|-------------------|--------------------|--|--------------------------|-----------------------|-------------------|--------------------|---------------------------|--------------------------|-----------------------|-------------------|--------------------|---------------------------|--------------------------|--------|---------------------------|---------|----------|
| | | Type | Plate | | Plate Current (mA) | Control-Grid Voltage (V) | Screen-Grid Voltage (V) | Plate Voltage (V) | Plate Current (mA) | Control-Grid Current (mA) | Screen-Grid Current (mA) | Plate Dissipation (W) | Plate Voltage (V) | Plate Current (mA) | Control-Grid Current (mA) | Screen-Grid Current (mA) | Plate Dissipation (W) | Plate Voltage (V) | Plate Current (mA) | Control-Grid Current (mA) | Screen-Grid Current (mA) | Plate Dissipation (W) | Plate Voltage (V) | Plate Current (mA) | Control-Grid Current (mA) | Screen-Grid Current (mA) | | | | |
| 101D | Triode | O.F. | 4.5 | 1.0 | A Audio | 130 | 0.0075 | -9 | | | 130 | 0.0077 | 6.2 | 5800 | 1070 | 415 | 11% | 100L | 1 | | | 101D | | | | | | | | |
| 101F | " | O.F. | 4.15 | 0.50 | A " | 130 | 0.0068 | -8 | | | 130 | 0.0068 | 6.5 | 5800 | 1120 | 415 | 11% | 100L | 1 | | | 101F | | | | | | | | |
| 101FA | " | O.F. | 4.15 | 0.50 | A " | 130 | 0.0144 | -8 | | | 130 | 0.0144 | 8.9 | 6100 | 1460 | 415 | 11% | 100L | 1 | | | 101FA | | | | | | | | |
| 102D | " | O.F. | 2.1 | 1.0 | A " | 130 | 0.0086 | -1.5 | | | 130 | 0.0086 | 29.6 | 58000 | 510 | 415 | 14% | 100L | 1 | | | 102D | | | | | | | | |
| 102F | " | O.F. | 2.1 | 0.50 | A " | 130 | 0.0086 | -1.5 | | | 130 | 0.0086 | 31 | 50000 | 620 | 415 | 14% | 100L | 1 | | | 102F | | | | | | | | |
| 104D | " | O.F. | 4.5 | 1.0 | A " | 130 | 0.025 | -20 | | | 130 | 0.025 | 2.5 | 2100 | 1180 | 415 | 14% | 100L | 1 | | | 104D | | | | | | | | |
| 205D | " | O.F. | 4.5 | 1.6 | A " | 350 | 0.029 | -22.5 | | | 350 | 0.029 | 7.3 | 3800 | 1940 | 415 | 2% | 100L | 7 | | | 205D | | | | | | | | |
| 205E | " | O.F. | 4.5 | 1.6 | A " | 350 | 0.029 | -22.5 | | | 350 | 0.029 | 7.3 | 3800 | 1940 | 415 | 2% | 100L | 7 | | | 205E | | | | | | | | |
| 212E | " | T.F. | 14.0 | 6.0 | B R.F. Ampl. | 2000 | 0.280 | -120 | | | 2000 | 0.165 | 16 | 1800 | 8500 | 13% | 3% | 147A | 4 | | | 212E | | | | | | | | |
| 215A | " | O.F. | 1.0 | 0.25 | A Audio | 60 | 0.002 | -3 | | | 60 | 0.002 | 5.7 | 13500 | 420 | 21% | 11% | 125B | 1 | | | 215A | | | | | | | | |
| 220C | " | W.F. | 21.5 | 41.0 | B R.F. Ampl. | 10000 | 0.75 | -250 | | | 10000 | 0.64 | 40 | 8000 | 5000 | 20% | 6% | 132A | 50 | | | 220C | | | | | | | | |
| 228A | " | W.F. | 21.5 | 41.0 | B " | 5000 | 0.65 | -35 | | | 5000 | 0.9 | 16 | 2500 | 6500 | 18 | 3% | 133A | 48 | | | 228A | | | | | | | | |
| 231D | " | O.F. | 3.1 | 0.060 | A Audio | 80 | 0.0021 | -3 | | | 80 | 0.0021 | 8.4 | 16000 | 510 | 4 | 1% | 143B | 24 | | | 231D | | | | | | | | |
| 232B | " | W.F. | 20.0 | 60.0 | B R.F. Ampl. | 17500 | 1.5 | -30 | | | 15000 | 1.35 | 40 | 6150 | 6500 | 21% | 6 | 132A | 50 | | | 232B | | | | | | | | |
| 236A | " | W.F. | 21.5 | 41.0 | B " | 15000 | 1.0 | -37.5 | | | 15000 | 1.0 | 40 | 6200 | 6450 | 30 | 3% | 133A | 50 | | | 236A | | | | | | | | |
| 240B | " | W.F. | 21.5 | 41.0 | B " | 12000 | 1.0 | -250 | | | 10000 | 0.64 | 40 | 8000 | 5000 | 20% | 6 | 143B | 50 | | | 240B | | | | | | | | |
| 241B | " | T.F. | 14.0 | 6.0 | B " | 2000 | 0.280 | -120 | | | 2000 | 0.165 | 16 | 1800 | 8500 | 14% | 3% | 147A | 5 | | | 241B | | | | | | | | |
| 242C | " | T.F. | 10.0 | 3.25 | B " | 1250 | 0.20 | -80 | | | 1250 | 0.088 | 12.5 | 3500 | 3800 | 7% | 2% | 145A | 3 | | | 242C | | | | | | | | |
| 244A | " | H | 2.0 | 1.6 | A Audio | 135 | 0.0085 | -6 | | | 135 | 0.0085 | 10.1 | 10000 | 710 | 4% | 1% | 141A | 26 | | | 244A | | | | | | | | |
| 244A | " | H | 2.0 | 1.6 | A R.F. Ampl. | 135 | 0.0088 | -1.5 | | | 135 | 0.0088 | 13.5 | 18000 | 51% | 1% | 141A | 27 | | | 244A | | | | | | | | | |
| 244A | " | O.F. | 3.3 | 0.100 | A " | 135 | 0.0015 | -1.5 | | | 135 | 0.0015 | 28.5 | 725000 | 340 | 1% | 1% | 143B | 10 | | | 244A | | | | | | | | |
| 244A | " | H | 2.0 | 1.6 | A Audio | 135 | 0.0082 | -4.5 | | | 135 | 0.0082 | 15.2 | 16000 | 340 | 4% | 1% | 141A | 28.4 | | | 244A | | | | | | | | |
| 244A | " | T.F. | 10.0 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 21% | 6 | 142A | 50 | | | 244A | | | | | | | | |
| 244B | " | O.F. | 5.0 | 2.0 | A Audio | 450 | 0.080 | -60 | | | 450 | 0.080 | 5.1 | 1500 | 3150 | 8% | 2% | 143B | 2 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 3 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 3 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 7.3 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 3.1 | 0.080 | A Audio | 90 | 0.0021 | -3 | | | 90 | 0.0021 | 8.4 | 16300 | 510 | 4% | 1% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 10.0 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 5.0 | 2.0 | A Audio | 450 | 0.080 | -60 | | | 450 | 0.080 | 5.1 | 1500 | 3150 | 8% | 2% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 7.3 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 3.1 | 0.080 | A Audio | 90 | 0.0021 | -3 | | | 90 | 0.0021 | 8.4 | 16300 | 510 | 4% | 1% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 10.0 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 5.0 | 2.0 | A Audio | 450 | 0.080 | -60 | | | 450 | 0.080 | 5.1 | 1500 | 3150 | 8% | 2% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 7.3 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 3.1 | 0.080 | A Audio | 90 | 0.0021 | -3 | | | 90 | 0.0021 | 8.4 | 16300 | 510 | 4% | 1% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 10.0 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 5.0 | 2.0 | A Audio | 450 | 0.080 | -60 | | | 450 | 0.080 | 5.1 | 1500 | 3150 | 8% | 2% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 7.3 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 3.1 | 0.080 | A Audio | 90 | 0.0021 | -3 | | | 90 | 0.0021 | 8.4 | 16300 | 510 | 4% | 1% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 10.0 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 5.0 | 2.0 | A Audio | 450 | 0.080 | -60 | | | 450 | 0.080 | 5.1 | 1500 | 3150 | 8% | 2% | 143B | 13 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A R.F. Ampl. | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | H | 2.0 | 1.6 | A Audio | 180 | 0.0055 | -1.5 | | | 180 | 0.0055 | 5.50 | 40000 | 1380 | 5% | 1% | 141A | 27 | | | 244B | | | | | | | | |
| 244B | " | T.F. | 7.3 | 3.25 | B R.F. Ampl. | 750 | 0.040 | -70 | | | 750 | 0.040 | 10.5 | 2750 | 3000 | 7% | 2% | 143B | 27 | | | 244B | | | | | | | | |
| 244B | " | O.F. | 3.1 | 0.080 | A Audio | 90 | 0.0021 | -3 | | | | | | | | | | | | | | | | | | | | | | |

