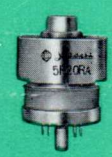


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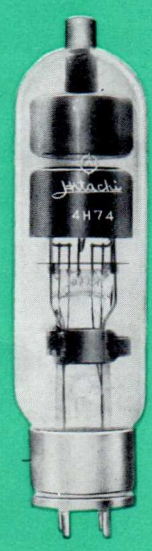
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Figure may be  
see NEC

- VACUUM POWER TUBES
- HIGH-VACUUM RECTIFIERS
- MERCURY-VAPOR RECTIFIERS
- GAS-FILLED RECTIFIERS
- GRID-CONTROLLED RECTIFIERS
- DISC SEAL TRIODES
- REFLEX KLYSTRONS
- TRAVELLING WAVE TUBES



# HITACHI ELECTRON TUBES



 **Hitachi, Ltd.**  
Tokyo Japan

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## Guide to the Use of This Catalogue

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1. Some hundred tube types are covered by this quick reference catalog. Some of them are readily interchangeable with American types shown under the column "American Equivalent."
2. Explanation of Symbols used in "Cathode Type" symbols:
  - FO : Direct-Heated, Oxide-Coated Filament.
  - FT : Thoriated-Tungsten Filament.
  - FW : Pure-Tungsten Filament.
  - HO : Oxide-Coated Unipotential Cathode.
3. Only typical ones are shown under "Class of Service" and "Applications."  
Explanation of symbols used in "Class of Service" symbols:
  - AB<sub>1</sub> : Class-AB<sub>1</sub> Push-Pull Audio-Frequency Power Amplifier or Modulator.
  - AB<sub>2</sub> : Class-AB<sub>2</sub> Push-Pull Audio-Frequency Power Amplifier or Modulator.
  - B : Class-B Push-Pull Audio-Frequency Power Amplifier or Modulator.
  - CM : Class-C Suppressor-Grid-Modulated Telephone Service.
  - CP : Class-C Plate-Modulated Telephone Service.
  - CT : Class-C Telegraph and Frequency-Modulated Telephone Service.
4. "Maximum Plate Ratings" and "Maximum Ratings" show the values depending on Absolute Maximum Rating System. Also, the values are for Continuous Services unless otherwise noted.
5. In classes CM, CP and CT, the values shown under "Maximum Plate Ratings" and "Typical Operating Conditions" are for one tube. (Therefore, values are for two units in the cases of twin-unit types.) In classes AB<sub>1</sub>, AB<sub>2</sub> and B, the values shown under "Maximum Plate Ratings" are for one tube; and those under "Typical Operating Conditions" are for two tubes, or for two units in twin-unit types.
6. In some cases DC screen voltage should be supplied through a series resistor from higher voltage supply. Voltages shown under "DC Screen Volts" are average values of screen grid voltage obtained in this manner. Similar expressions are taken for "DC Grid Volts" which should be obtained through a grid or cathode circuit resistor.
7. Explanation of the symbols used in base connection diagrams.

Col : Collector	IS : Internal Shield
F : Filament	K : Cathode
FCT : Filament Center Tap	NC : No Connection
G : Grid	P : Plate
H : Heater	R : Repeller
HCT : Heater Center Tap	RS : Resonator Shell
Hel : Helix	S : Shield
IC : Internal Connection	

# How to Handle Power Tubes

## 1. Observation Common to All Types

### (A) Fixing

- (1) Power tubes should preferably be installed in a vertical position. For other positions allowed, refer to instructions given in the tables concerning respective kinds of power tubes.
- (2) Use buffer devices when power tubes receive oscillations and shocks.
- (3) In the case of high-voltage power tubes for over several thousand volts, keep connections and wirings at a clearance of more than several centimeters from the glass. If they are placed too close, glass valves will be absorbed on account of corona discharge valves, and other phenomena.

### (B) Cathode Heating Voltage

It is very important that fluctuations in cathode voltage be kept below the following values in order to prolong the service life of power tubes:

Thorium tungsten filament cathode (FT) .....	with in $\pm 5\%$
Directly-heated oxide cathode (FO) .....	with in $\pm 5\%$
Indirectly-heated oxide cathode (HO) .....	with in $\pm 10\%$

When employing tungsten filament (FW), be careful to use a low voltage so long as there is no decline in working efficiency and not to exceed the rated value of  $+5\%$ .

### (C) Maximum Rating

The maximum rated values given above are the highest limits that should not be exceeded so as to stabilize action and prolong service life. Especially, be careful not to exceed the maximum rated values when adjusting the set or when there are fluctuations in power source. In case there is any input excess over  $50\%$ , cut it off instantly by means of a fuse or overload breaker placed in the input circuit.

## 2. Proper Way of Handling Vacuum Tubes for Transmission

### (A) Use and Keeping

When using for the first time after their arrival vacuum tubes for transmission with an anode loss over  $50\text{ W}$ , fire the cathode for about 15 minutes first and then apply an anode voltage on them.

In the case of large-type vacuum tubes with an anode loss over  $500\text{ W}$ , apply an anode voltage on them after reducing it by half and 15 minutes later, a full-voltage. After that, operate the vacuum tubes in a regular way for over 30 minutes. When you want to keep vacuum tubes for transmission for a long period without using them, it is recommended that you conduct the above operation once in three to six months.

### (B) Cooling

- (1) As a rule, keep the temperature at below  $180^\circ\text{C}$ , at the part of electrode lead where glass valve is sealed. Any excess of this temperature will necessitate forced-air-cooling, irrespective of instructions given in the tables.
- (2) In the case of vacuum tubes for forced-air-cooling, operate the blower before firing filament or simultaneously with its firing. When their action is over, stop the blower after the cathode is extinguished or simultaneously with it.
- (3) In the case of those for water-cooling, it is required that they be cooled by water when the filament is set fire. As soon as the water stops flowing, cut off the anode and filament circuits without fail.

### (C) Prevention of Parasitic Oscillations

Parasitic oscillations will often bring about unexpected accidents, including absorbing by valves. Hence, their prevention needs particularly careful attention.

## 3. Proper Way of Handling Hot Cathode Mercury Rectifier

### (A) Use and Keeping

When using hot cathode mercury rectifiers for the first time after their arrival, set fire to the filament first with a rated voltage (Type 2H66 for 5 minutes, Type 4H72 for 10 minutes, and Type 4H73 for 30 minutes). In case the inverse voltage exceeds  $8\text{ kV}$ , impress an anode voltage on them after reducing it by half, and about 30 minutes later, step it up to a normal voltage for action. When you want to keep hot cathode mercury rectifiers for a long period without using them, carry out the above operation once in three months.

### (B) Condensed Mercury Temperature

To prevent the growing of inverse arc, it is very important to keep the condensed mercury temperature (temperature of valve within  $1\text{ cm}$  from the upper end of the base) within the designated range.

### (C) Peak Inverse Voltage

It sometimes occurs that the value of anode inverse voltage will become greater than those anticipated on account of overload, distortion in the wave of AC voltage and other causes. When the peak anode inverse voltage stands nearly at the maximum rated value, it is necessary that you confirm that it does not exceed the maximum rated value.

