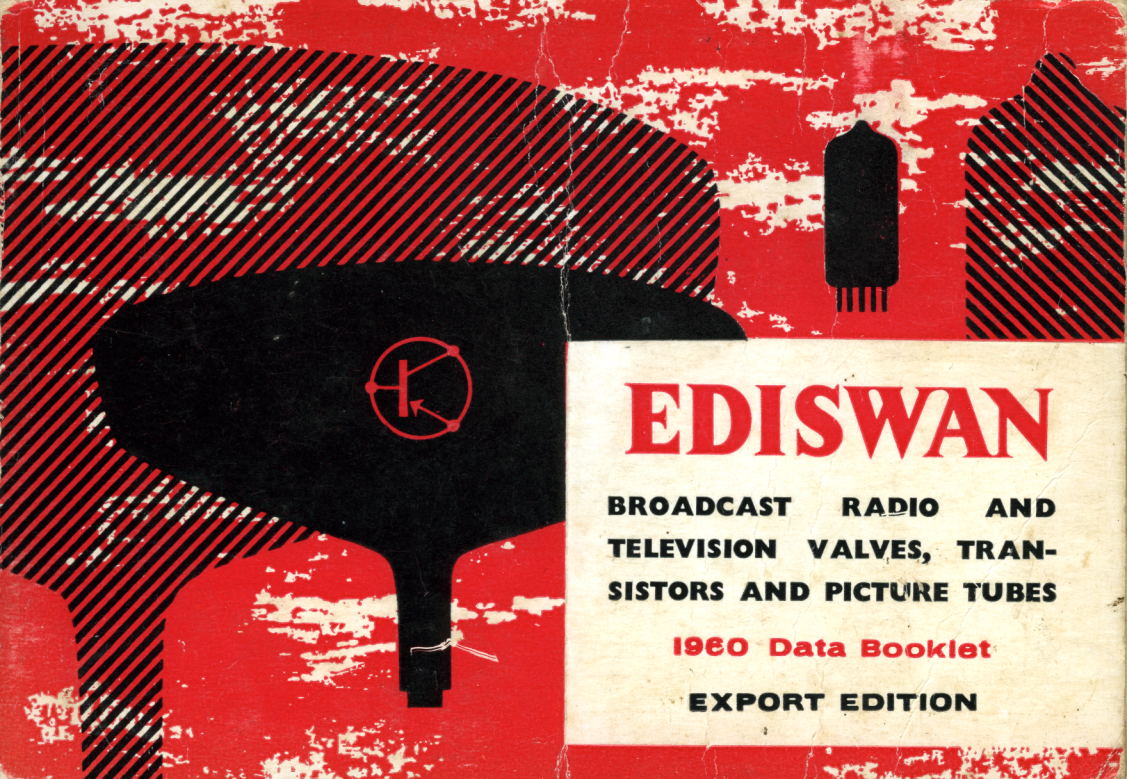


EDISWAN

BROADCAST RADIO AND TELEVISION VALVES, TRANSISTORS AND PICTURE TUBES

1960 Data Booklet

EXPORT EDITION

EDISWAN

1960
DATA BOOKLET

BROADCAST RADIO & TELEVISION VALVES, TRANSISTORS & PICTURE TUBES

ASSOCIATED ELECTRICAL INDUSTRIES EXPORT LTD
Radio and Electronic Components Division (PD15)
155 CHARING CROSS ROAD
LONDON W.C.2
Telephone: Gerrard 8660
Cables: Aeixport Telex 23416

KEY TO ABBREVIATIONS

RATING & OPERATING CONDITIONS

f_α	= Common base cut-off frequency	r_a	= Anode A.C. Resistance
g_c	= Conversion Conductance	R_a	= Anode Load Resistance
g_m	= Mutual Conductance	Thermal resistance	= Free Air Thermal Resistance
I_a	= Anode Current	$T_{j\ (max.)}$	= Maximum Junction Temperature
$I_{c(o)}$	= Maximum Collector to Base Leakage Current	V_a	= Anode Voltage
$I_{ce(o)}$	= Maximum Collector to Emitter Leakage Current	$V_{a(b)}$	= Anode Supply Voltage
$I_{e(o)}$	= Maximum Emitter to Base Leakage Current	V_{cb}	= Collector to Base Voltage
I_f	= Filament Current	V_{ce}	= Collector to Emitter Voltage
I_{g_2}	= Screen Current	V_{eb}	= Emitter to Base Voltage
I_h	= Heater Current	V_f	= Filament Voltage
I_t	= Target Current	V_{g_1}	= Grid Voltage
$P_{a(max.)}$	= Max. Anode Dissipation	V_{g_2}	= Screen Voltage
$P_{c(max.)}$	= Maximum Collector Dissipation	V_h	= Heater Voltage
$P_{g_2(max.)}$	= Max. Screen Dissipation	V_t	= Target Voltage
P.I.V.(max.)	= Max. Peak Inverse Voltage	α	= Current Amplification, Common Base
P_{out}	= Power Output	β	= Current Amplification, Common Emitter
		μ	= Amplification Factor

KEY TO ABBREVIATIONS *continued*

BASE CONNECTIONS

MAIN SYMBOLS

a = anode
f = filament
g = grid
h = heater
IC = internal connection
k = cathode
M = metallising
NC = No Connection
NP = No Pin
s = shield
t = target

"Internal connection" indicates that the pin is connected to an electrode for the purpose of improving mechanical rigidity. The connection may not always be made to the same electrode on a given valve type, and it is essential that the corresponding valve holder socket be left unconnected.

SUBSCRIPTS

d = diode
t = triode
p = pentode
q = tetrode
h = heptode or hexode
C.T. = centre tap

In the case of multiple grid valves (tetrodes, pentodes and pentagrids) the grids are numbered from the cathode. Thus in the case of an H.F. pentode, g_1 is the signal grid, g_2 the screen grid, and g_3 the suppressor grid.

In the case of multiple valves, the electrode systems are distinguished by a single tick (′) for the first electrode system, and a double tick (″) for the second electrode system. Thus in the case of a double triode, a′, g′ and k′ constitute one triode section; a″, g″ and k″ constitute the other.

NOMENCLATURE FOR RADIO RECEIVING VALVES

SIGNAL VALVES

These have a three symbol name comprising a number, a letter or letter sequence and a final number.

First number indicates heater or filament rating, i.e.

1.	1·4 volts (parallel)
6.	6·3 volts (parallel)
10.	0·1 amp. (series)
20.	0·2 amp. (series)
30.	0·3 amp. (series)

Following letter or letter sequence indicates class of valve, i.e.

C	Frequency changer
D	Signal diode(s)
F	Voltage amplifier tetrode or pentode
FD	Voltage amplifier tetrode or pentode with diode(s)
FL	Voltage amplifier tetrode or pentode with voltage amplifier triode
K	Small gas triode or tetrode
L	Voltage amplifier triode or double triode including oscillator triode
LD	Voltage amplifier triode with diode(s)
M	Tuning indicator
P	Power amplifier valve, tetrode or pentode
PL	Power amplifier valve, tetrode or pentode with voltage amplifier triode

Final number distinguishes between different valves in the same class.

POWER RECTIFIER VALVES

These have a two symbol name comprising one or two letters and a final number.

Letters indicate class of rectifier, i.e.

U	High vacuum half-wave
UU	High vacuum full-wave

Final numbers distinguish between different valves in the same class.

In the case of rectifiers intended for series running, the final number is such that the first two digits of the number correspond to the approximate filament voltage.

1C1

Pentagrid F.C. - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	1·4mA
I_{g2}	3·2mA

Characteristics

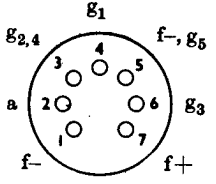
g_c	280μA/V
r_a	500kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base

B7G



Viewed from free end of pins

1C2

Pentagrid F.C. - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
$V_{g2(osc)}$	30V
V_{g4}	60V
V_{g1}	0V
I_a	0·7mA
$I_{g2(osc)}$	1·6mA
I_{g4}	150μA
$R_{a(osc)}$	33kΩ

Characteristics

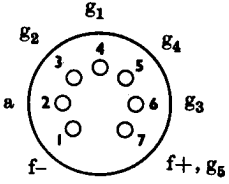
g_c	325μA/V
r_a	650kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	60V
$V_{g4(max)}$	90V

Base

B7G



Viewed from free end of pins

1C3

Pentagrid F.C. - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
$V_{g2(osc)}$	35V
V_{g4}	68V
V_{g1}	0V
I_a	0·6mA
$I_{g2(osc)}$	1·5mA
I_{g4}	140μA
$R_{a(osc)}$	33kΩ

Characteristics

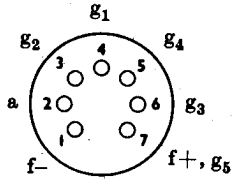
g_c	300μA/V
r_a	800kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	60V
$V_{g4(max)}$	90V

Base

B7G



Viewed from free end of pins

1F1

Vari - μ - R.F. Pentode - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	64V
V_{g2}	64V
V_{g1}	0V
I_a	1·65mA
I_{g2}	0·55mA

Characteristics

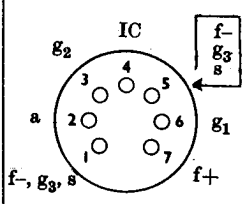
g_m	0·85mA/V
r_a	700kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

1F2

R.F. Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	90V
V_{g2}	67·5V
V_{g1}	0V
I_a	2·9mA
I_{g2}	1·2mA

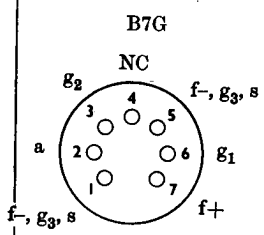
Characteristics

g_m	0·925mA/V
r_a	500kΩ

Rating

$V_{a(max)}$	110V
$V_{g2(max)}$	90V

Base



Viewed from free end of pins

1F3

Vari-μ-R.F. Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	3·4mA
I_{g2}	1·5mA

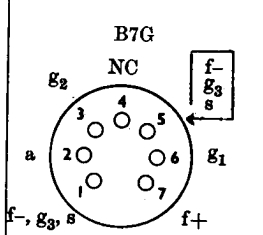
Characteristics

g_m	0·875mA/V
r_a	250kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base



Viewed from free end of pins

1FD1

Diode Pentode - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	−1·5V
I_a	170μA
I_{g2}	55μA

Characteristics

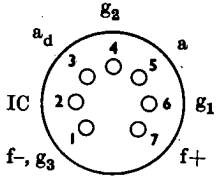
g_m	170μA/V

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

1FD9

Diode Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	1·6mA
I_{g2}	400μA

Characteristics

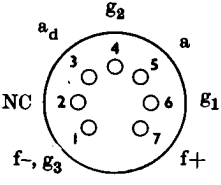
g_m	0·625mA/V
r_a	600kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

1M1

Tuning Indicator - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	60V
V_{g1}	−8V
I_a	120μA

Battery Operation
Pin 4 Positive

$V_{a(b)}$	90V
V_{g1}	−13·5V
I_a	250μA

Battery Operation
Pin 4 Negative

$V_{a(b)}$	110V
V_{g1}	−15V
I_a	90μA

Mains Operation
Pin 5 Earthed

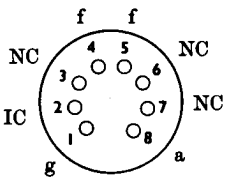
Rating

$V_{a(max)}$	90V

For Circuits without Anode Series Resistor

Base

B8D



Viewed from free end of pins

1P1

Output Pentode - 1·4V, 50mA or 2·8V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
V_{g2}	85V
V_{g1}	−5·2V
I_a	5mA
I_{g2}	0·9mA
R_a	13kΩ
P_{out}	200mW

Characteristics

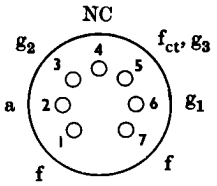
g_m	1·4mA/V
r_a	150kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V
$P_{a(max)}$	600mW
$P_{g2(max)}$	200mW

Base

B7G



Viewed from free end of pins

1P10

Output Pentode - 1·4V, 100mA or 2·8V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	−7V
I_a	7·2mA
I_{g2}	1·5mA
R_a	5kΩ
P_{out}	180mW

Characteristics

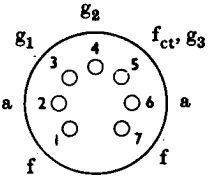
g_m	1·55mA/V
r_a	100kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base

B7G



Viewed from free end of pins

1P11

Output Pentode - 1·4V, 100mA or 2·8V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	90V
V_{g2}	90V
V_{g1}	−4·5V
I_a	9·5mA
I_{g2}	2·1mA
R_a	10kΩ
P_{out}	270mW

Characteristics

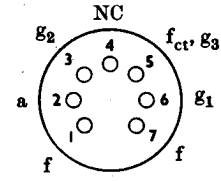
g_m	2·15mA/V
r_a	100kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

6C9

Triode Heptode F.C. - 6·3V, 0·45A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		100V
V_{g1}		−2·5V
I_a	T.	5mA
	H.	3mA
I_{g2}		6mA
R_a	T.	33kΩ

Characteristics

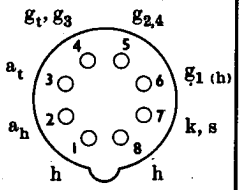
g_m	T.	4mA/V
g_c	H.	0·65mA/V
μ	T.	17
r_a	T.	4·5kΩ
r_a ($V_{g.t.} = 0V$)	H.	3MΩ

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$P_{a(max)}$	H.	1W
$V_{g2(max)}$		250V
$P_{g2(max)}$		0·75W

Base

B8A



Viewed from free end of pins

6C10

Triode Hexode F.C. - 6·3V, 0·23A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		85V
V_{g1}		−2V
I_a	T.	5mA
	H.	3mA
I_{g2}		3mA
R_a	T.	33kΩ

Characteristics

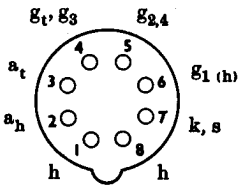
g_m	T.	2·8mA/V
g_c	H.	0·75mA/V
μ	T.	22
r_a	T.	7·8kΩ
r_a ($V_{g.t.} = 0V$)	H.	1030kΩ

Rating

$V_{a(max)}$	T.	175V
	H.	250V
$P_{a(max)}$	T.	0·8W
	H.	1·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		300mW

Base

B8A



Viewed from free end of pins

6C12

Triode Heptode F.C. 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		103V
V_{g1}		−2V
I_a	T.	4·5mA
	H.	3·25mA
R_a	T.	33kΩ

Characteristics

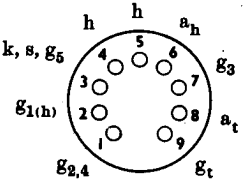
g_m	T.	3·7mA/V
	H.	2·4mA/V
g_c		0·775mA/V
μ	T.	20
r_a	T.	5·5kΩ
r_a ($V_{g.t.} = 0V$)	H.	1MΩ

Rating

$V_{a(max)}$	T.	250V
	H.	300V
$P_{a(max)}$	T.	0·8W
	H.	1·7W
$V_{g2(max)}$		125V
$P_{g2(max)}$		1W

Base

B9A



Viewed from free end of pins

6C31

Triode Heptode F.C. - 6·3V, 0·83A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		100V
V_{g1}		−3V
I_a	T.	4·5mA
	H.	3mA
I_{g2}		6mA
R_a	T.	39kΩ

Characteristics

g_m	T.	4·7mA/V
g_c	H.	0·75mA/V
μ	T.	16
r_a	T.	3·4kΩ
r_a	H.	1600kΩ

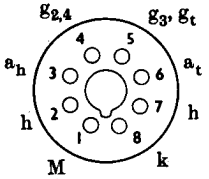
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$P_{a(max)}$	H.	1·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1W

Base

I.O.



TC=g_1

Viewed from free end of pins

6D1

Television Diode - 6·3V, 0·15A Heater

Rating

P.I.V. (max)	350V
Peak Current	50mA

Base

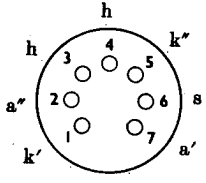
B3G

6D2

Double Diode - 6·3V, 0·3A Heater

Base

B7G



Viewed from free end of pins

Separate Cathodes

Rating

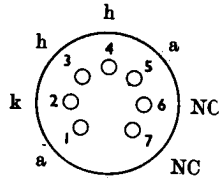
P.I.V. (max)	500V
Peak Current	50mA

6D3

Slow Heating Diode - 6·3V, 0·3A Heater

Base

B7G



Viewed from free end of pins

Rating

$V_{a(max)}$	250V
$I_{a(max)}$	5mA

6F1

R.F. Pentode - 6·3V, 0·35A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·8V
I_a	10mA
I_{g2}	2·6mA

Characteristics

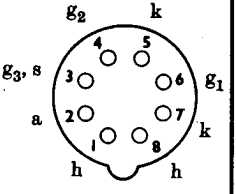
g_m	9mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	3·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B8A



Viewed from free end of pins

6F11

R.F. Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	85V
V_{g1}	−1·5V
I_a	3·5mA
I_{g2}	1·1mA
R_a	47kΩ

Characteristics

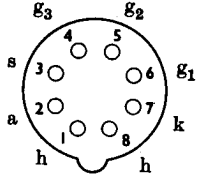
g_m	2·2mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	150V
$P_{g2(max)}$	300mW

Base

B8A



Viewed from free end of pins

6F12

R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−2V
I_a	10mA
I_{g2}	2·5mA

Characteristics

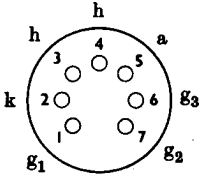
g_m	7·5mA/V
r_a	1050kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·8W

Base

B7G



Viewed from free end of pins

6F13

R.F. Pentode - 6·3V, 0·35A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·8V
I_a	10mA
I_{g2}	2·6mA

Characteristics

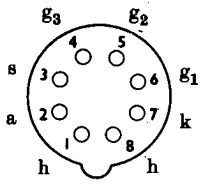
g_m	9mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	3·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B8A



Viewed from free end of pins

6F14

Video Output Pentode - 6·3V, 0·35A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	135V
V_{g1}	−1·3V
I_a	27mA
I_{g2}	6·5mA
R_a	6kΩ

Characteristics

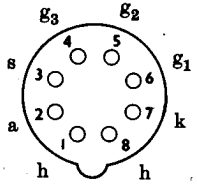
g_m	10·6mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B8A



Viewed from free end of pins

6F15

Vari-μ-R.F. Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	100V
V_{g1}	−2·5V
I_a	7mA
I_{g2}	2mA

Characteristics

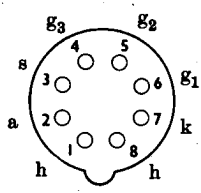
g_m	2·3mA/V
r_a	1·7MΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	300mW

Base

B8A



Viewed from free end of pins

6F18

Vari-μ-H.F. Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	175V
V_{g2}	100V
V_{g1}	−1·3V
I_a	12mA
I_{g2}	3·5mA

Characteristics

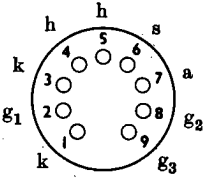
g_m	4·4mA/V
r_a	220kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·5W

Base

B9A



Viewed from free end of pins

6F19

Vari-μ-R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	100V
V_{g1}	−2V
I_a	10mA
I_{g2}	2·5mA

Characteristics

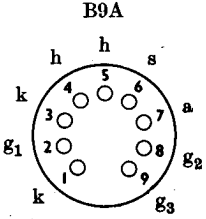
g_m	6mA/V
r_a	500kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W
$V_{g2(max)}$	300V
$P_{g2(max)}$	0·65W

Base

B9A



Viewed from free end of pins

6F23

H.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

V_a	170V
V_{g2}	170V
V_{g1}	−1·9V
I_a	10mA
I_{g2}	2·6mA

Characteristics

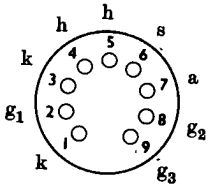
g_m	9·2mA/V

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V
$P_{a(max)}$	3W
$P_{g2(max)}$	1W

Base

B9A



Viewed from free end of pins

6FD12

D.D. Vari-μ-R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	100V
V_{g1}	−1·5V
I_a	11mA
I_{g2}	3·3mA

Characteristics

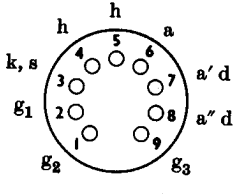
g_m	4·5mA/V
r_a	600kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	300V
$P_{g2(max)}$	450mW

Base

B9A



Viewed from free end of pins

6K25

Thyratron - 6·3V, 1A Heater

Characteristics

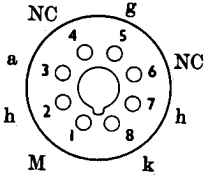
Control Ratio = 20

Rating

$V_{a(max)}$	400V
I_a Peak	500mA

Base

I.O.