CHARACTERISTIC DATE

CHARACTERISTIC DATA

| Code No. | Name | Cathode Htr. or Fil. | | Class Operation | Plate Tail Voltage | Plate Current Amperes | Control Voltage | Screen Potential Voltage | Max. R.F. Current Amperes | Power Watts | Max. Plate Dissipation Watts | Average Characteristics—Class A Operation | | | | Trans-conductance Micro-mhos | Maximum Inches Dia. | Socket | Tube Base—Standard | Remarks | Code No. |
|----------|----------------|----------------------|-------|------------------------|--------------------|-----------------------|-----------------|--------------------------|---------------------------|-------------|------------------------------|---|-----------------|--------------------------|-----------------------|------------------------------|---------------------|--------|--|--------------|----------|
| | | Type | Volts | | | | | | | | | Plate Current Amperes | Control Voltage | Screen Potential Voltage | Plate Current Amperes | | | | | | |
| X 282A | Duodec. Triode | H | 10.0 | A Audio (Triode Sect.) | 135 | 0.0221 | -6 | | 0.041 | 0.040 | 135 | 0.0021 | 13.3 | 20000 | 665 | 5 1/2 | 14B | 8 | Each Diode, Es=9V, Is=0.0022 Amp. | 282A | |
| X 283A | Triode | H | 10.0 | A Audio (Triode Sect.) | 180 | 0.0145 | -18 | 180 | 1.2 | 1.2 | 180 | 0.0145 | 105 | 100000 | 1050 | 4 1/4 | 14B | 33 | | 283A | |
| X 284A | Triode | H | 10.0 | A Audio (Triode Sect.) | 180 | 0.0145 | -18 | 180 | 1.2 | 1.2 | 180 | 0.0145 | 105 | 100000 | 1050 | 4 1/4 | 14A | 28A | | 284A | |
| 285A | Triode | H | 10.0 | A Audio (Triode Sect.) | 1250 | 0.105 | -45 | | 42.5 | 42.5 | 1250 | 0.080 | 25 | 6000 | 4200 | 7 1/8 | 14A | 3 | | 285A | |
| 286A | Triode | H | 10.0 | A Audio (Triode Sect.) | 1300 | 0.105 | -50 | | 6 | 6 | 1300 | 0.080 | 3.2 | 140 | 22000 | 51 1/2 | 14A | 58 | Water Cooled For either Bayonet or Push Type Socket. | 286A | |
| 300B | Triode | H | 5.0 | A Audio (Triode Sect.) | 300 | 0.060 | -61 | | 6 | 6 | 300 | 0.060 | 3.4 | 5400 | 5400 | 6 1/2 | 14B | 31 | | 300B | |
| X 303A | Duodec. Triode | H | 2.0 | A Audio (Triode Sect.) | 135 | 0.0022 | -6 | | 0.040 | 0.040 | 135 | 0.0022 | 13.5 | 21000 | 640 | 5 1/2 | 14B | 4 | | 303A | |
| 304B | Triode | T-F | 7.5 | B R.F. Ampl. | 1250 | 0.060 | -110 | 200 | 25 | 25 | 1250 | 0.040 | 11 | 2000 | 5500 | 6 1/8 | 14B | 19 | | 304B | |
| 305A | Triode | T-F | 10.0 | B R.F. Ampl. | 1000 | 0.050 | -135 | | 30 | 30 | 1000 | 0.050 | 60 | 4000 | 1400 | 7 1/8 | 14B | 30 | | 305A | |
| 306A | Triode | O-F | 2.0 | C R.F. Ampl. (7M) | 300 | 0.058 | -50 (Approx.) | Res. 8000—180 | 7 | 7 | 15 | 0.043 | 250 | 63000 | 4050 | 6 1/8 | 14A | 30 | Max. Screen Dissipation 6 Watts | 306A | |
| 307A | Triode | O-F | 5.5 | C R.F. Ampl. (5GN) | 500 | 0.040 | -35 (Approx.) | Res. 14000—200 | 6 | 6 | 15 | 0.050 | 120 | 30000 | 4000 | 6 1/8 | 14A | 35 | Max. Screen Dissipation 6 Watts | 307A | |
| 308B | Triode | T-F | 14.0 | B R.F. Ampl. | 1750 | 0.215 | -220 | | 125 | 125 | 250 | 0.167 | 8 | 1070 | 7500 | 13 1/2 | 14A | 4 | | 308B | |
| 309A | Triode | H | 10.0 | A Audio or R.F. Ampl. | 135 | 0.048 | -15 | 75 | 0.25 | 0.25 | 135 | 0.048 | 1100 | 100000 | 1100 | 4 1/2 | 14A | 28A | Variable Mu | 309A | |
| 310B | Triode | H | 10.0 | A Audio or R.F. Ampl. | 125 | 0.045 | -3 | 125 | 0.25 | 0.25 | 125 | 0.045 | 1250 | 75000 | 1800 | 4 1/2 | 14B | 27 | | 310B | |
| 311A | Triode | H | 10.0 | A Audio or R.F. Ampl. | 135 | 0.050 | -15 | 135 | 2 | 2 | 135 | 0.050 | 122 | 43000 | 2800 | 4 1/2 | 14A | 28A | Low Hum | 311A | |
| 312A | Triode | T-F | 10.0 | C R.F. Ampl. (5GN) | 1250 | 0.050 | -50 (Approx.) | Res. 22000—300 | 23 | 23 | 50 | 0.050 | 1100 | 28000 | 3800 | 7 1/4 | 14B | 38 | | 312A | |
| 314A | Triode | T-F | 2.0 | B R.F. (7M) | 400 | 0.080 | Adjust (-17) | | 6.5 | 6.5 | 30 | 0.087 | 6.5 | 2700 | 2400 | 2 1/2 | 14B | 52 | | 314A | |
| 320A | Triode | W-F | 10.0 | C R.F. Ampl. (5GN) | 19000 | 12.5 | -50 (Approx.) | Res. 35000—400 | 75000 | 150000 | 19000 | 8.0 | 30 | 365 | 31100 | 94 | 10 1/2 | 14B | 51 | Water Cooled | 320A |
| 322A | Triode | T-F | 10.0 | C R.F. Ampl. (5GN) | 2000 | 0.080 | -85 (Approx.) | Res. (Approx.) | 53 | 53 | 2000 | 0.0625 | 1400 | 55000 | 4000 | 9 1/2 | 14B | 53 | | 322A | |
| 328A | Triode | H | 7.5 | A Audio or R.F. Ampl. | 135 | 0.0555 | -3 | 135 | 0.25 | 0.25 | 135 | 0.0555 | 1350 | 75000 | 1800 | 4 1/2 | 14B | 37 | | 328A | |
| 331A | Triode | T-F | 10.0 | B R.F. Ampl. | 135 | 0.055 | -15 | 135 | 2 | 2 | 125 | 0.050 | 122 | 43000 | 2800 | 4 1/2 | 14A | 28A | | 331A | |
| 332A | Triode | T-F | 10.0 | B R.F. Ampl. | 2000 | 0.040 | -20 | 600 | 5 | 5 | 2000 | 0.0525 | 1400 | 55000 | 4000 | 8 1/2 | 14A | 39 | | 332A | |
| 333A | Triode | T-F | 10.0 | B R.F. Ampl. | 230 | 0.030 | -14 | 230 | 3.5 | 3.5 | 230 | 0.030 | 326 | 38000 | 4300 | 4 1/2 | 14B | 33 | Variable Mu | 333A | |
| 337A | Triode | H | 10.0 | A Audio or R.F. Ampl. | 135 | 0.0683 | -3 | 135 | 3.5 | 3.5 | 135 | 0.068 | 1070 | 65000 | 1450 | 4 1/2 | 14B | 35A | Water Cooled | 337A | |
| 339A | Triode | O-F | 5.0 | B R.F. Ampl. | 400 | 0.120 | -90 | 400 | 30 | 30 | 400 | 0.073 | 96 | 20000 | 4800 | 7 1/8 | 14A | 39 | | 339A | |
| 340A | Triode | W-F | 20.0 | B R.F. Ampl. | 18000 | 1.1 | -450 | | 9000 | 25000 | 15000 | 1.3 | 40 | 5860 | 6520 | 6 1/2 | 14A | 50 | Water Cooled | 340A | |
| 342A | Triode | W-F | 20.0 | B R.F. Ampl. | 18000 | 1.4 | -450 | | 8500 | 25000 | 15000 | 1.3 | 40 | 5860 | 6520 | 6 1/2 | 14A | 50 | Water Cooled | 342A | |
| 343A | Triode | W-F | 21.5 | B R.F. Ampl. | 15000 | 0.70 | -350 | | 3500 | 10000 | 10000 | 0.64 | 40 | 5920 | 6750 | 20 1/8 | 14A | 50 | Water Cooled | 343A | |
| 343AA | Triode | W-F | 21.5 | B R.F. Ampl. | 12500 | 0.66 | -300 | | 2750 | 5000 | 10000 | 0.50 | 40 | 5920 | 6750 | 21 1/8 | 14A | 50 | Air Cooled | 343AA | |
| 347A | Triode | H | 6.3 | A Audio or R.F. Ampl. | 135 | 0.0028 | -4.5 | 135 | 0.035 | 0.035 | 135 | 0.0028 | 15.7 | 17500 | 800 | 4 1/4 | 14A | 42 | | 347A | |
| 348A | Triode | H | 6.3 | A Audio or R.F. Ampl. | 135 | 0.0065 | -3 | 135 | 0.25 | 0.25 | 135 | 0.0065 | 1200 | 65000 | 1800 | 4 1/2 | 14A | 43 | Low Hum | 348A | |
| 349A | Triode | H | 6.3 | A Audio or R.F. Ampl. | 250 | 0.085 | -14 | 250 | 3.5 | 3.5 | 250 | 0.085 | 336 | 80000 | 4200 | 4 1/2 | 14A | 44 | | 349A | |
| 350A | Triode | H | 6.3 | A Audio or R.F. Ampl. | 250 | 0.085 | -20 | 250 | 24 | 24 | 250 | 0.085 | 430 | 67000 | 6400 | 5 1/8 | 14A | 41 | Max. Screen Dissipation 4 Watts | 350A | |
| 350B | Triode | H | 6.3 | A Audio (Triode Sect.) | 400 | 0.085 | -20 | 250 | 20 | 20 | 400 | 0.085 | 13.3 | 25000 | 6250 | 5 1/8 | 14A | 36 | Max. Screen Dissipation 4 Watts | 350B | |
| 352A | Duodec. Triode | H | 10.0 | A Audio (Triode Sect.) | 135 | 0.0021 | -6 | | 0.042 | 0.042 | 135 | 0.0021 | 13.3 | 20500 | 650 | 4 1/4 | 14B | 31 | Each Diode, Es=9V, Is=0.0021 Amp. | 352A | |
| 356A | Triode | T-F | 5.0 | C R.F. Ampl. (7M) | 1250 | 0.100 | -100 | | 85 | 85 | 50 | 0.100 | 50 | 13000 | 3800 | 5 | 152A | 21 | | 356A | |
| 357A | Triode | T-F | 10.0 | C R.F. Ampl. (7M) | 3000 | 0.240 | -270 | | 590 | 350 | 1000 | 0.100 | 50 | 3300 | 900 | 5 1/8 | 153A | 48 | | 357A | |
| 361A | Triode | F | 1.4 | A Audio | 45 | 0.0004 | | 35 | 0.009 | 0.009 | 35 | 0.0004 | 160 | 64000 | 250 | 1 1/8 | None | 62 | Audiotone | 361A | |
| 362A | Triode | F | 1.4 | A Audio | 45 | 0.00126 | | 45 | 0.009 | 0.009 | 45 | 0.00126 | 160 | 28000 | 570 | 1 1/8 | None | 62 | Audiotone | 362A | |
| 363A | Triode | T-F | 10.0 | C R.F. Ampl. (7M) | 2000 | 0.150 | -250 | 750 | 1000 | 350 | 700 | 0.00125 | 300 | 29000 | 12000 | 8 | SpI. Nrg. | 60 | Unmodulated—For Frequency Mod. Use | 363A | |
| 364A | Triode | T-F | 5.0 | C R.F. Ampl. (7M) | 1250 | 0.100 | -100 | 200 | 8 | 8 | 50 | 0.100 | 50 | 11000 | 4300 | 3 3/8 | AS5 | 61 | | 364A | |
| 366A | Triode | H | 6.3 | A R.F. Ampl. | 200 | 0.016 | -2 | 200 | 6.5 | 6.5 | 200 | 0.016 | 2790 | 27000 | 10300 | 3 | 14 | 64 | Not in production | 366A | |
| 367A | Triode | H | 1.6 | B A R.F. | 400 | 0.075 | -20 | 250 | 20 | 20 | 400 | 0.053 | 400 | 64000 | 6250 | 2 1/8 | 14A | 63 | | 367A | |
| 368A | Triode | T-F | 10.0 | C R.F. Ampl. (7M) | 3500 | 1.40 | -300 | | 20 | 20 | 3000 | 0.080 | 25 | 4500 | 2000 | 2 1/2 | 153A | 64 | Below 1000 MC. Frequency Modulated | 368A | |
| 370A | Triode | F | 32.0 | C R.F. Ampl. (7M) | 3500 | 1.40 | -300 | | 20 | 20 | 1750 | 0.100 | 25 | 4500 | 2000 | 2 1/2 | 153A | 64 | | 370A | |

KEY TO DESIGNATIONS

Con.—Argon Gas
Fil.—Filament Type Cathode
Elem.—Element Type Cathode
Gas Filled
Ht.—Heater Type Cathode

Mercur. Mod.—Modulator
Occ.—Oscillator
P.M.—Pilot Modulated
R.—Half Wave
Sect.—Section

OC—Oscillator
PM—Pilot Modulated
R.—Half Wave
Sect.—Section

OC—Oscillator
PM—Pilot Modulated
R.—Half Wave
Sect.—Section

OC—Oscillator
PM—Pilot Modulated
R.—Half Wave
Sect.—Section

OC—Oscillator
PM—Pilot Modulated
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Sect.—Section

