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# RADIO MANUFACTURERS ASSOCIATION

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N. W.
WASHINGTON, D. C.

R.M.A. DATA BUREAU
90 West Street
New York, N. Y.

December 9, 1938

RMA Release #152

To Tube Engineers

The Data Bureau has been requested by the Philco Radio & Television Corporation to announce the release to the radio industry of the following tube types:

35Z3
35A5
7B7
7C6
7A7
7Y4

In compliance with this request, technical data is being forwarded herewith.

Very truly yours,

RMA DATA BUREAU

By Lawrence C. F. Horle

LCFH:A

152(6)

12/1/38

# Type 35Z3(G-L)
## Cathode Type - Half Wave - High Vacuum Rectifier

### Tentative Data and Character

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 35 | volts |
| Heater Current (Nominal) | .160 | amp. |

### Operating Conditions & Characteristics

| | | |
|---|---|---|
| Heater Voltage | 32 | volts |
| Max. AC Plate Voltage (RMS) | 250 | volts |
| Max. Peak Inverse Voltage | 700 | volts |
| Max. DC Output Current | 100 | ma |
| Max. Peak Plate Current | 400 | ma |
| Max. Voltage Heater-Cathode | 300 | volts |
| Voltage Drop at 200 ma | 22 | volts |

Base - "Loktal" - 8 pin
Bulb - T-9
Max. Overall Length - 3-5/32"
Max. Diameter - 1-3/16"
Max. Seated Height - 2-5/8"

### Basing

Pin #1 - Heater
Pin #2 - P
Pin #3 - No connection
Pin #4 - No connection
Pin #5 - No connection
Pin #6 - No connection
Pin #7 - K
Pin #8 - Heater

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# Type 35A5(GL)
# Power Output Pentode

## Tentative Date & Characteristics

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 35.0 | volts |
| Heater Current (Nominal) | .160 | amp. |

## Operating Conditions & Characteristics

| | | |
|---|---|---|
| Heater Voltage | 32 | Volts |
| Grid #1 Voltage | -7.5 | volts |
| Grid #2 Voltage | 110 | volts |
| Grid #2 Current | 2.8 | ma |
| Plate Voltage | 110 | volts |
| Plate Current | 35 | ma |
| Plate Resistance | 25 | K ohms |
| Trans-conductance | 5500 | μmhos |
| Signal Input | 5.3 | volts RMS |
| Load Resistance | 2500 | ohms |
| Power Output | 1.40 | watts |

## Direct Interelectrode Capacitances

| | |
|---|---|
| Cgp | |
| Cg (F+K+G-2) | 7 |
| CP (F+K+G-2) | |

Base - "Loktal" 8 pin
Bulb - T-9
Max. Overall Length 3-5/32"
Max. Diameter 1-3/16"
Max. Seated Height 2-5/8"

## Basing

| | | | |
|---|---|---|---|
| Pin #1 | Heater | Pin #5 | No connection |
| Pin #2 | Plate | Pin #6 | G-1 |
| Pin #3 | G-2 | Pin #7 | K & Deflectors |
| Pin #4 | No connection | Pin #8 | Heater |

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# Type 7B7(GL)
## Tentative Ratings & Characteristics

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 7.0 | volts |
| Heater Current (Nominal) | .160 | amp |

## Operating Conditions & Characteristics

| | | |
|---|---|---|
| Heater Voltage | 6.3 | volts |
| Grid #1 Voltage | -3.0 | volts |
| Grid #2 Voltage | 100 | volts |
| Grid #2 Current | 2.0 | ma |
| Grid #3 Voltage | 0 | volts |
| Plate Voltage | 250 | volts |
| Plate Current | 8.5 | ma |
| Plate Resistance | .7 | Megohms |
| Amplification Factor | 1200 | |
| Transconductance (at -3.0) | 1700 | µmhos |
| Transconductance (at -40 ) | 10 | µmhos |

## Direct Interelectrode Capacitances

| | | |
|---|---|---|
| Cgp | .005 | µµfd max. |
| Cg (F+K+G-2+G-3) | 5.0 | µµfd |
| Cp (F+K+G-2+G-3) | 7.0 | µµfd |

