EDISWAN

MAZDA VALVES

1948-9

PRICE — ONE SHILLING

This booklet is a condensed version of the Ediswan loose-leaf Valve Manual and contains all data which has been included in the Manual up to February, 1949.
It does not represent the complete range of Ediswan and Mazda valves and details of any valves not shown herein may be obtained on application to :-

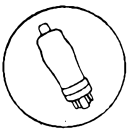
The Radio Division,
The Edison Swan Electric Co. Ltd.,
155, Charing Cross Road, London, W.C.2

EDISWAN

SPECIAL PURPOSE & INDUSTRIAL VALVES

MAZDA

RADIO VALVES &
CATHODE RAY TUBES



THE EDISON SWAN ELECTRIC CO. LTD.
(RADIO DIVISION)

155, CHARING CROSS ROAD, LONDON, W.C.2

Tel.: GERRARD 8660 (6 lines). *'Grams:* EDISWAN, WESTCENT, LONDON

Codes: { WESTERN UNION
A B C 5th Edition

R.1424 10m. 6. 49

BRANCHES AND STORES

ABERDEEN ..	1 Windmill Brae (Sub-Store), operating from DUNDEE Branch	Tel. 545
BELFAST	12 King Street	Tel. 20549/26608
BIRMINGHAM ..	18/22 Constitution Hill	Tel. Central 6411/2
BRADFORD ..	26a Peel Place, Leeds Road (Sub-Store), operating from LEEDS Branch ..	Tel 22821
BRIGHTON ..	18/19 Duke Street	Tel. 2518
BRISTOL, 1 ..	47 Colston Street, Tramway Centre ..	Tel. 20161/2
CARDIFF	Swan House, 89/90 Frederick Street ..	Tel. 3157
DUNDEE	Ediswan House, 41 Ward Road ..	Tel. 3129
EDINBURGH ..	127 George Street	Tel. 27231
GLASGOW, C.2 ..	157a St. Vincent Street	Tel. Central 0687/8/9
HUDDERSFIELD ..	15 Dundas Street (Sub-Store), operating from LEEDS Branch	Tel. 1161
HULL	Ediswan House, 53 Grey Street	Tel. Central 36823
IPSWICH	Crown Hall Chambers, Hyde Park Corner (Sub-Store), operating from LONDON Branch	Tel. 4086
LEEDS, 2	Templar House, Lady Lane	Tel. Leeds 29634/5
LEICESTER	Ediswan House, 27 High Cross Street	Tel. 58124/5
LIVERPOOL, 1 ..	19/23 Sir Thomas Street.. ..	Tel. Central 2002
LONDON	155 Charing Cross Road, W.C.2	Tel. Gerrard 8660
MAIDSTONE ..	9 Market Buildings (Sub-Store), operating from BRIGHTON Branch ..	Tel. 4530
MANCHESTER ..	Lloyds House, Albert Square ..	Blackfriars 4423
NEWCASTLE-ON-TYNE, 1	99 St. Andrew's Street, Gallowgate	Tel. 27473/4
NORWICH ..	18 Bedford Street (Sub-Store), operating from LEICESTER Branch	Tel. 24024
NOTTINGHAM ..	23 Goldsmith Street	Tel. 42511
PLYMOUTH ..	9 Whimple Street (Sub-Store), operating from BRISTOL Branch	Tel. 4962
SHEFFIELD ..	Mappin Buildings, Norfolk Street	Tel. 22144 (3 lines)
SOUTHAMPTON ..	125 High Street	Tel. 76263/4
TAUNTON	36 Bridge Street (Sub-Store), operating from BRISTOL Branch	Tel. 3267

LIST OF EDISWAN OVERSEAS REPRESENTATIVES FOR RADIO VALVES

Territory	Name and Address
AUSTRALIA	Australian General Electric Proprietary Ltd. P.O. Box 2517, Mazda House, 93-95 Clarence Street, Sydney. (With branches at Melbourne, Brisbane and Adelaide).
BARBADOS	Da Costa & Co. Ltd. P.O. Box 103, Bridgetown.
BERMUDA	R. D. Aitken, P.O. Box 336, Queen Street, Hamilton.
BELGIUM	Societe d'Electricite et de Mecanique,
& LUXEMBOURG	54, Chaussee de Charleroi, Brussels.
BRITISH EAST AFRICA ..	Stephen Ellis & Co. Ltd.
(Kenya, Tanganyika & Uganda)	Victoria Street, Nairobi.
CHILE	Kenrick & Co. Casilla 127, Santiago De Chile.
EGYPT & CYPRUS ..	British Thomson-Houston Co. Ltd. P.O. Box 901, 44 Sharia Cherif Pasha, Cairo.
ETHIOPA	Sabean Utility Corporation Ltd. P.O. Box 795, Addis Ababa.
FRANCE & COLONIES ..	Compagnie des Lampes, 29 Rue de Lisbonne, Paris VIIIe.
FIJI ISLES	Fiji Trading Co. P.O. Box 285, Victoria Parade, Suva.
GIBRALTAR	A. M. Capurro & Sons P.O. Box 94, 40 Main Street, Gibraltar.
INDIA, PAKISTAN,	Associated Electrical Industries (India) Ltd.
CEYLON & BURMA ..	P.O. Box 271, 6 Mission Row, Calcutta. (With branches at Coimbatore, Bombay, Bangalore, Karachi, Lahore, Madras and Nagpur).
IRAQ	The Faiha Trading Corporation Ltd. P.O. Box 52, 30/32 Rewaq Street, Baghdad.
MADEIRA	Blandy Brothers, Funchal, Madeira.
MALAYA,	The Borneo Co. Ltd.:—Local Branches :—
NORTH BORNEO,	Jesselton, North Borneo ;
SINGAPORE & SIAM	Kuala Lumpur, Malaya ;
(South of latitude 10° North)	Weld Quay, Penang, Malaya ;
	Ipoh, Malaya ;
	Malacca, Malaya ;
	Kuching, Sarawak ;
	Miri, Sarawak ;
	Sibu, Sarawak ;
	Kuala Belit, Brunei ;
	Brunei Town, Brunei ;
	Mercantile Bank Buildings, Singapore.
Head Office :	Sackville House, 143/9 Fenchurch Street, London, E.C.3, England.
NEW ZEALAND	National Electrical & Engineering Co. Ltd. P.O. Box 1055, 286/288 Wakefield Street, Wellington, (Branches at Dunedin, Auckland & Christchurch).
NORWAY	British Imports A/S, Lovenskioldsgt, 14, Oslo.
PALESTINE	The British Thomson-Houston Co. Ltd. P.O. Box 331, 26 Gruzenberg Street, Tel-Aviv.
SUDAN	The Sudan Mercantile Co. Ltd. P.O. Box 97, Khartoum.
TURKEY	Jack Benhabib, P.O. Box 2297, Beyoglu, Istanbul.
URUGUAY	S.U.N.E.Y. S/A. Casilla de Correo No. 263, 25 Demayo 731-737, Montevideo.

June, 1948

SYMBOLS

The letter symbols used in this manual are based on those agreed between the British Radio Valve Manufacturers' Association and the British Standards Institution.

VOLTAGE	
Direct Voltage.	V.
Alternating voltage (r.m.s.)	$V_{r.m.s.}$
Alternating voltage, mean.	$V_{av.}$
Peak Voltage.	$V_{pk.}$
Peak inverse voltage (rectifier)	P.I.V.
D.C. H.T. supply voltage.	$V_{a(b).}$
Anode voltage.	$V_{a.}$
Filament voltage, D.C.	$V_{f.}$
Filament voltage, A.C. (r.m.s.)	$V_{f(r.m.s.)}$
D.C. grid voltage.	$V_{g.}$
D.C. voltage applied to various grids.	V_{g1}, V_{g2}, V_{g3}, V_{g4}, etc.
Signal voltage.	$V_{sig.}$
Output voltage.	$V_{out.}$
CURRENT	
Direct current.	I
Alternating current. (r.m.s.)	$I_{(r.m.s.)}$
Alternating current (mean)	$I_{av.}$
Peak current.	$I_{pk.}$
Anode current D.C.	$I_{a.}$
A.C. Anode current (r.m.s.)	$I_{a.(r.m.s.)}$
D.C. Grid current.	$I_{g.}$
Currents to various grids.	I_{g1}, I_{g2}, I_{g3}, etc.
No signal current.	$I_{o.}$
POWER	
Anode Dissipation.	P_a (or W_a).
Output Power.	P_{out} (or W_{out}).
Grid 2 dissipation.	P_{g2} (or W_{g2}).

IMPEDANCE

Internal anode impedance.	$r_{a.}$
External load impedance	$Z_{a.}$

RESISTANCE

External anode load resistance.	$R_{a.}$
External resistance in series with g2.	$R_{g2.}$
External grid leak.	$R_{g.}$
External cathode resistance.	$R_{k.}$
Insulation resistance, heater to cathode.	$r_{hk.}$
Insulation resistance, anode to cathode.	$r_{ak.}$

CAPACITANCE

Capacitance (cold) — anode to all electrodes.	$c_{a,all.}$
Capacitance (cold)—anode to grid 1.	$c_{a,g1}$
Capacitance (Working) — grid to cathode.	$c_{g1,k(w).}$
Input capacitance, grid to all electrodes except anode.	$C_{in.}$
Output capacitance, anode to all electrodes except grid.	$C_{out.}$
Capacitance—Grid to anode.	$C_{ga.}$

MISCELLANEOUS

Mutual conductance (slope)	$g_{m.}$
Conversion Conductance.	$g_{c.}$
Amplification factor.	$\mu.$
Frequency.	$f.$
Internal shield.	s.
Internal conducting coating.	m.
External conducting coating (metallising)	M.
Fluorescent screen or other target.	t.

The examples given do not represent a complete standard and where the need arises additional symbols will be used for less common parameters.

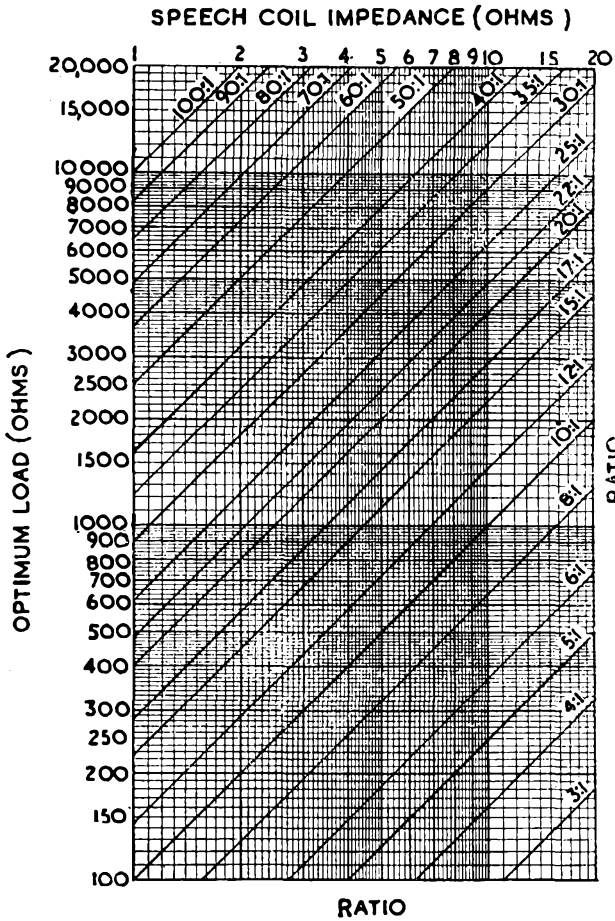
RECEIVING VALVES

PRICE LIST

RECEIVING VALVES

	TYPE	LIST PRICE
BATTERY RANGE		
Pentagrid F/C.	1C1	13/-
Straight R.F. Pen.	1F2	11/6
Var. Mu. R.F. Pen.	1F3	11/6
Diode R.F. Pen.	1FD9	13/-
Output Pentode	1P10	11/6
A.C. RANGE		
Triode Heptode F/C.	6C9	14/-
,, ,,	6C31	11/6
Television Diode	6D1	5/6
Television Double Diode	6D2	7/-
Screened R.F. Pentode	6F11	13/-
High Slope R.F. Pentode	6F12	17/6
,, ,,	6F13	15/6
,, Video ,,	6F14	15/6
Var. Mu. R.F. Pentode	6F15	13/-
G.3 R.F. Pentode	6F32	10/6
Triode Oscillator	6L18	12/-
Double Diode Triode	6LD20	12/-
Output Tetrode	6P25	13/-
Television Scanning Pentode	6P28	17/6
F.W. Rectifier	UU9	11/6
A.C./D.C. RANGE		
Triode Heptode F/C.	10C1	14/-
High Slope R.F. Pen.	10F3	13/-
Var. Mu. R.F. Pen.	10F9	13/-
Double Diode Triode	10LD11	12/-
Output Tetrode	10P13	13/-
,, ,,	10P14	13/-
Half Wave Rectifier	U404	11/6

LOUDSPEAKER OUTPUT TRANSFORMER RATIO



October 1948 Issue 1/2

RADIO DIVISION

THE EDISON SWAN ELECTRIC COMPANY LTD.

1.C.1.

MAZDA

1.C.1.

PENTAGRID FREQUENCY CHANGER

Directly heated – for battery operation

TENTATIVE

RATING

Filament Voltage (volts)	V_f	1.4
Filament Current (amps)	I_f	.05
Maximum Anode Voltage (volts)	$V_{a(max)}$	90
Maximum Screen Voltage (volts)	$V_{g2\ \&\ 4(max)}$	67.5
Maximum Screen Supply Voltage (volts)	$V_{g2\ \&\ 4(b)max}$	90.0
Maximum Mean Cathode Current (mA)	$I_{k(av)max}$	5.5

INTER-ELECTRODE CAPACITANCES *	†	‖
Grid 3/all (μμF) (R.F. Input)	7.0	8.1
Anode/all (μμF) (I.F. Output)	7.5	8.6
Grid 1/all (μμF) (Osc. Input)	3.8	4.9
Grid 3/Anode (μμF) (max)	0.4	0.4
Grid 3/Grid 1 (μμF) (max)	0.2	0.23
Grid 1/Anode (μμF) (max)	0.1	0.13

* With no external shield

† Inter-electrode capacitances with holder capacitance balanced out.

‖ Total capacitance including a Benjamin B7G holder type 75/663R.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19.0
Maximum Seated Height (mm)	47.6
Approximate Nett Weight (ozs)	0.25
Approximate Packed Weight (ozs)	0.5

MOUNTING POSITION - Unrestricted.

MAZDA

1.C.1.

PENTAGRID FREQUENCY CHANGER

Directly heated – for battery operation

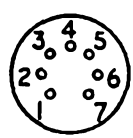
TENTATIVE

TYPICAL OPERATION

Anode Voltage (volts)	V_a	45	67.5	90	90
Screen Voltage (volts)	$V_{g2\ \&\ 4}$	45	67.5	45	67.5
Grid 3 Voltage	V_{g3}	0	0	0	0
Grid 1 Resistance (megohms)	R_{g1}	0.1	0.1	0.1	0.1
Anode Impedance (megohms) (approximately)	r_a	0.6	0.5	0.8	0.6
Conversion Conductance (μmhos)	g_c	235	280	250	300
Grid 3 Bias for Conversion Conductance of approximately 5 μmhos		-9	-14	-9	-14
Anode Current (mA)	I_a	0.7	1.4	0.8	1.6
Screen Current (mA)	$I_{g2\ \&\ 4}$	1.9	3.2	1.9	3.2
Grid 1 Current (mA)	I_{g1}	0.15	0.25	0.15	0.25
Total Cathode Current (mA)	I_k	2.75	5.0	2.75	5.0

BULB Clear

BASE B7G.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Filament - ve	f-
Pin 2	Anode	a
Pin 3	Grids 2 & 4(Osc. Anode & Screen)	g2 & 4
Pin 4	Grid 1 (Oscillator)	g1
Pin 5	Filament - ve & Grid 5	f- & g5
Pin 6	Grid 3 (Signal)	g3
Pin 7	Filament +ve	f+

1.F.3.

MAZDA

1.F.3.

VARIABLE – Mu R. F. PENTODE

Directly heated – for battery operation

TENTATIVE

RATING

Filament Voltage (volts)	V_f	1.4
Filament Current (amps)	I_f	.05
Maximum Anode Voltage (volts)	$V_{a(max)}$	90
Maximum Screen Voltage (volts)	$V_{g2(max)}$	67.5
Maximum Screen Supply Voltage (volts)	$V_{g2(b)}$	90
Maximum Mean Cathode Current (mA)	$I_{k(av)max}$	5.5

INTER-ELECTRODE CAPACITANCES

		§	‡
Grid/Anode (μμF) (max)	$C_{a,g1}$	0.01	0.012
Grid/Earth (μμF)	C_{in}	4.1	5.2
Anode/Earth (μμF)	C_{out}	7.5	8.6

§ Measured with Benjamin cylindrical screen type 75/832, but holder capacitance balanced out.

‡ Total capacitance including a Benjamin B7G holder type 75/833 and screen type 75/832.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19.0
Maximum Seated Height (mm)	47.6
Approximate Nett Weight (ozs)	0.25
Approximate Packed Weight (ozs)	0.5

MOUNTING POSITION - Unrestricted.

1.F.3.

MAZDA

1.F.3.

VARIABLE – Mu R. F. PENTODE

Directly heated – for battery operation

TENTATIVE

TYPICAL OPERATION

Anode Voltage (volts)	Va	45	67.5	90	90
Screen Voltage (volts)	Vg2	45	67.5	45	67.5
Control Grid Bias (volts)	Vg1	0	0	0	0
Anode Current (mA)	Ia	1.6	3.3	1.7	3.4
Screen Current (mA)	Ig2	0.7	1.5	0.65	1.4
Anode Impedance (megohms)	ra	0.35	0.25	0.8	0.5
Mutual Conductance (mA/V)	Gm	0.65	0.95	0.7	0.97
Grid Bias for mutual conductance = 10μA/v	Vg1	-8.5	-14	-8.5	-14

BULB Clear

BASE B.7.G.

Viewed from free end of base.

CONNEXIONS

Pin 1	Filament -ve	f-
Pin 2	Anode	a
Pin 3	Screen Grid	g2
Pin 4	No Connection	-NC
Pin 5	Filament -ve and Grid 3	f-
Pin 6	Control Grid	g1
Pin 7	Filament +ve	f+

1.FD.9

MAZDA

1.F.D.9

DIODE – R. F. PENTODE

Directly heated – for battery operation

TENTATIVE

RATING

Filament Voltage (volts)	V_f	1.4
Filament Current (amps)	I_f	.05
Maximum Anode Voltage (volts)	$V_{a(max)}$	90
Maximum Screen Voltage (volts)	$V_{g2(max)}$	90
Maximum Control Grid Voltage (volts positive)	$V_{g1(max)}$	0
Maximum Cathode Current (mA)	$I_{k(av)max}$	3.0
Maximum Mean Diode Current (μA)	$I_{a(d)(av)max}$	200
Inner Mμ ••	μ_{g1g2}	12.0

•• at V_a = 67.5; V_{g2} = 67.5; V_{g1} = 0.

INTER-ELECTRODE CAPACITANCES		‖	¶
Grid/Anode (μμF)	$C_{a,g1}$	0.4	0.67
Grid/Earth (μμF)	C_{in}	2.2	3.3
Anode/Earth (μμF)	C_{out}	3.3	4.4

• With no external shield.

‖ Inter-electrode capacitances with holder capacitance balanced out.

¶ Total capacitance including a Benjamin B7G Holder Type 75/663R.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19.0
Maximum Seated Height (mm)	47.6
Approximate Nett Weight (ozs)	0.25
Approximate Packed Weight (ozs)	0.5

1.FD.9

MAZDA

1.F.D.9

DIODE – R. F. PENTODE

Directly heated – for battery operation

TENTATIVE

TYPICAL OPERATION

Anode Voltage (volts)	V_a	67.5
Screen Voltage (volts)	V_{g2}	67.5
Grid Bias Voltage (volts)	V_{g1}	0
Anode Impedance (megohms)	r_a	0.6
Mutual Conductance (mA/V)	g_m	0.625
Anode Current (mA)	I_a	1.6
Screen Current (mA)	I_{g2}	0.4

As R.C.C. Amplifier

Anode Supply Voltage (volts)	$V_{a(b)}$	45	45	90	135
Grid Bias Voltage (volts)	V_{g1}	0	0	0	0
Anode Load Resistance (megohms)	R_a	0.22	0.47	0.47	0.47
Screen Resistance (megohms)	R_{g2}	0.39	1.2	1.8	1.8
Grid Resistance of following valve (megohms)	R_g	0.47	2.2	2.2	2.2
Screen Bypass Condenser (μF)	$C_{g2,E}$	.035	0.02	0.03	0.035
Coupling Condenser to following valve (μF)	C	.006	0.002	0.002	0.002
Voltage Gain @ 5v.					
R.M.S. Output		24	38	57	70

BULB Clear

BASE B7G

Viewed from free end of pins.

CONNEXIONS

Pin 1	Filament (–) grid 3	f–,g3
Pin 2	No connection	NC
Pin 3	Diode	ad
Pin 4	Screen Grid	g2
Pin 5	Anode	a
Pin 6	Control Grid	g1
Pin 7	Filament (+)	f+

1.P.10

MAZDA

1.P.10

OUTPUT PENTODE

Directly heated – for battery operation

TENTATIVE

GENERAL

The 1.P.10 has a 2.8 volt 50 mA filament with a centre tap. For normal operation from a 1.4 volt dry cell the two sections so formed are connected in parallel.

In some applications, such as AC/DC/battery receivers, it may be desirable to connect all the valve filaments in series; in which case the two filament sections of the 1.P.10 would be run in series. With this arrangement a shunting resistance must be placed across the 1.4 Volt section of the 1.P.10 nearest the negative end of the chain, in order to by-pass the cathode current in excess of the rated maximum per section. If the cathode current of the other valves contributes to the filament current of the 1.P.10, it may be necessary to by-pass both filament sections.

RATING		¶	]
Filament Voltage (volts)	V_f	2.8	1.4
Filament Current (amps)	I_f	.05	0.1
Maximum Anode Voltage (volts)	$V_{a(max)}$	90	
Maximum Screen Voltage (volts)	$V_{g2(max)}$	67.5	
Maximum Mean Cathode Current (mA) with Input swing	$I_{k(av)max}$	5.5 •	11.0
Maximum Quiescent Cathode Current (mA)	$I_{k(o)max}$	4.5 •	9.0

¶ Series Filament Arrangement

] Parallel Filament Arrangement

• For each 1.4v. Filament Section.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19.0
Maximum Seated Height (mm)	47.6
Approximate Nett Weight (ozs)	0.25
Approximate Packed Weight (ozs)	0.5

MOUNTING POSITION - Unrestricted.

MAZDA

1.P.10

OUTPUT PENTODE

Directly heated – for battery operation

TENTATIVE

TYPICAL OPERATION AS CLASS 'A' AMPLIFIER		§		‡	
Anode Voltage (volts)	V_a	67.5	90	67.5	90
Screen Voltage (volts)	V_{g2}	67.5	67.5	67.5	67.5
Control Grid Bias (volts) †	V_{g1}	-7	-7	-7	-7
Quiescent Anode Current (mA)	$I_{a(o)}$	6.0	6.1	7.2	7.4
Quiescent Screen Current (mA)	$I_{g2(o)}$	1.2	1.1	1.5	1.4
Mutual Conductance (mA/V)	g_m	1.4	1.43	1.55	1.58
Anode Impedance (megohms)	r_a	0.1	0.1	0.1	0.1
Anode Load (ohms)	Z_a	5,000	8,000	5,000	8,000
Input Swing (volts RMS)	$V_{rms(sig)}$	5	5	5	5
Power Output (mW)	P_{out}	160	235	180	270
Percentage Total harmonic Distortion (%)	D	12	13	10	12

§ Series Filament Arrangement.

‡ Parallel Filament Arrangement.

† Referred to negative end of the filament.

BULB Clear

BASE B.7.G.

Viewed from free end of pins.

CONNEXIONS

Pin 1	Filament	f
Pin 2	Anode	a
Pin 3	Control Grid	g1
Pin 4	Screen Grid	g2
Pin 5	Filament C.T. Grid 3	f(tap)g3
Pin 6	Anode	a
Pin 7	Filament	f

For Parallel filament operation Pin 5 should be connected to L.T. negative.

For Series filament operation Pin 1 is normally connected to L.T. negative.

THE EDISON SWAN ELECTRIC COMPANY LTD.

6.C.9

MAZDA

6.C.9

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

TENTATIVE

RATING		Triode	Heptode
Heater Voltage (volts)	V_h		6.3
Heater Current (amps)	I_h		0.45
Maximum Anode Voltage (volts)	$V_{a(max)}$	150	250
Maximum Screen Voltage (volts)	V_{g2}		250
Maximum Mean Cathode Current-Heptode (mA)	$I_{k(h)av(max)}$		10
Maximum Mean Cathode Current-Triode (mA)	$I_{k(t)av(max)}$	6	
Mutual Conductance (mA/V)	g_m		‡ 2.5
Amplification Factor	μ		
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$		150

‡ Taken at V_a = 250v; $V_{g2(h)}$ = 100v; $V_{g(h)}$ = -2.5v.

INTER-ELECTRODE CAPACITANCES

		¶	§
(Triode Section)			
Anode/Earth (μμF)	$C_{out(t)}$	1.7	3.0
Anode/Grid 1 (μμF)	$C_{a(t),g(t)}$	1.8	2.0
Grid 1/Earth (μμF)	$C_{in(t)}$	7.7	9.0
(Heptode Section)			
Anode/All (μμF)	$C_{a(h),all}$	3.0	4.5
Anode/Grid 1 (μμF)	$C_{a(h),g1(h)}$	.003	.0045
Grid 1/All (μμF)	$C_{g1(h),all}$	8.3	9.8
Heptode Grid/Triode Grid (μμF)	$C_{g1(h),g(t)}$	.12	.13
Heptode Grid/Triode Anode (μμF)	$C_{g1(h),a(t)}$	.013	.014

¶ Inter-electrode capacitances with holder capacitance balanced out

§ These capacitances include a Benjamin B8A holder measured at a frequency of 1 Mc/s.

"Earth" denotes electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to Cathode.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	$\frac{3}{4}$
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted.

MAZDA

6.C.9

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated—for parallel operation. **TENTATIVE**

TYPICAL OPERATION

Triode Section

Anode Voltage (volts)	$V_{a(t)}$	80
Approximate Anode Current (mA)	$I_{a(t)}$	4 to 6

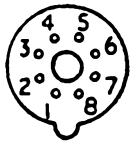
Heptode Section

Anode Voltage (volts)	$V_{a(h)}$	250
Initial Screen Voltage (volts)	$V_{g2(h)}$	100
Grid Bias (volts-ve)	$V_{g1(h)}$	-2.5
Peak Heterodyne Voltage (volts)	$V_{(pk)het}$	9.0
Conversion Conductance (μA/Volt)	g_c	650
Approximate Anode Current (mA)	$I_{a(h)}$	3.0
Approximate Screen Current (mA)	$I_{g2(h)}$	6.0
Approximate Anode Impedance (megohms)	$r_{a(w)}$	3.0
Input Loss at 45 Mc/s	$r_{g1,k(w)}$	5,500
Input Capacitance Working (Hot) (μμF)	$C_{in(w)}$	9.7
Change in input capacitance produced by biassing valve to cut-off (μμF)	$\triangle C_{in(w)}$	1.3
Equivalent grid noise resistance (ohms)	r_{eq}	60,000

Inter-electrode capacitance with holder capacitance balanced out.

BULB Clear

BASE B.8.A.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Heptode Anode	a_h
Pin 3	Triode Anode	a_t
Pin 4	Triode Grid 1 and Heptode Grid 3	$g1(t)$ $g3(h)$
Pin 5	Heptode Grid 2 and Grid 4	$g2(h)$ $g4(h)$
Pin 6	Heptode Grid 1	$g1(h)$
Pin 7	Cathode & Shield	k & s
Pin 8	Heater	h

6.C.31

MAZDA

6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

RATING		Triode	Heptode
Heater Voltage (volts)	V_h	6.3	
Heater Current (amps)	I_h	0.83	
Maximum Anode Voltage (volts)	$V_{a(max)}$	150	250
Maximum Screen Voltage (volts)	V_{g2}		250
Mutual Conductance (mA/V)	g_m	• 5.3	: 3.1
Amplification Factor	μ	• 16	
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	15	
Maximum Potential Heater/Cathode (volts DC)	$V_{h,k}$	150	

: Taken at V_a = 250v; V_{g2} = 100v; V_{g3} = 0; V_{g1} = -2v.

• Taken at Va_t = 100v; Vg_t = 0v.

INTER-ELECTRODE CAPACITANCES

Heptode Section

Anode/Earth (μμF)	$C_{a(h),E}$	13.0
Anode/Grid (μμF)	$C_{a(h),g1(h)}$	0.0012
Grid 1/Earth (μμF)	$C_{g1(h),E}$	9.5
Heptode Grid/Triode Grid (μμF)	$C_{g1(h),g(t)}$	0.09

Triode Section

Anode/Earth (μμF)	$C_{out(t)}$	4.4
Anode/Grid (μμF)	$C_{a(t),g(t)}$	3.0
Grid/Earth (μμF)	$C_{in(t)}$	11.5

DIMENSIONS

Maximum Overall Length (mm)	103
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	90
Approximate Nett Weight (ozs)	1¾
Approximate Packed Weight (ozs)	2¼

MOUNTING POSITION - Unrestricted.

MAZDA

6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

TYPICAL OPERATION

Heptode Section

Anode Voltage (volts)	$V_{a(h)}$	250	250
Screen Voltage (volts)	$V_{g2(h)}$	100	100
Grid Bias (volts - ve)	$V_{g1(h)}$	-3.0	-2.5
Peak Heterodyne Voltage (volts)	$V_{(pk)het}$	9.0	9.0
Conversion Conductance (mA/volt)	gc	750	870
Anode Current (mA)	$I_{a(h)}$	3.0	3.8
Screen Current (mA)	$I_{g2(h)}$	6.05	7.5
Anode Impedance (megohms)	$r_{a(w)}$	1.6	1.2
Input Capacitance Workings (Hot) (μμF)	$C_{in(w)}$	12.5	13.0
Conversion Conductance at V_g = -43v; V_{g2} = 250v(μA/V) (approx.)		3	
Input signal handling capacity (Peak carrier volts)			• 10

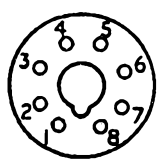
• For 5% Total Audio Harmonic Distortion at 60% Modulation.

Triode Section

Anode Voltage (volts)	80
Anode Current (mA) (average)	5

BULB Metallised

BASE International octal (I08)



Viewed from free end of pins.

CONNEXIONS

Pin 1	Metallising	M
Pin 2	Heater	h
Pin 3	Heptode Anode	ah
Pin 4	Grid 2, Grid 4	g2,g4
Pin 5	Grid 3, Triode Grid	g3,gt
Pin 6	Triode Anode	at
Pin 7	Heater	h
Pin 8	Cathode	k
Top Cap	Grid	gl

NOTE

The 6.C.31 is identical to the TH.41 with the exception of heater characteristics, basing and inter-electrode capacitance.

6.C.31

MAZDA

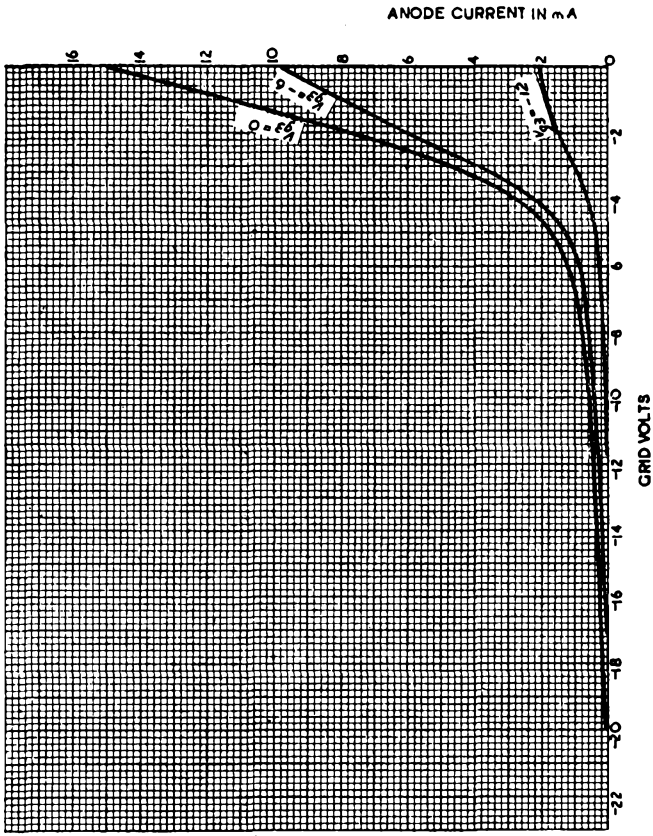
6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

Curves of heptode section taken at V_g=250, V_{g2}=100



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MAZDA

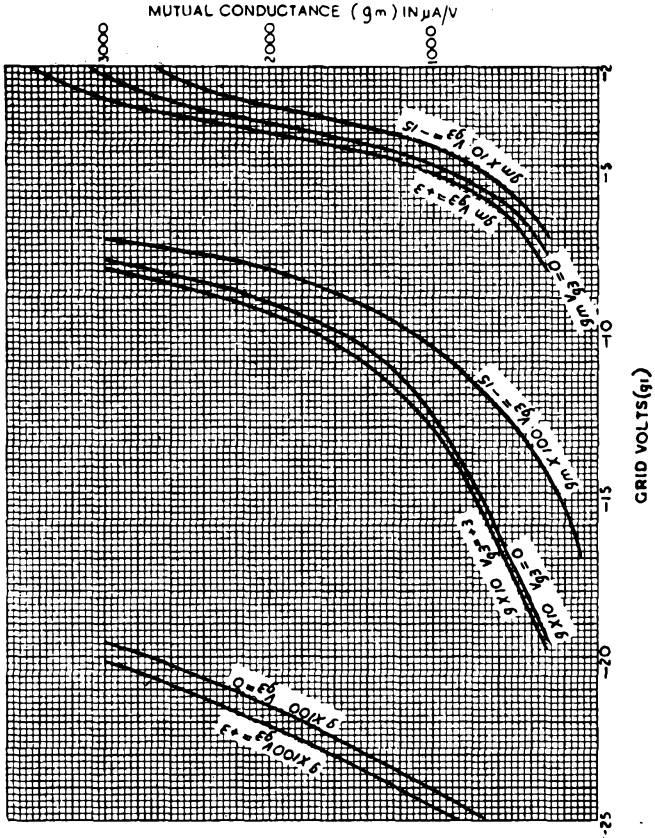
6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

Curves of heptode section taken at V_b=250, V_{g2}=100



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6.C.31

MAZDA

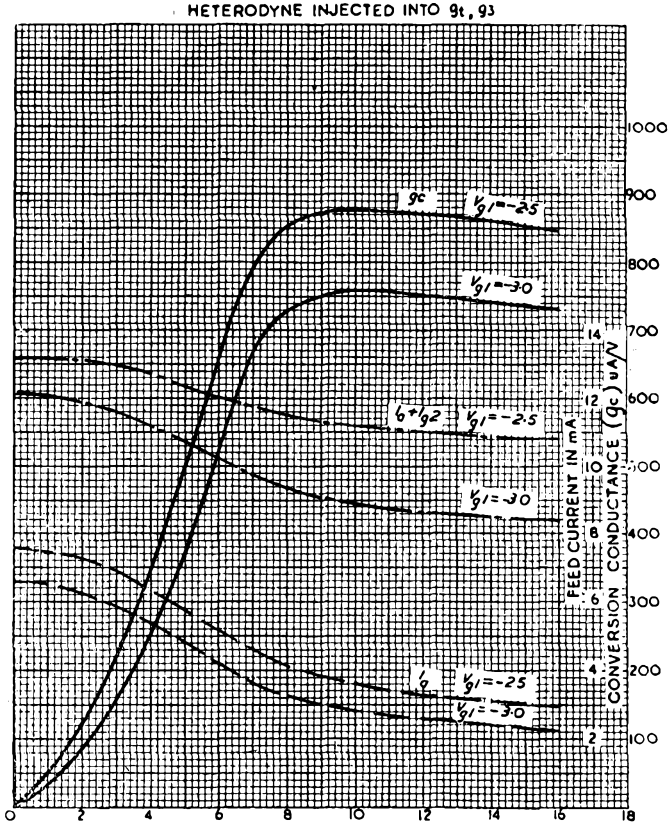
6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

V_a	V_{g2}	V_{g3}	R_{g3}	V_{g1}	V_{sig}
250	100	Grid current bias	50,000Ω	-2·5 -3·0	0·5v Peak



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6.C.31

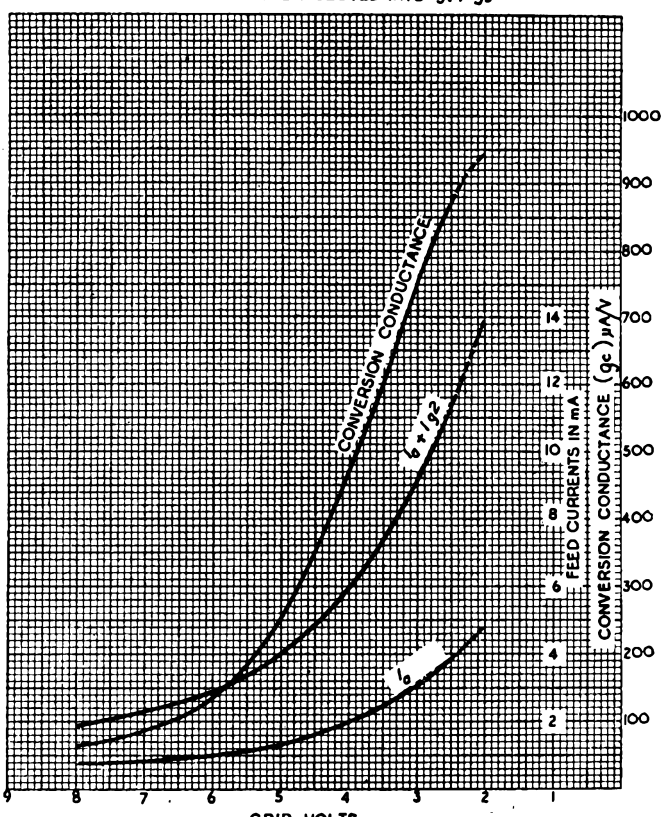
TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

V_b	V_{g2}	V_{g3}	R_{g3}	V het	V sig
250	100	self bias	50,000 Ω	9.0 Peak	0.5V Peak

HETERODYNE INJECTED INTO g_1, g_3



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6.C.31

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6.C.31

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated – for parallel operation

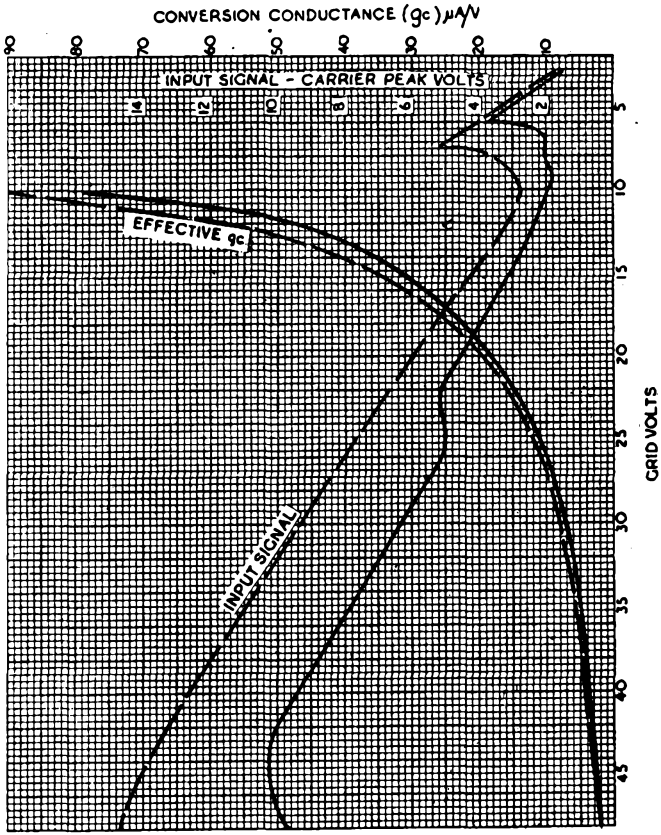
AVERAGE CHARACTERISTIC CURVES

V_b	V_{g2}	R_{g2}	V_{gt}	$R_{gt,k}$	V_{het}	Modulation
250	100 @ V_{g1} = -3 Rislon	24·8kΩ	self bias	50	9·0 Peak	60%

——— 5% Total audio harmonic distortion

— — 10% Total audio harmonic distortion

Heterodyne injected in $g_{t,g3}$



THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.D.1

TELEVISION SINGLE DIODE

Indirectly heated – for parallel operation

RATING		
Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.15
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	5
Maximum Peak Anode Current (mA)	$i_{a(pk)max}$	50
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	350
Maximum Potential Heater/ Cathode (volts DC)	$V_{h-k(max)}$	150

INTER-ELECTRODE CAPACITANCES		
Anode/Cathode (μμF)	c_{a-k}	1.6
Anode/Heater (μμF)	c_{a-h}	0.45
Cathode/Heater (μμF)	c_{k-h}	3.0

The hot Anode/Cathode capacitance increases by 0.1 μμF.