OC—Oscillator
PM—Pilot Modulated
R.—Half Wave
Sect.—Section

OC—Oscillator
PM—Pilot Modulated
R.—Half Wave
Sect.—Section

Western Electric Company

CHARACTERISTIC DATE

RECTIFIERS

| Code No. | Cathode-tion | Cooling | Cathode | | | Maximum Dimensions | | Max. Peak Inverse Voltage Volts | Max. Peak Current Amperes | Maximum Average Current | | Maximum Anode Current Amperes | Maximum Anode Current Quadrature Operation | Maximum Anode Current per Anode (660 Volts) | Maximum Anode Current (5000 Volts) | Maximum Anode Current (40 Milliamperes) | Maximum Temperature Range, Degrees C. | Socket | Tube Size and Base Connections | Code No. |
|----------|--------------|---------|---------|----------|---------|--------------------|----------|---------------------------------|---------------------------|-------------------------|----------------------|-------------------------------|--|---|--|---|---------------------------------------|--------|--------------------------------|----------|
| | | | Type | Volt-sec | Amperes | Height | Diameter | | | In Phase Operation | Quadrature Operation | | | | | | | | | |
| 214E | Rh-V | Air | W-F | 10.0 | 3.25 | 7 1/4 | 2 1/4 | 3,500 | 0.800 | 2.5 | — | 0.64 | — | 5 | 15 | 0.50 | 145A | 6 | 214E | |
| 222A | Rh-V | Water | W-F | 21.5 | 41 | 18 | 3 3/4 | 25,000 | 5 | 1.0 | — | 0.25 | — | 5 | 15 | 0.50 | 132A 133A 132A 132A | 8 | 222A | |
| 233B | Rh-V | " | W-F | 21.5 | 41 | 20 1/4 | 4 1/4 | 50,000 | 5 | — | — | — | — | — | — | — | 132A 132A 132A 132A | 8 | 233B | |
| 237A | Rh-V | " | W-F | 20.0 | 61 | 23 1/4 | 4 1/4 | 50,000 | 8 | — | — | — | — | — | — | — | 132A 132A 132A 132A | 8 | 237A | |
| 249B | Rh-Hg | Air | O-F | 2.5 | 7.5 | 7 1/4 | 2 1/4 | 7,500 | — | — | — | — | — | — | — | — | 143B 143B 138B 139A | 15 | 249B | |
| 253A | Rh-Hg | " | O-F | 2.5 | 3.0 | 6 1/4 | 2 1/4 | 3,500 | — | — | — | — | — | — | — | — | 139A 139A | 8 | 253A | |
| 255B | Rh-Hg | " | O-F | 5.0 | 19 | 19 1/4 | 5 1/4 | 20,000 | — | 8 | 16 | 2 | 4 | 30 | 15 | 15-30 | Spl. Mtg. | 8 | 255B | |
| 258B | Rh-Hg | " | O-F | 2.5 | 7.5 | 7 1/4 | 2 1/4 | 7,500 | — | 2.5 | — | 0.64 | — | 5 | 5 | 0-50 | 138B 139A | 8 | 258B | |
| 263A | Rh-Ar | " | O-F | 2.5 | 15 | 10 1/4 | 3 1/4 | 100 | — | 12.5 | — | 3.2 | — | 15 | -20 to +60 | 290A Plug & 139A | 9 | 263A | | |
| 263B | Rh-Hg | " | O-F | 2.5 | 15 | 10 1/4 | 3 1/4 | 100 | — | 20 | — | 5 | — | 15 | 10-50 | 290A Plug & 139A | 9 | 263B | | |
| 266B | Rh-Hg | " | O-F | 5.0 | 42 | 21 1/4 | 7 | 20,000 | — | 20 | 40 | 5 | 10 | 60 | { 15-30 (30-40 Forward A.C.) 10-50 | Spl. Mtg. 138B 139A | 57 | 266B | | |
| 267B | Rh-Hg | " | O-F | 5.0 | 6.75 | 8 1/4 | 2 1/4 | 7,500 | — | 4 | 8 | 1 | 2 | 15 | 10-50 | 138B 139A | 8 | 267B | | |
| 271A | Rh-V | " | O-F | 5.0 | 2.0 | 4 1/4 | 2 1/4 | 1,500 | 0.8 | — | — | — | — | — | — | — | 143B | 11 | 271A | |
| 271B | Rh-V | " | O-F | 5.0 | 2.0 | 4 1/4 | 2 1/4 | 1,500 | 0.8 | — | — | — | — | — | — | — | Oxal | 32 | 271B | |
| 288A | Rh-Ar | " | W-F | 2.2 | 18 | 6 1/4 | 3 1/4 | 300 | — | 24 | — | 6.0 | — | — | — | — | Magnol | 56 | 288A | |
| 289A | Rh-Ar | " | W-F | 5.0 | 3.0 | 6 1/4 | 3 1/4 | 375 | — | 24 | — | 6.0 | — | 5 | — | — | Magnol | 56 | 289A | |
| 301A | Rh-Hg | " | W-F | 5.0 | 3.0 | 6 1/4 | 3 1/4 | 375 | — | 24 | — | 6.0 | — | 5 | — | — | Magnol | 11 | 301A | |
| 314A | Rh-Hg | " | O-F | 5.0 | 5.0 | 6 1/4 | 2 1/4 | 300 | — | 5 per Anode | — | 1.25 per Anode | — | 5 | 0-50 | 143B | 11A | 314A | | |
| 315A | Rh-Hg | " | O-F | 5.0 | 10.0 | 12 1/4 | 3 1/4 | 12,500 | — | 4 | 8 | 1 | 2 | 15 | 10-40 | 138B | 8 | 315A | | |
| 319A | Rh-Hg | " | O-F | 5.0 | 6.75 | 8 1/4 | 2 1/4 | 7,500 | — | 4 | 8 | 1 | 2 | 15 | 10-50 | 148A | 21 | 319A | | |
| 321A | Rh-Hg | " | O-F | 5.0 | 10.0 | 11 1/4 | 3 1/4 | 12,500 | — | 4 | 8 | 1 | 2 | 15 | 10-40 | 148A | 21 | 321A | | |
| 324A | Rh-V | " | W-F | 5.0 | 3.0 | 5 1/4 | 1 1/4 | 12,000 | 0.020 | — | — | — | — | — | 10-50 | 143B | 18 | 324A | | |
| 327A | Rh-Ar | " | W-F | 2.0 | 12 | 4 1/4 | 2 1/4 | 275 | — | 8 | — | 2 | — | — | — | Gen. Elec. 275708 | 56 | 327A | | |
| 345A | Rh-V | " | H | 6.3 | 1.0 | 4 1/4 | 1 1/4 | 1,000 | 0.500 | — | — | — | — | — | — | Max. Rectified Current—100 Milliamperes | 141A | 40 | 345A | |
| 351A | Rh-V | " | H | 6.3 | 1.0 | 4 1/4 | 1 1/4 | 1,000 | 0.500 | — | — | — | — | — | — | Max. Rectified Current—100 Milliamperes | Oxal | 47 | 351A | |

KEY TO DESIGNATIONS

- A—Anode Gas
- Ar—Argon Gas
- Ca—Calcium
- El—Element
- F—Flameless Type Cathode
- H—Heater Type Cathode
- Hg—Mercury
- Hd—Heater Type Cathode
- Hg—Mercury
- Mod—Modulator
- U—Uddle-Cooled
- W—Water
- PM—Pulse Modulated
- Full—Full Wave
- R—Half Wave
- Sec.—Section
- SIGM—Suppressor Grid Modulated
- V—High Vacuum
- X—Rated "A-M-A Only"

CHARACTERISTIC DATE

| Code No. | Gas | Cathode | | Maximum Dimensions, | | Nominal Control-Cap Voltage, D-C | Nominal Control-Cap Voltage, D-C | Nominal Control-Cap Voltage, D-C | Minimum Main-Cap Voltage, D-C | Nominal Main-Cap Voltage, D-C | Maximum Transfer Ratio at 100 Volts Microamperes | Direct Forward Current Rating For Life of Hours as an Indicator | | | Peak Plate Current | Nominal Discharge Time | | Socket | Tube Symbol and Base Connections | Code No. |
|----------|-------|---------|-------|---------------------|--------|----------------------------------|----------------------------------|----------------------------------|-------------------------------|-------------------------------|--|---|------------|-----------|--------------------|------------------------|-----------|--------|----------------------------------|----------|
| | | Type | Volts | Amps. | Height | | | | | | | Diameter | 100 Hrs. | 1000 Hrs. | | 5000 Hrs. | Main Cap. | | | |
| 286A | Ar | H | 2.3 | 1.7 | 4 1/2 | 14% | 0.075 | 0.075 | 0.075 | — | 325 | —20 to +50 | — | — | 1000 | 141A | 141A | 26A | 286A | |
| 289A | Ar | O.F. | 2.2 | 0.58 | 4 1/2 | 25% | 0.120 | 0.020 | 0.300 | 0.5 | 275 | -20 to +50 | — | 100 | 141A | 141A | 2A | 289A | | |
| 277A | Ar | H | 3.0 | 2.8 | 6 1/4 | 25% | 0.300 | 0.300 | 0.300 | — | 350 | -20 to +50 | — | 100 | 141A | 141A | 26A | 277A | | |
| 287A | Hg | O.F. | 2.5 | 7.0 | 6 3/8 | 2% | 2.5 | 0.64 | 0.64 | 5 | 2500 | — | +30 to +80 | 1000 | 141A | 141A | 29 | 287A | | |
| 297A | Ar | O.F. | 1.75 | 0.350 | 4 | 13% | 0.060 | 1.5 | 0.010 | 5 | 500 | -20 to +50 | +30 to +80 | 1000 | 143B | 143B | 2A | 297A | | |
| 323A | Ar/Hg | O.F. | 2.5 | 7.0 | 6 3/8 | 2% | 6.0 | 0.060 | 1.5 | 5 | 500 | — | -20 to +90 | 1000 | 141A | 141A | 29 | 323A | | |
| 338A | Ar | H | 10.0 | 0.5 | 4 1/2 | 1% | 0.600 | 0.100 | 0.100 | 5 | 325 | -20 to +50 | — | 1000 | 141A | 141A | 26A | 338A | | |
| 354A | Hg | O.F. | 2.5 | 16.0 | 9 1/2 | 3% | 16.0 | 4.0 | 4.0 | 15 | 1500 | — | +30 to +70 | 1000 | 143B | 143B | 16 | 354A | | |
| 355A | Ar/Hg | O.F. | 2.5 | 16.0 | 9 1/2 | 3% | 16.0 | 4.0 | 4.0 | 15 | 350 | — | -20 to +80 | 1000 | 141A | 141A | 16 | 355A | | |

THYRATRONS

COLD CATHODE TUBES

| Code No. | Classification | Maximum Dimensions, Inches | | Nominal Control-Cap Voltage, D-C | Nominal Control-Cap Voltage, D-C | Nominal Control-Cap Voltage, D-C | Minimum Main-Cap Voltage, D-C | Nominal Main-Cap Voltage, D-C | Maximum Transfer Ratio at 100 Volts Microamperes | Direct Forward Current Rating For Life of Hours as an Indicator | | | Peak Plate Current | Nominal Discharge Time | | Socket | Tube Symbol and Base Connections | Code No. | |
|----------|----------------|----------------------------|----------|----------------------------------|----------------------------------|----------------------------------|-------------------------------|-------------------------------|--|---|-----------|-----------|--------------------|------------------------|--------------|-----------|----------------------------------|----------|------|
| | | Height | Diameter | | | | | | | 100 Hrs. | 1000 Hrs. | 5000 Hrs. | | Main Cap. | Control Cap. | | | | |
| 313C | 3 EL-G | 3 1/2 | 1 3/8 | 70 | 60 | 60 | 150 | 75 | 5 | 35 | 20 | 15 | 5 | 10 | 10 | 3 | 143B | 22 | 313C |
| 313CA | 3 EL-G | 3 1/2 | 1 3/8 | 72 | 60 | 60 | 200 | 75 | 5 | 18 | 10 | 8 | 5 | 10 | 3 | 143B | 22 | 313CA | |
| 313CB | 3 EL-G | 3 1/2 | 1 3/8 | 70 | 60 | 60 | 185 | 76 | 5 | 18 | 10 | 8 | 5 | 10 | 3 | 143B | 22 | 313CB | |
| 333A | 3 EL-G | 3 1/2 | 1 3/8 | 70 | 60 | 60 | 150 | 75 | 5 | 35 | 20 | 15 | 5 | 10 | 3 | Bx. Mtg. | 22A | 333A | |
| 346A | 3 EL-G | 3 1/2 | 1 3/8 | 70 | 60 | 60 | 225 | 80 | 5 | 35 | 20 | 15 | 5 | 10 | 3 | " | 23 | 346A | |
| 353A | 3 EL-G | 3 1/2 | 1 3/8 | 70 | 60 | 60 | 150 | 75 | 5 | 35 | 20 | 15 | 5 | 10 | 3 | " | 23 | 353A | |
| 358A | 2 EL-G | 1 1/2 | 3/4 | 75 | 60 | 60 | 180 | 80 | 100 | 18 | 10 | 7.5 | 1 | 10 | 3 | Clip Mtg. | 49 | 358A | |
| 359A | 3 EL-G | 2 1/2 | 3/4 | 70 | 60 | 60 | 180 | 80 | 100 | 18 | 10 | 7.5 | 1 | 10 | 3 | Clip Mtg. | 59 | 359A | |

CATHODE RAY TUBES

| Code No. | Application | Cathode | | Maximum Length Inches | Maximum Diameter Inches | Fluorescent Characteristic | Potential Ionization Efficiency, % | Potential Ionization Efficiency, % | Ratio E ₁ to E ₂ to Produce Focus | Potential on Modulating Electrode in Relation to Extinction Spot | Ratio E ₁ to E ₂ to Extinguish Spot | Potential on Outer Electrode for 1 Inch Diameter Spot | Socket | Tube Symbol and Base Connections | Code No. |
|----------|-------------|---------|-------|-----------------------|-------------------------|----------------------------|------------------------------------|------------------------------------|---|--|---|---|--------|----------------------------------|----------|
| | | Type | Volts | | | | | | | | | | | | |
| 325A-B-C | Note 1 | H | 5.0 | 0.55 | 16 1/2 | 4% | Note 1 | 1500 | 5000 | 0.2-0.3 | Variable | F ₁ /15 | 141A | 46 | 325A-B-C |
| 326A-B-C | Note 1 | H | 5.0 | 0.55 | 22 | 7 1/2 | Note 1 | 1500 | 5000 | 0.2-0.3 | Variable | F ₁ /25 | 141A | 46 | 326A-B-C |
| 330A-B-C | Note 1 | H | 5.0 | 1.65 | 23 1/2 | 7 1/2 | Note 1 | 1500 | 5000 | 0.2-0.3 | Variable | F ₁ /25 | 141A | 45 | 330A-B-C |

FLUORESCENT CHARACTERISTICS

Note 1: Application and Fluorescent Characteristics for Types A, B and C
 223A, 226A, 320A
 223B, 226B, 320B
 235C, 236C, 330C
 Visual Observation and Photography with Green-Sensitive Film
 Observation and Photography of Non-reverser and Low Frequency Phenomena
 Photography with Blue-Sensitive Film

Green, Medium Resistance
 Blue-Green, Long Persistence
 Blue, Highly Active

KEY TO DESIGNATIONS

A—Argon Gas E—Emission C—Gas Filled H—Heater Type Cathode M—Mercury Mod—Modulator O—Oxid Coated P—First Metallized V—High Vacuum X—Rated "A" M (amp)
 Can—Cathodes F—Filament Type Cathode H—Heater Type Cathode M—Mercury Mod—Modulator O—Oxid Coated P—First Metallized V—High Vacuum X—Rated "A" M (amp)
 S—Suppression Grid Metallized T—Thoriated Tungsten W—Tungsten

Western Electric Company

CHARACTERISTIC DATE

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Department 9715

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Bell & Commercial Electron Tubes
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| <u>Code Number</u> | <u>Price Category</u> | <u>Description & Material in Which Used</u> | <u>Competition</u> | <u>Code</u> |
|--------------------|-----------------------|---|--------------------|-------------|
| 101-D | S | Low power filamentary triode used in carrier and voice frequency equipment. (Merchandise control.) | | |
| 101-F | S | Low power filamentary triode used in carrier and voice frequency equipment. (Merchandise control.) | | |
| 101-FA | S | Similar to 101-F, except for modifications designed to obtain higher gain. (Merchandise control.) | | |
| 101-H | M.D. | Three element filament type tube. Used in submarine cable terminal equipment. Similar in characteristics to 101-D tube. | | |
| 101-L | S | Low power filamentary triode used in voice and carrier frequency equipment. (Merchandise control.) | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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Bell & Commercial Electron Tubes
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CHARACTERISTIC DATE

| <u>Code Number</u> | <u>Price Category</u> | <u>Description & Material in Which Used</u> | <u>Competition</u> | <u>Code</u> |
|--------------------|-----------------------|--|--------------------|-------------|
| 101-M | S | Low power filamentary triode used in voice frequency equipment where quick heating of the filament is required. (Merchandise control.) | | |
| 102-D | S | Filamentary voltage amplifier triode used in voice and carrier frequency equipment. (Merchandise control.) | Sylvania | 102-D |
| 102-F | S | Filamentary voltage amplifier triode used in voice and carrier frequency equipment. (Merchandise control.) | | |
| 102-H | M.D. | Three element filament type tube. Used in submarine cable terminal equipment. | | |
| 102-L | S | Filamentary voltage amplifier triode used in voice and carrier frequency equipment. (Merchandise control.) | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
 (*) With modifications.

