ELECTRONEN BUIZEN

HALFGELEIDERS

PHILIPS

ZAKBOEKJE

electronen buizen halfgeleiders

Philips Nederland N.V.

INHOUD

Alle typenummers die in dit boekje zijn opgenomen, zijn numeriek/alfabetisch gerangschikt in de afdeling „Ontvang- en Versterkbuizen". Voor typen die niet tot deze groep behoren, wordt verwezen naar de betreffende bladzijde.

GEGEVENS VAN ELECTRONENBUIZEN

TYPENUMMER SYSTEEM

Hieronder volgt een overzicht van het tegenwoordige typenummer systeem voor buizen, die zodanig zijn aangeduid, dat hieruit bepaalde buisgegevens kunnen worden afgeleid, zoals b.v. electrische gegevens, belangrijkste toepassingen, type buisvoet enz.
Voor sommige gevallen is het echter niet mogelijk gebleken aan dit systeem strikt de hand te houden.

ONTVANG- EN VERSTERKBUIZEN

Het typenummer bestaat uit een aantal hoofdletters gevolgd door één of twee cijfers (b.v. EF 6, UCH 81).

Eerste letter: gegevens over de gloeidraad.
Tweede en volgende letters: classificatie van de buis.
Cijfers: serienummer.

In onderstaande tabel volgt de verklaring van de letters en cijfers.

A — 4 V
C — 200 mA
D — 1,4 V batterij
E — 6,3 V
G — 5 V
K — 2 V batterij
O — geen gloeidraad
P — 300 mA
U — 100 mA
Z — Koude kathode

Tweede en volgende letters

A — H.F. enkele diode
B — H.F. dubbele diode
C — Triode (behalve gasgevulde- en eindtriodes)
D — Eindtriode
E — Tetrode (behalve eindtetrodes)

F — Penthode (behalve eindpenthodes)
H — Hexode of Heptode
K — Octode of Heptode
L — Eindtetrode of Penthode
M — Afstemindicator
P — Buis met secundaire emissie
Q — Enneode
T — Diversen
X — Gasgevulde dubbelfazige gelijkrichtbuis
Y — Hoog-vacuum enkelfazige gelijkrichtbuis
Z — Hoog-vacuum dubbelfazige gelijkrichtbuis

Cijfers

Serienummer

SPECIALE BUIZEN

(Betrouwbare, tril- en schokvaste buizen met lange levensduur, etc.)

Het systeem is hetzelfde als bij ontvang- en versterkbuizen, met dien verstande, dat de cijfers tussen de letters geplaatst zijn (b.v. E80F, E90CC).

KATHODESTRAALBUIZEN

Het typenummer bestaat uit twee hoofdletters gevolgd door twee cijfergroepen (b.v. DG 13-2, MW 31-16).

De eerste letter: geeft de methode van focussering en afbuiging aan.

De tweede letter: duidt de samenstelling van het scherm aan.

De eerste groep cijfers: geeft de afmetingen van het scherm aan.

De tweede groep cijfers: geeft het serienummer aan.

Hieronder volgt de verklaring van de letters en cijfers.

Eerste letter

D — Electrostatische focussering en electrostatische afbuiging in twee richtingen.

M — Electromagnetische focussering en electromagnetische afbuiging.

Tweede letter

B — Blauwachtige fluorescentie, korte nalichtingstijd (1% van de maximum helderheid na 0,01 sec.)

F — Oranje fluorescentie, zeer lange nalichtingstijd (0,1% van de maximum helderheid na 75 sec.)

G — Groene fluorescentie, middelmatige nalichtingstijd (1% van de maximum helderheid na 0.05 sec.)

N — Groene fluorescentie, lange nalichtingstijd (0,1% van de maximum helderheid na 6,4 sec.)

P — Twee-lagen scherm, blauwachtige fluorescentie met een korte nalichtingstijd gevolgd door groen-gele fluorescentie met een zeer lange nalichtingstijd (0,1% van de maximum helderheid na 80 sec.)

R — Groen-gele fluorescentie, lange nalichtingstijd (0,1% van de maximum helderheid na 20 sec.)

W — Witte fluorescentie, middelmatige nalichtingstijd.
Direct-zicht buizen: kleur temp. 8000 °K
Projectie buizen : kleur temp. 5500 °K

Eerste groep cijfers

Bij ronde buizen: schermdiameter in cm
Bij rechthoekige buizen: schermdiagonaal in cm

Tweede groep cijfers

Serienummer

ZENDBUIZEN

Het typenummer bestaat uit twee of drie hoofdletters, die worden gevolgd door twee groepen cijfers. Bij sommige typen wordt hier nog een

letter aan toegevoegd (b.v. TAL 12/10, DCG 4/1000—G.)

Eerste letter: classificeert de buis.

Tweede letter: bepaalt het type gloeidraad of kathode.

Eerste groep cijfers: geeft de werkspanning aan.

Tweede groep cijfers: geeft het vermogen aan.

Toegevoegde letter: geeft het type buisvoet aan.

Hier volgt de verklaring van de letters en cijfers.

Eerste letter

D — Gelijkrichtbuis (inclusief roostergestuurde buizen)
M — Triode (L.F. versterkbuis of modulator)
P — Penthode
Q — Tetrode
T — Triode (H.F., L.F. of oscillatorbuis)

Voor buizen met een dubbel systeem, worden twee van de bovengenoemde letters gebruikt (b.v. QQC 04/15)

Tweede letter

(derde letter voor buizen met een dubbel systeem)

A — Direct verhitte tungsten gloeidraad
B — Direct verhitte gethorieerde wolfram gloeidraad
C — Direct verhitte gloeidraad met oxydelaagje
E — Indirect verhitte kathode met oxydelaagje

Derde letter

(vierde letter voor buizen met een dubbel systeem)

G — Kwikdamp-vulling
L — Geforceerde luchtkoeling
W — Waterkoeling
X — Xenon-vulling

Wanneer het typenummer geen letter bevat die de koeling aangeeft, is de buis luchtgekoeld.

Eerste groep cijfers

Gelijkrichtbuizen: De gelijkgerichte spanning in Kilovolts in een driefazig gelijkrichtercircuit met enkelfazige gelijkrichtbuizen.

Zendbuizen: De globale maximum anodespanning in Kilovolts.

Tweede groep cijfers

Gelijkrichtbuizen: Het gelijkgerichte vermogen in Watts of Kilowatts in een driefazig gelijkrichtercircuit met enkelfazige gelijkrichtbuizen.

H.F. Buizen: Het gelijkgerichte vermogen in Watts of Kilowatts in klasse C telegrafie-instelling.

Modulatorbuizen: Bij benadering de anode-dissipatie in Watts of Kilowatts.

Toegevoegde letters

B— Aansluitdraden
E— Medium 7 p. buisvoet
ED— Edison buisvoet
EG— Goliath buisvoet
G— Medium 4p. buisvoet
GB— Jumbo 4p. buisvoet
N— Medium 5p. buisvoet
P— P-buisvoet

FOTOBUIZEN

Het typenummer bestaat uit twee cijfers gevolgd door twee letters (b.v. 90AV)

Eerste cijfer : geeft het type buisvoet aan.
Tweede cijfer : geeft het serienummer aan.
Eerste letter : geeft het type kathode aan.
Tweede letter : classificeert de fotobuis.

Hieronder volgt de verklaring van de letters en cijfers.

Eerste cijfer

2 — Loctal 8p. buisvoet

3 — Octal 8 p. buisvoet
5 — Speciale buisvoet
8 — Noval 9p. buisvoet
9 — Miniatuur 7 p. buisvoet

Tweede cijfer

Serienummer

Eerste letter

A — Caesium-antimonium kathode (blauw gevoelig)
C — Caesium-op-zilveroxyde kathode (ro d gevoelig)

Tweede letter

G — Gasgevuld
V — Hoog-vacuum

SPANNINGSSTABILISATORBUIZEN

Het typenummer bestaat uit een getal gevolgd door een hoofdletter, een cijfer en in sommige gevall n een tweede hoofdletter (b.v. 85A2, 150C1K)

Getal: geeft brandspanning aan.
Eerste letter: geeft het stroombereik aan.
Cijfer: geeft serienummer aan.
Tweede letter: geeft het type buisvoet aan.

De verklaring van de letters en cijfers staat in de volgende tabellen.

Getal

Gemiddelde brandspanning in Volts

Eerste letter

A — max. 10 mA
B — max. 22 mA
C — max. 40 mA
D — max. 100 mA
E — max. 200 mA

Cijfer

Serienummer

Tweede letter

E — Edison
K — Octal 8p. buisvoet
P — P-buisvoet

SYMBOLEN

Electroden

a	Anode
a_h	Hulpanode
a_{ign}	Ontsteekanode
d	Anode van detectiediode
D	Afbuigplaat of afbuigstaaf
f	Gloeidraad of weerstanddraad
f_c	Aftakking van gloeidraad of weerstanddraad
g	Rooster
$i.c.$	Inwendige verbinding (niet uitwendig verbinden)
k	Kathode
$k(i)$	Ingangskathode van U.H.F. buis
$k(o)$	Uitgangskathode van U.H.F. buis
l	Fluorescerend scherm
m	Uitwendig geleidende laag
s	Inwendig scherm
S	Schakelelement

Electroden systemen

D	Diode
H	Hexode of Heptode
P	Penthode
T	Triode

Spanningen

V_a	Anode spanning Brandspanning van spanningsstabilisatorbuis
ΔV_a	Brandspanningsvariatie van stabilisatorbuis in stabiliseergebied
V_{aarc}	Anodespanning bij geleidende buis
V_{aeff}	Effectieve waarde van anodewisselspanning
V_{ag}	Spanning tussen anode en rooster
V_{ah}	Hulpanodespanning
V_{aharc}	Hulpanodespanning bij geleidende buis

V_{ahign}	Ontsteekspanning van hulpanode
V_{ahp}	Piekwaarde van hulpanodespanning
V_{ainvp}	Piekwaarde van anodetegenspanning
V_{ap}	Piekwaarde van anodespanning
V_{arc}	Boogspanning
V_b	Voedingsspanning
V_{ba}	Voedingsspanning van anode
V_{bg2}	Voedingsspanning van tweede rooster
V_{contr}	Spanningsbereik van stroomregulatorbui
V_d	Anodespanning van detectiediode
V_{dinv}	Anodetegenspanning van detectiediode
V_{dinvp}	Piekwaarde van anodetegenspanning van detectiediode
V_f	Gloeispanning
V_g	Roosterspanning
$V_{g(arc)}$	Roosterspanning bij geleidende buis
V_{ginvp}	Piekwaarde van roostertegenspanning
V_{gp}	Piekwaarde van roosterspanning
V_i	Ingangswisselspanning per buis
V_{ign}	Ontsteekspanning
V_{invp}	Piekwaarde van tegenspanning
V_k	Spanning tussen kathode en chassis
V_{kf}	Spanning tussen kathode en gloeidraad
V_{kfp}	Piekwaarde van spanning tussen kathode en gloeidraad
V_l	Spanning van fluorescerend scherm
V_o	Uitgangswisselspanning; afgegeven gelijkspanning
V_{osc}	Oscillatorspanning
V_{tr}	Secondaire transformatorspanning (onbelast)