Base - "Loktal" - 8 pin
Bulb - T-9
Max. overall length 2-25/32"
Max. Diameter 1-3/16"
Max. seated height 2-1/4"

## Basing

Pin #1 - Heater
Pin #2 - Plate
Pin #3 - G-2
Pin #4 - G-3
Pin #5 - Shield
Pin #6 - G-1
Pin #7 - K
Pin #8 - Heater

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# Type 7C6(G-4)
## Duo Diode Triode

### Tentative Ratings & Characteristics

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 7.0 | Volts |
| Heater Current (Nominal) | .160 | amp. |

### Operating Conditions & Characteristics

| | | |
|---|---|---|
| Heater Voltage | 6.3 | volts |
| Grid #1 Voltage | -1.0 | volts |
| Plate Voltage | 250 | volts |
| Plate Current | 1.3 | ma. |
| Plate Resistance | .1 | Megohms |
| Amplification Factor | 100 | |
| Transconductance | 1000 | μmhos |

### Direct Interelectrode Capacitances

| | | |
|---|---|---|
| Cgp | 1.4 | μμf max. |
| CgK | 2.4 | μμf |
| CpK | 3.0 | μμf |
| Cg-D-1 or D-2 | .01 | μμf max. |
| Cp-D-1 or D-2 | .02 | μμf max. |

Base - "Loktal" 8 pin
Bulb - T-9
Max. overall length 2-25/32"
Max. diameter 1-3/16"
Max. seated height 2-1/4"

### Basing

Pin #1 - Heater
Pin #2 - Plate
Pin #3 - Grid
Pin #4 - Shield & Cathode
Pin #5 - D-1
Pin #6 - D-2
Pin #7 - K
Pin #8 - Heater

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# Type 7A7 (6L)
## R. F. Pentode

### Tentative Ratings and Characteristics

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 7.0 | volts |
| Heater Current (Nominal) | .320 | amp. |

### Operating Conditions and Characteristics

| | | |
|---|---|---|
| Heater Voltage | 6.3 | volts |
| Grid #1 Voltage | -3.0 | volts |
| Grid #2 Voltage | 100 | volts ? |
| Grid #2 Current | 2.0 | ma |
| Grid #3 Voltage | 0 | volts |
| Plate Voltage | 250 | volts |
| Plate Current | 8.6 | ma |
| Plate Resistance | .80 | Megohms |
| Amplification Factor | 1600 | |
| Transconductance (at -3.0) | 2000 | µmhos |
| Transconductance (at -35 ) | 10 | µmhos |

### Direct Interelectrode Capacitances

| | | | |
|---|---|---|---|
| Cgp | .005 | µµf | max. |
| Cg (F+K+G-2+G-3) | 6.0 | µµf | |
| Cp (F+K+G-2+G-3) | 7.0 | µµf | |

Base - "Loktal" - 8 pin.
Bulb - T-9
Max. Overall Length - 2-25/32"
Max. Diameter - 1-3/16"
Max. Seated Height - 2-1/4"

### Basing

Pin #1 - Heater
Pin #2 - Plate
Pin #3 - G-2
Pin #4 - G-3
Pin #5 - Shield
Pin #6 - G-1
Pin #7 - K
Pin #8 - Heater

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12/1/38

Type 7Y4(GL)
Cathode Type - Full Wave - High Vacuum Rectifier

Tentative Data and Characteristics

| | | |
|---|---|---|
| Heater Voltage (Nominal) | 7.0 | volts |
| Heater Current (Nominal) | .530 | amp. |

Operating Conditions & Characteristics

| | | |
|---|---|---|
| Heater Voltage | 6.3 | volts |
| Max. AC Voltage per plate (RMS) | 350 | volts |
| Max. Peak Inverse Voltage | 1000 | volts |
| Max. DC Output Current | 60 | ma |
| Max. Peak Plate Current | 250 | ma |
| Max. Voltage Heater-Cathode | 450 | volts |
| Voltage Drop at 60 ma (each side) | 19 | volts |

Base - "Loktal" - 8 pin
Bulb - T-9
Max. Overall Length - 2-25/32"
Max. Diameter - 1-3/16"
Max.Seated Height - 2-1/4"

Basing

Pin #1 - Heater
Pin #2 - No connection
Pin #3 - P-2
Pin #4 - No connection
Pin #5 - No connection
Pin #6 - P-1
Pin #7 - K
Pin #8 - Heater

# RADIO MANUFACTURERS ASSOCIATION
## ENGINEERING DEPARTMENT

RMA DATA BUREAU
90 WEST STREET
NEW YORK, N. Y.