CHARACTERISTIC DATE

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 Radio Division
 Department 9715

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Bell & Commercial Electron Tubes
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| <u>Code Number</u> | <u>Price Category</u> | <u>Description & Material in Which Used</u> | <u>Competition</u> | <u>Code</u> |
|--------------------|-----------------------|---|--------------------|-------------|
| 104-D | S | Filamentary power amplifier triode used in voice and carrier frequency equipments requiring greater power outputs than can be obtained from 101-D or 101-F. | | |
| CK-108 | | Manufactured by Raytheon. We use it in 100 type loudspeakers. Kearny Telephone Merchandise maintains stock. | Raytheon | |
| 111-A | | Ballast lamp - see the general bulletin. | | |
| 112-A | | Ballast lamp. | | |
| 113-A | | Ballast lamp. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
 (*) With modifications.

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|--------------------|-----------------------|---|---------------------------------|-------------|
| 203-A | - | Code number in our series but not our tube at present. Our 203-A (M.D. years ago) was the VT-1. | Amperex United Elec. | |
| 204-A | - | Code number in our series but not our tube. | Field | |
| 205-F | S | Moderate power filamentary triode. Replaces previous 205 types. Used as an amplifier, oscillator or modulator; 13-C, 25-B, 25-D, 32-A, 34-A, 34-B, 35-A, 40-A, 42-A, 45-A, 46-C, 46-D, 8-C, 9-A, 11-A, 17-B, 18-B, 25-C, 51-A, 60-A, 70-A, 79-A, D-92080 and D-85808 Amplifiers; 1-B, 3-A, 3-B, 4-A, 6-B, 8-A, 8-B, 9-A, 9-B, 9-C, 11-A, and 13-A Transformers; 308-A R.T.E., 9-A Oscillators; 6035-A and B, 6040-A, 6041-A Audiophones; 208-C and 209-A Radio Tel. Equipments; 700-A, 700-B, 701-A, 706-A and 708-A Control Cabinets; D-90873 Oscillator; D-90684 Oscillator Amplifier, 50 K.W. Equipments, 9-A Speech Input Equipments. Also used by E.R.P. and Telephone Co. | Sylvania Amperex R. C. A. | 1602 |
| 208-A | M.D. | Triode, replaced by 205-F. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|---|--|--|
| 212-E | M | Transmitting filamentary triode. Replaces 212-D, 5-C, 6-B, 7-A and 306-A Transmitters. Also used 12-B Radio Transmitters (301-B, 302-B, 303-B and 304-B Equipments) in place of 270-A, (D-98653 Oscillator Modulator unit - modified 12-B Transmitter.) 50 K.W. Trans. (1) D-156000 Radio Transmitter Transoceanic, also used by Long Lines. We had JAN type approval and so did Federal. | Federal Amperex Rogers-Elec tronic (Toronto) R.C.A. Westinghouse United Elec. | 212-E 212-E AR-300 849* WL-849* 312-E |
| 214-E | M.D. | Half wave high vacuum rectifier. D-86771, D-86823, D-87910, D-88823 Panels. Train Dispatching Equipment. 60-B Vacuum Tube Rectifier. Use 242-C after strapping terminals P and G of the 60-B Rectifier; then 214-E or 242-C can be used interchangeably. | R.C.A. | 217-A |
| 215-A | S | Small filamentary triode. A. T. & T. uses in 23-A Amplifier. Old Navy number was 38015. | | |
| 216-A | M.D. | Amplifier or oscillator. Train Dispatching Equipment, 7-A Amplifier. Old 12-A Loudspeaking outfit (still some in use on Mexican Government Railway System). Recommend 101-D even though it will not have the long life; it is cheaper in the long run. | | |

{S} Small type. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
{*} With modifications.

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|--------------------|-----------------------|--|------------------------------|-----------------|
| 217-A | M.D. | Rectifier to supply plate potential for amplifiers. The JAN-217-A is not our tube (RCA and Lewis Electronics) but it is identical with our old 214-E (replaced by 242-C). | | |
| 217-C | - | Half-wave high vacuum rectifier, described in Spec. JAN-217-C not our tube (Amperex, G.E., RCA, Lewis Electronics & Westinghouse). | | |
| 219-A&D | M.D. | Rectifier. | | |
| 220-B | M.D. | Filamentary water cooled triode tube used in 5-C Radio Transmitter. Water cooled Broadcasting Tube 10 KW. D-96847 R.T.E. (Replacing 5-C.) Circuits have been changed to use either 220-C or 343-A. | Federal | 320-B |
| 220-C | L | Filamentary water cooled triode 10 KW. Replaces 220-B. Used in old 5 KW types R.T.E. up to (and optional in) 405-A-1 and 2 R.T.E. | Amperex Federal R.C.A. | F-320-B 892* |
| 220-GA | L | Air cooled 220-C, 405-B-1 and 405-B-2 R.T.E. (optional along with 343-AA). | Amperex? | |

(S) Small value.
(*) With modifications.

(M) Medium value. (M.D.) Manufacture discontinued.

(L) Large value.

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|--------------------|-----------------------|---|--------------------|------------------|
| 221-D | M.D. | Triode. | | |
| 222-A | L | Half wave, water cooled Rectifier, 25 KV, 5-C Radio Transmitter using same water jacket as 233-A and 237-A tubes. | Federal Amperex | 322-A 222-A* |
| 222-B | M.D. | Replaced by 222-A. Half wave, high voltage, water cooled rectifier tube. 5 KW R.T.F. Rated manufacture discontinued in 1944. Had round terminals rather than blade type which means that the connectors must be changed before using the 222-A. If 233-B is in manufacture, it can be used interchangeably. | Federal Amperex | F-322-A 222-A |
| 223 -A | M.D. | Triode. | | |
| 224-A, B & C | M.D. | Cathode ray tubes. Replaced by 325-A, B, and C and 326-A, B and C tubes, all of which were discontinued prior to 1942. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|---|--------------------|-------------|
| 225-A | M.D. | Triode. | | |
| 226-A | M.D. | Rectifier. | | |
| 227-A | | Code number in our series but not our tube. Listed in the W.P.B. pamphlet "Scheduled Producers of Electron Tubes" with Eitel McCullagh as manufacturer. | Eitel McCullagh | |
| 228-A | L | Filamentary water cooled triode 5 KW three element broadcasting tube. 6-B Transmitter and its predecessors. About 40 sockets in use 4/1/45. Government says use in place of Federal F-328-A - 2/1/45. | Amperex Federal | 328-A |
| 229-D | M.D. | Triode. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|--|--------------------|----------------------|
| 230-D | M.D. | Same as 231-D except for base, which is old UV type. | | |
| 231-D | S | Small, filamentary triode with low filament power consumption. 309-A Police Radio Transmitting Equipment. 32-A and 55-A Amplifiers, 6044-A Test Sets, 4-A P.A. System, 11-A and 12-A Oscillator, 20-A Control Unit; 701-A Oscillator in 276-A Panel. (Merchandise Control.) | | UX-199 (obsolete) |
| 232-A | L | Water cooled triode. 7-A and 306-A Transmitters. Replaced by 232-B but since conversions are not being made smoothly, consider as A & M only. | | |
| 232-B | L | <p>Filamentary water cooled triode 25 KW. Redesign 232-A. Replaces 232-A but connectors have to be changed as follows: One Det. 5-A ESO-602410 in D-85491 and D-95289 Second Power Amplifier Units of the 7-A Transmitter; one Det. 7 ESO-602079 in 306-A Equipments; two Det. 3-A ESO-608894 in 306-B Equipments; and six Det. 1-A ESO-608894 in the D-85493 and D-95290 Third Power Amplifier Tube Units of the 7-A Transmitters and 306-A and 306-B - 50 KW Equipments. Still used in 50 KW Equipments. 342-A can replace this tube in existing sockets. Optional in place of 342-A tubes in 406 and 407 types R.T.E.</p> | Federal R.C.A. | F-332-C 893* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|--------------------|-------------|
| 232-BA | L | Standards of good Engineering Practice lists this number for a 232-B with fins for air cooling. H.E. Mendenhall reserved the code number in 1941 when we were active on a 10 KW air cooled AM Transmitter but the only work done by Mr. West was procuring a tool for fins somewhat longer than the fins used on other tubes. No tubes manufactured to date -3/23/46. | | |
| 233-B | L | Half wave water cooled rectifier 50 KV. Rocky Point Transoceanic (non-stock). Uses same water jacket as 222-A and 237-A. | Federal | F-333-A |
| 234-A | M.D. | Rectifier tube for 7-A Radio Transmitter. Since old KSL Transmitter was sold to Government and converted to use the 249-B tube, KMOX has the last one in operation (1/21/45). Told Graybar, St. Louis to convince KMOX to convert (1/26/45). | | |
| 235-D | M.D. | Used in the D-88000 Amplifier. | R.C.A. | 201 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|--|--------------------|--------------------|
| 236-A | L | Flamentary water cooled triode 20 KW. A. T. & T. Co. (Merchandise control). | | |
| 237-A | M.D. | Half-wave, high voltage, water cooled rectifier. 7-A Transmitter. 237-A replaced by 344-A tube. Uses same water jacket as 222-A and 233-A. | Federal | F-337-A F-237-A |
| 238-A | M.D. | Alkali metal photoelectric cell gas filled for use in film reproduction equipment. Coded 4-A PEC - also Manufacture discontinued. | | |
| 239-A | M.D. | For use in 710-A Control Cabinet. Replaced by 264-C. | | |
| 240-B | L | Flamentary water cooled triode 10 KW. Replaces 240-A. Long Lines, Short Wave, Transoceanic and Ship-to-Shore Radio Transmitter. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|---|--------------------|-----------------------------|
| 241-B | M | Filamentary air cooled triode 275 W. Long Lines - D-90643 Short Wave Transmitter. (A replaced by B.) 405 and 407 Trans. Eqpts. Replaced by 357-B in new RTE's. | G. E. Westinghouse | GL-849* WL-849* |
| 242-C | S | Filamentary air cooled triode 100 W. Replaces A and B and also 211-D. Has Molybdenum plate originally designed for sound pictures and amateur use. Used in D-90684 Broadcast Amplifier, 5-C, 6-B, 7-A Transmitters and 309-A (Police) Radio Transmitting Equipment. 20-A and 23-A Radio Transmitter. (D-98653 Oscillator Modulator unit modified 12-B Transmitter. Used in short wave stations. 450-A1 and 451-A1 (100 and 250 W) RTE. Substitute for 214-E after strapping plate and grid terminals in 60-B Rectifier socket. Altec uses 1500 yearly (8/23/45). | G. E. R. C. A. | GL-242-C 211* WL-211* |
| 243-A | M.D. | Triode. | | |
| 244-A | S | Low power triode with indirectly heated cathode. Used in 9-A, 9-B, 9-D, 11-A, 11-B, 11-C, 12-A, 13-A and D-94207 Receivers. D-93315 Transoceanic Receiver. 60-A, 78-A, 78-B, 83-A, 83-B, 83-C, 84-A and 85-A Amplifiers. 256-A and 257-A Panels. B-2 Privacy Equipment; Component Part Apparatus - 75-A 77-A, 75-B, 77-B Amplifiers. 20-A Radio Transmitters. D-156000 Radio Transmitter. Station WMIN reported long life in the feedback rectifier circuit operated at .8 ma. | R. C. A. | 56 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--------------------|---------------|
| 245-A | S | Voltage amplifier tetrode with indirectly heated cathode. Used in 9-A, 9-B, 9-D, 13-A Receivers. 83-A, 83-B, 83-C, 83-D, 83-E and 83-F Amplifiers. D-93315 Transoceanic Receiver. | R. C. A. | 24-A* |
| 246-A | S | Voltage amplifier filamentary tetrode. Used in D-90303, D-90848 and D-91719 Transoceanic Receivers. Short wave receiving sets. (Merchandise control.) | R. C. A. | 22 |
| 247-A | S | Low power triode with indirectly heated cathode. Used in 10-A Receiver. 15-A, 16-A and 23-A Radio Transmitters. 61-A Amplifier. 242-A, 243-A and D-96662 Panels. 20-A Radio Transmitters. 702-A Oscillator. New 405 and 407 Trans. Equipments. 443-A1 (1 KW) R.T.E. 451 Type R.T.E. Triode. | | |
| 248-A | M.D. | | | |
| 249-B | S | Half wave mercury vapor rectifier. Replaces 249-A tube. 15-A and 16-A Transmitters, Navy Aircraft Radio Transmitting Equipment. 71-B, 87-A, B and D, 88-A and 90-A Amplifiers. 309-A Police R.T.E. 2-A, 2-B, 4-A, 9-A and 9-B Rectifier. D-96959 Panel. 20-A and 23-A Radio Transmitters. 50 KW Equipment. 405 and 407 Trans. Eqpts. used by E.R.P. 443-A1 (1 kW) R.T.E. 430-B1 (100 Watt) R.T.E. FM Transmitters. (Our tube compares unfavorably with competition). The same tube with a two prong base is coded 258-B. | Field Taylor | 866* 249-B |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|-----------------------|--------------------|
| 249-C | S | D-96656 R.T.E. Navy. Navy using Raytheon on Plane Jobs. D-97502 Rectifier. D-97500 General Announcing systems. Same size envelope as 249-B but larger anode cap. D-97600 Flight Deck Announcing System (40 each) C0-118487 reduces size to permit aero-plane use - 6/3/35. 14-A Rectifier. 99-A and 100-A Amplifier. | Taylor | |
| 251-A | L | Filamentary air cooled triode 1KW. 9-A, 9-B, 14-A Transmitters. D-94723 Transoceanic Transmitter. 71-A & B, 88-A, 90-A Amplifiers (500 Watt); 303-A R.T.E. | G. E. Westinghouse | GL-851* WL-851* |
| 252-A | S | Moderate power, filamentary triode. Used in 57-A, 59-A, 59-B and 67-A Amplifiers. 10-A, 11-A, 15-A and 16-A Radio Transmitters. D-96656 R.T.E. Navy, 309-A Police R.T.E. D-96662 Panel. | | |
| 253-A | S | Half wave, mercury vapor rectifier. Used in 57-A 59-A, 59-B, 67-A, 71-A and 6071-A Amplifiers; 10-A Transmitters; 10-A Rectifier; 223-A and D-87587 Panels; 9-A Speech Input Equipment; 302-A, 303-A, 304-A, 308-A Radio Trans. Equipments. Sound Picture Equipment. Also used with adapters in 6000-A Rectifier in place of 211 Tube. | Westinghouse | WL-866A/866 |
| 254-A | M | Filamentary air cooled tetrode. Used in 10-A (Aviation) and D-93258 Radio Transmitter. | Westinghouse | WL-865* |