Stromen

I_a	Anodestroom
I_{ah}	Hulpanodestroom
I_{amax}	Anodestroom bij max. uitsturing
I_{amin}	Anodestroom zonder uitsturing
I_{ap}	Piekwaarde van anodestroom
I_b	Voedingsstroom

I_{contr}	Stroombereik van spanningsstabilisatorbuis
I_d	Anodestroom van detectiediode
I_{dp}	Piekwaarde van anodestroom van detectiediode
I_f	Gloeistroom
I_g	Roosterstroom
I_{gmax}	Roosterstroom bij max. uitsturing
I_{gmin}	Roosterstroom zonder uitsturing
I_{gp}	Piekwaarde van roosterstroom
I_k	Kathodestroom
I_l	Stroom van fluorescerend scherm
I_o	Afgegeven gelijkstroom per buis
I_{rec}	Aanbevolen stroom
I_{reg}	Gestabiliseerde stroom van stroomregulatorbuis
I_{surge}	Stroomstoot

Vermogens

W_a	Max. anodedissipatie
W_{ig}	Stuurvermogen
W_o	Max. afgegeven vermogen

Weerstanden

R_a	Uitwendige anodeweerstand; Aanpassingsweerstand; Totale weerstand in anode van gelijkrichtbuis
R_{aa}	Aanpassingsweerstand tussen twee anoden van een balansversterker
$R_{damping}$	Dempingsweerstand
R_{eq}	Equivalente ruisweerstand
R_E	Weerstand van thermo-element
R_f	Weerstand van gloeidraad
R_g	Uitwendige weerstand tussen rooster en kathode
R_g'	Uitwendige weerstand tussen rooster en kathode van volgende buis
R_i	Inwendige weerstand; wisselstroomweerstand van spanningsstabilisatorbuis
R_{id}	Inwendige weerstand van detectiediode
R_k	Weerstand tussen kathode en chassis

R_{kf}	Uitwendige weerstand tussen kathode en gloeidraad	
R_t	Totale weerstand in anode van gelijkrichtbuis	
R_1	Uitwendige weerstand tussen $+V_b$ en g_2	potentio-
R_2	Uitwendige weerstand tussen g_2 en chassis	meter
R_1	Uitwendige weerstand tussen $+V_b$ en g_2	
R_3	Uitwendige weerstand tussen g_2 en k	potentio-
R_4	Uitwendige weerstand tussen k en chassis	meter

Capaciteiten

C_a	Anode-alle andere elementen behalve stuurrooster
C_{ag}	Anode-rooster, alle andere elementen geaard
C_{ak}	Anode-kathode, alle andere elementen geaard
C_{dk}	Anode-kathode van detectiediode, alle andere elementen geaard
$C_{DD'}$	Afbuigplaat D — afbuigplaat D', alle andere elementen geaard
C_{filt}	Ingangscapaciteit van afvlakfilter
C_g	Rooster — alle andere electroden en schermen behalve anode

Diversen

d_{tot}	Totale vervorming
freq	Frequentie
g	Spanningsversterking per trap
m	Aantal anoden van gelijkrichtbuis
N	Gevoeligheid; afbuiging
S	Steilheid
S_c	Conversiesteilheid
S_{eff}	Effectieve steilheid van oscillatorbuis
S_0	Steilheid van oscillatortriode bij $V_g = 0$ V en $V_{osc} = 0$ V
t_{amb}	Omgevingstemperatuur
t_{Hg}	Temperatuur van gecondenseerd kwik (bij de kathode)
t_{rec}	Aanbevolen temperatuur
T_{av}	Integratietijd ter bepaling van gemiddelde waarden van stromen en spanningen

T_{dion}	Deionisatietijd
T_h	Opwarmtijd van buis
T_{ion}	Ionisatietijd
T_{imp}	Impulsduur
α	Schaduwhoek op fluorescerend scherm
η	Rendement
μ	Versterkingsfactor
$\mu_{g_1g_2}$	Versterkingsfactor van tweede rooster t.o.v. eerste rooster

N.B. Het feit dat een buis in dit boekje is opgenomen, houdt niet in dat deze altijd geleverd kan worden.

uitgave 1955

RECEIVING AND AMPLIFYING TUBES MOREOVER TABLE OF CONTENTS

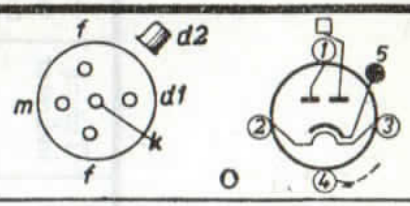
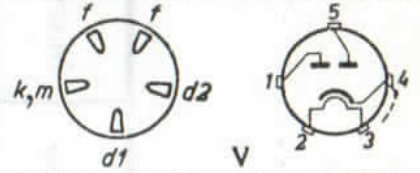
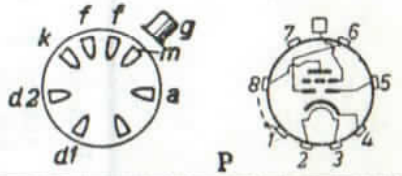
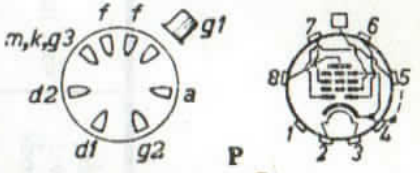
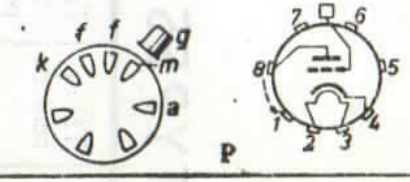
PREFERRED

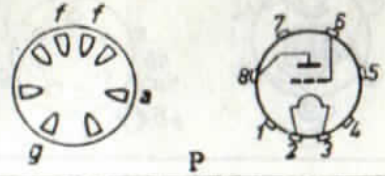
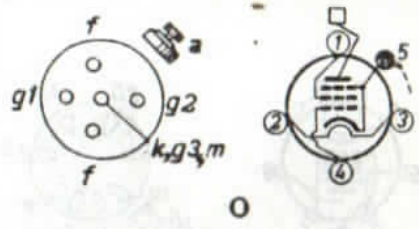
FILAMENT VOLTAGE OR CURRENT	Type of Tube	Diode pentode	Double diode	Double diode triode	Triple diode triode	Double diode pentode	Triode	Double triode
	0.625 V							
	1.25 V							
	1.4 V	DAF 91 DAF 96						
	5 V							
	6.3 V		EAA 91	EBC 81	EABC 80	EBF 80	EC 55 EC 56 EC 57 EC 80 EC 81 EC 92	ECC 81 ECC 82 ECC 83 ECC 84 ECC 85 E80CC [2]) E90CC [2])
	18 V							
	100 mA			UBC 81	UABC 80	UBF 80	UC 92	UCC 85
	300 mA		EAA 91		PABC 80	EBF 80		ECC 81 ECC 82 ECC 83 PCC 84 PCC 85

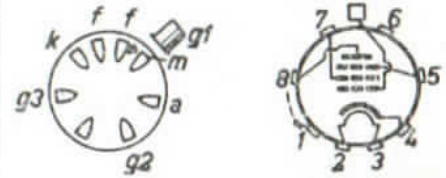
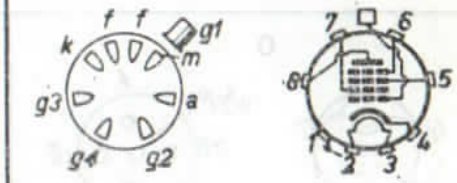
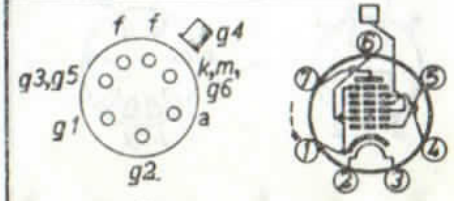
[1]) For hearing aid [2]) Special Quality tubes [3]) For 90° deflection circuits only.

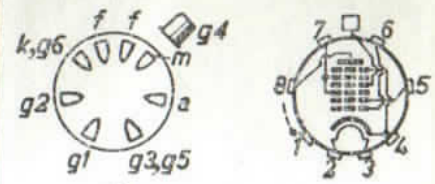
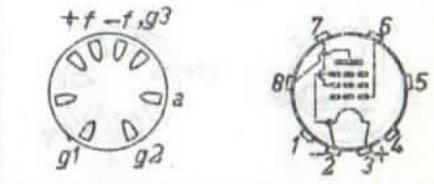
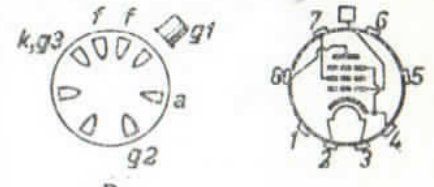
TYPES

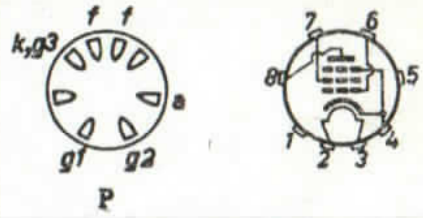
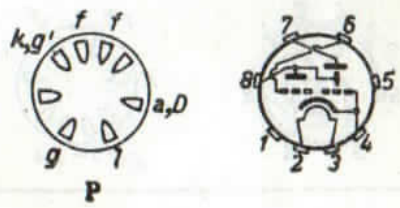
Triode pentode	Triode power pentode	var. mu	Pentode sharp cut-off	power	Mixer	Tuning indicator	High-vacuum rectifier
			DF 64[1])				
				DL 64[1])			
		DF 91 DF 96		DL 94 DL 96	DK 92 DK 96	DM 70	DY 86
							GZ 34
ECF 80	ECL 80	EF 85 EF 89	EF 80 EF 86 E80F[2]) E83F[2]) E180F[2])	EL 34 EL 42 EL 81 EL 82 EL 83 EL 84 E80L[2]) E81L[2])	ECH 81	EM 80	EY 81 EZ 80
			18042[2])	18045[2])			
		UF 85 UF 89	UF 80	UL 84	UCH 81	UM 80	UY 85 UY 92
PCF 80	ECL 80 PCL 82[3])	EF 85	EF 80	PL 36[3]) PL 81 PL 82 PL 83	ECH 81		PY 81 PY 82

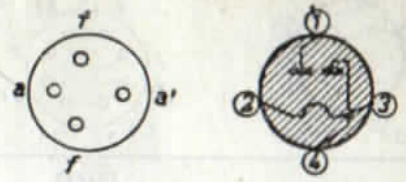
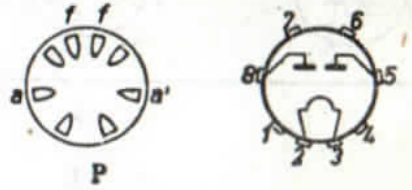
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
AB 1 Double diode	= **AB 2** With different base				
AB 2 Double diode Detector and A.G.C.	V_f = 4 V I_f = 0.65 A	$V_{d\,inv\,p}$ = max. 420 V	I_d = max. 0.8		
ABC 1 Double diode triode Typical characteristics	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_g = −7 V	I_a = 4	S = 2.0 mA/V R_i = 13.5 kΩ μ = 27	
ABL 1 Double diode output pentode Class A final amplifier	V_f = 4 V I_f = 2.4 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 9 W	
AC 2 Triode Typical characteristics	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_g = −5.5 V	I_a = 6	S = 2.5 mA/V R_i = 12 kΩ μ = 30	