Viewed from free end of pins

6L1

Double Triode - 6·3V, 0·4A Heater

Characteristics

g_m	4mA/V
μ	16
r_a	4kΩ

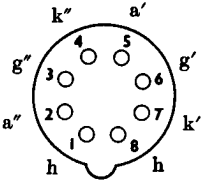
(V_a = 100V, V_g = 0V)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$ *(Either Anode)*	3W
$P_{a(max)}$ *(Both Anodes)*	4W

Base

B8A



Viewed from free end of pins

6L12

R.F. Double Triode - 6·3V, 0·435A Heater

Typical Operating Conditions

$V_{a(b)}$	250V(amp) 250V(osc)
V_{g1}	−2V
I_a	10mA(amp)
I_a	5·2mA(osc)
R_a	1·8kΩ (amp)
R_a	12kΩ (osc)

Characteristics

g_m	6·0mA/V(amp)
g_m	2·3mA/V(osc)
μ	57 (amp)

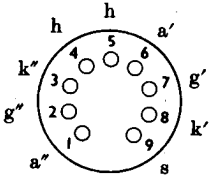
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$ *(Either Anode)*	2·5W
$P_{a(max)}$ *(Both Anodes)*	4·5W

Base

B9A



Viewed from free end of pins

6L13

High-μ-Double Triode - 6·3V, 0·3A, or 12·6V, 0·15A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
I_a	0·86mA
R_a	100kΩ

Characteristics

g_m	1·6mA/V
μ	100
r_a	62·5kΩ

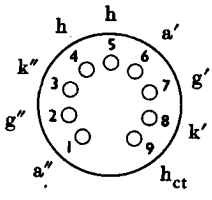
($V_a = 250V$, $V_g = -2V$)

Rating

$V_{a(max)}$	300V
$I_{k(max)}$	8mA
$P_{a(max)}$ *(Each Section)*	1W

Base

B9A



Viewed from free end of pins

6L18

Oscillator Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
I_a	4·5mA
R_a	47kΩ

Characteristics

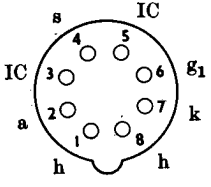
g_m	7·6mA/V
μ	17
r_a *($V_g = 0V$)*	2·25kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4W

Base

B8A



Viewed from free end of pins

6L19

Double Triode - 6·3V, 0·4A Heater

Typical Operating Conditions

$V_{a(b)}$	260V
V_{g1}	−2V
I_a	1·1mA
R_a	100kΩ

Characteristics

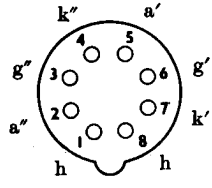
g_m	3·4mA/V
μ	55
r_a *($V_a = 100V$, $V_g = 0V$)*	16kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$ *(Per Anode)*	1·5W

Base

B8A



Viewed from free end of pins

6L34

Grounded Grid Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·5V
I_a	10mA

Characteristics

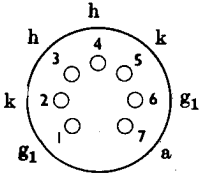
g_m	8·5mA/V
μ	90
r_a	10·5kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·5W

Base

B7G



Viewed from free end of pins

6LD3

Double Diode Triode - 6·3V, 0·23A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·9V
I_a	0·85mA
R_a	100kΩ

Characteristics

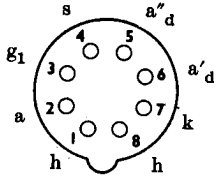
g_m	1·95mA/V
μ	70
r_a ($V_g = 0V$)	54kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B8A



Viewed from free end of pins

6LD12

Triple Diode Triode - 6·3V, 0·45A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−3V
I_a	1mA

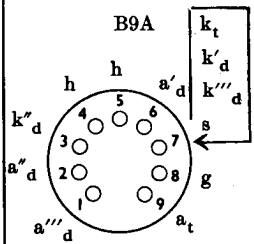
Characteristics

g_m	1·45mA/V
μ	70
$(V_g = 0V)$	

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base



Viewed from free end of pins

6LD13

Double Diode Triode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·85V
I_a	0·85mA
R_a	100kΩ

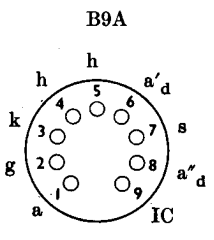
Characteristics

g_m	1·2mA/V
μ	70
$(V_g = 0V)$	

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base



Viewed from free end of pins

6LD20

Double Diode Triode - 6·3V, 0·25A Heater

Typical Operating Conditions

$V_{a(b)}$	260V
V_{g1}	−3V
I_a	2mA
R_a	47kΩ

Characteristics

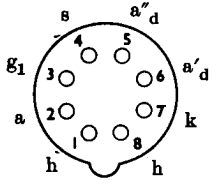
g_m	3·4mA/V
μ	31·5
r_a	9·3kΩ
(V_g = 0V)	

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1·25W

Base

B8A



Viewed from free end of pins

6M1

Tuning Indicator - 6·3V, 0·3A Heater

Typical Operating Conditions

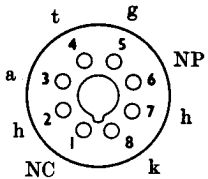
$V_{a(b)}$	250V
V_t	250V
V_{g1}	−0·5V
I_a	0·23mA
I_t	1·16mA
V_{g1}	−22·5V
(For 0° Shadow)	
R_a	1MΩ

Rating

$V_{a(max)}$	250V
$V_{t(max)}$	250V

Base

I.O.



Viewed from free end of pins

6M2

Dual Sensitivity Tuning Indicator - Maltese Cross 6·3V, 0·2A Heater

Typical Operating Conditions

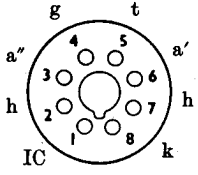
SECTION:	(1)	(2)
$V_{(a)b}$	250V	250V
V_t	250V	250V
I_t	0·46mA	0·46mA
($V_{g1}=0$)		
R_a	1MΩ	2MΩ
V_{g1}	0V	0V
I_a	0·25mA	0·12mA
θ°	83°	75°
V_{g1}	−20V	−4V
I_a	0·08mA	0·07mA
θ°	6°	15°

Rating

$V_{a(max)}$	300V
$V_{t(max)}$	250V
$P_{a(max)}$	0·5W

Base

I.O.



Viewed from free end of pins

6P1

Output Tetrode - 6·3V, 0·8A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	7·5mA
R_a	5kΩ
P_{out}	4·2W

Characteristics

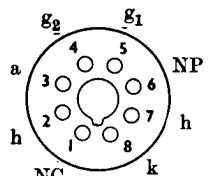
g_m	8·8mA/V
r_a	40kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	12W
$V_{g2(max)}$	250V
$P_{g2(max)}$	3W

Base

I.O.



Viewed from free end of pins

6P15

Output Pentode - 6·3V, 0·76A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−7·3V
I_a	48mA
I_{g2}	5·5mA
R_a	4·3kΩ
P_{out}	4·4W

Characteristics

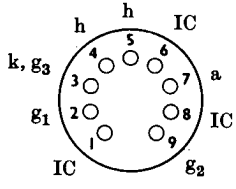
g_m	11·3mA/V
r_a	38kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	12W
$V_{g2(max)}$	300V
$P_{g2(max)}$	2W

Base

B9A



Viewed from free end of pins

6P25

Output Tetrode - 6·3V, 1·1A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	8mA
R_a	5kΩ
P_{out}	4·5W

Characteristics

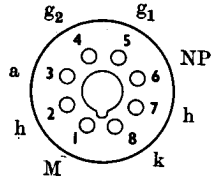
g_m	8·8mA/V
r_a	40kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base

I.O.



Viewed from free end of pins

6P26

Output Tetrode - 6·3V, 0·6A Heater

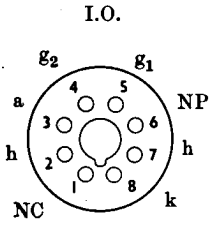
Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	8·5mA
R_a	5·2kΩ
P_{out}	4·5W

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	3W

Base



Viewed from free end of pins

6P28

Line Output Tetrode - 6·3V, 1·1A Heater

Typical Operating Conditions

$V_{a(b)}$	350V
V_{g2}	250V
V_{g1}	−8·8V
I_a	72mA
I_{g2}	16mA

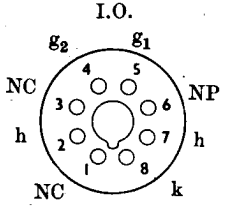
Characteristics

g_m	9·5mA/V

Rating

$V_{a(max)}$	400V
$P_{a(max)}$	15W
$V_{g2(max)}$	275V
$P_{g2(max)}$	4·5W

Base



Top Cap=a

Viewed from free end of pins

6/30L2

Twin Triode - 6·3V, 0·3A Heater

Characteristics

g_m	3·4mA/V
μ	18

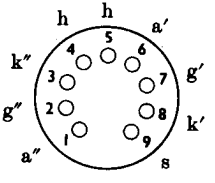
($V_a = 200V$, $I_a = 10mA$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	
(Either Anode)	2·0W
(Both Anodes)	2·5W

Base

B9A



Viewed from free end of pins

10C1

Triode Heptode F.C. - 0·1A, 28V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	175V
	H.	175V
V_{g2}		100V
V_{g1}	H.	−2·5V
I_a	T.	5mA
	H.	3mA
I_{g2}		6mA
R_a	T.	18kΩ

Characteristics

g_m	T.	4mA/V
	H.	2·5mA/V
g_c		0·65mA/V
μ	T.	17
r_a	T.	4·5kΩ
	H.	2·2MΩ

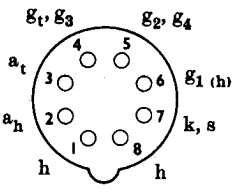
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$P_{a(max)}$	H.	1W
$V_{g2(max)}$		250V
$P_{g2(max)}$		0·75W

Base

B8A



Viewed from free end of pins

10C2

Triode Pentode F.C.- 0·1A, 28V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	P.	135V
V_{g2}		135V
V_{g1}		−2·7V
I_a	T.	5mA
I_a	P.	5mA
I_{g2}		1·5mA
R_a	T.	33kΩ

Characteristics

g_m	T.	3·8mA/V
	P.	4mA/V
g_c		2mA/V
μ	T.	17
r_a	T.	4·5kΩ

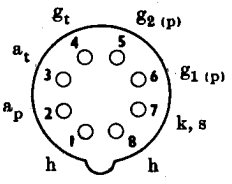
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	P.	250V
$P_{a(max)}$	P.	1W
$V_{g2(max)}$		250V
$P_{g2(max)}$	P.	0·5W

Base

B8A



Viewed from free end of pins

10C14

Triode Heptode F.C. - 0·1A, 19V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	170V
	H.	170V
V_{g2}		102V
V_{g1}		−2·2V
I_a	T.	4·5mA
	H.	3·2mA
I_{g2}		6·8mA
R_a	T.	15kΩ

Characteristics

g_m	T.	3·7mA/V
	H.	2·3mA/V
g_c		0·75mA/V
μ	T.	22
r_a	T.	5·9kΩ
r_a	H.	900kΩ

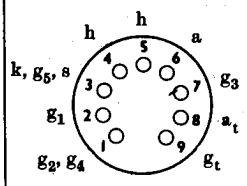
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	H.	250V
$P_{a(max)}$	T.	0·8W
	H.	1·7W
$V_{g2(max)}$		200V
$P_{g2(max)}$		1W

Base

B9A



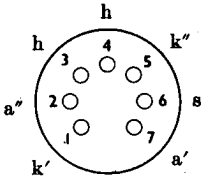
Viewed from free end of pins

10D2

Double Diode - 0·1A, 19V Heater

Base

B7G



Viewed from free end of pins

Rating

Max Mean diode Current = 9mA

P.I.V. (max) 500V

Separate Cathodes

10F1

R.F. Pentode - 0·1A, 22V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·8V
I_a	10mA
I_{g2}	2·6mA

Characteristics

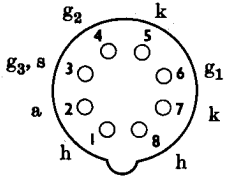
g_m	9mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	3·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B8A



Viewed from free end of pins

10F3

R.F. Pentode - 0·1A, 22V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−2·35V
I_a	6mA
I_{g2}	1·6mA

Characteristics

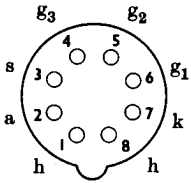
g_m	6·5mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·4W

Base

B8A



Viewed from free end of pins

10F9

Vari-μ-R.F. Pentode - 0·1A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	175V
V_{g2}	100V
V_{g1}	−2·5V
I_a	7mA
I_{g2}	2mA

Characteristics

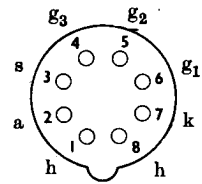
g_m	2·3mA/V
r_a	1MΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·3W

Base

B8A



Viewed from free end of pins

10F18

Vari-μ-H.F. Pentode - 0·1A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	175V
V_{g2}	100V
V_{g1}	−1·3V
I_a	12mA
I_{g2}	3·5mA

Characteristics

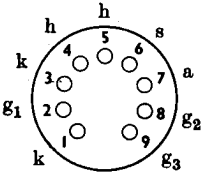
g_m	4·4mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·5W

Base

B9A



Viewed from free end of pins

10FD12

DD Vari-μ-RF Pentode - 0·1A, 19V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	100V
V_{g1}	−1·5V
I_a	11mA
I_{g2}	3·3mA

Characteristics

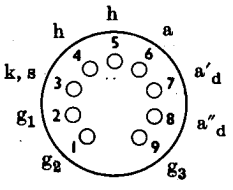
g_m	4·5mA/V
μ	20
r_a	600kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	0·45W

Base

B9A



Viewed from free end of pins

10L1

Grounded Grid Triode - 0·1A, 19V Heater

Typical Operating Conditions

$V_{a(b)}$	180V
V_{g1}	−1V
I_a	7·4mA

Characteristics

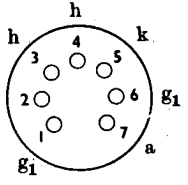
g_m	8·5mA/V
μ	90
r_a	11kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·5W

Base

B7G



Viewed from free end of pins

10L14

R.F. Double Triode - 0·1A, 26V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g1}	−2V
I_a	6mA

Characteristics

g_m	5·8mA/V
μ	50

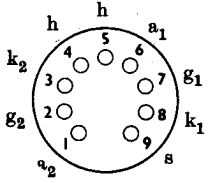
(Va = 100V, Vg = 0V)
Separate Cathodes

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	
(Either Anode)	2·5W
(Both Anodes)	4·5W

Base

B9A



Viewed from free end of pins

10LD3

Double Diode Triode - 0·1A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g1}	−1·1V
I_a	0·5mA
R_a	100kΩ

Characteristics

g_m	1·4mA/V
μ	70
r_a	50kΩ

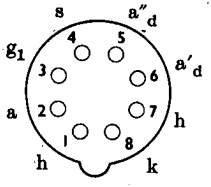
($V_a = 100V$, $V_g = -1V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B8A



Viewed from free end of pins

10LD11

Double Diode Triode - 0·1A, 15V Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g1}	−2·25V
I_a	1·25mA
R_a	47kΩ

Characteristics

g_m	3·4mA/V
μ	31·5
r_a	9·3kΩ

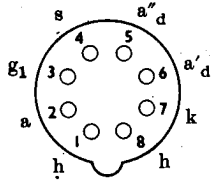
($V_g = 0V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1·25W

Base

B8A



Viewed from free end of pins

10LD12

Triple Diode Triode - 0·1A, 28V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
I_a	1mA
R_a	100kΩ

Characteristics

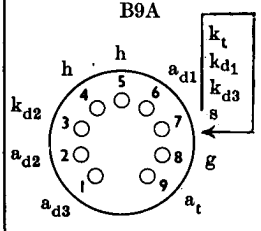
g_m	1·4mA/V
μ	70
$(V_g = 0V)$	

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

10LD13

Double Diode Triode - 0·1A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g1}	−4·4V
I_a	0·5mA
R_a	100kΩ

Characteristics

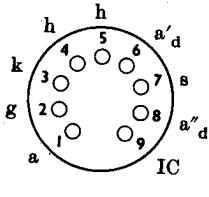
g_m	1·4mA/V
μ	70
$(V_g = 0V)$	

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

10M1

Tuning Indicator - 0·1A, 18V Heater

Typical Operating Conditions

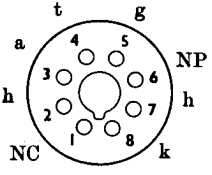
$V_{a(b)}$	150V
V_t	150V
V_{g1}	0V
(−17V for 0° Shadow)	
I_a	0·135mA
(at V_g − 0·5V, R_a 1MΩ)	
I_t	2·1mA

Rating

$V_{a(max)}$	250V
$V_{t(max)}$	250V

Base

I.O.



Viewed from free end of pins

10M2

Dual Sensitivity Tuning Indicator - Maltese Cross 0·1A, 12·6V Heater

Typical Operating Conditions

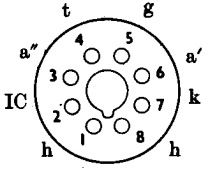
SECTION:	(1)	(2)
$V_{a(b)}$	200V	200V
V_t	200V	200V
I_t	0·4mA	0·4mA
(V_{g1}=0)		
R_a	2MΩ	1MΩ
V_{g1}	0V	0V
I_a	0·1mA	0·19mA
θ°	78°	75°
V_{g1}	−3V	−20V
I_a	0·06mA	0·08mA
θ°	25°	10°

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	0·5W
$V_{t(max)}$	250V
$P_{t(max)}$	0·5W

Base

I.O.



Viewed from free end of pins

10P13

Output Tetrode - 0·1A, 40V Heater

Typical Operating Conditions

$V_{a(b)}$	180V
V_{g2}	150V
V_{g1}	−6·3V
I_a	29mA
I_{g2}	5·8mA
R_a	5·4kΩ
P_{out}	2·6W

Characteristics

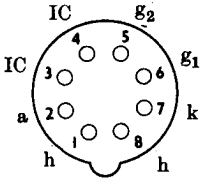
g_m	7·5mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	6W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·8W

Base

B8A



Viewed from free end of pins

10P14

Output Tetrode - 0·1A, 40V Heater

Typical Operating Conditions

$V_{a(b)}$	165V
V_{g2}	175V
V_{g1}	−9·4V
I_a	42mA
I_{g2}	10·5mA
R_a	3·5kΩ
P_{out}	3·4W

Characteristics

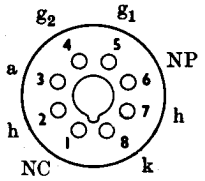
g_m	7·2mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	3W

Base

I.O.



Viewed from free end of pins

10P18

Output Pentode - 0·1A, 45V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−12·5V
I_a	70mA
I_{g2}	5mA
R_a	2·2kΩ
P_{out}	5·2W

Characteristics

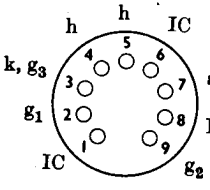
g_m	10mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	12W
$V_{g2(max)}$	200V
$P_{g2(max)}$	1·75W

Base

B9A



Viewed from free end of pins

10PL12

Triode Beam Tetrode - 0·1A, 50V Heater

Typical Operating Conditions

V_a	Q.	200V
V_{g2}	Q.	200V
V_{g1}	Q.	−16V
I_a	Q.	35mA
Ig_2	Q.	7mA

Characteristics

g_m	Q.	6·4 mA/V
	T.	2·5 mA/V

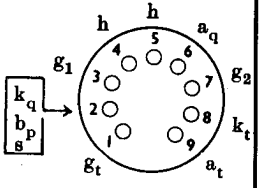
($V_{at}=100V$, $V_{gt}=0V$)

Rating

$V_{a(max)}$	Q.	250V
	T.	250V
$V_{g2(max)}$		250V
$P_{a(max)}$	Q.	7W
	T.	1W
$P_{g2(max)}$		1·8W

Base

B9A



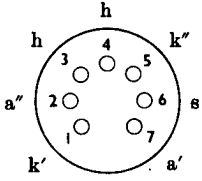
Viewed from free end of pins

20D1

Double Diode - 0·2A, 9·5V Heater

Base

B7G



Viewed from free end of pins

Separate Cathodes

Rating

P.I.V.$_{(max)}$	500V
Peak Current	50mA

20F2

R.F. Pentode - 0·2A, 11V Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	135V
V_{g1}	−1·3V
I_a	27mA
I_{g2}	6·5mA
R_a	6kΩ

Characteristics

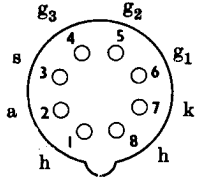
g_m	10·6mA/V
r_a	125kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B8A



Viewed from free end of pins

20L1

Double Triode - 0·2A, 12·6V Heater

Characteristics

g_m	2·8mA/V
μ	16
r_a	4kΩ

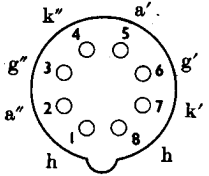
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	
(Either Anode)	3W
(Both Anodes)	4W

Base

B8A



Viewed from free end of pins

20P1

Line Output Tetrode - 0·2A, 38V Heater

Characteristics

g_m	7·3mA/V

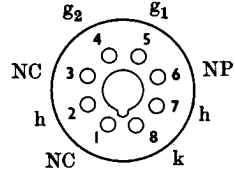
($V_a = V_{g_2} = 150V$, $I_a = 100mA$)

Rating

$V_{a(max)}$	400V
$P_{a(max)}$	15W
$V_{g2(max)}$	250V
$P_{g2(max)}$	5W

Base

I.O.



Top Cap = a

Viewed from free end of pins

20P3

Output Tetrode - 0·2A, 20V Heater

Typical Operating Conditions

$V_{a(b)}$	165V
V_{g2}	175V
V_{g1}	−9·4V
I_a	42mA
I_{g2}	10·5mA
R_a	3·5kΩ
P_{out}	3·4W

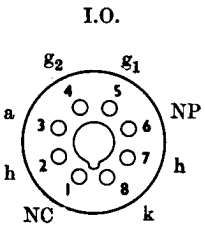
Characteristics

g_m	7·2mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	3W

Base



Viewed from free end of pins

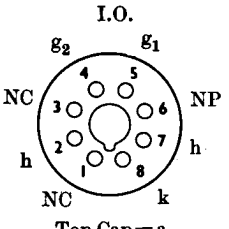
20P4

Line Output Tetrode - 0·2A, 38V Heater

Rating

$V_{a(max)}$	400V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	4W

Base



Top Cap = a

Viewed from free end of pins

20P5

Output Tetrode - 0·2A, 20V Heater

Typical Operating Conditions

$V_{a(b)}$	180V
V_{g2}	150V
V_{g1}	−6·3V
I_a	29mA
I_{g2}	5·8mA
R_a	5·4kΩ
P_{out}	2·6W

Characteristics

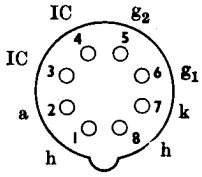
g_m	7·5mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	6W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·8W

Base

B8A



Viewed from free end of pins

30C1

Triode Pentode F.C. - 0·3A, 9V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	120V
	P.	170V
V_{g2}		145V
V_{g1}	T.	−2V
	P.	−1·4V
I_a	T.	6mA
	P.	6·8mA
I_{g2}		2mA

Characteristics

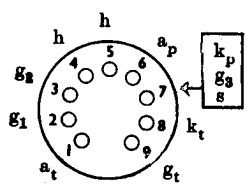
g_m	T.	5mA/V
	P.	6·2mA/V
g_c	P.	2mA/V
μ	T.	20
r_a ($V_{g.t.} = 0V$)	P.	500kΩ

Rating

$V_{a(max)}$	T.	250V
	P.	250V
$P_{a(max)}$	T.	1·5W
	P.	1·7W
$V_{g2(max)}$		175V
$P_{g2(max)}$		0·5W

Base

B9A



Viewed from free end of pins

30C15

Triode Pentode F.C. - 0·3A, 9V Heater

Typical Operating Conditions

$V_{a(b)}$		200V
V_a	T.	120V
V_{g2}		138V
I_a	P.	7·6mA
I_{g2}		2·3mA
I_a	T.	6mA

Characteristics

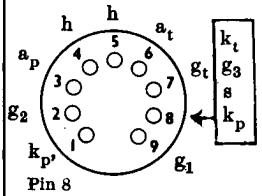
g_m	P.	8·5mA/V
	T.	5·0mA/V
μ	T.	20
V_a	P. = *170V*	
I_a	P. = *10mA*	
V_a	T. = *100V*	
I_a	T. = *14mA*	

Rating

$V_{a(max)}$	P.	250V
	T.	250V
$V_{g2(max)}$		175V
$P_{a(max)}$	P.	1·7W
	T.	1·5W
$P_{g2(max)}$		0·5W

Base

B9A



Viewed from free end of pins

30F5

H.F. Pentode - 0·3A, 7·3V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−1·85V
I_a	10mA
I_{g2}	2·6mA

Characteristics

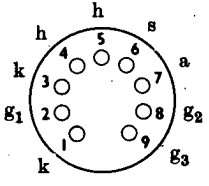
g_m	8·8mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	3W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1W

Base

B9A



Viewed from free end of pins

30FL1

Triode Beam Tetrode - 0·3A, 9·4V Heater

Characteristics

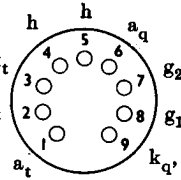
g_m	T.	3·4mA/V
	Q.	7·5mA/V
μ ($V_{g.t.} = 0V$)	T.	18

Rating

$V_{a(max)}$	T.	250V
	Q.	250V
$P_{a(max)}$	T.	2W
	Q.	3W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1W

Base

B9A



Viewed from free end of pins

30L1

R.F. Double Triode - 0·3A, 7V Heater

Typical Operating Conditions

Cascode

$V_{a(b)}$	200V
V_{g1}	−1·5V
I_a	12mA

Characteristics

g_m	6mA/V
μ	24
r_a	4kΩ

($V_a = 90V$, $I_a = 12mA$)

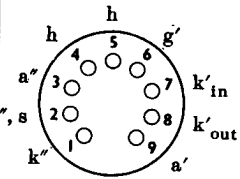
Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2W

(*Either Anode*)

Base

B9A



Viewed from free end of pins

30L15

R.F. Double Triode - 0·3A, 7V Heater

Typical Operating Conditions

Cascode

$V_{a(b)}$	200V
I_a	15mA
V_g (sec 1)	−1·23V

Characteristics

g_m	9mA/V
μ	28

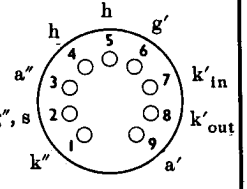
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2W

Base

B9A



Viewed from free end of pins

30P4

Line Output Tetrode - 0·3A, 25V Heater

Typical Operating Conditions

V_a	100V
V_{g2}	100V
I_a	100mA

Characteristics

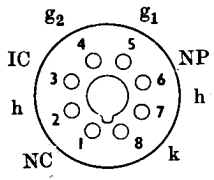
g_m	13mA/V

Rating

$V_{a(max)}$	400V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	4W

Base

I.O.