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|--------------------|-----------------------|--|--|---|
| 254-B | M | Filamentary air cooled tetrode. Does not replace 254-A Tube. (7-1/2 volt instead of 5 volt, etc.) Used in D-93258 and D-94723 Transoceanic Transmitters. Airport Transmitters. | R. C. A. G. E. Westinghouse | 8001* GL-865* WL-865* |
| 255-B | M | High voltage 20 KV air cooled half wave mercury vapor rectifier. Replaces 255-A Tube. Transoceanic Transmitters, D-96847 (5000 Watt) Amplifier (six tubes per). 407-A Radio Trans. Eqpt. (6 each). (6) D-158974 Amp. Transoceanic. (6) 50 KW FM Transmitter. | G. E. Westinghouse R. C. A. Federal | GL-869-B* 869-B* 869* F-369-A* |
| 256-A | S | Three element thyratron with indirectly heated cathode. 1-A Photomatic Equipment. (We are out of business on this equipment.) Flight Deck Announcing System. D-91818 Oscilloscope 209-A Radio Telephone Equipment. | R. C. A. | 885* |
| 257-A | S | Small filamentary triode used extensively by Bell System. Low filament power consumption. Double-ended 231-D. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|-----------------------------------|-------------------------|
| 258-B | S | Half wave, mercury vapor rectifier. Used in 12-A Radio Transmitters; 302-A, 303-A, 304-A and 306-A Radio Transmitting Equipment; D-94723 Transoceanic Transmitter; 6071-A and 71-A Amplifier; D-87587 Panel. (D-98653 Oscillator Modulator unit modified 12-B Transmitter.) Same as 249-B except has two prong base. | G. E. Taylor | 866-A/866* 258-B |
| 259-A | S | Voltage amplifier, tetrode with indirectly heated cathode. Used in 10-A, 11-A, 11-B, 11-C, 12-A, D-94207 Receivers; 234-A and 236-A Panels; 1-A and B Frequency Monitoring Unit; Component part apparatus 75-A, 75-B, 77-A and 78-B Amplifiers. 2-A Phase Monitor. D-156000 Radio Transmitter. Partially replaced by 283-A. Has Higher trans-conductance than R.C.A. 24-A or W.E. 245-A. | R. C. A. | 35-A |
| 259-B | S | Voltage amplifier tetrode with indirectly heated cathode. Does not replace 259-A Tube. Exceptionally low noise. Laboratory, college and experimental uses. | | |
| 260-A | M.D. | Filamentary air cooled tetrode. D-93259 and D-94723 Transoceanic Transmitters. Ship-to-Shore. We have used R.C.A. tubes since 1939. | R. C. A. G. E. Westinghouse | 860 GI-860 WL-860 |

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|--------------------|-----------------------|--|-----------------------------------|----------------------------|
| 261-A | M.D. | <p>Flamentary air cooled triode. Used in 8-A, 8-B, 9-A, 9-B and 9-C Transmitters. Replaced by 276-A. (242-C would be overloaded.)</p> | G. E. Westinghouse R. C. A. | GL-835* WL-680* 211* |
| 262-B | S | <p>Low power triode with indirectly heated cathode. Replaces 262-A Tube (if heater-cathode exceeds 30 volts, use R.C.A. 1603), which was called a quiet tube for amplification of small low frequency signals (SPD-4) until R.C.A. brought out their 1603 which is really quiet. Used in 59-A, 59-B, 62-A, 63-A, 67-A, 69-A, 70-A, 80-A, 80-B, 81-A, 82-A, 86-B, 86-D, 92-D, D-94531, D-95159 & D-95508 Amplifiers. D-96656 R.T.E. Navy. Navy Precision Clock. 309-A Police R.T.E. IG & 700-A Volume Indicator. 15-A & 23-A Transmitter. 249-A Panel. 9-A & 15-A Speech Input Equipment. D-97600 Flight Deck Announcing System (10 each). 703-A Oscillator. D-99015 Recording Reproducing System. For use with 105-A, 106-A & 104-A Amplifiers (Speech Input) used by E.R.P. (about 5500 yearly). (6) D-99945 Transoceanic Receiver. D-156000 Transmitter.</p> | R. C. A. | 1603 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|--|--|
| 263-B | S | Full wave thermionic mercury vapor rectifier. Replaces 263-A Tube. D-944723 Transoceanic Transmitter and 5-A Current Supply Set. Used in Rectifiers in Aircraft Radio Transmitters. (United Air Lines). Holdaway says the Electron Co. EL6CF or 4B25 can be used as substitutes with a base change - 7/25/45. ERP West Coast has 20 sockets in operation requiring 100 tubes annually. W.D. rating is under consideration 1/1/46. | Electron Continental " Westinghouse | EL6CF* 4B25* CE-221* WL-670A* |
| 264-C | S | Small low noise filamentary triode. Replaces 264-A and B. ERP use most of our production in 47-C; 47-D, 48-B, 49-C, 53-C, 53-D Amplifiers. 710-B Central Cabinet. D-90191 Panel. 70-B1 Telephoto System. | Amperex R. C. A. | 264-B 864 |
| 265-A | M.D. | Triode. | | |
| 266-B | L | Half wave mercury vapor rectifier 22 KV. Replaces 266-A. 306-A Radio Transmitting Equipment. | Westinghouse G. E. Amperex Federal | WL-266-B GL-266-B 266-B F-266-A |
| 266-C | L | Same as B, except that the terminals correspond to those of our competitors. Originally intended for sale to composite stations. | Westinghouse G. E. Amperex | WL-857-B GL-857-B |

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|--------------------|-----------------------|--|--|--|
| 263-B | S | Full wave thermionic mercury vapor rectifier. Replaces 263-A Tube. D-94723 Transoceanic Transmitter and 5-A Current Supply Set. Used in Rectifiers in Aircraft Radio Transmitters. (United Air Lines). Holdaway says the Electron Co. EL6CF or 4B25 can be used as substitutes with a base change - 7/25/45. ERP West Coast has 20 sockets in operation requiring 100 tubes annually. W.D. rating is under consideration 1/1/46. | Electron Continental " Westinghouse | EL6CF* 4B25* CE-221* WL-670A* |
| 264-C | S | Small low noise filamentary triode. Replaces 264-A and B. ERP use most of our production in 47-C; 47-D, 48-B, 49-C, 53-C, 53-D Amplifiers. 710-B Central Cabinet. D-90191 Panel. 70-B1 Telephoto System. | Amperex R. C. A. | 264-B 864 |
| 265-A | M.D. | Triode. | | |
| 266-B | L | Half wave mercury vapor rectifier 22 KV. Replaces 266-A. 306-A Radio Transmitting Equipment. | Westinghouse G. E. Amperex Federal | WL-266-B GL-266-B 266-B F-266-A |
| 266-C | L | Same as B, except that the terminals correspond to those of our competitors. Originally intended for sale to composite stations. | Westinghouse G. E. Amperex | WL-857-B GL-857-B |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|--|-----------------------|-------------------------|
| 267-B | S | Half wave mercury vapor rectifier. Replaces 267-A. 443-A1 (1 kw) R.T.E. D-158974 Amplifier Transoceanic (6) D-156000 SSB R. Trans. D-94723 Transoceanic Transmitter. D-95857 Set of parts. (See 319-A for 4 prong instead of 2 prong based tube.) D-95858 Rectifier. | Westinghouse G. E. | 872-A/872* GL-872-A* |
| 268-A | M | Filamentary air cooled triode 25W. 10A Transmitter (old airport job). | | |
| 269-A | S | Three element filamentary thyatron. Mdse. Control. | | |
| 270-A | L | Filamentary air cooled triode 350 W. 71-A and B, 90-A and 6071-A Amplifier. (250 watt.) 302-A R.T.E. 212-E has been substituted in practically all 71 Type amplifiers. | Amperex G. E. | GL-849* |