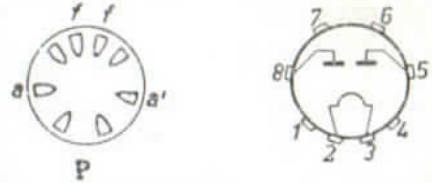
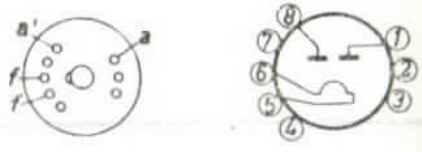
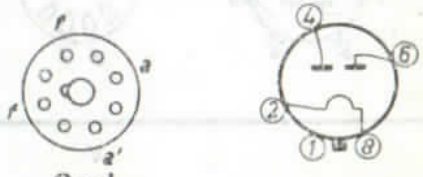
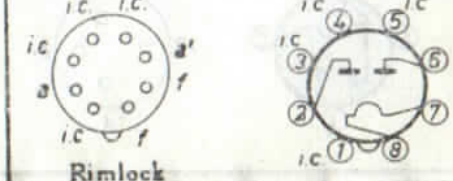
AD 1 Output triode Class A	V_f = 4 V I_f = 0.95 A	V_a = 250 V V_g = −45 V	I_a = 60	S = 6 mA/V R_i = 670 Ω R_a = 2.3 kΩ W_o = 4.2 W W_a = 15 W	
AF 2 Variable mu pentode R.F. or I.F. amplifier	V_f = 4 V I_f = 1.1 A	V_a = 200 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 4.25 I_{g2} = 1.8	S = 2.5 mA/V R_i = 1.4 MΩ C_{ag1} < 6 mpF	

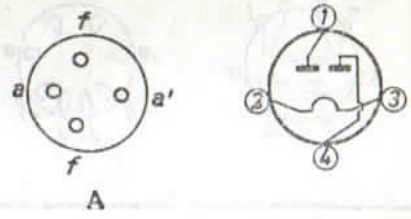
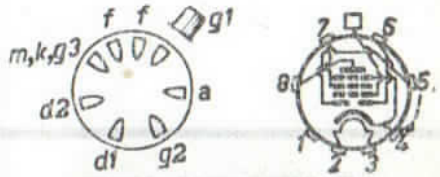
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
AF 3 Variable mu pentode R.F. or I.F. amplifier	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −3 V V_{g3} = 0 V	I_a = 8 I_{g2} = 2.6	S = 1.8 mA/V R_i = 1.2 MΩ C_{ag1} < 3 mpF	 P
AF 7 R.F. pentode R.F. amplifier	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3 I_{g2} = 1.1	S = 2.1 mA/V R_i = 2 MΩ C_{ag1} < 3 mpF	
AH 1 Hexode Mixer	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g4} = 80 V V_{g2} = 80 V V_{g3} = −12 V V_{g1} = −2 V V_{osc} = 9 V_{eff}	I_a = 1.7 $I_{(g2+g4)}$ = 2.6	S_c = 0.55 mA/V R_i = 2 MΩ	 P
AK 1 Octode	= **AK 2** with different base				 C

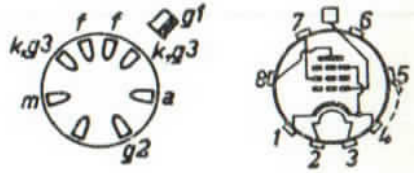
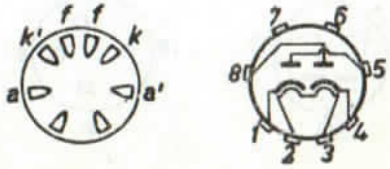
AK 2 Octode Frequency changer	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g3+g5} = 70 V V_{g4} = −1.5 V V_{g2} = 90 V R_{g1} = 50 kΩ	I_a = 1.6 I_{g3+g5} = 3.8 I_{g2} = 2.0 I_{g1} = 0.19	S_c = 0.6 mA/V R_i = 1.6 MΩ	
AL 1 Output pentode Class A final amplifier	V_f = 4 V I_f = 1.1 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −15 V R_k = 350 Ω	I_a = 3.6 I_{g2} = 8.8	S = 2.8 mA/V R_i = 43 kΩ R_a = 7 kΩ W_o = 3.1 W W_a = 9 W	
AL 2 Output pentode Class A final amplifier	V_f = 4 V I_f = 1 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −25 V R_k = 625 Ω	I_a = 36 I_{g2} = 5	S = 2.6 mA/V R_i = 60 kΩ R_a = 7 kΩ W_o = 3,8 W W_a = 9 W	

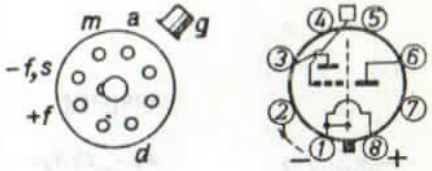
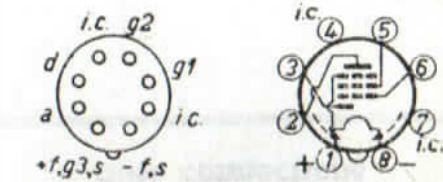
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
AL 4 Output pentode Class A final amplifier	V_f = 4 V I_f = 1.75 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 9 W	
AL 5 Output pentode	= 4688				
AM 1 Tuning Indicator	V_f = 4 V I_f = 0.3 A	$V_b = V_l$ = 250 V R_a = 2 MΩ V_g = 0/−5 V	I_a = 0.095/0.021 I_l = 0.13/0.14	α 74°/0°	
AX 1	= 4652				

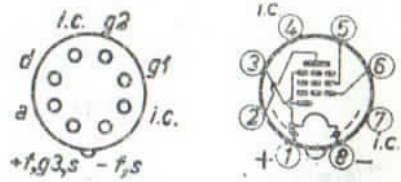
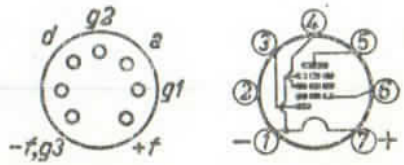
AX 50 Gasfilled full-wave rectifying tube Rectifier	$V_f =$ 4 V $I_f =$ 3.75 A	V_{tr} = 2×500 V V_{arc} = max. 15 V	I_o = max. 275	C_{filt} = max. 64 µF R_t = min. 200 Ω C_{filt} = max. 32 µF R_t = min. 150 Ω C_{filt} = max. 16 µF R_t = min. 100 Ω	 A
AZ 1 Full-wave rectifying tube Rectifier	$V_f =$ 4 V $I_f =$ 1.1 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 60 = max. 75 = max. 100	R_t = min. 100 Ω = min. 80 Ω = min. 60 Ω C_{filt} = max. 60 µF	 P

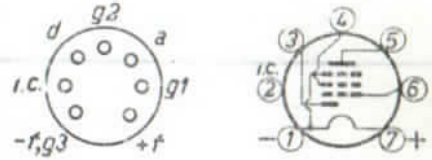
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
AZ 4 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 2.3 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 120 = max. 150 = max. 200	R_t = min. 100 Ω = min. 80 Ω = min. 60 Ω C_{filt} = max. 60 µF	 P
AZ 11 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 1.1 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 60 = max. 75 = max. 100	R_t = min. 100 Ω = min. 80 Ω = min. 60 Ω C_{filt} = max. 60 µF	 Y
AZ 12 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 2.3 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 120 = max. 150 = max. 200	R_t = min. 100 Ω = min. 80 Ω = min. 60 Ω C_{filt} = max. 60 µF	
AZ 31 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 1.1 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 60 = max. 75 = max. 100	R_t = min. 100 Ω = min. 80 Ω = min. 60 Ω C_{filt} = max. 60 µF	 Octal
AZ 41 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 0.72 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 60 = max. 60 = max. 70	R_t = min. 200 Ω = min. 150 Ω = min. 100 Ω C_{filt} = max. 50 µF	 Rimlock

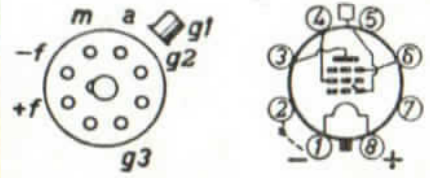
AZ 50 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 3 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	= max. 250 = max. 275 = max. 300	C_{filt} = max. 64 µF R_t = min. 200 Ω C_{filt} = max. 32 µF R_t = min. 150 Ω C_{filt} = max. 16 µF R_t = min. 100 Ω	 A
C 8 **C 10** **C 12**	Current regulators, see p. 239				
CBL 1 Double diode output pentode Class A final amplifier	V_f = 44 V I_f = 0.2 A	V_a = 200 V V_{g2} = 200 V V_{g1} = −8.5 V R_k = 170 Ω	I_a = 45 I_{g2} = 6	S = 8 mA/V R_i = 40 kΩ R_a = 4.5 kΩ W_o = 4 W W_a = 9 W	 P
		V_a = 100 V V_{g2} = 100 V V_{g1} = −4 V R_k = 170 Ω	I_a = 21 I_g = 3	S = 6.5 mA/V R_i = 48 kΩ R_a = 4.5 kΩ W_o = 0.85 W	

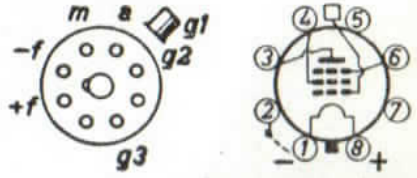
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
CF 50 A.F. pentode Typical characteristics A.F. amplifier	V_f = 30 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 1.5 I_{g2} = 0.3	S = 3.3 mA/V R_i = 2.5 MΩ μ_{g2g1} = 45	 P
		V_b = 250 V R_a = 0.3 MΩ R_{g2} = 0.9 MΩ R_k = 2 kΩ	I_a = 0.7 I_{g2} = 0.18	g = 315	
		V_b = 450 V R_a = 0.3 MΩ R_{g2} = 1 MΩ V_{g1} = −2 V = −10 V = −12 V	I_a = 1.3 = 0.22 = 0.04	g = 395 = 90 = 7	
CY 2 Double half-wave rectifying tube Rectifier (cathodes and anodes interconnected) Voltage doubler	V_f = 30 V I_f = 0.2 A	V_{tr} = 250 V	I_o = max. 120	C_{filt} = 32/16 µF R_t = min. 125/75 Ω	 P
		V_{tr} = 127 V	I_o = max. 60	C_{filt} = max. 32 µF R_t = 0 Ω	