Top Cap = a

Viewed from free end of pins

30P12

Output Tetrode - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
$V_{g2(b)}$	180V
V_{g1}	−10·3V
I_a	31mA
I_{g2}	7·2mA
R_a	5kΩ
P_{out}	2·25W

Characteristics

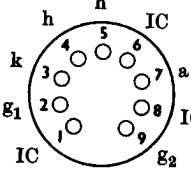
g_m	8·3mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	6W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·8W

Base

B9A



Viewed from free end of pins

30P16

Output Pentode - 0·3A, 16·5V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−14·4V
I_a	45mA
I_{g2}	8·5mA
R_a	4kΩ
P_{out}	4·2W

Characteristics

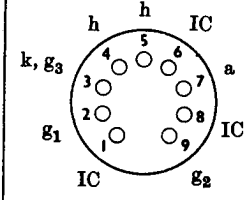
g_m	7·6mA/V
r_a	24kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	9W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base

B9A



Viewed from free end of pins

30P18

Output Pentode - 0·3A, 15V Heater

Typical Operating Conditions

V_a	170V
V_{g2}	170V
I_a	70mA
I_{g2}	5mA
V_{g1}	−12·5V

Characteristics

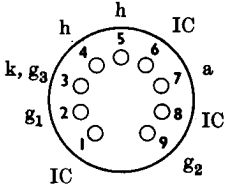
g_m	10mA/V
r_a	23kΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	200V
$P_{a(max)}$	12W
$P_{g2(max)}$	1·75W

Base

B9A



Viewed from free end of pins

30P19

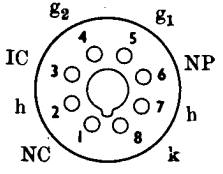
Line Output Tetrode - 0·3A, 25V Heater

Rating

$V_{a(max)}$	400V
$V_{g2(max)}$	250V
$I_{k(max)}$	160mA
$P_{g2(max)}$	5W
$P_{a(max)}$	10W

Base

I.O.



Top Cap = a

Viewed from free end of pins

30PL1

Triode Beam Tetrode 0·3A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	180V
V_{g1}	−9·6V
I_a	28mA
I_{g2}	6·5mA
R_a	6kΩ
P_{out}	2W

Characteristics

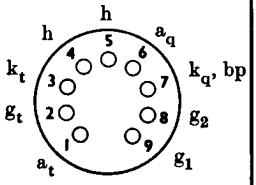
g_m Q. 6·5mA/V
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	Q.	250V
$P_{a(max)}$	T.	2W
	Q.	5·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1·5W

Base

B9A



Viewed from free end of pins

INDUSTRIAL VALVES AND CATHODE RAY TUBES

Brief technical data on our range of Industrial Valves and Cathode Ray Tubes is contained in publication number PD16/1900A. We shall be glad to supply copies on request.

30PL13

Triode O/P Beam Tetrode - 0-3A, 16V Heater

Typical Operating Conditions

V_a	T.	200V
I_a	T.	10mA

Characteristics

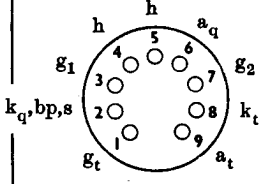
g_m	T.	3·4mA/V
μ	T.	18

Rating

$V_{a(max)}$	Q.	250V
	T.	250V
$V_{g2(max)}$		250V
$P_{a(max)}$	Q.	7W
$P_{g2(max)}$		2·4W

Base

B9A



Viewed from free end of pins

AC/HL

Triode - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−3·4V
I_a	2mA
R_a	50kΩ

Characteristics

g_m	3mA/V
μ	35
r_a	11·7kΩ

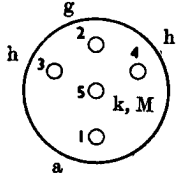
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	200V
$I_{a(max)}$	12mA

Base

5 Pin



Viewed from free end of pins

AC/HL/DD

Double Diode Triode - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−2·7V
I_a	2mA
R_a	50kΩ

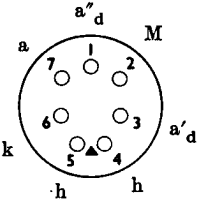
Characteristics

g_m	2·6mA/V
μ	36
r_a ($V_g = 0V$)	13·8kΩ

Rating

$V_{a(max)}$	250V

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

AC/PEN

Output Pentode - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−15·5V
I_a	32mA
I_{g2}	6mA
R_a	7·5kΩ
P_{out}	3·3W

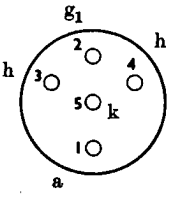
Characteristics

g_m	2·7mA/V
r_a	75kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	8W
$V_{g2(max)}$	250V

Base 5 Pin



Top Cap = g_2

Viewed from free end of pins

AC/SG/VM

Vari-μ-Screened Grid - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	60V
V_{g1}	−2V
I_a	5·8mA

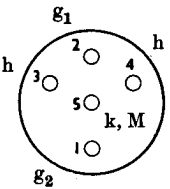
Characteristics

g_m	1·8mA/V
r_a	720kΩ

Rating

$V_{a(max)}$	200V
$V_{g2(max)}$	80V

Base 5 Pin



Top Cap=a

Viewed from free end of pins

AC/TH1

Triode Heptode F.C. - 4V, 1·3A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		100V
V_{g1}	H.	−3V
I_a	T.	4·5mA
I_a	H.	3mA
I_{g2}		6mA
R_a	T.	39kΩ

Characteristics

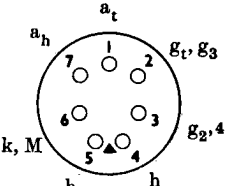
g_m	T.	4·7mA/V
g_c	H.	0·75mA/V
μ	T.	16
r_a	T.	3·4kΩ
r_a	H.	1·6MΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$V_{g2(max)}$		250V

Base 7 Pin



Top Cap=g_1

Viewed from free end of pins

AC/TP

Triode Pentode F.C. - 4V, 1·25A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	P.	250V
V_{g2}		200V
V_{g1}	P.	−5V
I_a	T.	1·5mA
I_a	P.	6·5mA
I_{g2}	P.	2·5mA

Characteristics

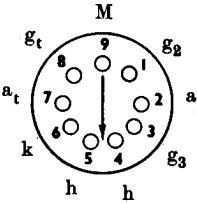
g_m	T.	1·62mA/V
g_c	P.	0·7mA/V
r_a	P.	900kΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	200V
	P.	250V
$V_{g2(max)}$		250V

Base 9 Pin



Top Cap=g_1

Viewed from free end of pins

AC/VP1

Vari-μ-R.F. Pentode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	200V
V_{g1}	−2·8V
I_a	7·4mA
I_{g2}	1·85mA

Characteristics

g_m	2mA/V
r_a	IMΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V

Base

5 Pin	7 Pin
1=g_2	1=M
2=g_1	2=g_1
3=h	3=g_3
4=h	4=h
5=k, g_3, M	5=h
	6=k
	7=g_2

Top Cap.=a

AC/VP2

Vari-μ-R.F. Pentode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	200V
V_{g1}	−2·8V
I_a	7·4mA
I_{g2}	1·85mA

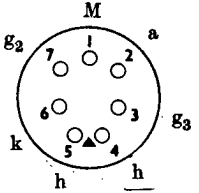
Characteristics

g_m	2mA/V
r_a	1MΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

AC/2HL

Triode - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·2V
I_a	2·5mA
R_a	50kΩ

Characteristics

g_m	6·5mA/V
μ	75
r_a	11·5kΩ

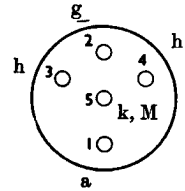
($V_a = 100V$, $Vg = 0V$)

Rating

$V_{a(max)}$	200V

Base

5 Pin



Viewed from free end of pins

AC2/PEN

Output Pentode - 4V, 1·75A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−5·3V
I_a	32mA
I_{g2}	6mA
R_a	6·7kΩ
P_{out}	3·5W

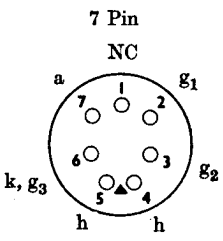
Characteristics

g_m	8·5mA/V
r_a	110kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2W

Base



Viewed from free end of pins

AC2/PEN/DD

D.D. Output Pentode - 4V, 2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−5·3V
I_a	32mA
I_{g2}	6mA
R_a	6·7kΩ
P_{out}	3·5W

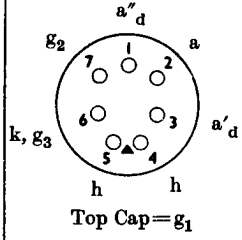
Characteristics

g_m	8·5mA/V
r_a	110kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2W

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

AC4/PEN

Output Tetrode - 4V, 1·75A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·75V
I_a	64mA
I_{g2}	13mA
R_a	3·3kΩ
P_{out}	6·9W

Characteristics

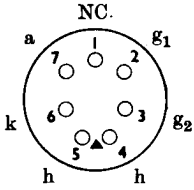
g_m	12mA/V
r_a	20kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	16W
$V_{g2(max)}$	250V
$P_{g2(max)}$	4W

Base

7 Pin



Viewed from free end of pins

AC5/PEN

Output Tetrode - 4V, 1·75A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	7·5mA
R_a	5·2kΩ
P_{out}	4·85W

Characteristics

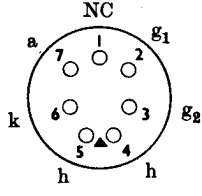
g_m	9·4mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base

7 Pin



Viewed from free end of pins

AC5/PEN/DD

D.D. Output Tetrode - 4V, 2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	7·5mA
R_a	5·2kΩ
P_{out}	4·85W

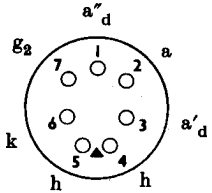
Characteristics

g_m	9·4mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

CME141

14″ Aluminised E/S Focus C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a2,4}$	12kV
V_{a1}	300V
V_{a3}	100V (Av)
V_{g1}	−51V (Av)*

** For Cut Off*

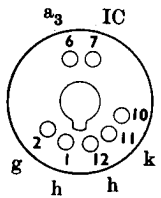
Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

Deflection Angle = 70°

Rating

$V_{a2,4(max)}$	14kV
(min)	10kV
$V_{a1(max)}$	400V
$V_{a3(max)}$	± 500V

Base Duo-Decal



Cap = $a_{2,}$ a_4.

Viewed from free end of pins

Neck Diameter, 38 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

CME1402

14″ Aluminised E/S Focus C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a2,4}$	12kV
V_{a1}	300V
V_{a3}	100V (Av)
V_{g1}	−51V (Av)*

**For Cut Off*

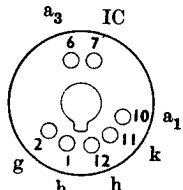
Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

Deflection Angle = 90°

Rating

$V_{a2,4(max)}$	14kV
(min)	10kV
$V_{a1(max)}$	400V
$V_{a3(max)}$	±500V

Base Duo-Decal



Cap = a_2, a_4

Viewed from free end of pins

Neck Diameter, 38 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

CME1702

17″ Aluminised E/S Focus C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a2,4}$	14·5kV
V_{a1}	300V
V_{a3}	100V (Av)
V_{g1}	−51V (Av)*

** For Cut Off*

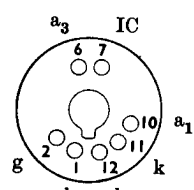
Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

Deflection Angle = 90°

Rating

$V_{a2,4(max)}$	15kV
(min)	12kV
$V_{a1(max)}$	400V
$V_{a3(max)}$	±500V

Base Duo-Decal



Cap = a_2, a_4

Viewed from free end of pins

Neck Diameter, 38 mm.
This Tube has an External Conductive Coating.

CME1703

17″ Aluminised C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a2,4}$	14kV
V_{a1}	300V
V_{a3}	100V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 24V (Av)

Deflection Angle = 110°

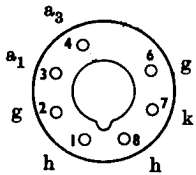
Rating

$V_{a2,4(max)}$	16kV
(min)	12kV
$V_{a3(max)}$	±500V
$V_{a1(max)}$	400V

Neck Diameter, 29·4 mm.

Base

B8H



Cap = $a_{2,4}$

Viewed from free end of pins

CME1705

17″ Short Neck Aluminised C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a3}	15kV
V_{a1}	450V
V_{a2}	100V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 350μA = 33V (AV)

Deflection Angle = 110°

Neck Diameter, 29·4 mm.

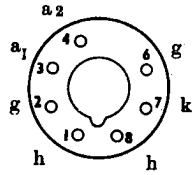
Rating

$V_{a3(max)}$	16kV
(min)	14kV
$V_{a\ 1,2(max)}$	500V
$V_{a1(min)}$	400V

This Tube has an External Conductive Coating.

Base

B8H



Cap = a_3

Viewed from free end of pins

CME2101

21″ Aluminised C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

$V_{a2,4}$	15kV
V_{a1}	300V
V_{a3}	100V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 24V (Av)

Deflection Angle = 110°

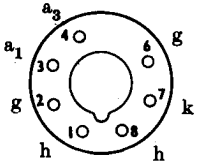
Rating

$V_{a2,4(max)}$	16kV
(min)	14kV
$V_{a3(max)}$	±500V
$V_{a1(max)}$	400V

Neck Diameter, 29·4 mm.

Base

B8H



Cap = a2, a4

Viewed from free end of pins

CRM71

7″ Triode C.R.T. - 2V, 1·4A Heater

Typical Operating Conditions

V_a	3·5kV
V_{g1}	−31V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 21V (Av)

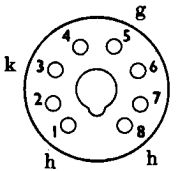
Rating

$V_{a(max)}$	4kV

Neck Diameter 35 mm.

Base

Mazda Octal



Cap = a

Viewed from free end of pins

CRM91

9″ Triode C.R.T. - 2V, 1·3A Heater

Typical Operating Conditions

V_a	5kV
V_{g1}	−45V (Av)*

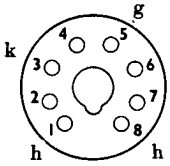
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 23V (Av)

Deflection Angle=64°

Base

Mazda Octal



Cap=a

Viewed from free end of pins

Rating

$V_{a(max)}$	6kV

Neck Diameter, 35 mm.

CRM92A

9″ Triode C.R.T. - 2V, 1·3A Heater

Typical Operating Conditions

V_a	6kV
V_{g1}	−48V (Av)*

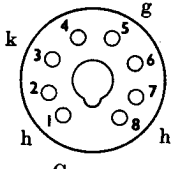
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 25·2V (Av)

Deflection Angle=57°

Base

Mazda Octal



Cap=a

Viewed from free end of pins

Rating

$V_{a(max)}$	7kV
$V_{g1(max)}$	−100V

Neck Diameter, 35 mm.
Suitable replacement for the CRM92.

CRM93

9″ Aluminised Tetrode C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	9kV
V_{a1}	300V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

Deflection Angle = 57°

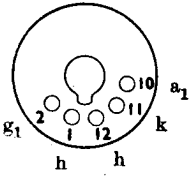
Rating

$V_{a2(max)}$	9kV
(min)	7·5kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Neck Diameter, 35 mm.
An Ion-Trap Magnet is required.

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

CRM121B

12″ Triode C.R.T. - 2V, 1·3A Heater

Typical Operating Conditions

V_a	9kV
V_{g1}	−71V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 30V (Av)

Deflection Angle = 57°

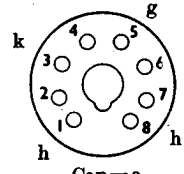
Rating

$V_{a(max)}$	10kV

Neck Diameter, 35 mm.
This Tube is a suitable replacement for CRM121, CRM121A, CRM123 (aluminised).

Base

Mazda Octal



Cap = a

Viewed from free end to pins

CRM122

12″ Triode C.R.T. - 0·3A, 7·3V Heater

Typical Operating Conditions

V_a	9kV
V_{g1}	−71V (Av)*

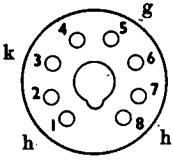
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 30V (Av)

Deflection Angle = 57°

Base

Mazda Octal



Cap = a

Viewed from free end of pins

Rating

$V_{a(max)}$	10kV
$V_{g1(max)}$	−100V

Neck Diameter, 35 mm.

CRM123

12″ Aluminised Triode C.R.T. - 2V, 1·3A Heater

Typical Operating Conditions

V_a	9kV
V_{g1}	−71V (Av)*

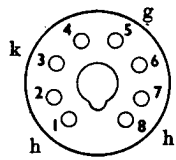
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 30V (Av)

Deflection Angle = 57°

Base

Mazda Octal



Cap = a

Viewed from free end of pins

Rating

$V_{a(max)}$	10kV
$V_{a(min)}$	7·5kV

Neck Diameter, 35 mm.

CRM124

12″ Aluminised Tetrode C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	10kV
V_{a1}	300V
V_{g1}	−50V (Av)*

* *For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

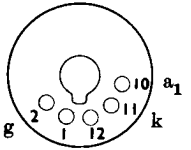
Deflection Angle = 57°

Rating

$V_{a2(max)}$	10kV
(min)	7·5kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Base

Duo-Decal



Viewed from free end of pins

Neck Diameter, 35 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

CRM141 & 142

14″ Aluminised Tetrode C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	12kV
V_{a1}	300V
V_{g1}	−51V (Av)*

* *For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5 (Av)

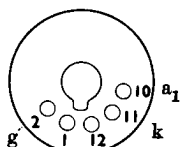
Deflection Angle = 67°

Rating

$V_{a2(max)}$	14kV
(min)	8kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Base

Duo-Decal



Viewed from free end of pins

Neck Diameter, 35 mm.
An Ion-Trap Magnet is required.
CRM142 has a Grey Face.

CRM143 & 144

14″ Aluminised Tetrode C.R.T. (Grey Face. Rectangular) - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	12kV
V_{a1}	300V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

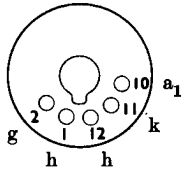
Deflection Angle = 70°

Rating

$V_{a2(max)}$	14kV
(min)	8kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Neck Diameter, 38 mm.
An Ion-Trap Magnet is required.
CRM144 has an External Conductive Coating.

CRM151

15″ Aluminised Triode C.R.T. - 2V, 1·3A Heater

Typical Operating Conditions

V_a	12kV
V_{g1}	−93V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 33V (Av)

Deflection Angle = 51°

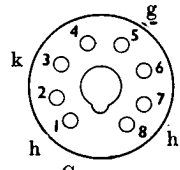
Rating

$V_{a(max)}$	13kV
(min)	9kV

Neck Diameter, 35 mm.

Base

Mazda Octal



Cap = a

Viewed from free end of pins

CRM152B

15″ Aluminised Triode C.R.T. (Grey Face) - 2V, 1·3A Heater

Typical Operating Conditions

V_a	12kV
V_{g1}	−93V (Av)*

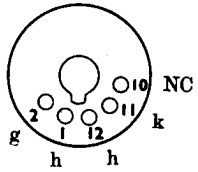
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 33V (Av)

Deflection Angle = 67°

Base

Duo-Decal



Cap = a

Viewed from free end of pins

Rating

$V_{a(max)}$	13kV
(min)	9kV
$V_{g1(max)}$	−300V

Neck Diameter, 35 mm.

CRM153

15″ Aluminised Tetrode C.R.T. (Grey Face) - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	14kV
V_{a1}	300V
V_{g1}	−51V (Av)*

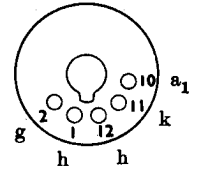
** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

Deflection Angle = 67°

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Rating

$V_{a2(max)}$	15kV
(min)	10kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Neck Diameter, 35 mm.
An Ion-Trap Magnet is required.

CRM171 & 172

17″ Aluminised Tetrode C.R.T. (Grey Face. Rectangular) - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	14kV
V_{a1}	300V
	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

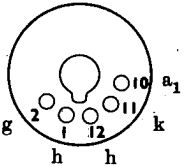
Deflection Angle = 70°

Rating

$V_{a2(max)}$	16kV
(min)	10kV
$V_{a1(max)}$	400V
$V_{a1(max)}$	−125V

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Neck Diameter, 35 mm.
An Ion-Trap Magnet is required.
CRM172 has an External Conductive Coating.

CRM173

17″ Aluminised Tetrode C.R.T. - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	15kV
V_{a1}	300V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·6V (Av)

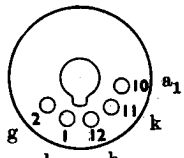
Deflection Angle = 90°

Rating

$V_{a2(max)}$	16kV
(min)	11kV
$V_{a1(max)}$	400V

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Neck Diameter, 38 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

CRM211

21″ Aluminised Tetrode C.R.T. (Grey Face. Rectangular) - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	16–18kV
V_{a1}	300V
V_{g1}	−51V (Av)*

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

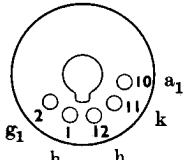
Deflection Angle = 70°

Rating

$V_{a2(max)}$	18kV
(min)	14kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Neck Diameter, 38 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

CRM212

21″ Aluminised Tetrode C.R.T. (Grey Face. Rectangular) - 0·3A, 12·6V Heater

Typical Operating Conditions

V_{a2}	16–18kV
V_{a1}	300V
V_{g1}	−51V (Av)

** For Cut Off*

Pk. to Pk. Mod. Voltage For Mod. up to 150μA = 26·5V (Av)

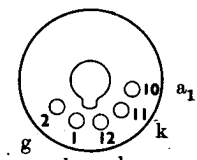
Deflection Angle = 90°

Rating

$V_{a2(max)}$	20kV
(min)	14kV
$V_{a1(max)}$	400V
$V_{g1(max)}$	−125V

Base

Duo-Decal



Cap = a_2

Viewed from free end of pins

Neck Diameter 38 mm.
This Tube has an External Conductive Coating.
An Ion-Trap Magnet is required.