RMA Release No. 152A

February 20, 1941

To
Tube Engineers:

Registration was made by the RMA Data Bureau of vacuum tube 35Z3 under the sponsorship of the Philco Radio & Television Corp. on December 9, 1938 and announced in RMA Release No. 152.

The Philco Corporation now requests the announcement of a modification of ~~this~~ tube type as described in the data sheets herewith attached.

Respectfully yours,

RMA DATA BUREAU

By: Lawrence C. F. Horle

Encl.
LCFH:A

RMA Release # 152A

PHILCO RADIO & TELEVISION CORPORATION
PHILADELPHIA, PA.

TECHNICAL DATA
TYPE 35Z3
Half-Wave High-Vacuum Rectifier

REVISED RATINGS AND CHARACTERISTICS

## Physical Specifications

| | |
|---|---|
| Coated Unipotential Cathode | |
| Base | Loktal 8-pin |
| Bulb | T-9 |
| Maximum Diameter | 1-3/16" |
| Maximum Overall Length | 3-5/32" |
| Maximum Seated Height | 2-5/8" |
| Pin Connections | RMA Basing No. 4Z-L-0 |

| | |
|---|---|
| Pin 1 - Heater | Pin 5 - No Connection |
| Pin 2 - Plate | Pin 6 - No Connection |
| Pin 3 - No Connection | Pin 7 - Cathode |
| Pin 4 - Internal Connection | Pin 8 - Heater |

Mounting Position — Any

## Ratings

| | |
|---|---|
| Heater Voltage (ac or dc) | 35.0 volts |
| Heater Current | .150 ampere** |
| Maximum AC Plate Voltage (RMS) | 235 volts |
| Maximum DC Heater to Cathode Potential | 350 volts |
| Maximum Peak Inverse Voltage | 700 volts |
| Maximum Steady-State Peak Plate Current | 600 ma. |
| Tube Voltage Drop: Measured with applied DC at 200 ma. Plate Current | 20 volts |

## Typical Operating Conditions

### Half-Wave Rectifier

| | | | |
|---|---|---|---|
| Heater Voltage | 35.0 | 35.0 | 35.0 volts |
| Heater Current | 0.150 | 0.150 | 0.150 ampere** |
| AC Plate Voltage (RMS) | 117 | 150 | 235 max. volts |
| DC Output Current | 100 max. | 100 max. | 100 max. ma. |
| Minimum Total Effective Plate Supply Impedance* | 15 | 40 | 100 ohms |

* When filter condensers larger than 40 µfds are used, it may be necessary to add additional plate supply impedance.

** Denotes change, was originally 0.16 ampere.

# RADIO MANUFACTURERS ASSOCIATION
## ENGINEERING DEPARTMENT

RMA DATA BUREAU
90 WEST STREET
NEW YORK, N. Y.

RMA Release No. 152B

April 17, 1941

To
Tube Engineers

Registration was made by the RMA Data Bureau of vacuum tube 35A5 under the sponsorship of the Philco Radio and Television Corporation on December 9, 1938 and announced in RMA Release No. 152.

The Philco Corporation now requests the announcement of change of heater current from 0.16 to 0.15 amps. and the distribution of data with respect to the rating and typical operating conditions and characteristics of this tube type. This is given in the data sheet herewith attached.

Respectfully yours,

RMA DATA BUREAU

By:

Encl.
LCFH:

PHILCO RADIO & TELEVISION CORPORATION
PHILADELPHIA, PA.