(S) Small value. (M) Medium value. (W.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|--------------------|--------------|
| 271-A | S | Moderate power triode with indirectly heated cathode. Used in 700-A and B Oscillators. 12-A, 15-A, 20-A and 23-A Radio Transmitters. 306-A and 309-A Police Radio Transmitting Eqpt. 78-A, 78-B and 82-A Amplifiers. 1-A and B Frequency Monitoring Unit. 233-A and 234-A Panels. D-94768, D-94996, D-94997, D-94998, D-95001, D-95006 and D-95007 Sets of Parts. 302-A, 303-A and 304-A R.T.E. 15-A Speech Input Equipment. Modified 42 type amplifier in Sound Picture Recording. | R. C. A. | 801* 843* |
| 272-A | S | Low power triode with indirectly heated cathode. 14-B Radio Transmitting Equipment. 74-A and D-93679 Amplifiers. 9-A and B Rectifier. Navy Precision Clock - 16-A Radio Receiver. 6001-A Radio Compass. D-97600 Flight Deck Announcing System (8) each). 282-A Panel. (1) D-99945 Transoceanic Receiver. | | |
| 273-A | - | Command Set. Program Distribution. Tel. Companies (Demand small). Apparently no sockets in the field and shop prefers not to make. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--------------------|-------------|
| 274-A | S | Full wave filamentary high vacuum rectifier. 1-A Frequency Monitoring Unit. 11-A, 11-B, 11-C, 13-A and D-94207 Receivers. 5-A, 6-A, 7-A, 7-B, 7-C, 8-A and D-97503 Rectifiers. 78-A, 78-B, 85-A, 86-A, 86-B, 86-D, 91-A, 92-A, 100-A, D-94531, D-95159 and D-95508 Amplifiers. 309-A Police R.T.E. 15-A Speech Input Equipment. D-97500 General Announcing System (2 each). D-97600 Flight Deck Announcing System (24 each). 20-A and 21 Type Police Radio Transmitters. 280-A Panel. 282-A Panel. 703-A Oscillator. 405 and 407 Trans. Eqpt. 2-A Phase Monitors. Used by ERP. (6) D-99945 Transoceanic Receiver (3) D-156000 Radio Transmitters. If load is not over 120 mls., R.C.A. 80 can be used interchangeably. | R. C. A. | 80* 523* |
| 274-B | S | Same as 274-A except 274B has an octal base. Designed for use in 124-A Amplifier (1). Approximately 9935 sockets in Gov't. Radio & Radar gear of W.E. mfr. - 5/1/45. | R.C.A. Sylvania | 5Y3G* |
| 275-A | S | Moderate power filamentary triode. 11-A, 11-B, 11-C, 13-A and D-94207 Receivers. 85-A, D-94531 and D-95036 (S.P.), D-95159, D-95508 Amplifiers. 7-A, 7-B, 7-C Rectifiers. D-96656 R.T.E. Navy. D-97600 Flight Deck Announcing System (4) each. 280-A Panel. 282-A Panel. About 20 sockets in Gov't. Radio & Radar gear of W.E. mfr. - 5/1/45. (House control) | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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|--------------------|-----------------------|--|----------------------|--------------------|
| 276-A | S | Filamentary air cooled triode 100 W. 306-A Radio Transmitting Equipment. D-96656 R.T.E. Navy. Replaces 261-A and 248-A Tubes. Used in Aircraft Transmitter in place of 211-D and E. | G. E. R. C. A. | GL-276-A 211* |
| 277-A | S | Three element thyratron with indirectly heated cathode. 12-A Radio Transmitter. 302-A, 303-A, 304-A and 306-A Radio Transmitting Eqpt. 1-A Frequency Monitoring Unit. All sets of parts listed under 271-A. Entirely replaced by 287-A, except special use by B.T.L. If equipment now uses 277-A, customer will need a D-95076 Adapter to convert to 287-A if he hasn't done so already. | | |
| 278-A | M.D. | Filamentary air cooled tetrode. Screen grid 251-A. Used by B.T.L. and A.T. & T. for experiments, also at Rugby Eng. - Transoceanic. Not stocked. Made only in BTL and abandoned about 1935. Use 379-A or 251-A and neutralize. | | |
| 279-A | L | Filamentary air cooled triode 1200 W. 71-A and B, 90-A and 6071-A Amplifiers. (1000 Watt). 304-A Radio Transmitting Equipment. D-96847 Amplifier. (2) D-156000 Radio Trans. Replaced by 379-A Tube in all but D-156000 R.T. About 220 sockets in field to maintain - 1/15/46. | Westinghouse G.E. | WL-851* GL-851* |

{S} Small value.
{*} With modifications.

(M) Medium value. (M.D.) Manufacture discontinued.

(L) Large value.

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|--------------------|-----------------------|---|--------------------|-------------|
| 280-A | M.D. | Half wave thermionic mercury vapor rectifier. D-94704, D-94706 and D-94887 General Announcing Systems. Amplifier failed - now has no specific use. (Stock junked in 1938.) | | |
| 281-A | S | Moderate power filamentary coplanar-grid tetrode. 1-A Telephotographic Equipment. (Assoc. Press). | | |
| 282-A | M | Filamentary air cooled tetrode 70 W. 308-A and 309-A (Special in 16-A). Police R.T.E. 208-C and 209-A Radio Telephone Equipment. Airlines are purchasing tubes from other sources. (Taylor) Replaces 282-B since modified. | Taylor | 282-A |
| 282-B | M.D. | Filamentary air cooled tetrode. 282-A with isolantite base, heavier filament, better support. Slightly different characteristics which show up in Airplane Circuits. D-96656 R.T.E. Navy. Patrol Planes. Observation and Scout Planes. Replaced by 282-A Tube since modified. | | |
| 283-A | S | Variable-mu voltage amplifier, tetrode with indirectly heated cathode. Partially replaces 259-A. 9, 10, 11 and 12 Type Receivers. D-96530 Receivers. 208-C Radio Telephone Equipment. 2-A Phase Monitor. | | |

{S} Small value. (M) Medium Value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|-----------------------------------|----------------------------|
| 284-D | S | Flamentary air cooled triode 85 W. Replaces 284-A, B & C. 9-A and B Rectifier. Replaces 280-A in General Announcing Systems. 16-A Police Radio Transmitter. D-96662 Panel. D-97600 Flight Deck Announcing System. (16 each) U. S. Navy. D-97501 Amplifier. D-97500 General Announcing System (4 each). 87-A, B and D and 99-A Amplifier. About 500 yearly used by E.R.P. | Westinghouse G. E. R. C. A. | WL-845* GL-845* 845* |
| 285-A | S | Lower power pentode with indirectly heated cathode. 12 Type Radio Receiver. D-96530 Receiver. 208-C Radio Telephone Equipment. | R. C. A. | 38* 41* |
| 286-A | S | Variable- μ , voltage amplifier, pentode with indirectly heated cathode. 13-A and B Radio Receiver DSB (256-A Panel). Navy Direction Finder. 82-A, 83-A, 83-B, 83-C and 84-A Amplifiers. Trucksess estimates 2000 for regulated rectifiers in 1947 - 3/31/46. | | |
| 287-A | S | Three element thyratron. Replaces (partially) the 277-A by using D-95076 Adapter. 1-A Telephotographic Equipment. 12-A Radio Transmitter. D-97600 Flight Deck Announcing System (8 each). Used with all 700 Type Oscillators (about 600 sockets). (D-98653 Oscillator Modulator Unit modified 12-B Transmitter). Long Life Tube. Not used in 400 series of R.T.E. | Continental | 302 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|--|
| 288-A | M.D. | Half wave, tungsten filament, argon filled rectifier. To replace GE Tungar Rectifier Bulb 189048. | G. E. | 189048 4B28 |
| 289-A | M.D. | Half wave tungsten filament argon filled rectifier. To replace GE Tungar Rectifier Bulb 189049 for Telephone Plant Work. Merchandise Control. Current Army - Navy #4B26. | G. E. R. C. A. Westinghouse Allen Continental JAN | 189049 2000 289416-D F-60 CE-226 4B26 |
| 290-A | A&M | Variable-mu Pentode with indirectly heated cathode. 12-B, 12-C, 14-A, 16-A Radio Receiver with 6001-A Radio Compass. 208-C and 209-A Radio Telephone Equipment. 280-A Panel. E.R.P. uses. Test sets in Works and Transoceanic Telephone. (Merchandise Control). | | |
| 291-A | A&M | Pentagrid converter with indirectly heated cathode. 12-B, 12-C, 14-A, 16-A Radio Receiver with 6001-A Radio Compass. 208-C and 209-A Radio Telephone Equipment. Used in Tel. Test Sets. (6-A-7 can be rebased to make equivalent of 291-A.) (Merchandise Control.) | R. C. A. | 6-A-7* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|--|
| 292-A | M.D. | Duplex-Diode Triode with indirectly heated cathode. Replaced by 352-A. 12-B, 12-C, 14-A, 16-A Radio Receiver with 6001-A Radio Compass. 208-C and 209-A Radio Telephone Equipment. E.R.P. uses. Suggest substitute 352-A; only difference is in diode plate IP, 292-A limits are 3.7 - 6.7 and 352-A limits are 4.4 - 8.0, but Stafford says 99% of 352-A production is also within limits of 292-A (6/22/44). | | |
| 293-A | S | Pentode with indirectly heated cathode. 12-B, 12-C, 13-A, 14-A, 16-A Radio Receiver with 6001-A Radio Compass. Navy Precision Clock. 208-C and 209-A Radio Telephone Equipment. 20-A Radio Transmitter. 280-A Broadcasting Panel. D-99945 SSB Radio Receiver. | | |
| 294-A | A&M | Power Amplifier Pentode. Radio or Audio Frequency for Navy. Used by E.R.P. in recorders. 100-A Recorder. Tube Shop can't meet test and there is no known substitute (1/1/45). | | |
| 295-A | S | Filamentary air cooled triode 100W. Competitive in composite Broadcasting Stations. 405-A Radio Equipment Feedback Circuit. D-99762 Conversion Parts (9 sets sold). 355-E1 R.T.E. | R.C.A. Westinghouse G. E. Continental | 203-A WL-203-A GL-203-A C-203-A |

{S} Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
{*} With modifications.

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|--------------------|-----------------------|---|---|---------------------------------|
| 296-A | M.D. | Comparable to R.C.A. 849 (Carbon plate 270). Cancelled. | R. C. A. | 849 |
| 297-A | S | Three element filamentary Thyatron. Used for testing protection circuit of 1-A Thermostat (Aviation) also in test circuits in B.T.L. considered as a telephone tube. (Merchandise Control.) | | |
| 298-A | L | Water cooled triode 100 KW used as an oscillator modulator or amplifier at high power levels. Four KS-8080 Gaskets with each tube. 50 KW Non-Western and W. E. Co. 407-A (50 KW) Trans. | Federal Amperex G. E. R. C. A. | 298-A 220-C* 862* 862* |
| 298-B | L | Similar to 298A except for higher amplification factor. Used in electronic heating applications. | G. E. | 862* |
| 299-A | - | Rectifier goes with 320-A. (None authorized to date) | R. C. A. | 870* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|-------------------------------|------------------------------|
| 300-A | S | Moderate power filamentary triode. Used in ten frequency 27-A Trans. 86-A, 86-B, 86-D, 87-A, 91-A and 92-A Amplifiers. Also D-95036 Amplifiers converted by E.R.P. D-97600 Flight Deck Announcing System (8 each). Teleflash, Amateur use. Replaced by 300-B. | R. C. A. | 250* |
| 300-B | S | Same as 300-A Tube except for location of bayonet pin in base. For use by E.R.P. in 42 and 46 Type Amplifiers. Replaces some 205-D and all 300-A Tubes. Bayonet pin was changed so the 300-B could be used in old 205-D sockets. Since the 300-A was always used in wafer sockets, the 300-B is interchangeable. About 3481 sockets in Gov't Radio and Radar gear of W. E. manufacture - 5/1/45. | R. C. A. | 2A3* |
| 301-A | S | Full wave mercury vapor Rectifier. 71-B and 90-A Amplifiers. 12-A Rectifier. 280-A Panel. 443-A1 R.T.E. New i-3-10-50 KW FM Transmitters. | R. C. A. R. C. A. G. E. | 2866-A* 83* GL-2866-A* |
| 302-A | M.D. | Oscillograph. Direction Finder, U.S. Navy. Replaced by 324-A Tube. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|----------------------------------|-------------------------------|
| 303-A | S | Duo diode triode with indirectly heated cathode. Similar to 292-A. D-96530 (modified 12-D) Receiver. 13-R Receiver (SSB). 208-C Radio Telephone Equipment. | | |
| 304-A | M. D. | Filamentary air cooled triode. Short wave. Carbon plate. Westinghouse used in short wave transmitters. Also amateur field. Replaced by 304-B. | Federal G. E. Westinghouse | 204-A GL-204-A WL-204-A |
| 304-B | M.D. | Filamentary air cooled triode. Used at full rating at frequencies up to 100 mc. and at reduced power to 300 mc. (Molybdenum plate 304.) Replaces 304-A. Government use. (2) D-158974 Amplifiers. Manufacture discontinued in 1941. (316-A more or less took its place in any new developments.) | R. C. A. Raytheon G. E. | 834 RK-32 GL-834 |
| 305-A | S | Filamentary tetrode 60 W. Navy Direction Finder. Remote Radio Key Equipment, Navy. 16-A Police Radio Transmitter. D-96657 Panel. Amateur use. | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|---|--------------|
| 306-A | S | Moderate power filamentary pentode. 16, 17, 18 and 21 Types Police Radio Transmitters. D-96657 Panel. (Amateur use.) (Subcontracted to National Union in 1944 but they will make only substantial quantities.) | National Union | 306-A |
| 307-A | S | Moderate power filamentary pentode for use in 19-A Radio Transmitter. (Itinerant Flyer.) 20-A Radio Transmitter. Amateur use. Special 14 Type Transmitter for Signal Corps. Ten frequency 27-A Radio Transmitter (Aviation). | Raytheon Sylvania Ken-Rad Nat'l. Union | 75* 307-A |
| 308-B | M | Filamentary air cooled triode. 250 W. D-97600 Flight Deck Announcing System (32 each). For use in high power audio frequency amplifier in announcing system. | | |
| 309-A | S | Voltage amplifier variable mu pentode with indirect heating cathode. For use in RA - 150 Amplifier (ERP) (4 each). (Merchandise control.) | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|---|
| 310-A | S | Voltage amplifier cathode type pentode. Inexpensive Theatre Equipment. Coaxial Cable Job - 91-A, 92-A Amplifier. "J" & "K" Carrier Systems at regulated battery offices. AI Noise Reducer. 405, 406 and 407 & 355-EI-R.T.E. (1) D-99945 Radio Receiver. Transoceanic (SSB). D-99762 Conversion Parts. (Merchandise Control.) | | |
| 310-B | S | Voltage amplifier pentode with indirectly heated cathode. Used in Speech Input Equipments. Used by E.R.P. Supposed to be extremely free of noise but has proven inferior to R.C.A. 1603 in meeting FM noise requirements. | R. C. A. | 1603 |
| 311-A | S | Low power cathode type pentode. Carrier Telephone Systems. D-156000 Radio Trans. (Merchandise Control.) | R. C. A. | 6K6 |
| 312-A | M | Flamentary air cooled pentode 50 W. G01 and G02 and GN Equipment. V-2-A in 451-A R.T.E. Used in 450-A R.T.E. | General Electronics R. C. A. Raytheon G. E. | 38412 804* RK-20-A* GL-813/814 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|--------------------|-------------|
| 313-C | S | Three element cold cathode. Subset of the four battery selective ringing, Chicago. 50 KW Eqpt. 405 and 407 Radio Receiver. (SSB) Replaces 313-A Tube. About 1700 sockets in Gov't. Radio & Radar gear of W.E. mfr. - 5/1/45. (Merchandise Control.) | United Elec. | CV-75* |
| 313-CA | S | Three element cold cathode. Replaces 313-AA. Specially selected 313-CC tubes. The 313-CC can be substituted for all known uses except socket GD of A-1 vogad. (SSB). Gov't. Contract Service estimates about 5100 sockets in special Gov't. gear - 5/1/45. (Merchandise Control.) | | |
| 313-CB | S | Three element cold cathode. Same as 313-C except has higher main-gap voltage. Used in telephone equipment. (Merchandise Control.) | | |
| 313-CC | S | Three element cold cathode. Used in D-99945 Receiver (SSB) also R-1 and R-2 of A-1 Vogad. (SSB). About 1200 sockets in special Gov't. gear - 5/1/45. | | |
| 313-CD | S | Three element cold cathode. Used as indicator in test circuit for X-66031 Repeater. Has paint removed from an area at the end of the bulb for observation. | | |