D1

Television Diode - 4V, 0·2A Heater

Base

B3G

Rating

$P.I.V._{(max)}$	500V
Peak Current	50mA

DAF91

Diode Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	1·6mA
I_{g2}	400μA

Characteristics

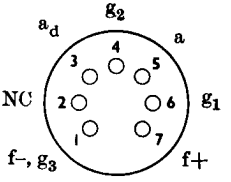
g_m	0·625mA/V
r_a	600kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

DAF96

Diode Pentode - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	−1·5V
I_a	170μA
I_{g2}	55μA

Characteristics

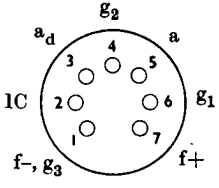
g_m	170μA/V

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

DD41

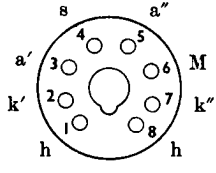
Double Diode - 4V, 0·5A Heater

Rating

P.I.V.(max)	500V
Peak Current	50mA

Base

M.O.



Viewed from free end of pins

Separate Cathodes

DF91

Vari-μ-R.F. Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	3·4mA
I_{g2}	1·5mA

Characteristics

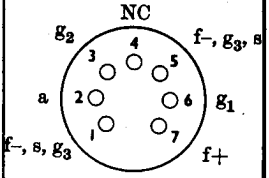
g_m	0·875mA/V
r_a	250kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base

B7G



Viewed from free end of pins

DF92

R.F. Pentode - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	90V
V_{g2}	67·5V
V_{g1}	0V
I_a	2·9mA
I_{g2}	1·2mA

Characteristics

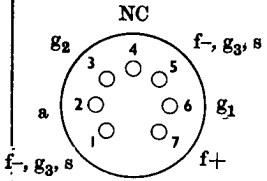
g_m	0·925mA/V
r_a	500kΩ

Rating

$V_{a(max)}$	110V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

DF96

Vari-μ-R.F. Pentode - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	64V
V_{g2}	64V
V_{g1}	0V
I_a	1·65mA
I_{g2}	0·55mA

Characteristics

g_m	0·85mA/V
r_a	700kΩ

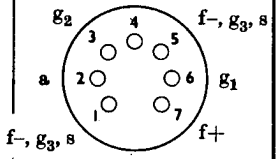
Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G

IC



Viewed from free end of pins

DK91

Pentagrid F.C. - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	0V
I_a	1·4mA
I_{g2}	3·2mA

Characteristics

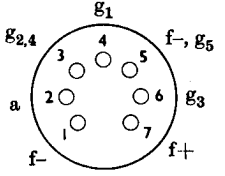
g_c	280μA/V
r_a	500kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base

B7G



Viewed from free end of pins

DK92

Pentagrid F.C. - 1·4V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
$V_{g2(osc)}$	30V
V_{g4}	60V
V_{g1}	0V
I_a	0·7mA
$I_{g2(osc)}$	1·6mA
I_{g4}	150μA
$R_{a(osc)}$	33kΩ

Characteristics

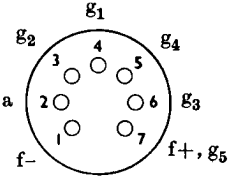
g_c	325μA/V
r_a	650kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	60V
$V_{g4(max)}$	90V

Base

B7G



Viewed from free end of pins

DK96

Pentagrid F.C. - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
$V_{g2(osc)}$	35V
V_{g4}	68V
V_{g1}	0V
I_a	0·6mA
$I_{g2(osc)}$	1·5mA
I_{g4}	140μA
$R_{a(osc)}$	33kΩ

Characteristics

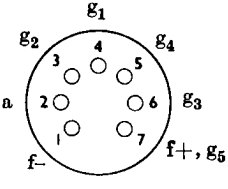
g_c	300μA/V
r_a	800kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	60V
$V_{g4(max)}$	90V

Base

B7G



Viewed from free end of pins

DL92

Output Pentode - 1·4V, 100mA, or 2·8V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	67·5V
V_{g2}	67·5V
V_{g1}	−7V
I_a	7·2mA
I_{g2}	1·5mA
R_a	5kΩ
P_{out}	180mW

Characteristics

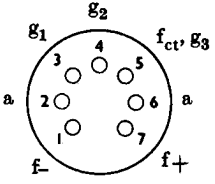
g_m	1·55mA/V
r_a	100kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	67·5V

Base

B7G



Viewed from free end of pins

DL94

Output Pentode - 1·4V, 100mA, or 2·8V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	90V
V_{g2}	90V
V_{g1}	−4·5V
I_a	9·5mA
I_{g2}	2·1mA
R_a	10kΩ
P_{out}	270mW

Characteristics

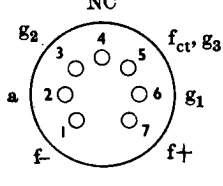
g_m	2·15mA/V
r_a	100kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

DL96

Output Pentode - 1·4V, 50mA, or 2·8V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	85V
V_{g2}	85V
V_{g1}	−5·2V
I_a	5mA
I_{g2}	0·9mA
R_a	13kΩ
P_{out}	200mW

Characteristics

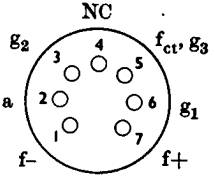
g_m	1·4mA/V
r_a	150kΩ

Rating

$V_{a(max)}$	90V
$V_{g2(max)}$	90V

Base

B7G



Viewed from free end of pins

DM71

Tuning Indicator - 1·4V, 25mA Filament

Typical Operating Conditions

$V_{a(b)}$	60V
V_{g1}	−8V
I_a	120μA

Battery Operation
Pin 4 Positive

$V_{a(b)}$	90V
V_{g1}	−13·5V
I_a	250μA

Battery Operation
Pin 4 Negative

$V_{a(b)}$	110V
V_{g1}	−15V
I_a	90μA

Mains Operation
Pin 5 Earthed

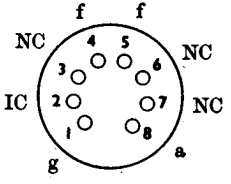
Rating

$V_{a(max)}$	90V

For Circuits without Anode Series Resistor

Base

B8D



Viewed from free end of pins

EABC80

Triple Diode Triode - 6·3V, 0·45A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−3V
I_a	1mA

Characteristics

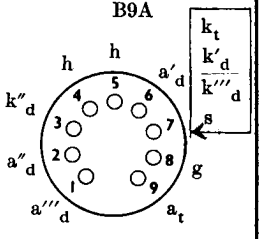
g_m	1·45mA/V
μ	70
$(V_g = 0V)$	

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

EB91

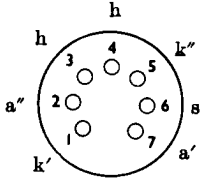
Double Diode - 6·3V, 0·3A Heater

Rating

P.I.V.$_{(max)}$	500V
Peak Current	50mA

Base

B7G



Viewed from free end of pins

Separate Cathodes

EBC41

Double Diode Triode - 6·3V, 0·23A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·9V
I_a	0·85mA
R_a	100kΩ

Characteristics

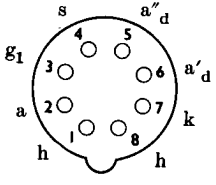
g_m	1·95mA/V
μ	70
r_a ($V_g = 0V$)	54kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B8A



Viewed from free end of pins

EBC81

Double Diode Triode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·85V
I_a	0·85mA
R_a	100kΩ

Characteristics

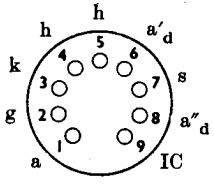
g_m	1·2mA/V
μ ($V_g = 0V$)	70

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

EBC90

D.D. Triode - 6·3V, 0·3A. Heater

Typical Operating Conditions

V_a	250V
V_g	−3V
I_a	1mA

Characteristics

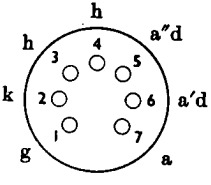
g_m	1·2 mA/V
μ	70
r_a	58kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B7G



Viewed from free end of pins

EBF80

D.D. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	80V
V_{g1}	−2V
I_a	5mA
I_{g2}	1·75mA

Characteristics

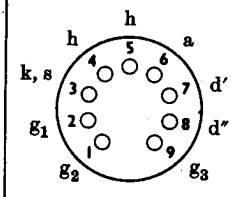
g_m	2·2mA/V
μ	18
r_a	1·4MΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1·5W
$P_{g2(max)}$	300mW

Base

B9A



Viewed from free end of pins

EBF89

D.D. Vari-μ-R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	100V
V_{g1}	−1·5V
I_a	11mA
I_{g2}	3·3mA

Characteristics

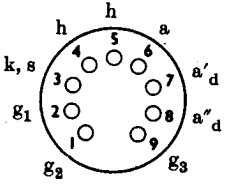
g_m	4·5mA/V
r_a	600kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	300V
$P_{g2(max)}$	450mW

Base

B9A



Viewed from free end of pins

EC91

Grounded Grid Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·5V
I_a	10mA

Characteristics

g_m	8·5mA/V
μ	90
r_a	10·5kΩ

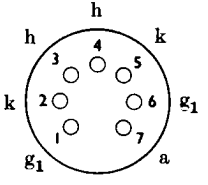
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·5W

Base

B7G



Viewed from free end of pins

EC92

V.H.F. Triode - 6·3V, 0·15A Heater

Typical Operating Conditions

V_a	250V
V_g	−2V
I_a	10mA

Characteristics

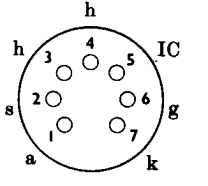
μ	60
g_m	5·5 mA/V
r_a	11kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W
$I_{k(max)}$	15mA

Base

B7G



Viewed from free end of pins

ECC81

Double Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−2V
I_a	10mA

Characteristics

g_m	5·5mA/V
μ	60
r_a	10·5kΩ

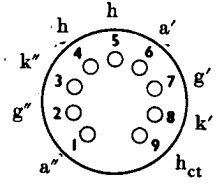
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W

Base

B9A



Viewed from free end of pins

ECC82

Double Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−9·6V
I_a	9·6mA
R_a	13kΩ
P_{out}	265mW

Characteristics

g_m	2·2mA/V
μ	17
r_a	7·7kΩ

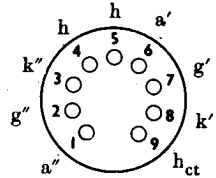
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·75W

Base

B9A



Viewed from free end of pins

ECC83

Double Triode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−1·3V
I_a	0·86mA
R_a	100kΩ

Characteristics

g_m	1·6mA/V
μ	100
r_a	62·5kΩ

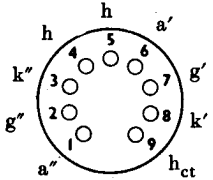
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

ECC85

R.F. Double Triode - 6·3V, 0·435A Heater

Typical Operating Conditions

$V_{a(b)}$	250V (amp) 250V (osc)
V_{g1}	−2V
I_a	10mA (amp) 5·2mA (osc)
R_a	1·8kΩ (amp) 12kΩ (osc)

Characteristics

g_m	6mA/V (amp) 2·3mA/V (osc)
μ	57

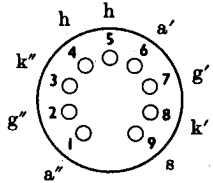
($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	
(Either Anode)	2·5W
(Both Anodes)	4·5W

Base

B9A



Viewed from free end of pins

ECH35

Triode Hexode - 6·3V, 0·225A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		100V
V_{g1}		−2V
I_a	T.	4·5mA
	H.	3mA
I_{g2}		3mA
R_a	T.	45kΩ

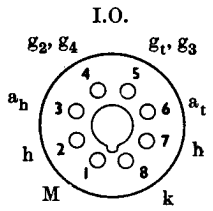
Characteristics

g_m	T.	2·8mA/V
g_c		0·65mA/V
μ	T.	24
r_a ($V_{g.t.} = 0V$)	H.	1·3MΩ

Rating

$V_{a(max)}$	T.	100V
	H.	300V
$P_{a(max)}$	T.	1.5W
	H.	1.2W
$V_{g2(max)}$		200V
$P_{g2(max)}$		600mW

Base



Top Cap = g_1

Viewed from free end of pins

ECH42

Triode Hexode F.C. - 6·3V, 0·23A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		85V
V_{g1}		−2V
I_a	T.	5mA
	H.	3mA
I_{g2}		3mA
R_a	T.	33kΩ

Characteristics

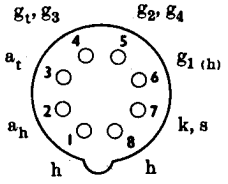
g_m	T.	2·8mA/V
g_c	H.	0·75mA/V
μ	T.	22
r_a	T.	7.8kΩ
r_a	H.	1030kΩ
($V_{g.t.} = 0V$)		

Rating

$V_{a\ (max)}$	T.	175V
	H.	250V
$P_{a\ (max)}$	T.	0·8W
	H.	1·5W
$V_{g2\ (max)}$		250V
$P_{g2\ (max)}$		300mW

Base

B8A



Viewed from free end of pins

ECH81

Triode Heptode F.C. - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		103V
V_{g1}		−2V
I_a	T.	4·5mA
	H.	3·25mA
I_{g2}		6·7mA
R_a	T.	33kΩ

Characteristics

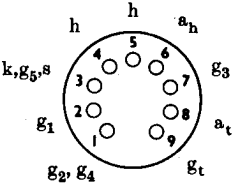
g_m	T.	3·7mA/V
	H.	2·4mA/V
g_c		0·775mA/V
μ	T.	20
r_a	T.	5·5kΩ
r_a	H.	1MΩ
($V_{g.t.} = 0V$)		

Rating

$V_{a(max)}$	T.	250V
	H.	300V
$P_{a(max)}$	T.	0·8W
	H.	1·7W
$V_{g2(max)}$		125V
$P_{g2(max)}$		1W

Base

B9A



Viewed from free end of pins

ECL80

Triode Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	170V
	P.	170V
V_{g2}		170V
V_{g1}	T.	−3·5V
	P.	−6·7V
I_a	T.	0·5mA
	P.	15mA
I_{g2}		2·8mA
R_a	T.	220kΩ
	P.	11kΩ
P_{out}		1W

Characteristics

g_m	T.	1·9mA/V
g_c	P.	3·2mA/V
μ		20
r_a		150kΩ

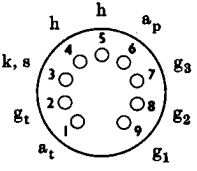
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	200V
	P.	400V
$P_{a(max)}$	T.	1W
	P.	3·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1·2W

Base

B9A



Viewed from free end of pins

ECL82

Triode Pentode - 6·3V, 0·78A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	170V
	P.	200V
V_{g2}		200V
V_{g1}	P.	−16V
I_a	T.	0·43mA
	P.	35mA
I_{g2}		7mA
R_a	T.	220kΩ
	P.	5·6kΩ
P_{out}		3·5W

Characteristics

g_m	T.	2·5mA/V
g_c	P.	6·4mA/V
μ	T.	70
	P.	9·5
r_a	T.	28kΩ
	P.	20kΩ

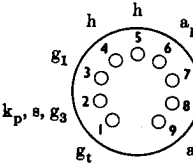
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	300V
	P.	600V
$P_{a(max)}$	T.	1W
	P.	7W
$V_{g2(max)}$		300V
$P_{g2(max)}$		1·8W

Base

B9A



Viewed from free end of pins

EF41

Vari-μ-Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	100V
V_{g1}	−2·5V
I_a	6mA
I_{g2}	1·7mA

Characteristics

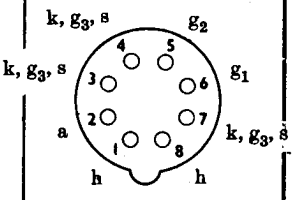
g_m	2·2mA/V
μ	18
r_a	1MΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2W
$V_{g2(max)}$	300V
$P_{g2(max)}$	300mW

Base

B8A



Viewed from free end of pins

EF80

R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−2V
I_a	10mA
I_{g2}	2·5mA

Characteristics

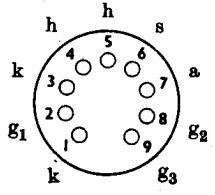
g_m	7·4mA/V
μ	50
r_a	500kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W
$V_{g2(max)}$	300V
$P_{g2(max)}$	700mW

Base

B9A



Viewed from free end of pins

EF85

Vari-μ-R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	100V
V_{g1}	−2V
I_a	10mA
I_{g2}	2·5mA

Characteristics

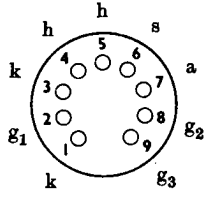
g_m	6mA/V
μ	25
r_a	500kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W
$V_{g2(max)}$	300V
$P_{g2(max)}$	650mW

Base

B9A



Viewed from free end of pins

EF86

A.F. Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

V_a	250V
V_{g2}	140V
V_{g3}	0V
V_{g1}	−2V
I_a	3mA
I_2	0·6mA

Characteristics

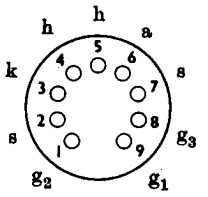
g_m	1·8mA/V
r_a	2·5MΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	1W
$V_{g2(max)}$	200V
$P_{g2(max)}$	200mW

Base

B9A



Viewed from free end of pins

EF89

Vari-μ-R.F. Pentode - 6·3V, 0·2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g3}	0V
V_{g1}	−2V
I_a	9mA
I_{g2}	3mA

Characteristics

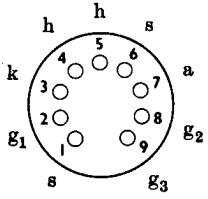
g_m	3·5mA/V
r_a	1MΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	300V
$P_{g2(max)}$	450mW

Base

B9A



Viewed from free end of pins

EF91

R.F. Pentode - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−2V
I_a	10mA
I_{g2}	2·5mA

Characteristics

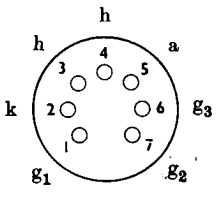
g_m	7·5mA/V
r_a	1050kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	800mW

Base

B7G



Viewed from free end of pins

EL84

Output Pentode - 6·3V, 0·76A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−7·3V
I_a	48mA
I_{g2}	5·5mA
R_a	4·5kΩ
P_{out}	5·7W

Characteristics

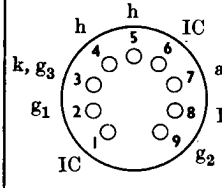
g_m	11·3mA/V
r_a	38kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	12W
$V_{g2(max)}$	300V
$P_{g2(max)}$	2W

Base

B9A



Viewed from free end of pins

EM35

Dual Sensitivity Tuning Indicator - Maltese Cross 6·3V, 0·2A Heater

Typical Operating Conditions

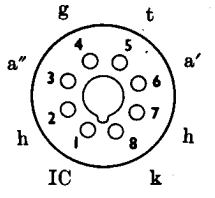
SECTION:	(1)	(2)
$V_{a(b)}$	250V	250V
V_t	250V	250V
I_t ($V_{g1}=0$)	0·46mA	0·46mA
R_a	1MΩ	2MΩ
V_{g1}	0V	0V
I_a	0·25mA	0·12mA
θ°	83°	75°
V_{g1}	−20V	−4V
I_a	0·08mA	0·07mA
θ°	6°	15°

Rating

$V_{a(max)}$	300V
$V_{t(max)}$	250V

Base

I.O.



Viewed from free end of pins

EM80

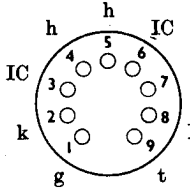
Tuning Indicator - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_t	200V
V_{g1}	0V
I_a	0·3mA
I_t	1·5mA
V_{g1}	−16V
(For 0° Shadow)	
R_a	500kΩ

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	200mW
$V_{t(max)}$	300V

EM81

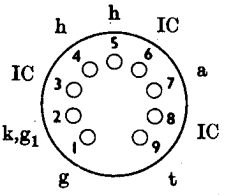
Tuning Indicator - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$		250V
V_t		250V
V_g	−1V	−10·5V
I_a	370μA	20μA
I_t	2m/A	2·3mA
θ°	65°	5°
R_a		500kΩ

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	200mW
$V_{t(max)}$	300V

EM85

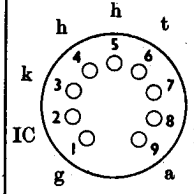
Tuning Indicator - 6·3V, 0·3A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_t	200V
V_{g1}	0V
I_a	0·4mA
I_t	1·4mA
V_{g1}	−14V
(*For 0° Shadow*)	
R_a	470kΩ

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$	250V
$V_{t(max)}$	250V

EY51

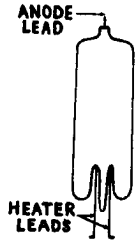
E.H.T. Rectifier - 6·3V, 0·09A Heater

Rating

P.I.V.$_{(max)}$	17kV
$I_{a(max)}$	0·35 mA

Base

Special



EY86

EHT H.W. Rectifier - 6·3V, 90mA Heater

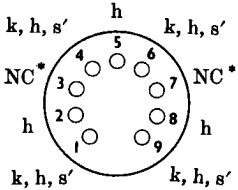
Typical Operating Conditions

I_a	0·15mA
P.I.V.	18kV

Rating

$V_{a(max)}$	5kV r.m.s.
P.I.V.$_{(max)}$	27kV

Base B9A



Top Cap=a

Viewed from free end of pins

* *Should not be left unconnected. Connect to Heater*

EZ40

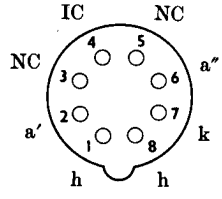
F.W. Rectifier - 6·3V, 0·6A Heater

Rating

$V_{a(max)}$	350V r.m.s.
$I_{a(max)}$	90mA

Base

B8A



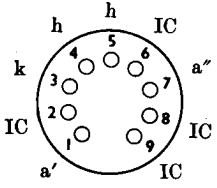
Viewed from free end of pins

EZ80

F.W. Rectifier - 6·3V, 0·6A Heater

Base

B9A



Viewed from free end of pins

Rating

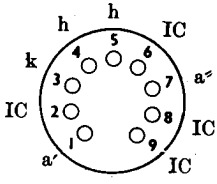
$V_{a(max)}$	350V r.m.s.
$I_{a(max)}$	90mA

EZ81

F.W. Rectifier - 6·3V, 1A Heater

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$ *(r.m.s. per Anode)*	350V
$I_{a(max)}$	150mA
P.I.V.$_{(max)}$	1kV

HL23

Triode - 2V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	120V
V_{g1}	−1·5V
I_a	0·5mA
R_a	50kΩ

Characteristics

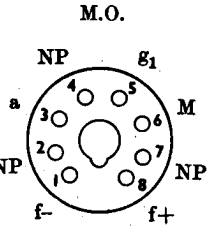
g_m	1·5mA/V
μ	32
r_a	21kΩ

($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	150V

Base



Viewed from free end of pins

HL23DD

D.D. Triode - 2V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	120V
V_{g1}	−1·5V
I_a	0·6mA
R_a	50kΩ

Characteristics

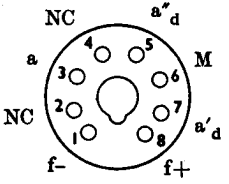
g_m	1·2mA/V
μ	25
r_a	21kΩ

($V_g = 0V$)

Rating

$V_{a(max)}$	150V

Base M.O.