# TECHNICAL DATA
# TYPE 35A5
# Beam Power Amplifier

## REVISED RATINGS AND CHARACTERISTICS

### Physical Specifications

| | |
|---|---|
| Coated Unipotential Cathode | |
| Base | Loktal 8-pin |
| Bulb | T-9 |
| Maximum Diameter | 1-3/16" |
| Maximum Overall Length | 3-5/32" |
| Maximum Seated Height | 2-5/8" |

Pin Connections — RMA Basing No. 6AA-L-0

| | |
|---|---|
| Pin 1 - Heater | Pin 5 - No Connection |
| Pin 2 - Plate | Pin 6 - Grid #1 |
| Pin 3 - Grid #2 | Pin 7 - Cathode & Beam Plates |
| Pin 4 - No Connection | Pin 8 - Heater |

Mounting Position — Any

### Ratings

| | |
|---|---|
| Heater Voltage (AC or DC) | 35.0 volts |
| Heater Current | 0.150 ampere** |
| Maximum Plate Voltage | 200 volts |
| Maximum Screen Voltage | 117 volts |
| Maximum Plate Dissipation | 8.5 watts |
| Maximum Screen Dissipation | 1 watt |

### Typical Operating Conditions and Characteristics - Amplifier Class $A_1$

| | | |
|---|---|---|
| Heater Voltage (AC or DC) | 35.0 | 35.0 volts |
| Heater Current | 0.150 | 0.150 ampere** |
| Plate Voltage | 200 | 110 volts |
| Screen Voltage | 110 | 110 volts |
| Grid Voltage * | -8 | -7.5 volts |
| Peak A-F Grid Voltage | 8 | 7.5 volts |
| Plate Resistance (approx.) | 40,000 | 14,000 ohms |
| Transconductance | 5900 | 5800 umhos |
| Zero-Signal Plate Current | 41 | 40 ma. |
| Maximum-Signal Plate Current | 44 | 41 ma. |
| Zero-Signal Screen Current (Nominal) | 2 | 3 ma. |
| Maximum-Signal Screen Current(Nominal) | 7 | 7 ma. |
| Load Resistance | 4500 | 2500 ohms |
| Total Harmonic Distortion | 10 | 10 % |
| Power Output | 3.3 | 1.5 watts |

* The dc resistance in the grid circuit, under rated maximum conditions, for the type 35A5, should not exceed 0.5 megohm for self-bias operation and 0.1 megohm for fixed bias operation.

** Denotes change, was originally 0.16 ampere.

Release No. 152C
J5-7C6
May 10,1948

JETEC DATA
JOINT ELECTRON TUBE ENGINEERING COUNCIL
COMMITTEE ON RECEIVING TUBES

# JETEC TYPE 7C6

## DOUBLE DIODE TRIODE

### MECHANICAL DATA

Coated unipotential cathode

| | | | |
|---|---|---|---|
| Outline drawing | 9-30 | Bulb | T-9 |
| Base | | | D8-1 lock-in 8-pin |
| Maximum diameter | | | 1-3/16" |
| Maximum overall length | | | .2-25/32 " |
| Maximum seated height | | | 2-1/4" |
| Pin connections | | | .Basing 8W-L-7 |

Pin 1 - Heater
Pin 2 - Triode plate
Pin 3 - Triode grid
Pin 4 - Internal connection
Pin 5 - #2 diode plate
Pin 6 - #1 diode plate
Pin 7 - Cathode, internal shield
Pin 8 - Heater

Mounting position. . . . . .Any

### ELECTRICAL DATA

#### Direct Interelectrode Capacitances*

| | | |
|---|---|---|
| Diode input (each unit): (1p or 2p to h+k) | 1.6 | µµf |
| Triode grid to #1 diode plate (g to 1p) (max.) | 0.01 | µµf |

*External shield #308 connected to pin 7.