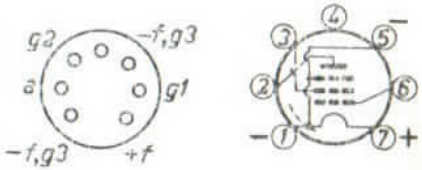
DA 90 Single diode Detector	see 1 A 3				
DAC 21 Diode triode Typical characteristics A.F amplifier	$V_f = 1.4$ V $I_f = 25$ mA	$V_a = 120$ V $V_g = 0$ V	$I_a = 0.75$	$S = 0.4$ mA/V $R_i = 0.1$ MΩ $\mu = 40$	 Octal
		$V_a = 90$ V $V_g = 0$ V	$I_a = 0.45$	$S = 0.3$ mA/V $R_i = 0.13$ MΩ $\mu = 40$	
		$V_b = 120$ V $V_g = 0$ V $R_a = 0.5$ MΩ	$I_a = 0.12$	$g = 25$	
		$V_b = 90$ V $V_g = 0$ V $R_a = 0.5$ MΩ	$I_a = 0.08$	$g = 23$	
DAF 40 Diode pentode R.F. or I.F. amplifier	$V_f = 1.4$ V $I_f = 25$ mA	$V_a = 120$ V $R_{g2} = 0.27$ MΩ $V_{g1} = 0$ V	$I_a = 0.85$ $I_{g1} = 0.20$	$S = 0.7$ mA/V $R_i = 2.6$ MΩ $C_{ag1} < 7$ mpF	 Rimlock
		$V_a = 67.5$ V $V_{g2} = 67.5$ V $V_{g1} = 0$ V	$I_a = 0.85$ $I_{g2} = 0.20$	$S = 0.7$ mA/V $R_i = 1.6$ MΩ	

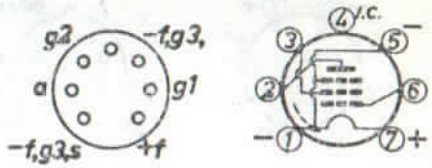
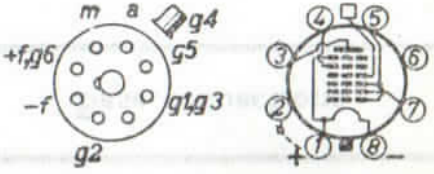
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DAF 41 Diode pentode A.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_b = 150 V R_a = 0.47 MΩ R_{g2} = 2.2 MΩ V_{g1} = 0 V	I_a = 0.24 I_{g2} = 0.05	g = 112	 Rimlock
		V_b = 90 V R_a = 0.47 MΩ R_{g2} = 2.2 MΩ V_{g1} = 0 V	I_a = 0.13 I_{g2} = 0.03	g = 83	
		V_b = 67.5 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ V_{g1} = 0 V	I_a = 0.17 I_{g2} = 0.04	g = 60	
DAF 91 Diode pentode Typical characteristics A.F. amplifier	V_f = 1.4 V I_f = 50 mA	V_a = 67.5 V V_{g2} = 67.5 V V_{g1} = 0 V	I_a = 1.6 I_{g2} = 0.4	S = 0.62 mA/V R_i = 0.6 MΩ	 Miniature
		V_b = 90 V R_a = 1 MΩ R_{g2} = 3.9 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ	I_b = 0.09	g = 60	

DAF 91 (continued) A.F. amplifier	V_f = 1.4 V I_f = 50 mA	V_b = 67.5 V R_a = 1 MΩ R_{g2} = 3.9 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ	I_b = 0.06	g = 55	
		V_b = 45 V R_a = 1 MΩ R_{g2} = 3.9 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ	I_b = 0.04	g = 42	
DAF 96 Diode pentode A.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_b = 64 V R_a = 1 MΩ R_{g2} = 2.7 MΩ R_{g1} = 10 MΩ R_{g1}' = 2.2 MΩ	I_g = 0.042 I_{g2} = 0.013	g = 63	 Miniature
		V_b = 85 V R_a = 1 MΩ R_{g2} = 2.7 MΩ R_{g1} = 10 MΩ R_{g1}' = 2.2 MΩ	I_g = 0.064 I_{g2} = 0.021	g = 70	
DB	Cathode-ray tubes, see p. 178				

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DC 70	U.H.F. tube, see p. 171				
DCC 90 Double triode	see 3 A 5				
DCG **DCX**	Rectifying tubes for transmitting purposes, see p. 198				
DF 21 Pentode R.F. or I.F. amplifier A.F. amplifier	$V_f = 1.4$ V $I_f = 25$ mA	$V_a = 120$ V $R_{g2} = 120$ kΩ $V_{g1} = 0$ V $V_{g3} = 0$ V	$I_a = 1.2$ $I_{g2} = 0.25$	$S = 0.7$ mA/V $R_i = 2.5$ MΩ $C_{ag1} < 6$ mpF	 Octal
		$V_a = 90$ V $V_{g2} = 90$ V $V_{g1} = 0$ V $V_{g3} = 0$ V	$I_a = 1.2$ $I_{g2} = 0.25$	$S = 0.7$ mA/V $R_i = 2$ MΩ	
		$V_b = 120$ V $R_a = 0.5$ MΩ $R_{g2} = 2$ MΩ $V_{g1} = -0.5$ V $V_{g3} = 0$ V	$I_a = 0.15$ $I_{g2} = 0.03$	$g = 85$	

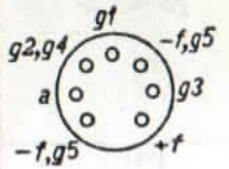
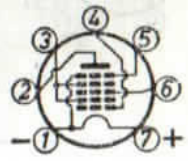
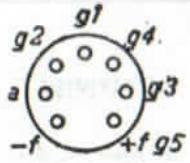
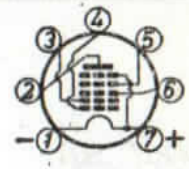
DF 21 (continued) A.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_b = 90 V R_a = 0.5 MΩ R_{g2} = 2 MΩ V_{g1} = −0.5 V V_{g3} = 0 V	I_a = 0.10 I_{g2} = 0.02	g = 69	
DF 22 Variable mu pentode R.F. or I.F. amplifier	V_f = 1.4 V I_f = 50 mA	V_a = 120 V R_{g2} = 0.1 MΩ V_{g1} = −1.5 V V_{g3} = 0 V	I_a = 1.4 I_{g2} = 0.3	S = 1.1 mA/V R_i = 2.5 MΩ C_{ag1} < 5 mpF	 Octal
		V_a = 90 V V_{g2} = 90 V V_{g1} = −1.5 V V_{g3} = 0 V	I_a = 1.4 I_{g2} = 0.3	S = 1.1 mA/V R_i = 1.5 MΩ	
DF 64 **DF 65** **DF 66** **DF 67** **DF 70**	Hearing-aid tubes, see p. 167				

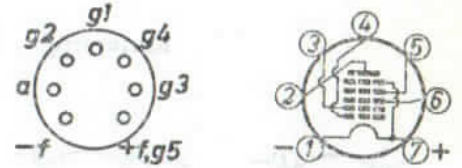
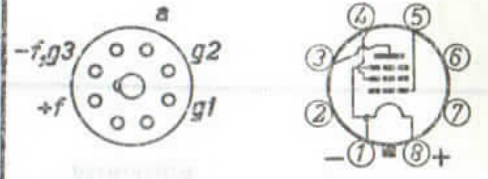
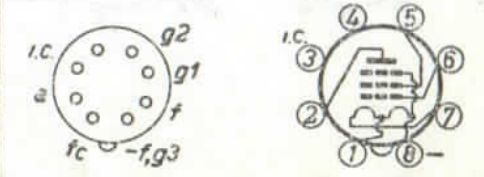
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DF 91 Variable mu pentode R.F. or I.F. amplifier	$V_f = 1.4$ V $I_f = 50$ mA	$V_a = 90$ V $V_{g2} = 45$ V $V_{g1} = 0$ V	$I_a = 1.8$ $I_{g2} = 0.65$	$S = 0.65$ mA/V $R_i = 0.8$ MΩ $C_{ag1} < 0.01$ pF	
		$V_a = 67.5$ V $V_{g2} = 45$ V $V_{g1} = 0$ V	$I_a = 1.75$ $I_{g2} = 0.68$	$S = 0.72$ mA/V $R_i = 0.6$ MΩ	
		$V_a = 45$ V $V_{g2} = 45$ V $V_{g1} = 0$ V	$I_a = 1.7$ $I_{g2} = 0.7$	$S = 0.7$ mA/V $R = 0.35$ MΩ	Miniature

DF 92 Pentode	see 1 L 4				
DF 96 R.F. pentode R.F. or I.F. amplifier	$V_f = 1.4$ V $I_f = 25$ mA	$V_a = 64$ V $V_{g2} = 64$ V $V_{g1} = 0$ V	$I_a = 1.65$ $I_{g2} = 0.55$	$S = 0.85$ mA/V $R_i = 0.7$ MΩ $C_{ag1} < 10$ mpF	 Miniature
		$V_a = 85$ V $V_{g2} = 64$ V $V_{g1} = 0$ V	$I_a = 1.65$ $I_{g2} = 0.55$	$S = 0.75$ mA/V $R_i = 1.0$ MΩ	
DG	Cathode-ray tubes, see p. 178				
DK 21 Octode Frequency changer	$V_f = 1.4$ V $I_f = 50$ mA	$V_a = V_b = 120$ V $R_{g5} = 0.12$ MΩ $V_{g4} = 0$ V $R_{g2} = 25$ kΩ $R_{g1+g3} = 35$ kΩ	$I_a = 1.5$ $I_{g5} = 0.25$ $I_{g2} = 2.4$ $I_{g1+g3} = 0.2$	$S_c = 0.5$ mA/V $R_i = 1.5$ MΩ	 Octal

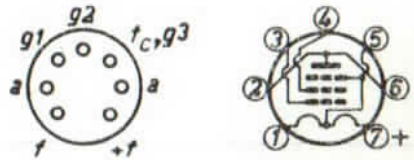
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DK 21		$V_a = V_b =$ 90 V $V_{g5} =$ 90 V $V_{g4} =$ 0 V $R_{g2} =$ 12.5 kΩ $R_{g1+g3} =$ 35 kΩ	$I_a =$ 1.5 $I_{g5} =$ 0.25 $I_{g2} =$ 2.4 $I_{g1+g3} =$ 0.2	$S_c =$ 0.5 mA/V $R_i =$ 1.2 MΩ	
DK 40 [1] Octode Frequency changer	$V_f =$ 1.4 V $I_f =$ 50 mA	$V_a = V_b =$ 135 V $R_{g5} =$ 270 Ω $V_{g4} =$ 0 V $R_{g2} =$ 26 kΩ $R_{g1+g3} =$ 35 kΩ $V_{osc} =$ 8 V	$I_a =$ 1.0 $I_{g5} =$ 0.25 $I_{g2} =$ 2.6	$S_c =$ 0.42 mA/V $R_i =$ 1.0 MΩ	g1,g3 g5 g2 g4 a +f g6 -f Rimlock 4 5 3 6 2 7 + 1 8 −
		$V_a = V_b =$ 90 V $R_{g5} =$ 90 kΩ $V_{g4} =$ 0 V $R_{g2} =$ 8.5 kΩ $R_{g1+g3} =$ 35 kΩ $V_{osc} =$ 8 V	$I_a =$ 1.0 $I_{g5} =$ 0.25 $I_{g2} =$ 2.6	$S_c =$ 0.42 mA/V $R_i =$ 1.0 MΩ	
		$V_a = V_b =$ 67.5 V $V_{g5} =$ 67.5 V $V_{g4} =$ 0 V $V_{g2} =$ 67.5 V $R_{g1+g3} =$ 35 kΩ $V_{osc} =$ 8 V	$I_a =$ 1.0 I_{g5} 0.25 $I_{g2} =$ 2.6	$S_c =$ 0.42 mA/V $R_i =$ 0.9 MΩ	

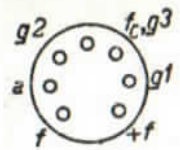
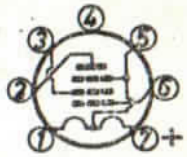
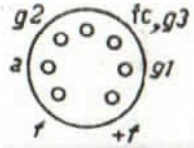
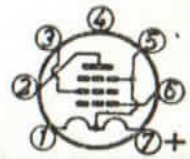
[1]) Rg_1+g_3 conected to + f.