Top Cap=g_1

Viewed from free end of pins

HL41

Triode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−3·1V
I_a	2·2mA
R_a	50kΩ

Characteristics

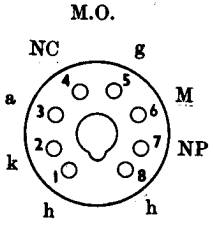
g_m	3·5mA/V
μ	36
r_a	10·3kΩ

($V_a = 100V$, $V_g = 0V$)

Rating

$V_{a(max)}$	250V

Base



Viewed from free end of pins

HL41DD

D.D. Triode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g1}	−3·1V
I_a	2·2mA
R_a	50KΩ

Characteristics

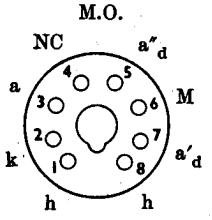
g_m	2·5mA/V
μ	30
r_a	12kΩ

($V_g = 0V$)

Rating

$V_{a(max)}$	250V

Base



Top Cap=g_1

Viewed from free end of pins

HL42DD

D.D. Vari-μ-Triode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	260V
V_{g1}	−1·25V
I_a	2·8mA
R_a	50kΩ

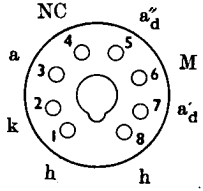
Characteristics

g_m	2·9mA/V
μ	23
r_a ($V_g = 0V$)	8kΩ

Rating

$V_{a(max)}$	250V

Base M.O.



Top Cap = g_1

Viewed from free end of pins

HL133DD

D.D. Triode - 0·2A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	185V
V_{g1}	−2·5V
I_a	1·45mA
R_a	50kΩ

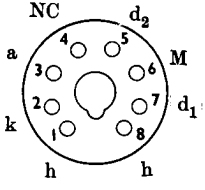
Characteristics

g_m	2·5mA/V
μ	32
r_a ($V_g = 0V$)	12·8kΩ

Rating

$V_{a(max)}$	250V

Base M.O.



Top Cap = g_1

Viewed from free end of pins

ME41

Tuning Indicator - 4V, 0·5A Heater

Typical Operating Conditions

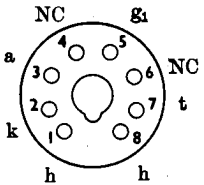
$V_{a(b)}$	250V
V_{g1}	−0·5V
I_a	0·23mA
I_t	1·16mA
V_{g1}	−22·5V
(For 0° Shadow)	
R_a	1MΩ

Rating

$V_{a(max)}$	250V
$V_{t(max)}$	250V

Base

M.O.



Viewed from free end of pins

ME91

Tuning Indicator - 0·2A, 9V Heater

Typical Operating Conditions

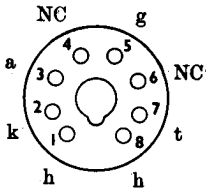
$V_{a(b)}$	175V
V_{g1}	−0·5V
I_a	0·16mA
I_t	2·7mA
V_{g1}	−19V
(For 0° Shadow)	
R_a	1MΩ

Rating

$V_{a(max)}$	200V
$V_{t(max)}$	200V

Base

M.O.



Viewed from free end of pins

P41

Oscillator Triode - 4V, 0·95A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
I_a	4·5mA
R_a	50kΩ

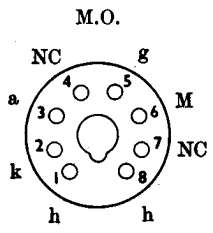
Characteristics

g_m	4·4mA/V
μ	16
r_a ($V_g = 0V$)	3·6kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4W

Base



Viewed from free end of pins

P61

Oscillator Triode - 6·3V, 0·6A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
I_a	4·5mA
R_a	50kΩ

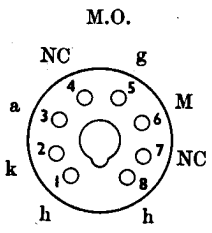
Characteristics

g_m	8mA/V
μ	17
r_a ($V_g = 0V$)	3·6kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4W

Base



Viewed from free end of pins

PCC84

R.F. Double Triode - 0·3A, 7V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g1}	−1·5V
I_a	12mA

Characteristics

g_m	6mA/V
μ	24
r_a	4kΩ

($V_a = 100V$, $V_g = 0V$)

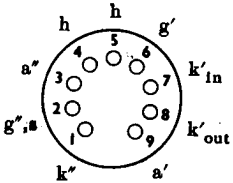
Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2W

(*Either Anode*)

Base

B9A



Viewed from free end of pins

PCF80

Triode Pentode F.C. - 0·3A, 9V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	120V
	P.	170V
V_{g2}		145V
V_{g1}	T.	−2V
	P.	−1·4V
I_a	T.	6mA
	P.	6·8mA
I_{g2}		2mA

Characteristics

g_m	T.	5mA/V
	P.	6·2mA/V
g_c	P.	2·1mA/V
μ	T.	20
r_a		500kΩ

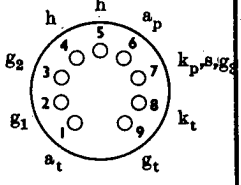
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	P.	250V
$P_{a(max)}$	T.	1·5W
	P.	1·7W
$V_{g2(max)}$		175V
$P_{g2(max)}$		0·5W

Base

B9A



Viewed from free end of pins

PCF82

Triode Pentode F.C. - 0·3A, 9·5V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	150V
	P.	170V
V_{g2}		110V
V_{g1}	T.	−1V
	P.	−3·7V
I_a	T.	18mA
	P.	4·7mA
I_{g2}		2mA

Characteristics

g_m	T.	8·5mA/V
	P.	5·2mA/V
g_c	P.	1·65mA/V
μ	T.	40
	P.	35
r_a	P.	400kΩ

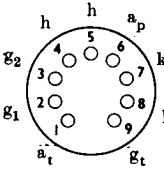
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	300V
	P.	300V
$P_{a(max)}$	T.	2·7W
	P.	2·8W
$V_{g2(max)}$		300V
$P_{g2(max)}$		0·5W

Base

B9A



Viewed from free end of pins

PCL82

Triode Output Pentode - 0·3A, 16V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	100V
	P.	200V
V_{g2}		200V
V_{g1}	T.	−0V
	P.	−16V
I_a	T.	3·5mA
	P.	35mA
I_{g2}		7mA
R_a		5·6kΩ
P_{out}		3·5W

Characteristics

g_m	T.	2·5mA/V
g_c	P.	6·4mA/V
μ	T.	70
	P.	9·5
r_a	T.	28kΩ
	P.	20kΩ

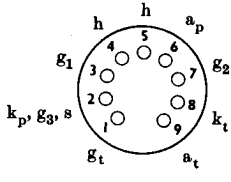
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	P.	600V
$P_{a(max)}$	T.	1W
	P.	7W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1·8W

Base

B9A



Viewed from free end of pins

PCL83

Triode Pentode - 0·3A, 12·6V Heater

Typical Operating Conditions

V_a	P.	170V
V_{g2}	P.	170V
I_a	P.	30mA
I_{g2}	P.	5mA
V_{g1}	P.	−9·5V
V_a	T.	250V
I_a	T.	10·5mA
V_g	T.	−8·5V

Characteristics

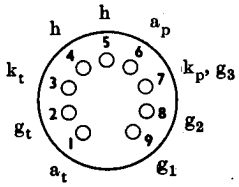
g_m	P.	5·5mA/V
r_a	P.	53kΩ
g_m	T.	2·2mA/V
r_a	T.	7·7kΩ
μ	T.	17

Rating

$V_{a(max)}$	P.	250V
$P_{a(max)}$	P.	5·4W
$V_{g2(max)}$	P.	250V
$P_{g2(max)}$	P.	1·2W
$V_{a(max)}$	T.	250V
$P_{a(max)}$	T.	3·5W

Base

B9A



Viewed from free end of pins

PEN25

Output Pentode - 2V, 0·15A Filament

Typical Operating Conditions

$V_{a\,(b)}$	120V
V_{g2}	120V
V_{g1}	−3·6V
I_a	5mA
I_{g2}	1mA
R_a	14kΩ
P_{out}	400mW

Characteristics

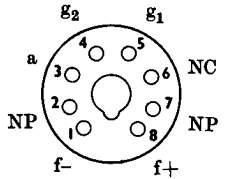
g_m	3mA/V
r_a	350kΩ

Rating

$V_{a(max)}$	150V
$V_{g2(max)}$	150V

Base

M.O.



Viewed from free end of pins

PEN44

Output Tetrode - 4V, 2·1A Heater

Typical Operating Conditions

$V_{a(b)}$	260V
V_{g2}	270V
V_{g1}	−11·1V
I_a	70mA
I_{g2}	12mA
R_a	3kΩ
P_{out}	8W

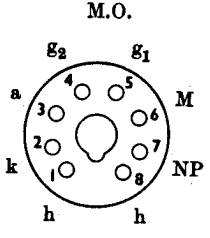
Characteristics

g_m	10·6mA/V

Rating

$V_{a(max)}$	275V
$P_{a(max)}$	18W
$V_{g2(max)}$	275V

Base



Viewed from free end of pins

PEN45

Output Tetrode - 4V, 1·75A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	8mA
R_a	5kΩ
P_{out}	4·5W

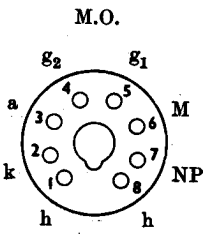
Characteristics

g_m	8·8mA/V
r_a	40kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base



Viewed from free end of pins

PEN45DD

D.D. Output Tetrode - 4V, 2A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	250V
V_{g1}	−8·5V
I_a	40mA
I_{g2}	8mA
R_a	5kΩ
P_{out}	4·5W

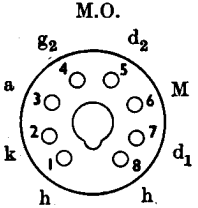
Characteristics

g_m	8·8mA/V
r_a	40kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base



Top Cap = g_1

Viewed from free end of pins

Diode 2 should be used for detection

PEN46

Line Output Tetrode - 4V, 1·75A Heater

Typical Operating Conditions

$V_{a(b)}$	315V
V_{g2}	230V
V_{g1}	−7·8V
I_a	63mA
I_{g2}	14mA

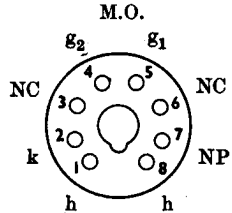
Characteristics

g_m	8·5mA/V

Rating

$V_{a(max)}$	350V
$P_{a(max)}$	20W
$V_{g2(max)}$	240V
$P_{g2(max)}$	3·4W

Base



Top Cap = a

Viewed from free end of pins

PEN220

Output Pentode - 2V, 0·2A Filament

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g2}	150V
V_{g1}	−4·9V
I_a	9mA
I_{g2}	1·6mA
R_a	14kΩ
P_{out}	600mW

Characteristics

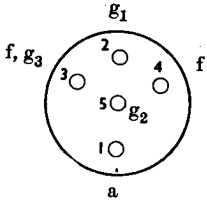
g_m	2·2mA/V

Rating

$V_{a(max)}$	150V
$V_{g2(max)}$	150V

Base

5 Pin



Viewed from free end of pins

PEN383

Output Tetrode - 0·2A, 38V Heater

Typical Operating Conditions

$V_{a(b)}$	160V
V_{g2}	175V
V_{g1}	−10V
I_a	64mA
I_{g2}	13mA
R_a	2·6kΩ
P_{out}	3·75W

Characteristics

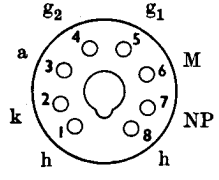
g_m	10·5mA/V

Rating

$V_{a(max)}$	200V
$P_{a(max)}$	10W
$V_{g(2max)}$	200V

Base

M.O.



Viewed from free end of pins

PEN384

Output Tetrode - 0·2A, 38V Heater

Typical Operating Conditions

$V_{a(b)}$	110V
V_{g2}	110V
V_{g1}	−7V
I_a	40mA
I_{g2}	2·9mA
R_a	2·2kΩ
P_{out}	1·9W

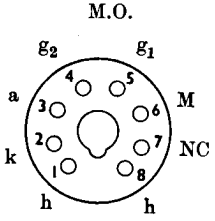
Characteristics

g_m	7·8mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V

Base



Viewed from free end of pins

PEN453DD

D.D. Output Tetrode - 0·2A, 45V Heater

Typical Operating Conditions

$V_{a(b)}$	160V
V_{g2}	175V
V_{g1}	−10V
I_a	64mA
I_{g2}	13mA
R_a	2·6kΩ
P_{out}	3·75W

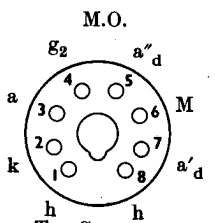
Characteristics

g_m	10·5mA/V

Rating

$V_{a(max)}$	200V
$P_{a(max)}$	10W
$V_{g2(max)}$	200V

Base



Top Cap=g_1

Viewed from free end of pins

PENDD4020

D.D. Output Pentode - 0·2A, 40V Heater

Typical Operating Conditions

$V_{a(b)}$	240V
V_{g2}	250V
V_{g1}	−7·75V
I_a	43mA
I_{g2}	8·5mA
R_a	4·8kΩ
P_{out}	3·9W

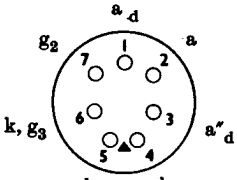
Characteristics

g_m	7mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

PL36

Line Output Pentode - 0·3A, 25V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−21V
I_a	100mA
I_{g2}	8mA

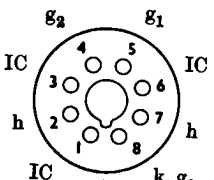
Characteristics

g_m	11mA/V
μ	5·6
r_a	5·5kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	10W
$V_{g2(max)}$	250V
$P_{g2(max)}$	5W

Base I.O.



Top Cap = a

Viewed from free end of pins

PL81

Line Output Pentode - 0·3A, 21·5V Heater

Typical Operating Conditions

V_a	170V
V_{g3}	0V
V_{g2}	170V
V_{g1}	−22V
I_a	45mA
I_{g2}	3mA

Characteristics

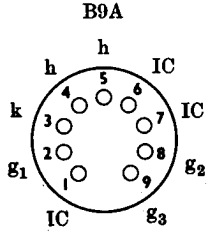
g_m	6·2mA/V
r_a	10kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	8W
$V_{g2(max)}$	250V
$P_{g2(max)}$	4·5W
$P_a + P_{g2(max)}$	10W

Base

B9A



Viewed from free end of pins

PL82

Output Pentode - 0·3A, 16·5V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−14·4V
I_a	45mA
I_{g2}	8·5mA
R_a	4kΩ
P_{out}	4·2W

Characteristics

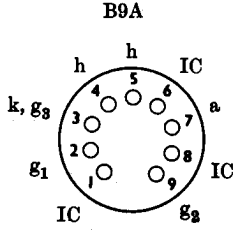
g_m	7·6mA/V
μ	10
r_a	24kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	9W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2·5W

Base

B9A



Viewed from free end of pins

PL83

Video Output Pentode - 0·3A, 15V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−2·3V
I_a	36mA
I_{g2}	5mA

Characteristics

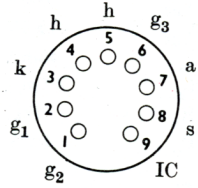
g_m	10·5mA/V
μ	2·5
r_a	100kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	9W
$V_{g2(max)}$	250V
$P_{g2(max)}$	2W

Base

B9A



Viewed from free end of pins

PP3/250

Output Triode - 4V, 1A Heater

Typical Operating Conditions

$V_{a(b)}$	300V
V_{g1}	−37V
I_a	48mA
R_a	3kΩ
P_{out}	4·2W

Characteristics

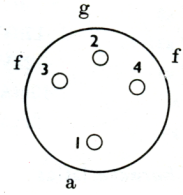
g_m	5·4mA/V
μ	6·5
r_a	1·2kΩ

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	15W

Base

4 Pin



Viewed from free end of pins

PP5/400

Output Triode - 4V, 2A Heater

Typical Operating Conditions

$V_{a(b)}$	400V
V_{g1}	−32V
I_a	62·5mA
R_a	2·7kΩ
P_{out}	6W

Characteristics

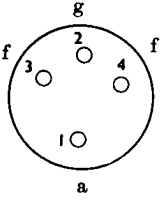
g_m	8·2mA/V
μ	9
r_a	1·1kΩ

Rating

$V_{a(max)}$	400V
$P_{a(max)}$	25W

Base

4 Pin



Viewed from free end of pins

PY32

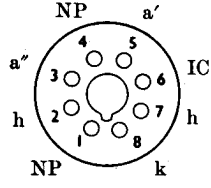
H.W. Rectifier - 0·3A, 29V Heater

Rating

$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	275mA
P.I.V.$_{(max)}$	700V

Base

I.O.



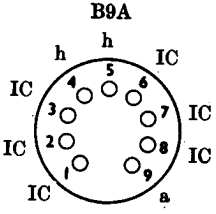
Viewed from free end of pins

PY81

Booster Diode - 0·3A, 17V Heater

Base

B9A



Top Cap = k

Viewed from free end of pins

Rating

P.I.V.$_{(max)}$ 4kV

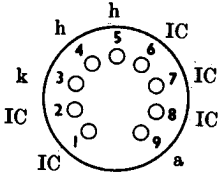
$I_{a(max)}$ 150mA (Av)

PY82

H.W. Rectifier - 0·3A, 19V Heater

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$ 250V r.m.s.

P.I.V.$_{(max)}$ 700V

$I_{a(max)}$ 180mA

QP25

Double Pentode - 2V, 0·2A Filament

Typical Operating Conditions

$V_{a(b)}$	110V
V_{g2}	110V
V_{g1}	−8·65V
I_a	4·25mA
I_{g2}	0·8mA
R_a	16kΩ
P_{out}	0·95W

Characteristics

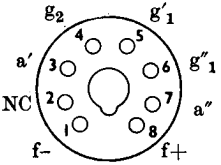
g_m	3mA/V

Rating

$V_{a(max)}$	120V
$V_{g2(max)}$	120V

Base

M.O.



Viewed from free end of pins

QP230

Double Pentode - 2V, 0·3A Filament

Typical Operating Conditions

$V_{a(b)}$	120V
V_{g2}	120V
V_{g1}	−9·6V
I_a	4·65mA
I_{g2}	1·15mA
R_a	17kΩ
P_{out}	0·85W

Characteristics

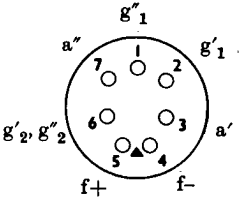
g_m	3mA/V

Rating

$V_{a(max)}$	150V
$V_{g2(max)}$	150V

Base

7 Pin



Viewed from free end of pins

SP41

R.F. Pentode - 4V, 0·95A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·5V
I_a	10·9mA
I_{g2}	2·7mA

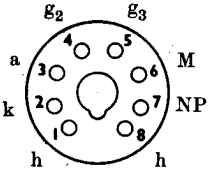
Characteristics

g_m	8·5mA/V
r_a	700kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·25W

Base M.O.



Top Cap = g_1

Viewed from free end of pins

SP42

Video Output Pentode - 4V, 0·95A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	140V
V_{g1}	−1·25V
I_a	27mA
I_{g2}	6·75mA
R_a	1·85kΩ

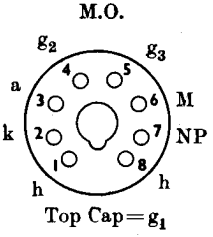
Characteristics

g_m	9mA/V

Rating

$V_{a(max)}$	200V
$P_{a(max)}$	5W
$V_{g2(max)}$	200V
$P_{g2(max)}$	1W

Base



Top Cap = g_1

Viewed from free end of pins

SP61

R.F. Pentode - 6·3V, 0·6A Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·5V
I_a	10·9mA
I_{g2}	2·7mA

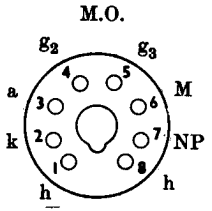
Characteristics

g_m	8·5mA/V
r_a	700kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	4·5W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·25W

Base



Top Cap = g_1

Viewed from free end of pins

SP181

R.F. Pentode - 0·2A, 18V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−1·5V
I_a	10·9mA
I_{g2}	2·7mA

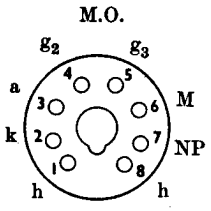
Characteristics

g_m	8·5mA/V
r_a	700kΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V

Base



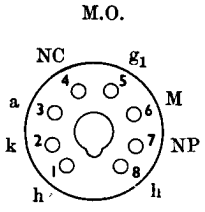
Top Cap = g_1

Viewed from free end of pins

T41

Thyratron - 4V, 1·5A Heater

Base



Viewed from free end of pins

Characteristics

Control Ratio = 20

Rating

$V_{a(max)}$	400V
Ia. Pk.	500mA

TH41

Triode Heptode F.C. - 4V, 1·3A Heater

Typical Operating Conditions

$V_{a(b)}$	T.	250V
	H.	250V
V_{g2}		100V
V_{g1}	H.	−3V
I_a	T.	4·5mA
	H.	3mA
I_{g2}		6mA

Characteristics

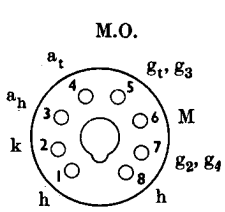
g_m	T.	5·3mA/V
	H.	3·1mA/V
g_c	H.	0·75mA/V
μ	T.	16
r_a	T.	3·4kΩ
	H.	1·6MΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$P_{a(max)}$	H.	1·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1W

Base



Top Cap = $g_{1\,(h)}$

Viewed from free end of pins

TH233

Triode Heptode F.C. - 0·2A, 23V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	175V
	H.	175V
V_{g2}		100V
V_{g1}	H.	−3V
I_a	T.	4·5mA
	H.	2·6mA
I_{g2}		5·6mA
R_a	T.	22kΩ

Characteristics

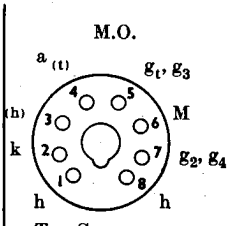
g_m	T.	4·7mA/V
	H.	3mA/V
g_c	H.	0·64mA/V
μ	T.	16
r_a	T.	3·4kΩ
	H.	1·3MΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$P_{a(max)}$	H.	1·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1W

Base



Top Cap = $g_{1\,(h)}$

Viewed from free end of pins

TH2321

Triode Heptode F.C. - 0·2A, 23V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	175V
	H.	150V
V_{g2}		100V
V_{g1}	H.	−3V
I_a	T.	4·5mA
	H.	3mA
I_{g2}		6mA
R_a	T.	22kΩ

Characteristics

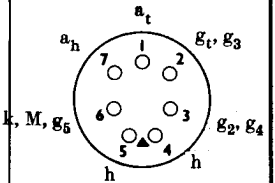
g_m	T.	4·7mA/V
g_c	H.	0·65mA/V
μ	T.	16
r_a	T.	3·4kΩ
	H.	1MΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	H.	250V
$V_{g2(max)}$		250V

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

TP22

Triode Pentode F.C. - 2V, 0·25A Filament

Typical Operating Conditions

$V_{a(b)}$	T.	120V
	P.	120V
V_{g2}		60V
V_{g1}	P.	−1·5V
I_a	T.	0·8mA
	P.	1·15mA
I_{g2}		0·4mA
R_a	T.	25kΩ

Characteristics

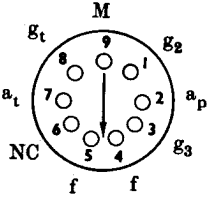
g_m	T.	1·4mA/V
g_c	P.	0·45mA/V
μ	T.	34
r_a	T.	24kΩ
	P.	900kΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	150V
	P.	150V
$V_{g2(max)}$		150V

Base 9 Pin



Top Cap = g_1

Viewed from free end of pins

TP25

Triode Pentode F.C. - 2V, 0·2A Filament

Typical Operating Conditions

$V_{a(b)}$	T.	120V
	P.	120V
V_{g2}		60V
V_{g1}	P.	−1·5V
I_a	T.	2·5mA
	P.	0·58mA
I_{g2}		0·92mA
R_a	T.	16kΩ

Characteristics

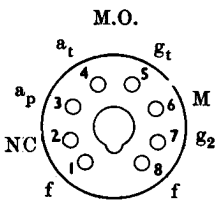
g_m	T.	1·7mA/V
	P.	1mA/V
g_c	P.	0·26mA/V
μ	T.	18
r_a	T.	12kΩ
	P.	1·3MΩ

($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	P.	150V
	T.	150V
$V_{g2(max)}$		150V

Base



Top Cap = g_1

Viewed from free end of pins

TP2620

Triode Pentode F.C. - 0·2A, 26V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	200V
	P.	200V
V_{g2}		200V
V_{g1}	P.	−5V
I_a	T.	1·5mA
	P.	6·5mA
I_{g2}	P.	2·5mA
R_a	T.	33kΩ

Characteristics

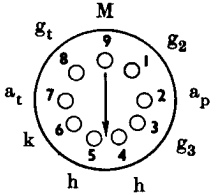
g_m	T.	1·62mA/V
g_c	P.	0·7mA/V
μ	T.	30
r_a	T.	18·5kΩ
	P.	700kΩ

($V_{g.t.}$ = 0V)

Rating

$V_{a(max)}$	T.	200V
	P.	250V
$V_{g2(max)}$		250V

Base 9 Pin



Top Cap = g_1

Viewed from free end of pins

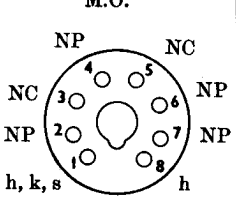
U22

E.H.T. Rectifier - 2V, 2A Heater

Rating

$V_{a(max)}$	5·2kV
$I_{a(max)}$	1mA
(*Pulse Op.*	−0·1mA)
I_a Pk.	20mA
P.I.V.$_{(max)}$	14·5kV

Base



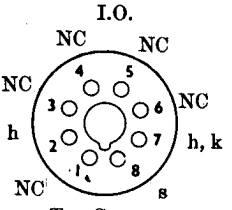
Top Cap = a

Viewed from free end of pins

U24

E.H.T. Rectifier - 2V, 0·15A Heater

Base



Top Cap = a

Viewed from free end of pins

All pins with the exception of No. 2 should be connected to Pin No. 7 on the holder and Pin No. 7 connected to the reservoir condenser.