The hot Cathode/Heater capacitance increases by 0.2 μμF.

DIMENSIONS	
Maximum Overall Length (mm)	51
Maximum Diameter (mm)	11
Maximum Seated Height (mm)	44.5
Approximate Nett Weight (ozs)	¼
Approximate Packed Weight (ozs)	½

MOUNTING POSITION - Unrestricted

6.D.1

MAZDA

6.D.1

TELEVISION SINGLE DIODE

Indirectly heated – for parallel operation

TYPICAL OPERATION

Vision Signal Detector-Half Wave

Using a shunt peaking circuit with 2 Mc/s pass-band followed by Video Stage.

Total Load (R) (ohms)	4800
Compensating Inductance (L) (μH)	180
Total Capacitance across Load (C) (μμF)	20

With recommended RC = 95,000 (ohms x μμF)

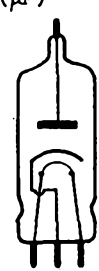
and $\frac{L}{CR^2} = 0.4 \times 10^{-6}$

D.C. Restoring in Cathode Ray Tube

Load Resistance (megohms)	0.5
Coupling Condenser (μF)	0.01

BULB Clear

BASE B.3.G.



MAZDA

6.D.2

DOUBLE DIODE (Separate Cathodes)
Indirectly heated – for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.3
Maximum Mean Anode Current per Anode (mA)	$I_{a(av)max}$	9
Maximum Peak Anode Current per Anode (mA)	$I_{a(pk)max}$	50
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	500
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	250

INTER-ELECTRODE CAPACITANCES •

		†	¶
Anode 1/All other electrodes (μμF)	$c_{a'-all}$	3.4	4.6
Anode 1/Anode 2 (μμF)	$c_{a'-a''}$	0.023	0.026
Anode 1/Cathode 1 (μμF)	$c_{a'-k'}$	1.75	1.75
Anode 2/All other electrodes (μμF)	$c_{a''-all}$	3.4	4.6
Anode 2/Cathode 2 (μμF)	$c_{a''-k''}$	1.75	1.75
Cathode 1/All other electrodes (μμF)	$c_{k'-all}$	4.1	5.3
Cathode 1/Cathode 2 (μμF)	$c_{k'-k''}$	0.009	0.011
Cathode 2/All other electrodes (μμF)	$c_{k''-all}$	4.0	5.2

• Measured with a closely fitting metal can connected to earth.

† Inter-electrode capacitance with holder capacitance balanced out.

¶ Total capacitance including a B.7.G. ceramic holder.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19
Maximum Seated Height (mm)	47.5
Approximate Nett Weight (ozs)	¼
Approximate Packed Weight (ozs)	½

MOUNTING POSITION – Unrestricted

6.D.2

MAZDA

6.D.2

DOUBLE DIODE (Separate Cathodes)
Indirectly heated – for parallel operation

BULB Clear

BASE B.7.G.

Viewed from free end of pins.

CONNEXIONS

Pin 1	Cathode 2	k"
Pin 2	Anode 1	a'
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Cathode 1	k'
Pin 6	Internal Shield	s
Pin 7	Anode 2	a"

6.F.11

MAZDA

6.F.11

SCREENED R. F. PENTODE

Indirectly heated – for parallel operation

RATING		
Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.2
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	150
Maximum Cathode Current (mA)	$I_{k(av)max}$	10
Mutual Conductance (mA/V)	g_m •	2.2
Anode Impedance (megohms)	r_a •	2.8
Inner μ	μ_{g1-g2} •	26
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

• Taken at V_a = 250v; V_{g2} = 100v; V_{g1} = 1.8v.

INTER-ELECTRODE CAPACITANCES		†	¶
Anode/Earth (μμF)	c_{out}	6.7	8.2
Anode/Grid (μμF)	c_{a-g1}	.0039	.004
Grid/Earth (μμF)	c_{in}	5.3	6.8

† Inter-electrode capacitances with holder capacitance balanced out.

¶ Including a Benjamin B.8.A. holder at a frequency of 1 Mc/s with vertical screen fitted to holder between pins 3-4 and 7-8.

"Earth" denotes the remaining earthy potential electrodes, shields and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	¾
Approximate Packed Weight (ozs)	1

MOUNTING POSITION – Unrestricted

6.F.11

MAZDA

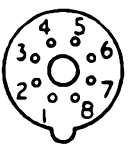
6.F.11

SCREENED R. F. PENTODE

Indirectly heated – for parallel operation

BULB Clear

BASE B.8.A.



Viewed from free end of pins

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Internal Shield	s
Pin 4	Suppressor Grid	g_3
Pin 5	Screen Grid	g_2
Pin 6	Control Grid	g_1
Pin 7	Cathode	k
Pin 8	Heater	h

NOTE: Pin 8 should preferably be connected to "earth" potential.

In use pins 3 and 4 should be joined and earthed.

MAZDA

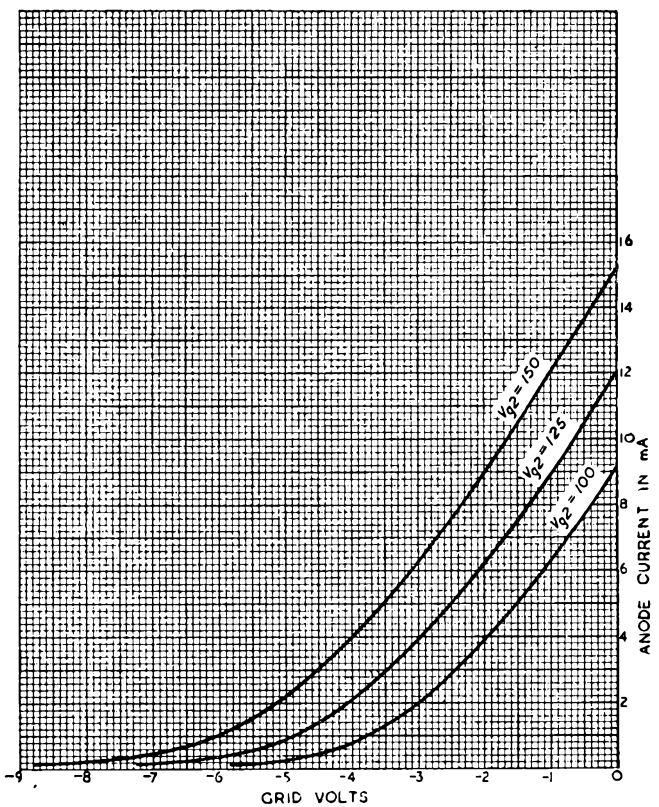
6.F.11

SCREENED R. F. PENTODE

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

Curves taken at V_b=250



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THE EDISON SWAN ELECTRIC COMPANY LTD.

6.F.11

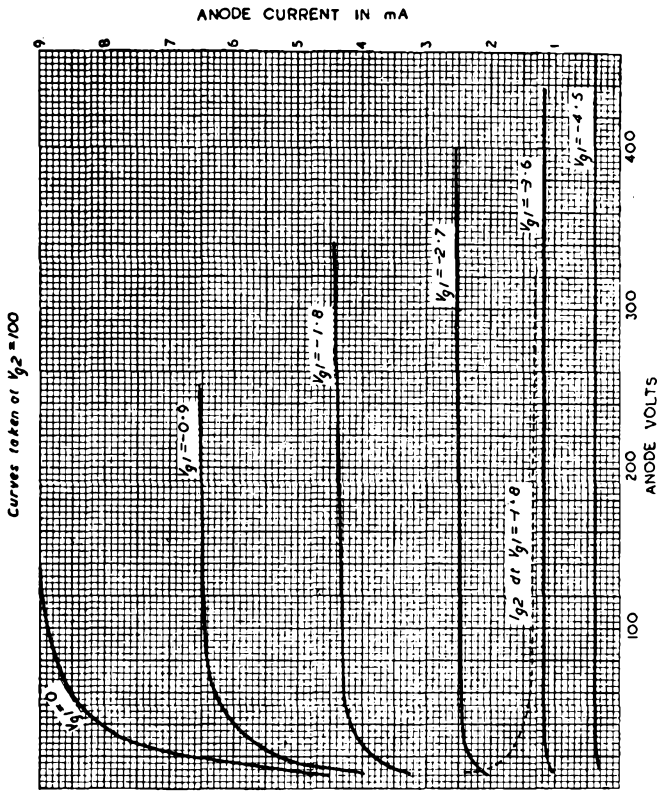
MAZDA

6.F.11

SCREENED R. F. PENTODE

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES



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MAZDA

6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated - for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.3
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	250
Mutual Conductance (mA/V)	S_m	• 7.5
Anode Impedance (megohm)	r_a	• 0.9
Inner μ q	μ_{g1g2}	• 74
Maximum Anode Dissipation (watts)	$W_{a(max)}$	† 2.5
Maximum Screen Dissipation (watts)	$W_{g2(max)}$	† 0.8
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

• Taken at $V_a = V_{g2} = 250$ v; $V_{g1} = -2$ v; $I_a = 10$ mA

q i.e. $\frac{dV_{g2}}{dV_{g1}}$ with I_a constant

† If used in a can at maximum rating the can must be matt black both internally and externally.

INTER-ELECTRODE CAPACITANCES

		§	]	‡
Anode/Earth (μμF)	C_{out}	3.2	4.4	4.6
Anode/Control Grid (μμF)	C_{a-g1}	.0045	.006	.005
Control Grid/Earth (μμF)	C_{in}	7.6	8.8	9.0

§ Measured with Benjamin B7G valveholder and cylindrical screen type 75/832, but with holder capacitance balanced out.

] Including capacitance of Benjamin B7G valveholder type 75/833 and cylindrical screen type 75/832.

‡ As] but with additional perpendicular shield fitted between pins 2-3 and 6-7.

"Earth" denotes the remaining earthy electrodes, shields and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19
Maximum Seated Height (mm)	47.5
Approximate Nett Weight (ozs)	1
Approximate Packed Weight (ozs)	2

MOUNTING POSITION - Unrestricted

6.F.12

MAZDA

6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

TYPICAL OPERATION

Anode Voltage (volts)	V_a	250	200
Screen Voltage (volts)	V_{g2}	250	200
Grid Bias Voltage (volts -ve)	V_{g1}	2.0	1.5
Anode Current (mA)	I_a	10.0	8.3
Screen Current (mA)	I_{g2}	2.5	2.1
Mutual Conductance (mA/V)	g_m	7.5	7.2
Input Working Capacity (μμF)	$c_{in(w)}$	9.9	10.1
Change in Input Capacity (μμF) produced by biassing valve to 1 μA/V	$\Delta c_{in(w)}$	2.2	2.3
Self Bias Resistance (ohms)	R_k	160	145
Input Loss Resistance at 45 Mc/s (ohms)		8,900	8,200
Equivalent noise resistance required (ohms)	R_{eq}	1,100	1,000

Bulb Clear

BASE B.7.G.

Viewed from free ends of pins

CONNEXIONS

Pin 1	Control Grid	g1
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode	a
Pin 6	Suppressor Grid	g3
Pin 7	Screen Grid	g2

MAZDA

6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

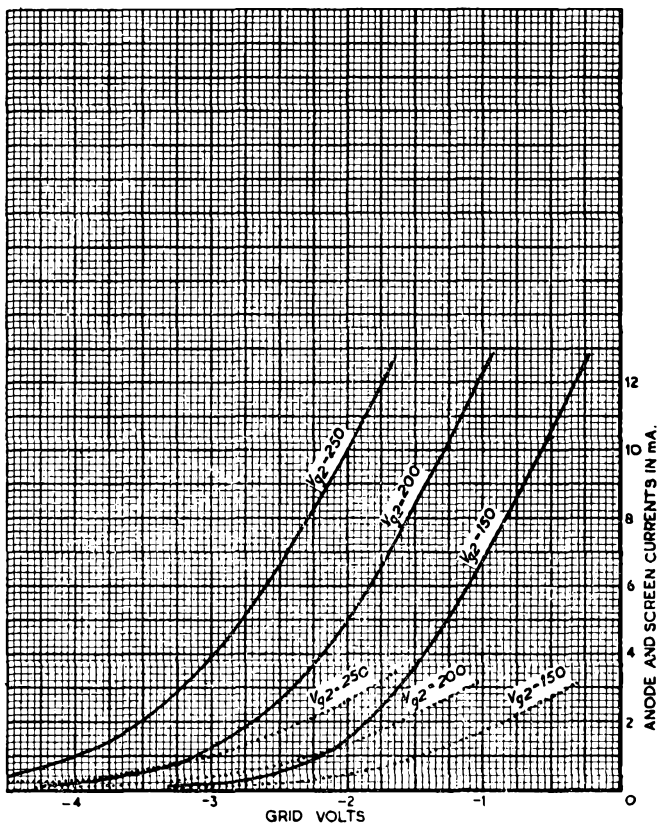
Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F12

Curves taken at V_a=250V.

Key { —— Anode Current ····· Screen Current



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6.F.12

MAZDA

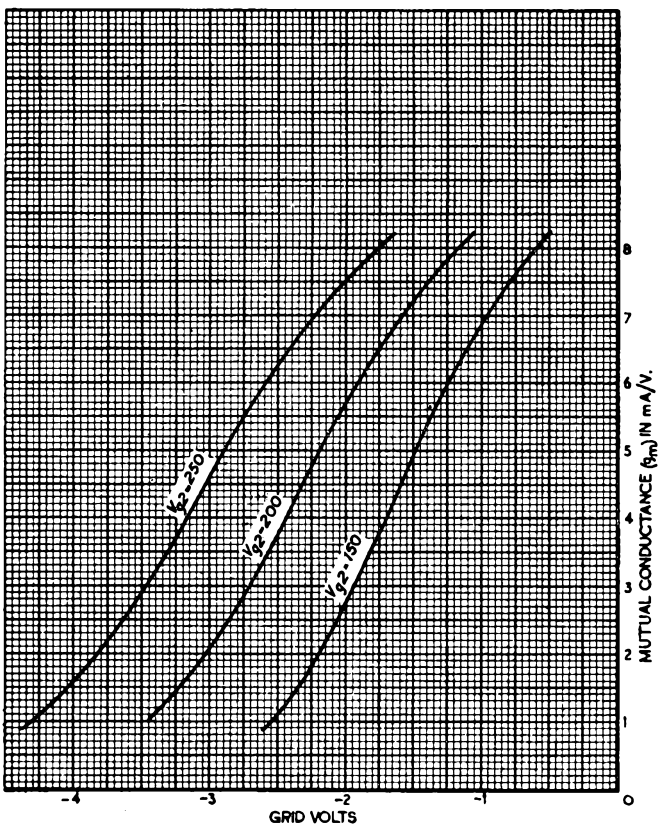
6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F12



May 1948 RADIO DIVISION Issue 1/2

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MAZDA

6.F.12

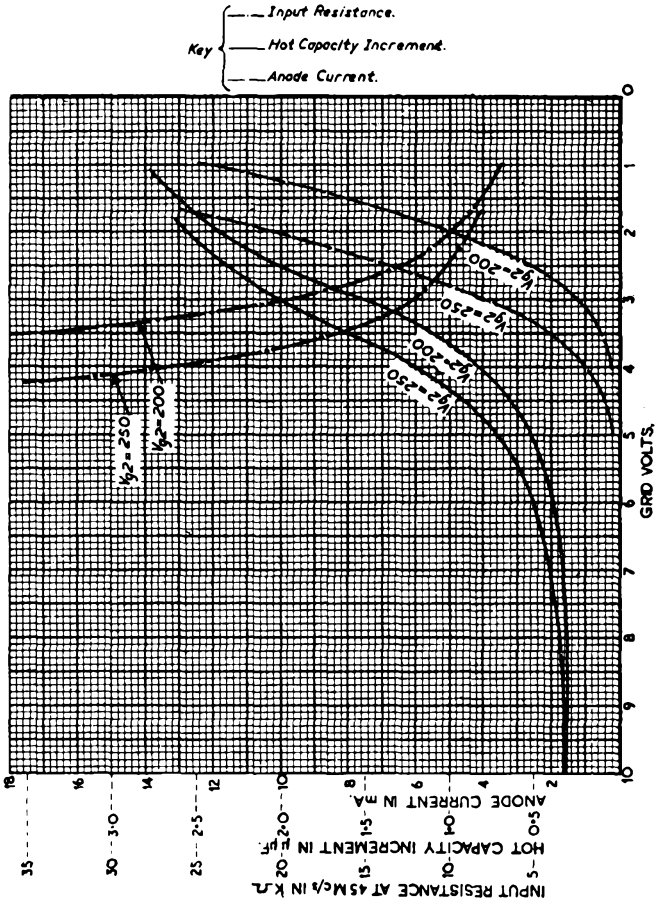
HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F12

Curves taken at V_b=250V, V_{g3}=0V, f=45 Mc/s.



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6.F.12

MAZDA

6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

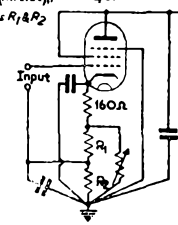
CHARACTERISTIC CURVES OF AVERAGE

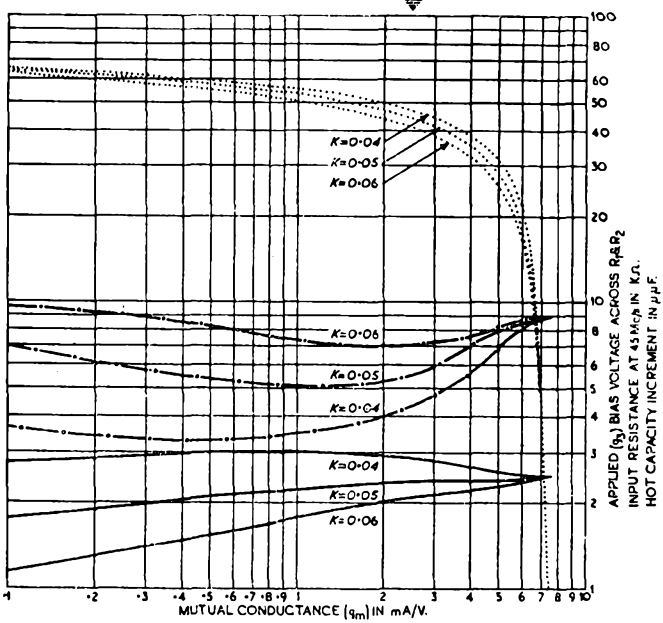
MAZDA VALVE 6F12

Curves taken at I_a=10mA (initial), f=45Mc/s.

Key
- ..... Applied (g_3) Bias Voltage across R_1&R_2
- —.— Input Resistance.
- ——— Hot Capacity Increment.

Note:- $K=\frac{R_1}{R_1+R_2}$





May 1948 RADIO DIVISION Issue 1/2

THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.F.12

HIGH SLOPE SCREENED R.F. PENTODE

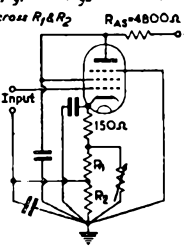
Indirectly heated – for parallel operation

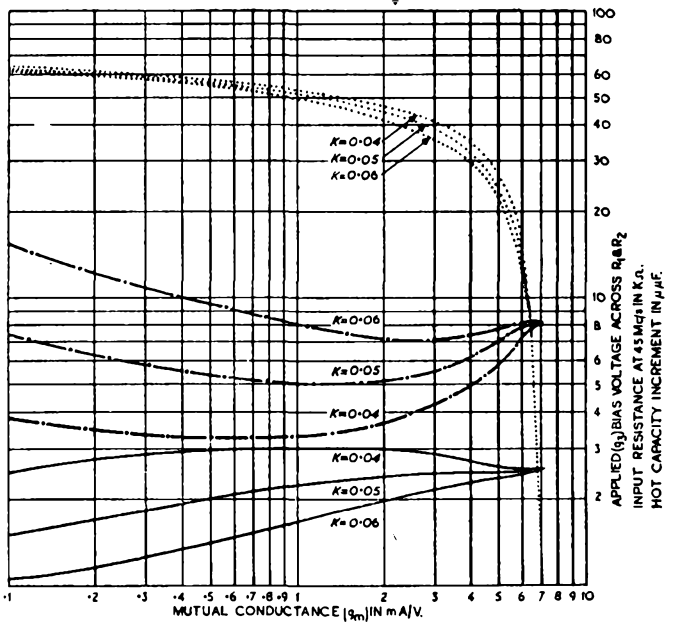
CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE 6F12

Curves taken at $V_a = V_{g2} = 200V$ (initial), $V_{g1} = 1.5V$, V_{g3} at Earth, $f = 4.5 Mc/s$.

Key
- ..... Applied (g_3) Bias Voltage across R_1 & R_2
- ——— Input Resistance.
- — — Hot Capacity Increment.

Note:- $K = \frac{R_1}{R_1 + R_2}$





6.F.13

MAZDA

6.F.13

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.35
Maximum Anode Voltage (volts)	V_a	250
Maximum Screen Voltage (volts)	V_{g2}	250
Mutual Conductance (mA/V)	g_m	$ 9.0
Maximum Anode Dissipation (watts)	p_a	† 3.5
Maximum Screen Dissipation (watts)	p_{g2}	† 1.0
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

$ Taken at $V_a = V_{g2} = 200v$; $V_{g1} = -1.8v$.

† With grid cathode resistance not exceeding 10,000 ohms.

INTER-ELECTRODE CAPACITANCES

		¶	+	[
Anode/Earth (μμF)	C_{out}	4.4	5.9	-
Anode/Control Grid (μμF)	$C_{a,g}$	-	.007	.006
Control Grid/Earth (μμF)	C_{in}	9.5	11.0	-

¶ Inter-Electrode capacitances with holder capacitance balanced out.

\+ Total capacitances including Benjamin B8A moulded holder measured at 1 Mc/s.

[Total capacitances including Benjamin B8A moulded holder measured at 1 Mc/s but with extra perpendicular shield.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius over Location Key (mm)	12.25

MOUNTING POSITION - Unrestricted.

MAZDA

6.F.13

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

TYPICAL OPERATION

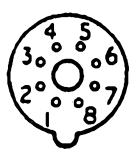
Anode Voltage (volts)	V_a	-	200	190	208
Screen Voltage (volts)	V_{g2}	220 ‡	200	190	208
Grid Bias Voltage (volts -ve)	V_{g1}	1.45	1.8	1.55	1.9
Anode Current (mA)	I_a	17.0 ‡	10.0	10.3	10.15
Screen Current (mA)	I_{g2}	4.5 ‡	2.60	2.7	2.65
Mutual Conductance (mA/V)	g_m		9.0	9.25	8.95
Input Capacity Working (μμF)	• $c_{in(w)}$		12.6	12.75	12.6
Change in input capacity produced by biassing valve to 1μA/V (μμF)	△ $c_{in(w)}$	-	2.75	2.9	2.7
Self Bias Resistance (ohms)	$R_{k,E}$	68	-	120	150
Input Loss at 45 Mc/s (ohms)	$r_{g1,k(w)}$	-	4800	4500	4900
Equivalent grid noise resistance (ohms)	r_{eq}		780	750	790

‡ Maximum permissable rating D.C. connected as Video Output Valve.

• Inter-Electrode capacitance with holder capacitance balanced out.

BULB Clear

BASE B8A



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Internal Screen	s
Pin 4	Suppressor Grid	g3
Pin 5	Screen Grid	g2
Pin 6	Control Grid	g1
Pin 7	Cathode	K
Pin 8	Heater	h

6.F.13

MAZDA

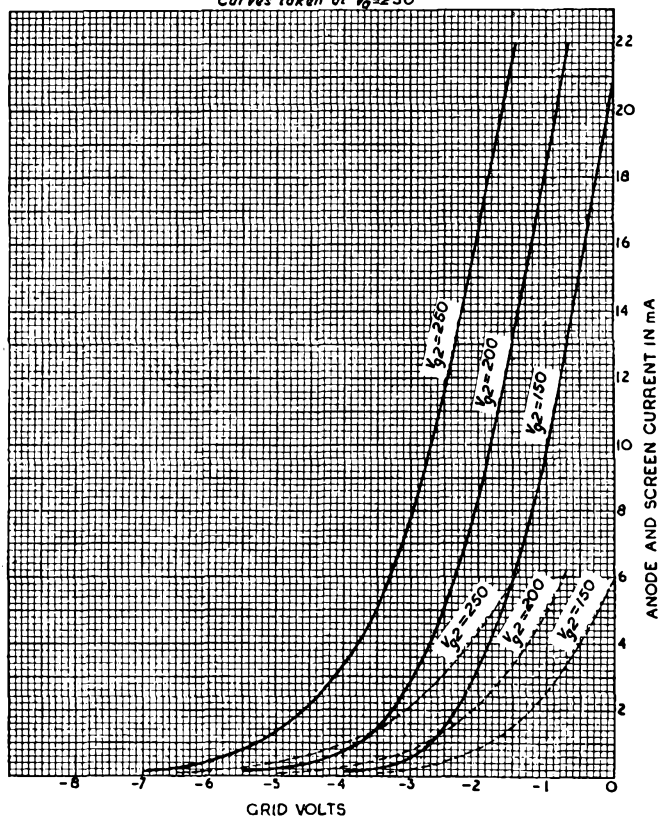
6.F.13

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES

Curves taken at V_{g2}=250



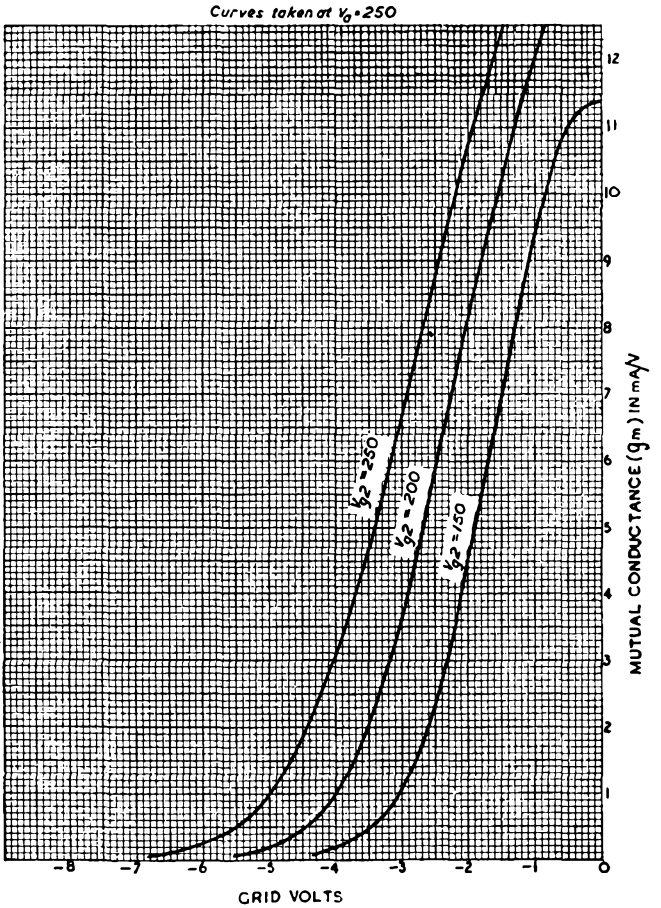
MAZDA

6.F.13

HIGH SLOPE SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES



6.F.14

MAZDA

6.F.14

TELEVISION SCREENED PENTODE

TENTATIVE

RATING

Heater Voltage (volts)	V_h		6.3
Heater Current (amps)	I_h		0.35
Maximum Anode Voltage (volts)	$V_{a(max)}$		250
Maximum Screen Voltage (volts)	$V_{g2(max)}$		250
Mutual Conductance (mA/V)	g_m	*	10.6
Anode Impedance (megohms)	r_a	*	0.125
Inner μ_1	$\mu_{g1,g2}$	*	33
Maximum Anode Dissipation (watts)	$w_{a(max)}$		4.0
Maximum Screen Dissipation (watts)	$w_{g2(max)}$		1.0
Maximum Potential Heater/Cathode (volts D.C.)	$V_{h-k(max)}$		150

* Taken at $V_a = V_{g2} = 140v$; $V_{g1} = -1.25v$.

INTER-ELECTRODE CAPACITANCES

		§	[
Anode/Earth ($\mu\mu F$)	C_{out}	3.8	5.3
Anode/Control Grid ($\mu\mu F$)	C_{a-g1}	.02	.021
Control Grid/Earth ($\mu\mu F$)	C_{in}	9.3	10.8

§ Inter-electrode Capacitances with holder capicitance balanced out.

[Total capacitance including a Benjamin B8A moulded holder at a frequency of 1 Mc/s.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	¾
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted.

6.F.14

MAZDA

6.F.14

TELEVISION SCREENED PENTODE

TENTATIVE

BULB Clear

BASE B8A

Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Internal Shield •	s
Pin 4	Suppressor Grid	g_3
Pin 5	Screen Grid	g_2
Pin 6	Control Grid	g_1
Pin 7	Cathode	k
Pin 8	Heater	h

This valve is not fitted with an internal cylindrical shield around the electrode structure.

6.F.15

MAZDA

6.F.15

VARIABLE MU R. F. PENTODE

Indirectly heated – for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.2
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	250
Maximum Cathode Current (mA)	$I_{k(av)max}$	10
Mutual Conductance (mA/V)	g_m	[2.3
Anode Impedance (megohm)	r_a	[1.7
Inner μ	$\mu_{g1,g2}$	16.5
Maximum Potential Heater/Cathode (volts D.C.)	$V_{h,k(max)}$	150

[Taken at V_a = 250v; V_{g2} = 100v; V_{g1} = -2.5v.

INTER-ELECTRODE CAPACITANCES

		¶	‖
Anode/Earth (μμF)	C_{out}	6.8	8.3
Anode/Grid (μμF)	$C_{a,g1}$	.0034	.0035
Grid/Earth (μμF)	C_{in}	5.1	6.6

¶ Inter-electrode capacitances with holder capacitance balanced out.

‖ Including a Benjamin B8A holder at a frequency of 1 Mc/s with vertical screen fitted to holder between pins 3-4 and 7-8.

"Earth" denotes the remaining earthy potential electrodes, shields and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	¾
Approximate Packed Weight (ozs)	1

MOUNTING POSITION Unrestricted.

MAZDA

6.F.15

VARIABLE MU R. F. PENTODE

Indirectly heated – for parallel operation

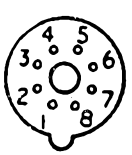
TYPICAL OPERATION

Anode Voltage (volts)	V_a	250	250
Screen Voltage (volts)	V_{g2}	100	250
Grid Bias Voltage (volts-ve)	V_{g1}	2.5	
Anode Current (mA)	I_a	7.0	
Screen Current (mA)	I_{g2}	2.0	
Mutual Conductance (mA/V)	g_m	2.3	
Anode Impedance (megohms)	r_a	1.7	
Input Loss at 45 Mc/s (ohms)	$r_{g1,k(w)}$	24,000	
Input Capacitance Working (Hot) (μμF)	$C_{in(w)}$	• 6.1	
Change in input capacitance produced by biassing valve to cut-off (μμF) △	$C_{in(w)}$	0.9	
Bias to give mutual conductance of 100 μA/V.	V_{g1}		27
Bias to give mutual conductance of 23 μA/V.	V_{g1}	13.3	34
Equivalent grid noise resistance (ohms)	r_{eq}	6,000	

• Inter-electrode capacitance with holder capacitance balanced out.

BULB Clear

BASE B8A



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Internal Shield	s
Pin 4	Suppressor Grid	g3
Pin 5	Screen Grid	g2
Pin 6	Control Grid	g1
Pin 7	Cathode	k
Pin 8	Heater	h

NOTE

In use pins 3 and 4 should be joined and earthed.

6.F.15

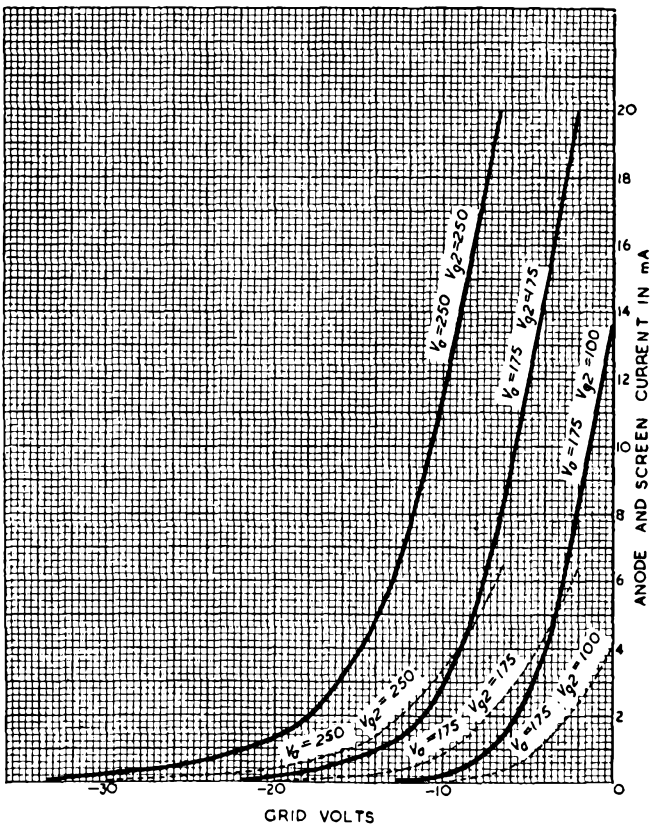
MAZDA

6.F.15

VARIABLE MU R. F. PENTODE

Indirectly heated – for parallel operation

TENTATIVE CHARACTERISTIC CURVES



October 1948 *RADIO DIVISION* Issue 1/2

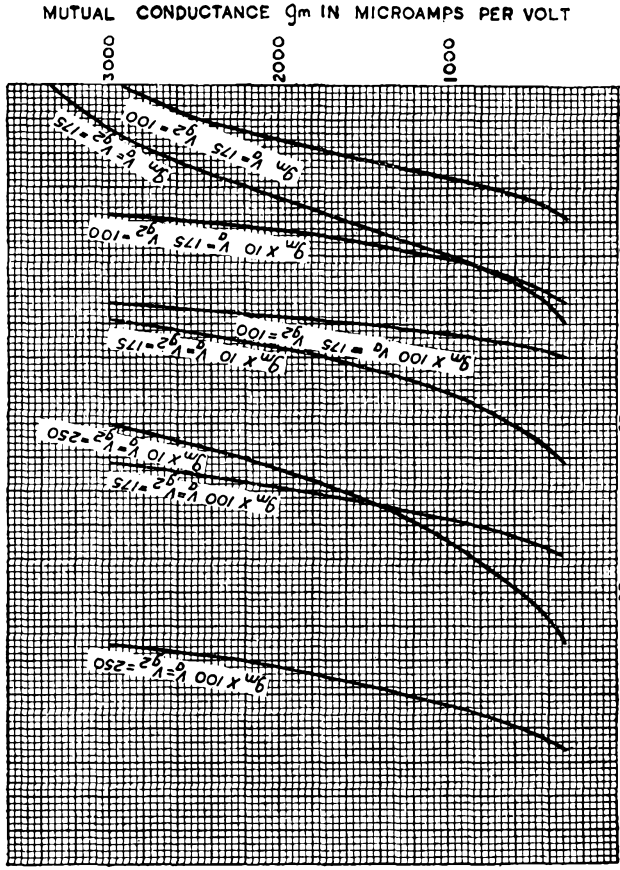
THE EDISON SWAN ELECTRIC COMPANY LTD

MAZDA

6.F.15

VARIABLE MU R. F. PENTODE

Indirectly heated – for parallel operation



THE EDISON SWAN ELECTRIC COMPANY LTD

6.L.18

MAZDA

6.L.18

TRIODE OSCILLATOR

Indirectly heated – for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.3
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Mutual Conductance (mA/V)	g_m	• 7.6
Anode Impedance (ohms)	r_a	• 2250
Amplification Factor	μ	• 17
Maximum Anode Dissipation (watts)	$W_{a(max)}$	5.0
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

• Taken at V_a = 150 v; I_a = 25 mA.