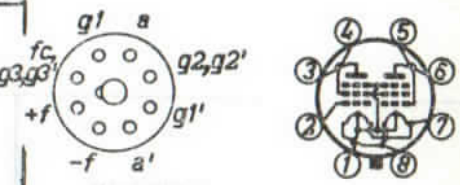
DK 91 Heptode Frequency changer	$V_f = 1.4$ V $I_f = 50$ mA	$V_a = 90$ V $V_{g2+g4} = 67.5$ V $V_{g3} = 0$ V $R_{g1} = 0.1$ MΩ	$I_a = 1.6$ $I_{g2+g4} = 3.2$ $I_{g1} = 0.25$	$S_c = 0.30$ mA/V $R_i = 0.6$ MΩ	 Miniature 
		$V_a = 67.5$ V $V_{g2+g4} = 67.5$ V $V_{g3} = 0$ V $R_{g1} = 0.1$ MΩ	$I_a = 1.4$ $I_{g2+g4} = 3.2$ $I_{g1} = 0.25$	$S_c = 0.28$ mA/V $R_i = 0.5$ MΩ	
		$V_a = 45$ V $V_{g2+g4} = 45$ V $V_{g3} = 0$ V $R_{g1} = 0.1$ MΩ	$I_a = 0.7$ $I_{g2+g4} = 1.9$ $I_{g1} = 0.15$	$S_c = 0.23$ mA/V $R_i = 0.6$ MΩ	
DK 92 Heptode Frequency changer	$V_f = 1.4$ V $I_f = 50$ mA	$V_a = V_b = 85$ V $V_{g3} = 0$ V $V_{osc} = 4$ V $R_{g4} = 0.18$ MΩ $R_{g2} = 33$ kΩ $R_{g1} = 27$ kΩ	$I_a = 0.65$ $I_{g4} = 0.14$ $I_{g2} = 1.65$ $I_{g1} = 0.13$	$S_c = 0.32$ mA/V $S_{eff} = 0.4$ mA/V $R_i = 1$ MΩ $R_{eq} = 100$ kΩ	 Miniature 
		$V_a = V_b = 63.5$ V $V_{g4} = 63.5$ V $V_{g3} = 0$ V $V_{osc} = 4$ V $R_{g2} = 22$ kΩ $R_{g1} = 27$ kΩ	$I_a = 0.70$ $I_{g4} = 0.15$ $I_{g2} = 1.55$ $I_{g1} = 0.13$	$S_c = 0.3$ mA/V $S_{eff} = 0.36$ mA/V $R_i = 0.9$ MΩ $R_{eq} = 120$ kΩ	
		$V_a = V_b = 41$ V $V_{g4} = 41$ V $V_{g3} = 0$ V $V_{osc} = 2.5$ V $R_{g2} = 6.8$ kΩ $R_{g1} = 27$ kΩ	$I_a = 0.25$ $I_{g4} = 0.09$ $I_{g2} = 1.75$ $I_{g1} = 0.08$	$S_c = 0.18$ mA/V $S_{eff} = 0.7$ mA/V $R_i = 0.75$ MΩ $R_{eq} = 115$ kΩ	

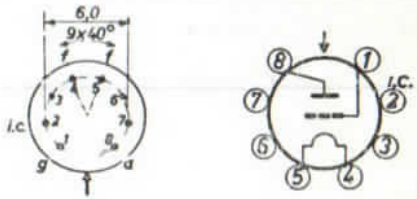
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DK 96 Heptode Frequency changer	V_f = 1.4 V I_f = 25 mA	$V_a = V_b$ = 85 V V_{g3} = 0 V V_{osc} = 4 V R_{g4} = 0.12 MΩ R_{g2} = 33 kΩ R_{g1} = 27 kΩ	I_a = 0.6 I_{g4} = 0.14 I_{g2} = 1.5 I_{g1} = 0.085	S_c = 0.3 mA/V R_i = 0.8 MΩ R_{eq} = 100 kΩ	 Miniature
		$V_a = V_b$ = 64 V V_{g4} = 64 V V_{g3} = 0 V V_{osc} = 4 V R_{g2} = 18 kΩ R_{g1} = 27 kΩ	I_a = 0.55 I_{g4} = 0.12 I_{g2} = 1.6 I_{g1} = 0.085	S_c = 0.275 mA/V R_i = 0.75 MΩ R_{eq} = 110 kΩ	
DL 21 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 50 mA	V_a = 120 V V_{g2} = 120 V V_{g1} = −4.8 V	I_a = 5 I_{g2} = 0.9	S = 1.4 mA/V R_i = 0.35 MΩ R_a = 24 kΩ W_o = 0.27 W	 Octal
		V_a = 90 V V_{g2} = 90 V V_{g1} = −3 V	I_a = 4 I_{g2} = 0.7	S = 1.3 mA/V R_i = 0.3 MΩ R_a = 22.5 kΩ W_o = 0.16 W	
DL 41 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 50 mA	V_a = 120 V V_{g2} = 120 V V_{g1} = −5.8 V	I_a = 5 I_{g2} = 0.82	S = 1.35 mA/V R_i = 0.16 MΩ R_a = 24 kΩ W_o = 0.3 W W_a = 1.2 W	
		V_a = 90 V V_{g2} = 90 V V_{g1} = −3.6 V	I_a = 4 I_{g2} = 0.65	S = 1.25 mA/V R_i = 0.17 MΩ R_a = 22.5 kΩ W_o = 0.18 W	

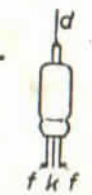
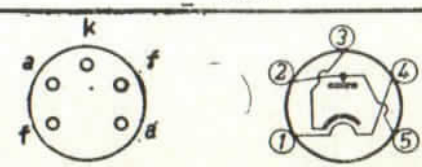
DL 41 Output pentode (continued) Class A final amplifier Class B final amplifier	V_f = 1.4 V I_f = 0.1 A	V_a = 120 V V_{g2} = 120 V V_{g1} = −5.7 V	I_a = 10 I_{g2} = 1.65	S = 2.55 mA/V R_i = 80 kΩ R_a = 12 kΩ W_o = 0.6 W W_a = 1.2 W	
		V_a = 90 V V_{g2} = 90 V V_{g1} = −3.6 V	I_a = 8 I_{g2} = 1.3	S = 2.45 mA/V R_i = 90 kΩ R_a = 11 kΩ W_o = 0.36 W	
		V_a = 150 V V_{g2} = 150 V V_{g1} = −13.2 V V_i = 10.6 V	$I_{a\,min}$ = 2× 1.5 $I_{a\,max}$ = 2×11.5 I_{g2min} = 2×0.25 I_{g2max} = 2× 4	R_{aa} = 15 kΩ W_o = 2.1 W	
DL 64 **DL 65** **DL 66** **DL 67** **DL 71** **DL 72**	Hearing-aid tubes, see p. 169				

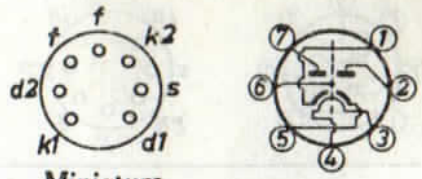
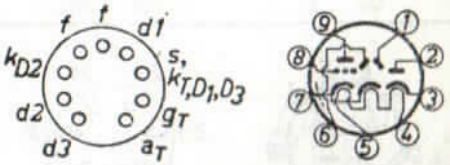
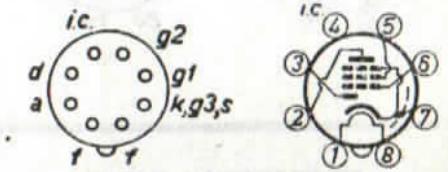
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DL 92 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 0.1 A	$V_a = V_b$ = 84 V V_{g1} = 6.5 V R_{g2} = 10 kΩ	I_a = 8 I_{g2} = 1.7	S = 1.55 mA/V R_i = 0.1 MΩ R_a = 7 kΩ W_o = 190 mW W_a = 0.7 W	 Miniature
		$V_a = V_b$ = 61 V V_{g2} = 61 V V_{g1} = −6 V	I_a = 6.6 I_{g2} = 1.4	S = 1.5 mA/V R_i = 0.1 MΩ R_a = 7 kΩ W_o = 125 mW	
	V_f = 2.8 V I_f = 50 mA	$V_a = V_b$ = 84 V V_{g1} = −6 V R_{g2} = 10 kΩ	I_a = 7.6 I_{g2} = 1.6	S = 1.5 mA/V R_i = 0.1 MΩ R_a = 7 kΩ W_o = 180 mW	
		$V_a = V_b$ = 61 V V_{g2} = 61 V V_{g1} = −5.5 V	I_a = 6.5 I_{g2} = 1.4	S = 1.45 mA/V R_i = 0.1 MΩ R_a = 7 kΩ W_o = 120 mW	