## 4. Proper Way of Handling Gas-filled and Mercury-vapor Grid-controlled Rectifiers

### (A) Use and Keeping

In these respects, treat them in the same way as the mercury-vapor rectifier.

### (B) Peak Inverse Voltage

Pay the same attention as in the case of mercury-vapor rectifier.

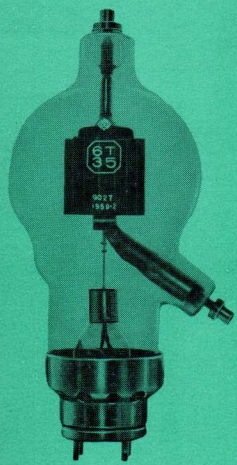
### (C) Phase of Filament Voltage

Their longest service life can be obtained when the phase of filament voltage (voltage phase of pin indicated by the service symbol FS in the diagram showing connections) is advanced  $90$  degrees from the anode voltage phase. For simplifying connections, it is recommended that the phase be advanced  $60$  or  $120$  degrees in the case of 3-phase circuit and to place it in inverse phase to each other in the case of single-phase circuit.

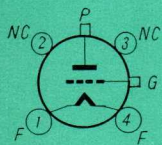
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# POWER TUBES

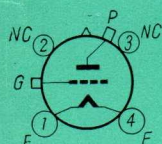
## TRIODES (Air-Cooled)



6T35



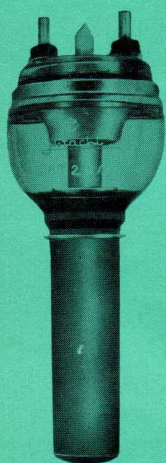
3T12



4T16•4T17

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Amplification Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
3T12	—	Intended for use in industrial heating.	F T	10	4.25	190	65	20
4T16	100T L ✓	Low- $\mu$ type general-purpose triode.	F T	5	6.3	190	80	14
4T17	100T H ✓	High- $\mu$ type general-purpose triode.	F T	5	6.3	190	80	38
5T20	250T L ✓	Low- $\mu$ type general-purpose triode.	F T	5	10.5	250	97	14
5T21	250T H ✓	High- $\mu$ type general-purpose triode.	F T	5	10.5	250	97	35
5T25	—	Similar to 5T20 but has higher ratings.	F T	5	10.5	250	97	14
5T30	450T L ✓	Low- $\mu$ type general-purpose triode.	F T	7.5	12	310	128	18
5T31	450T H ✓	High- $\mu$ type general-purpose triode.	F T	7.5	12	310	128	38
6T35	750T L ✓	Low- $\mu$ type triode.	F T	7.5	21	420	178	15
7T40	1000T ✓	General-purpose triode. Forced air cooling required at full-rating operation.	F T	7.5	16	310	128	35
SN-205C	—	Low- $\mu$ type triode, not recommended for new equipment.	F T	11	12	380	140	14
UV-211A	—	Low- $\mu$ type triode, not recommended for new equipment.	F T	10	3.25	170	52	12

## TRIODES (Water-Cooled)



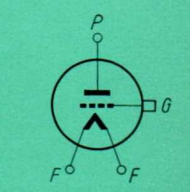
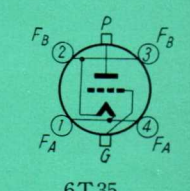
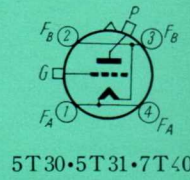
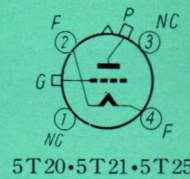
8T20A



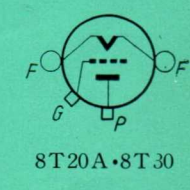
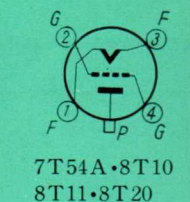
7T54•7T56

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Amplification Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
7T54	—	Improved version of 7T56 with thoriated tungsten filament.	F T	12	25	230	85	25
7T54A	—	Similar to 7T54, but has different terminals.	F T	12	25	220	85	25
7T56	—	General purpose 5 kW triode with pure-tungsten filament.	F W	16	50	245	85	25
8T10	—	General purpose 10 kW triode with pure-tungsten filament.	F W	22	60	375	100	25
8T11	—	Improved version of 8T10 with thoriated tungsten filament.	F T	12	40	375	100	25
8T20	—	High-Gm type with thoriated tungsten filament.	F T	12	40	320	110	21
8T20A	—	Improved version of 8T20 with ring-sealed grid.	F T	12	40	325	115	21
8T30	—	High- $\mu$ type with ring-sealed grid construction. Intended for use in AM broadcast transmitter.	F T	12	40	380	115	50

Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type
		D C Volts	D C Input Watts	Dissipation Watts	D C Plate Volts	D C Grid Volts	D C Plate Amps.	Driving Power Watts	Power Output Watts	
		C P	75	1,800	230	60	1,500	-300	0.125	
C P	75	2,250	350	90	2,000	-250	0.15	10	220	
C P	40	2,500	260	65	2,000	-500	0.13	21	200	4T16
C T	40	3,500	400	100	3,000	-400	0.13	15	300	
B	—	3,000	350	100	2,500	-50	0.06	2.5	300	4T17
C P	40	2,500	260	65	2,000	-250	0.13	17	200	
C T	40	3,500	400	100	3,000	-200	0.13	11	300	
C P	40	3,200	660	165	3,000	-550	0.2	25	460	5T20
C T	40	4,000	1,000	250	3,000	-350	0.31	29	680	
B	—	4,000	850	250	3,000	-70	0.06	3.8	630	5T21
C P	40	3,200	660	165	3,000	-250	0.2	23	460	
C T	40	4,000	1,000	250	3,000	-150	0.31	20	680	
C T	40	4,000	1,200	350	3,500	-350	0.33	32	800	5T25
C P	40	4,500	1,200	300	4,000	-550	0.27	37	920	5T30
C T	40	6,000	1,800	450	5,000	-500	0.35	45	1,350	
B	—	5,000	1,500	450	4,000	-120	0.08	7	1,200	5T31
C P	40	4,500	1,200	300	4,000	-450	0.27	47	920	
C T	40	6,000	1,800	450	5,000	-350	0.35	32	1,350	
C P	40	5,500	2,000	450	5,000	-850	0.3	100	1,200	6T35
C T	40	7,500	3,500	750	6,000	-700	0.48	61	2,300	
B	—	7,500	3,000	1,000	6,000	-160	0.15	12	3,100	7T40
C P	50	5,500	2,400	600	5,000	-450	0.45	75	1,800	
C T	50	7,500	4,000	1,000	6,000	-400	0.6	52	2,700	
B	—	3,000	1,250	500	—	—	—	—	—	S N-205 C
C P	15	2,500	1,000	300	—	—	—	—	—	
C T	15	3,000	1,500	500	2,500	-350	0.45	35	750	
B	—	1,250	150	75	1,000	-77	0.02	3	170	U V-211 A
C P	10	1,000	145	50	—	—	—	—	—	
C T	10	1,250	180	75	1,000	-150	0.13	5	85	