INTER-ELECTRODE CAPACITANCES

		♭	†
Anode/Earth (μμF)	C_{out}	6.0	9.1
Anode/Grid (μμF)	C_{a-g1}	2.6	2.8
Grid/Earth (μμF)	C_{in}	4.6	5.9

♭ Inter-electrode capacitances with holder capacitance balanced out.

† Total capacitances including Benjamin B.6.A. moulded holder measured at 1 Mc/s.

"Earth" denotes the remaining earthy potential electrodes, shields and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	⅛
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted.

MAZDA

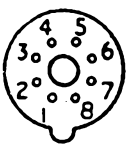
6.L.18

TRIODE OSCILLATOR

Indirectly heated – for parallel operation

BULB Clear

BASE B.8.A.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Internal Connexion §	
Pin 4	Internal Shield	s
Pin 5	Internal Connexion §	
Pin 6	Grid	gl
Pin 7	Cathode	k
Pin 8	Heater	h

§ "Internal Connexion" indicates that the pin is connected to an electrode for the purpose of improving mechanical rigidity. The connexion 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.

6.L.18

MAZDA

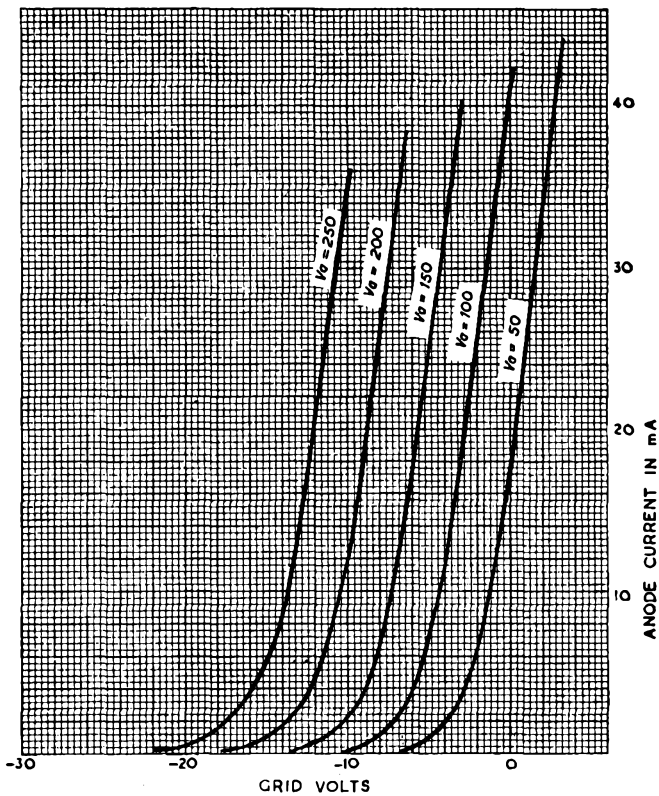
6.L.18

TRIODE OSCILLATOR

Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6L18



June 1948 *RADIO DIVISION* Issue 1/2

THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA
6.LD.20

DOUBLE DIODE TRIODE
Indirectly heated – for parallel operation

TENTATIVE

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.25
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Cathode Current (mA)	$I_{k(av)max}$	5
Mutual Conductance (mA/V)	g_m	¶ 3.4
Anode Impedance (ohms)	r_a	¶ 9,300
Amplification Factor	μ	¶ 31.5
Maximum Mean Diode Current per diode (mA)	$I_{a(d)av(max)}$	0.1
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

¶ Taken at V_a = 100v; V_g = 0v.

INTER-ELECTRODE CAPACITANCES

		†	§
Anode/Earth (μμF)	$C_{out(t)}$	3.7	5.0
Anode/Grid (μμF)	C_{ag}	1.5	1.7
Grid/Earth (μμF)	$C_{in(t)}$	3.6	4.9
Grid/Diode 1 (μμF)	$C_{g,a'(d)}$	.0017	.003
Grid/Diode 2 (μμF)	$C_{g,a''(d)}$	.005	.015
Diode 1/Earth (μμF)	$C_{in(a'd)}$	2.1	3.4
Diode 1/Diode 2 (μμF)	$C_{a'(d)a''(d)}$	0.45	0.65
Diode 2/Earth (μμF)	$C_{in(a''d)}$	2.0	3.3
Anode/Diode 1 (μμF)	$C_{a,a'(d)}$	.0017	.0027
Anode/Diode 2 (μμF)	$C_{a,a''(d)}$	.0019	.0031

† Inter-electrode capacitances with holder capacitance balanced out.

§ These capacitances include a Benjamin B8A holder measured at a frequency of 1 Mc/s.

"Earth" denotes electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	¾
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted.

6.LD.20

MAZDA

6.LD.20

DOUBLE DIODE TRIODE

Indirectly heated – for parallel operation

TENTATIVE

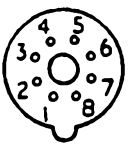
TYPICAL OPERATION

H.T. Applied Voltage (volts)	V_b	260	260
Decoupling Resistance (ohms)	Ω	22,000	22,000
Anode Load (ohms)	Z_a	47,000	100,000
Cathode Self-Bias Resistance (ohms)	R_k	1,500	2,200
Anode Current (mA)	I_a	2.0	1.3
Voltage Amplification :		19.5	21.5
Output Voltage (R.M.S.) for 2% Second Harmonic :		16.5	20.0

: When feeding an output valve having a 470,000 ohm grid resistor.

BULB Clear

BASE B.8.A.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater]	h
Pin 2	Anode	a
Pin 3	Control Grid	g_1
Pin 4	Internal Shield	s
Pin 5	Diode 2 ¶	a"d
Pin 6	Diode 1	a'd
Pin 7	Cathode	k
Pin 8	Heater	h

] Pin 1 should preferably be connected to "earth" potential.

¶ It is recommended that Diode 2 should be used for detection.

MAZDA

6.P.25

BEAM POWER AMPLIFIER

Indirectly heated – for parallel operation

RATING

Maximum Heater Voltage (volts)	V_f	6.3
Maximum Heater Current (amps)	I_f	1.1
Maximum Anode Voltage (volts)	V_a	250
Maximum Anode Dissipation (watts)	W_a(max)	10
Maximum Screen Voltage (volts)	V_{g2}	250
Maximum Screen Dissipation (watts)	W_{g2}(max)	2.5
Mutual Conductance (mA/V)	g_m	• 9.0
Inner Mu	μ_{g1-g2}	•17.6
Maximum Potential Heater/Cathode (volts DC)	V_{h-k}(max)	150

•Taken at $V_a = V_{g2} = 100v$; $V_{g1} = 0v$.

INTER-ELECTRODE CAPACITANCES

Anode/Earth (μμF)	C_{out}	12
Anode/Grid (μμF)	C_{a-g1}	0.85
Grid/Earth (μμF)	C_{in}	23

"Earth" denotes the remaining earthy potential electrodes, heater and metallizing joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	123
Maximum Diameter (mm)	45
Maximum Seated Height (mm)	109
Approximate Nett Weight (ozs)	2
Approximate Packed Weight (ozs)	3

Apart from the heater characteristics and basing, the characteristics of the 6.P.25 are identical with the Pen.45.

MOUNTING POSITION - Unrestricted.

6.P.25

MAZDA

6.P.25

BEAM POWER AMPLIFIER

Indirectly heated – for parallel operation

TYPICAL OPERATION

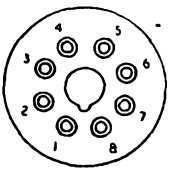
Anode Voltage (volts)	V_a		250	
Screen Voltage (volts)	V_{g2}		250	
Grid Bias Voltage (volts -ve)	V_{g1}		8.5	
Quiescent Anode Current (mA)	$I_{a(o)}$		40	
Quiescent Screen Current (mA)	$I_{g2(o)}$		8.0	
Power Output (watts)	W_{out}	¶ 4.5		† 5.4
Anode Load (ohms)	Z_a	¶ 5000		† 4700
Input Swing R.M.S.	$V_{g1(rms)}$	¶ 4.3		† 5.1
Anode Current (mA) (with Input Swing)	$I_{a(av)}$	¶ 42		† 43
Input Swing (volts RMS) for 50 mW	$V_{g1(rms)}$	0.41		0.42
Input Swing (volts RMS) for 250 mW	$V_{g1(rms)}$	0.93		0.94
Self Bias Resistance (ohms)	R_k		180	

¶ For 5% Third Harmonic and Second Harmonic not exceeding 5%.

† For 7% Third Harmonic and Second Harmonic not exceeding 7%.

BULB Partly metallized

BASE A.0.7



Viewed from free end of pins.

CONNEXIONS

Pin 1	Metallizing	M
Pin 2	Heater	h
Pin 3	Anode	a
Pin 4	Grid 2	g_2
Pin 5	Grid 1	g_1
Pin 6	Omitted.	
Pin 7	Heater	h
Pin 8	Cathode	k

THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA
U.22
HIGH VOLTAGE H.W. RECTIFIER
Indirectly Heated

RATING

Heater Voltage (volts)	V_h	2.0	2.0
Heater Current (amps)	I_h	2.0	2.0
Maximum Anode Voltage (volts RMS)	$V_{a(rms)max}$	5,200	-
Maximum Peak Inverse Anode Voltage (volts) (Working)	P.I.V.(max)	14,500	10,000
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	1.0	5.0
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	20	55.0
Minimum Limiting Resistance (ohms) •		50,000	30,000

• This resistance may be obtained in the distributed resistance of the transformer winding.

INTER-ELECTRODE CAPACITANCE

Anode/Heater+Cathode (μμF)	C_{a-all}	2.2

DIMENSIONS

Maximum Overall Length (mm)	96
Maximum Diameter (Base) (mm)	29.5
Maximum Seated Height (mm)	83
Approximate Nett Weight (ozs)	1
Approximate Packed Weight (ozs)	1½

MOUNTING POSITION - Unrestricted.

U.22

MAZDA

U.22

HIGH VOLTAGE H.W. RECTIFIER

Indirectly Heated

TYPICAL OPERATION

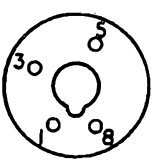
A.C. Input Volts (RMS)	3,700	4,000	4,500	4,800	5,150
Reservoir Condenser (μF)	0.1	0.1	0.1	0.1	0.1
D.C. Load Current (mA)	0.25	0.25	0.25	0.25	0.25
D.C. volts Output (kV)	5.0	5.45	6.1	6.5	7.0
Ripple Volts (RMS) at 50 cps (approx.)	14	14	14	14	14

NOTE . Heating time delay approximately 15% of final output voltage at 35 secs.

BULB Clear

CAP Standard BVA

BASE British Octal (B04)



Viewed from underside of Base.

CONNEXIONS

Pin 1	Heater, Cathode & Shield	h, k and s
Pin 2	Omitted	-
Pin 3	-	-
Pin 4	Omitted	-
Pin 5	-	-
Pin 6	Omitted	-
Pin 7	Omitted	-
Pin 8	Heater	h
Top Cap	Anode	a

NOTE This sheet supersedes leaflet U22/Sheet 12/6.

THE EDISON SWAN ELECTRIC COMPANY LTD.

U.24

MAZDA

U.24

HIGH VOLTAGE HALF WAVE RECTIFIER

Indirectly heated – for R.F. E.H.T. Supply

TENTATIVE

RATING		
Filament Voltage (volts)	V_f	2.0
Filament Current (amps)	I_f	0.15
Maximum Peak Inverse Voltage (No Load) (kV)	P.I.V.(max)	22.0
Maximum Peak Inverse Voltage (On Load) (kV)	P.I.V.(max)	20.0
Maximum Anode Voltage (RMS) (kV)	V_a	7.8
Maximum Mean Anode Current with Oscillator Operation (mA)	I_a	0.5
Maximum Mean Anode Current with Pulse operation (mA)	I_a	0.1
Maximum Peak Anode Current (mA)	$I_{a(pk)}$	15.0

INTER-ELECTRODE CAPACITANCES		
Anode/Heater & Shield (μμF)	$C_{a,h\ \&\ s}$	1.3

DIMENSIONS	
Maximum Overall Length (mm)	110
Maximum Bulb Diameter (mm)	28.5
Maximum Base Diameter (mm)	31.5
Maximum Seated Height (mm)	97
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	1⅝

MOUNTING POSITION - Unrestricted.

U.24

MAZDA

U.24

HIGH VOLTAGE HALF WAVE RECTIFIER

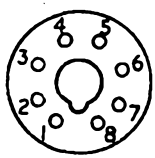
Indirectly heated – for R.F. E.H.T. Supply

TENTATIVE

BULB Clear

TOP CAP American Miniature

BASE International Octal (I08)



Viewed from free end of pins.

CONNEXIONS

Pin 1	-	-
Pin 2	Heater	h
Pin 3	-	-
Pin 4	-	-
Pin 5	-	-
Pin 6	-	-
Pin 7	Heater and Cathode	h & k
Pin 8	Shield	s
Top Cap	Anode	a

NOTE

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.

U.201

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

RATING		
Heater Current (amps)	I_h	0.2
Heater Voltage (volts)	V_h	20.0
Maximum Anode Voltage (volts RMS)	$V_{a(rms)max}$	250
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	750
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	90
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	700
Maximum Peak Potential Heater/Cathode with heater negative (volts)	$V_{h-k(max)}$	550

DIMENSIONS	
Maximum Overall Length (mm)	98
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	82
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	1¾

MOUNTING POSITION - Unrestricted

U.201

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

TYPICAL OPERATION

D.C. Load Current (mA)	70	70	70	90	90	90
A.C. Input Volts (RMS)	230	230	110	230	230	110
D.C. Rectified Output	•248	‡235	[117	•235	‡220	[111
Reservoir Condenser (μF)	16	16	32	16	16	32
D.C. Voltage drop across rectifier (volts)	8	8	8	9.5	9.5	9.5

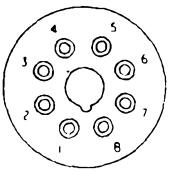
• Voltage Output with 50 ohms limiting resistance in series with rectifier.

‡ Voltage Output with 100 ohms limiting resistance in series with rectifier.

[Voltage Output with zero limiting resistance in series with rectifier.

BULB Clear

BASE A.0.6



Viewed from free end of pins.

CONNEXIONS

Pin 1	Blank	
Pin 2	Heater	h
Pin 3	Blank	
Pin 4	Omitted	
Pin 5	Anode	a
Pin 6	Omitted	
Pin 7	Heater	h
Pin 8	Cathode	k

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

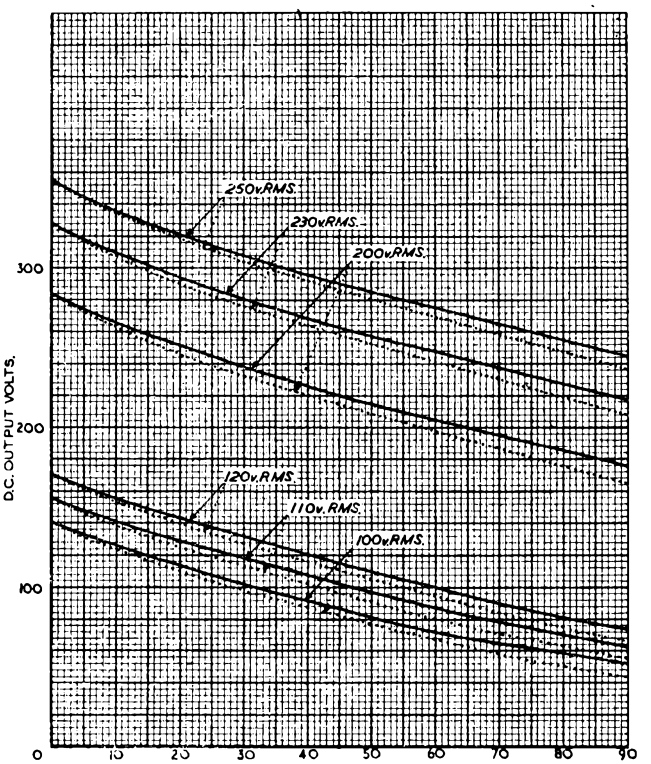
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U201

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 8μF Reservoir Condenser.

Key { —— *no Limiting Resistance in Anode Circuit.*
..... *50Ω Limiting Resistance in Anode Circuit.*



THE EDISON SWAN ELECTRIC COMPANY LTD.

U.201

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

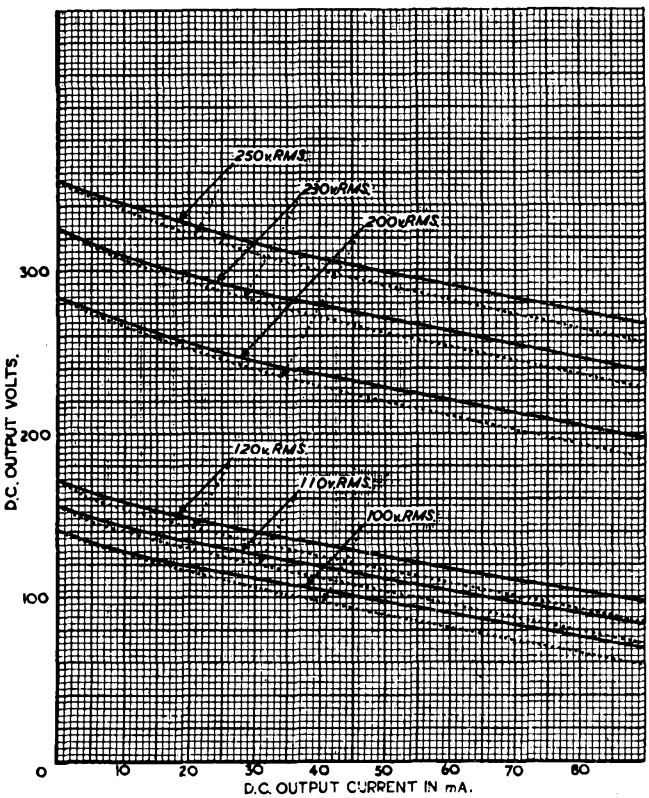
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U201

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 12μF Reservoir Condenser.

Key { —— *no Limiting Resistance in Anode Circuit.*
..... *50Ω Limiting Resistance in Anode Circuit.*



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

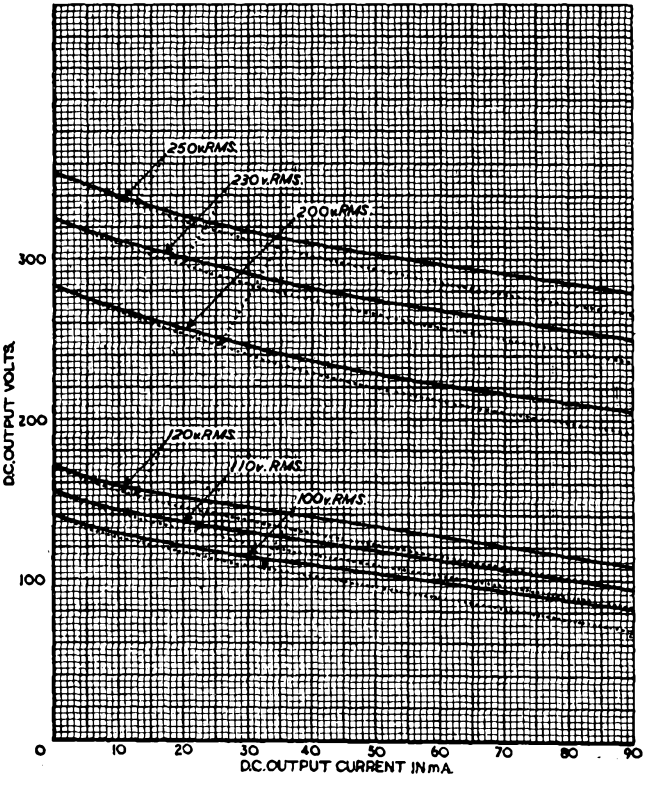
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U201

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 16 μF Reservoir Condenser.

Key { —— no Limiting Resistance in Anode Circuit.
..... 50 Ω Limiting Resistance in Anode Circuit.



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THE EDISON SWAN ELECTRIC COMPANY LTD.

U.201

MAZDA

U.201

HALF WAVE RECTIFIER

Indirectly heated – for series operation

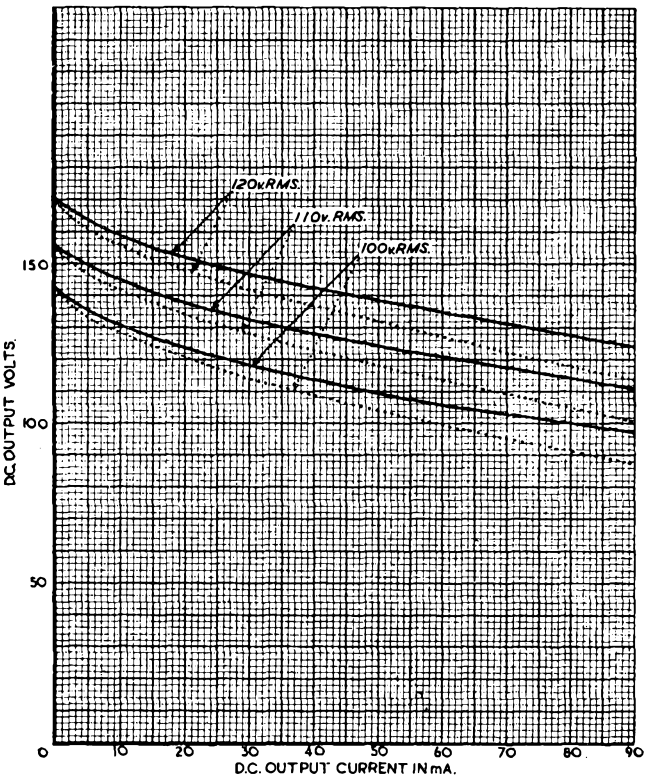
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U20J

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 32μF Reservoir Condenser.

Key { —— *no Limiting Resistance in Anode Circuit.*
{ ····· *22Ω Limiting Resistance in Anode Circuit*



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

RATING

Heater Current (amps)	I_h	0.1
Heater Voltage (volts)	V_h	40.0
Maximum Anode Voltage (volts RMS)	$V_{a(rms)max}$	250
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	750
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	90
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	700
Maximum Peak Potential Heater/Cathode with Heater negative (volts)	$V_{h-k(max)}$	550

DIMENSIONS

Maximum Overall Length (mm)	76
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	63
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	⅞
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted.

U.404

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

TYPICAL OPERATION

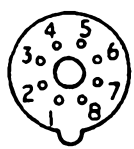
D.C. Load Current (mA)		70		90	
D.C. Rectified Output with 230 volts R.M.S. input	• 248	† 235	• 235	16	† 220
Reservoir Condenser (µF)		16			
D.C. Voltage drop across rectifier (volts)		8.0		9.5	

• Voltage output with 50 ohms limiting resistance in series with rectifier.

† Voltage output with 100 ohms limiting resistance in series with rectifier.

BULB Clear

BASE B.8.A.



Viewed from free end of pins

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Blank	
Pin 4	Internal Connexion b	
Pin 5	Internal Connexion b	
Pin 6	Internal Connexion b	
Pin 7	Cathode	k
Pin 8	Heater	h

b "Internal Connexion" indicates that the pin is connected to an electrode for the purpose of improving mechanical rigidity. The connexion 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.

THE EDISON SWAN ELECTRIC COMPANY LTD.

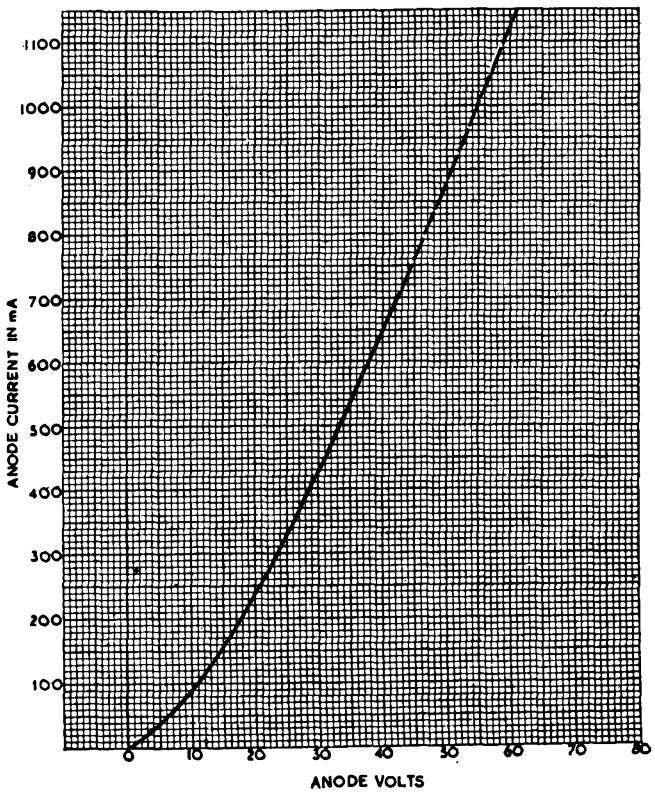
MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

AVERAGE CHARACTERISTIC CURVE



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THE EDISON SWAN ELECTRIC COMPANY LTD.

U.404

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

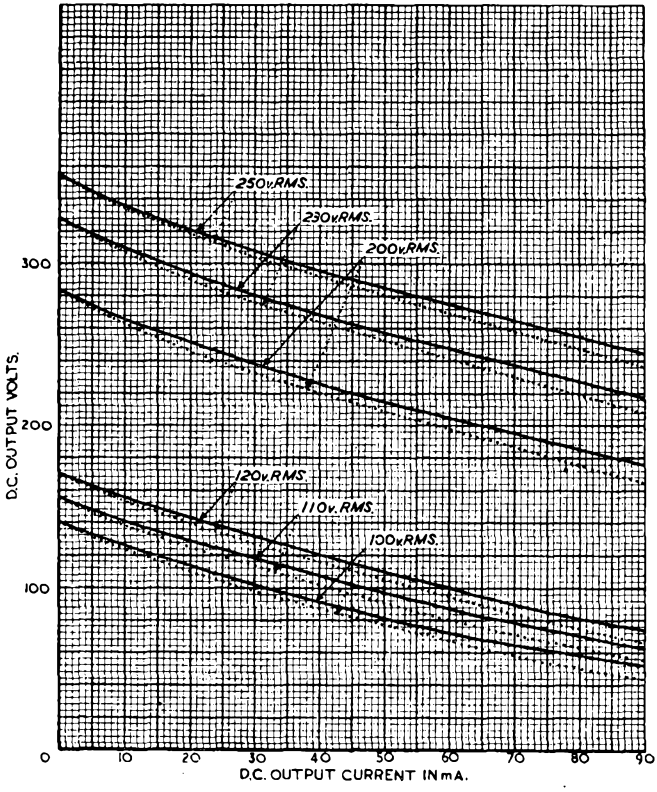
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U404

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 8μF Reservoir Condenser.

Key { —— *no Limiting Resistance in Anode Circuit.*
..... *50Ω Limiting Resistance in Anode Circuit.*



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated — for series operation

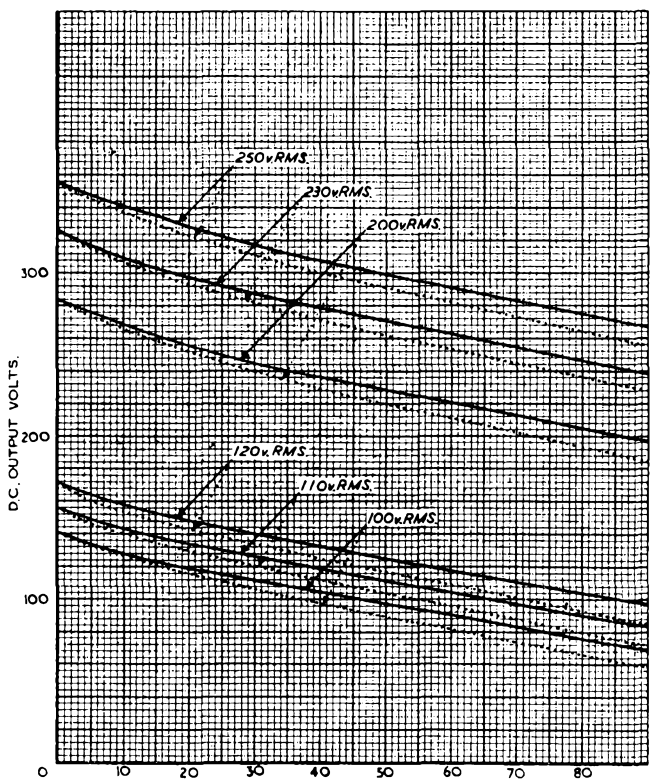
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U404

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 12μF Reservoir Condenser.

Key { —— *no Limiting Resistance in Anode Circuit.*
Key { ····· *50Ω Limiting Resistance in Anode Circuit.*



THE EDISON SWAN ELECTRIC COMPANY LTD.

U.404

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

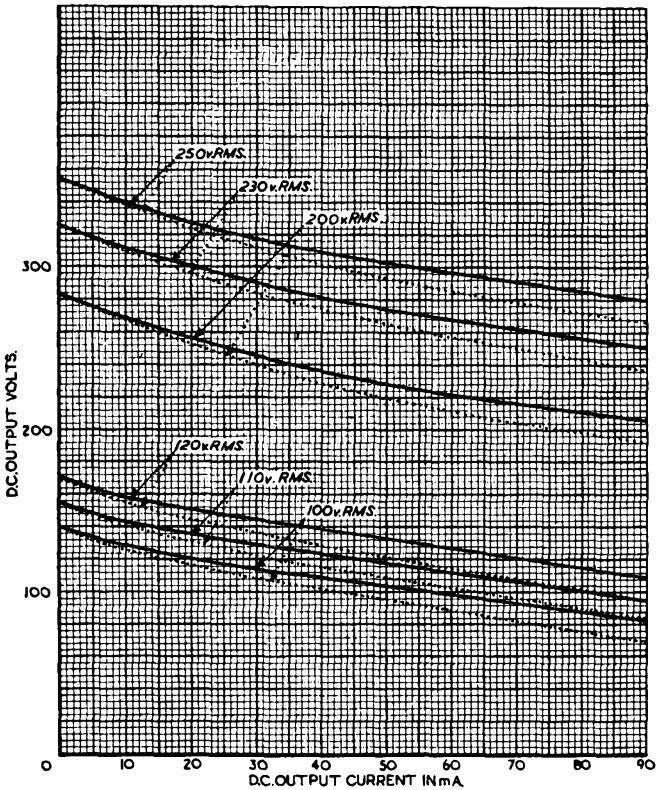
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U404

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 16 μF Reservoir Condenser.

Key { —— no Limiting Resistance in Anode Circuit.
..... 50 Ω Limiting Resistance in Anode Circuit.



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

U.404

HALF WAVE RECTIFIER

Indirectly heated – for series operation

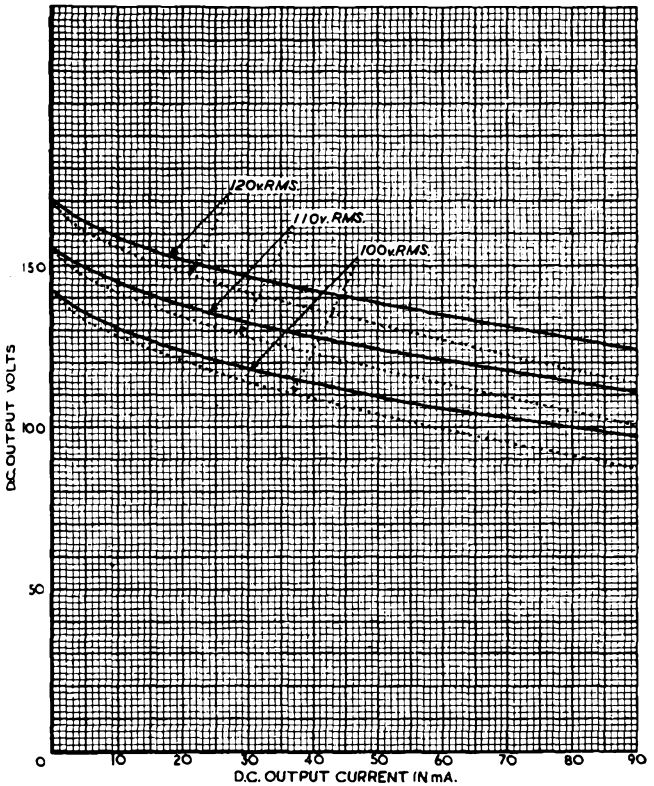
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE U.404

HALF WAVE RECTIFICATION REGULATION CHARACTERISTIC

Curves taken with 32μF Reservoir Condenser.

Key { —— no Limiting Resistance in Anode Circuit.
····· 22Ω Limiting Resistance in Anode Circuit.



THE EDISON SWAN ELECTRIC COMPANY LTD.

U.U.9

MAZDA

U.U.9

FULL WAVE RECTIFIER

Indirectly heated – for parallel operation

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.63
Maximum Anode Voltage (volts RMS per anode)	$V_{a(rms)max}$	350
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	1100
Maximum Total Mean Anode Current (mA)	$I_{a(av)max}$	90
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	360
Maximum Reservoir Condenser (μF)		16
Maximum Peak Potential Heater/Cathode with Heater negative (volts DC)	$V_{h-k(max)}$	* 300

* This rating is applicable only to vibrator power supplies.

DIMENSIONS

Maximum Overall Length (mm)	76
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	63
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	$\frac{3}{4}$
Approximate Packed Weight (ozs)	1

MOUNTING POSITION - Unrestricted

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THE EDISON SWAN ELECTRIC COMPANY LTD

MAZDA

U.U.9

FULL WAVE RECTIFIER

Indirectly heated – for parallel operation

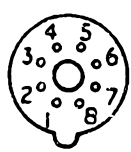
TYPICAL OPERATION (as Full Wave Rectifier)

Voltage per anode (volts RMS)		300	350	300	350
Approximate DC Rectified Output (volts)	†	360	425	340	405
DC Load Current (mA)		60	60	90	90
Reservoir Condenser (μF)		8	8	8	8

† These voltages assume very low transformer resistances and reactances.

BULB Clear

BASE B.8.A.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode 2	a"
Pin 3	Internal Connexion ¶	
Pin 4	Internal Connexion ¶	
Pin 5	Internal Connexion ¶	
Pin 6	Anode 1	a'
Pin 7	Cathode	k
Pin 8	Heater	h

¶ "Internal Connexion" indicates that the pin is connected to an electrode for the purpose of improving mechanical rigidity. The connexion 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.

U.U.9

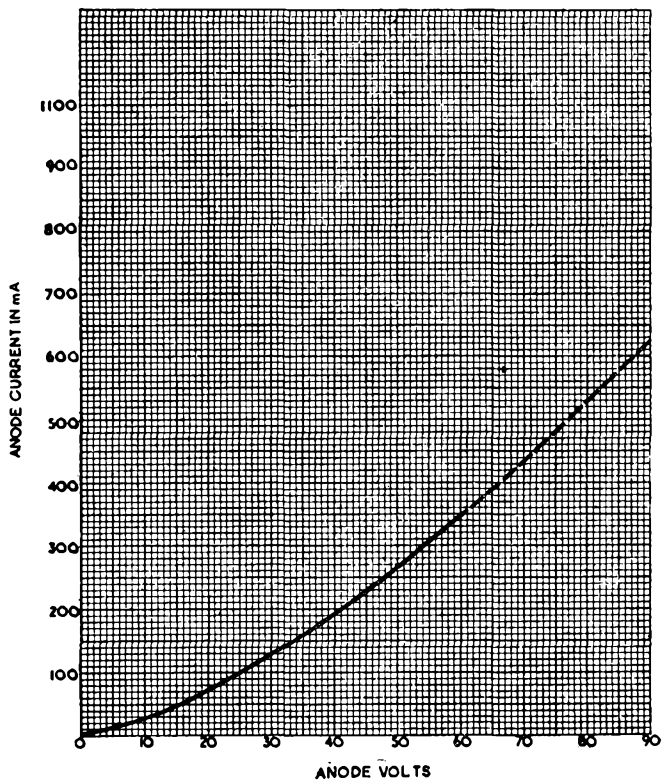
MAZDA

U.U.9

FULL WAVE RECTIFIER

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVE



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THE EDISON SWAN ELECTRIC COMPANY LTD.

CATHODE RAY TUBES

INTRODUCTORY NOTES

ON

M A Z D A

SPECIAL PURPOSE

CATHODE RAY TUBES

The type of screen phosphor normally used in any one type of Mazda Cathode Ray Tube is, generally, indicated on the relevant data sheets. A list is given below showing all types of screen phosphor available:-

P1.	Green	- Medium Persistence
P2.	Blue-green	- Long Persistence
P3.	Blue actinic	- Short Persistence
P4.	White	- Medium-short persistence.

When ordering, the type of screen phosphor required should be indicated by adding the appropriate suffix to the type number of the Cathode Ray Tube. Eg. 30B1/P3.

MAZDA

30.B.1

CATHODE RAY TUBE - ALL ELECTROSTATIC. 3½" Dia.

Indirectly heated - for measurement purposes.

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.72
Maximum 1st Anode Voltage (volts)	$V_{a1(max)}$	2,500
Maximum 2nd Anode Voltage (volts)	$V_{a2(max)}$	1,000
Maximum 3rd Anode Voltage (volts)	$V_{a3(max)}$	6,000
Average Sensitivity of "X" Plates (mm/V)	•	360/V
Average Sensitivity of "Y" Plates (mm/V)	•	800/V

Where "V" denotes the voltage on the 3rd Anode and bulb coating.

INTER-ELECTRODE CAPACITANCES

X1 Deflecting Plate/All other electrodes (μμF)	$C_{x1,all}$	15.0
X2 Deflecting Plate/All other electrodes (μμF)	$C_{x2,all}$	15.0
Y1 Deflecting Plate/All other electrodes (μμF)	$C_{y1,all}$	14.5
Y2 Deflecting Plate/All other electrodes (μμF)	$C_{y2,all}$	14.5
X1 Deflecting Plate/Y1 Deflecting Plate (μμF)	$C_{x1,y1}$	1.5
X1 Deflecting Plate/Y2 Deflecting Plate (μμF)	$C_{x1,y2}$	1.0
X2 Deflecting Plate/Y1 Deflecting Plate (μμF)	$C_{x2,y1}$	1.0
X2 Deflecting Plate/Y2 Deflecting Plate (μμF)	$C_{x2,y2}$	1.25
Control Grid (Wehnelt)/All other electrodes (μμF)	$C_{g,all}$	9.5

DIMENSIONS

Maximum Overall Length (mm)	340
Maximum Diameter (mm)	90
Nominal Screen Diameter (inches)	3½
Approximate Nett Weight (ozs)	21
Approximate Packed Weight (lbs)	10¾

NOTES

For general measurement work the 30.B.1/P1 is recommended. This has a screen with a medium persistence green phosphor. For special applications, however, the tube may be supplied with any of the standard phosphors described on the Introductory Page to this Section.