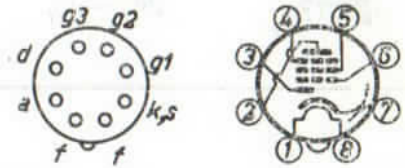
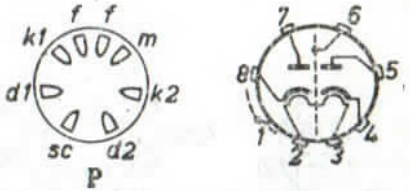
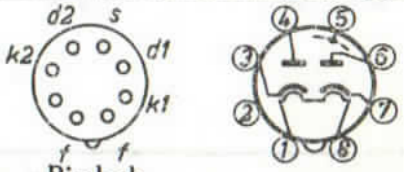
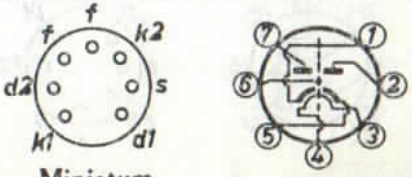
DL 93 Output pentode	see 3A 4					
DL 94 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 0.1 A	V_a = 86 V V_{g2} = 86 V V_{g1} = −4.5 V	I_a = 8 I_{g2} = 1.8	S = 2.0 mA/V R_i = 0.11 MΩ R_a = 8 kΩ W_o = 0.29 W W_a = 1.2 W	 Miniature	
	V_f = 2.8 V I_f = 50 mA	V_a = 86 V V_{g2} = 86 V V_{g1} = −4.3 V	I_a = 7.0 I_{g2} = 1.5	S = 1.9 mA/V R_i = 0.12 MΩ R_a = 10 kΩ W_o = 0.27 W		
DL 95 Output pentode	see 3 Q 4					
DL 96 Output pentode Class A Class A half filament Class A	V_f = 1.4 V I_f = 50 mA	V_a = 85 V V_{g2} = 85 V V_{g1} = −5.2 V	I_a = 5 I_{g2} = 0.9	S = 1.4 mA/V R_i = 150 kΩ R_a = 13 kΩ W_o = 0.2 W W_a = 0,6 W		
	V_f = 1.4 V I_f = 25 mA	V_a = 85 V V_{g2} = 85 V V_{g1} = −5.2 V	I_a = 2.5 I_{g2} = 0.45	R_a = 25 kΩ W_o = 0.1 W	 Miniature	
	V_f = 2.8 V I_f = 25 mA	V_a = 90 V V_{g2} = 90 V V_{g1} = −6.3 V	I_a = 3.7 I_{g2} = 0.7	R_a = 20 kΩ W_o = 0.15 W		

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DLL 21 Double output pentode Class AB push-pull amplifier	V_f = 1.4 V I_f = 0.1 A	V_a = 120 V V_{g2} = 120 V V_{g1} = −8.7 V	$I_{a\,min}$ = 2× 1.0 $I_{a\,max}$ = 2× 4.1 I_{g2min} = 2×0.16 I_{g2max} = 2× 1.1	R_{aa} = 30 kΩ W_o = 0.6 W	 Octal
		V_a = 90 V V_{g2} = 90 V V_{g1} = −5.7 V	$I_{a\,min}$ = 2× 1.0 $I_{a\,max}$ = 2× 3.0 I_{g2min} = 2×0.16 I_{g2max} = 2× 0.7	R_{aa} = 30 kΩ W_o = 0.3 W	
	V_f = 1.4 V I_f = 0.2 A	V_a = 135 V V_{g2} = 135 V V_{g1} = −9.4 V	$I_{a\,min}$ = 2× 2.0 $I_{a\,max}$ = 2× 8.8 I_{g2min} = 2×0.35 I_{g2max} = 2× 2.3	R_{aa} = 15 kΩ W_o = 1.5 W	
		V_a = 120 V V_{g2} = 120 V V_{g1} = −8.2 V	$I_{a\,min}$ = 2× 2.0 $I_{a\,max}$ = 2× 7.5 I_{g2min} = 2×0.35 I_{g2max} = 2× 2.0	R_{aa} = 15 kΩ W_o = 1.2 W	
	V_f = 2.8 V I_f = 0.1 A	V_a = 135 V V_{g2} = 135 V V_{g1} = −9.5 V	$I_{a\,min}$ = 2× 1.5 $I_{a\,max}$ = 2× 8.2 I_{g2min} = 2×0.25 I_{g2max} = 2× 2.4	R_{aa} = 15 kΩ W_o = 1.5 W	

DLL 21 Double output pentode (continued) Class AB push-pull amplifier	$V_f = 2.8$ V $I_f = 0.1$ mA	$V_a = 120$ V $V_{g2} = 120$ V $V_{g1} = -8.1$ V	$I_{a\,min} = 2\times 1.5$ $I_{a\,max} = 2\times 7.1$ $I_{g2min} = 2\times 0.25$ $I_{g2max} = 2\times 1.9$	$R_{aa} = 15$ kΩ $W_o = 1.1$ W	
		$V_a = 90$ V $V_{g2} = 90$ V $V_{g1} = -5.9$ V	$I_{a\,min} = 2\times 1.0$ $I_{a\,max} = 2\times 4.4$ $I_{g2min} = 2\times 0.2$ $I_{g2max} = 2\times 1.3$	$R_{aa} = 20$ kΩ $W_o = 0.5$ W	
DM 70 Tuning indicator	$V_f = 1.4$ V $I_f = 25$ mA	$V_f = 1.4$ V (Pin 5 positive) $V_a = 85$ V	$I_a = 0.17$ ($V_g = 0$ V)	$V_g = -10$ V for complete extinction	 Subminiature
		$V_f = 1.4$ V (Pin 4 positive) $V_a = 60$ V	$I_a = 0.105$ ($V_g = 0$ V)	$V_g = -7$ V for complete extinction	
DM 71	= DM 70 with short leads				
DN **DP** **DR**	Cathode-ray tubes, see p. 178				

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DY 86 H.T. rectifier for T.V. receivers	V_f = 1.4 V I_f = 0.55 A	see EY 86 except for heater rating			
E1C **E1F**	= 4671 = 4672	U.H.F. tube see p. 171			
E1T	Decade counter tube, see p. 246				
E80CC **E80F** **E80L**	Reliable, ruggedized and long life tubes, see p. 166				
E81L **E83F**	Repeater tubes, see p. 165				
E90CC **E92CC**	Tube for computers, see p. 175				
E180F	Reliable, ruggedized, see p. 166				
EA 50 Single diode Detector	V_f = 6.3 V I_f = 0.15 A	V_d = max. 200 V V_{kf} = max. 100 V R_{kf} = max. 20 kΩ	I_d = max. 5	C_{dk} = 2.1 pF	
EA 76 Diode	V_f = 6.3 V I_f = 0.15 A	$\smile V_{d\,invp}$ = max. 420 V	I_d = max. 9		 Subminiature

EAA 91 Double diode Detector and A.G.C.	V_f = 6.3 V I_f = 0.3 A	$V_{d\,invp}$ = max. 420 V	I_d = max. 9 I_{dp} = max. 54		 Miniature
EABC 80 Triple diode high mu triode Typical characteristics (diode systems) Typical characteristics (triode systems)	V_f = 6.3 V I_f = 0.45 A	$V_{d_1\,invp}$ = max. 350 V $V_{d_2\,invp}$ = max. 350 V $V_{d_3\,invp}$ = max. 350 V	I_{d_1} = max. 1 I_{d_1p} = max. 6 I_{d_2} = max. 10 I_{d_2p} = max. 75 I_{d_3} = max. 10 I_{d_3p} = max. 75	R_{id_1} = 5 kΩ (V_{d_1} = 10 V) R_{id_2} = 200 Ω (V_{d_2} = 5 V) R_{id_3} = 200 Ω (V_{d_3} = 5 V)	 Noval
		V_a = 250 V V_g = −3 V	I_a = 1.0	S = 1.2 mA/V R_i = 58 kΩ μ = 70	
		V_a = 100 V V_g = −1 V	I_a = 0.8	S = 1.3 mA/V R_i = 54 kΩ μ = 70	
EAC 91	U.H.F. tube, see p. 172				
EAF 41 Diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2} = 95 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.2 MΩ C_{ag_1} < 2 mpF	 Rimlock
		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ R_k = 1.6 kΩ	I_a = 0.86 I_{g2} = 0.28	g = 105	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EAF 42 Diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2} = 110 kΩ V_{g1} = −2 V V_{g3} = 0 V	I_a = 5 I_{g2} = 1.5	S = 2.0 mA/V R_i = 1.4 MΩ C_{ag1} < 2 mpF	
		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ R_k = 1.5 kΩ V_{g3} = 0 V	I_a = 0.80 I_{g2} = 0.26	g = 120	Rimlock
EB 4 Double diode Detector and A.G.C.	V_f = 6.3 V I_f = 0.2 A	$V_{d\,invp}$ = = max. 420 V	I_d = max. 0.8		
EB 41 Double diode Detector and A.G.C.	V_f = 6.3 V I_f = 0.3 A	$V_{d\,invp}$ = = max. 420 V	I_d = max. 9 I_{dp} = max. 54		 Rimlock
EB 91 Double diode Detector and A.G.C.	V_f = 6.3 V I_f = 0.3 A	$V_{d\,invp}$ = = max. 420 V	I_d = max. 9 I_{dp} = max. 54		 Miniature

EBC 3
EBC 33

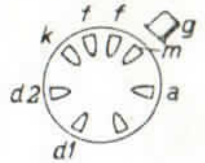
Double diode triodes

Typical characteristics

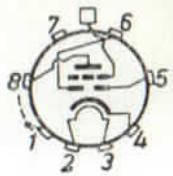
A.F. amplifier

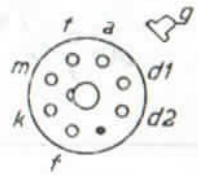
V_f = 6.3 V
I_f = 0.2 A

V_a = 275 V V_g = −6.25 V	I_a = 5	S = 2.0 mA/V R_i = 15 kΩ μ = 30	
V_a = 200 V V_g = −4.3 V	I_a = 4	S = 2.0 mA/V R_i = 15 kΩ μ = 30	
V_a = 100 V V_g = −2.1 V	I_a = 2	S = 1.6 mA/V R_i = 19 kΩ μ = 30	
V_b = 250 V R_a = 0.2 MΩ R_k = 4 kΩ	I_a = 0.75	g = 26	
V_b = 200 V R_a = 0.2 MΩ R_k = 12.5 kΩ	I_a = 0.35	g = 22	
V_b = 100 V R_a = 0.2 MΩ R_k = 12.5 kΩ	I_a = 0.2	g = 19	

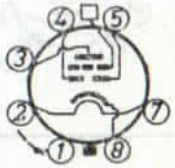


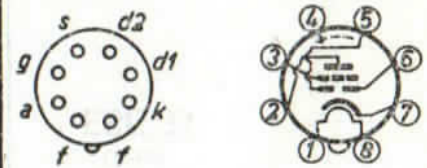
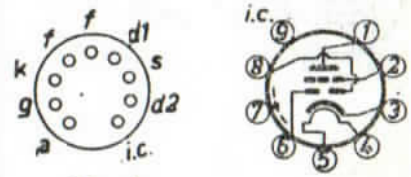
P
EBC 3

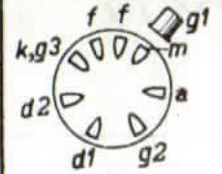
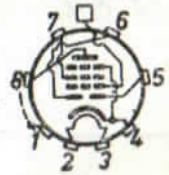
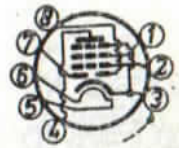