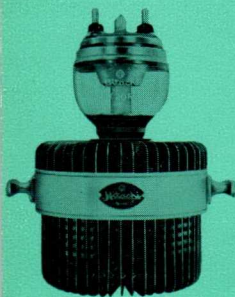


Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type
		D C Volts	D C Input Watts	Dissipation Watts	D C Plate Volts	D C Grid Volts	D C Plate Amps.	Driving Power Watts	Power Output Watts	
		B	—	8,000	7,000	3,000	7,000	-230	.300	
C P	40	6,000	4,000	2,000	6,000	-850	.600	130	2,500	
C T	40	8,000	7,000	3,000	7,000	-800	.850	140	4,300	
B	—	8,000	7,000	3,000	7,000	-230	.300	45	6,000	7T54A
C P	40	6,000	4,000	2,000	6,000	-850	.600	130	2,500	
C T	40	8,000	7,000	3,000	7,000	-800	.850	140	4,300	
B	—	8,000	7,000	3,000	7,000	-230	.300	40	5,600	7T56
C P	40	6,000	4,000	2,000	6,000	-850	.600	100	2,300	
C T	40	8,000	7,000	3,000	7,000	-800	.850	110	4,000	
B	—	12,000	20,000	10,000	11,000	-370	.500	55	21,000	8T10
C P	30	10,000	10,000	6,600	9,000	-1,200	1.000	230	6,500	
C T	30	12,000	22,000	10,000	11,000	-1,200	1.800	430	13,500	
B	—	12,000	20,000	10,000	11,000	-370	.500	60	23,000	8T11
C P	30	10,000	10,000	6,600	9,000	-1,200	1.000	250	7,000	
C T	30	12,000	22,000	10,000	11,000	-1,200	1.800	440	14,000	
B	—	12,000	25,000	10,000	11,000	-480	.500	48	25,000	8T20
C P	30	10,000	18,000	6,600	9,000	-1,200	1.300	300	8,500	
C T	30	12,000	25,000	10,000	11,000	-1,200	2.200	320	18,000	
B	—	12,000	25,000	10,000	11,000	-480	.500	48	25,000	8T20A
C P	30	10,000	18,000	6,600	9,000	-1,200	1.300	300	8,500	
C T	30	12,000	25,000	10,000	11,000	-1,200	2.200	320	18,000	
B	—	12,000	20,000	10,000	11,000	-145	.500	85	20,000	8T30
C P	30	10,000	10,000	6,500	9,000	-1,000	.850	310	5,500	
C T	30	14,000	22,000	10,000	11,000	-1,000	1.750	400	13,000	



# POWER TUBES

## TRIODES (Forced-Air-Cooled)



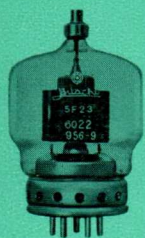
8T20R A



7T54R • 7T56R

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Amplification Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
7T54R	—	Improved version of 7T56R with thoriated tungsten filament.	F T	12	25	240	126	25
7T54R A	—	Similar to 7T54R, but has different terminals.	F T	12	25	230	126	25
7T56R	—	Pure-tungsten filament type, general purpose 5 kW triode.	F W	16	50	255	126	25
8T10R	—	Pure-tungsten filament type, general purpose 10 kW triode.	F W	22	60	395	205	25
8T11R	—	Thoriated tungsten filament type, other features same as 8T10R.	F T	12	40	395	205	25
8T20R	—	High-Gm type with thoriated tungsten filament.	F T	12	40	320	205	21
8T20R A	—	Improved version of 8T20R with ring-sealed grid.	F T	12	40	330	205	21
8T30R	—	High-mu type with ring-sealed grid. Used in AM broadcast transmitters.	F T	12	40	395	205	50

## TETRODES (Air-Cooled)



5F23

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Grid-Screen Mu-Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
4F21	4D21/✓ 4-125A	Radial beam type for VHF transmitters.	F T	5	6.5	138	73	6.2
5F22	5D22/ 4-250A ✓	Radial beam type for VHF transmitters.	F T	5	14	156	89	5.3
5F23	4-400A	Similar to 5F22, but has higher ratings.	F T	5	14	156	89	5.3

## TETRODES (Forced-Air-Cooled)



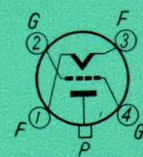
4F16R



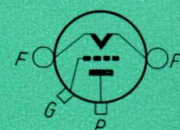
5F20R A

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Grid-Screen Mu-Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
4F15R	4X150A	Small and compact type for VHF/UHF transmitters.	H O	6.0	2.6	63	41.3	5
4F16R	6816 ✓	Very small and compact type with ceramic-seal construction useful up to 1,200 Mc with full rating.	H O	6.3	2.1	48	31.8	16
4F20R	4X150D	Same as 4F15R, but has 26.5 volts heater for aircraft equipments.	H O	26.5	0.57	63	41.3	5
5F20R A	4C X250B	Improved version of 4F15R having higher ratings with ceramic-seal and intergral cooler design.	H O	6.0	2.6	63	41.3	5

Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type
		D C	D C	Dissipa-	D C	D C	D C	Driving	Power	
		Volts	Input Watts	tion Watts	Plate Volts	Grid Volts	Plate Amps.	Power Watts	Output Watts	
B	—	8,000	6,000	2,500	7,000	-230	.300	45	6,000	7T54R
CP	40	6,000	4,000	1,500	6,000	-850	.600	130	2,500	
CT	40	8,000	6,000	2,500	7,000	-800	.850	140	4,300	
B	—	8,000	6,000	2,500	7,000	-230	.300	45	6,000	7T54R A
CP	40	6,000	4,000	1,500	6,000	-850	.600	130	2,500	
CT	40	8,000	6,000	2,500	7,000	-800	.850	140	4,300	
B	—	8,000	6,000	2,500	7,000	-230	.300	40	5,600	7T56R
CP	40	6,000	4,000	1,500	6,000	-850	.600	100	2,300	
CT	40	8,000	6,000	2,500	7,000	-800	.850	110	4,000	
B	—	12,000	12,000	6,000	9,000	-300	.500	35	12,500	8T10R
CP	30	10,000	10,000	4,000	9,000	-1,200	1.000	230	6,500	
CT	30	12,000	17,000	6,000	10,000	-1,200	1.600	300	11,000	
B	—	12,000	12,000	6,000	9,000	-300	.500	40	13,000	8T11R
CP	30	10,000	10,000	4,000	9,000	-1,200	1.000	250	7,000	
CT	30	12,000	17,000	6,000	10,000	-1,200	1.600	380	12,000	
B	—	12,000	20,000	6,000	10,000	-430	.500	35	16,000	8T20R
CP	30	10,000	16,000	4,000	9,000	-1,200	1.300	300	8,500	
CT	30	12,000	22,000	6,000	10,000	-1,100	2.000	300	15,500	
B	—	12,000	20,000	6,000	10,000	-430	.500	35	16,000	8T20R A
CP	30	10,000	16,000	4,000	9,000	-1,200	1.300	300	8,500	
CT	30	12,000	22,000	6,000	10,000	-1,100	2.000	300	15,500	
B	—	12,000	12,000	6,000	9,000	-110	.400	50	9,000	8T30R
CP	30	10,000	10,000	4,000	9,000	-1,000	.850	310	5,500	
CT	30	12,000	17,000	6,000	10,000	-800	1.500	300	10,000	