Final Anode and Bulb coating are brought out separately in order to enable a finer spot or a higher writing speed to be obtained by increasing the Final Anode voltage above the limit set for the 1st Anode Voltage.

In use the 3rd Anode and bulb coating are normally joined.

MAZDA

30.B.1

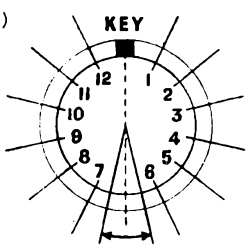
CATHODE RAY TUBE - ALL ELECTROSTATIC. $3\frac{1}{2}$" Dia.
Indirectly heated - for measurement purposes.

TYPICAL OPERATION

3rd Anode Voltage (volts)	V_{a3}	2,000	5,000
2nd Anode Voltage - approximate, for focus (volts)	V_{a2}	440	800
1st Anode Voltage (volts)	V_{a1}	2,000	2,000
Average Bias on Control Grid for Cut-off of Beam Current (volts)	V_g	-60	-60
Average Working Bias for 20μA Beam (volts)		-33	-33
Approximate Sensitivity of "X" Plates (mm/V)		0.20	0.08
Approximate Sensitivity of "Y" Plates (mm/V)		0.30	0.12

BASE 12 Contact Key Base (BS.448)

VIEW OF FREE END



PERMISSIBLE ANGULAR VARIATION OF MOUNTS ± 10°

CONNEXIONS

Pin 1	Control Grid	g
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode 1	a1
Pin 6	Anode 2	a2
Pin 7	Internal Coating	m
Pin 8	Deflecting Plate Y2	y2
Pin 9	Deflecting Plate X2	x2
Pin 10	Anode 3	a3
Pin 11	Deflecting Plate X1	x1
Pin 12	Deflecting Plate Y1	y1

30.C.2

MAZDA

30.C.2

CATHODE RAY TUBE - ALL ELECTROSTATIC. 5½" Dia.

Indirectly heated - for measurement purposes.

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.72
Maximum 1st Anode Voltage (volts)	$V_{a1(max)}$	2,500
Maximum 2nd Anode Voltage (volts)	$V_{a2(max)}$	1,000
Maximum 3rd Anode Voltage (volts)	$V_{a3(max)}$	6,000
Average Sensitivity of "X" Plates (mm/V)		• 600/V
Average Sensitivity of "Y" Plates (mm/V)		• 1,100/V

• Where "V" denotes the voltage on the 3rd Anode and bulb coating.

INTER-ELECTRODE CAPACITANCES

X1 Deflecting Plate/All other electrodes (μμF)	$C_{x1,all}$	15.0
X2 Deflecting Plate/All other electrodes (μμF)	$C_{x2,all}$	15.0
Y1 Deflecting Plate/All other electrodes (μμF)	$C_{y1,all}$	14.5
Y2 Deflecting Plate/All other electrodes (μμF)	$C_{y2,all}$	14.5
X1 Deflecting Plate/Y1 Deflecting Plate (μμF)	$C_{x1,y1}$	1.5
X1 Deflecting Plate/Y2 Deflecting Plate (μμF)	$C_{x1,y2}$	1.0
X2 Deflecting Plate/Y1 Deflecting Plate (μμF)	$C_{x2,y1}$	1.0
X2 Deflecting Plate/Y2 Deflecting Plate (μμF)	$C_{x2,y2}$	1.25
Control Grid (Wehnelt)/all other electrodes (μμF)	$C_{g,all}$	9.5

DIMENSIONS

Maximum Overall Length (mm)	430
Maximum Diameter (mm)	140
Nominal Screen Diameter (inches)	5½
Approximate Nett Weight (ozs)	30
Approximate Packed Weight (lbs)	11½

NOTES

For general measurement work the 30.C.2/P1 is recommended. This has a screen with a medium persistence green phosphor. For special applications, however, the tube may be supplied with any of the standard phosphors described on the Introductory Page to this Section.

Final Anode and Bulb coating are brought out separately in order to enable a finer spot or a high writing speed to be obtained by increasing the Final Anode Voltage above the limit set for the 1st Anode Voltage.

In use the 3rd Anode and Bulb coating are normally joined.

MAZDA

30.C.2

CATHODE RAY TUBE - ALL ELECTROSTATIC. 5½" Dia.

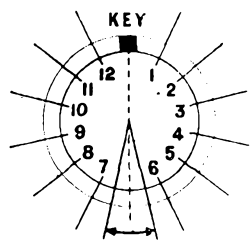
Indirectly heated - for measurement purposes.

TYPICAL OPERATION

3rd Anode Voltage (volts)	V_{a3}	2,000	5,000
2nd Anode Voltage - approximate, for focus (volts)	V_{a2}	440	800
1st Anode Voltage (volts)	V_{a1}	2,000	2,000
Average Bias on Control Grid for Cut-off of Beam Current (volts)	V_g	-60	-60
Average Working Bias for 20μA Beam (volts)		-33	-33
Approximate Sensitivity of "X" Plates (mm/V)		0.30	0.12
Approximate Sensitivity of "Y" Plates (mm/V)		0.57	0.23

BASE Special 12 Contact Key Base (BS448)

VIEW OF FREE END



PERMISSIBLE ANGULAR VARIATION OF MOUNTS ± 10°

CONNEXIONS

Pin 1	Control Grid	g
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode 1	a1
Pin 6	Anode 2	a2
Pin 7	Internal Coating	m
Pin 8	Deflecting Plate Y2	y2
Pin 9	Deflecting Plate X2	x2
Pin 10	Anode 3	a3
Pin 11	Deflecting Plate X1	x1
Pin 12	Deflecting Plate Y1	y1

MAZDA

30.C.3

CATHODE RAY TUBE - ALL ELECTROSTATIC. 5½" Dia.

Indirectly heated - for measurement purposes, with side connexions to both pairs of plates.

RATING

Heater Voltage (Volts)	V_h	4.0
Heater Current (amps)	I_h	0.72
Maximum 1st Anode Voltage (volts)	$V_{a1(max)}$	2,500
Maximum 2nd Anode Voltage (volts)	$V_{a2(max)}$	1,000
Maximum 3rd Anode Voltage (volts)	$V_{a3(max)}$	6,000
Average Sensitivity of "X" Plates (mm/V)	†	600/V
Average Sensitivity of "Y" Plates (mm/V)	†	1,100/V

† Where "V" denotes the voltage on the 3rd Anode and Bulb Coating.

INTER-ELECTRODE CAPACITANCES

X1 Deflecting Plate/All other electrodes	(μμF)	$C_{x1,all}$	6.0
X2 Deflecting Plate/All other electrodes	(μμF)	$C_{x2,all}$	6.0
Y1 Deflecting Plate/All other electrodes	(μμF)	$C_{y1,all}$	8.6
Y2 Deflecting Plate/All other electrodes	(μμF)	$C_{y2,all}$	8.6
X1 Deflecting Plate/Y1 Deflecting Plate	(μμF)	$C_{x1,y1}$	0.25
X1 Deflecting Plate/Y2 Deflecting Plate	(μμF)	$C_{x1,y2}$	0.25
X2 Deflecting Plate/Y1 Deflecting Plate	(μμF)	$C_{x2,y1}$	0.25
X2 Deflecting Plate/Y2 Deflecting Plate	(μμF)	$C_{x2,y2}$	0.25
Control Grid (Wehnelt)/All other electrodes	(μμF)	$C_{g,all}$	8.2
X1 Deflecting Plate/X2 Deflecting Plate	(μμF)	$C_{x1,x2}$	2.5
Y1 Deflecting Plate/Y2 Deflecting Plate	(μμF)	$C_{y1,y2}$	3.2

DIMENSIONS

Maximum Overall Length (mm)	430
Maximum Diameter (mm)	140
Nominal Screen Diameter (inches)	5½
Approximate Nett Weight (ozs)	30
Approximate Packed Weight (lbs)	11¼

NOTES

The connexions to the deflector plates are brought out to side contacts on the neck of the tube in order to reduce the inductance and capacitance of the leads, and the coupling between the X and Y plates. It is intended, particularly, for H.F. and pulse measurements.

For general measurement work the 30.C.3/P1 is recommended. This has a screen with a medium persistence green phosphor. For special applications, however, the tube may be supplied with any of the standard phosphors described on the Introductory Page to this section.

Final Anode and Bulb coating are brought out separately in order to enable a finer spot or a higher writing speed to be obtained by increasing the Final Anode voltage above the limit set for the 1st Anode Voltage.

In use the 3rd Anode and Bulb coating are normally joined.

MAZDA

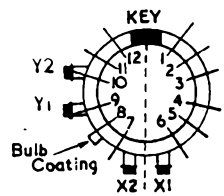
30.C.3

CATHODE RAY TUBE - ALL ELECTROSTATIC. $5\frac{1}{2}$" Dia.
Indirectly heated - for measurement purposes, with side connexions to both pairs of plates.

TYPICAL OPERATION

3rd Anode Voltage (volts)	V_{a3}	2,000	6,000
2nd Anode Voltage - approximate for focus (volts)	V_{a2}	440	960
1st Anode Voltage (volts)	V_{a1}	2,000	2,000
Average Bias on Control Grid for Cut-off of Beam Current (volts)	V_g	-60	-60
Average Working Bias for 20μA Beam (volts)		-33	-33
Approximate Sensitivity of "X" Plates (mm/V)		0.30	0.1
Approximate Sensitivity of "Y" Plates (mm/V)		0.57	0.19

BASE 12 Contact Key Base BS.448.



CONNEXIONS

Pin 1	Control Grid	g
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode 1	a1
Pin 6	Anode 2	a2
Pin 7	-	-
Pin 8	-	-
Pin 9	-	-
Pin 10	Anode 3	a3
Pin 11	-	-
Pin 12	-	-

30.C.8

MAZDA

30.C.8

CATHODE RAY TUBE - ALL ELECTROSTATIC. 7" Dia.
Indirectly heated - for Radio D.F. Compass

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.72
Maximum 1st Anode Voltage (volts)	$V_{a1(max)}$	500
Maximum 2nd Anode Voltage (volts)	$V_{a2(max)}$	1,000
Maximum 3rd Anode Voltage (volts)	$V_{a3(max)}$	4,000
Average Sensitivity of "X" Plates (mm/V)		‡ 520/V
Average Sensitivity of "Y" Plates (mm/V)		‡ 520/V

‡ Where "V" dénotes the voltage on the 3rd Anode.

INTER-ELECTRODE CAPACITANCES

XE Deflecting Plate/All other electrodes (μμF)	$C_{xe,all}$	14.6
XW Deflecting Plate/All other electrodes (μμF)	$C_{xw,all}$	14.0
YN Deflecting Plate/All other electrodes (μμF)	$C_{yn,all}$	14.9
YS Deflecting Plate/All other electrodes (μμF)	$C_{ys,all}$	13.8
XE Deflecting Plate/XW Deflecting Plate (μμF)	$C_{xe,xw}$	4.5
YN Deflecting Plate/YS Deflecting Plate (μμF)	$C_{yn,ys}$	4.4
XE+XW Deflecting Plates/YN+YS Deflecting Plates (μμF)	$C_{(xe+xw)-(yn+ys)}$	2.7
Control Grid (Wehnelt)/All other electrodes (μμF)	$C_{g,all}$	8.6

DIMENSIONS

Maximum Overall Length (mm)	495
Maximum Diameter (mm)	175
Nominal Screen Diameter (inches)	7
Approximate Nett Weight (lbs)	2¼
Approximate Packed Weight (lbs)	11¾

NOTES

This is a Cathode Ray Tube with a compass scale affixed to the screen. It is a precision constructed and calibrated instrument which provides bearings with an error not exceeding 1% at any point on the scale while the four cardinal bearings, N,S,E,W, are accurate to ± 0.25°.

Normally the tube is supplied with a green phosphor (P1) having medium persistence characteristics. Other phosphors (see Introductory Page 1. to this section) and scale arrangements can be supplied by special arrangement.

The gun system is capable of providing the high beam currents required for "Pulse D.F."

MAZDA

30.C.8

CATHODE RAY TUBE - ALL ELECTROSTATIC. 7" Dia.
Indirectly heated - for Radio D.F. Compass

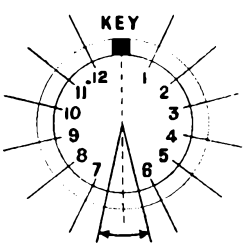
TYPICAL OPERATION

3rd Anode Voltage (volts)	V_{a3}	2,200
2nd Anode Voltage-approximate, for focus (volts) ¢	V_{a2}	440
1st Anode Voltage (volts)	V_{a1}	450
Negative Bias on Control Grid for cut-off of Beam Current (volts)	V_g	60

¢ The voltage required on the 2nd Anode for focus decreases with an increase of beam current and the above figure gives the voltage required at low currents.

BASE 12 Contact Key Base (BS.448)

VIEW OF FREE END



PERMISSIBLE ANGULAR VARIATION OF MOUNTS ± 10°

CONNEXIONS

Pin 1	Control Grid	g
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode 1	a1
Pin 6	Anode 2	a2
Pin 7	Blank	-
Pin 8	Deflecting Plate YS	ys
Pin 9	Deflecting Plate YN.	yn
Pin 10	Anode 3	a3
Pin 11	Deflecting Plate XE	xe
Pin 12	Deflecting Plate XW	xw

30.E.7

MAZDA

30.E.7

CATHODE RAY TUBE - ALL ELECTROSTATIC. 12" Dia. Indirectly heated - for Radio D.F. Compass

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.72
Maximum 1st Anode Voltage (volts)	$V_{a1(max)}$	500
Maximum 2nd Anode Voltage (volts)	$V_{a2(max)}$	1,000
Maximum 3rd Anode Voltage (volts)	$V_{a3(max)}$	4,000
Average Sensitivity of "X" Plates (mm/V)		† 800/V
Average Sensitivity of "Y" Plates (mm/V)		† 800/V

† Where "V" denotes the voltage on the 3rd Anode.

INTER-ELECTRODE CAPACITANCES

XE Deflecting Plate/All other electrodes (μμF)	$C_{xe,all}$	15.2
XW Deflecting Plate/All other electrodes (μμF)	$C_{xw,all}$	15.6
YN Deflecting Plate/All other electrodes (μμF)	$C_{yn,all}$	14.9
YS Deflecting Plate/All other electrodes (μμF)	$C_{ys,all}$	15.6
XE Deflecting Plate/XW Deflecting Plate (μμF)	$C_{xe,xw}$	5.1
YN Deflecting Plate/YS Deflecting Plate (μμF)	$C_{yn,ys}$	4.8
XE+XW Deflecting Plates/YN+YS Deflecting Plates (μμF)	$C_{(xe+xw)-(yn+ys)}$	2.9
Control Grid (Wehnelt)/All other electrodes (μμF)	$C_{g,all}$	9.8

DIMENSIONS

Maximum Overall Length (mm)	640
Maximum Diameter (mm)	312
Nominal Screen Diameter (inches)	12
Approximate Nett Weight (lbs)	7½
Approximate Packed Weight (lbs)	53

NOTES

This is a Cathode Ray Tube with a compass scale affixed to the screen. It is a precision constructed and calibrated instrument which provides bearings with an error not exceeding 1% at any point on the scale while the four cardinal bearings, N, S, E, W, are accurate to ±0.25°.

Normally the tube is supplied with a green phosphor (P1) having medium persistence characteristics. Other phosphors (see Introductory Page to this Section) and scale arrangements can be supplied by special arrangement.

The gun system is capable of providing the high beam currents required for "pulse D.F."

MAZDA

30.E.7

CATHODE RAY TUBE - ALL ELECTROSTATIC. 12" Dia.
Indirectly heated - for Radio D.F. Compass

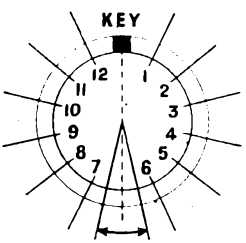
TYPICAL OPERATION

3rd Anode Voltage (volts)	V_{a3}	2,200
2nd Anode Voltage - approximate, for focus (volts) :	V_{a2}	450
1st Anode Voltage (volts)	V_{a1}	450
Negative Bias on Control Grid for Cut-off of Beam Current (volts)	V_g	60

: The voltage required on the 2nd Anode for focus decreases with an increase of beam current and the above figure gives the voltage required at low currents.

BASE 12 Contact Key Base (BS 448)

VIEW OF FREE END



PERMISSIBLE ANGULAR VARIATION OF MOUNTS ± 10°

CONNEXIONS

Pin 1	Control Grid	g
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode 1	a1
Pin 6	Anode 2	a2
Pin 7	Blank	-
Pin 8	Deflecting Plate YS	ys
Pin 9	Deflecting Plate YN	yn
Pin 10	Anode 3	a3
Pin 11	Deflecting Plate XE	xe
Pin 12	Deflecting Plate XW	xw

TRANSMITTING VALVES

EHA.2500

EDISWAN

EHA.2500

FORCED AIR COOLED TRIODE

GENERAL

The EHA.2500 is a three electrode valve designed for use as a Radio Frequency Amplifier or Oscillator. The anode is fitted with a special radiator and cooling is obtained by forced air.

As the design minimises lead inductance, this valve is particularly suitable for H.F. applications.

RATING

Filament Voltage (volts)	V_f		8.0
Filament Current (amps)	I_f		80.0
Maximum Anode Voltage (volts)	$V_{a(max)}$		7,500
Average Maximum Filament Emission (amps)	F_{em}		4.5
Maximum Anode Dissipation (kW)	$W_{a(max)}$		2.5
Mutual Conductance (mA/V)	g_m	•	5.5
Amplification Factor	μ	•	55.0
Anode Impedance (ohms)	r_a	•	10,000
Maximum Operating Frequency at full rating		†	40 Mc/s

• Taken at V_a = 7,000v; I_a = 400mA.

† At higher frequencies the maximum permissable anode voltages and inputs must be reduced.

INTER-ELECTRODE CAPACITANCES

Anode/Grid (μμF)	C_{a-gl}	11.0
Anode/Filament (μμF)	C_{a-f}	1.0
Grid/Filament (μμF)	C_{gl-f}	12.0

AIR FLOW

200 cubic feet per minute. 15 cubic feet per minute on to seals. When the valve is mounted with glass end up arrangements should be made to draw the cooling air through the radiator. If this is not possible it is recommended that the valve should be mounted with the glass end down and the leads passed through the sides of a special supporting cylinder. The outline drawing of this cylinder is shown on the next page and can be supplied.

DIMENSIONS

Maximum Overall Length (mm)	240
Maximum Diameter (mm)	150
Approximate Nett Weight (lbs)	13.0
Approximate Packed Weight (lbs)	54.0

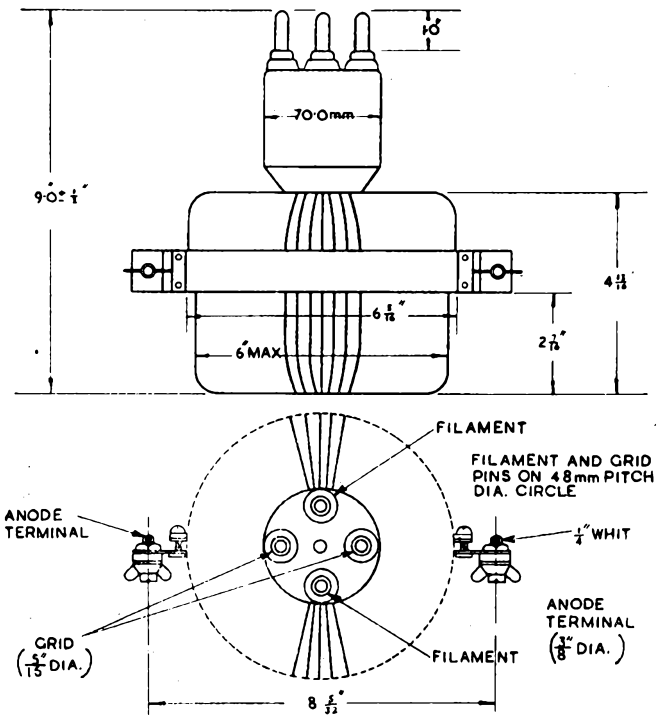
MOUNTING POSITION - Vertical

EDISWAN

EHA.2500

FORCED AIR COOLED TRIODE

EHA 2500



ALL DIMS IN ins UNLESS STATED OTHERWISE

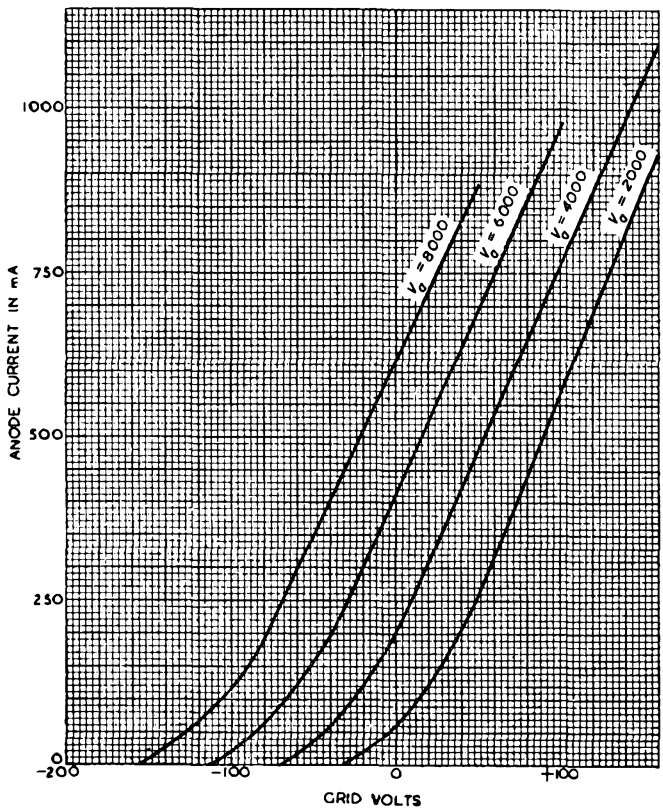
EHA.2500

EDISWAN

EHA.2500

FORCED AIR COOLED TRIODE

AVERAGE CHARACTERISTICS



August 1948 RADIO DIVISION Issue 1/4

THE EDISON SWAN ELECTRIC COMPANY LTD.

EHA.2500

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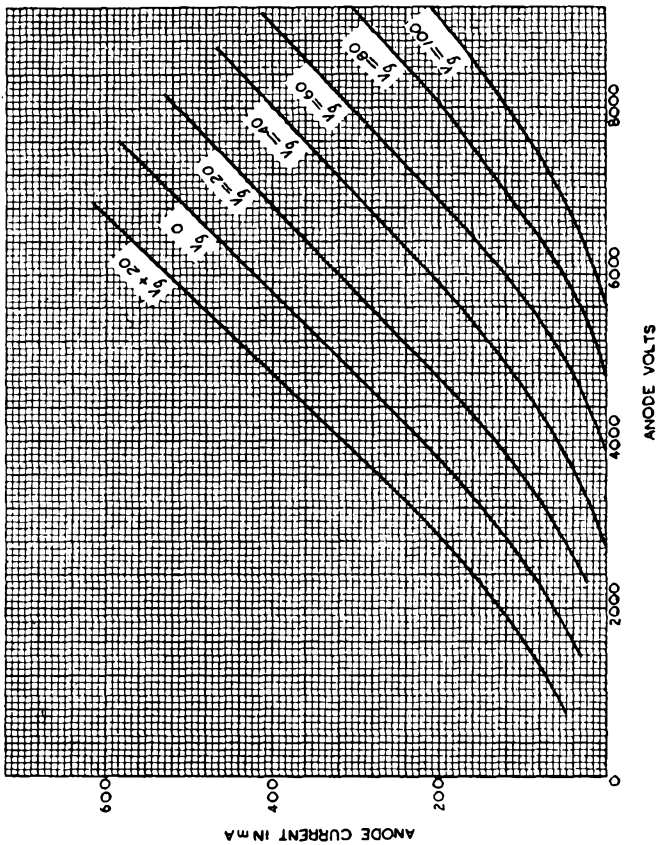
EHA.2500

FORCED AIR COOLED TRIODE

AVERAGE CHARACTERISTICS



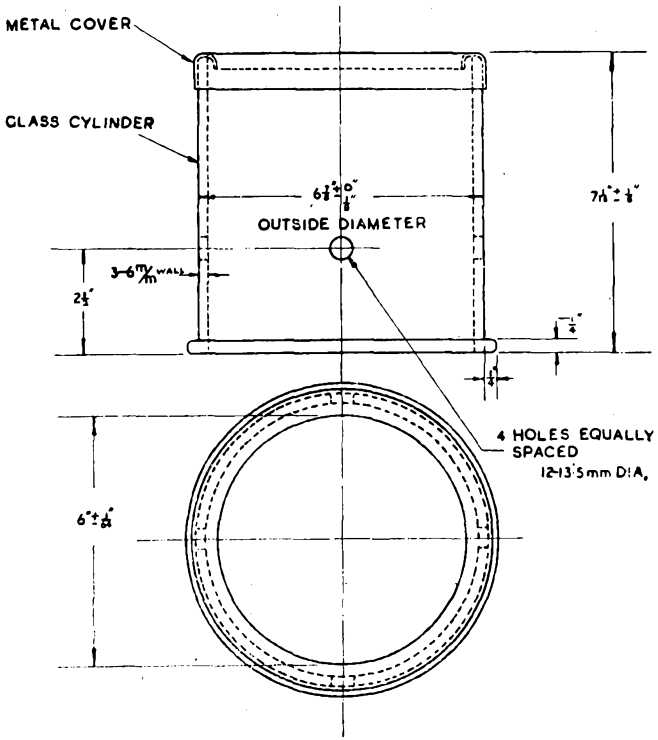
EHA.2500

EDISWAN

EHA.2500

FORCED AIR COOLED TRIODE

SUPPORT TYPE G.C.2.



NOTE THIS SUPPORT IS USED WHEN VALVE IS OPERATED IN AN INVERTED POSITION

ALL DIMS IN ins UNLESS STATED OTHERWISE

THE EDISON SWAN ELECTRIC COMPANY LTD.

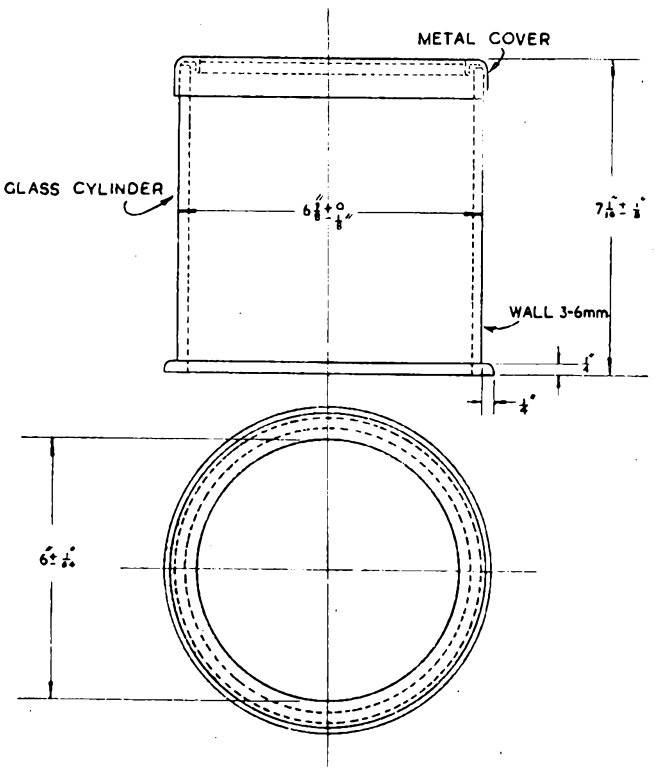
EHA.2500

EDISWAN

EHA.2500

FORCED AIR COOLED TRIODE

SUPPORT TYPE G.C.1.



ALL DIMS IN ins UNLESS
STATED OTHERWISE

FOR USE WHEN VALVE IS MOUNTED WITH GLASS END UP

EHA.5000

EDISWAN

EHA.5000

FORCED AIR COOLED TRIODE

GENERAL

The EHA.5000 is a three electrode valve designed for use as a Radio Frequency Amplifier or Oscillator. The anode is fitted with a special radiator and cooling is obtained by forced air. The design minimises lead inductance and this valve is particularly suitable for use in R.F. heating equipments. It is the direct equivalent of the American type 889R.

RATING

Filament Voltage (volts)	V_f		11.0
Filament Current (amps)	I_f		125
Maximum Anode Voltage (volts)	$V_{a(max)}$		8,500
Maximum Filament Emission (amps)	F_{em}		11.0
Maximum Anode Dissipation (kW)	$W_{a(max)}$		5.0
Mutual Conductance (mA/V)	g_m	‡	10
Amplification Factor	μ	‡	20
Anode Impedance (ohms)	r_a	‡	2,000
Maximum Operating Frequency at full rating		§	25 Mc/s

‡ Taken at V_a = 5,000v; I_a = 1,000mA.

§ At higher frequencies the maximum permissable anode voltages and inputs must be reduced.

INTER-ELECTRODE CAPACITANCES

Anode/Grid (μμF)	c_{a-g1}	20.7
Anode/Filament (μμF)	c_{a-f}	2.5
Grid/Filament (μμF)	c_{g1-f}	19.5

AIR FLOW (MAIN)

500 cubic feet per minute. In addition, 15 cubic feet per minute should be directed on to the seals.

DIMENSIONS

Maximum Overall Length (mm)	298.5
Maximum Diameter (mm)	192.0
Approximate Nett Weight (lbs)	34.0
Approximate Packed Weight (lbs)	72.0

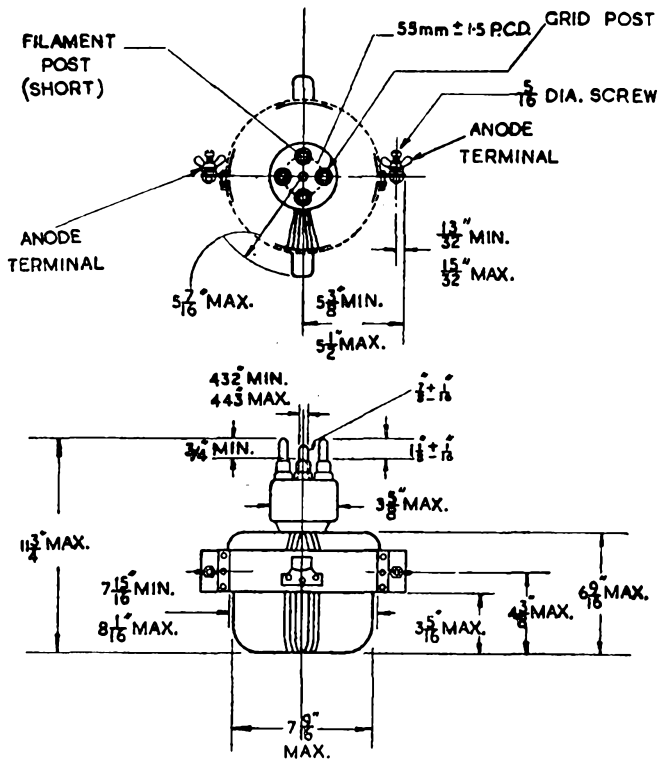
MOUNTING POSITION - Vertical

EDISWAN

EHA.5000

FORCED AIR COOLED TRIODE

EHA.5000



LIFTING HANDLES IN LINE WITH FIL. PINS

ALL DIMS IN ins UNLESS STATED OTHERWISE

THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.866

EDISWAN

ESU.866

HALF-WAVE MERCURY VAPOUR RECTIFIER

RATING

Filament Voltage (volts)	V_f	2.5
Filament Current (amps)	I_f	5.0
Maximum Peak Anode Current (amps)	Ia(pk)	1.0
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	10,000
Maximum Mean Anode Current (amps)	Ia(av)max	0.25
Approximate Voltage Drop (volts)	V_{ir}	15
Cathode Delay Time (secs)	t	60
Ambient Temperature (C°)		20-60

DIMENSIONS

Maximum Overall Length (mm)	170
Maximum Diameter (mm)	66
Approximate Nett Weight (ozs)	3
Approximate Packed Weight (lbs)	1½
Approximate Packed Export Weight (lbs)	2

MOUNTING POSITION Vertical

BASE U.X. 4 pin.

TOP CAP Anode

SPECIAL NOTE

When first placed into operation it is essential that the filament is run at the rated value for 15 minutes without any anode voltage being applied.

APPLICATION

The single phase half wave circuit is not favoured on account of the magnitude and frequency of the ripple current which is more difficult to filter than in other systems. Furthermore with choke input the D.C. output voltage will be approximately 0.45 of the transformer r.m.s. voltage. Full wave rectification overcomes the disadvantages of a half wave system and is therefore recommended.

TYPICAL CIRCUITS

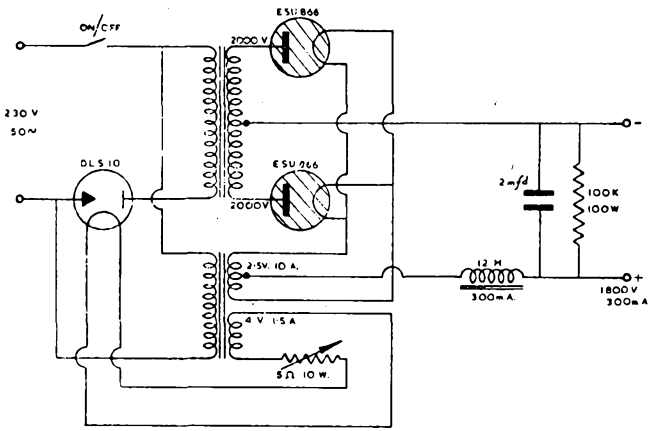
The necessary 60 sec. delay is provided by the DLS.10 which should be connected to a separate winding on filament transformer or to an independent L.V. Transformer. A bleeder resistor should be connected across the output circuit and where possible it should draw 10% of the full load current. This resistor will also discharge the filter condenser(s) on switching off.

EDISWAN

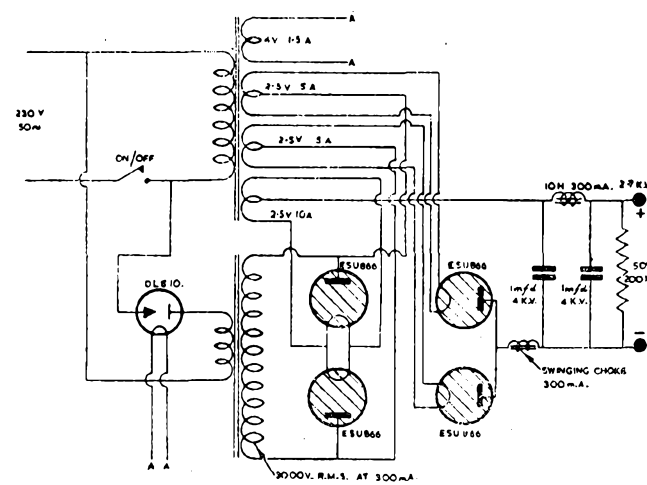
ESU.866

HALF-WAVE MERCURY VAPOUR RECTIFIER

FULL WAVE CIRCUIT TO SUPPLY 1·8 K.V. AT 300 m.A.



BRIDGE RECTIFIER CIRCUIT TO SUPPLY 2·7 K.V. AT 300 m.A



THE EDISON SWAN ELECTRIC COMPANY LTD

EHW.3000

EDISWAN

EHW.3000

WATER COOLED TRIODE

GENERAL

The EHW.3000 is a triode designed for use as a radio-frequency amplifier or oscillator. The anode is water-cooled and is capable of dissipating up to 3 kilowatts, depending upon the class of service. The design minimizes lead inductance and makes the valve particularly suitable for high frequency applications.

RATING

Filament Voltage (volts)	V_f	8.0
Filament Current (amps)	I_f	80.0
Maximum Anode Voltage (volts)	$V_{a(max)}$	7,500
Average Maximum Filament Emission (amps)	$I_{em(av)}$	4.5
Maximum Anode Dissipation (watts)	$P_{a(max)}$	3,000
Mutual Conductance (mA/V)	g_m •	5.5
Amplification Factor	μ •	55
Anode Impedance (ohms)	r_a •	10,000
Maximum Operating Frequency at full rating		:10 Mc/s

• Taken at V_a = 7,000v; I_a = 400 mA.

: At higher frequencies the maximum permissable anode voltages and inputs must be reduced.

INTER-ELECTRODE CAPACITANCES

Anode/Grid (μμF)	$c_{a,g}$	11.0
Anode/Filament (μμF)	$c_{a,f}$	1.0
Grid/Filament (μμF)	$c_{g,f}$	12.0

WATER FLOW 2 gallons per minute

AIRFLOW 15 Cubic feet should be directed on to the seals.