#### Ratings

| | | |
|---|---|---|
| Heater voltage (nominal) (ac or dc) | 7.0 | volts |
| Maximum heater-cathode voltage | 90 | volts |
| Maximum plate voltage | 300 | volts |
| Maximum plate dissipation | 0.6 | watt |
| Maximum positive voltage (dc) grid | 0 | volts |
| Maximum diode current each plate for continuous operation | 1.0 | ma |

#### Typical Operating Conditions and Characteristics, Class A1 Amplifier

| | | | |
|---|---|---|---|
| Heater voltage (ac or dc) | 6.3 | 6.3 | volts |
| Heater current | 150 | 150 | ma |
| Plate voltage | 100 | 250 | volts |
| Grid voltage | 0 | -1 | volts |
| Plate resistance (approx.) | 100,000 | 100,000 | ohms |
| Transconductance | 850 | 1000 | µmhos |
| Amplification factor | 1.0 | 1.3 | ma |
| Average diode current each plate with 10 volts dc applied | 85 | 100 | |
| | 2.0 | 2.0 | ma |

Refer to "Interpretation of Receiving Tube Ratings"

JETEC DATA
JOINT ELECTRON TUBE ENGINEERING COUNCIL
COMMITTEE ON RECEIVING TUBES

October 4, 1948

# JETEC TYPE 35A5

## BEAM PENTODE

## MECHANICAL DATA

Coated unipotential cathode

| | | | |
|---|---|---|---|
| Outline drawing | 9-31 | Bulb | T-9 |
| Base | | | D8-1 lock-in 8-pin |
| Maximum diameter | | | 1-3/16" |
| Maximum overall length | | | 3-5/32" |
| Maximum seated height | | | 2-5/8" |
| Pin connections | | | Basing 6AA |

Pin 1 - Heater
Pin 2 - Plate
Pin 3 - Grid #2
Pin 4 - No connection
Pin 5 - No connection
Pin 6 - Grid #1
Pin 7 - Cathode, beam plate
Pin 8 - Heater

Mounting position . . . . . any

## ELECTRICAL DATA

### Ratings

| | | |
|---|---|---|
| Heater voltage (ac or dc) | 35.0 | volts |
| Maximum plate voltage | 200 | volts |
| Maximum grid #2 voltage | 125 | volts |
| Maximum plate dissipation | 8.5 | watts |
| Maximum grid #2 dissipation | 1.0 | watts |
| Maximum grid #1 circuit resistance (self-bias) | 0.5 | megohm |
| Maximum grid #1 circuit resistance (fixed-bias) | 0.1 | megohm |
| Maximum heater-cathode voltage | 90 | volts |

### Typical Operating Conditions and Characteristics, Class A1 Amplifier

| | | | |
|---|---|---|---|
| Heater voltage | 35.0 | 35.0 | volts |
| Heater current | 150 | 150 | ma |
| Plate voltage | 110 | 200 | volts |
| Grid #2 voltage | 110 | 125 | volts |
| Grid #1 voltage | -7.5 | 0 | volts |
| Cathode-bias resistor | 0 | 180 | ohms |
| Peak a-f grid #1 voltage | 7.5 | 8.0 | volts |
| Plate resistance (approx.) | 14,000 | 34,000 | ohms |
| Transconductance | 5,800 | 6,100 | μmhos |
| Zero-signal plate current | 40 | 43 | ma |
| Maximum-signal plate current | 41 | 43 | ma |
| Zero-signal grid #2 current | 3 | 2.0 | ma |
| Maximum-signal grid #2 current | 7 | 5.5 | ma |
| Load resistance | 2,500 | 5,000 | ohms |
| Total harmonic distortion (approx.) | 10 | 10 | % |
| Power output | 1.5 | 3.0 | watts |

Refer to "Interpretation of Receiving Tube Ratings"

JETEC DATA
JOINT ELECTRON TUBE ENGINEERING COUNCIL
COMMITTEE ON RECEIVING TUBES

December 15, 1950

# JETEC TYPE 35Z3

## DIODE

## MECHANICAL DATA

Coated unipotential cathode

| | | | |
|---|---|---|---|
| Outline drawing | 9-31 | Bulb | T-9 |
| Base | | | D8-1 lock-in 8-pin |
| Maximum diameter | | | 1-3/16" |
| Maximum overall length | | | 3-5/32" |
| Maximum seated height | | | 2-5/8" |
| Pin connections | | | Basing 4Z |