Rating

$V_{a(max)}$	7·8kV
$I_{a(max)}$	0·5mA
(*Pulse Op.*	−0·1mA)
I_a Pk.	15mA
P.I.V.$_{(max)}$	20kV

U25

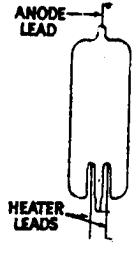
E.H.T. Rectifier - 2V, 0·2A Heater

Rating

$V_{a(max)}$	7·8kV
P.I.V.$_{(max)}$	20kV
$I_{a(max)}$	0·5mA
I_a Pk.$_{(max)}$	15mA
(*Up to 250 kc/s max*)	
$V_{a(max)}$	5·85kV
P.I.V.$_{(max)}$	15kV
$I_{a(max)}$	0·5mA
I_a Pk.$_{(max)}$	15mA
(*Up to 350 kc/s max*)	
I_a Pk.$_{(max)}$	25mA
$I_{a(max)}$	−0·2mA
(*Pulse Operation*)	

Base

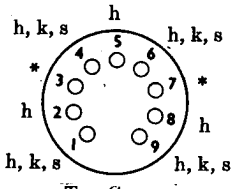
Special



U26

E.H.T. Rectifier - 2V, 0·35A Heater

Base B9A



Top Cap=a

Viewed from free end of pins

Pins 3 and 7 are floating but must not be left unconnected. They should be connected to the external circuit with not more than 100V between adjacent pins.

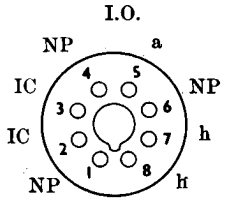
Rating

P.I.V.$_{(max)}$	25kV
$I_{a(max)}$	0·2mA
I_a Pk.	80mA

U191

Efficiency Diode - 0·3A, 19V Heater

Base



Top Cap=k

Viewed from free end of pins

Rating

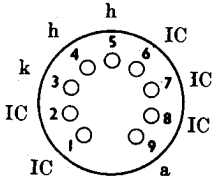
P.I.V$_{(max)}$	4·5kV
$I_{a(max)}$	150mA

U192

H.W. Rectifier - 0·3A, 19V Heater

Base

B9A



Viewed from free end of pins

Rating

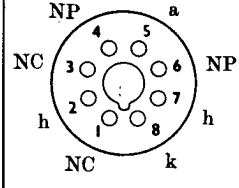
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	180mA
P.I.V.$_{(max)}$	700V

U201

H.W. Rectifier - 0·2A, 20V Heater

Base

I.O.



Viewed from free end of pins

Rating

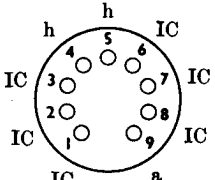
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	90mA
P.I.V.$_{(max)}$	750V

U251

Efficiency Diode - 0·3A, 25V Heater

Base

B9A



Top Cap = k

Viewed from free end of pins

Rating

P.I.V.$_{(max)}$	7kV
$I_{a(max)}$	120mA

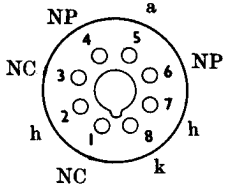
Rating applies only to use as an Efficiency Diode

U281

Efficiency Diode - 0·2A, 28V Heater

Base

I.O.



Viewed from free end of pins

Rating

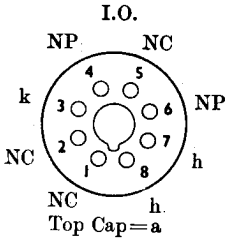
P.I.V.$_{(max)}$	3kV
$I_{a(max)}$	150mA

Rating applies only to use as an Efficiency Diode

U282

Efficiency Diode - 0·2A, 28V Heater

Base



Top Cap = a

Viewed from free end of pins

Rating

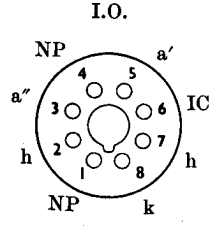
$P.I.V._{(max)}$	4·5kV
$I_{a(max)}$	150mA

Rating applies only to use as an Efficiency Diode

U291

H.W. Rectifier - 0·3A, 29V Heater

Base



Viewed from free end of pins

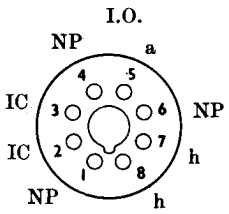
Rating

$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	275mA
$P.I.V._{(max)}$	700V

U301

Efficiency Diode - 0·2A, 28V Heater

Base



Top Cap=k

Viewed from free end of pins

Rating

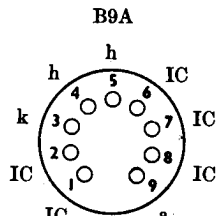
$P.I.V._{(max)}$	4·5kV
$I_{a(max)}$	150mA

Rating applies only to use as an Efficiency Diode

U381

H.W. Rectifier - 0·1A, 38V Heater

Base



Viewed from free end of pins

Rating

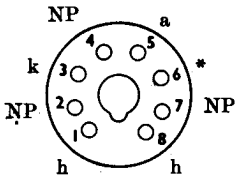
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	110mA
$P.I.V._{(max)}$	700V

U403

H.W. Rectifier - 0·2A, 40V Heater

Base

M.O.



Viewed from free end of pins

** BULB—Clear. (Valves manufactured before 1951 had a metallised bulb, the metallising being connected to Pin 6)*

Rating

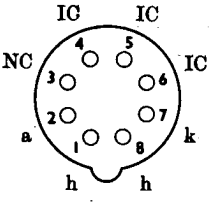
$V_{a(max)}$	250V
$I_{a(max)}$	120mA
P.I.V.$_{(max)}$	750V

U404

H.W. Rectifier - 0·1A, 40V Heater

Base

B8A



Viewed from free end of pins

Rating

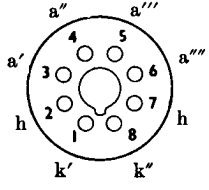
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	90mA
P.I.V.$_{(max)}$	750V

U801

Multiple Rectifier - 0·2A, 80V Heater

Base

I.O.



Viewed from free end of pins

Anodes a′ and a″ are associated with cathode k′.
Anodes a‴ and a⁗ are associated with cathode k″.

Rating

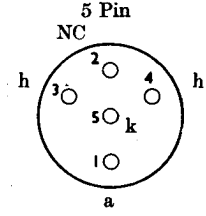
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	300mA

U4020

H.W. Rectifier - 0·2A, 40V Heater

Base

5 Pin



Viewed from free end of pins

Rating

$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	120mA

UABC80

Triple Diode Triode - 0·1A, 28V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
I_a	1mA
R_a	100kΩ

Characteristics

g_m	1·4mA/V
μ	70

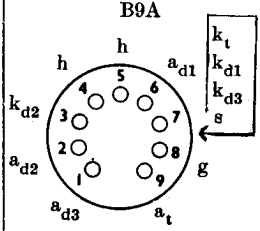
(V_a=200V, V_{g1}=−2·3V)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

UBC41

D.D. Triode - 13V, 0·1A Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g1}	−1·1V
I_a	0·5mA
R_a	100kΩ

Characteristics

g_m	1·4mA/V
μ	70
r_a	50kΩ

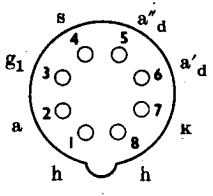
(V_a = 100V, V_g = −1V)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B8A



Viewed from free end of pins

UBC81

D.D. Triode - 0·1A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g1}	−4·4V
I_a	0·5mA
R_a	100kΩ

Characteristics

g_m	1·4mA/V
μ	70

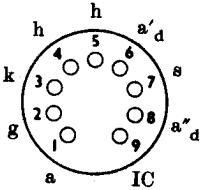
($V_a = 100V, V_g = -1V$)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	1W

Base

B9A



Viewed from free end of pins

UBF89

D.D. Pentode - 0·1A, 19V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	100V
V_{g1}	−1·5V
I_a	11mA
I_{g2}	3·3mA

Characteristics

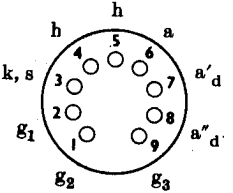
g_m	4·5mA/V
μ	20
r_a	600kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	450mW

Base

B9A



Viewed from free end of pins

UC92

H.F. Triode - 0·1A, 9·5V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g1}	−1V
I_a	11·5mA

Characteristics

g_m	6·4mA/V
μ	66

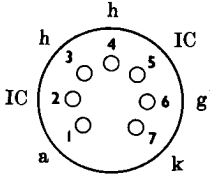
(V_a = 100V, V_g = 0V)

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	2·5W

Base

B7G



Viewed from free end of pins

UCC85

R.F. Double Triode - 0·1A, 26V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g1}	−2V
I_a	6mA

Characteristics

g_m	5·8mA/V
μ	50

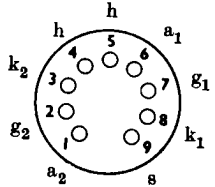
(V_a = 100V, V_g = 0V)

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	
(*Either Anode*)	2·5W
(*Both Anodes*)	4·5W

Base

B9A



Viewed from free end of pins

(*Separate Cathodes*)

UCH42

Triode Hexode F.C. - 0·1A, 14V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	200V
	H.	200V
V_{g2}		150V
V_{g1}	H.	−2V
I_a	T.	5·5mA
	H.	3mA
I_{g2}		3mA
R_a	T.	22kΩ

Characteristics

g_m	T.	2·8mA/V
g_c	H.	0·75mA/V
μ	T.	22

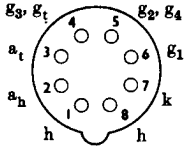
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	175V
	H.	250V
$P_{a(max)}$	T.	0·8W
	H.	1·5W
$V_{g2(max)}$		250V
$P_{g2(max)}$		300mW

Base

B8A



Viewed from free end of pins

UCH81

Triode Heptode F.C. - 0·1A, 19V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	170V
	H.	170V
V_{g2}		102V
V_{g1}	H.	−2·2V
I_a	T.	4·5mA
	H.	3·2mA
I_{g2}		6·8mA
R_a	T.	15kΩ

Characteristics

g_m	T.	3·7mA/V
	H.	2·3mA/V
g_c	H.	0·75mA/V
μ	T.	22
r_a	T.	5·9kΩ
	H.	900kΩ

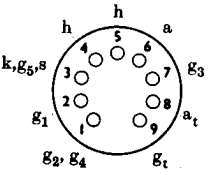
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	H.	250V
$P_{a(max)}$	T.	0·8W
	H.	1·7W
$V_{g2(max)}$		200V
$P_{g2(max)}$		1W

Base

B9A



Viewed from free end of pins

UCL82

Triode Output Pentode - 0·1A, 50V Heater

Typical Operating Conditions

$V_{a(b)}$	T.	200V
	P.	200V
V_{g2}		200V
V_{g1}	T.	−1·1V
	P.	−16V
I_a	T.	0·52mA
	P.	35mA
I_{g2}		7mA
R_a	T.	220kΩ
	P.	5·6kΩ
P_{out}	P.	3·5W

Characteristics

g_m	T.	2·5mA/V
	P.	6·4mA/V
μ	T.	70
	P.	9.5
r_a	T.	28kΩ
	P.	20kΩ

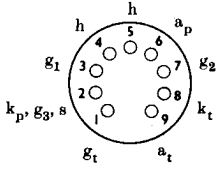
($V_{g.t.} = 0V$)

Rating

$V_{a(max)}$	T.	250V
	P.	250V
$P_{a(max)}$	T.	1W
	P.	7W
$V_{g2(max)}$		250V
$P_{g2(max)}$		1·8W

Base

B9A



Viewed from free end of pins

UF89

Vari-μ-R.F. Pentode - 0·1A, 12·6V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	110V
V_{g1}	−2V
I_a	11mA
I_{g2}	3·9mA

Characteristics

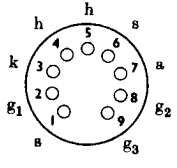
g_m	3·8mA/V
μ	19
r_a	450kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	2·25W
$V_{g2(max)}$	250V
$P_{g2(max)}$	450mW

Base

B9A



Viewed from free end of pins

UL41

Output Pentode - 0·1A, 45V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−10·4V
I_a	53mA
I_{g2}	10mA
R_a	3kΩ
P_{out}	4·25W

Characteristics

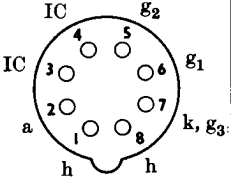
g_m	9·5mA/V
μ	10
r_a	20kΩ

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	9W
$V_{g2(max)}$	250V
$P_{g2(max)}$	1·75W

Base

B8A



Viewed from free end of pins

UL84

Output Pentode - 0·1A, 45V Heater

Typical Operating Conditions

$V_{a(b)}$	170V
V_{g2}	170V
V_{g1}	−12·5V
I_a	70mA
I_{g2}	5mA
R_a	2·2kΩ
P_{out}	5·2W

Characteristics

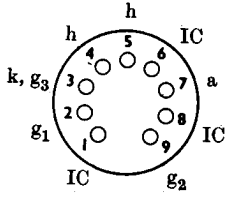
g_m	10mA/V

Rating

$V_{a(max)}$	250V
$P_{a(max)}$	12W
$V_{g2(max)}$	200V
$P_{g2(max)}$	1·75W

Base

B9A



Viewed from free end of pins

UM35

Dual Sensitivity Tuning Indicator - Maltese Gross

0·1A, 12·6V Heater

Typical Operating Conditions

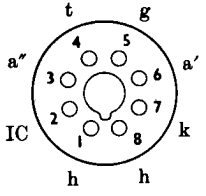
SECTION:	(1)	(2)
$V_{a(b)}$	200V	200V
V_t	200V	200V
I_t	0·4mA	0·4mA
($V_{g1}=0$)		
R_a	2MΩ	1MΩ
V_{g1}	0V	0V
I_a	0·1mA	0·19mA
θ°	78°	75°
V_{g1}	−3V	−20V
I_a	0·06mA	0·08mA
θ°	25°	10°

Rating

$V_{a(max)}$	300V
$P_{a(max)}$	0·5W
$V_{t(max)}$	250V
$P_{t(max)}$	0·5W

Base

I.O.



Viewed from free end of pins

UU5

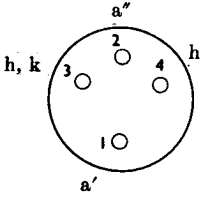
F.W. Rectifier - 4V, 2·3A Heater

Rating

$V_{a(max)}$ (*r.m.s. per Anode*)	500V
$I_{a(max)}$	120mA

Base

4 Pin



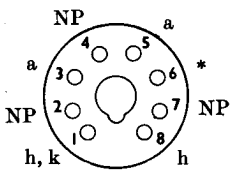
Viewed from free end of pins

UU6

F.W. Rectifier - 4V, 1·4A Heater

Base

M.O.



Viewed from free end of pins

* *BULB—Clear. (Valves manufactured before 1951 had a metallised bulb, the metallising being connected to Pin 6)*

Rating

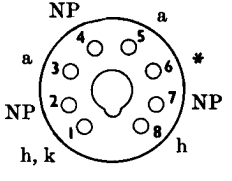
$V_{a(max)}$	350V
(r.m.s. per Anode)	
$I_{a(max)}$	120mA

UU7

F.W. Rectifier - 4V, 2·3A Heater

Base

M.O.



Viewed from free end of pins

* *BULB—Clear. (Valves manufactured before 1951 had a metallised bulb, the metallising being connected to Pin 6)*

Rating

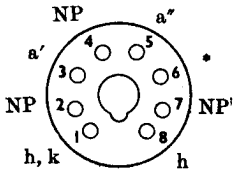
$V_{a(max)}$	350V
(r.m.s. per Anode)	
$I_{a(max)}$	180mA

UU8

F.W. Rectifier - 4V, 2·8A Heater

Base

M.O.



Viewed from free end of pins

* *BULB—Clear. (Valves manufactured before 1951 had a metallised bulb, the metallising being connected to Pin 6)*

Rating

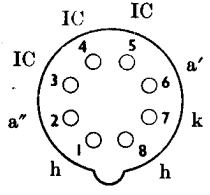
$V_{a(max)}$ *(r.m.s. per Anode)*	350V
$I_{a(max)}$	250mA

UU9

F.W. Rectifier - 6·3V, 0·58A Heater

Base

B8A



Viewed from free end of pins

Rating

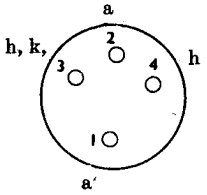
$V_{a(max)}$ *(r.m.s. per Anode)*	350V
$I_{a(max)}$	90mA
P.I.V.$_{(max)}$	1,100V

UU10

F.W. Rectifier - 4V, 2·3A Heater

Base

4 Pin



Viewed from free end of pins

Rating

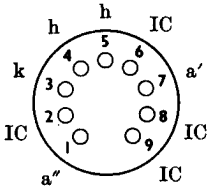
$V_{a(max)}$ *(r.m.s. per Anode)*	500V
$I_{a(max)}$	180mA

UU12

F.W. Rectifier - 6·3V, 0·95A Heater

Base

B9A



Viewed from free end of pins

Rating

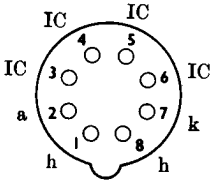
$V_{a(max)}$ *(r.m.s. per Anode)*	350V
$I_{a(max)}$	150mA
$P.I.V._{(max)}$	1kV

UY41

H.W. Rectifier - 0·1A, 31V Heater

Base

B8A



Viewed from free end of pins

Rating

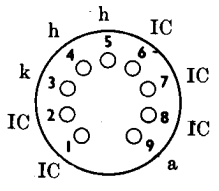
$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	100mA

UY85

H.W. Rectifier - 0·1A, 38V Heater

Base

B9A



Viewed from free end of pins

Rating

$V_{a(max)}$	250V r.m.s.
$I_{a(max)}$	110mA
P.I.V.$_{(max)}$	700V

VP23

Vari-μ-R.F. Pentode - 2V, 50mA Filament

Typical Operating Conditions

$V_{a(b)}$	120V
V_{g2}	60V
V_{g1}	−1·5V
I_a	1·45mA
I_{g2}	0·5mA

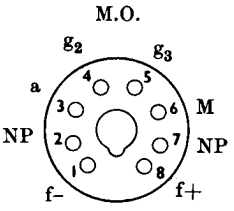
Characteristics

g_m	1·08mA/V
r_a	1·45MΩ

Rating

$V_{a(max)}$	150V
$V_{g2(max)}$	150V

Base



Top Cap=g_1

Viewed from free end of pins

VP41

Vari-μ-R.F. Pentode - 4V, 0·65A Heater

Typical Operating Conditions

$V_{a(b)}$	250V
V_{g2}	200V
V_{g1}	−2·7V
I_a	7·7mA
I_{g2}	2mA

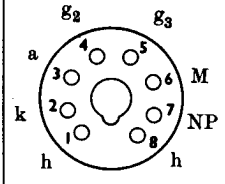
Characteristics

g_m	2mA/V
r_a	1·3MΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V

Base M.O.



Top Cap=g_1

Viewed from free end of pins

VP133

Vari-μ-R.F. Pentode - 0·2A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	150V
V_{g2}	150V
V_{g1}	−2·7V
I_a	8mA
I_{g2}	2·2mA

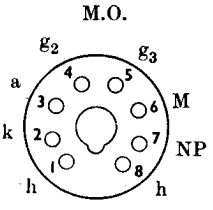
Characteristics

g_m	2·1mA/V
r_a	700kΩ

Rating

$V_{a(max)}$	200V
$V_{g2(max)}$	200V

Base



Top Cap=g_1

Viewed from free end of pins

VP210

Vari-μ-R.F. Pentode - 2V, 0·1A Filament

Typical Operating Conditions

$V_{a(b)}$	120V
V_{g2}	60V
V_{g1}	−1·5V
I_a	1·1mA
I_{g2}	0·385mA

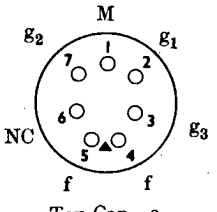
Characteristics

g_m	0·82mA/V
r_a	1·45MΩ

Rating

$V_{a(max)}$	150V
$V_{g2(max)}$	150V

Base 7 Pin



Top Cap=a

Viewed from free end of pins

VP1322

Vari-μ-R.F. Pentode - 0·2A, 13V Heater

Typical Operating Conditions

$V_{a(b)}$	200V
V_{g2}	200V
V_{g1}	−2·8V
I_a	7·4mA
I_{g2}	1·85mA

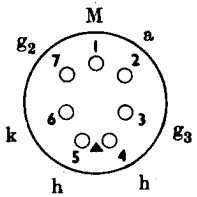
Characteristics

g_m	2mA/V
r_a	1MΩ

Rating

$V_{a(max)}$	250V
$V_{g2(max)}$	250V

Base 7 Pin



Top Cap = g_1

Viewed from free end of pins

XA101

Germanium Junction Transistor I.F. Amplifier to 500 kc/s

Characteristics @ 25°C

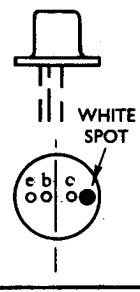
$I_{c(o)}$ −5μA @ V_{cb} −12V
$I_{e(o)}$ −10μA @ V_{eb} −12V
$I_{ce(o)}$ −70μA @ V_{ce} −10V
Thermal Resistance 0·33° c/mW
f. Cut Off 5Mc/s
α = 0·97
β = 35
} @ V_c −5V, I_c −1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	−16V
$V_{cb(max)}$	−20V
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

rbb' = 75 Ω and cb'c = 13·5pF in equivalent π Network.