DIMENSIONS

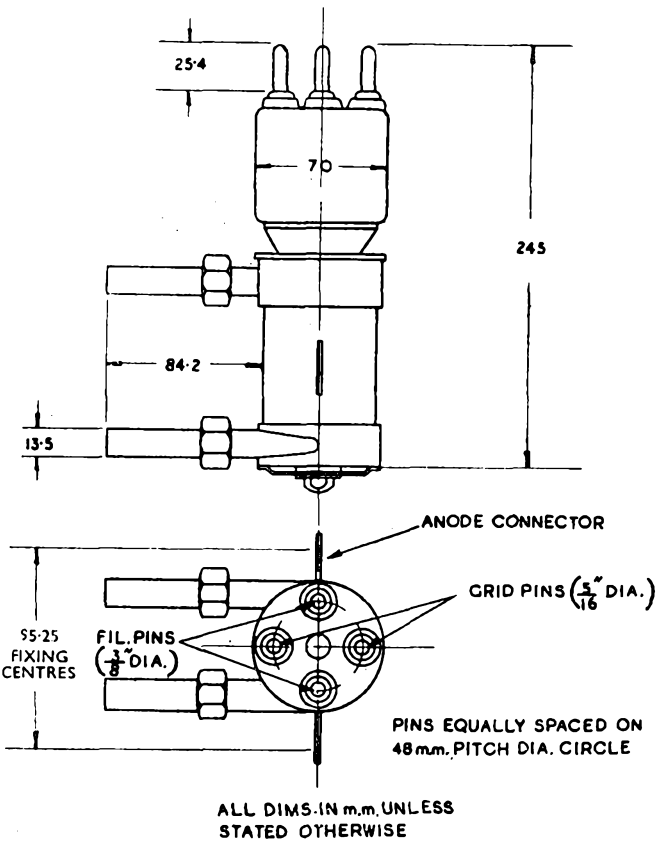
Maximum Overall Length (mm)	245
Maximum Diameter (mm)	70
Approximate Nett Weight (lb)	4
Approximate Packed Weight (lb)	11
Approximate Export Packed Weight (lb)	14

MOUNTING POSITION - Vertical

EDISWAN

EHW.3000

WATER COOLED TRIODE



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THE EDISON SWAN ELECTRIC COMPANY LTD

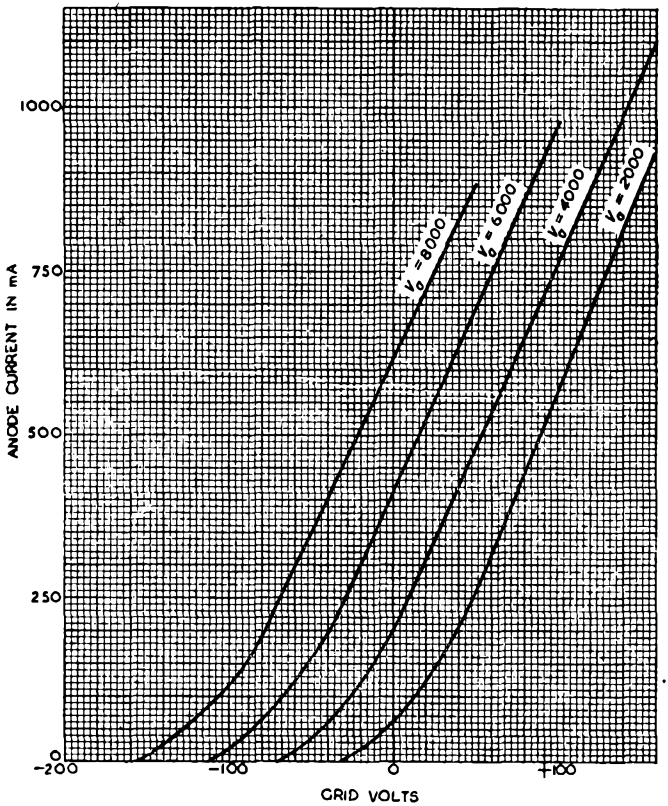
EHW.3000

EDISWAN

EHW.3000

WATER COOLED TRIODE

AVERAGE CHARACTERISTICS



October 1948 RADIO DIVISION Issue 1/4

THE EDISON SWAN ELECTRIC COMPANY LTD

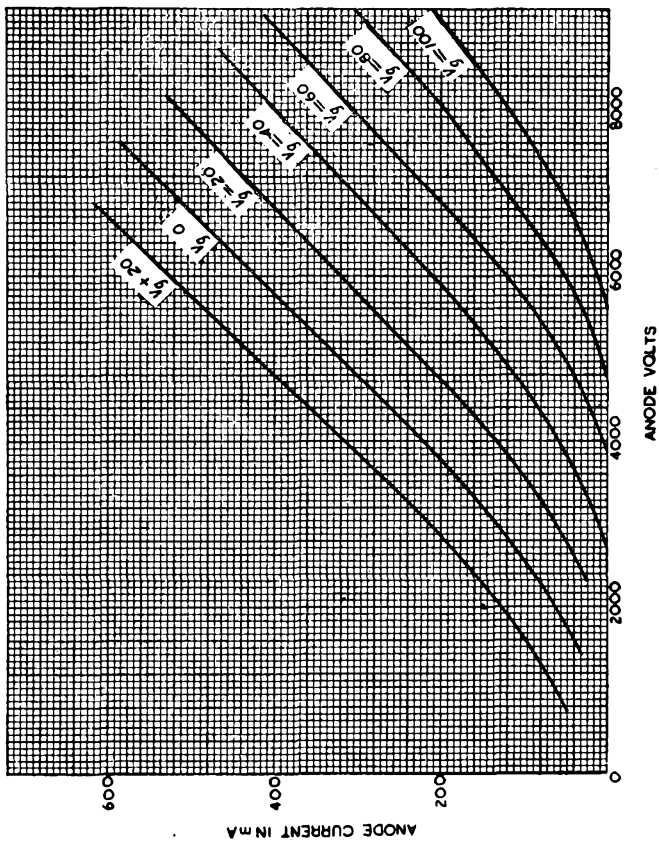
EHW.3000

EDISWAN

EHW.3000

WATER COOLED TRIODE

AVERAGE CHARACTERISTICS



THE EDISON SWAN ELECTRIC COMPANY LTD.

ESW.204

EDISWAN

ESW.204

RADIATION COOLED TRIODE

GENERAL

The ESW.204 is a U.H.F. triode suitable for use in industrial and transmitting equipment. The filament is of the thoriated Tungsten type.

RATING

Filament Voltage (volts)	V_f		11.0
Filament Current (amps)	I_f		7.0
Maximum Anode Voltage (volts)	$V_{a(max)}$		2,000
Average Maximum Filament Emission	$Fem_{(av)}$		2.5
Maximum Anode Dissipation (watts)	$Wa._{(max)}$		250
Mutual Conductance (mA/V)	gm	•	2.0
Amplification Factor	μ	•	18.0
Anode Impedance (ohms)	r_a	•	9,000
Maximum Operating Frequency at full rating		†	80 Mc/s

• Taken at V_a = 2,000v; I_a = 125 mA

† At higher frequencies the maximum permissable anode voltages and inputs must be reduced.

INTER-ELECTRODE CAPACITANCES

Anode/Grid ($\mu\mu$F)	$ca,_{gl}$	8.4
Anode/Filament ($\mu\mu$F)	$ca,_f$	1.56
Grid/Filament ($\mu\mu$F)	$gl,_f$	3.23

DIMENSIONS

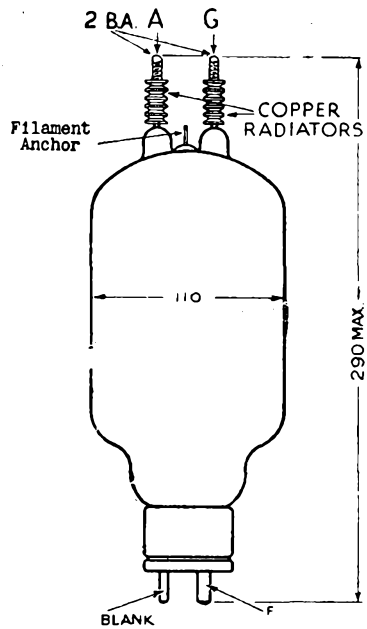
Maximum Overall Length (mm)	290.0
Maximum Diameter (mm)	110.0

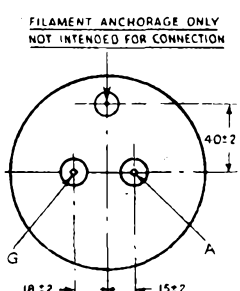
MOUNTING POSITION - Vertical

EDISWAN

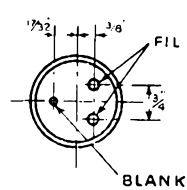
ESW.204

RADIATION COOLED TRIODE





TOP VIEW OF BULB



UNDERSIDE VIEW OF BASE

ALL DIMENSIONS IN mm. UNLESS OTHERWISE STATED

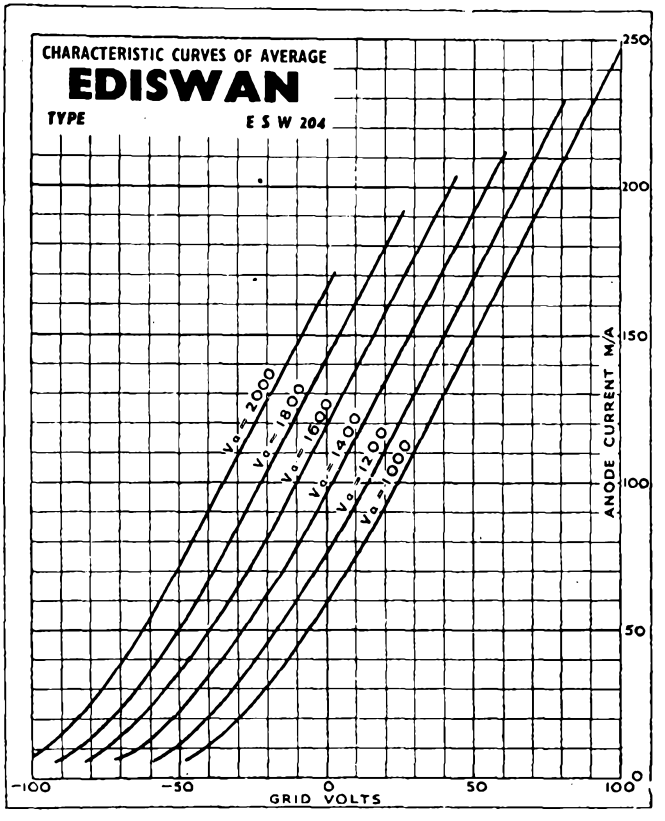
Base blank pin in alignment with Anode terminal on top of bulb

ESW.204

EDISWAN

ESW.204

RADIATION COOLED TRIODE



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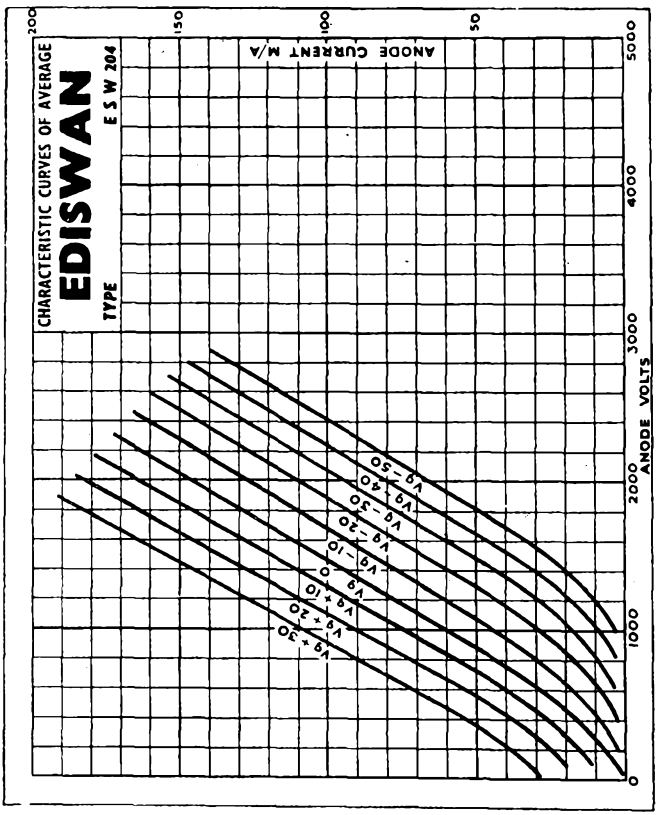
THE EDISON SWAN ELECTRIC COMPANY LTD.

EDISWAN

ESW.204

RADIATION COOLED TRIODE



ESW.501

EDISWAN

ESW.501

RADIATION COOLED TRIODE

GENERAL

The ESW.501 is a U.H.F. thoriated tungsten filament triode suitable for use in industrial and transmitting equipment.

RATING

Filament Voltage (volts)	V_f	6.0
Filament Current (amps)	I_f	4.0
Maximum Anode Voltage (volts)	$V_{a(max)}$	1,500
Average Maximum Filament Emission (amps)	$F_{em(av)}$	1.0
Maximum Anode Dissipation (watts)	$W_{a(max)}$	60.0
Mutual Conductance (mA/V)	G_m	• 1.3
Amplification Factor	μ	• 8.0
Anode Impedance (ohms)	V_a	• 6,200
Maximum Operating Frequency at full rating		‖ 80 Mc/s
Power Output (watts)	P_o	100

• Taken at V_a = 1,000v; I_a = 50 mA.

‖ At higher frequencies the maximum permissable anode voltage and input must be reduced.

INTER-ELECTRODE CAPACITANCES

Anode/Grid (μμF)	$c_{a,gl}$	4.0
Anode/Filament (μμF)	$c_{a,f}$	1.26
Grid/Filament (μμF)	$c_{gl,f}$	1.63

DIMENSIONS

Maximum Overall Length (mm)	215
Maximum Diameter (mm)	57.0
Approximate Nett Weight (ozs)	4.0
Approximate Home Packed Weight (lbs)	4.0
Approximate Export Packed Weight (lbs)	6.0

MOUNTING POSITION - Vertical

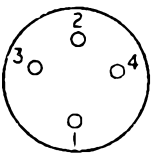
EDISWAN

ESW.501

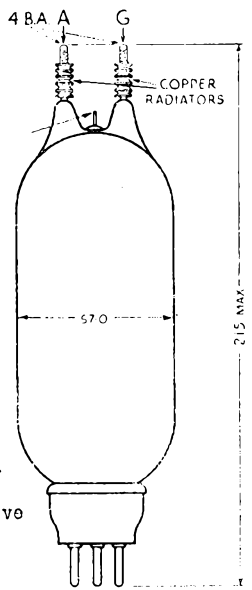
RADIATION COOLED TRIODE

TOP CONNEXIONS Anode and Grid - screw terminals.

BASE 4 pin. Standard B.V.A.
Filament - pins 3 & 4.



Viewed from free end of pins.



Anode and Grid terminals on top of valve in alignment with their respective pins on base.

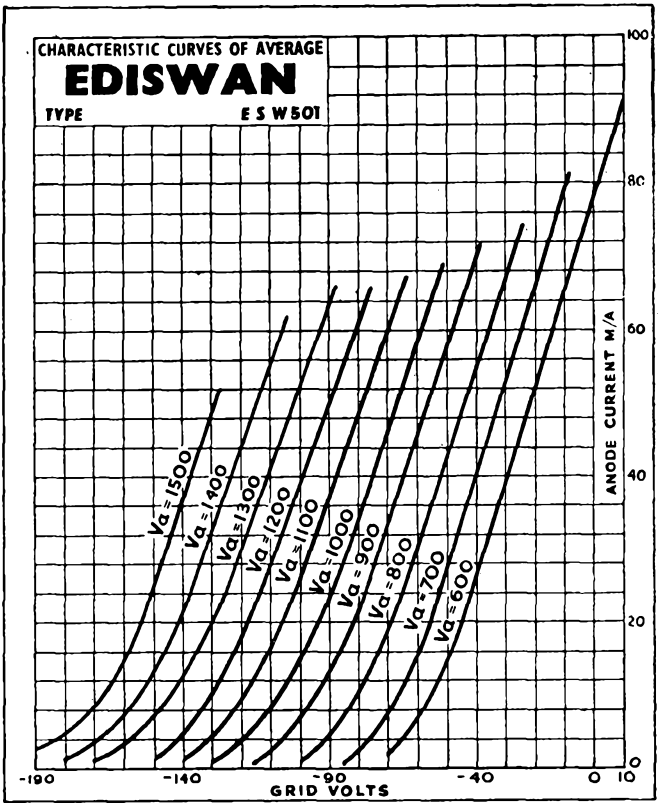
THE EDISON SWAN ELECTRIC COMPANY LTD.

ESW.501

EDISWAN

ESW.501

RADIATION COOLED TRIODE



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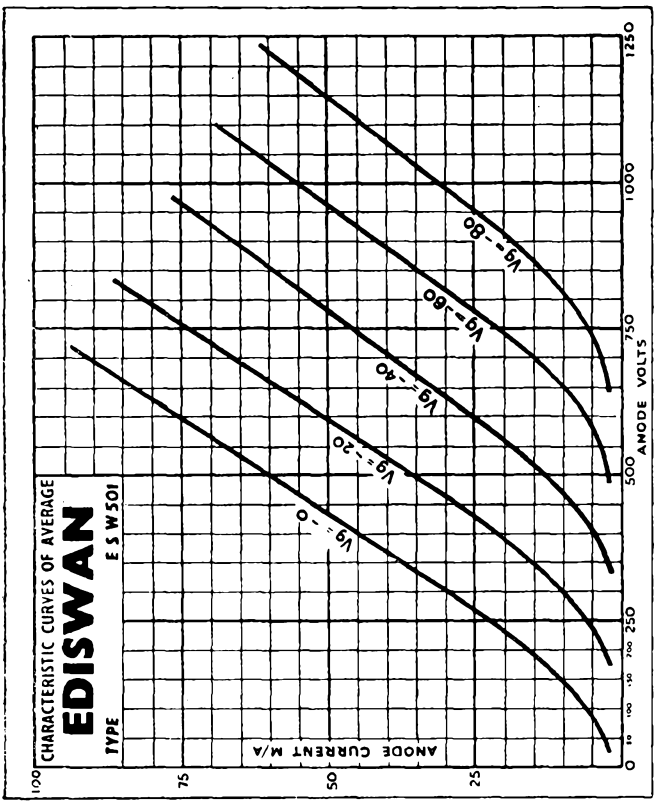
THE EDISON SWAN ELECTRIC COMPANY LTD.

EDISWAN

ESW.501

RADIATION COOLED TRIODE



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THE EDISON SWAN ELECTRIC COMPANY LTD.

INDUSTRIAL VALVES

BARRETTERS

EDISWAN BARRETTERS

(also overleaf)

HYDROGEN FILLED RESISTANCE LAMPS

TYPE	VOLTAGE (volts)	CURRENT (amps)	BASE	MAXIMUM OVERALL LENGTH	MAXIMUM OVERALL DIAMETER	REMARKS
BU 30/2	1 - 3	.27 - .33	ES	85	32	
BU 30/4	2.5- 6	.27 - .33	ES	100	32	
BU 30/6	3 - 9	.27 - .33	ES	90	27	
BU 30/8	4 - 12	.27 - .33	ES	100	32	
BU 30/10	6 - 14	.27 - .33	ES	115	32	
BU 30/12	6 - 18	.27 - .33	ES	100	32	
BU 30/50	25 - 75	.27 - .33	ES	120	38	
BU 30/110	85 - 170	.27 - .33	ES	240	46	
BU 35/14	10 - 18	.316-.385	ES	115	38	
BU 35/80	40 - 120	.315-.385	ES	145	58	
BU 40/8	4 - 12	.36 - .44	ES	125	32	
BU 43/30	15 - 45	.387-.473	ES	105	32	
BU 47/6	3 - 9	.323-.517	ES	100	32	
BU 50/8	4 - 12	.45 - .55	ES	125	32	
BU 50/24	12 - 36	.45 - .55	3 PIN	95 N.I.P.	32	CENTRE TAPPED
BU 50/40	25 - 50	.45 - .55	ES	120	32	
BU 60/120	80 - 150	.65 - .85	ES	156	64	
BU 63/30	15 - 45	.567-.693	4 PIN	110 N.I.P.	53	
BU 65/10	6 - 14	.585-.715	ES	107	32	
BU 65/14	9 - 20	.585-.715	ES	105	32	
BU 70/8	4 - 12	.63 - .77	3 PIN	75 N.I.P.	32	CENTRE TAPPED
BU 70/12	8 - 16	.63 - .77	3 PIN	80 N.I.P.	32	CENTRE TAPPED
BU 70/16	10 - 21	.63 - .77	3 PIN	80 N.I.P.	32	CENTRE TAPPED
BU 70/22	16 - 38	.63 - .77	3 PIN	90 N.I.P.	38	CENTRE TAPPED
BU 70/28	16 - 38	.63 - .77	3 PIN	100 N.I.P.	32	CENTRE TAPPED
BU 70/35	20 - 45	.63 - .77	3 PIN	100 N.I.P.	38	CENTRE TAPPED
BU 80/21	12 - 30	.72 - .88	ES	135	38	
BU 85/5	4 - 8	.765-.935	ES	105	32	
BU 85/8	4 - 12	.765-.935	ES	125	32	
BU 90/100	80 - 140	.810-.990	ES	320	64	

EDISWAN BARRETTERS

(continued)

HYDROGEN FILLED RESISTANCE LAMPS

TYPE	VOLTAGE (volts)	CURRENT (amps)	BASE	MAXIMUM OVERALL LENGTH	MAXIMUM OVERALL DIAMETER	REMARKS
BU 100/06	.4 - .8	.9 - 1.1	MES	45	26	
BU 100/3	1.6-4.5	.9 - 1.1	ES	100	32	
BU 100/4	2 - 6	.9 - 1.1	ES	110	32	
BU 100/6	3 - 9	.9 - 1.1	ES	90	32	
BU 100/8	4 - 12	.9 - 1.1	ES	96	32	
BU 100/10	5 - 15	.9 - 1.1	ES	115	32	
BU 100/11	6 - 16	.9 - 1.1	ES	122	32	
BU 100/14	7 - 20	.9 - 1.1	ES	126	38	
BU 100/14a	7 - 20	.9 - 1.1	3 PIN	120 N.I.P.	38	
BU 100/20	15 - 30	.9 - 1.1	ES	100	38	
BU 115/22	11 - 31	1.03-1.26	3 PIN	105 N.I.P.	38	CENTRE TAPPED
BU 130/7	4 - 10	1.17-1.43	ES	115	32	
BU 133/110	60 - 180	1.2 -1.46	ES	315	64	
BU 140/28	18 - 35	1.26-1.54	4 PIN	115 N.I.P.	64	
BU 150/160	80 - 240	1.275-1.725	ES	320	90	
BU 170/28	15 - 40	1.53-1.87	3 PIN	110 N.I.P.	38	CENTRE TAPPED
BU 180/5	3 - 7	1.62-1.98	Marda Octal	75 N.I.P.	32	
BU 180/24	15 - 34	1.71-2.09	3 PIN	120	38	CENTRE TAPPED
BU 200/7	4 - 10	1.8 - 2.2	4 PIN	120	45	
BU 200/14	8 - 20	1.8 - 2.2	3 PIN	100 N.I.P.	32	CENTRE TAPPED
BU 200/20	11 - 29	1.8 - 2.2	ES	130	38	
BU 215/75	60 - 100	1.9 - 2.3	ES	280	64	
BU 250/7	4 - 10	2.25-2.75	4 PIN	125 N.I.P.	38	
BU 280/20	10 - 30	2.52-3.08	3 PIN	130 N.I.P.	68	
BU 350/55	40 - 80	3.15-3.85	Special	290	90	
BU 350/55/1	40 - 80	3.15-3.85	GES	300 approx.	90	
BU 400/6	3 - 9	3.5 - 5.0	ES	145	51	
BU 600/6	3 - 9	5.4 - 6.6	ES	150	58	
BU 800/6	3 - 9	7.2 - 8.8	ES	145	58	

DLS.10

EDISWAN

DLS.10

VACUUM THERMAL DELAY SWITCH

GENERAL

This vacuum delay switch is designed on a new principle intended to overcome the disadvantages of the ordinary bi-metallic strip delay switch. The operating parts are enclosed in a glass bulb which is evacuated and renders the action immune from atmospheric influence.

A small filament is mounted vertically on a glass stem, and adjacent to it is a thin strip of special thermostatic metal. Attached to this strip is a springy contact which is normally clear of a fixed contact. On application of current to the filament the metal strip is heated by radiation and curves away from the filament. This springy contact then presses firmly against the fixed contact and remains in position as long as the heater is alight.

On switching off the heater the contact is broken after a lapse of some seconds. The time taken for the contact to close can be varied by inserting a series resistance in the heater circuit to reduce the temperature.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f :	1.5
Delay Time at 4.0v (secs)		min. 30: max. 90
Maximum Peak Current (Low Voltage Rating)	I_{pk}	6 amps at 250 v
Maximum Peak Current (High Voltage Rating)	I_{pk}	200 mA at 1 kV

: At approximately 4.0v.

DIMENSIONS

Maximum Overall Length (mm)	120 N.I.P.§
Maximum Diameter (mm)	45
Approximate Nett Weight (ozs)	1⅛
Approximate Packed Weight (ozs)	2⅛
Approximate Packed Export Weight (ozs)	4

§ Not including pins.

MOUNTING POSITION - Vertical

EDISWAN

DLS.10

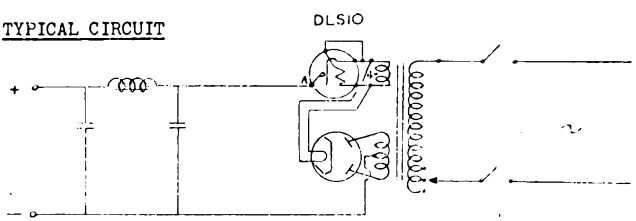
VACUUM THERMAL DELAY SWITCH

APPLICATION

This delay switch is recommended for use with mercury vapour rectifiers in order to provide the necessary delay before the anode voltage is applied. The normal delay time is 60 seconds but the periods of delay up to approximately 1½ minutes can be arranged for if necessary. The heater should be connected across the rectifier filament (4v.) and the contacts on the pins A and G are connected in the H.T. positive supply.

It is essential that negligible potential difference should exist between the filament and moving contact, or trouble may be experienced due to thermionic emission. Alternatively the switch contacts may be connected in the primary of the H.T. mains transformer.

TYPICAL CIRCUIT

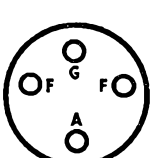


NOTE

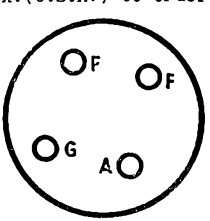
This switch is normally intended to operate at 4.0 volts and higher values of heater voltage will affect the life adversely.

BASE

BVA 4 pin -



or U.X.(U.S.A.) to order only.



DLS.10

EDISWAN

DLS.10

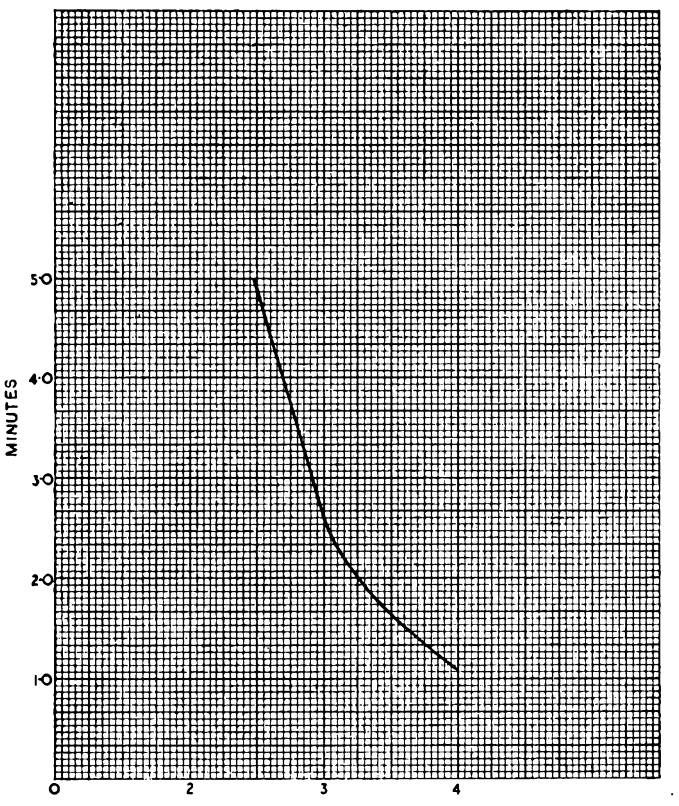
VACUUM THERMAL DELAY SWITCH

CHARACTERISTIC CURVES OF AVERAGE

EDISWAN

THERMAL DELAY SWITCH

DLS.10



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THE EDISON SWAN ELECTRIC COMPANY LTD.

ES.75

EDISWAN

ES.75

TRIODE POWER AMPLIFIER

GENERAL

The ES.75 is a power valve for use in public address equipment and large power amplifiers in general. It will be found suitable for relay service work where it can be used in place of a number of smaller output valves with a corresponding simplification of circuit. The ES.75 is similar to the ES.75.H, but has a lower amplification factor with a corresponding increase in the grid bias under working conditions. Basing connexions are shown overleaf.

RATING

Filament Voltage (volts)	V_f	10.0
Filament Current (amps)	I_f	4.2
Maximum Anode Voltage (volts)	$V_{a(max)}$	1,000
Maximum Anode Dissipation (watts)	W_a	75
Audio Output (watts) (approx.)	W_{out}	15
Amplification Factor	μ	5.0
Impedance (ohms)	r_a	2,100
Mutual Conductance (mA/V)	g_m	2.4
Grid Voltage (approx.)	V_g	150 volts negative at 1,000 anode volts.

DIMENSIONS

Maximum Overall Length (mm)	202
Maximum Diameter (mm)	57

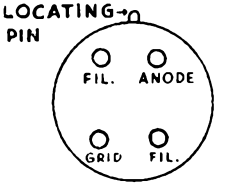
ES.75

EDISWAN

ES.75

TRIODE POWER AMPLIFIER

BASE Jumbo



Viewed from free end of pins.

APPLICATION

The rated value of 75 watts dissipation should never be exceeded. Owing to the small bulb and the special heat-resisting glass employed, the bulb becomes hot during normal operation and it should be mounted in an open well ventilated position. It is advisable to mount the valve in a vertical position with the base downwards, but if this is not desirable the filament should be in the vertical plane when the valve is mounted horizontally.

The filament may be supplied from alternating current and the anode and grid return leads should be taken to the centre tap of the filament transformer. If direct current is used for the filament, the return should be to the positive lead. When the valves are operated in parallel or push-pull, a small choke coil or low resistance should be connected in the grid circuit of each valve to prevent oscillation.

NOTE

The valve is supplied in a special wooden carrying crate to protect it from shock and vibration and it should be kept in this crate when not in use in the valve socket. When valves are kept as spares, they should be periodically used in the amplifier to ensure that they have not deteriorated over a long period.

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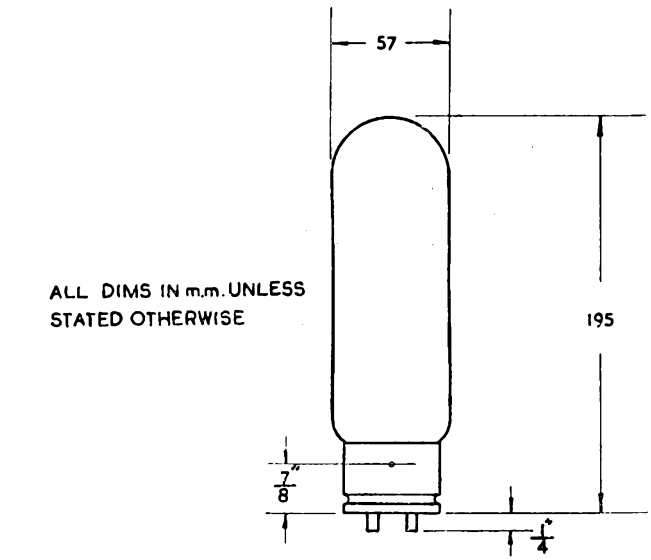
THE EDISON SWAN ELECTRIC COMPANY LTD.

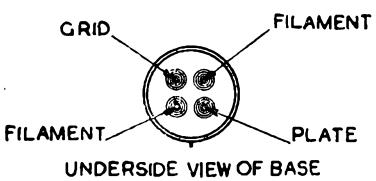
ES.75

EDISWAN

ES.75

TRIODE POWER AMPLIFIER





UNDERSIDE VIEW OF BASE

HARD GLASS BULB

September 1948 RADIO DIVISION Issue 1/5

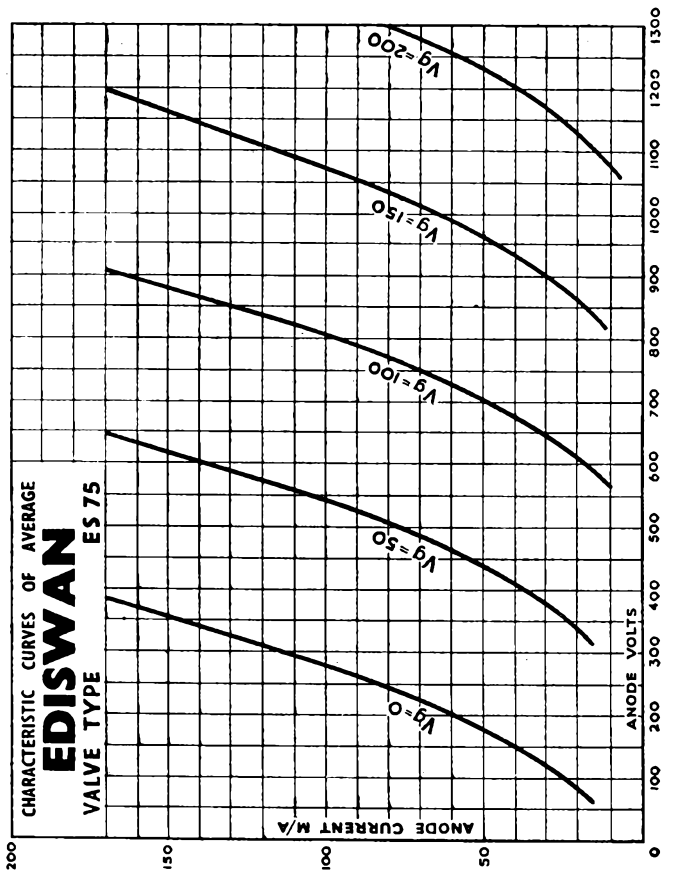
THE EDISON SWAN ELECTRIC COMPANY LTD.

ES.75

EDISWAN

ES.75

TRIODE POWER AMPLIFIER



September 1948 RADIO DIVISION Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

ES.75.H

EDISWAN

ES.75.H

TRIODE POWER AMPLIFIER

GENERAL

The ES.75.H. is a power valve for use in public address equipment and large power amplifiers in general. It has a thoriated tungsten filament and the anode is of graphite, giving greater heat dissipating properties and constancy of characteristic.

RATING

Filament Voltage (volts)	V_f	10.0
Filament Current (amps)	I_f	4.2
Maximum Anode Dissipation (watts)	W_a	75
Maximum Anode Voltage	$V_{a(max)}$	1,000
Amplification Factor	μ	11
Anode A.C. Resistance (ohms) (approx.)	r_a	3,200
Mutual Conductance (mA/V)	g_m	3.4
Maximum Operating Frequency		2 Mc/s

DIMENSIONS

Maximum Overall Length (mm)	202
Maximum Diameter (mm)	57

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THE EDISON SWAN ELECTRIC COMPANY LTD.

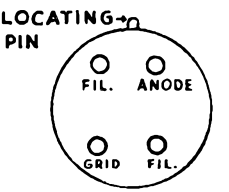
ES.75.H

EDISWAN

ES.75.H

TRIODE POWER AMPLIFIER

BASE Jumbo



Viewed from free end of pins.

APPLICATION

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NOTE

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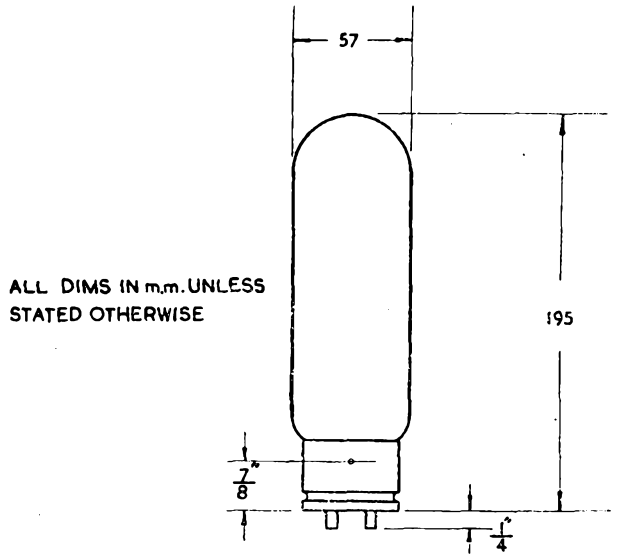
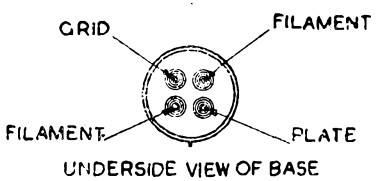
EDISWAN

ES.75.H

TRIODE POWER AMPLIFIER





UNDERSIDE VIEW OF BASE

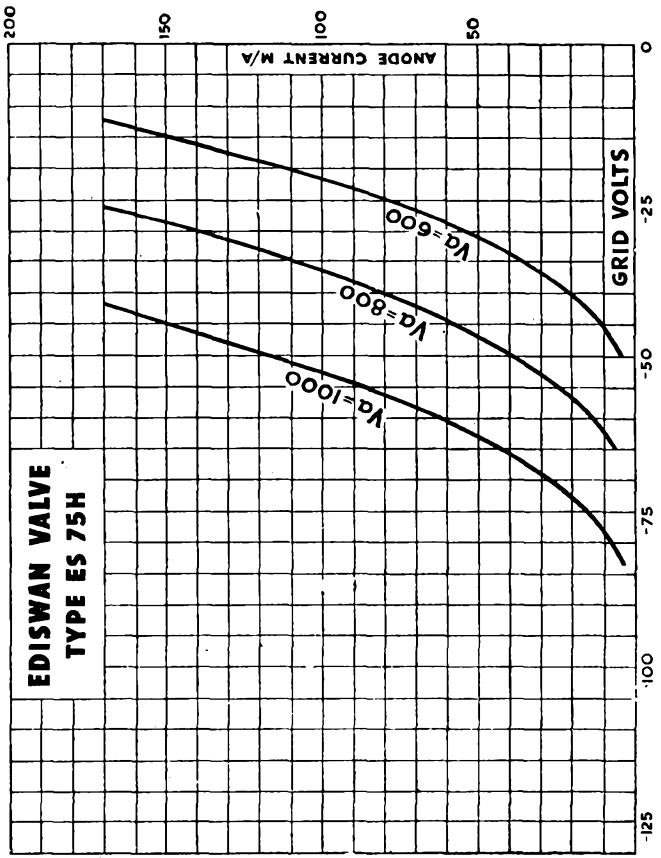
HARD GLASS BULB

ES.75.H

EDISWAN

ES.75.H

TRIODE POWER AMPLIFIER



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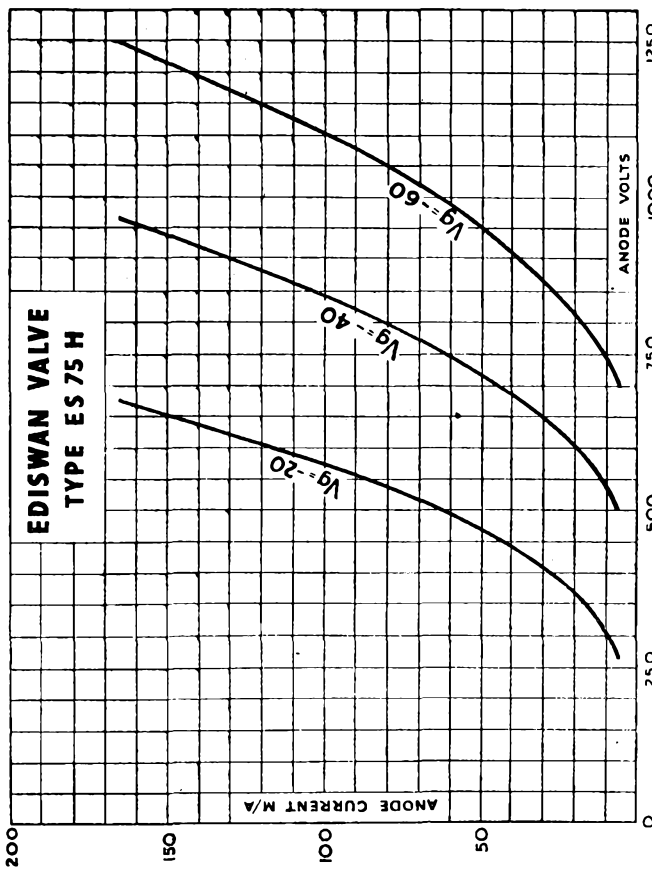
THE EDISON SWAN ELECTRIC COMPANY LTD.