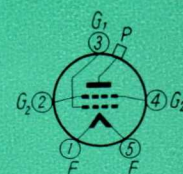


7T54R A  
8T10R  
8T11R  
8T20R



8T20R A  
8T30R

Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type	
		D C	D C	Dissipa-	D C	D C	D C	D C	Driving		Power
		Volt	Input Watts	tion Watts	Plate Volts	Screen Volts	Grid Volts	Plate Amps.	Power Volts		Output Watts
AB <sub>2</sub>	—	3,000	320	125	2,500	350	-43	0.26	2.4	400	4F21
CP	120	2,500	300	85	2,000	350	-250	0.14	4.2	220	
CT	120	3,000	400	125	3,000	350	-180	0.15	3.3	350	
AB <sub>2</sub>	—	4,000	800	250	3,000	300	-53	0.47	4.6	1,000	5F22
CP	75	3,200	660	165	2,500	400	-200	0.21	3.5	400	
CT	75	4,000	1,000	250	3,500	500	-200	0.26	3.5	700	
AB <sub>2</sub>	—	4,000	1,100	400	3,500	500	-85	0.7	5.1	1,650	5F23
CP	110	3,200	850	270	3,000	500	-230	0.27	4.5	610	
CT	110	4,000	1,400	400	4,000	500	-230	0.31	5.0	950	

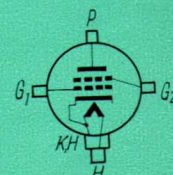


4F21  
5F22  
5F23

Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type	
		D C	D C	Dissipa-	D C	D C	D C	D C	Driving		Power
		Volts	Input Watts	tion Watts	Plate Volts	Screen Volts	Grid Volts	Plate Amps.	Power Volts		Output Volts
B	—	1,250	240	150	1,250	300	-44	0.475	0.075	425	4F15R
CP	500	1,000	180	100	1,000	250	-105	0.2	2	140	
CT	500	1,250	300	150	1,250	250	-80	0.2	10	140	
AB <sub>2</sub>	—	1,000	180	115	850	300	-15	0.355	0.3	140	4F16R
CP	400	800	120	75	700	250	-50	0.13	3	45	
CT	1,200	800	120	75	—	—	—	—	—	—	
B	—	1,250	240	150	1,250	300	-44	0.475	0.075	425	4F20R
CP	500	1,000	180	100	1,000	250	-105	0.2	2	140	
CT	500	1,250	300	150	1,250	250	-80	0.2	10	140	
B	—	2,000	500	250	2,000	350	-55	0.5	0	600	5F20R A
CP	500	1,500	300	165	1,500	250	-100	0.2	1.7	235	
CT	500	2,000	500	250	2,000	250	-90	0.25	—	225	



4F15R • 4F20R  
5F20R A



4F16R

# POWER TUBES

## BEAM POWER TUBES (Air-Cooled)



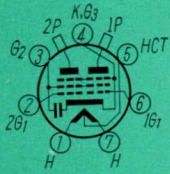
2B52



4B13



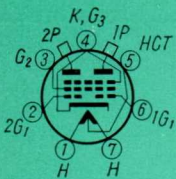
6939



2B29•2B32



2B46•2E26

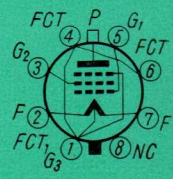


2B52•2B94

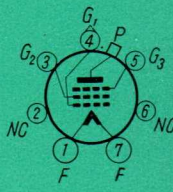
Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Grid-Screen Mu-Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
2B29	829B ✓	Twin-unit type with features convenient for Lecher-wire type push-pull output circuit.	HO	6.3 12.6	2.25 1.125	105	57	9
2B32	832A ✓	Similar to 2B29, but has lower ratings.	HO	6.3 12.6	1.6 0.8	81	57	6.5
2B46	6146 ✓	Small and compact type for use as VHF power amplifier. Also suitable as modulator with high efficiency.	HO	6.3	1.25	94	43	4.5
2B52	6252 ✓	Compact type similar to 2B94, but has lower input-power rating and higher operating frequency.	HO	6.3 12.6	1.3 0.65	81	44	8
2B94	5894 ✓	Twin-unit type with features convenient for Lecher-wire type push-pull output circuit. Recommended for use in lower UHF range.	HO	6.3 12.6	1.8 0.9	105	48	8.2
2E24	2E24 ✓	Direct-heated filament type for mobile transmitters.	FO	6.3	0.65	89	34	7.5
2E26	2E26 ✓	Small and compact type for use as low-power amplifier.	HO	6.3	0.8	89	34	6.5
4B13	813 ✓	Thoriated-tungsten filament type.	FT	10	5	185	65	8.5
5763	5763 ✓	9-pin miniature type low-power amplifier. Also recommended as a frequency multiplier.	HO	6.3	0.75	66	22	16
6360	6360 ✓	Twin-unit, 9-pin miniature type.	HO	6.3 12.6	0.82 0.41	78	22	7.5
6939	6939 ✓	Twin-unit, 9-pin miniature type. Recommended for use in lower UHF range.	HO	6.3 12.6	0.6 0.3	66	22	31
UY-807 ✓	807	Popular type for use in amateur transmitters.	HO	6.3	0.9	147	50	7.5