Base



XA102

Germanium Junction Transistor
Frequency Changer-or-L.O. to 2 Mc/s

Characteristics @ 25°C

$I_{c(o)}$ $-5\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-10\mu A$ @ $V_{eb}-12V$
$I_{ce(o)}-70\mu A$ @ $V_{ce}-10V$
Thermal Resistance 0·33° c/mW

f. Cut Off 8 Mc/s
$\alpha=0{\cdot}984$
$\beta=60$
} @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-20V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

rbb' = 75 Ω and cb'c = 13·5pF in equivalent π Network.

XA103

Germanium Junction Transistor
I.F. Amplifier

Characteristics @ 25°C

$I_{c(o)}$ $-5\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-10\mu A$ @ V_{eb} $-1V$
$I_{c_E(o)}-150\mu A$ @ $V_{ce}-12V$
Thermal Resistance 0·33° c/mW

f. cut off. 2 Mc/s
$\alpha=0{\cdot}97$
$\beta=35$
} @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-12V$
$V_{cb(max)}$	$-12V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

rbb' = 170 Ω and cb'c = 13·5pF in equivalent π Network.

XA104

Germanium Junction Transistor Frequency Changer or L.O.

Characteristics @ 25°C

$I_{c(o)}$ $-5\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-10\mu A$ @ $V_{eb}-1V$
$I_{ce(o)}-150\mu A$ @ $V_{ce}-12V$
Thermal Resistance 0·33° c/mW

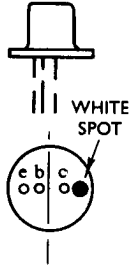
f. cut off 4 Mc/s
$\alpha=0{\cdot}984$
$\beta=60$
} @V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-12V$
$V_{cb(max)}$	$-12V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C.

rbb' = 170 Ω and cb'c = 13·5pF in equivalent π Network.

Base



XA111

Germanium Junction Transistor I.F. Amplifier to 500 kc/s

Characteristics @ 25°C

$I_{c(o)}-$ $5\mu A$ @ $V_{cb}-12V$
$I_{e(o)}-$ $10\mu A$ @ $V_{eb}-12V$
$I_{ce(o)}-70\mu A$ @ $V_{ce}-10V$
Thermal Resistance 0·33° c/mW

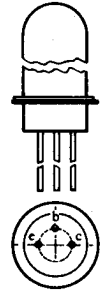
f. Cut Off 5 Mc/s
$\alpha=0{\cdot}97$
$\beta=35$
} @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-20V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

rbb' = 75 Ω and cb'c = 13·5pF in equivalent π Network.

Base



XA112

Germanium Junction Transistor Frequency Changer-or-L.O. to 2 Mc/s

Characteristics @ 25°C

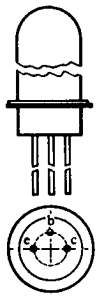
$I_{c(o)}$ $-5\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-10\mu A$ @ $V_{eb}-12V$
$I_{ce(o)}$ $-70\mu A$ @ $V_{ce}-10V$
Thermal Resistance 0·33° c/mW
f. Cut Off 8 Mc/s
$\alpha = 0{\cdot}984$
$\beta = 60$
} @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-20V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

rbb' = 75 Ω and cb'c = 13·5pF in equivalent π Network.

Base



XA124

Germanium Junction Drift Transistor Frequency Changer-or-L.O. to 23 Mc/s

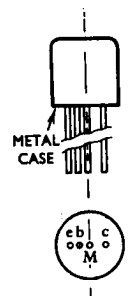
Characteristics @ 25°C

$I_{c(o)}$ $-20\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-50\mu A$ @ $V_{eb}-0{\cdot}5V$
Thermal Resistance 0·75° c/mW
f. Cut Off 30 Mc/s
$\alpha = 0{\cdot}984$
$\beta = 60$
} @ V_c-12V, I_c-1mA

Absolute Ratings @ 55°C

$V_{cb(max)}$	$-20V$
$V_{eb(max)}$	$-0{\cdot}5V$
$P_{c(max)}$	40mW
$T_{j(max)}$	85°C

Base



XA126

Germanium Junction Drift Transistor R.F. Amplifier

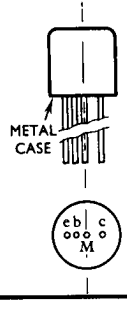
Characteristics @ 25°C

$I_{c(o)}$ $-20\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-50\mu A$ @ $V_{eb}-1{\cdot}5V$
Thermal Resistance 0·75° c/mW
f. Cut Off 30 Mc/s
$\alpha=0{\cdot}984$
$\beta=60$
} @ V_c-12V, I_c-1mA

Absolute Ratings @ 55°C

$V_{cb(max)}$	$-20V$
$V_{eb(max)}$	$-1{\cdot}5V$
$P_{c(max)}$	40mW
$T_{j(max)}$	85°C

Base



XA131

Germanium Junction Drift Transistor R.F. Amp. to 100 Mc/s-or-L.O. to 250 Mc/s

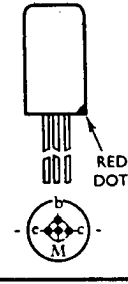
Characteristics @ 25°C

$I_{c(o)}$ $-16\mu A$ @ $V_{cb}-12V$
$I_{e(o)}$ $-50\mu A$ @ $V_{eb}-0{\cdot}5V$
f. Cut Off 100 Mc/s
$\alpha=0{\cdot}984$
$\beta=60$
} @ V_c-12V, $I_c-1{\cdot}5mA$

Absolute Ratings @ 55°C

$V_{cb(max)}$	$-30V$
$V_{eb(max)}$	$-0{\cdot}5V$
$P_{c(max)}$	70mW
$T_{j(max)}$	85°C

Base



XB102

Germanium Junction Transistor
L.F. Amplifier or Driver

Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$

$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$

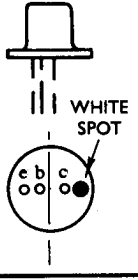
Thermal Resistance 0·33° c/mW

$\alpha=0{\cdot}968$, $\beta=30$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	90mW
$T_{j(max)}$	75°C

Base



XB103

Germanium Junction Transistor
L.F. Amplifier or Driver

Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$

$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$

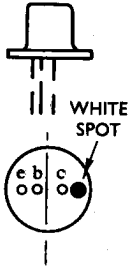
Thermal Resistance 0·33° c/mW

$\alpha=0{\cdot}985$, $\beta=66$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	90mW
$T_{j(max)}$	75°C

Base



XB104

Germanium Junction Transistor
L.F. Amplifier or Driver

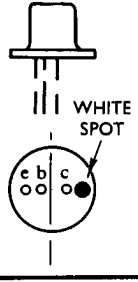
Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-12V$
$I_{ce(o)}-250\mu A$ @ $V_{ce}-10V$
Thermal Resistance 0·33° c/mW
$\alpha = 0{\cdot}968$, $\beta = 30$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-20V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

Base



XB112

Germanium Junction Transistor
L.F. Amplifier or Driver

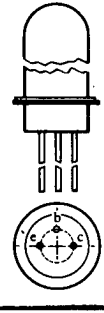
Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$
$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$
Thermal Resistance 0·33° c/mW
$\alpha = 0{\cdot}968$, $\beta = 30$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	90mW
$T_{j(max)}$	75°C

Base



XB113

Germanium Junction Transistor
L.F. Amplifier or Driver

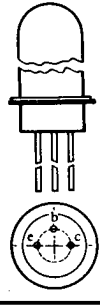
Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$
$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$
Thermal Resistance 0·33° c/mW
$\alpha=0{\cdot}985$, $\beta=66$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	90mW
$T_{j(max)}$	75°C

Base



XB114

Germanium Junction Transistor
L.F. Amplifier or Driver

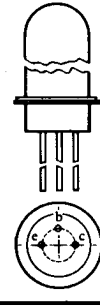
Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-12V$
$I_{ce(o)}-250\mu A$ @ $V_{ce}-10V$
Thermal Resistance 0·33° c/mW
$\alpha=0{\cdot}968$, $\beta=30$ } @ V_c-5V, I_c-1mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-20V$
$P_{c(max)}$	60mW
$T_{j(max)}$	65°C

Base



XC101

Germanium Junction Transistor
A.F. Amplifier for Class B—P.P. Output

Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$

$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$

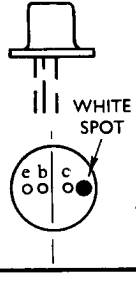
Thermal Resistance 0·3° c/mW. (0·21° when clamped to 12 sq. in. (min) aluminium plate.)

$\alpha=0{\cdot}985$, $\beta=66$ } @ V_c-6V, I_c-8mA

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	100mW
$T_{j(max)}$	75°C

Base



XC121

Germanium Junction Transistor
A.F. Amplifier for Class B.—P.P. Output

Normally supplied in matched pairs.

Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$

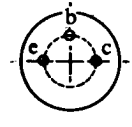
$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$

Thermal Resistance 0·2° c/mW.

Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	150mW
$T_{j(max)}$	75°C

Base



XC131

Germanium Junction Transistor
A.F. Amplifier for Class B.—P.P. Output

Matched pair mounted as a unit in Heat Sink

Characteristics @ 25°C

$I_{c(o)}$ $-10\mu A$ @ $V_{cb}-15V$

$I_{ce(o)}-250\mu A$ @ $V_{ce}-12V$

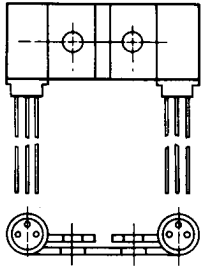
Thermal Resistance with Heat Sink 0·1° c/mW.
For two transistors clamped to an aluminium plate of 12 sq. in. (min).

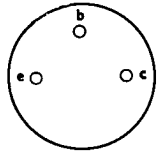
*Absolute Ratings @ 45°C

$V_{ce(max)}$	$-16V$
$V_{cb(max)}$	$-35V$
$P_{c(max)}$	300mW
$T_{j(max)}$	75°C.

* *User must also ensure that operating conditions are such that Thermal Runaway cannot occur under most adverse conditions.*

Base





XC141

Germanium Junction Transistor
Audio Output - Class A-or-Class B

Characteristics @ 25°C

V_{cb}(Breakdown) $_{min}-40V$ @ I_c-5mA

V_{eb}(Breakdown) $_{min}-10V$ @ I_e-2mA

$I_{c(o)}$ $-100\mu A$ @ $V_{cb}-0{\cdot}5V$

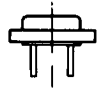
$I_{c(o)}$ $-3mA$ @ $V_{cb}-30V$

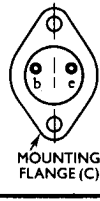
Absolute Ratings

$V_{cb(max)}$	$-20V$*
$V_{ce(max)}$	$-20V$*
$V_{eb(max)}$	$-12V$
$I_{c(max)}$	$-1{\cdot}5A$
$I_{e(max)}$	$1{\cdot}5A$
$P_{c(max)}$	11W to 80°C

* *For Inductive Load*

Base





XC142

Germanium Junction Transistor
Audio Output - Class A-or-Class B

Characteristics @ 25°C

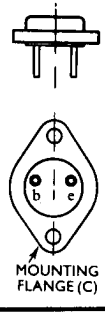
V_{cb}(Breakdown) $_{min}$ −60V @ I_c −5mA
V_{eb}(Breakdown) $_{min}$ −10V @ I_e −2mA
$I_{c(o)}$ −100μA @ V_{eb} −0·5V
$I_{c(o)}$ −3mA @ V_{cb} −30V

Absolute Ratings

$V_{cb(max)}$ −30V*
$V_{ce(max)}$ −30V*
$V_{eb(max)}$ −12V
$I_{c(max)}$ −1·5A
$I_{e(max)}$ 1·5A
$P_{c(max)}$ 11W to 80°C

* *For Inductive Load*

Base



XC155

Germanium Junction Transistor
Power Output

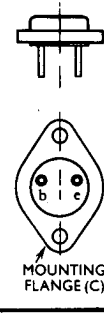
Characteristics @ 25°C

V_{cb}(Breakdown) $_{min}$ −80V @ I_c −3mA
V_{eb}(Breakdown) $_{min}$ −60V @ I_e −3mA
$I_{c(o)\ (max)}$ −150μA @ V_{cb} −0·5V
$I_{c(o)\ (max)}$ −500μA @ V_{cb} −30V
Thermal Resistance 1° C/W (Av).

Absolute Ratings

$I_{c(max)}$ −5A
$I_{e(max)}$ 5A
$I_{b(max)}$ −2A
$P_{c(max)}$ 10W to 85°C
$P_{c(max)}$ 50W to 25°C

Base



XC156

Germanium Junction Transistor Power Output

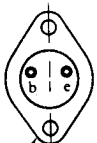
Characteristics @ 25°C

V_{cb}(Breakdown) $_{min}$ −100V @ I_c −3mA
V_{eb}(Breakdown) $_{min}$ − 60V @ I_e −3mA
$I_{c(o)\ (max)}$ −150μA @ V_{cb} −0·5V
$I_{c(o)\ (max)}$ −500μA @ V_{cb} −30V
Thermal Resistance 1° C/W (Av).

Absolute Ratings

$I_{c(max)}$ −5A
$I_{e(max)}$ 5A
$I_{b(max)}$ −2A
$P_{c(max)}$ 10W to 85°C
$P_{c(max)}$ 50W to 25°C

Base



TRANSISTOR BETA TESTER

This simple and inexpensive test set provides a quick, direct, indication of current gain and collector leakage current of P-N-P Transistors under common emitter conditions.

It is a transistorised, battery operated unit ideally suited for the service engineer.

Write for Leaflet No. PD17/1967.

Valve	Manufacturer	Ediswan Mazda Equivalent
1AC6	Brimar, Cossor	1C2; DK92
1AB6	Brimar, Ferranti	1C3; DK96
1AH5	Brimar	1FD1; DAF96
1AJ4	Brimar	1F1; DF96
1D5	Brimar	U4020
1L4	Brimar	1F2; DF92
1M3	Retma	1M1; DM71
1R5	Brimar	1C1; DK91
1S5	Brimar	1FD9; DAF91
1T4	Brimar	1F3; DF91
2A/100A	Brimar	D1
2B35	Retma	6D1
2D4A	Mullard	V914
3C4	Brimar	1P1; DL96
3S4	Brimar	1P10; DL92
3V4	Brimar	1P11; DL94
4XP	Cossor	PP3/250
6AB8	Retma	ECL80
6AJ8	Cossor	6C12; ECH81
6AK8	Cossor	6LD12; EABC80
6AL5	Brimar	6D2; EB91
6AM6	Brimar, Cossor	6F12; EF91
6AQ4	Retma	6L34; EC91
6AQ8	Cossor	6L12; ECC85
6BM8	Retma	ECL82
6BQ5	Brimar	6P15; EL84

Valve	Manufacturer	Ediswan Mazda Equivalent
6BR5	Retma	EM80
6BT4	Retma	EZ40
6BX6	Retma	EF80
6BY7	U.S.A.	6F19; EF85
6CA4	Retma	UU12; EZ81
6CJ5	Retma	EF41
6CU7	Retma	6C10; ECH42
6DC8	Retma	6FD12; EBF89
6EL7	Retma	6F23
6G5G	Tungsram	6M1
6N8	Retma	EBF80
6S2	Retma	EY86
6U5G	Brimar	6M1
7A2	Brimar	AC/Pen
7A3	Brimar	AC2/Pen
7AN7	Emitron, Brimar	30L1; PCC84
7EK7	Retma	30L15
8D3	Brimar	6F12; EF91
9A8	Emitron, Brimar	30C1/ PCF80
9D2	Brimar	VP1322
9U8	Brimar	PCF82
11A2	Brimar	AC/HL/DD
12AT7	Retma	ECC81
12AU7	Retma	ECC82
12AX7	Retma	6L13; ECC83
13VPA	Cossor	VP1322

Valve	Manufacturer	Ediswan Mazda Equivalent
14K7	Retma	UCH42
14L7	Retma	10LD3; UBC41
15A5	Retma	PL83
16A5	Cosssor	30P16; PL82
16A8	Retma	PCL82
16GK8	Retma	30PL13
17Z3	Retma	PY81
19D8	Retma	10C14; UCH81
19Y3	Retma	U192; PY82
20A1	Brimar	AC/TH1
25E5	Retma	PL36
31A3	Retma	UY41
38A3	Retma	U381; UY85
40SUA	Cossor	U4020
41MH	Cossor	AC2/HL
41MRC	Cossor	AC2/HL
41STH	Cossor	AC/TH1
42MP/Pen 420T	Cossor	AC2/Pen
45A5	Retma	UL41
45B5	Retma	10P18; UL84
420TDD	Cossor	AC2/PenDD
431U	Cossor	UU5
441U	Cossor	UU5
62DDT	Cossor	6LD3; EBC41
62TH	Cossor	6C10; ECH42

Valve	Manufacturer	Ediswan Mazda Equivalent
63ME	Cossor	6M1
141DDT	Cossor	10LD3; UBC41
202STH	Cossor	TH2321
210VPT	Cossor	VP210
220HPT 220/OT	Cossor	Pen 220
240QP	Cossor	QP230
302THA	Cossor	TH2321
442BU	Cossor	UU5
460BU	Cossor	UU5
7204A	G.E.C.	CRM144
7205A	G.E.C.	CME1402
7404A	G.E.C.	CRM172
7405A	G.E.C.	CME1703
7501A	G.E.C.	CRM212
7502A	G.E.C.	CRM212
7503A	G.E.C.	CME2101
A A11B	Ever Ready	UU5
A11C	Ever Ready	UU5
A11D	Ever Ready	UU5
A30B	Ever Ready	AC2HL
A50M	Ever Ready	AC/VP1
A70B	Ever Ready	AC/Pen
A70D	Ever Ready	AC2/Pen
ACO44	Mullard	PP3/250

Valve	Manufacturer	Ediswan Mazda Equivalent
APP4A	Tungsram	AC/Pen
APP4B	Tungsram	AC2/Pen
APV4	Tungsram	UU5
AS4125	Tungsram	AC/SG/VM
B B109	G.E.C.	10L14; UCC85
B309	G.E.C.	ECC81
B319	G.E.C.	30L1; PCC84
B719	G.E.C.	6L12; ECC85
B729	G.E.C.	6/30L2
BVA132		HL23DD
BVA142		VP23
BVA162		Pen25
BVA172		TP25
BVA211		UU5
BVA214		
BVA215		
BVA216		
BVA264		6P25
BVA265		
BVA266		
BVA267		
C C9A	Brimar	CRM92A
C12A	Brimar	CRM121B
C21TM	Brimar	CRM212

Valve	Manufacturer	Ediswan Mazda Equivalent
C36A	Ever Ready	TH2321
C36B		
C36C		
C50N	Ever Ready	VP1322
CY31	Mullard	U201
D D4	Ferranti	AC/HL
D77	G.E.C.	6D2; EB91
D152		
DAF91	Mullard	1FD9; DAF91
DAF96	Mullard	1FD1; DAF96
DD6	Ferranti & Cossor	6D2; EB91
DD6G	Tungsram	6D2; EB91
DDPP4B	Tungsram	AC2PenDD
DDT	Cossor	AC/HL/DD
DDT4	Tungsram	AC/HL/DD
DF91	Mullard	1F3; DF91
DF92	Mullard	1F2; DF92
DF96	Mullard	1F1; DF96
DH42	G.E.C.	AC/HL/DD
DH118	G.E.C.	10LD3; UBC41
DH119	G.E.C.	10LD13; UBC81
DH142	G.E.C.	10LD3; UBC41
DH150	G.E.C.	6LD3; EBC41
DH718	G.E.C.	6LD3; EBC41
DH719	G.E.C.	6LD12; EABC80

	Valve	Manufacturer	Ediswan Mazda Equivalent
	DK91	Mullard	1C1; DK91
	DK92	Mullard	1C2; DK92
	DK96	Mullard	1C3; DK96
	DL92	Mullard	1P10; DL92
	DL94	Mullard	1P11; DL94
	DL96	Mullard	1P1; DL96
	DM71	Mullard	1M1; DM71
	DN41	G.E.C.	AC2PenDD
	D024	Mullard	PP5/400
E	EA50	Mullard	6D1
	EABC80	Mullard	6LD12; EABC80
	EB91	Mullard	6D2; EB91
	EBC41	Mullard	6LD3; EBC41
	EBC81	Mullard	6LD13; EBC81
	EBF89	Mullard	6FD12; EBF89
	EC91	Mullard	6L34; EC91
	ECC85	Mullard	6L12; ECC85
	ECH42	Mullard	6C10; ECH42
	ECH81	Mullard	6C12; ECH81
	EF41	Mullard	EF41
	EF85	Mullard	EF85
	EF91	Mullard	6F12; EF91
	EL84	Mullard	6P15; EL84
	EM35	European	6M2
	EZ81	Mullard	UU12; EZ81

	Valve	Manufacturer	Ediswan Mazda Equivalent
G	G4120N	Philips	UU5
H	H4D	Ferranti	AC/HL/DD
	HL4	Tungsram	AC/HL
	HLA1	Brimar	AC2HL
I	IW2	Mullard	UU5
	IW3		
	IW4	Mullard	UU5
	IW4/500	Mullard	UU5
K	K50M	Ever Ready	VP210
	K50N		
	K70B	Ever Ready	Pen220
	KT2	G.E.C.	Pen220
	KT41	G.E.C.	AC2/Pen
	KT42	G.E.C.	AC/Pen
L	LN119	G.E.C.	10PL12; UCL82
	LN319	G.E.C.	30LP1
	LP4	Ferranti	PP3/250
	LZ319	G.E.C.	30C1; PCF80
	LZ329	G.E.C.	30C1; PCF80
M	MH4	G.E.C.	AC/HL
	MH41	G.E.C.	AC/2HL

Valve	Manufacturer	Ediswan Mazda Equivalent
MHD4	G.E.C.	AC/HL/DD
MM4V	Mullard	AC/SG/VM
MP/Pen	Cossor	AC/Pen
MPT4	G.E.C.	AC/Pen
MU12	G.E.C.	UU5
MU14	G.E.C.	UU5
MVSG	Cossor	AC/SG/VM
MVSPen	Cossor	AC/VP1
MVSPenB	Cossor	AC/VP2
MW18–2	Mullard	CRM71
MW22–3	Mullard	CRM92 or 92A
N N17	G.E.C.	1P10; DL92
N19	G.E.C.	1P11; DL94
N25	G.E.C.	1P1; DL96
N41	G.E.C.	AC2/Pen
N118	G.E.C.	10P13
N119	G.E.C.	10P18; UL84
N145	G.E.C.	10P13
N147	G.E.C.	6P25
N308	G.E.C.	30P4
N329	G.E.C.	30P16; PL82
N369	G.E.C.	30P12
N379	G.E.C.	30P18
N709	G.E.C.	6P15; EL84