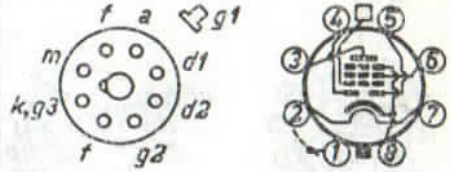
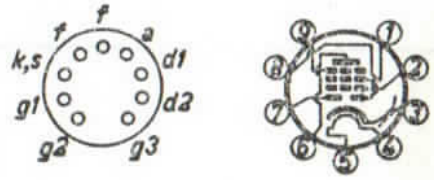
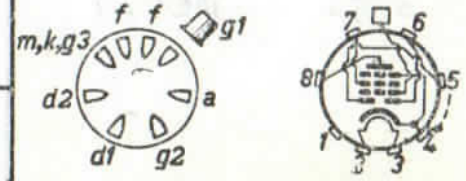


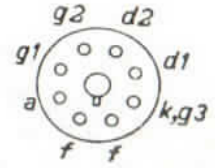
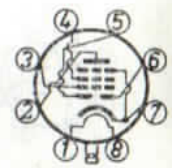
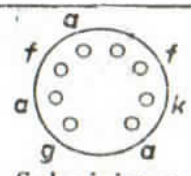
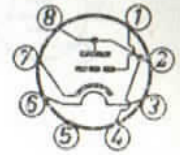
Octal
EBC 33

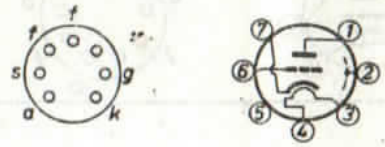
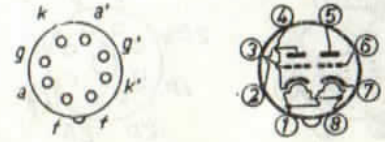


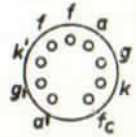
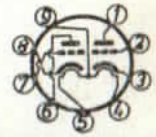
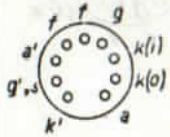
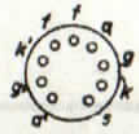
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EBC 41 Double diode high mu triode Typical characteristics A.F. amplifier	V_f = 6.3 V I_f = 0.23 A	V_a = 250 V V_g = −3 V	I_a = 1	S = 1.2 mA/V R_i = 58 kΩ μ = 70	 Rimlock
		V_b = 250 V R_a = 0.22 MΩ R_k = 1.8 kΩ	I_a = 0.7	g = 51	
EBC 81 Double diode high mu triode Typical characteristics A.F. amplifier	V_f = 6.3 V I_f = 0.23 A	V_a = 250 V V_g = −3 V	I_a = 1	S = 1.2 mA/V R_i = 58 kΩ μ = 70	 Noval
		V_b = 250 V R_a = 22 kΩ R_k = 1.8 kΩ	I_a = 0.7	g = 51	

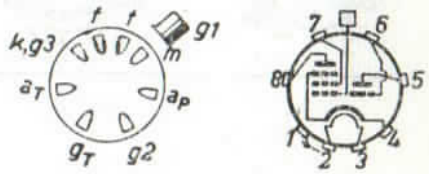
EBF 2 Double diode variable mu pentode I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a=V_b= 250 V R_{g2} = 95 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.3 MΩ C_{ag1} < 2 mpF	 
		V_a=V_b= 100 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 0.4 MΩ	P
EBF 11 Double diode variable mu pentode I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a=V_b= 250 V R_{g2} = 85 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.8	S = 1.8 mA/V R_i = 2.0 MΩ C_{ag1} < 2 mpF	 
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 2 kΩ	I_a = 0.8 I_{g2} = 0.25	g = 98	Y

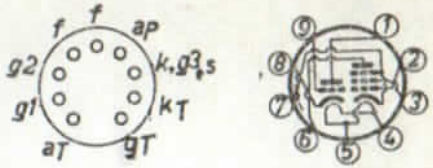
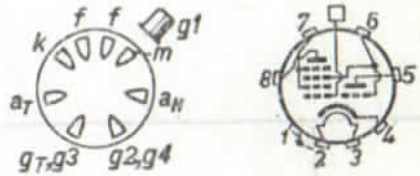
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EBF 32 Double diode variable mu pentode I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 95 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.3 MΩ C_{ag1} < 2 mpF	 Octal
		$V_a = V_b$ = 100 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V Ri = 0.4 MΩ	
EBF 80 Double diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.3 A	$V_a = V_b$ = 250 V V_{g3} = 0 V R_{g2} = 95 kΩ R_k = 295 Ω	I_a = 5.0 I_{g2} = 1.75	S = 2.2 mA/V R_i = 1.4 MΩ C_{ag1} < 2.5 mpF	 Noval
		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ R_k = 1.8 kΩ V_{g3} = 0 V	I_a = 0.75 I_{g2} = 0.30	g = 110	
EBL 1 Double diode output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.18 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 8 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 9 W	 P
		V_a = 250 V V_{g2} = 250 V R_k = 140 Ω	$I_{a\,min}$ = 2× 24 $I_{a\,max}$ = 2×28.5 I_{g2min} = 2× 2.8 I_{g2max} = 2× 4.6	R_{aa} = 10 kΩ W_o = 8.2 W	

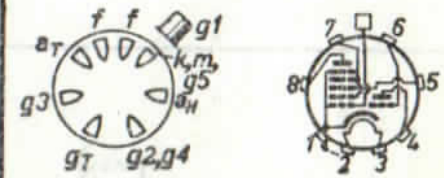
EBL 21 Double diode output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.8 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4.5	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 11 W	 
		V_a = 250 V V_{g2} = 275 V V_{g1} = −6.2 V R_k = 125 Ω	I_a = 44 I_{g2} = 5.8	S = 9.5 mA/V R_i = 50 kΩ R_a = 5.7 kΩ W_o = 5.5 W	
		V_a = 300 V V_{g2} = 300 V R_k = 130 Ω	$I_{a\,min}$ = 2×30 $I_{a\,max}$ = 2×36 I_{g2min} = 2×3.8 I_{g2max} = 2×6.5	R_{aa} = 9 kΩ W_o = 13.2 W	Loctal 8p.
EC 50	Thyratron, see p. 210				
EC 55 **EC 56** **EC 57**	U.H.F. tubes, see p. 172				
EC 70 R.F. triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_g = −2 V	I_a = 13	S = 5.5 mA/V R_i = 3.6 kΩ μ = 20	 Subminiature 
EC 80 **EC 81** **EC 91**	U.H.F. tubes, see p. 173				

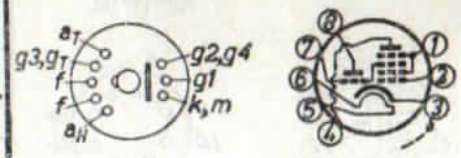
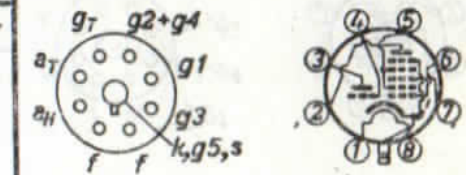
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EC 92 R.F. triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 250 V V_g = −2 V	I_a = 10	S = 5 mA/V R_i = 12 kΩ μ = 60 freq. = max. 300 Mc/s	 Miniature
		V_a = 170 V V_g = −1 V	I_a = 8.5	S = 5.5 mA/V R_i = 12 kΩ μ = 66	
ECC 40 Double triode Class A final amplifier (per system) A.F. amplifier (per system) A.F. amplifier (2 systems in cascade)	V_f = 6.3 V I_f = 0.6 A	V_a = 250 V R_k = 920 Ω V_g = −5.6 V	I_a = 6	S = 2.9 mA/V R_i = 11 kΩ μ = 32 R_a = 15 kΩ W_o = 0.28 W W_a = 1.5 W	 Rimlock
		V_b = 400 V R_a = 0.1 MΩ R_k = 2.2 kΩ R_{g1}' = 0.33 MΩ	I_a = 2.2	g = 24.5 V_o = max. 76 V	
		V_b = 250 V R_a = 0.1 MΩ R_k = 2.2 kΩ R_{g1}' = 0.33 MΩ	I_a = 1.4	g = 24 V_o = max. 44 V	
		V_b = 250 V R_a = 0.22 MΩ R_a' = 0.22 MΩ R_g' = 1 MΩ $R_{k,k'}$ = 1 kΩ	I_b = 2.0	g = 780	

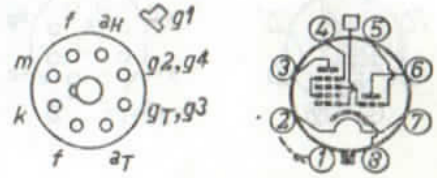
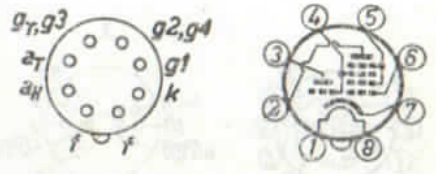
ECC 81 Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.3 A	V_a = 100 V V_g = −1 V	I_a = 3.0	S = 3.75 mA/V R_i = 16.5 kΩ μ = 62	
		V_a = 170 V V_g = −1 V	I_a = 8.5	S = 5.9 mA/V R_i = 11.2 kΩ μ = 66	
	V_f = 12.6 V I_f = 0.15 A	V_a = 250 V V_g = −2 V	I_a = 10	S = 5.5 mA/V R_i = 11 kΩ μ = 60	
ECC 82 Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −8.5 V	I_a = 10.5	S = 2.2 mA/V R_i = 7.7 kΩ μ = 17	 
	V_f = 12.6 V I_f = 0.15 A	V_a = 100 V V_g = 0 V	I_a = 11.8	S = 2.2 mA/V R_i = 6.25 kΩ μ = 19.5	
ECC 83 Double high mu triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −2 V	I_a = 1.2	S = 1.6 mA/V R_i = 62.5 kΩ μ = 100	
	V_f = 12.6 V I_f = 0.15 A	V_a = 100 V V_g = −1 V	I_a = 0.5	S = 1.25 mA/V R_i = 80 kΩ μ = 100	Noval
ECC 84 Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.33 A	V_a = 90 V V_g = −1.5 V	I_a = 12	S = 6 mA/V R_i = 4 kΩ μ = 24	  Noval
ECC 85 Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.435A	V_a = 250 V V_g = −2.3 V	I_a = 10	S = 5.9 mA/V R_i = 9.8 kΩ μ = 57	  Noval

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
ECC 91 Double triode	see 6 J 6				
ECF 1 Triode variable mu pentode I.F. amplifier (pentode system) Typical characteristics (triode system)	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 75 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 2	S = 2.0 mA/V R_i = 1.6 MΩ C_{ag1} < 4 mpF	 P
		V_a = 150 V V_g = −3 V	I_a = 8	S = 2.2 mA/V R_i = 9 kΩ μ = 20	