(S) Small value. (W) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|-----------------------|-------------|
| 314-A | S | Full wave mercury vapor rectifier. Inexpensive theatre equipment. 12-A and B Rectifier. 101-A Amplifier. | G. E. | |
| 315-A | M | Half-wave mercury vapor rectifier 12.5 KV. D-96847 R.T.E. 405 Radio Trans. Equipment. | Federal G. E. Amperex | 315-A |
| 316-A | S | Filamentary air-cooled triode (door knob). Amateur use. Frequency limit of 750 mc. Leads are designated TP-5157 (4 required). Boeing adopted for their transmitter in the Clippers about 1943. Used by Alaska Communications. General Radio uses in frequency meter. | Tungsol G. E. | GL-316-A |
| 318-A | S | Heater type pentode. Originally designed for 50 KW equipment but R.C.A. 837 being used in present circuits. D-99110 (100 W.) Transmitter and 23-A Transmitter. | G. E. R. C. A. | GL-837 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|---|
| 319-A | S | Half wave mercury vapor rectifier similar to 267-B except for four prong instead of two prong base. Composite stations. | Westinghouse G. E. R. C. A. Federal Raytheon | WL-872-A/872* GL-872-A 872-A 353-A* 872-A |
| 320-A | L | Water cooled triode. 250 KW. For 500 KW Transmitters. | | |
| 321-A | M | Half wave mercury vapor rectifier similar to 315-A except four prong instead of two prong base. Composite and competitive stations. The 321-A has higher inverse peak than competitive tubes. | (See 319-A) | |
| 322-A | M | Filamentary air cooled pentode. 125 W. for use in ten frequency 27-A and 27-AA Radio Transmitters. | Westinghouse G. E. R. C. A. Raytheon | WL-803 GL-803 803 28-A* |
| 323-B | S | Three element thyatron. Entirely replaces 323-A. Has somewhat higher ratings and uses two more standard parts. Used for charging P.B.X. and Central Office batteries. See 393-A. B. T. L. estimates (5/31/46) 4200 will be needed in 1947 for regulated rectifiers. (Merchandise Control.) | Continental | |

{S} Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
{*} With modifications.

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|--|-----------------------|--|---|-----------------------------|
| 324-A | M.D. | Two element half wave rectifier for use with 325, 326 and 330 type oscillograph tubes for high voltage low current. Designed to replace D-96413 tube and 302-A tube. Discontinued 3/13/24. | | |
| 325-A, B-C | M.D. | High vacuum cathode ray Oscillograph tube. Replaces 224-C tube. (A-Green fluorescent screen of about 4-1/2" diameter, medium persistence) (B-Long persistence screen of high fluorescent intensity) (C-Blue fluorescent screen of highly actinic quality). (See 326-A, B, C below). | | |
| 326-A, B-C | M.D. | High vacuum cathode ray Oscillograph tube. Replaces 224-C tube. (A-Medium persistence screen of green fluorescent) (B-Long highly actinic) (C-Blue fluorescent screen highly actinic). Discontinued at the beginning of the War. Navy got Allan B. Dumont Lab. in Passaic to manufacture under our number as a stop gap. | | |
| 327-A | M.D. | Two element Argon filled rectifier tube having a tungsten filament for charging battery equipment in telephone plants. Replaced by GE Cat. 12X825 tungar. (Merchandise control.) | JAN G.E. Westinghouse Eitel McCullogh | 4B35 12X825 WL-966626 |
| (S) Small value. (*) With modifications. | (M) Medium value. | (M.D.) Manufacture discontinued. | (L) Large value. | |

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|--------------------|-----------------------|---|---|--------------------------------------|
| 328-A | S | Voltage amplifier pentode with indirectly heated cathode used in carrier repeaters and audio frequency amplifiers. (Merchandise control.) | Federal | 328-A |
| 329-A | S | Lower power cathode type pentode. Power output tube used in connection with carrier telephone systems in non-regulated battery offices. (Merchandise control.) | | |
| 330-A B-C | M.D. | Three trace Oscillograph tubes developed for college use. 330-A Green fluorescent screen of medium persistence 330-B long persistence screen of high fluorescent intensity 330-C blue fluorescent screen of high actinic quality. | | |
| 331-A | S | Filamentary air cooled triode. 125 W. To be used in last audio stage of aircraft radio transmitter. 443-A1 (1 kw) R.T.E. 430-B1 (100 watt) R.T.E. About 864 sockets in Special Gov't. gear 5/1/45. | G. E. Westinghouse R. C. A. United Elec. Raytheon | GL-805 WL-805 805 905 57 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|---|-----------------------|--------------------|
| 332-A | M | Filamentary air cooled pentode. It is intended for use in single side band and multiple steering antenna radio system. D-156000 Radio Transmitter. Similar to 322-A Tube. | G. E. Westinghouse | GL-803* WL-803* |
| 333-A | S | Three element cold cathode used in subscriber sets and is the same electrically as the 313-C Tube. (Merchandise Control.) | | |
| 334-A | M.D. | Mercury vapor thyratron. Rectifier in battery charging equipment in telephone plants. Replaced by 354-A in most cases. (Merchandise Control.) | | |
| 335-A | M.D. | Same as 334-A except with argon gas in addition to mercury vapor. Same use as 334-A. Replaced by 354-A Tube. (Merchandise control.) | | |
| 336-A | S | Power amplifier pentode. Audio amplifiers and Speech Input Equipments. Used by E.R.P. 106 Amplifier (1 each). | | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--------------------------|-----------------|
| 337-A | S | Variable MU pentode with indirectly heated cathode. For use in new single side band and MUSA Receivers. D-99945 Radio Rec. (SSB) D-156000 Radio Transmitter. (Merchandise Control.) | | |
| 338-A | S | Three element thyratron with indirectly heated cathode for use in carrier telephone systems. (Merchandise control.) | R. C. A. Westinghouse | 885* WL-629* |
| 339-A | S | Filamentary pentode. Designed for use in 24-A Radio Transmitter. 221-A R.T.E. (emergency set for A.T. & T.) and 224-C R.T.E. (Ship to shore). Used by Coast Guard, Signal Corps (Alaska link) A.T. & T. and Harborcraft. | | |
| 340-A | L | Three element water cooled tube designed for use as an oscillator modulator or amplifier at the higher power levels. Short wave broadcasting equipment and also transmitters developed for the A. T. & T. Co. Long Lines Dept. Similar to 342-A tube except designed for use at higher frequencies. (4) D-158974 Amplifier Transoceanic. | | |

(S) Small value. (M) Medium value. (W.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--------------------------|--------------------------|
| 341-A | L | Water cooled triode primarily used in second power amplifier of transmitters already in the field. Same as 232-B except that it operates at a filament current of 40 amperes instead of 60 amperes. | G. E. Westinghouse | GL-891-R WL-891-R |
| 341-AA | L | Previously known as Spl. Low Mu. 343-AA - designed for use in Transmitter of WQXR and other composite 5 or 10 kw Radio Transmitting Eqpts. as an audio frequency amplifier and modulator at the higher power levels. Forced air cooled 3 element tube, filament voltage 21.5 V. Filament current 57.5 amp. Made 10 for WQXR. Extremely long life. WQXR returned one of original five for fin credit after 22,000 hours of service. | | |
| 342-A | L | Water cooled triode similar to 232-B except that it employs a filament operating at 70 amperes instead of 60 amperes to improve the tube life. Supersedes the 232-B for new applications. Used in the third power amp. of the 407-A1 (50 KW) Trans. Works better than Federal F-332-C (says Navy). Inherently noisier than the 232-B and is unsatisfactory as a replacement in 50 KW Transmitters. | Federal Amperex R. C. A. | 332-C 232-CH* 893* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|-------------------------------------|
| 343-A | L | Water cooled triode similar to 220-B and C except that it operates at a filament current of 60 amperes instead of 40 amperes (to increase the tube life) and is inherently noisier. Supersedes the 220-B and 220-C tubes used in 405-A2 (5 KW) Transmitter but do not substitute for 220 tubes in prior models. "Super-duper" is D-170924. | Federal R. C. A. G. E. Westinghouse | 343-A 892* GL-892* WL-892* |
| 343-AA | L | Same as 343-A except equipped with fins for air blast cooling. Used in 405-B1 and B2 R.T.F. | R. C. A. G. E. Westinghouse | 892-R* GL-892-R* WL-892-R* |
| 344-A | M.D. | Water cooled rectifier similar to the 237-A tube except that it employs a filament which operates at 73 amperes instead of 60 amperes which gives the tube increased life. Designed to replace the 237-A. Noremanufactured. | | |
| 345-A | S | Full wave high vacuum rectifier tube intended for use with coaxial cable rectifiers and for feedback in radio broadcast transmitters. Can be used where R.C.A. 84 or 6Z4 is specified. D-99110 OSC Amp. 405-A1 and B1. 406-A and B, 407-A1, A2, A3 and A4. Radio Transmitters. Similar to 351-A Tube. Do not use competitive tubes if load is over 60 mls. | R. C. A. R. C. A. | 84 6Z4 |

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|--------------------|-----------------------|--|--------------------|---------------------------------------|
| 346-B | S | Three element cold cathode gas filled tube for use as a relay, voltage regulator or rectifier. For use in district selector circuits; remote control zone registration. (Merchandise Control) | | |
| 347-A | S | This tube is similar in design to 262-B tube except that it employs a 6.3 volt, .5 amperes heater and is equipped with a small octal base. For use in public address equipments. 120-A and 121-A Amplifiers. (The 1603 is quieter and will meet the FM noise requirements.) | R. C. A. | 1603 |
| 348-A | S | This tube is similar in design to the 310-B tube except that it employs a 6.3 volt, .5 ampere heater and is equipped with an octal base. For use in public address equipment. 430-B1 (100 watt) R.T.E., 120-A and 121-A Amplifiers. 124 type Amplifier (2) 503 FM R.T.E. (which has been changed to call for 6J7 and 6J5 Tubes). About 12 sockets in special Government gear 5/1/45. | R. C. A. | 6J7 6C6* 6J5* 1603* 1620* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
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|--------------------|-----------------------|--|--|--|
| 349-A | S | Suppressor Grid Pentode having indirectly heated cathode intended as audio frequency power amp. This tube is similar in design to the 336-A except that it employs a 6.3 volt, 1.0 ampere heater and is equipped with an octal base. Initial use in 121-A Amplifier. (443-A1) R.T.E. 1-5-50 KW Pre-war FM Transmitter. About 1600 sockets in special Government gear 5/1/45. | R. C. A. | 6F6* |
| 350-A | S | A beam power tube similar to R.C.A. 807. Used in 443-A1 R.T.E. Amplifiers and Marine Sets. 430-A1 R.T.E. 24AA Radio Transmitter. 503-A1 Pre-war FM Equipment. About 1000 sockets in special Government gear 5/1/45. | G. E. Westinghouse Nat'l Union R. C. A. Taylor Raytheon | 807* 807* 1625* 807* T-21 RK-40 |
| 350-B | S | Beam power tube similar to 6L6. Designed for use in 124 Amplifier. 2 used with each set. 443-A (250 W) R.T.E. (5 in each). 503-A1 Pre-war FM Equipment. (Converted to use Elmac 4-125 during 1946). Proposed using in new side band equipment 5/1/46. About 10,000 sockets in special Government gear 5/1/45. | National Elmac | 6L6* 4-125 |