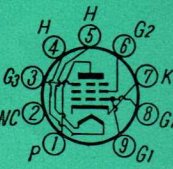
Class of Service	Max. Frequency Mc	Max. Plate Ratings			Typical Operating Conditions						Hitachi Type
		D C Volts	D C Input Watts	Dissipa- tion Watts	D C Plate Volts	D C Screen Volts	D C Grid Volts	D C Plate Amps.	Driving Power Watts	Power Output Watts	
AB <sub>1</sub>	—	600	100	30	600	200	-18	0.04	0	44	2B29
CP	200	600	90	28	425	200	-60	0.212	0.8	60	
CT	200	750	120	40	600	200	-45	0.240	0.7	82	
CP	200	600	22	10	425	200	-60	0.052	0.15	17	2B32
CT	200	750	36	15	500	200	-65	0.072	0.18	27	
AB <sub>2</sub>	—	600	62.5	20	600	165	-44	0.022	0.2	90	2B46
CP	60	480	45	13.3	475	135	-77	0.094	0.3	35	
	175	250	30	13.3	—	—	—	—	—	—	
CT	60	600	67.5	20	600	150	-58	0.112	0.2	53	
	175	320	45	20	320	180	-51	0.140	3	26	
B	—	600	60	20	500	250	-26	0.025	0	23.5	2B52
CP	300	500	36	20	500	250	-80	0.080	2	26.5	
	600	330	24	20	—	—	—	—	—	—	
CT	300	600	60	20	600	250	-60	0.1	2	42	
	600	400	40	20	400	250	-50	0.1	—	22	
B	—	600	120	40	600	250	-25	0.035	0.2	70	2B94
CP	250	450	72	27	450	250	-100	0.15	0.6	53	
	500	375	60	27	375	250	-60	0.16	13	33	
CT	250	600	120	40	600	250	-80	0.2	4	85	
	500	500	100	40	500	250	-60	0.2	13	55	
CP	125	400	20	6.7	400	180	-45	0.05	0.15	15	2E24
CT	125	500	30	10	500	190	-45	0.06	0.2	21	
AB <sub>2</sub>	—	400	30	10	400	125	-15	0.02	0.36	42	2E26
CP	125	400	20	6.7	400	160	-50	0.05	0.15	15	
CT	125	500	30	10	500	185	-40	0.06	0.15	21	
AB <sub>1</sub>	—	2,250	360	100	2,000	750	-90	0.05	0	335	4B13
CP	30	1,600	240	67	1,600	300	-160	0.15	2.7	183	
CT	30	2,000	360	100	2,000	400	-120	0.18	1.9	280	
CT	50	300	15	12	300	250	-60	0.05	0.35	7	5763
	175	300	12	12	—	—	—	—	—	—	
CM	88/175	300	15	12	300	250	-75	0.04	0.6	2.1	6360•6939
AB <sub>1</sub>	—	300	30	14	300	200	-21.5	0.072	0	12	6360
CP	200	240	15	6.6	200	175	-50	0.067	0.1	8.1	
CT	200	300	22.5	10	300	175	-40	0.075	0.1	14.5	
CP	500	200	8	4	180	180	-20	0.04	1	4.2	6939
CT	500	250	12	6	180	180	-20	0.055	1.2	5.8	
CM	167/500	250	8	6	180	180	-75	0.04	1.1	2.3	
AB <sub>2</sub>	—	600	60	25	600	300	-32	0.048	0.1	80	U Y -807
CP	60	475	40	16.5	475	250	-85	0.083	0.4	29	
CT	60	600	60	25	600	250	-45	0.1	0.3	42	



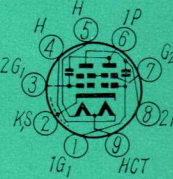
2E24



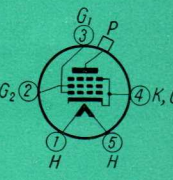
4B13



5763



6360•6939



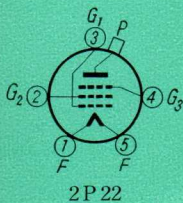
U Y -807

# POWER TUBES

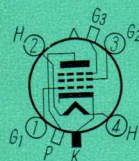
## PENTODES (Air-Cooled)



4P55



2P22



3P50

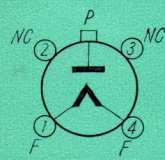
Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Grid-Screen Mu-Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
2P22	2E22 ✓	Quick heating coated-filament type.	FO	6.3	1.5	152	50	9
3P50	—	Sturdy type for use in amplifier and modulator.	HO	12	1.25	135	50	5
3P50A	—	Same as 3P50 except for different base.	HO	10	1.5	135	50	5
4P55	—	Oxide-cathode type. Operates at low plate voltages. Features high sensitivity and good linearity.	HO	6.3	3.2	160	75	5.5
4P60	—	Medium-power pentode of thoriated-tungsten filament type.	FT	10	3.25	160	65	6
5P70	—	Improved version of P250A with cylindrical construction and higher ratings.	FT	12	10	225	120	4.5
6P80A	—	Largest type of air-cooled pentode family. Cylindrical electrode construction.	FT	12	20	310	180	7
P220	—	Medium-power pentode of thoriated-tungsten filament type.	FT	12	4.25	205	90	6.5
P250A	—	Initially designed for use in marine transmitters.	FT	12	8.5	230	120	6.6

# RECTIFIERS

## HIGH-VACUUM RECTIFIERS



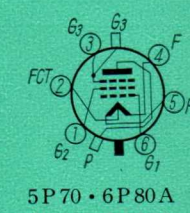
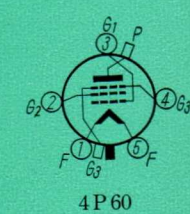
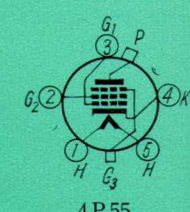
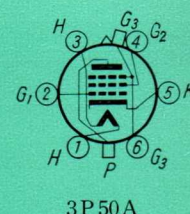
2K12



1K20

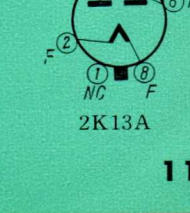
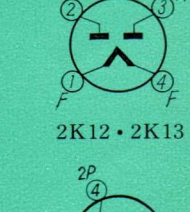
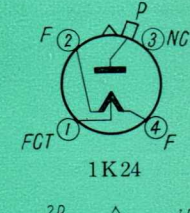
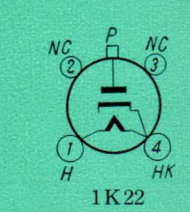
Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Tube Drop Volts (At Plate) (Amps.)
			Type	Volts	Amps.	Length mm	Diam. mm	
1K20	8020 ✓	Half-wave, high-voltage type.	FT	5	6.5	190	60	175 (0.1)
1K22	2X2A ✓	Half-wave type, small in size.	HO	2.5	1.75	112	38	200 (0.045)
1K24	3B24W ✓	Half-wave type.	FT	5	3	118	38	250 (0.160)
2K12	—	Full-wave type for use in various kind of medium power supply.	FO	5	4	138	50	70 (0.350)
2K13	—	Full-wave type, similar to 2K12 but has lower rating.	FO	5	3	138	50	60 (0.250)
2K13A	—	Same as 2K13 except for octal 5-pin base.	FO	5	3	130	50	60 (0.250)