Valve	Manufacturer	Ediswan Mazda Equivalent
O OP41	Ekco	AC4/Pen
OP42	Ekco	AC2/Pen
P PCC84	Mullard	30L1; PCC84
PCF80	Mullard	30C1; PCF80
P12/250	Tungsram	PP3/250
P27/500	Tungsram	PP5/400
Pen4VA	Mullard	AC/Pen
PenA4	Mullard	AC2/Pen
PenB1	Mullard	Pen220
PL82	Mullard	30P16; PL82
PL84	Mullard	30P18; PL84
PM22A	Mullard	Pen220
PP2	Tungsram	Pen220
PT2	Ferranti	Pen220
PT4	Ferranti	AC2/Pen
PT4D	Ferranti	AC2/PenDD
PT10	Cossor	AC5/Pen
PX4	G.E.C.	PP3/250
PY32	European	U291; PY32
PY82	Mullard	U192; PY82
Q QP21	G.E.C.	QP230
QP22B	Mullard	
QPT2	Ferranti	

Valve	Manufacturer	Ediswan Mazda Equivalent
R R1		
R2	Brimar	UU5
R3		
R42	Ferranti	UU5
R4A	Brimar	UU5
RV120–500	Tungsram	UU5
S S30C	Ever Ready	PP3/250
SD61	Cossor	6D1
SP6	Tungsram	6F12; EF91
T T4D	Mullard	D1
TH4A	Mullard	AC/TH1
TH4B		
TP4	Tungsram	AC/TP
U U10	G.E.C.	UU5
U47	G.E.C.	U25
U49	G.E.C.	U26
U118	G.E.C.	U404
U145	G.E.C.	U404
U329	G.E.C.	U251
U339	G.E.C.	U191
U709	G.E.C.	UU12; EZ81
U718	G.E.C.	UU9

Valve	Manufacturer	Ediswan Mazda Equivalent
UABC80	Mullard	10LD12; UABC80
UBC41	Mullard	10LD3; UBC41
UBC81	Mullard	10LD13; UBC81
UBF89	Mullard	10FD12; UBF89
UCC85	Mullard	10L14; UCC85
UCH81	Mullard	10C14; UCH81
UL84	Mullard	10P18; UL84
UM35	European	10M2
UY85	Mullard	U381; UY85
V VMS4B	G.E.C.	AC/SG/VM
VP4	Tungsram	AC/VP1
VP4A		
VP13C	Mullard	VP1322
VP21	G.E.C.	VP210
VP41	Ekco	AC/VP2
VPT2	Ferranti	VP210
VPT4	Ferranti	AC/VP1
VPT4B		
VSGA1	Brimar	AC/SG/VM
VFT6	Ferranti	6M1
W W17	G.E.C.	1F3; DF91
W21	G.E.C.	VP210
W25	G.E.C.	1F1; DF96
W42	G.E.C.	AC/VP2

Valve	Manufacturer	Ediswan Mazda Equivalent
W118	G.E.C.	10F9
W119	G.E.C.	10F18
W145	G.E.C.	10F9
W719	G.E.C.	6F19;
W739	G.E.C.	6F18
WD119	G.E.C.	10FD12
X X17	G.E.C.	1C1; DK91
X18	G.E.C.	1C2; DK92
X20	G.E.C.	1C2; DK92
X25	G.E.C.	1C3; DK96
X41	G.E.C.	AC/TH1
X118	G.E.C.	10C1
X119	G.E.C.	10C14; UCH81

Valve	Manufacturer	Ediswan Mazda Equivalent
X145	G.E.C.	10C1
X150	G.E.C.	6C10; ECH42
X719	G.E.C.	6C12; ECH81
Y Y25	G.E.C.	1M1; DM71
Y61, Y63	G.E.C.	6M1
Y110	G.E.C.	UM80
Z Z77	G.E.C.	6F12; EF91
Z145	G.E.C.	10F1
Z329	G.E.C.	30F5
ZD17	G.E.C.	1FD9; DAF91
ZD25	G.E.C.	1FD1; DAF96

REPLACEMENTS FOR OBSOLETE TYPES *continued*

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES										
			Base	1	2	3	4	5	6	7	8	9	T.C.
A AC/DD	DD41	Change base to Mazda Octal	Brit. 5 Pin	a″	a′	h	h	k					
AC/HL/DDD	AC/HL/DD and D1	Change base to Brit. 7 Pin, using AC/HL/DD as AF amplifier and detector, and D1 as AVC diode	Brit. 9 Pin	a″d	a″d	–	h	h	k	a	a′d	M	g_1
AC/ME	ME41	Change base to Mazda Octal	Brit. 7 Pin		g_1	t	h	h	k	a			
AC/P	No replacement		Brit. 5 Pin	a	g	h	h	k					
AC/P1	No replacement		Brit. 5 Pin	a	g_1	h	h	k					
AC/P4	No replacement		Brit. 5 Pin		g	h	h	k					a
AC/Pen	AC2/Pen	Reduce GB to —5·3 volts	Brit. 7 Pin	–	g_1	g_3	h	h	k	a			
AC/S1/VM	AC/SG/VM	None	(As for AC/SG/VM)										
AC/TH1A	TH41	None	(As for TH41)										
AC/S2	No replacement		Brit. 5 Pin	g_2	g_1	h	h	k,M					a
AC/S2Pen			Brit. 7 Pin	M	g_1	g_3	h	h	k	g_2			a
			(Also Brit. 5 Pin-connections as for AC/S2)										
AC/SG	AC/SG/VM	Increase grid bias to —2 volts	Brit. 5 Pin	g_3	g_1	h	h	k,M					a
AC/SP1	No replacement		Brit. 7 Pin	M	g_1	g_3	h	h	k	a			g_3
AC6Pen	Pen46	Change base to Mazda Octal	Brit. 7 Pin	–	g_1	g_3	h	h	k	–			a
C CG5E	CG12E	None	(As for CG12E)										
CRM152A	CRM152B	CRM152B has grey glass face	Duo-Decal						(See CRM152B)				
D DC/HL	No replacement		Brit. 5 Pin	a	g	h	h	k,M					
DC/P			Brit. 5 Pin	a	g	h	h	k,M					
DC/Pen			Brit. 5 Pin	a	g_1	h	h	k	Side Terminal				g_3
DC/SG			Brit. 5 Pin	g_3	g_1	h	h	k,M					a
DC2HL/DD	10LD11	Change base to B8A. May be necessary to adjust heater chain current	Brit. 7 Pin	a′d	M	a′d	h	h	k	a			g_1

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES										
			Base	1	2	3	4	5	6	7	8	9	T.C.
DC2/P	10P14	Change base to International Octal. Connect screen and anode (Pins 3 and 4). Adjust bias voltage	Brit. 5 Pin	a	g	h	h	k,M					
DC2/Pen	10P14	Change base to International Octal. Adjust bias voltage	Brit. 5 Pin		g_1	h	h	k	Side Terminal				g_3
DC2/SG DC2/SG/VM	10F9	Change base to B8A. May be necessary to adjust heater chain current	Brit. 5 Pin	g_2	g_1	h	h	k,M					a
DC3/HL	10LD11	Change base to B8A. Connect diodes to cathode (Pins 5, 6 and 7). May be necessary to adjust heater chain current	Brit. 5 Pin	a	g	h	h	k,M					
DD101	20D1	Change base to B7G	Mazda Octal	h	k′	a′	s	a″	M	k″	h		
DD207	HL23DD	Change base to Mazda Octal. Use double diode section only	Brit. 4 Pin	a′	a″	f	f						
DD620	20D1	Change base to B7G	Brit. 5 Pin	a″	a′	h	h	k					
F FC141	1C1	Change base to B7G. Alter circuit	Mazda Octal	f	–	a	g_2	g_1	M	g_3 g_4			g_4
H H141D	1FD9	Change base to B7G. Alter circuit	Mazda Octal	f	–	a	–	ad	M	–	f		g
H610	No replacement		Brit. 4 Pin	a	g	f	f						
HL2 HL210	HL23	Change base to Mazda Octal	Brit. 4 Pin	a	g	f	f						

REPLACEMENTS FOR OBSOLETE TYPES *continued*

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES										
			Base	1	2	3	4	5	6	7	8	9	T.C.
HL21DD	HL23DD	Change base to Mazda Octal	Brit. 5 Pin	a	a'd	f,M	f	a"d					g
HL22	HL23	None	(As for HL23)										
HL22DD	HL23DD	None	(As for HL23DD)										
HL133	HL133DD	Connect diodes to cathode (Pins 2, 5 and 7)	(As for HL133DD except f or diodes)										
HL610	No replacement		Brit. 4 Pin	a	g	f	f						
HL1320	HL133DD	Change base to Mazda Octal. Connect diodes to cathode. (Pins 2, 5 and 7)	Brit. 7 Pin	M	–	–	h	h	k	a			g
HLDD1320	HL133DD	Change base to Mazda Octal	Brit. 7 Pin	a'd	M	a"d	h	h	k	a			g
L L2	HL23	Change base to Mazda Octal. Not suitable for driving Class B positive drive	Brit. 4 Pin	a	g	f,M	f						
L21DD	HL23DD		Brit. 5 Pin	a	a'd	f,M	f	a"d					g
L22DD	HL23DD	Not suitable for driving Class B positive drive	(As for HL23DD)										
M ME920	ME91	Change base to Mazda Octal	Brit. 7 Pin	–	g_1	t	h	h		k	a		
MU2	U22	Change base to Mazda Octal (in some applications)	Brit. 4 Pin	–	–	f	f						a
P P215 P220	Pen25	Change base to Mazda Octal. Connect Screen and Anode (Pins 3 and 4). Adjust bias	Brit. 4 Pin	a	g	f							

REPLACEMENTS FOR OBSOLETE TYPES *continued*

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES										
			Base	1	2	3	4	5	6	7	8	9	T.C.
P220A P240 P245 P625A P625B P650	No replacement		Brit. 4 Pin	a	g	f	f						
PA20	PP3/250	Increase Filament Voltage to 4 volts	(As for PP3/250)										
PD220 PD220A	No replacements		Brit. 7 Pin	g″	g′	a′	f	f	–	a″			
Pen24	Pen25	None	(As for Pen25)										
Pen141	1P11	Change base to B7G	Mazda Octal	f–	–	a	g_2	g_1	–		f+		
Pen220A	QP230	Change base to Brit. 7 Pin, connect two sections in parallel, and adjust bias	Brit. 5 Pin (Also fitted with Brit. 4 Pin Base—Connections as Pen425)	a	g_1	f	f	g_2					
Pen231	Pen25	Change base to Mazda Octal	Brit. 5 Pin	a	g_1	f	f	g_2					
Pen425	AC/Pen	Change base to Brit. 7 Pin	Brit. 4 Pin	a	g_1	f	f	Side Terminal					g_3
Pen1340	No replacement		Brit. 7 Pin	–	g_1	g_2	h	h	k	a			
Pen3520	PenDD4020	Change base connections. Connect diodes to cathode (Pins 1, 3 and 6)	Brit. 7 Pin	–	g_1	g_2	h	h	k	a			
Pen3820	Pen383	Change base to Mazda Octal	Brit. 7 Pin	–	g_1	g_2	h	h	k	a			
PenDD61	AC2PenDD	Insert 1Ω 5 watt resistor in series with the heater	(As for AC2PenDD)										
PenDD1360	No replacement		Brit. 7 Pin	a′d	a	a″d	h	h	k	g_2			g_1

REPLACEMENTS FOR OBSOLETE TYPES *continued*

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES									
			Base	1	2	3	4	5	6	7	8	9	T.C.
PenDD2530	PenDD4020	Insert 400Ω 5 watt resistor in parallel with heater. May be necessary to adjust heater chain current	(As for PenDD4020										
PenDD4021	Pen453DD	Change base to Mazda Octal	Brit. 7 Pin	a'd	a	a"d	h	h	k	g_3			g_1
PP3/425	No replacement		Brit. 4 Pin	a	g	f	f						
PP3521	Pen383	Change base to Mazda Octal. Connect screen to anode (Pins 3 and 4). Change cathode resistor	Brit. 7 Pin	–	g	–	h	h	k	a			
Q QP240	QP230	Change base to Brit. 7 Pin. Common screen supply	Brit. 9 Pin	g_1'	a'	g_3	f–	f+	–	g_3''	a"	g_1''	
S S215A S215B S215VM SG215	VP210	Change base to Brit. 7 Pin	Brit. 4 Pin	g_3	g_1	h	h						a
SP22	VP23	None	(As for VP23)										
SP141	1F2	Change base to B7G	Mazda Octal	f–	–	a	g_3	–	M	–	f+		g_1
SP210 SP215	VP210	None	(As for VP210)										
SP1320	10F9	Change base to B8A. (Connect 130Ω 2 watt resistor in parallel with heater if valves are series-run)	Brit. 7 Pin	M	g_1	g_3	h	h	k	g_3			a

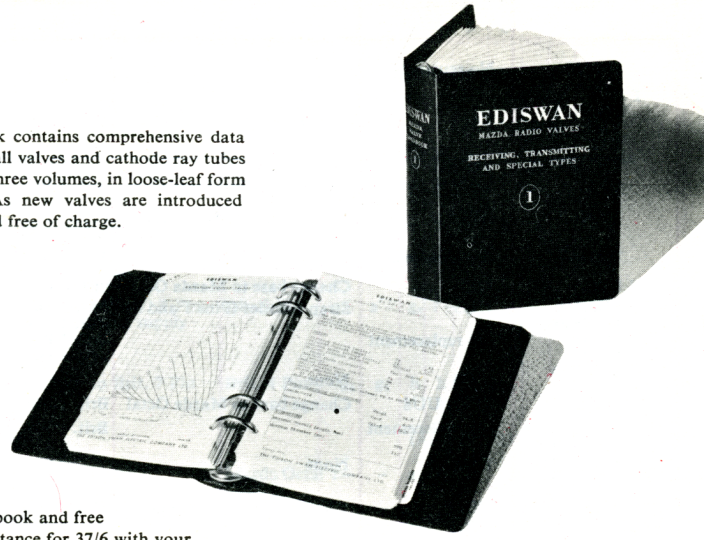
REPLACEMENTS FOR OBSOLETE TYPES *continued*

OBSOLETE TYPE	REPLACEMENT TYPE	MODIFICATIONS NECESSARY	BASING OF OBSOLETE TYPES										
			Base	1	2	3	4	5	6	7	8	9	T.C.
SP2220	No replacement		Brit. 7 Pin	M	g_1	g_3	h	h	k	g_3			a
T T11, T21, T31, T32	T41	Change base to Mazda Octal	Brit. 5 Pin	–	g_1	h	h	k					a
TH2320	TH2321	None	(As for TH2321)										
TP23	TP25	Change Base to Mazda Octal	Brit. 7 Pin	at	gt, g_3	g_3	f	f	M	ap			g_1
TP26	TP25	May be necessary to adjust oscillator coil	(As for TP25)										
TP1340	No replacement		Brit. 9 Pin	g_3	ap	g_3	h	h	k	at	gt	M	g_1
U U21	U22	Change base to Mazda Octal	Brit. 4 Pin	–	–	h,k	h						a
U30/250	UU5	Strap Anodes (Pins 1 and 2)	Brit. 4 Pin	a	–	h,k	h						
U65/550	No replacement		Brit. 5 Pin	a	–	h	h						
UD41			Brit. 7 Pin	–	–	h_2,k	h_1	h_2	h_2k$_3$a$_1$	a_2			
UU2			Brit. 4 Pin	a′	a″	h,k	h						
UU3, UU4	UU5	None	(As for UU5)										
UU10	UU7, UU8	Change base to Mazda Octal	Brit. 4 Pin	a′	a″	h,k	h						
UU30/250	No replacement		Brit. 4 Pin	a′	a″	h,k	h						
UU60/250, UU120/350, UU120/500	UU5	None	(As for UU5)										
V V914	DD41	Change Base to Mazda Octal	Brit. 5 Pin	a″	a′	h	h	k					
VP22	VP23	None	(As for VP23)										
VP215	VP210	None	(As for VP210)										
VP1320	No replacement		Brit. 7 Pin	M	g_1	g_3	h	h	k	g_3			a
VP1321	VP1322	Transpose connections to g_1 and a	Brit. 5 Pin	M	g_1	g_3	h	h	k	g_3			a

THIS COMPLETE TECHNICAL HANDBOOK

for 37/6

The Ediswan valve handbook contains comprehensive data and characteristic curves on all valves and cathode ray tubes made by Ediswan. It is in three volumes, in loose-leaf form and costs 37/6 complete. As new valves are introduced additional sheets are provided free of charge.



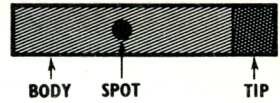
To obtain this valuable handbook and free follow-up service send a remittance for 37/6 with your name and address to: **Technical Publications Dept., Associated Electrical Industries Ltd., Radio and Electronic Components Division, 155 Charing Cross Road, London, W.C.2**

RESISTOR COLOUR CODE

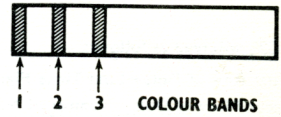
0. Black
1. Brown
2. Red
3. Orange
4. Yellow
5. Green
6. Blue
7. Mauve
8. Grey
9. White

Example:—

First Number—Body or Band 1 } Brown=1
Second Number—Tip or Band 2 } Green=5
Number of Noughts—Spot or Band 3 } Yellow=4
} 150,000 Ω



A Gold Band at the extreme end indicates 5% tolerance
A Silver Band at the extreme end indicates 10% tolerance
No Band at the extreme end indicates 20% tolerance
A Salmon Pink Band indicates high stability



Power in Watts $= EI,\ I^2R,\ \frac{E^2}{R}$

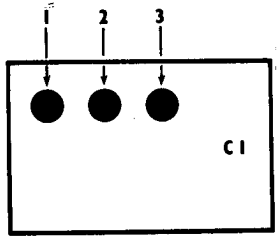
CONDENSER COLOUR CODE - AMERICAN

ALL VALUES IN uuF

Using the same colour code as on the previous page "C1" will read:

Brown, Red, Orange } = 12,000 pF—or—0·012 μF
1 2 000 }

with an assumed rating of 500V and a tolerance of 20%



CIRCULAR TYPE

"C2" will read as follows:

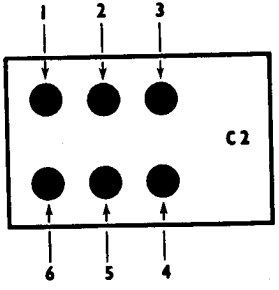
First Row of Dots = First Three Figures.

Second Row of Dots = Number of Noughts, Tolerance, Voltage Rating (in order shown)

Value = Brown, Red, Orange, Yellow } = { 1,230,000 pF. or—1·23 μF.
1 2 3 0000 }

Green } = 5%
5 }

Blue } = 600V
6 }



FUSE COLOUR CODE

60 mA	Black
100 mA	Grey
150 mA	Red
250 mA	Brown
500 mA	Yellow
750 mA	Green
1 Amp	Dark Blue
1·5 Amp	Light Blue
2 Amp	Purple
3 Amp	White
5 Amp	Black and White

MARKINGS OF ELECTROLYTIC CONDENSERS

Red—indicates the positive tag of the highest ripple current section.

Yellow—indicates the positive tag of the highest capacitance at the highest voltage of the remaining section/s.

Green—indicates the positive tag of the next highest capacitance at the highest voltage of the remaining section/s.

Blue—indicates the positive tag of the remaining section.

Plain—always indicates the negative tag.

CONDENSER COLOUR CODE - BRITISH

Recommended B.S.I. Colour Code for Fixed Ceramic dielectric Capacitors Grade I.

The codes indicate the temperature coefficient (in parts per million per °C), the capacitance (in pF), and the tolerance on capacitance expressed as a percentage or as a capacitance limit according to the size of the capacitor.

Identification
1. Surface of First Band or Dot; twice the surface area of other Bands or Dots.

or
2. Small Gap between First Band or Dot and Adjacent end, wider Gap between last Band or Dot and other end.

A white coding for temperature coefficient indicates a General Purpose Capacitor where the temperature coefficient is not important.

For Capacitors having the Standard temperature coefficient of $+100 \pm 30$ ppm/°C the single Band or Dot identification of temperature coefficient is replaced by a pair of Bands or Dots, the First being Red and the Second Violet.

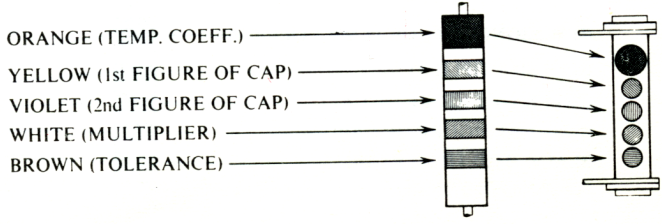
If the capacitance is shown in figures on a coloured body, the colour indicates the temperature coefficient.

FIVE BAND OR DOT COLOUR CODE

Colour	Temperature coeff.	Capacitance value				
	rated value tolerance	first figure	second figure	multi-plier	tolerance	
					rated cap. exceeding 10 pF	rated cap. up to 10 pF incl.
	1st band or dot	2nd band or dot	3rd band or dot	4th band or dot	5th band or dot	
Black	0 ±30	—	0	1	±20%	
Brown	−33 ±30	1	1	10	± 1%	±0·1 pF
Red	−75 ±30	2	2	10^2	± 2%	±0·25 pF
Orange	−150 ±30	3	3	10^3		
Yellow	−220 ±30	4	4	10^4		
Green	−330 ±60	5	5	—	± 5%	
Blue	−470 ±90	6	6	—		
Violet	−750 ±120	7	7	—		
Grey	— —	8	8	10^{-2}		
White	−330 ±500	9	9	10^{-1}	±10%	±1 pF

EXAMPLE OF APPLICATION OF FIVE BAND OR DOT COLOUR CODE

Capacitor with Temperature Coefficient of −150 Parts per Million/°C, rated Capacitance 4·7 pF and Tolerance ±0·1 pF



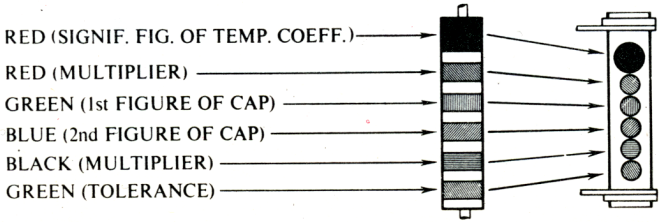
SIX BAND OR DOT COLOUR CODE

Colour	Temperature coeff.			Capacitance value				
	significant figure		multiplier	first figure	second figure	multiplier	tolerance	
	value tol.*						rated cap. exceeding 10 pF	rated cap. up to 10 pF incl.
	1st band or dot		2nd band or dot	3rd band or dot	4th band or dot	5th band	6th band or dot	
Black	—	—	−1	—	0	1	±20%	
Brown	—	—	−10	1	1	10	± 1%	±0·1 pF
Red	1·0	±0·15	-10^2	2	2	10^2	± 2%	±0·25 pF
Orange	1·5	±0·25	-10^3	3	3	10^3		
Yellow	2·2	±0·35	-10^4	4	4	10^4		
Green	3·3	±0·6	−1	5	5	—	± 5%	
Blue	4·7	±0·9	10	6	6	—		
Violet	7·5	±1·2	10^2	7	7	—		
Grey	—	—	10^3	8	8	10^{-2}		
White	—	—	10^4	9	9	10^{-1}	±10%	±1 pF

* or ± 40 parts per million per °C, whichever is the greater.

EXAMPLE OF APPLICATION OF SIX BAND OR DOT COLOUR CODE

Capacitor with Temperature Coefficient of −100 Parts per Million/°C, rated Capacitance 56 pF and Tolerance ±5%



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