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|--------------------|-----------------------|---|--------------------|-------------|
| 351-A | S | A full-wave high vacuum rectifier similar in design to 345A tube for use in amplifiers and public address equipment. (443-A1 (1 kw) R.T.E. 430-A1 (100 Watt) R.T.E.) 451A (250 W) R.T.E. Can be replaced by 6X5 if not over 70 mls load. Used by E.R.P. | R. C. A. | 6X5 |
| 352-A | S | A duo diode triode for use in 1,000 cycle ringer circuit SD-64419-01. Similar to 292A tube. (Merchandise control.) | | |
| 353-A | S | A three element cold cathode gas filled tube for use in 745 P.B.X. for generating audible ringing tone. Similar to 313C except for base. (Merchandise control) | | |
| 353-B | S | Same as 353A except that the main breakdown voltage limit is 165 to 225 volts DC. For use in AC operated message register circuit with #5 cross-bar system starting in April 1947. (Merchandise control.) | | |

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|--------------------|-----------------------|---|--------------------|----------------|
| 354-A | M | A mercury vapor filamentary type thyratron for use in J-862070 regulated rectifier for battery charging equipment in telephone plant. Estimated requirement for 6000 in 1947. Replaces 334A for new designs only. About 42 sockets in special Government gear 5/1/45. Heinz & Kaufmann use the codes 354-A, B, C, D, E, and F for transmitting triodes which are not comparable to our 354A. (Merchandise control.) | | |
| 355-A | M | A mercury vapor and argon filled filamentary thyratron for use in J-86207E and J rectifiers for battery charging equipment in telephone plant. Estimated demand for 7500 in 1947. About 34 sockets in special Government gear 5/1/45. (Merchandise control.) | | |
| 356-A | M.D. | A three element transmitting tube for high frequency use. Up to 100 mc at full power and 250 mc at reduced power. For use in 430A and B1 - 100 watt high frequency radio transmitter. Somewhat similar to the 304B tube. 1, 3, 10 & 50 KW Pre-war FM transmitters. Replaced by 356B. Station WHIO converted their 1 KW FM equipment to use Eimac 4-125. | R. C. A. Eimac | 808* 4-125* |

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|--------------------|-----------------------|---|--------------------|-------------------|
| 356-B | M | Replaces 356A. Zirconium plate and different grid treatment - 10 watt higher rating. New line of AM Transmitters. Frequency doublers (4 sockets) on the Norfolk, Cape Charles job. | R.C.A. Elmac | 808* 4-125* |
| 357-A | M | A high frequency 350 watt air-cooled triode. Can be substituted for 241-B with an adapter or possibly a socket replacement. 430-B1 (100 Watt) R.T.E. and 443-A1 (1 kw) R.T.E. Equipment. 1, 3, 10 & 50 KW Pre-war FM Transmitter. | G. E. R. C. A. | GL-833-A* 833* |
| 357-B | M | A high frequency 350 watt air cooled triode same as 357-A except that it has a Zirconium plate. Must be used in FM sockets and may be used in AM sockets after stocks of 357A's are exhausted. | G. E. R. C. A. | GL-833-A* 833* |
| 358-A | S | A two element cold cathode discharge tube. This tube designed for associate use in equipment to give visual signal to the subscriber to replace the audible signal of the ringer. (Merchandise control.) | | |

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|--------------------|-----------------------|---|--------------------|-------------|
| 359-A | S | Cold cathode three element, filled with a mixture of rare gases principally neon. Telephone type for use in small secretarial system - known as 103A Key Equipment. (Merchandise control.) | | |
| 360-A | M.D. | Tube for Ortho-tronic hearing aid. Discontinued. Use Raytheon tube. (See D-164696) | Raytheon | |
| 361-A | M.D. | Small tube for use in Ortho-tronic type audiphone. Intended primarily for resistance coupled voltage amplification or other uses within the limitations imposed by its very low current filament. It has a low microphonic level for a tube of comparable rating. Out of the hearing aid - 1942. Substitute Raytheon. | Raytheon | |
| 362-A | M.D. | Small tube for use in Ortho-tronic type audiphone. Out of the hearing aid 1942. | Raytheon | 507AX |
| 363-A | L | Filamentary pentode designed for use in Radio Communication Project for Virginia Capes. 350 watts. | | |

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|--------------------|-----------------------|---|----------------------|--------------|
| 364-A | M | Filamentary triode primarily required for use in Radio Communication Project for Virginia Capes. | | |
| 365-A | M.D. | Full wave rectifier. Developed for Virginia Capes Project. Only five made in B.T.L. Discontinued - never incorporated in any equipment. | | |
| 366-A | M.D. | Pentode developed for Virginia Capes Project but never used therein. | | |
| 367-A | M | Beam power amplifier. Developed for use in Virginia Capes Project. Local Video amplifiers can be replaced by 350-B in some cases. (Merchandise control.) | National Union Field | 616* 807* |
| 368-A | M | Filamentary air cooled triode intended for high frequency oscillator and amplifier applications of approximately 1.5 to 3 watts peak output. Similar to D-159764. | | |

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|--------------------|-----------------------|--|---|------------------|
| 368-AS | M.D. | Same as 368A except that it is a "single ender". Similar to 703A. | Tungsol | 368AS |
| 369-A | | Water cooled triode approximately 25 kw. Developed for use in Composite Stations. Never manufactured. | Federal | |
| 370-A | M.D. | Triode with filamentary type cathode. Class C operation - 3 & 50 KW Pre-war FM aircooled. Discontinued because new FM allocations required a different tube. | | |
| 371-B | M.D. | Rectifier tube developed for use as component of Rectifier being used in Pre-war Government Project. More rigid than 371A which it replaced. | Nat'l Union Electronic- Enterprises United Elec- tronics G. E. | 271* GL-8020* |

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|--------------------|-----------------------|---|--------------------|-------------|
| 372-A | S | Three element cold cathode gas filled tube. May be used as a relay, voltage regulator or rectifier. Intended primarily for use in the H5 telephone set mounting, as used in 306 type telephone sets. Tube is same as 333A except length of flexible leads are shorter and screw omitted from base. (Merchandise control.) | | |
| 373-A | S | Pentode voltage amplifier designed for K2 Carrier System. (Merchandise control.) | | |
| 374-A | S | Pentode power amplifier designed for K2 Carrier System. Partially superseded by 398A tube. (Merchandise control.) | | |
| 375-A | S | Cathode type beam tetrode. For use at audio frequencies. Primarily intended for general use in Central Office battery supply. Limited to 48 volts. (Merchandise control.) | | |
| 376-A | M.D. | Three element cold cathode tube. (Merchandise control.) | | |

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|--------------------|-----------------------|---|--------------------|-----------------------|
| 376-B | S | Three element cold cathode tube. Replaces 376-A and has a higher current rating. Initially used in the 1-C-1 Common Carrier Terminal Equipment. Radio power line carrier, a companion tube of the 398-A, 399-A, 400-A, and 401-A tubes. Might possibly be used in the AC Key Pulsing Senders and Receivers for the #4 and #5 cross-bar equipment. Estimated demand 1947 - 25,000. (Merchandise control.) | R. C. A. | Specialty heated OA4G |
| 378-A | M.D. | Never manufactured, but 705A is identical. | | |
| 379-A | L | An improved 279A Vacuum tube with grid connection in different location. A.T. & T. unable to use account grid connection and will continue to use 279A. 71A and B, 90A and 6071A Amplifiers (1000 watts) 304A Radio Transmitting Equipment. D-96847 Amplifiers. | Heinz & Kaufmann | 2054-A |
| 380-A | S | Cathode type diode - high frequency applications, type "L" Coaxial Systems and LA Altimeter (Receiver and test set). Replaces D-157653. No base. | | |

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|--------------------|-----------------------|---|--------------------|-------------|
| 381-A | S | Same as 380-A except that interelectrode capacitance plate to heater and cathode is 1.4 mmf (rather than 1.1) and has octal base. | | |
| 382-A | S | Triode with an indirectly heated cathode intended for miscellaneous low power applications through audio and high frequencies. No base. Originally developed for use in coaxial cable. Used in condenser transmitter amplifier. RA-1095. Replaces D-157591. | | |
| 383-A | S | Same as 382-A except has octal base. Originally designed for use in short wave multiplex type K carrier, UHF 12 channel job. | | |
| 384-A | M | Pentode with an indirectly heated cathode. Audio and high frequency applications. Unbased. Used on L carrier amplifier, large requirements. (Consider using the 6AK5 instead.) | Heinz & Kaufmann | HQ-201* |
| 385-A | S | Same as 384A except has octal base. Slight difference in plate resistance. 156 sockets in the model RBQ receiver and 302 sockets in the 42A1 carrier repeater. (12/20/44). Consider 6AK5 for any new applications. | Heinz & Kaufmann | HQ-201* |

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|--------------------|-----------------------|--|--------------------|-------------|
| 386-A | M | Pentode with indirectly heated cathode. Unbased. Low power applications - audio and high frequencies. Used on L carrier amplifiers. New York to Philadelphia coaxial. Large requirements. (Merchandise control.) | | |
| 387 | M | Same as 386-A except has octal base and top cap - slight differences in amplification factor, plate resistance and transconductance. Replaces D-159512. | | |
| 388-A | M.D. | Filamentary air cooled triode. Unbased. High frequency oscillator and amplifier. AN/APQ-2 Equipments made by Delco. Transmitter of 1A Alltimer - formerly D-156548. | | |
| 389-AA | L | Filamentary forced-air cooled triode. 10 KW Pre-war FM Transmitter. Will use at Station WHAS after change to new frequencies. | G. E. | 889-R* |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

CHARACTERISTIC DATE

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Bell & Commercial Electron Tubes
Confidential - For Distribution Only Within the Company

| <u>Code Number</u> | <u>Price Category</u> | <u>Description & Material in Which Used</u> | <u>Competition</u> | <u>Code</u> |
|--------------------|-----------------------|---|-------------------------------|------------------------------|
| 393-A | S | <p>Filamentary thyratron containing both argon and mercury vapor. About 14,000 sockets in special Government gear 5/1/45. Will probably replace the 323-A tube in D, J, G, H, K, and 2067-F rectifiers used in KS-15123 rectifier (Railroad job.)</p> | Continental G. E. | CE-393-A 393-A 3-C-23* |
| 394-A | S | <p>Filamentary thyratron, argon and mercury vapor filled. Power supply tube for the J-86207-G and H rectifiers for carrier telegraph and the J-86207-N rectifier inverter. About 3970 sockets in special Government gear 5/1/45. Also used in X-61680-B regulated tube (package C carrier) rectifier (2 each) in telephone work. Probable post-war use in regulation of industrial power supplies. Both Mackay and RCA Communications bought surplus Government Radio TWX equipments which use 394-A tubes. Trucksess is assigning a J number so that X-61680-B rectifiers will be recognized as regular telephone plant when the purchase of Government Package C Carriers is completed. C.E. Budd estimates 10,000 operating sockets in spiral four 5/1/46.</p> | Kuthe' Chatham Electric | |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.

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Bell & Commercial Electron Tubes
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| <u>Code Number</u> | <u>Price Category</u> | <u>Description & Material in Which Used</u> | <u>Competition</u> | <u>Code</u> |
|--------------------|-----------------------|--|--------------------|-------------|
| 395-A | S | Three element, double gap, cold cathode gas filled tube for use as a relay, rectifier or voltage regulator. Designed to take mechanical shock. Unbased. Nine detection devices and other Government applications. About 92,000 sockets in special Government gear 5/1/45, practically none of which will ever require replacement. X TFDC devices (A.B. Kowenhoven). Has advantages over 727-A tube. | | |
| 396-A | S | Same as 2C51. Bell System code number assigned at A. T. & T. request. | | |
| 397-A | M | Same as 2K56 velocity modulated local oscillator and transmitting tube designed for the 4000 MC Radio Relay System (Boston - New York Link). | | |
| 398-A | S | Filamentary power pentode similar to the 374-A. One socket in each J-98701 A Carrier Tel. Terminal (Subset) and J-98701B (Terminal Equipment). Companion tubes are 376B, 399A, 400A and 401A. | | |
| 399-A | S | Filamentary miniature pentode similar to RMA code IT4. One socket in each J-98701A Carrier Tel. Terminal (Subset) and two sockets in each J-98701B (Terminal Equipment). Companion tubes are 376B, 398A, 400A and 401A. | Field | IT4 |

(S) Small value. (M) Medium value. (M.D.) Manufacture discontinued. (L) Large value.
(*) With modifications.