Class of Service	Frequency Mc	Max. Plate Ratings			Typical Operating Conditions						Hitachi Type
		DC Volts	DC Input Watts	Dissipation Watts	DC Plate Volts	DC Screen Volts	DC Grid Volts	DC Plate Amps.	Driving Power Watts	Power Output Watts	
C S	30	750	45	30	600	160	-100	0.057	0.7	12	2P 22
C T	30	750	90	30	700	250	-50	0.1	0.4	48	
B	—	1,200	160	60	1,000	300	-50	0.19	0	75	3P 50
C S	30	1,200	85	60	1,000	260	-120	0.08	1.1	28	
C T	30	1,200	160	60	1,000	300	-120	0.15	0.7	105	3P 50A
B	—	1,200	160	60	1,000	300	-50	0.19	0	75	
C S	30	1,200	85	60	1,000	260	-120	0.08	1.1	28	4P 55
C T	30	1,200	160	60	1,000	300	-120	0.15	0.7	105	
A B <sub>1</sub>	—	1,500	300	120	1,250	300	-60	0.28	0	220	4P 55
C P	25	1,200	175	120	—	—	—	—	—	—	
C T	25	1,500	300	120	1,500	300	-150	0.12	0.2	125	4P 60
B	—	2,200	350	125	2,000	500	-75	0.16	0	110	
C S	40	2,200	190	125	2,000	320	-200	0.09	2	62	5P 70
C T	40	2,200	350	125	2,000	500	-200	0.16	1.1	230	
B	—	3,500	1,100	420	3,000	500	-100	0.42	0	500	6P 80A
C S	30	3,500	750	420	3,000	500	-230	0.22	7.5	250	
C T	30	3,500	1,400	420	3,000	500	-220	0.45	6	1,000	P 220A
C P	30	4,000	1,000	600	3,000	600	-95	0.3	6	330	
C S	30	4,000	1,000	600	3,500	530	-200	0.26	8	350	P 250A
C T	30	4,000	2,000	600	3,500	600	-200	0.51	6.5	1,350	
B	—	2,000	550	230	2,000	500	-75	0.22	0	170	P 250A
C S	30	2,000	350	230	2,000	350	-180	0.115	2	85	
C T	30	2,000	600	230	2,000	500	-180	0.24	1.6	330	P 250A
B	—	3,300	1,200	420	2,000	500	-70	0.35	0	320	
C P	25	3,300	1,200	420	2,000	500	-85	0.19	4.5	220	P 250A
C S	25	3,000	620	420	2,000	500	-180	0.25	6.5	170	
C T	25	3,000	1,200	420	2,800	500	-200	0.45	5	900	



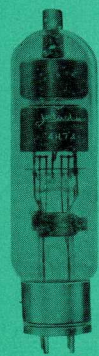
5P 70 • 6P 80A  
P 220 • P 250A

Max. Plate Ratings				Typical Operating Conditions					Hitachi Type
Peak Inverse Volts	Peak Amps.	Surge Amps.	Average Amps.	RMS Supply Volts	Series Resistance Ohms	Filter Capacitor $\mu$ F	DC Output Amps.	DC Output Volts	
40,000	1.5	—	0.1	—	—	—	—	—	1K 20
12,500	0.06	—	0.0075	—	—	—	—	—	1K 22
7,500	0.1	—	0.0075	—	—	—	—	—	
20,000	0.3	—	0.06	—	—	—	—	—	1K 24
2,800	1.2	5.45	—	700	100	4	0.350	700	2K 12
				1,000	180	4	0.220	1,150	
2,800	1.0	4.3	—	700	150	4	0.275	700	2K 13
				1,000	250	4	0.167	1,130	
2,800	1.0	4.3	—	700	150	4	0.275	700	2K 13A
				1,000	250	4	0.165	1,130	

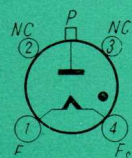


# RECTIFIERS

## MERCURY-VAPOR RECTIFIERS



4H74

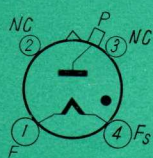


1H16

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Tube Drop Volts
			Type	Volts	Amps.	Length mm	Diam. mm	
1H16	816 ✓	Small, half-wave type.	F O	2.5	2	116	38	15
2H66	836A ✓	Half-wave type.	F O	2.5	5	170	60	15
4H72	872A ✓	Half-wave type.	F O	5	7.5	220	60	15
4H73	673 ✓	Half-wave type of improved design.	F O	5	10	280	80	15
4H74	—	Half-wave type of improved design.	F O	5	7.5	230	60	15
4H74A	—	Same as 4H74, except for base.	F O	5	7.5	230	60	15
4H88A	—	Similar to 4H72, but has higher ratings and different base.	F O	5	7.5	220	60	15

\* For two tubes in single-phase full-wave operation.

## GAS-FILLED RECTIFIERS



2H28

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Tube Drop Volts
			Type	Volts	Amps.	Length mm	Diam. mm	
2H28	3B28 ✓	Half-wave, xenon-filled type.	F O	2.5	5	153	50	10
4H32	4B32 ✓	Half-wave, xenon-filled type.	F O	5	7.5	205	60	12

\* For two tubes in single-phase full-wave operation.

## MERCURY-VAPOR GRID-CONTROLLED RECTIFIERS (THYRATRON)



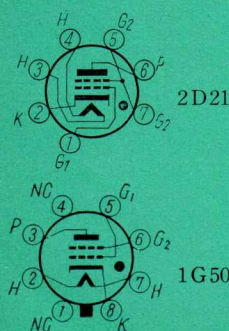
4G63

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Tube Drop Volts
			Type	Volts	Amps.	Length mm	Diam. mm	
4G63	5563 ✓	High-voltage, triode type for use in controlled power supply, etc.	F O	5	10	280	64	15
4G63A	5563A ✓	Improved version of 4G63 with higher ratings.	F O	5	10	260	64	15

## GAS-FILLED GRID-CONTROLLED RECTIFIERS (THYRATRON)



6G45

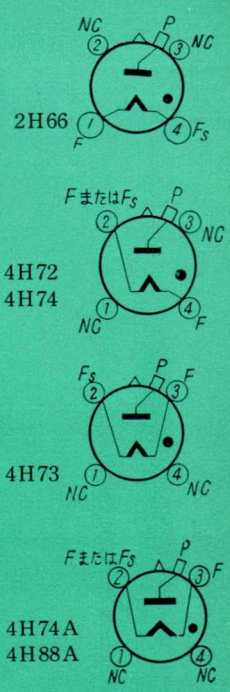


2D21

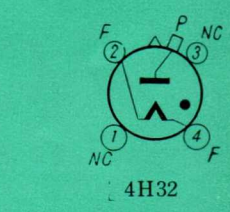
1G50

Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Tube Drop Volts
			Type	Volts	Amps.	Length mm	Diam. mm	
2D21 ✓	2D21	7-pin miniature type tetrode.	H O	6.3	0.6	54	19	8
1G50	2050 ✓	Small, sensitive tetrode type with octal 8-pin base.	H O	6.3	0.6	102	38	8
3G22	3D22A ✓	Sensitive tetrode of medium size.	H O	6.3	2.6	108	56	10
5G44	5544 ✓	Triode type of high commutation factor.	F O	2.5	12	180	65	16
6G45	5545 ✓	Triode type of high commutation factor.	F O	2.5	21	215	65	16
6G45A	—	Same as 6G45, except mechanical features.	F O	2.5	21	185	65	16
6G67	6807 ✓	Triode type of high commutation factor, has ring-sealed grid.	F O	2.5	21	215	64	16
6G68	6808 ✓	Same as 6G67, except for mechanical features.	F O	2.5	21	185	64	16