EDISWAN

ES.75.H

TRIODE POWER AMPLIFIER



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THE EDISON SWAN ELECTRIC COMPANY LTD.

ES.250.M

EDISWAN

ES.250.M

POWER AMPLIFIER TRIODE

GENERAL

The ES.250.M is a high power amplifying valve with a Thoriated Tungsten filament. The construction is very robust and the special hard glass envelope ensures freedom from electrolysis and enables the vacuum to be maintained without deterioration throughout life. The anode is of molybdenum, giving remarkable constancy of characteristic and free radiation of heat. The valve is also suitable for use as an oscillator.

RATING

Filament Voltage (volts)	V_f	11.0
Filament Current (amps)	I_f	4.0
Maximum Anode Voltage (volts)	$V_{a(max)}$	2,000
Maximum Anode Dissipation (watts)	$W_{a(max)}$	250
Mutual Conductance (mA/V)	g_m	¶ 3.3
Amplification Factor	μ	¶ 15
Anode Impedance (ohms)	r_a	¶ 4,000
Maximum Filament Emission (amps)	$F_{em(max)}$	4.0

¶ Taken at V_a = 2,000v; I_a = 125mA.

DIMENSIONS

Maximum Overall Length (mm)	370
Maximum Diameter (mm)	110
Approximate Nett Weight (lbs)	1½
Approximate Packed Weight (lbs)	7
Approximate Packed Export Weight (lbs)	7½

MOUNTING POSITION - Vertical

EDISWAN

ES.250.M

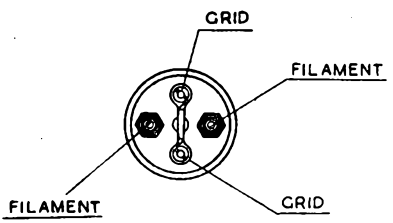
POWER AMPLIFIER TRIODE

APPLICATION

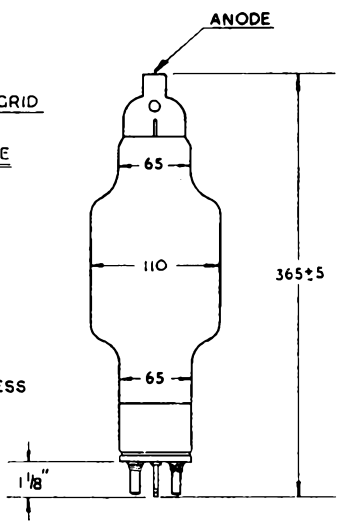
The valve is particularly suitable for use in the output stage of large audio-frequency amplifiers and is capable of supplying up to 30 watts of audio power to the reproducing system. As an oscillator or high frequency amplifier, it is suitable for working at frequencies up to 20 megacycles, although at the latter frequency the anode dissipation should not exceed 200 watts. It is desirable to state the working frequency when ordering this valve.

NOTE

The valve is supplied in a wooden crate to ensure safety in transit. This crate should be kept intact, and the valve should be stored in it when not actually required for use.



UNDERSIDE VIEW OF BASE



ALL DIMS IN m/m UNLESS STATED OTHERWISE

HARD GLASS BULB

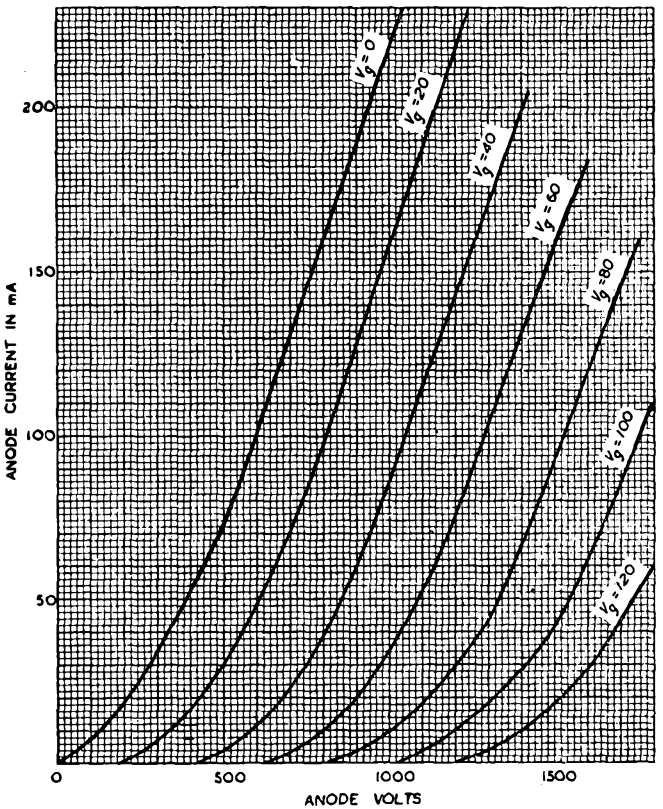
ES.250.M

EDISWAN

ES.250.M

POWER AMPLIFIER TRIODE

AVERAGE CHARACTERISTICS



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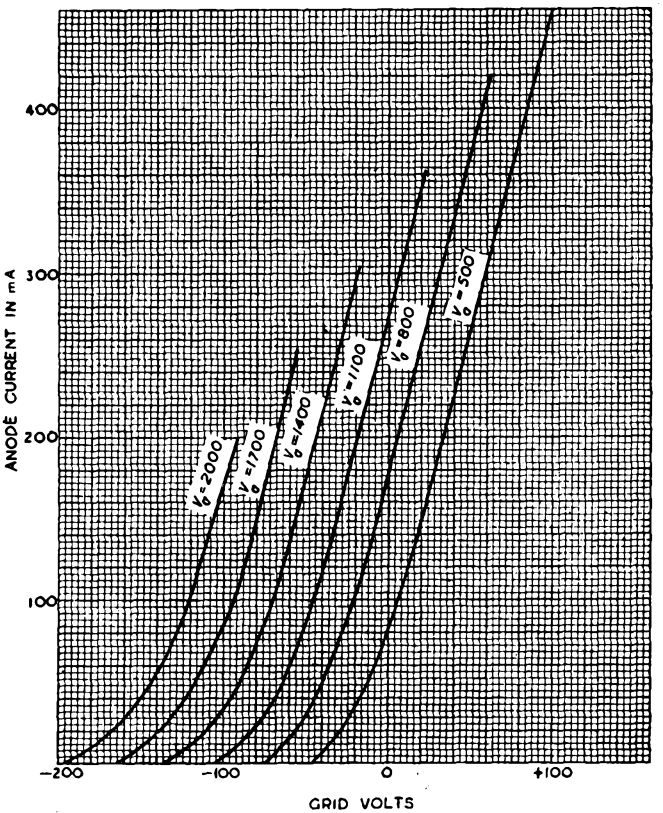
THE EDISON SWAN ELECTRIC COMPANY LTD.

EDISWAN

ES.250.M

POWER AMPLIFIER TRIODE

AVERAGE CHARACTERISTICS



THE EDISON SWAN ELECTRIC COMPANY LTD.

ES.450.X

EDISWAN

ES.450.X

RADIATION COOLED TRIODE

GENERAL

The ES.450.X is a transmitting type triode with a pure tungsten filament. It is particularly suitable for use as an R.F. Oscillator in small R.F. heating equipments.

RATING

Filament Voltage (volts)	V_f	18.0
Filament Current (amps)	I_f	5.15
Maximum Anode Voltage (volts)	$V_{a(max)}$	5,000
Maximum Anode Dissipation (watts)	$W_{a(max)}$	450
Mutual Conductance (mA/V)	g_m *	1.5
Amplification Factor	μ *	30
Anode Impedance (ohms)	V_a *	20,000
Maximum operating frequency at full rating.		1 Mc/s

* Taken at V_a = 2,000. V_g = 0.

DIMENSIONS

Maximum Overall Length (mm)	330
Maximum Diameter (mm)	160
Approximate Nett Weight (ozs)	22.0
Approximate Home Packed Weight (lbs)	8.0
Approximate Export Packed Weight (lbs)	8.5

MOUNTING POSITION - Vertical.

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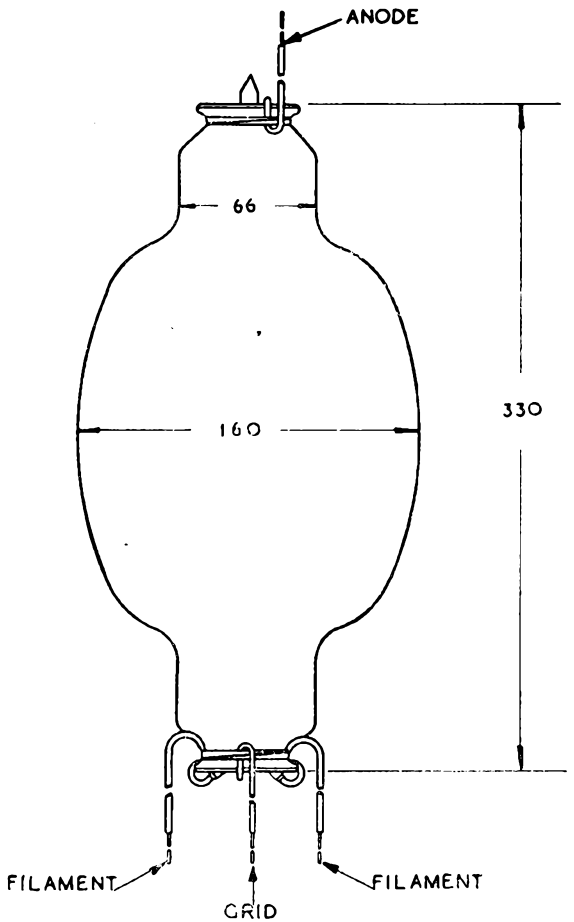
THE EDISON SWAN ELECTRIC COMPANY LTD

ES.450.X

EDISWAN

ES.450.X

RADIATION COOLED TRIODE



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THE EDISON SWAN ELECTRIC COMPANY LTD.

ESG.250

EDISWAN

ESG.250

POWER TETRODE

RATING		
Filament Voltage (volts)	V_f	11.25
Filament Current (amps)	I_f	8.0
Maximum Anode Voltage (volts)	$V_{a(max)}$	5,000
Maximum Screen Voltage (volts)	$V_{g2(max)}$	1,000
Maximum Anode Dissipation (watts)	$W_{a(max)}$	250
Maximum Screen Dissipation (watts)	$W_{g2(max)}$	100
Mutual Conductance (mA/V)	g_m	‡ 1.0
Amplification Factor	μ	‡ 100

‡ V_a = 3,000v; V_{g2} = 600v; V_{g1} = -40v.

INTER-ELECTRODE CAPACITANCES		
Anode - Filament ($\mu\mu$F)	C_{a-f}	0.7
Anode - Grid 1 ($\mu\mu$F)	C_{a-g1}	1.2
Grid 1 - Filament ($\mu\mu$F)	C_{g1-f}	6.4

DIMENSIONS	
Maximum Overall Length (mm)	395
Maximum Diameter (mm)	160
Approximate Nett Weight (lbs)	2
Approximate Packed Weight (lbs)	7½

MOUNTING POSITION - Vertical

August 1948 RADIO DIVISION Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD

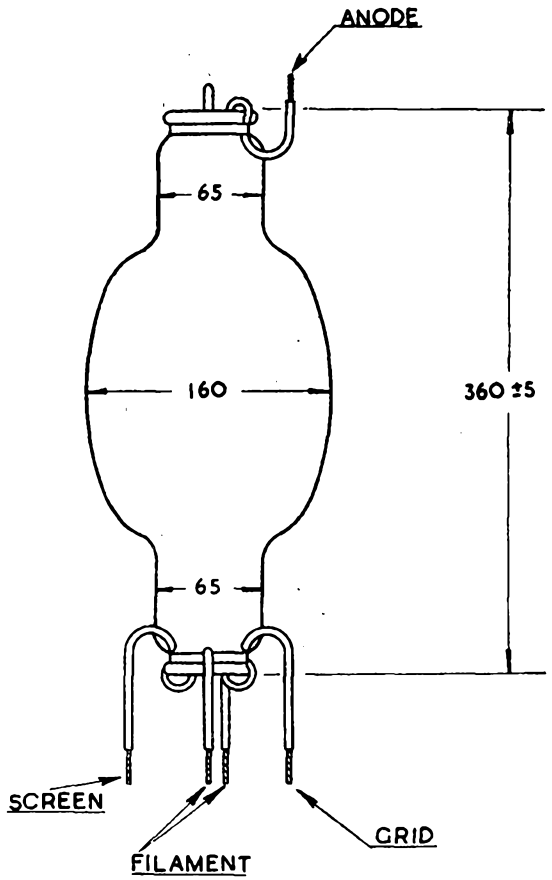
ESG.250

EDISWAN

ESG.250

POWER TETRODE

E.S.G. 250



ALL DIMS IN m/m UNLESS STATED OTHERWISE

ESU.75

EDISWAN

ESU.75

HALF-WAVE MERCURY VAPOUR RECTIFIER

GENERAL

When the rectifier is first placed in service the filament should be operated at normal voltage for 15 minutes without anode voltage in order to obtain correct distribution of the mercury. Care must be taken in installation to ensure free circulation of air around the bulb in order that the temperature limits are not exceeded.

RATING

Filament Voltage (volts)	V_f	2.0
Filament Current (amps)	I_f	10.0
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	7,000
Maximum Average Anode Current (amps)	Ia(max)	0.2
Maximum Peak Anode Current (amps)	Ia(pk)max	0.9
Ambient Temperature Range (°C)		10 - 50
Cathode Heating Delay Time (secs)		15.0

DIMENSIONS

Maximum Overall Length (mm)	185
Maximum Diameter (mm)	78
Approximate Nett Weight (ozs)	4
Approximate Packed Weight (ozs)	6½
Approximate Packed Export Weight (lbs.)	2

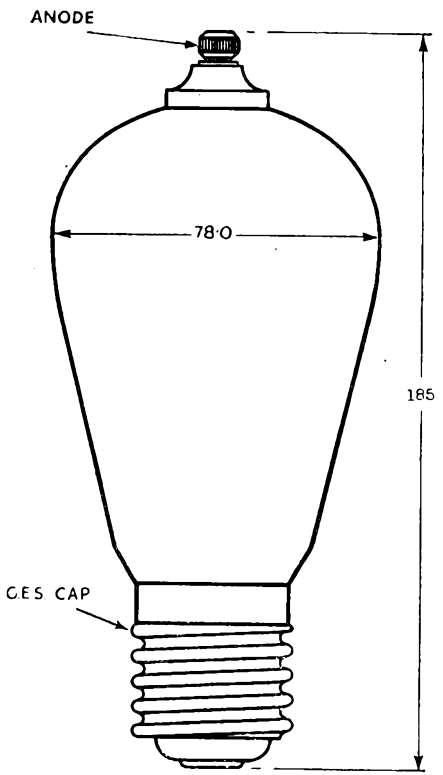
MOUNTING POSITION - Vertical

ESU.75

EDISWAN

ESU.75

HALF-WAVE MERCURY VAPOUR RECTIFIER



ALL DIMENSIONS IN M.M.

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THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.150

EDISWAN

ESU.150

HALF-WAVE MERCURY VAPOUR RECTIFIER

GENERAL

Hot Cathode Half-Wave Rectifier. Care must be taken in installation to ensure free circulation of air around the bulb in order that the temperature limits are not exceeded. When the rectifier is first placed in service, the filament should be operated at normal voltage for 15 minutes without anode voltage in order to obtain correct distribution of the mercury.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	10.0
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	10,000
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	1.8
Maximum Average Anode Current (mA)	$I_{a(av)}$	350
Ambient Temperature Range		10°-50° C
Cathode Heating Delay Time (secs)		60

DIMENSIONS

Maximum Overall Length (mm)	200
Maximum Diameter (mm)	57
Approximate Nett Weight (ozs)	4
Approximate Packed Weight (ozs)	5
Approximate Packed Export Weight (lbs.)	$3\frac{3}{4}$

MOUNTING POSITION - Vertical

EDISWAN

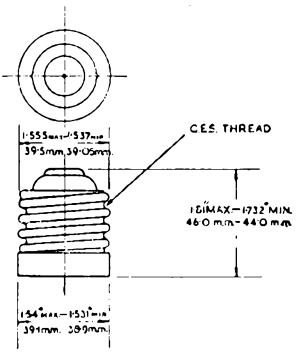
ESU.150

HALF-WAVE MERCURY VAPOUR RECTIFIER

BASE G.E.S. TOP CAP Insulated Screw Type

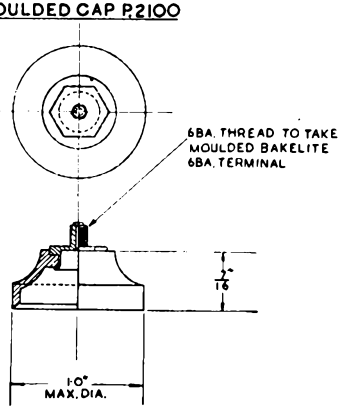
FILAMENT CAP

BASE P.I.O.2



THIS IS THE STANDARD EDISON GOLIATH SCREW CAP F.40/45

MOULDED CAP P.2100



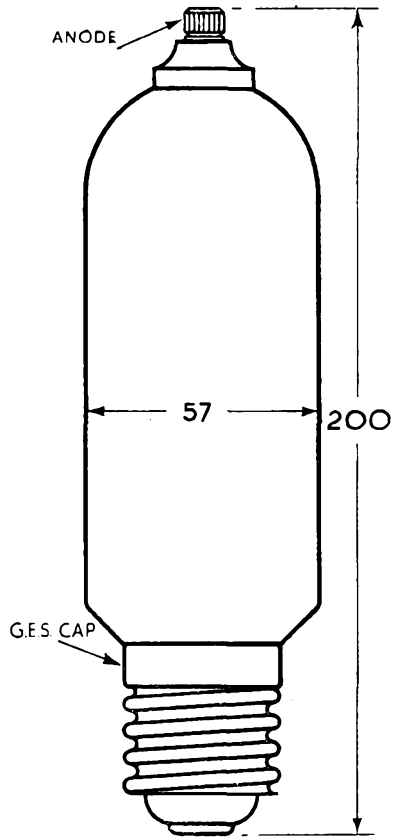
ALL DIMS IN m.m UNLESS STATED OTHERWISE

ESU.150

EDISWAN

ESU.150

HALF-WAVE MERCURY VAPOUR RECTIFIER



ALL DIMENSIONS IN M.M.

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THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.206

EDISWAN

ESU.206

HIGH VACUUM HALF-WAVE RECTIFIER

RATING

Filament Voltage (volts)	V_f	11.5
Filament Current (amps)	I_f	5.0
Maximum Peak Inverse Voltage (volts)	P.I.V.	10,000
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	100

DIMENSIONS

Maximum Overall Length (mm)	260
Maximum Diameter (mm)	102
Approximate Nett Weight (ozs)	9
Approximate Packed Weight (lbs)	5
Approximate Packed Export Weight (lbs)	5½

MOUNTING POSITION - Vertical

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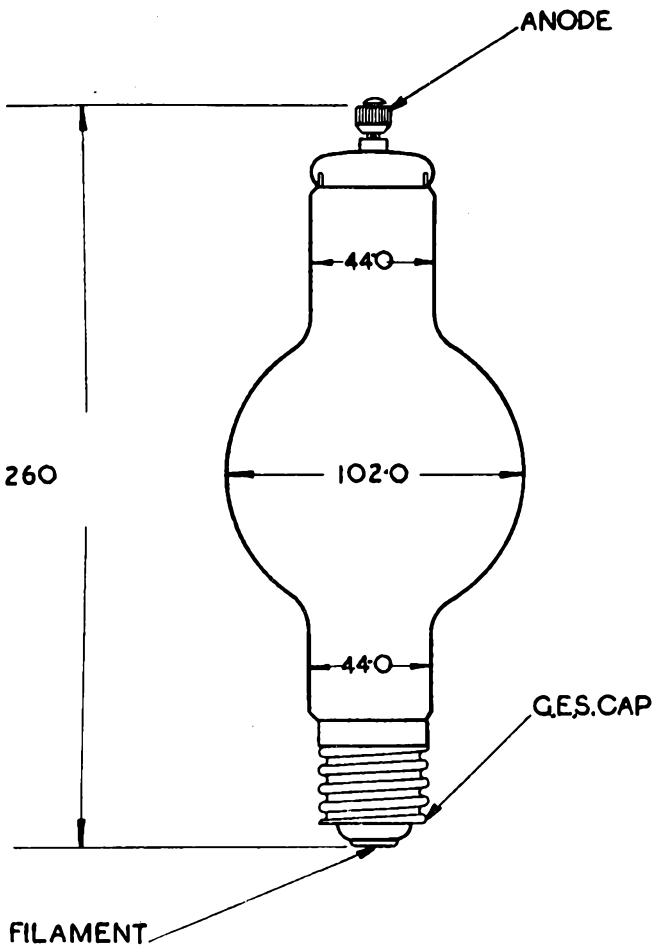
THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.206

EDISWAN

ESU.206

HIGH VACUUM HALF-WAVE RECTIFIER



HARD GLASS BULB

October 1948 *RADIO DIVISION* Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.303

EDISWAN

ESU.303

HALF-WAVE MERCURY VAPOUR RECTIFIER

GENERAL

The ESU.303 is a hot cathode half-wave mercury vapour rectifier. Care must be taken in installation to ensure free circulation of air around the bulb in order that the temperature limits are not exceeded.

When the rectifier is first placed in service the filament should be operated at normal voltage for 15 minutes without anode voltage in order to obtain correct distribution of mercury.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	12.5
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	14,000
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	3.0
Maximum Average Anode Current (amps)	$I_{a(av)}$	0.75
Ambient Temperature Range		10–40°C
Cathode Heating Delay Time (secs)	t	60

DIMENSIONS

Maximum Overall Length (mm)	285
Maximum Diameter (mm)	64
Approximate Nett Weight (ozs)	12
Approximate Packed Weight (lbs)	4.0
Approximate Packed Export Weight (lbs)	4½

MOUNTING POSITION - Vertical

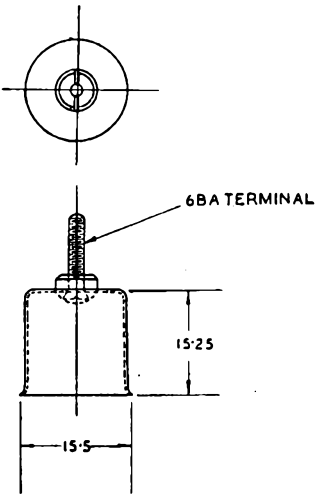
ESU.303

EDISWAN

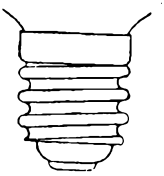
ESU.303

HALF-WAVE MERCURY VAPOUR RECTIFIER

TOP CAP Anode



BASE G.E.S. - Filament



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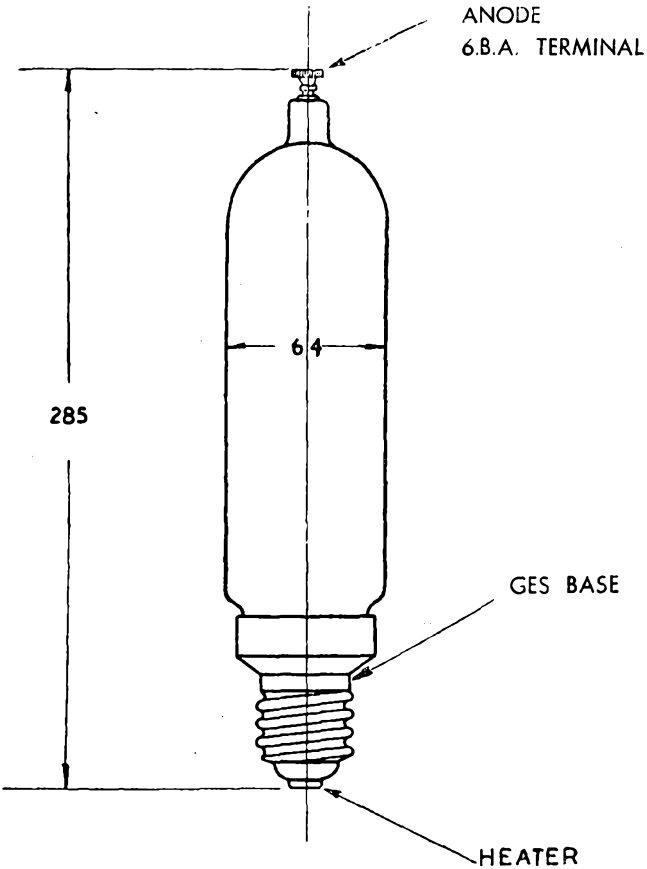
THE EDISON SWAN ELECTRIC COMPANY LTD

EDISWAN

ESU.303

HALF-WAVE MERCURY VAPOUR RECTIFIER

ESU 303



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October 1948 RADIO DIVISION Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.400

EDISWAN

ESU.400

HALF-WAVE MERCURY VAPOUR RECTIFIER

TENTATIVE

RATING		
Filament Voltage (volts)	V_f	5.0
Filament Current (amps)	I_f	12.5
Maximum Peak Anode Current (amps)	$I_{a(pk)}$	6.0
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	14,000
Approximate Voltage Drop (volts)	V_{ir}	10.0
Filament Heating Time (secs)		60
Ambient Temperature (C°)		20 60

DIMENSIONS	
Maximum Overall Length (mm)	250
Maximum Diameter (mm)	78
Approximate Nett Weight (ozs)	10½
Approximate Packed Weight (lbs)	4
Approximate Packed Export Weight (lbs)	4½

MOUNTING POSITION - Vertical

BASE - Jumbo

SPECIAL NOTE

When the rectifier is first placed into service, the filament should be operated at Normal Voltage for 15 minutes without the anode voltage. This will enable the mercury anode to be correctly distributed.

ESU.400

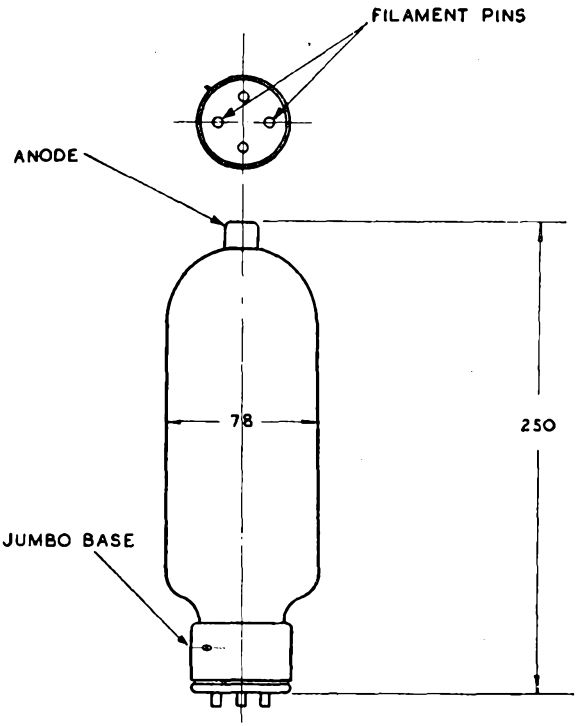
EDISWAN

ESU.400

HALF-WAVE MERCURY VAPOUR RECTIFIER

TENTATIVE

ESU400



ALL DIMS IN mm. UNLESS STATED OTHERWISE

ESU.450

EDISWAN

ESU.450

HIGH VACUUM HALF-WAVE RECTIFIER

RATING

Filament Voltage (volts)	V_f	17.0
Filament Current (amps)	I_f	6.6
Maximum Anode Voltage (volts)	$V_{a(max)}$	1,000
Maximum Peak Inverse Anode Voltage (volts)	P.I.V.(max)	20,000
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	0.4
Maximum Anode Dissipation (watts)	$P_{a(max)}$	450

DIMENSIONS

Maximum Overall Length (mm)	345
Maximum Diameter (mm)	160
Approximate Nett Weight (ozs)	18
Approximate Packed Weight (lbs)	8
Approximate Packed Export Weight (lbs)	9

MOUNTING POSITION - Vertical

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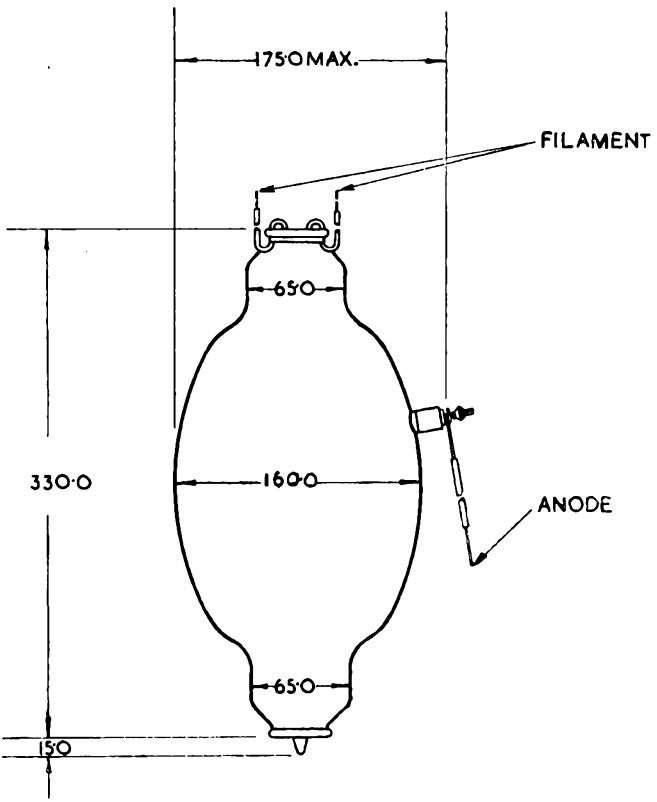
THE EDISON SWAN ELECTRIC COMPANY LTD.

EDISWAN

ESU.450

HIGH VACUUM HALF-WAVE RECTIFIER



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STATED OTHERWISE

October 1948 *RADIO DIVISION* Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

ESU.751

EDISWAN

ESU.751

HALF-WAVE MERCURY VAPOUR RECTIFIER

RATING

Filament Voltage (volts)	V_f	2.0
Filament Current (amps)	I_f	10.0
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	5,000
Maximum Peak Anode Current (amps)	$I_{a(pk)}$	0.9
Cathode heating delay time (secs)		15.0
Ambient Temperature Range (°C)		10-50

DIMENSIONS

Maximum Overall Length (mm)	150
Maximum Diameter (mm)	58
Approximate Nett Weight (ozs)	3½
Approximate Packed Weight (ozs)	6
Approximate Packed Export Weight (lbs)	2

MOUNTING POSITION - Vertical

NOTE: See ESU.75 for initial installation instructions.

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THE EDISON SWAN ELECTRIC COMPANY LTD.

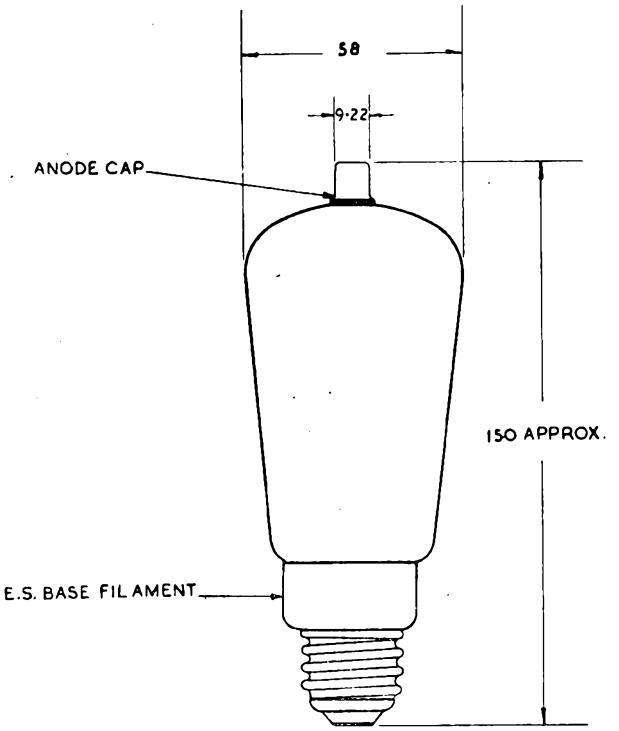
EDISWAN

ESU.751

HALF-WAVE MERCURY VAPOUR RECTIFIER

TOP CAP Anode

BASE EDISON SCREW - Filament



ALL DIMS IN m.m. UNLESS STATED OTHERWISE

October 1948 RADIO DIVISION Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

MR.15

EDISWAN

MR.15

GRID CONTROLLED MERCURY VAPOUR RECTIFIER

GENERAL

When this rectifier is first placed in service the filament should be operated at normal voltage for 15 minutes without the anode voltage in order to obtain correct distribution of the mercury.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	15.0
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	20,000
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	15
Control Ratio (approx.)		90
Ambient Temperature Range °C		10-40
Cathode heating delay time (secs)		60

DIMENSIONS

Maximum Overall Length (mm)	440
Maximum Diameter (mm)	150
Approximate Nett Weight (oz)	18
Approximate Packed Weight (lb)	9
Approximate Packed Export Weight (lb)	10

MOUNTING POSITION - Vertical

BASE G.E.S.

SPECIAL NOTE

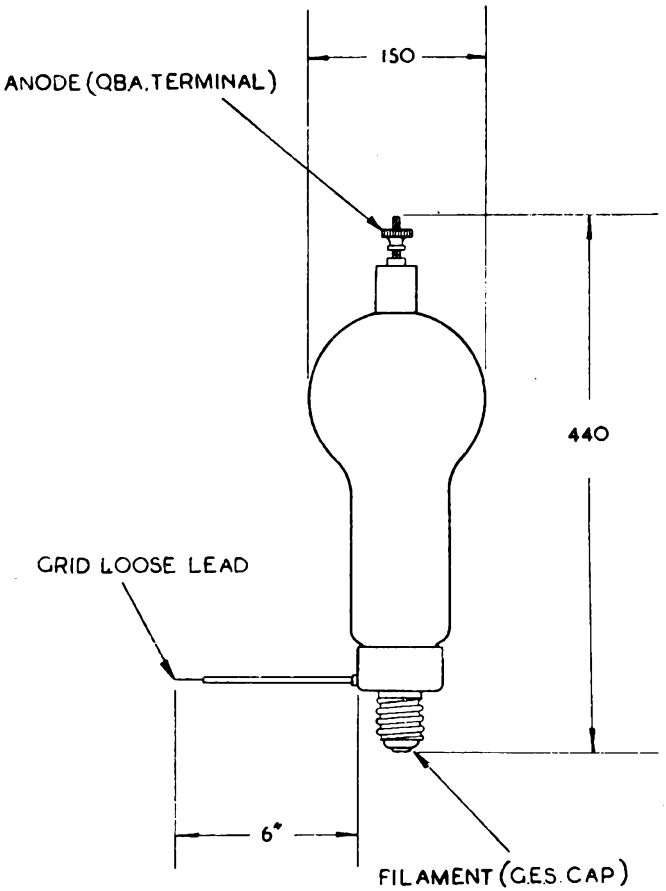
The grid is connected by means of an insulated loose flexible lead through the base.

MR.15

EDISWAN

MR.15

GRID CONTROLLED MERCURY VAPOUR RECTIFIER



ALL DIMS. IN m.m. UNLESS
STATED OTHERWISE

November 1948 *RADIO DIVISION* Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

MR.304

EDISWAN

MR.304

GRID CONTROLLED MERCURY VAPOUR RECTIFIER

GENERAL

Hot Cathode Half-Wave Grid Controlled Rectifier. Care must be taken in installation to ensure free circulation of air around the bulb in order that the temperature limits are not exceeded.

When the rectifier is first placed in service the filament should be operated at normal voltage for 15 minutes without anode voltage in order to obtain correct distribution of the mercury. The rectifier should be mounted vertically.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	12.5
Maximum Peak Inverse Voltage (kV)	P.I.V.(max)	14.0
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	3.0
Maximum Average Anode Current (amps)	$I_{a(av)max}$	0.75
Control Ratio		500
Ambient Heating Delay Time (secs)		60
Ambient Temperature Range	°C	10-40

DIMENSIONS

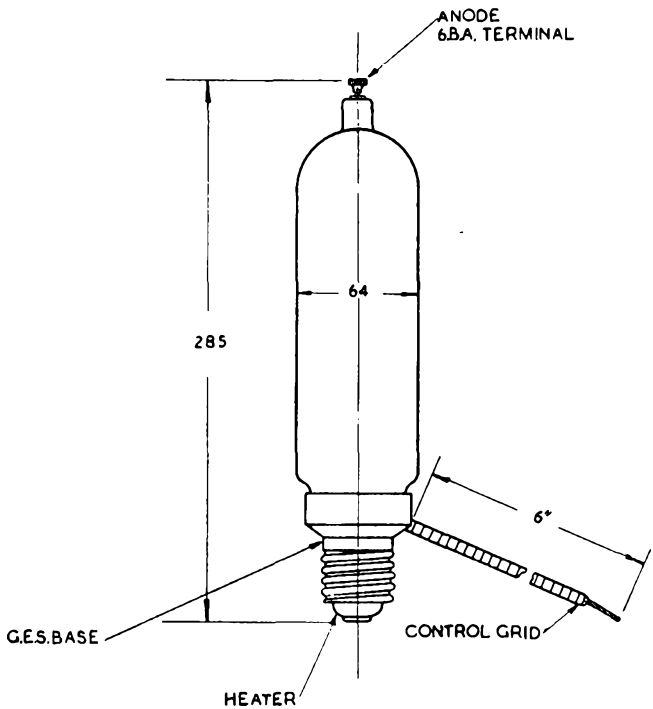
Maximum Overall Length (mm)	285
Maximum Overall Diameter (mm)	64

MR.304

EDISWAN

MR.304

GRID CONTROLLED MERCURY VAPOUR RECTIFIER



ALL DIMS. IN m.m. UNLESS STATED OTHERWISE

THE EDISON SWAN ELECTRIC COMPANY LTD.

MU.25

EDISWAN

MU.25

HALF-WAVE MERCURY VAPOUR RECTIFIER

GENERAL

This is an indirectly heated oxide coated cathode half-wave rectifier. Care should be taken in installation to ensure free circulation of air around bulb in order that the temperature limits are not exceeded. When the mercury vapour rectifier is first placed into service, the cathode should be operated at normal voltage for 15 minutes, without anode voltage in order to obtain correct distribution of the mercury.