Pin 1 - Heater
Pin 2 - Plate
Pin 3 - No connection
Pin 4 - No connection
Pin 5 - No connection
Pin 6 - No connection
Pin 7 - Cathode
Pin 8 - Heater

Mounting position . . . any

## ELECTRICAL DATA

### Ratings

| | | |
|---|---|---|
| Heater voltage (ac or dc) | 35 | volts |
| Maximum heater-cathode voltage | 350 | volts |
| Maximum peak inverse voltage | 700 | volts |
| Maximum steady-state peak plate current | 600 | ma |
| Maximum dc output current | 100 | ma |

### Typical Operating Conditions and Characteristics (half-wave rectifier)

| | | | |
|---|---|---|---|
| Heater voltage (ac or dc) | 35 | 35 | volts |
| Heater current | 150 | 150 | ma |
| AC plate supply voltage (RMS) | 117 | 235 | volts |
| Filter input capacitor | 40 | 40 | μf |
| Minimum total effective plate supply impedance | 15 | 100 | ohms |
| DC output voltage at input to filter (approx.): | | | |
| At 50 ma (half-load) | 140 | 280 | volts |
| At 100 ma (full-load) | 120 | 235 | volts |
| Difference (voltage regulation) | 20 | 45 | volts |
| Percentage regulation | 14 | 16 | % |
| DC output current | 100 | 100 | ma |
| Tube voltage drop (measured with tube conducting 200 ma.) | | 18 | volts |

Refer to "Interpretation of Receiving Tube Ratings"

Release No. 152C
J5-7B7
Dec. 15, 1950

JETEC DATA
JOINT ELECTRON TUBE ENGINEERING COUNCIL
COMMITTEE ON RECEIVING TUBES

# JETEC TYPE 7B7

## PENTODE

## MECHANICAL DATA

Coated unipotential cathode

| | |
|---|---|
| Outline drawing | 9-30 |
| Bulb | T-9 |
| Base | D8-1 lock-in 8-pin |
| Maximum diameter | 1-3/16" |
| Maximum overall length | 2-25/32" |
| Maximum seated height | 2-1/4" |
| Pin connections | Basing 8V |

Pin 1 - Heater
Pin 2 - Plate
Pin 3 - Grid #2
Pin 4 - Grid #3
Pin 5 - Internal shield
Pin 6 - Grid #1
Pin 7 - Cathode
Pin 8 - Heater

Mounting position . . . . . any

## ELECTRICAL DATA

### Direct Interelectrode Capacitances*

| | | |
|---|---|---|
| Grid to Plate: (g1 to p) max. | 0.004 | µµf |
| Input: g1 to (h+k+g2+g3+i.s.) | 5.0 | µµf |
| Output: p to (h+k+g2+g3+i.s.) | 6.0 | µµf |

*External shield #308 connected to pin 7.

### Ratings

| | | |
|---|---|---|
| Heater voltage (nominal) (ac or dc) | 7.0 | volts |
| Maximum heater-cathode voltage | 90 | volts |
| Maximum plate voltage | 300 | volts |
| Maximum grid #2 voltage | 100 | volts |
| Minimum negative grid #1 voltage | 0 | volts |
| Maximum plate dissipation | 2.25 | watts |
| Maximum grid #2 dissipation | 0.25 | watt |

### Typical Operating Conditions and Characteristics, Class A1 Amplifier

| | | | |
|---|---|---|---|
| Heater voltage | 6.3 | 6.3 | volts |
| Heater current | 150 | 150 | ma. |
| Plate voltage | 100 | 250 | volts |
| Grid #3 and internal shield | Pin 4 and 5 connected to pin 7 at socket | | |
| Grid #2 voltage | 100 | 100 | volts |
| Grid #1 voltage | -3 | -3 | volts |
| Plate resistance | 0.30 | 0.75 | megohm |
| Transconductance | 1675 | 1750 | µmhos |
| Plate current | 8.2 | 8.5 | ma. |
| Grid #2 current | 1.8 | 1.7 | ma |
| Grid #1 voltage (approx.) for Gm = 10 µmhos | -40 | -40 | volts |

Refer to "Interpretation of Receiving Tube Ratings"