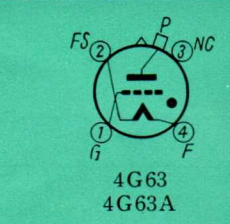
Condensed Mercury Temperature °C	Max. Plate Ratings				Typical Operating Conditions*				Hitachi Type
	Peak Inverse Volts	Peak Amps.	Surge Amps.	Average Amps.	Peak Inverse Volts	RMS Supply Volts	DC Output Volts	DC Output Amps.	
20~60	5,000	0.5	5	0.125	5,000	1,700	1,600	0.25	1H16
25~50	10,000	1.0	20	0.25	10,000	3,500	3,200	0.5	2H66
25~60	2,000	2.0	20	0.5	2,000	700	640	1.0	
25~55	10,000	5.0	50	1.25	10,000	3,500	3,200	2.5	4H72
25~50	15,000	6.0	60	1.5	15,000	5,300	4,800	3.0	4H73
25~55	10,000	7.0	60	1.75	10,000	3,500	3,200	3.5	
25~55	15,000	5.0	50	1.25	15,000	5,300	4,800	2.5	4H74
25~55	15,000	5.0	50	1.25	15,000	5,300	4,800	2.5	4H74A
25~50	15,000	5.0	50	1.25	15,000	5,300	4,800	2.5	4H88A



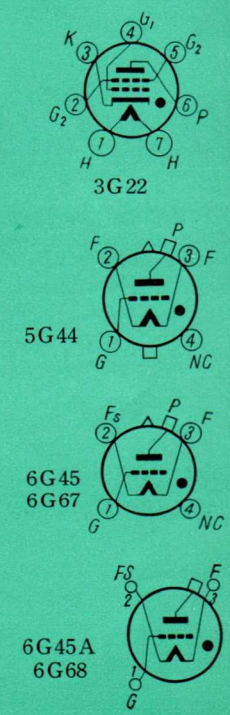
Ambient Temperature °C	Max. Plate Ratings				Typical Operating Conditions*				Hitachi Type
	Peak Inverse Volts	Peak Amps.	Surge Amps.	Average Amps.	Peak Inverse Volts	RMS Supply Volts	DC Output Volts	DC Output Amps.	
-75~+90	10,000	1.0	20	0.25	10,000	3,500	3,200	0.5	2H28
	5,000	2.0	20	0.5	5,000	1,700	1,600	1.0	
-55~+70	10,000	5.0	50	1.25	10,000	3,500	3,200	2.5	4H32



Applications	Condensed Mercury Temperature °C	Max. Plate Ratings					Hitachi Type
		Peak Forward Volts	Peak Inverse Volts	Peak Amps.	Average Amps.	Averaging Time sec.	
Controlled Rectifier	25~45	15,000	15,000	6.4	1.6	15	4G63
Welder Control	40~80	1,000	1,000	30	2.5	3	
Controlled Rectifier	25~55	15,000	15,000	10	1.8	20	4G63A
	25~50	20,000	20,000	6.4	1.6	20	
Welder Control	40~80	1,000	1,000	30	2.5	3	

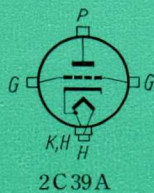


Applications	Ambient Temperature °C	Max. Plate Ratings					Hitachi Type
		Peak Forward Volts	Peak Inverse Volts	Peak Amps.	Average Amps.	Averaging Time sec.	
Relay Service	-75~+90	1,300	650	0.5	0.1	30	2D21
Relay Service		1,300	650	1.0	0.1	30	1G50
		360	180	1.0	0.2	30	
Relay & Motor Control	-75~+90	1,500	650	8.0	0.8	30	3G22
Motor Control	-55~+70	1,500	1,500	40	3.2	15	5G44
Motor Control	-55~+70	1,500	1,500	80	6.4	15	6G45
Motor Control	-55~+70	1,500	1,500	80	6.4	15	6G45A
Motor Control	-55~+70	1,500	1,500	80	6.4	15	6G67
Motor Control	-55~+70	1,500	1,500	80	6.4	15	6G68



# MICROWAVE TUBES

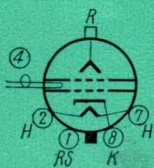
## DISC SEAL TRIODES



Hitachi Type	American Equivalent	Description	Cathode			Dimensions		Amplification Factor
			Type	Volts	Amps.	Length mm	Diam. mm	
2C39A ✓	2C39A	Forced-air cooling type with integral cooler. Useful up to 2,500Mc and above in grounded grid circuit.	H O	6.3	1.0	69.8	32.1	100
2C40 ✓	2C40	Radiation and conduction cooling type. Suitable as CW oscillator.	H O	6.3	0.75	65.2	33.3	36
2C43 ✓	2C43	Similar to 2C40 except for higher ratings.	H O	6.3	0.9	68.3	33.3	48

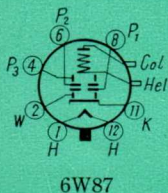
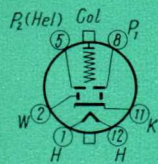
§ For pulse oscillator service. Values other than dissipation are peak values.

## REFLEX KLYSTRONS



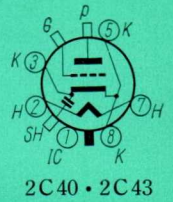
Hitachi Type	American Equivalent	Description	Cathode		Dimensions		Frequency Range Mc
			Volts	Amps.	Length mm	Diam. or Width mm	
2K25 ✓	2K25	Integral resonant cavity type for use in local oscillator service.	6.3	0.44	90	41	8,500~9,660
2K26 ✓	2K26	Similar to 2K25, but has higher power output at lower frequency range.	6.3	0.44	90	41	6,250~7,060
2K41 ✓	2K41	Integral resonant cavity type for transmitter and local oscillator.	6.3	1.0	119	—	2,660~3,310
2K44 ✓	2K44	Similar to 2K44, but designed for higher frequency range.	6.3	1.0	119	—	5,700~7,500
6V26	—	Similar to 2K26, but has different frequency range.	6.3	0.44	90	41	5,800~6,500
7V26	—	Similar to 2K26, but has different frequency range.	6.3	0.44	90	41	6,400~7,200
7V39	—	Similar to 2K44, but has wider frequency range.	6.3	1.0	119	—	5,700~8,300
7V204	V A-220D	Compact type with external tuning cavity, for transmitter service.	6.3	0.8	92	80	6,575~6,875
8V26	—	Similar to 2K26, but has different frequency range.	6.3	0.44	90	41	7,000~7,800

## TRAVELLING WAVE TUBES

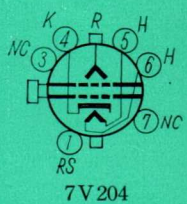
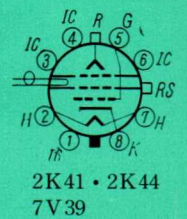