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	28 0
Maximum Peak Inverse Anode Voltage (volts)	P.I.V (max)	500
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	100
Maximum Average Anode Current (amps)	$I_{a(av)max}$	25
Ambient Temperature Range		10° -40°C
Cathode Heating Delay Time (mins)	t	5.0

DIMENSIONS

Maximum Overall Length (mm)	395
Maximum Diameter (mm)	110
Approximate Nett Weight (lbs)	1½
Approximate Packed Weight (lbs)	8
Approximate Packed Export Weight (lbs)	8½

MOUNTING POSITION - Vertical

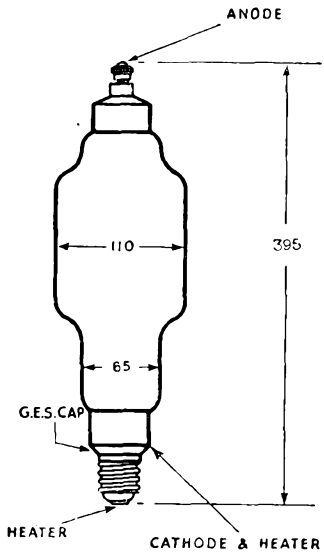
MU.25

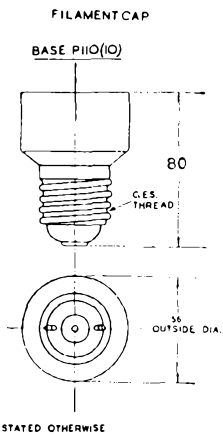
EDISWAN

MU.25

HALF-WAVE MERCURY VAPOUR RECTIFIER

BASE G.E.S. TOP CAP Screw.





ALL DIMS IN m.m. UNLESS STATED OTHERWISE

August 1948 RADIO DIVISION Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD.

U.235

EDISWAN

U.235

FULL WAVE GAS DISCHARGE RECTIFIER

GENERAL

Type U.235 is a full wave gas discharge rectifier suitable for use in low voltage charging circuits.

RATING

Filament Voltage (volts)	V_f	2.0
Filament Current (amps)	I_f	3.5
D.C. Output	20 volts	2 amps

DIMENSIONS

Maximum Overall Length (including Pins) (mm)	110
Maximum Diameter (mm)	45
Approximate Nett Weight (ozs)	1⅛
Approximate Home Packed Weight (ozs)	2½
Approximate Export Packed Weight (ozs)	4

MOUNTING POSITION - Vertical

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THE EDISON SWAN ELECTRIC COMPANY LTD.

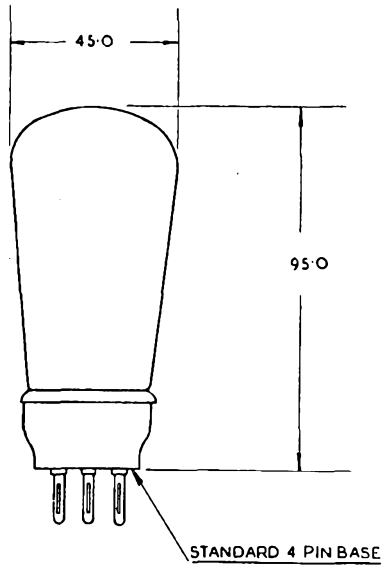
U.235

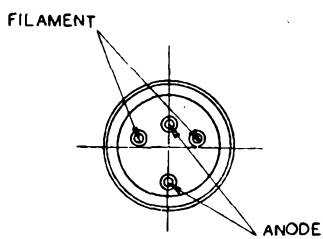
EDISWAN

U.235

FULL WAVE GAS DISCHARGE RECTIFIER

U.235





ALL DIMS IN m.m. UNLESS STATED OTHERWISE

December 1948 *RADIO DIVISION* Issue 1/5

THE EDISON SWAN ELECTRIC COMPANY LTD

NE.5

EDISWAN

NE.5

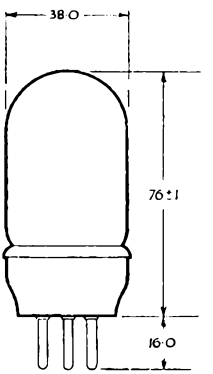
NEON

GENERAL

This neon tube is particularly suitable for the operation of small relays in automatic timing circuits, etc. Connections are made to the Anode and Cathode pins i.e. Pins Nos. 1 & 5. Care must be taken to ensure that the Anode pin is always connected to the positive side of circuit.

RATING

Approximate Striking Voltage (volts)	210
Approximate Extinguishing Voltage (volts)	110
Maximum Mean Current (mA)	20



NOTE: No resistance in base.

68506

EDISWAN

68506

HALF-WAVE TUNGAR RECTIFIER

GENERAL

Type 68506 is a Hot Cathode Gas Discharge Half-Wave Rectifier designed for use in low voltage battery charging circuits.

RATING

Filament Voltage (volts)	V_f	2.3
Filament Current (amps)	I_f	18.0
Striking Voltage (volts)	V_s	15.0
Anode to Cathode Voltage drop (volts)		10.0
D.C. Output	75 volts 6 amps.	

DIMENSIONS

Maximum Overall Length (mm)	170
Maximum Overall Diameter (mm)	80
Approximate Nett Weight (ozs)	4.0
Approximate Home Packed Weight (ozs)	8.0
Approximate Export Packed Weight (ozs)	12.0

MOUNTING POSITION - Vertical

BASE G.E.S. - Filament

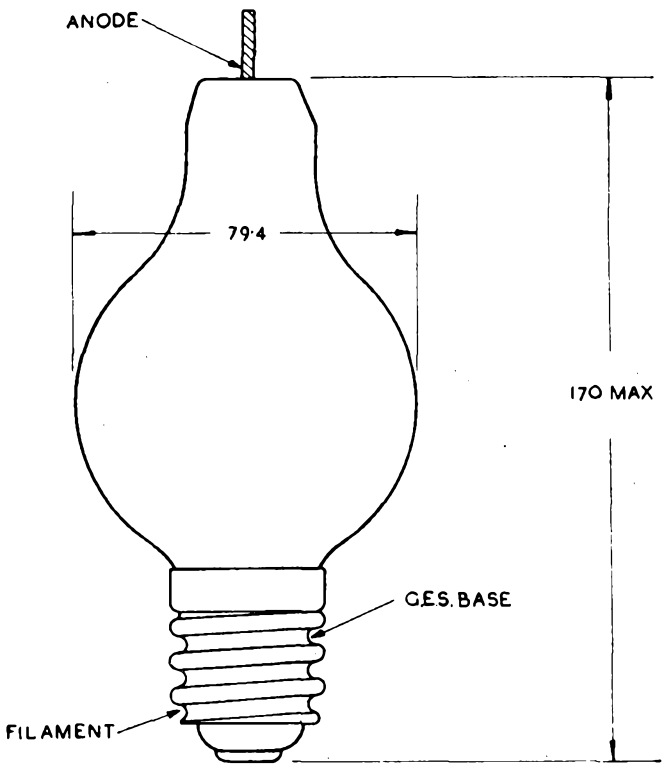
TOP CAP Loose lead - Anode.

68506

EDISWAN

68506

HALF-WAVE TUNGAR RECTIFIER



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THE EDISON SWAN ELECTRIC COMPANY LTD.

68510

EDISWAN

68510

HALF-WAVE TUNGAR RECTIFIER

GENERAL

Type 68510 is a Hot Gas Discharge Half-Wave Rectifier designed for use in low voltage battery charging equipment.

RATING

Filament Voltage (volts)	V_f	2.0
Filament Current (amps)	I_f	12.0
Striking Voltage (volts)	V_S	15.0
Anode to Cathode Voltage drop (volts)		10.0
D.C. Output	50 volts	2 amps
	75 volts	1.5 amps

DIMENSIONS

Maximum Overall Length (mm)	105
Maximum Overall Diameter (mm)	51
Approximate Nett Weight (ozs)	2½
Approximate Home Packed Weight (ozs)	4½
Approximate Export Packed Weight (ozs)	6

MOUNTING POSITION - Vertical

68510

EDISWAN

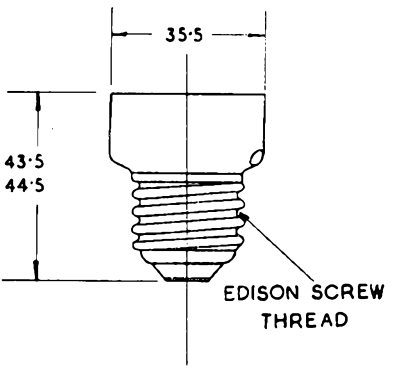
68510

HALF-WAVE TUNGAR RECTIFIER

BASE G.E.S. - Filament

LOOSE LEAD Anode

BASE P11O (25)
68510 FILAMENT AND ANODE CAP



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THE EDISON SWAN ELECTRIC COMPANY LTD.

SPECIAL PURPOSE VALVES

I.D.13

MAZDA

I.D.13

BATTERY R.F. DIODE

Indirectly heated

RATING

Heater Voltage (volts)	V_h	1.4
Heater Current (amps)	I_h	0.15
Maximum Anode Voltage (RMS).	$V_{a(max)}$	130
Maximum Peak Inverse Voltage (volts)	P.I.V.(max)	365
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	5.0
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	0.5
Maximum Potential Heater/Cathode (volts D.C.)	$V_{h-k(max)}$	100

INTER-ELECTRODE CAPACITANCES •

Anode/Cathode ($\mu\mu$F)	C_{a-k}	0.6
Anode/Heater ($\mu\mu$F)	C_{a-h}	1.05
Heater/Cathode ($\mu\mu$F)	C_{k-h}	0.7

• With no external shield.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19

MOUNTING POSITION - Unrestricted.

NOTE The Resonant frequency of this valve is approximately 1,000 Mc/s. with no external shield.

MAZDA

I.D.13

BATTERY R.F. DIODE

Indirectly heated

TYPICAL OPERATION (with Condenser Input Filter)

Anode Voltage (volts R.M.S)	117
Filter Input Condenser (μF)	2.0
Minimum Total Effective Anode/Supply Impedance (ohms)	0

BULB Clear

BASE B.7.G.

Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Anode	a
Pin 3	Cathode	k
Pin 4	-	-
Pin 5	Internal Connexion •	1.c
Pin 6	Anode	a
Pin 7	Heater	h

• This pin must be left free.

I.D.13

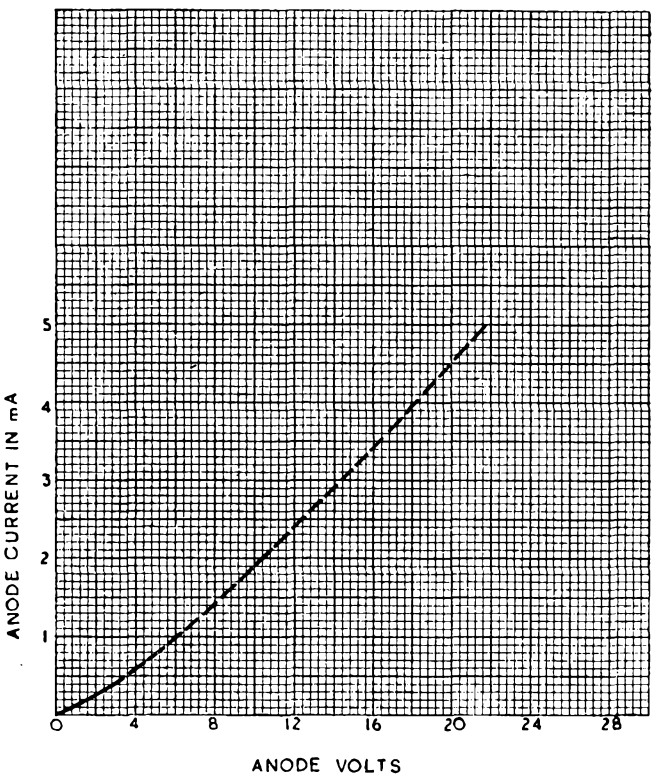
MAZDA

I.D.13

BATTERY R.F. DIODE

Indirectly heated

AVERAGE CHARACTERISTIC CURVE



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.F.32

SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

GENERAL

The 6.F.32 has a short cut off Suppressor Grid characteristic which makes it particularly suitable for use in Modulator, Variable Reactance and Timing Circuits.

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.63
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	200
Mutual Conductance (mA/V)	g_m	• 3.35
Inner μ ¶	$\mu_{g1-\mu g2}$	• 38
Maximum Anode Dissipation (watts)	$P_{a(max)}$	† 4.5
Maximum Screen Dissipation (watts)	$P_{g2(max)}$	1.5
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

• Taken at $V_a = V_{g2} = 200v$; $V_{g1} = -4v$; $V_{g3} = 0v$.

¶ i.e. $\frac{\delta V_{g2}}{\delta V_{g1}}$ with I_a constant

† Low grid resistance should be employed, particularly when running at maximum dissipation.

INTER-ELECTRODE CAPACITANCES

Anode/Earth (μμF)	C_{out}	5.7
Anode/Control Grid (μμF)	C_{a-g1}	< 0.0005
Control Grid/Earth (μμF)	C_{in}	10.5

"Earth" denotes the remaining earthy potential electrodes, heater and metallising joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	96
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	83.5
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	1¾

MOUNTING POSITION - Unrestricted

May 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD.

G

6.F.32

MAZDA

6.F.32

SCREENED R.F. PENTODE

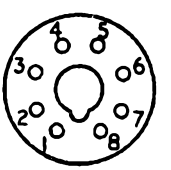
Indirectly heated – for parallel operation

TYPICAL OPERATION

Anode Voltage (volts)	V_a	200	200
Screen Voltage (volts)	V_{g2}	200	200
Control Grid Bias Voltage (volts)	V_{g1}	-4.5	-4.5
Suppressor Grid Bias Voltage (volts)	V_{g3}	0	-3.3
Anode Current (mA)	I_a	5.1	2.5
Screen Current (mA)	I_{g2}	3.45	5.5
Mutual Conductance	S_m	3.0	1.4
Approximate Suppressor Grid Bias (volts) for 50 μA/V with V_{g1} = -4.5v		-8.0	-8.0

BULB Metallised

BASE B.O.7



Viewed from free ends of pins

CAP B.V.A. Standard

CONNEXIONS

Pin 1	Heater	h
Pin 2	Cathode	k
Pin 3	Anode	a
Pin 4	Screen Grid	g2
Pin 5	Suppressor Grid	g3
Pin 6	Metallising	M
Pin 7	Omitted	-
Pin 8	Heater	h
Top Cap	Control Grid	g1

6.F.32

MAZDA

6.F.32

SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

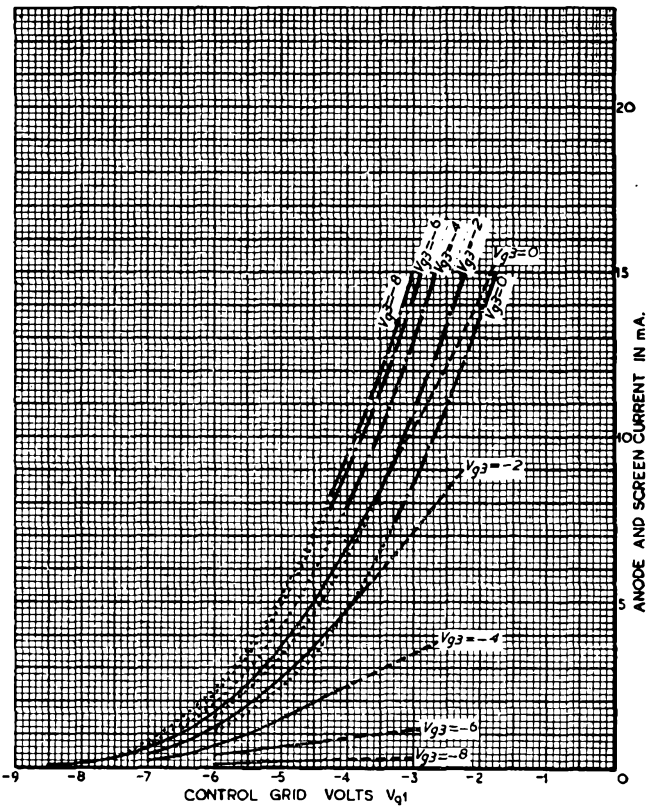
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F32

Curves taken at $V_a = V_{g2} = 200V$

Key
- Anode Current
- Screen Current
- Anode Current
- Screen Current

} In these regions a dissipation limit is exceeded



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THE EDISON SWAN ELECTRIC COMPANY LTD.

6.F.32

MAZDA

6.F.32

SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

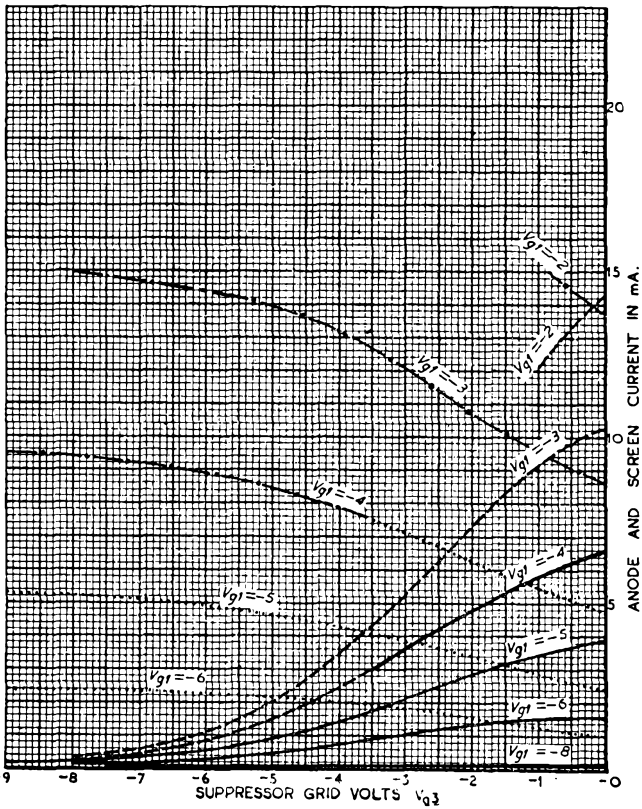
CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F32

Curves taken at $V_b = V_{g2} = 200V$

Key
- Anode Current
- Screen Current
- Anode Current
- Screen Current

} In these regions a dissipation limit is exceeded.



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.F.32

SCREENED R.F. PENTODE

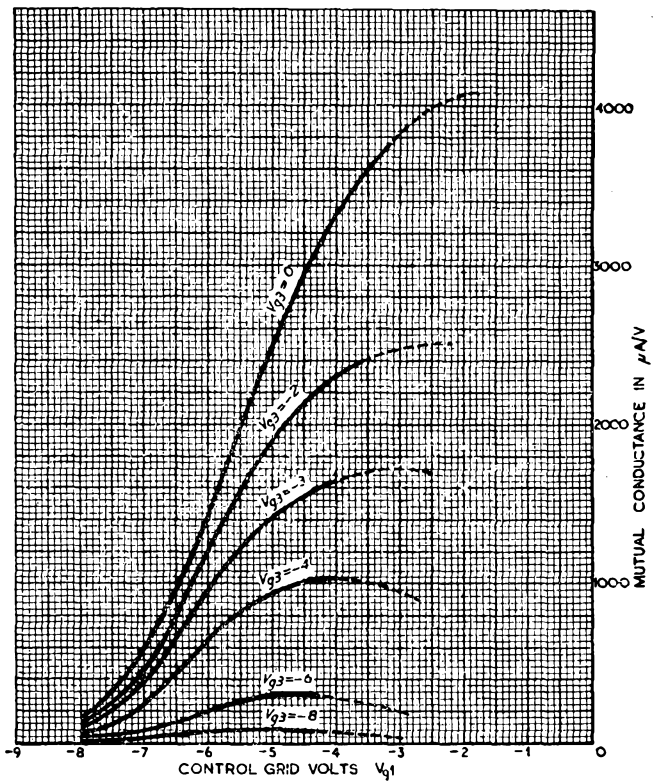
Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F32

Curves taken at $V_a = V_{g2} = 200V$.

Where the curve is broken a dissipation limit is exceeded.



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THE EDISON SWAN ELECTRIC COMPANY LTD.

6.F.32

MAZDA

6.F.32

SCREENED R.F. PENTODE

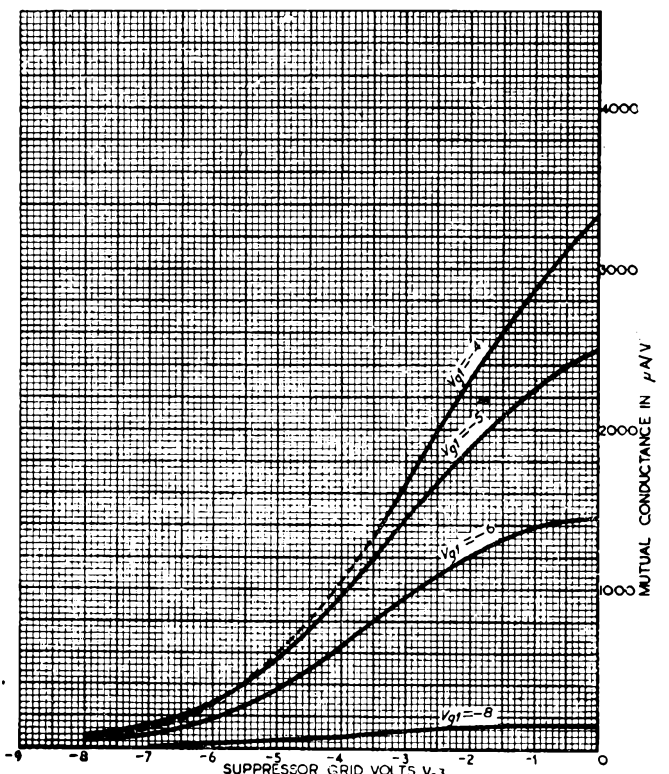
Indirectly heated – for parallel operation

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F32

Curves taken at $V_b = V_{g2} = 200V$.

Where the curve is broken a dissipation limit is exceeded.



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THE EDISON SWAN ELECTRIC COMPANY LTD

MAZDA

6.F.33

SCREENED R.F. PENTODE

Indirectly heated

GENERAL

The 6.F.33 has a short cut-off Suppressor Grid characteristic which makes it particularly suitable for use in Modulator, Variable Reactance and Timing Circuits. In order that the Suppressor Grid may be driven positive, a diode has been tied to this grid.

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.35
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	250
Mutual Conductance (mA/V)	S_m	• 4.35
Inner μ ♭	μ_{g1g2}	• 38
Maximum Anode Dissipation (watts)	$P_{a(max)}$	2.5
Maximum Screen Dissipation (watts)	P_{g2}	0.8
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	100

• Taken at V_a = 200 v; V_{g2} = 100 v; V_{g1} = -1.5 v; V_{g3} = 0 v.

♭ i.e. $\frac{\delta V_{g2}}{\delta V_{g1}}$ with I_a constant

INTER-ELECTRODE CAPACITANCES

		†	]
Anode/Earth (μμF)	C_{out}	4.5	5.7
Anode/Control Grid (μμF)	C_{a-g1}	0.01	0.012
Control Grid/Earth (μμF)	C_{in}	7.3	8.5

† Measured with Benjamin cylindrical screen type 75/832, but holder capacity balanced out.

] Including capacity of Benjamin B7G holder type 75/833 and screen type 75/832.

DIMENSIONS

Maximum Overall Length (mm)	54
Maximum Diameter (mm)	19
Maximum Seated Height (mm)	48.6
Approximate Nett Weight (ozs)	¼
Approximate Packed Weight (ozs)	½

MOUNTING POSITION - Unrestricted

6.F.33

MAZDA

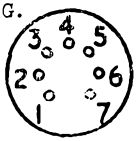
6.F.33

SCREENED R.F. PENTODE

Indirectly heated

BULB Clear

BASE B.7.G.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Control Grid	g1
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Anode	a
Pin 6	Suppressor Grid	g3
Pin 7	Screen Grid	g2

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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.F.33

SCREENED R.F. PENTODE

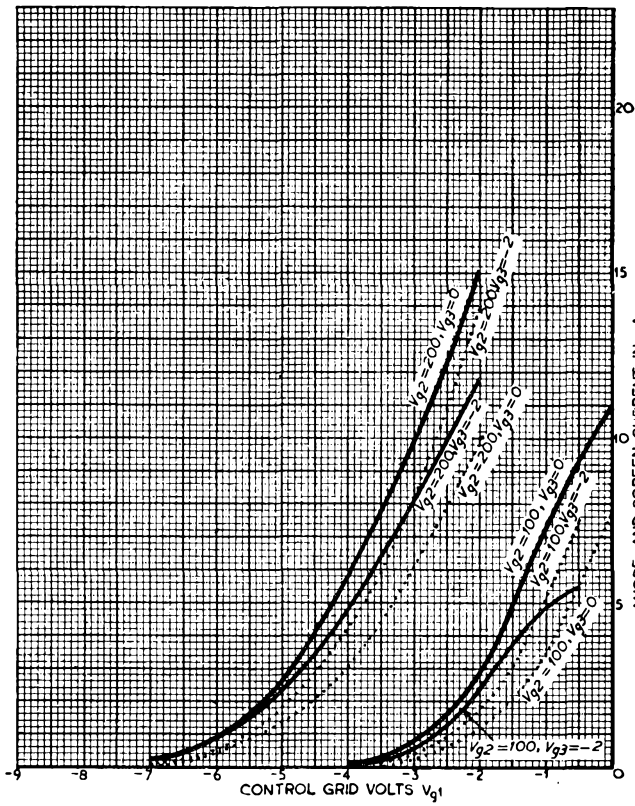
Indirectly heated

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F33

Curves taken at $V_b = 200V.$

Key { —— Anode Current
····· Screen Current



THE EDISON SWAN ELECTRIC COMPANY LTD.

6.F.33

MAZDA

6.F.33

SCREENED R.F. PENTODE

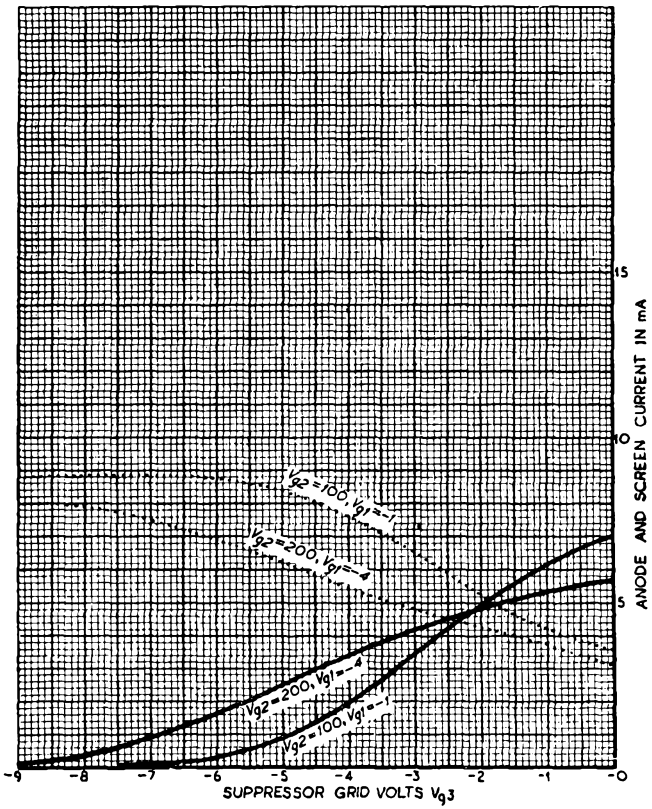
Indirectly heated

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F33

Curves taken at V_b = 200V.

Key { —— Anode Current
····· Screen Current



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

6.F.33

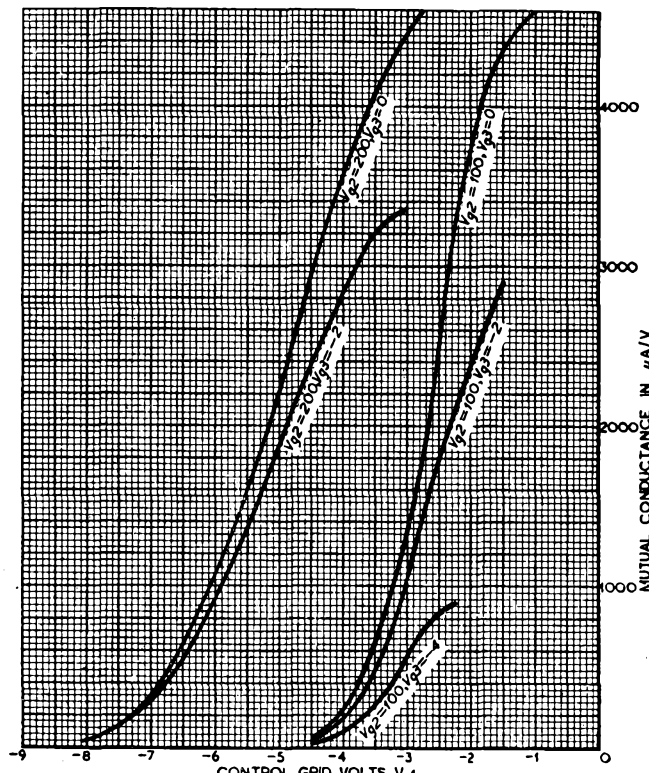
SCREENED R.F. PENTODE

Indirectly heated

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F33

Curves taken at V_b=200V.



THE EDISON SWAN ELECTRIC COMPANY LTD.

6.F.33

MAZDA

6.F.33

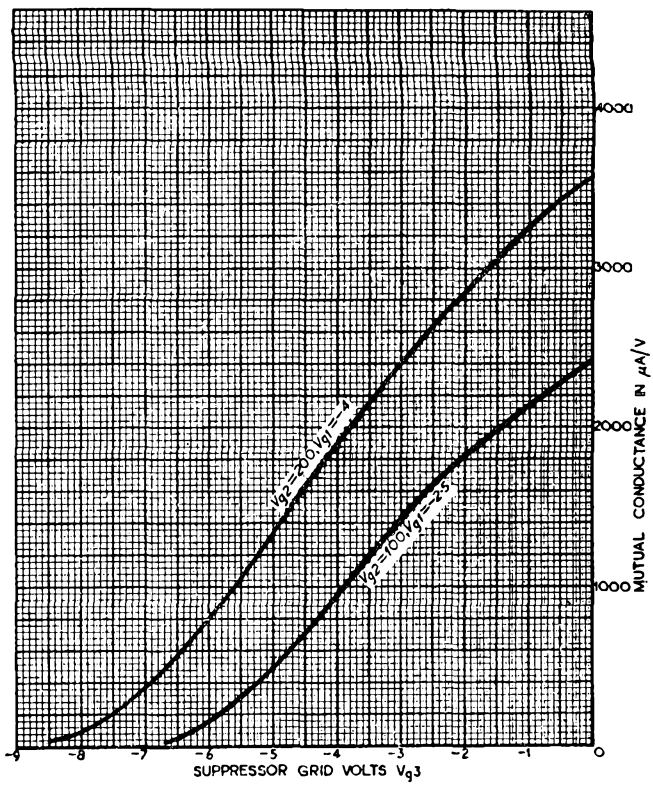
SCREENED R.F. PENTODE

Indirectly heated

CHARACTERISTIC CURVES OF AVERAGE

MAZDA VALVE 6F33

Curves taken at $V_b = 200V$



May 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

11.E.2

BEAM POWER AMPLIFIER

Indirectly heated – for Pulse Amplification

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.9
Maximum Peak Anode Voltage - Pulse Rating (volts)	$V_{a(pk)max}$	12,500
Maximum Screen Voltage (volts)	$V_{g2(max)}$	550
Maximum Peak Anode Current (amps)	$I_{a(pk)max}$	1.0
Inner Mu	$\mu_{g1,g2}$	: 9.0
Maximum Anode Dissipation (watts)	$W_{a(max)}$	5.0
Maximum Screen Dissipation (watts)	$W_{g2(max)}$	1.0
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

: Taken at V_a = 200v; V_{g2} = 200v; I_a = 25mA.

INTER-ELECTRODE CAPACITANCES

Anode/Earth (μμF)	$C_{a,all}$	7.5
Anode/Control Grid (μμF)	$C_{a,g1}$	0.2
Control Grid/Earth (μμF)	$C_{g1,all}$	15.5

"Earth" denotes the remaining earthy potential electrodes, heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	86
Maximum Diameter (mm)	32
Maximum Radius over Side Cap (mm)	25
Maximum Seated Height (mm)	73
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	4

MOUNTING POSITION - Vertical

NOTE

This valve is intended for use in break modulators but it can be employed in a series modulation with a standoff voltage of 3,000 volts.

11.E.2

MAZDA

11.E.2

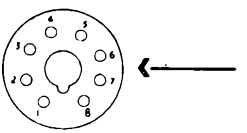
BEAM POWER AMPLIFIER

Indirectly heated – for Pulse Amplification

CAP American Miniature

BULB Clear

BASE I.O.8.



Viewed from free end of pins.

⟵ Indicates position of side cap.

CONNEXIONS

Pin 1	Blank	-
Pin 2	Heater	h
Pin 3	Blank	-
Pin 4	Screen Grid	g2
Pin 5	Control Grid	g1
Pin 6	Blank	-
Pin 7	Heater	h
Pin 8	Cathode	k
Side Cap	Anode	a

August 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

11.E.3

BEAM POWER AMPLIFIER

Indirectly heated – for Pulse Amplification

RATING

Heater Voltage (volts)	V_h	4.2
Heater Current (amps)	I_h	2.5
Maximum Anode Voltage as Series Modulator (volts DC)	$V_{a(max)}$	3,500
Maximum Peak Anode Voltage as Break Modulator (volts)	$V_{a(pk)max}$	12,500
Maximum Screen Voltage (volts)	$V_{g2(max)}$	700
Maximum Control Grid Negative Bias (volts-ve)	$V_{g1(max)}$	-700
Maximum Peak Cathode Current (amps)	$I_{k(pk)max}$	† 3.5
Inner μ	μ_{g1-g2}	: 9.0
Maximum Anode Dissipation (watts)	$W_{a(max)}$	10.0
Maximum Screen Dissipation as Series Modulator (watts)	$W_{g2(max)Series}$	0.9
Maximum Screen Dissipation as Break Modulator (watts)	$W_{g2(max)Break}$	2.0
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

† Taken under Pulse Conditions of approximately 10 micro-seconds duration and 400:1 minimum off-on ratio.

: Taken at V_a = 200; V_{g2} = 200; I_a = 40 mA.

INTER-ELECTRODE CAPACITANCES

Anode/Earth ($\mu\mu$F)	C_{out}	7.5
Anode/Control Grid ($\mu\mu$F)	C_{a-g1}	0.26
Control Grid/Earth ($\mu\mu$F)	C_{in}	20

"Earth" denotes the remaining earthy potential electrodes and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	140
Maximum Diameter (mm)	54
Maximum Seated Height (mm)	125
Approximate Nett Weight (ozs)	2½
Approximate Packed Weight (ozs)	7

MOUNTING POSITION - Vertical

NOTE

This valve is intended for use as a break or series modulator with a short duration pulse input signal. When the equipment may be subjected to reduced atmospheric pressures the peak voltage between the control grid and Screen grid should not exceed 1,200 volts.

11.E.3

MAZDA

11.E.3

BEAM POWER AMPLIFIER

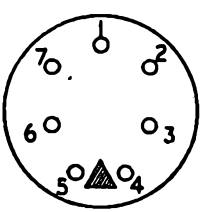
Indirectly heated – for Pulse Amplification

TYPICAL OPERATION		Series Modulator	Break Modulator
Quiescent Anode Voltage (volts)	$V_{a(o)}$	3,500	500
Screen Voltage (volts)·	V_{g2}	500	500
Signal Voltage Positive (volts)		50	25
Peak Anode Current (amps)	$I_{a(pk)}$	2	1
Approximate Knee Voltage (volts)		200	
Peak Anode Output Voltage (volts)		3,300	10,000
Approximate Peak Grid Current (amps)	$I_{g1(pk)}$	0.12	0.05

CAP BVA Standard

BULB Clear

BASE British 7 Pin.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Blank	-
Pin 2	Control Grid	g1
Pin 3	Blank	-
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Cathode	k
Pin 7	Screen Grid	g2
Top Cap	Anode	a

MAZDA

12.E.1

BEAM TETRODE

Indirectly heated – for parallel operation

TENTATIVE

GENERAL

The 12.E.1 is intended for use as a series or shunt control valve in stabilised power packs.

RATING

Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	1.6
Maximum Anode Voltage (volts)	$V_{a(max)}$	800
Maximum Screen Voltage (volts)	$V_{g2(max)}$	300
Maximum Control Grid Voltage	$V_{g1(max)}$	100
Maximum Voltage between g1 and g2 (volts)	V_{g1-g2}	400
Mutual Conductance (mA/V)	g_m	• 14
Maximum Anode Dissipation (watts)	p_a	35
Maximum Screen Dissipation (watts)	p_{g2}	5.0
Maximum Cathode Current (mA)	$I_{k(max)}$	300
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$ t ‖	300

• Taken at $V_a = V_{g2} = 150 V$ $I_a = 200$ mA.

‖ Provided the cathode is positive.

INTER-ELECTRODE CAPACITANCES

Grid/Earth (μμF)	c_{in}	23.0
Anode/Earth (μμF)	c_{out}	8.3
Anode/Grid (μμF)	$c_{a,g1}$	1.3

"Earth" denotes the remaining earthy potential electrodes and heater joined to cathode.

DIMENSIONS

Maximum Overall Length (mm)	150
Maximum Diameter (mm)	54
Maximum Seated Height (mm)	136
Approximate Nett Weight (ozs)	2½
Approximate Packed Weight (ozs)	7

MOUNTING POSITION - Vertical

If run horizontally then the axis AB must be on a horizontal plane.

12.E.1

MAZDA

12.E.1

BEAM TETRODE

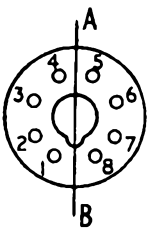
Indirectly heated – for parallel operation

TENTATIVE

BULB Clear

TOP CAP American miniature

BASE International Octal (I08)



Viewed from free end of pins.