Hitachi Type	American Equivalent	Description	Cathode		Dimensions		Frequency Range Mc
			Volts	Amps.	Length mm	Diam. mm	
6W85	—	Package type, voltage amplifier.	6.3	0.3	390	38	5,000~6,800
6W86	—	Package type, power amplifier.	6.3	1.0	412	38	3,000~6,800
6W87	—	Low-noise type intended for use in low-level stage.	6.3	0.4	440	38	5,000~6,800
7W86	—	Similar to 6W86, but designed for different frequency range.	6.3	1.0	412	38	6,000~7,000
8W86	—	Similar to 6W86, but designed for different frequency range.	6.3	1.0	300	31	6,500~7,800

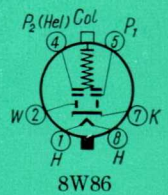
Class of Service	Frequency Mc	Max. Plate Ratings			Typical Operating Conditions					Hitachi Type
		D C Volts	D C Amps.	Dissipation Watts	D C Plate Volts	D C Grid Volts	D C Plate Amps.	Driving Power Watts	Power Output Watts	
C P	2,500	600	0.1	70	600	-16	0.065	—	16	2C39A
C T	500	1,000	0.125	100	900	-40	0.09	—	40	
	2,500	1,000	0.125	100	900	-22	0.09	—	17	
C T	500	500	0.025	6.5	250	-5	0.02	—	0.7	2C40
	3,370	500	0.025	6.5	250	-5	0.02	—	0.075	
C T	1,500	500	0.04	12	470	—	0.038	—	9	2C43
	§ 3,370	3,500	2.75	12	3,000	—	2.5	—	1,750	



Max. Ratings			Typical Operating Conditions						Hitachi Type
D C Resonator Volts	D C Resonator Amps.	D C Reflector Volts	Fre- quency Mc	D C Resonator Volts	D C Resonator Amps.	D C Reflector Volts	Electronic Tuning Range Mc	Power Output Watts	
330	0.37	-400	9,370	300	0.025	-160	40	0.030	2K25
330	0.35	-300	6,660	300	0.023	-100	45	0.100	2K26
1,250	0.60	-750	3,310	1,250	0.060	-750	12	2.750	2K41
1,250	0.060	-750	6,600	1,250	0.054	-600	30	0.800	2K44
330	0.035	-350	6,200	300	0.023	-100	40	0.100	6V26
330	0.035	-350	6,800	300	0.023	-100	45	0.100	7V26
1,250	0.060	-1,000	7,500	1,250	0.054	-600	30	0.600	7V39
750	0.080	-400	6,575	750	0.065	-335	35	1.000	7V204
330	0.035	-350	7,500	300	0.023	-100	40	0.100	8V26



Typical Operating Conditions at Center Frequency								Hitachi Type
D C Helix Volts	D C Collector Volts	D C Collector Amps.	Focussing Field Gauss	Power Input Watts	Power Output Watts	Gain db	Noise Factor db	
1,000	1,100	0.003	600	0.0001	0.08	30	—	6W85
2,500	2,600	0.035	700	0.05	5.0	23	—	6W86
800	1,100	0.0003	600	0.00002	0.002	25	11	6W87
2,600	2,700	0.03	700	0.03	5.0	25	—	7W86
2,500	2,600	0.035	800	0.003	3.0	33	—	8W86



# ALPHABETICAL INDEX

Types shown in parentheses are foreign equivalents

Type	Equivalent Type	Page	Type	Equivalent Type	Page
1G50	(2050)	12	6G45	(5545)	12
1H16	(816)	12	6G45A		12
1K20	(8020)	10	6G67	(6807)	12
1K22	(2X2A)	10	6G68	(6808)	12
1K24	(3B24W) ✓	10	6P80A		10
2B29	(829B) ✓	8	6T35	(750 T L)	4
2B32	(832A) ✓	8	6V26		14
2B46	(6146)	8	6W85		14
2B52	(6252)	8	6W86		14
2B94	(5894) <i>near</i> ✓	8	6W87		14
2C39A	(2C39A)	14	7T40	(1000T)	4
2C40	(2C40)	14	7T54		4
2C43	(2C43)	14	7T54A		4
2D21	(2D21)	12	7T54R		6
(2E22)	2P22	10	7T54R A		6
2E24	(2E24)	8	7T56		4
2E26	(2E26)	8	7T56R		6
2H28	(3B28) ✓	12	7V26		14
2H66	(866A)	12	7V39		14
2K12		10	7V204	(V A-220D)	14
2K13		10	7W86		14
2K13A		10	8T10		4
2K25	(2K25)	14	8T10R		6
2K26	(2K26)	14	8T11		4
2K41	(2K41)	14	8T11R		6
2K44	(2K44)	14	8T20		4
2P22	(2E22)	10	8T20A		4
(2X2A)	1K22	10	8T20R		6
(3B24W)	1K24	10	8T20R A		6
(3B28)	2H28 ✓	12	8T30		4
(3D22A)	3G22	12	8T30R		6
3G22	(3D22A)	12	8V26		14
3P50		10	8W86		14
3P50A		10	(100TH)	4T17	4
3T12		4	(100TL)	4T16	4
(4-125A)	4F21 ✓	6	(250TH)	5T21	4
(4-250A)	5F22 ✓	6	(250TL)	5T20	4
(4-400A)	5F23	6	(450TH)	5T31	4
4B13	(813) ✓	8	(450TL)	5T30	4
(4B32)	4H32 ✓	12	(673)	4H73	12
(4C X250B)	5F20R A	6	(750TL)	6T35	4
(4D21)	4F21 ✓	6	(807)	U Y-807	8
4F15R	(4X150A)	6	(813)	4B13 ✓	8
4F16R	(6816)	6	(816)	1H16	12
4F20R	(4X150D)	6	(829B)	2B29 ✓	8
4F21	(4D21/4-125A) ✓	6	(832A)	2B32 ✓	8
4G63	(5563)	12	(866A)	2H66	12
4G63A	(5563A)	12	(872A)	4H72 ✓	12
4H32	(4B32) ✓	12	(1000T)	7T40	4
4H72	(872A) ✓	12	(2050)	1G50	12
4H73	(673)	12	(5544)	5G44	12
4H74		12	(5545)	6G45	12
4H74A		12	(5563)	4G63	12
4H88A		12	(5563A)	4G63A	12
4P55		10	5763	(5763)	8
4P60		10	(5894)	2B94	8
4T16	(100TL)	4	(6146)	2B46	8
4T17	(100TH)	4	(6252)	2B52	8
(4X150A)	4F15R	6	6360	(6360)	8
(4X150D)	4F20R	6	(6807)	6G67	12
(5D22)	5F22 ✓	6	(6808)	6G68	12
5F20R A	(4C X250B) ✓	6	(6816)	4F16R	6
5F22	(5D22/4-250A)	6	6939	(6939)	8
5F23	(4-400A)	6	(8020)	1K20	10
5G44	(5544)	12	P220		10
5P70		10	P250A		10
5T20	(250TL)	4	S N-205C		4
5T21	(250TH)	4	U V-211A		4
5T25		4	U Y-807	(807)	8
5T30	(450TL)	4	(V A-220D)	7V204 ✓	14
5T31	(450TH)	4			



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