CONNEXIONS

Pin 1	-	-
Pin 2	Heater	h
Pin 3	-	-
Pin 4	Screen Grid	g2
Pin 5	Control Grid	g1
Pin 6	-	-
Pin 7	Heater	h
Pin 8	Cathode	k
Top Cap	Anode	a

August 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD

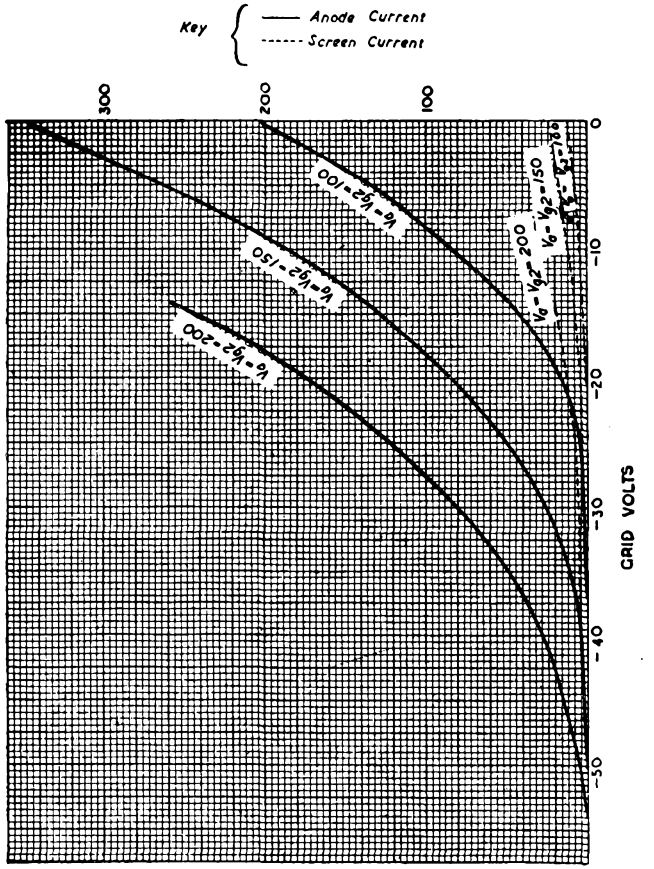
MAZDA

12.E.1

BEAM TETRODE

Indirectly heated – for parallel operation

TENTATIVE
AVERAGE CHARACTERISTIC CURVES



12.E.1

MAZDA

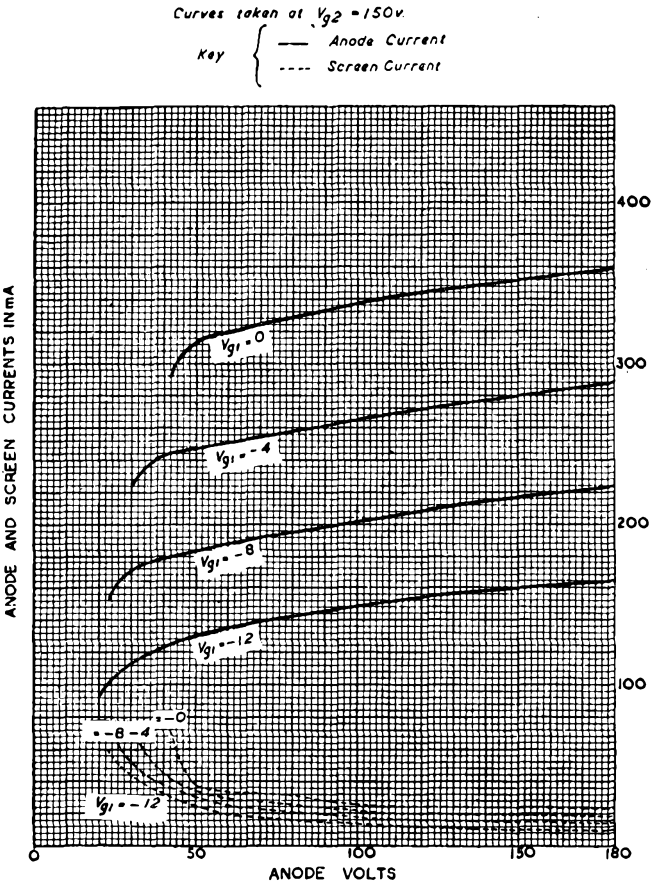
12.E.1

BEAM TETRODE

Indirectly heated – for parallel operation

TENTATIVE

AVERAGE CHARACTERISTIC CURVES



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THE EDISON SWAN ELECTRIC COMPANY LTD

MAZDA

19.E.2

HIGH VACUUM DIODE

Indirectly heated – for pulse operation

RATING :

Heater Voltage (volts)		V_h	4.0
Heater Current (amps)		I_h	2.1
Short pulse maximum peak inverse voltage (K_V)	†	P.I.V.	4.0
Fault pulse maximum peak inverse voltage (K_V)	†§	P.I.V.	5.5
Maximum Peak Anode Current (amps)		$I_{a(pk)}$	12
Maximum Anode Dissipation (watts)		P_a	5.0
Maximum Bulb Temperature (C°)			150

§ For maximum period of 50 m/sec.

† Pulse length 1 microsec and repetition rate 1,200 per second.

: All maximum ratings are absolute values, not design centres.

DIMENSIONS

Maximum Overall Length (mm)	100
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	87
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	3¾

MOUNTING POSITION - Vertical

19.E.2

MAZDA

19.E.2

HIGH VACUUM DIODE

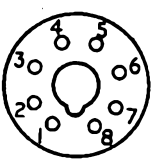
Indirectly heated – for pulse operation

TYPICAL OPERATION

Peak Anode Current (amps)	$I_{a(pk)}$	12.0
Anode Dissipation (watts)	P_a	3.5
Approximate D.C. Resistance at 12 amps peak current (ohms)	Ω	39.0

BULB Clear

BASE International Octal (I08)



Viewed from free end of pins.

Blank pins in socket to be left free.

CONNEXIONS

Pin 1	-	-
Pin 2	Heater	h
Pin 3	-	-
Pin 4	-	-
Pin 5	-	-
Pin 6	-	-
Pin 7	Heater	h
Pin 8	-	-
Top Cap	Anode	a

NOTE

The heater must be switched on for 30 seconds before the anode voltage is applied.

MAZDA

19.G.3

HIGH VACUUM HALF-WAVE RECTIFIER

Indirectly heated

RATING ¶		1,500 c.p.s	50 c.p.s.
Heater Voltage (volts)	V_h	• 4.0	• 4.0
Heater Current (amps)	I_h	1.4	1.4
Maximum Peak Inverse Voltage-No Load (volts)	$P.I.V.(max)_o$	7,500	7,000
Maximum Peak Inverse Voltage-On Load (volts)	P.I.V.(max)	6,500	6,300
Maximum Mean Current (mA)	I_{av}	75	50
Maximum Peak Current (mA)	I_{pk}	375	375
Minimum Surge Limiting Resistance (ohms)		[1,800	[1,900

• The Heater must be switched on for 15 seconds before the Anode Voltage is applied.

[This resistance may be obtained in the distributed resistance of the transformer.

¶ All Maximum Ratings are absolute values not design centres.

DIMENSIONS

Maximum Overall Length (mm)	100
Maximum Diameter (mm)	32
Maximum Bulb Diameter (mm)	29
Maximum Seated Height (mm)	87
Approximate Nett Weight (ozs)	1¾
Approximate Packed Weight (ozs)	2½

MOUNTING POSITION - Unrestricted

19.G.3

MAZDA

19.G.3

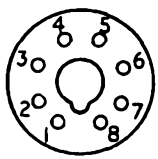
HIGH VACUUM HALF-WAVE RECTIFIER

Indirectly heated

CAP Miniature

BULB Clear

BASE International Octal (I08)



Viewed from free end of pins.

CONNEXIONS

Pin 1	Blank •	
Pin 2	Heater/Cathode	hk
Pin 3	Blank •	
Pin 4	Blank •	
Pin 5	Blank •	
Pin 6	Blank •	
Pin 7	Heater	h
Pin 8	Blank •	
Top Cap	Anode	a

• Blank pins in Socket must be left free.

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THE EDISON SWAN ELECTRIC COMPANY LTD

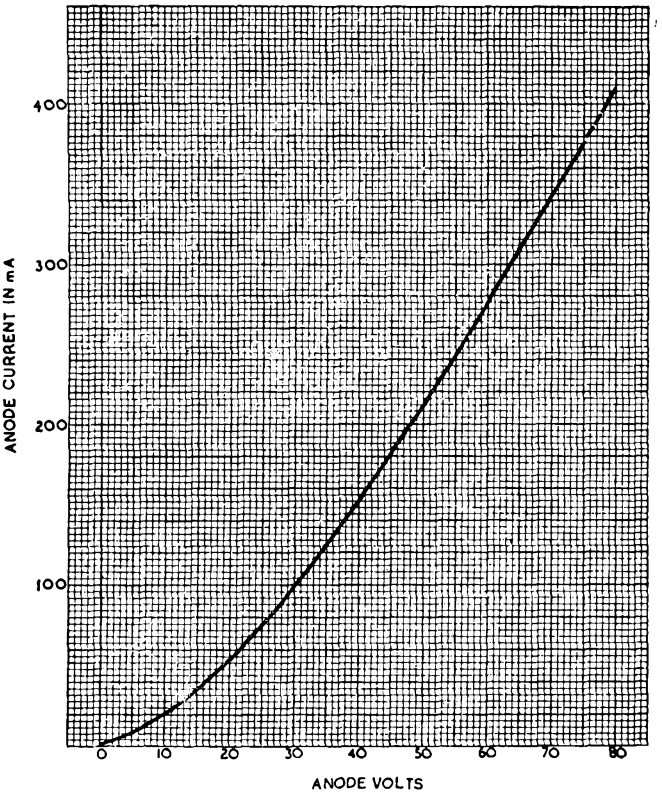
MAZDA

19.G.3

HIGH VACUUM HALF-WAVE RECTIFIER

Indirectly heated

AVERAGE CHARACTERISTIC CURVE



19.H.1

MAZDA

19.H.1

HIGH VOLTAGE HALF-WAVE RECTIFIER

Directly heated

RATING

Filament Voltage (volts)	V_f	4.0
Filament Current (amps)	I_f	2.0
Maximum D.C. Output Current (mA)	$I_{a(av)max}$	75
Maximum Working Peak Inverse Voltage (kV)	P.I.V.(max)	15.0
Maximum No Load Peak Inverse Voltage (kV) ‡	P.I.V.(max)	17.5
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	600
Maximum Value of Reservoir Capacitor	μF	0.5
Minimum Value of Limiting Resistor (ohms)	∩	2,500
H.T. Switching Delay Period (Seconds)		10

‡ The maximum value of RMS working anode voltage will depend on the regulation of the transformer, and must be such that the maximum P.I.V. on no load is not exceeded.

All Maximum Ratings are absolute values, not design centres.

DIMENSIONS

Maximum Overall Length (mm)	210
Maximum Diameter (mm)	51
Maximum Seated Height (mm)	195
Approximate Nett Weight (ozs)	5
Approximate Packed Weight (ozs)	14

MOUNTING POSITION - Vertical

MAZDA

19.H.1

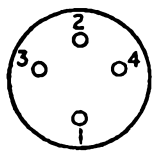
HIGH VOLTAGE HALF-WAVE RECTIFIER

Directly heated

BULB Clear

CAP B.V.A. Standard

BASE 4 pin



Viewed from free end of pins.

CONNEXIONS

Pin 1	-
Pin 2	-
Pin 3	Filament f
Pin 4	Filament f
Top Cap	Anode A

19.H.1

MAZDA

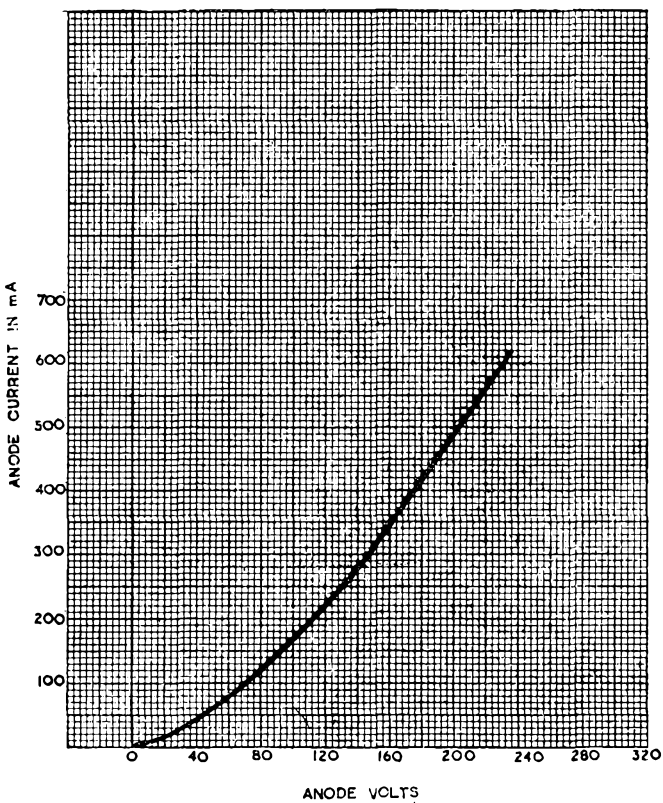
19.H.1

HIGH VOLTAGE HALF-WAVE RECTIFIER

Directly heated

AVERAGE CHARACTERISTIC CURVE

Curve taken with a short duration pulse



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THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

19.H.4

HIGH VACUUM DIODE

Directly heated – for High Voltage Power Rectification

RATING ¶		
Heater Voltage (volts)	V_h	§ 2.5
Heater Current (amps)	I_h	3.3
Maximum Mean Anode Current (mA)	$I_{a(av)max}$	25.0
Maximum Peak Anode Current (mA)	$I_{a(pk)max}$	150
Maximum Peak Inverse Voltage - No Load (KV)	$P.I.V._{o.}(max)$	23.0
Maximum Peak Inverse Voltage - On Load (KV)	$P.I.V._{w.}(max)$	20.0
Minimum Surge Limiting Resistance (ohms)	Ω	23,000

§ The Heater must be switched on for 10 seconds before the Anode Voltage is applied.

¶ All Maximum Ratings are absolute values, not design centres.

DIMENSIONS	
Maximum Overall Length (mm)	129
Maximum Diameter (mm)	40
Maximum Seated Height (mm)	116
Approximate Nett Weight (ozs)	2½
Approximate Packed Weight (ozs)	3½

MOUNTING POSITION - Unrestricted.

19.H.4

MAZDA

19.H.4

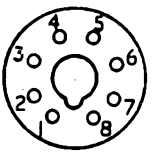
HIGH VACUUM DIODE

Directly heated – for High Voltage Power Rectification

CAP American Miniature Type

BULB Clear

BASE International Octal (I08)



Viewed from free end of pins.

CONNEXIONS

Pin 1	-	-
Pin 2	Heater	h
Pin 3	-	-
Pin 4	-	-
Pin 5	-	-
Pin 6	-	-
Pin 7	Heater	h
Pin 8	-	-
Top Cap	Anode	a

NOTE

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.

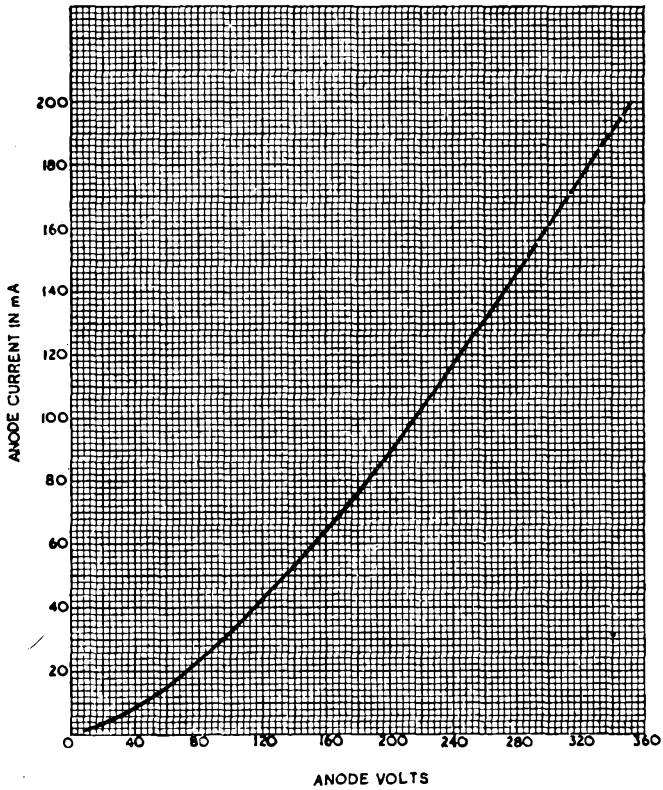
MAZDA

19.H.4

HIGH VACUUM DIODE

Directly heated – for High Voltage Power Rectification

AVERAGE CHARACTERISTIC CURVE



October 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD.

19.H.5

MAZDA

19.H.5

HIGH VACUUM DIODE

Indirectly heated–for Voltage Damping and Power Rectification

RATING ¶		
Heater Voltage (volts)	V_h ‡	4.0
Heater Current (amps)	I_h	4.0
Maximum Anode Dissipation (watts)	$P_{a(max)}$	32
As damping Diode		
Maximum Anode Current pulsing - 2 microseconds maximum (amps)	$I_{a(max)pulse}$	10
Maximum Peak Inverse Voltage short pulse rating or transients (kV)	P.I.V (max)	27
Maximum Peak Inverse Voltage short pulse rating or transients (Fault Condition) (kV)		35
Approximate Impedance at 8 amps Peak (ohms)	r_a	100
As power Rectifier or Charging Diode		
Maximum Mean Anode Current - at 4:1 Peak/Mean (choke filter) (mA)	$I_{a(max)av}$	180
Maximum Mean Anode Current - at 8:1 Peak/Mean (capacity filter) (mA)	$I_{a(max)av}$	125
Maximum R.M.S. Anode current (mA)	$I_{a(max)r.m.s.}$	350
Maximum Peak Inverse Voltage - No load (kV)	P.I.V.(max)o	20
Maximum Peak Inverse Voltage - On Load (kV)	P.I.V.(max)	18
Maximum Peak Inverse Voltage (Fault Condition) 5 seconds duration (kV)	P.I.V.(max)Fault	30

This valve is a very low impedance diode intended for use as a charging and damping diode in radar applications. It can also be used as a Power Rectifier at mains frequencies.

‡ The Heater must be switched on for 30 seconds before the Anode Voltage is applied

§ For a maximum period of 50 milliseconds

¶ All Maximum ratings are absolute values not design centres

DIMENSIONS	
Maximum Overall Length (mm)	230
Maximum Diameter (mm)	62
Approximate Nett Weight (ozs)	7
Approximate Packed Weight (ozs)	18

MOUNTING POSITION - Unrestricted

MAZDA

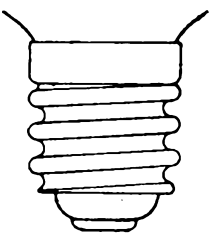
19.H.5

HIGH VACUUM DIODE

Indirectly heated—for Voltage Damping and Power Rectification

BULB Clear

BASE Goliath Ediswan Screw Cap



CONNEXIONS

Contact 1	Heater	h
Contact 2	Heater	h
Top Cap	Anode	a

NOTE

The Heater is connected internally to cathode

September 1948 RADIO DIVISION Issue 1/6

THE EDISON SWAN ELECTRIC COMPANY LTD.

24.B.1

MAZDA

24.B.1

TRIGATRON

GENERAL

A trigatron is a spark gap which operates as a switch for discharging the delay line in pulse series modulation. The instant of breakdown can be accurately controlled by means of a triggering voltage applied to a third electrode. This triggering voltage distorts the field between anode and cathode converting the sphere to sphere gap into a point to sphere gap. Accuracy of control is further improved by irradiating the gap with ultra violet light from a corona discharge.

TYPICAL OPERATION (for Linear Charging Conditions)

Repetition Frequency (pulses per second)	1000	1200	1500	2500
Pulse Length (micro-second)	0.2	1.0	0.5	0.25
Approximate Peak Pulse Power Output (kW)	180	150	150	150
Line and Load Impedance (ohms)	60	80	80	80
Main Gap Hold-off Voltage - Cathode to Anode (kV peak)‡	-7.2	-7.2	-7.2	-7.4
Average Trigger Voltage (kV peak)‡	3.0	3.2	3.2	3.2
Approximate D.C. Supply Voltage (kV) §	4.0	4.0	4.0	4.1

‡ With recommended circuit and an open circuit trigger voltage 8.5 kV peak with a build-up time to maximum voltage of approximately 2/3 μ Sec.

§ Based on a peak/D.C. applied voltage ratio of 1:8. This ratio depends on the losses in the charging choke, varying between 1:8 and 2:0.

NOTE All voltages measured with respect to anode.

MOUNTING POSITION - Unrestricted.

BASE Special

DIMENSIONS

Maximum Overall Length (mm)	156
Maximum Diameter (mm)	70
Approximate Nett Weight (ozs)	7
Approximate Packed Weight (ozs)	14

24.B.1

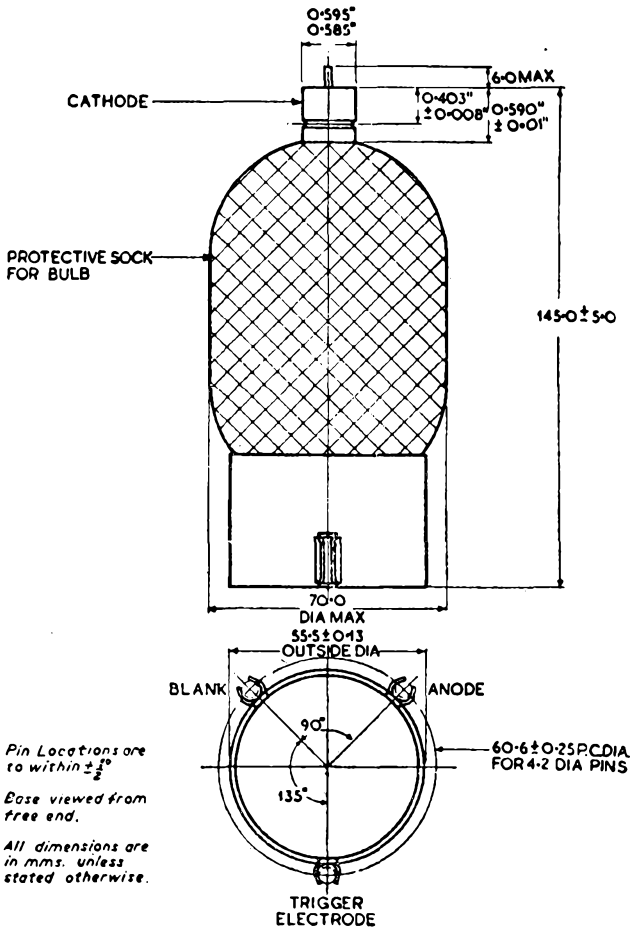
MAZDA

24.B.1

TRIGATRON

OUTLINE DRAWING OF

VALVE 24B1



Pin Locations are to within ± 1°

Base viewed from free end.

All dimensions are in mms. unless stated otherwise.

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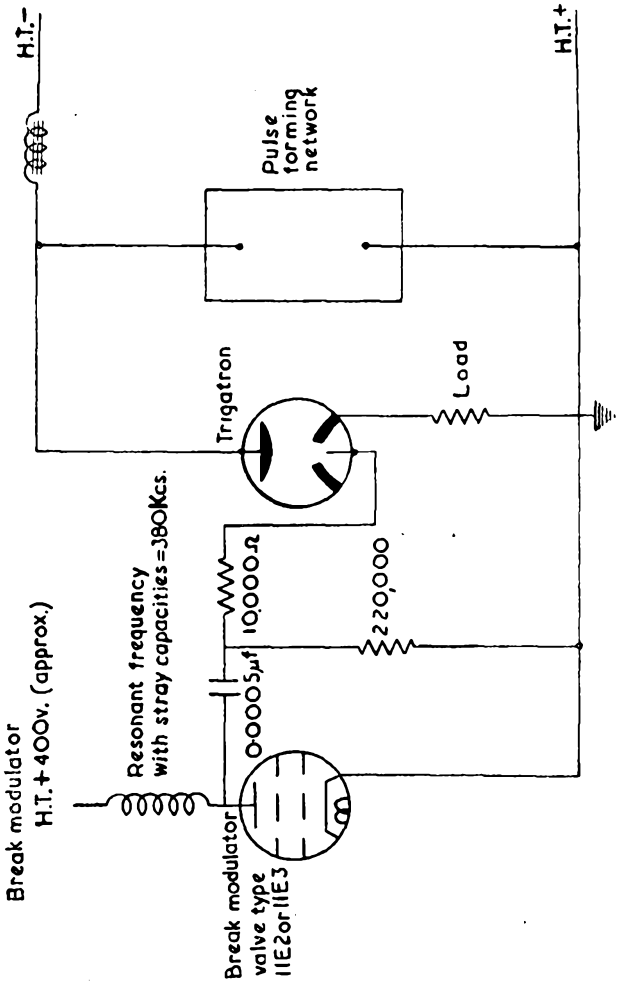
THE EDISON SWAN ELECTRIC COMPANY LTD.

24.B.1

MAZDA

24.B.1

TRIGATRON



THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

24.C.3

COLD CATHODE TRIGATRON

GENERAL

A trigatron is a spark gap which operates as a switch for discharging the delay line in pulse series modulation. The instant of breakdown can be accurately controlled by means of a triggering voltage applied to a third electrode. This triggering voltage distorts the field between anode and cathode converting the sphere to sphere gap into a point to sphere gap. Accuracy of control is further improved by irradiating the gap with ultra violet light from a corona discharge.

TYPICAL OPERATING

Repetition Frequency (pulses per second)	800.0
Pulse Length (μS)	1.0
Peak Pulse Power Output (kW approx.)	530.0
Line and load Impedance (ohms)	80.0
Main Gap voltage (cathode to Anode) (kV peak) ‖	-13.3
Average Trigger Voltage (kV peak) ‖	4.0
Approximate D.C. Supply Voltage (kV) ‡	7.4

‖ With recommended circuit and an open circuit trigger voltage 10.5 kV peak with a build-up time to maximum voltage of approximately 2/3 u Sec.

‡ Based on a peak/D.C. applied voltage ratio of 1:8. This ratio depends on the losses in the charging choke, varying between 1:8 and 2:0.

NOTE All voltages measured with respect to anode.

MOUNTING POSITION Unrestricted.

BASE Special.

DIMENSIONS.

Maximum Overall Length (mm)	156
Maximum Diameter (mm)	70
Approximate Nett Weight (ozs)	7
Approximate Packed Weight (ozs)	14

24.C.3

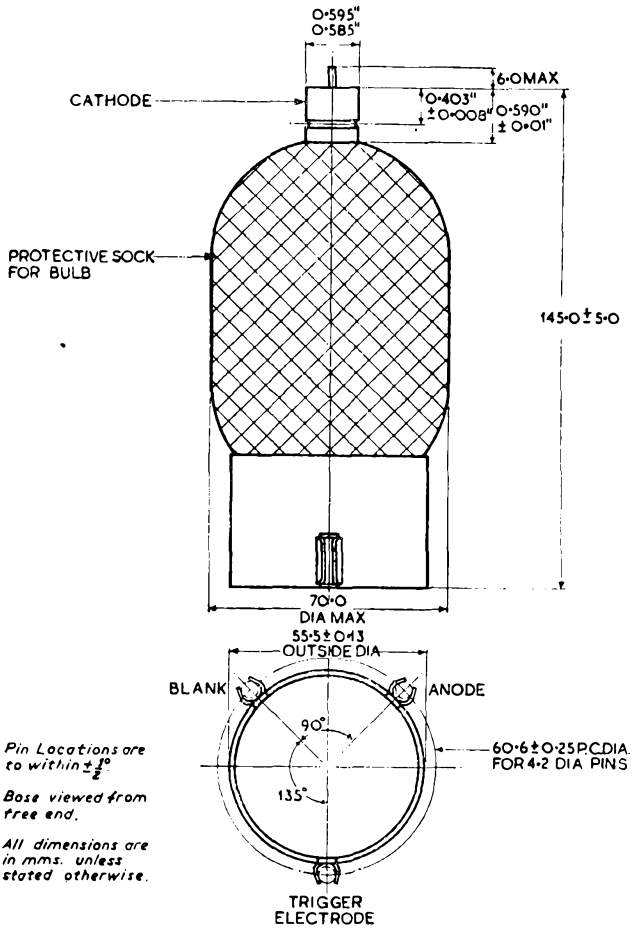
MAZDA

24.C.3

COLD CATHODE TRIGATRON

OUTLINE DRAWING OF

MAZDA VALVE 24C3



Pin Locations are to within ±1°

Base viewed from free end.

All dimensions are in mms. unless stated otherwise.

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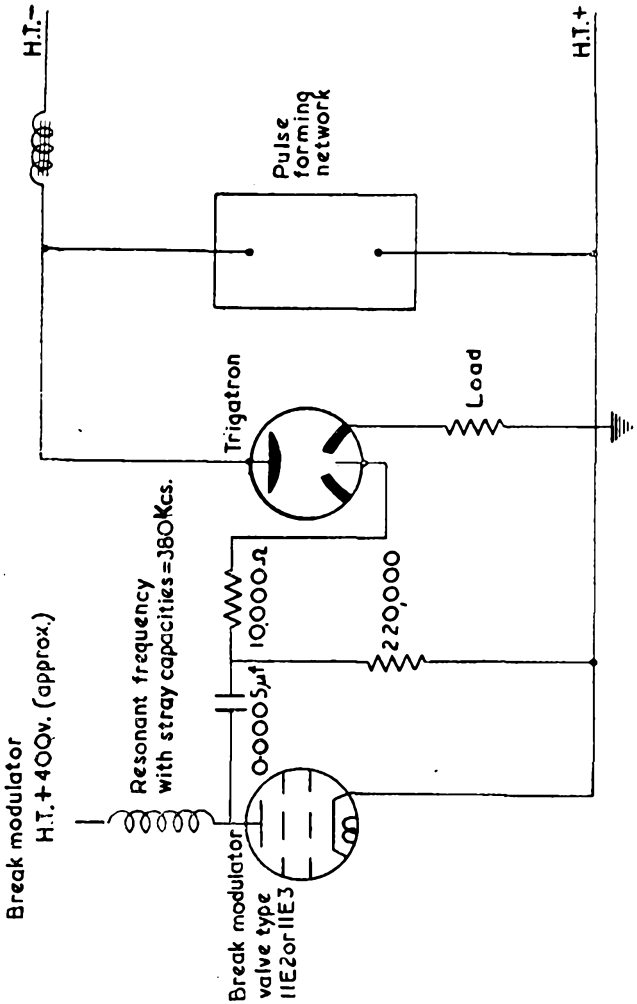
THE EDISON SWAN ELECTRIC COMPANY LTD.

MAZDA

24.C.3

COLD CATHODE TRIGATRON



THE EDISON SWAN ELECTRIC COMPANY LTD.

V.339

MAZDA

V.339

TRIODE

Indirectly heated – for Valve Voltmeter

REPLACEMENT ONLY – not for new equipment

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.58
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Amplification Factor	μ	* 73
Mutual Conductance (mA/V)	g_m	* 1.7
Anode A.C. Resistance (ohms)	r_a	* 43,000
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(max)}$	150

* Taken at V_a = 100v; V_g = 0v.

INTER-ELECTRODE CAPACITANCES

Anode/Earth ($\mu\mu F$)	C_{out}	4.7
Anode/Control Grid ($\mu\mu F$)	$C_{a,g1}$	3.6
Control Grid/Earth ($\mu\mu F$)	C_{in}	3.6

DIMENSIONS

Maximum Overall Length (mm)	95
Maximum Diameter (mm)	38
Maximum Seated Height (mm)	80
Approximate Nett Weight (ozs)	1½
Approximate Packed Weight (ozs)	2½

MOUNTING POSITION - Unrestricted.

NOTE

This valve is designed for use as a Valve Voltmeter, providing a very linear scale shape. It is capable of operating with high resistance input circuits.

V.339

MAZDA

V.339

TRIODE

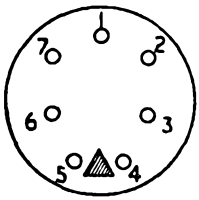
Indirectly heated – for Valve Voltmeter

REPLACEMENT ONLY – not for new equipment

BULB Metallised

CAP BVA Standard

BASE British 7 pin



Viewed from free end of pins.

CONNEXIONS

Pin 1	Blank	-
Pin 2	Metallizing	M
Pin 3	Blank	-
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Cathode	k
Pin 7	Anode	a
Top Cap	Control Grid	g1

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THE EDISON SWAN ELECTRIC COMPANY LTD.

V.453

MAZDA

V.453

SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

GENERAL

The V.453 is a low "hum", low noise, non-microphonic valve for use in the early stages of high gain amplifiers where the "Miller" input loading must be kept at a minimum, and where the elimination of "flicker" noise is of particular importance.

RATING

Heater Voltage (volts)	V_h	4.0
Heater Current (amps)	I_h	0.65
Maximum Anode Voltage (volts)	$V_{a(max)}$	250
Maximum Screen Voltage (volts)	$V_{g2(max)}$	150
Mutual Conductance (mA/V)	g_m	¶ 2.0

¶ Taken at V_a = 250 v; V_{g2} = 100 v; V_{g1} = -1.8v.

INTER-ELECTRODE CAPACITANCES

Anode/Earth (μμF)	c_{out}	11.6
Anode/Control Grid (μμF)	$c_{a,g1}$	.004
Control Grid/Earth (μμF)	c_{in}	6.75

DIMENSIONS

Maximum Overall Length (mm)	107
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	94
Approximate Nett Weight (ozs)	1¼
Approximate Packed Weight (ozs)	2

MOUNTING POSITION – Unrestricted.

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V.453

MAZDA

V.453

SCREENED R.F. PENTODE

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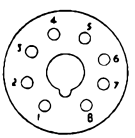
BULB Metallised.

BASE British Octal (B.O.7.)



Viewed from free end of pins.

CAP B.V.A. Standard

CONNEXIONS

Pin 1	Heater	h
Pin 2	Cathode	k
Pin 3	Anode	a
Pin 4	Screen Grid	g_2
Pin 5	Suppressor Grid	g3
Pin 6	Metallising	M
Pin 7	Omitted	-
Pin 8	Heater	h
Top Cap	Control Grid	g_1

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V.453

MAZDA

V.453

SCREENED R.F. PENTODE

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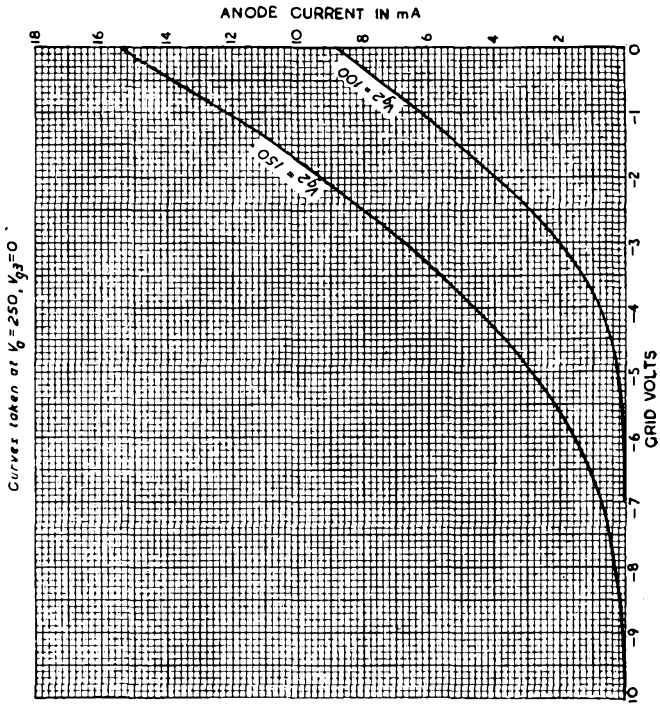
AVERAGE CHARACTERISTIC CURVES



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V.453

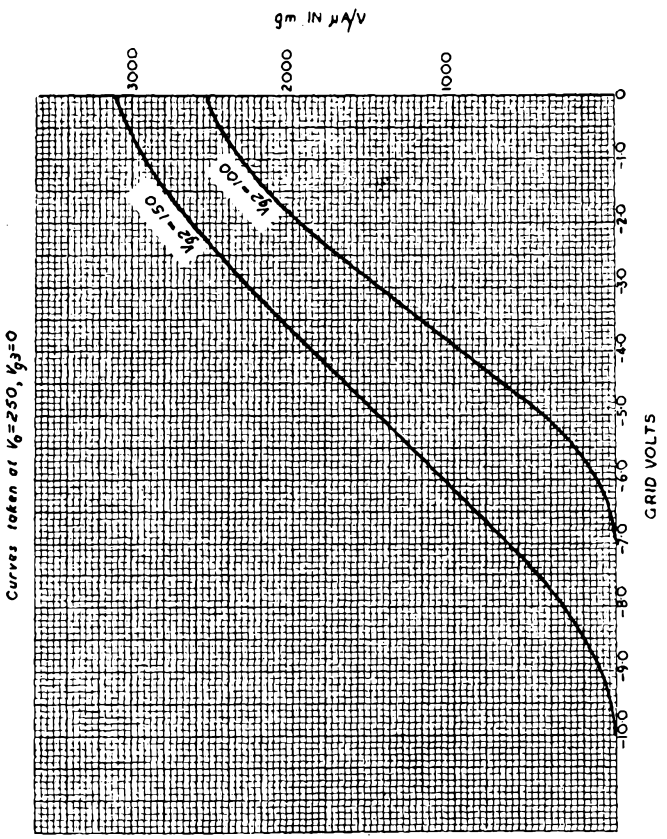
MAZDA

V.453

SCREENED R.F. PENTODE

Indirectly heated – for parallel operation

AVERAGE CHARACTERISTIC CURVES



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29.D.2

MAZDA

29.D.2

IONISATION GAUGE

Directly heated filament

RATING

Filament Voltage (volts)	V_f	6.0
Filament Current (amps)	I_f	1.3
Collector Voltage (volts negative) ‡		-25
Internal Wire Electrode Voltage §		185
Internal Wire Electrode Current (mA)		1.0
Collector Current μA/micron pressure		20

‡ It is advisable to include a 100,000 ohm fixed resistance in series with this electrode.

§ It is advisable to include a 500 ohm fixed resistance in series with this electrode.

WEIGHT

Approximate Nett Weight (ozs)	3⅛
Approximate Packed Weight (ozs)	14½

MOUNTING POSITION Unrestricted.

MAZDA

29.D.2

IONISATION GAUGE

Directly heated filament

TYPICAL OPERATION

De-gas electrodes before use, using normal High Vacuum Technique.

Collector is of nickel. It can be bombarded up to approximately 40w at 150 mA max.

Internal wire electrode is of molybdenum and can be bombarded at 20-25w with 60-100 mA.

Glass is C9 (Boro Silicate Type) and can be baked to 450°C.

BULB Clear

BASE Wire ends and stem.

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EDISWAN

MAZDA VALVES

1948-9

PRICE — ONE SHILLING