ECF 80 Triode pentode Typical characteristics (pentode system) Typical characteristics (triode system) Frequency changer	V_f = 6.3 V I_f = 0.43 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −2 V	I_a = 10 I_{g2} = 2.8	S = 6.2 mA/V R_i = 0.4 MΩ R_{eq} = 1.5 kΩ	 Noval
		V_a = 100 V V_g = −2 V	I_a = 14	S = 5 mA/V R_i = 4 kΩ μ = 20	
		V_a = 170 V V_{g2} = 170 V R_{g1} = 0.1 MΩ R_k = 330 Ω	I_a = 6.5 I_{g2} = 2 I_{g1} = 0.025	S_c = 2.2 mA/V R_i = 800 kΩ	
ECH 3 Triode hexode Frequency changer (hexode system)	V_f = 6.3 V I_f = 0.2 A	V_a=V_b= 250 V R_1 = 24 kΩ R_2 = 33 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3 I_{g2+g4} = 3 I_{g3+gT} = 0.2	S_c = 0.65 mA/V R_i = 1.3 MΩ	 P
		V_a=V_b= 200 V R_1 = 19 kΩ R_2 = 54 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3 I_{g2+g4} = 3 I_{g3+gT} = 0.2	S_c = 0.65 mA/V R_i = 0.9 MΩ	
		V_a=V_b= 100 V R_1 = 19 kΩ R_2 = 54 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −1.25 V	I_a = 1.0 I_{g2+g4} = 1.4 I_{g3+gT} = 0.2	S_c = 0.45 mA/V R_i = 1.3 MΩ	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
ECH 3 Triode hexode (continued) Oscillator (triode system)	V_f = 6.3 V I_f = 0.2 A	V_b = 250 V R_a = 45 kΩ R_{g3+gT} = 50 kΩ	I_a = 3.3 I_{g3+gT} = 0.2	S_o = 2.8 mA/V μ = 24	
		$V_a = V_b$ = 100 V R_{g3+gT} = 50 kΩ	I_a = 3.3 I_{g3+gT} = 0.2	S_o = 2.8 mA/V μ = 24	
ECH 4 Triode heptode Frequency changer (heptode system) Oscillator (triode system) I.F. amplifier (heptode system) A.F. amplifier (triode system) Typical characteristics (triode system)	V_f = 6.3 V I_f = 0.35 A	V_a = 250 V R_{g2+g4} = 24 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.0 I_{g2+g4} = 6.2 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.4 MΩ	 P
		V_b = 250 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.5 I_{g3+gT} = 0.19	S_{eff} = 0.55 mA/V	
		V_a = 250 V R_{g2+g4} = 45 kΩ V_{g3} = 0 V V_{g1} = −2 V	I_a = 5.3 I_{g2+g4} = 3.5	S = 2.2 mA/V R_i = 0.9 MΩ C_{ag1} < 2 mpF	
		V_b = 250 V R_a = 0.2 MΩ V_g = −2 V	I_a = 1.0	g = 13	
		V_a = 100 V V_g = 0 V	I_a = 12	S = 3.2 mA/V μ = 22	

ECH 11 Triode hexode Frequency changer (triode system) Oscillator (triode system)	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2+g4} = 50 kΩ R_{g3+gT} = 30 kΩ V_{g1} = −2 V	I_a = 2.3 I_{g2+g4} = 3.0 I_{g3+gT} = 0.33	S_c = 0.65 mA/V R_i = 1.2 MΩ V_{osc} = 8.5 V	 Y
		V_b = 250 V R_a = 30 kΩ R_{g3+gT} = 30 kΩ	I_a = 3.4 I_{g3+gT} = 0.33	S_o = 2.8 mA/V μ = 17	
ECH 21 Triode heptode Frequency changer (heptode system) Oscillator (triode system) L.F. amplifier (heptode system) A.F. amplifier (triode system) Typical characteristics (triode system)	V_f = 6.3 V I_f = 0.33 A	$V_a = V_b$ = 250 V R_{g2+g4} = 24 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.0 I_{g2+g4} = 6.2 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.4 MΩ	
		V_b = 250 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.5 I_{g3+gT} = 0.19	S_{eff} = 0.55 mA/V	
		$V_a = V_b$ = 250 V R_{g2+g4} = 45 kΩ V_{g3} = 0 V V_{g1} = −2 V	I_a = 5.3 I_{g2+gT} = 3.5	S = 2.2 mA/V R_i = 0.9 MΩ C_{ag1} < 2 mpF	 Loctal 8p.
		V_b = 250 V R_a = 0.2 MΩ V_g = −2 V	I_a = 1.0	g = 13	
		V_a = 100 V V_g = 0 V	I_a = 12	S = 3.2 mA/V μ = 22	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
ECH 35 Triode hexode Frequency changer (hexode system) Oscillator (triode system)	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_1 = 24 kΩ R_2 = 33 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.0 I_{g2+g4} = 3.0 I_{g3+gT} = 0.2	S_c = 0.65 mA/V R_i = 1.3 MΩ	 Octal
		V_b = 250 V R_a = 45 kΩ R_{g3+gT} = 50 kΩ	I_a = 3.3 I_{g3+gT} = 0.2	S_0 = 2.8 mA/V μ = 24	
ECH 41 Triode hexode Frequency changer (hexode system) Oscillator (triode system)	V_f = 6.3 V I_f = 0.23 A	$V_a = V_b$ = 250 V R_1 = 33 kΩ R_2 = 47 kΩ R_{g3+gT} = 20 kΩ V_{g1} = −2 V	I_a = 3.0 I_{g2+g4} = 2.2 I_{g3+gT} = 0.35	S_c = 0.5 mA/V R_i = 2 MΩ V_{osc} = 8 V R_{eq} = 170 kΩ	 Rimlock
		V_b = 250 V R_a = 30 kΩ R_{g3+gT} = 20 kΩ	I_a = 4.9 I_{g3+gT} = 0.35	S_o = 1.9 mA/V S_{eff} = 0.55 mA/V μ = 19	

ECH 42

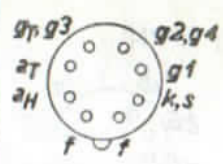
Triode hexode

Frequency changer (hexode system)

Oscillator (triode system)

$V_f = 6.3$ V
$I_f = 0.23$ A

$V_a = V_b = 250$ V $R_1 = 27$ kΩ $R_2 = 27$ kΩ $R_{g3+gT} = 22$ kΩ $V_{g1} = -2$ V	$I_a = 3.0$ $I_{g2+g4} = 3.0$ $I_{g3+gT} = 0.35$	$S_c = 0.75$ mA/V $R_i = 1.7$ MΩ $R_{eq} = 100$ kΩ
$V_b = 250$ V $R_a = 33$ kΩ $R_{g3+gT} = 22$ kΩ $V_{osc} = 8$ V	$I_a = 5.1$ $I_{g3+gT} = 0.35$	$S_0 = 2.8$ mA/V $S_{eff} = 0.6$ mA/V $\mu = 22$



Rimlock

ECH 81

Triode heptode

Frequency changer (heptode system)

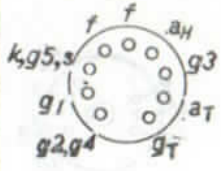
R.F. or I.F. amplifier (heptode system)

Typical characteristics (triode system)

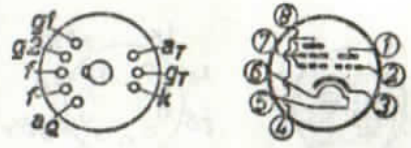
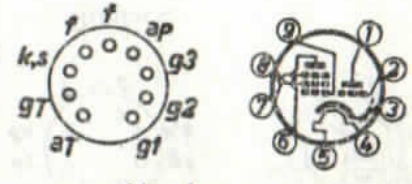
Oscillator (triode system)

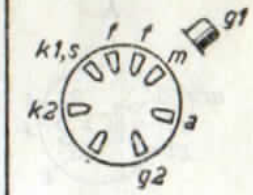
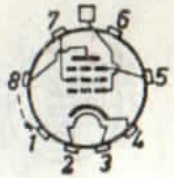
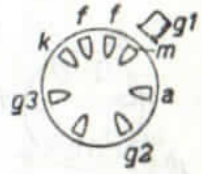
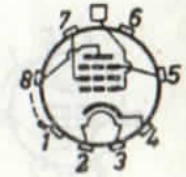
$V_f = 6.3$ V
$I_f = 0.3$ A

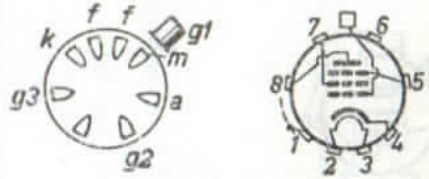
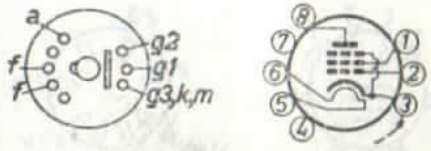
$V_a = V_b = 250$ V $R_{g2+g4} = 22$ kΩ $R_{g3+gT} = 47$ kΩ $V_{g1} = -2$ V	$I_a = 3.25$ $I_{g2+g4} = 6.7$ $I_{g3+gT} = 0.2$	$S_c = 0.775$ mA/V $R_i = 1$ MΩ $R_{eq} = 70$ kΩ
$V_a = V_b = 250$ V $R_{g2+g4} = 39$ kΩ $V_{g1} = -2$ V $V_{g3} = 0$ V	$I_a = 6.5$ $I_{g2+g4} = 3.8$	$S = 2.4$ mA/V $R_i = 0.7$ MΩ $\mu_{g2g1} = 20$ $R_{eq} = 8.5$ kΩ
$V_a = 100$ V $V_g = 0$ V	$I_a = 13.5$	$S = 3.7$ mA/V $R_i = 6$ kΩ $\mu = 22$
$V_b = 250$ V $R_a = 33$ kΩ $R_{g3+gT} = 47$ kΩ	$I_a = 4.5$ $I_{g3+gT} = 0.2$	$S_{eff} = 0.65$ mA/V

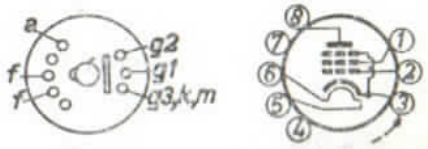
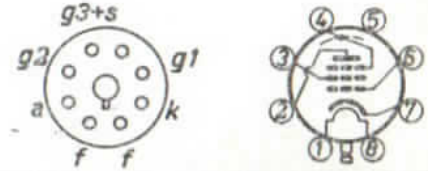


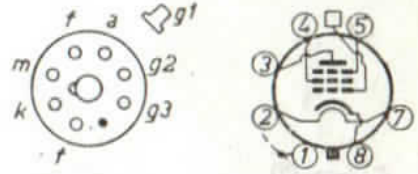
Noval

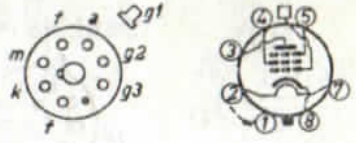
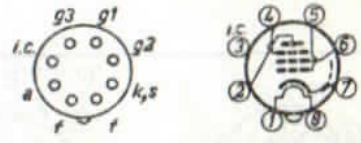
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
ECL 11 Triode output tetrode Class A final amplifier (tetrode system) Typical characteristics (triode system)	V_f = 6.3 V I_f = 1.0 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 25 kΩ R_a = 7 kΩ W_o = 3.8 W W_a = 9 W	 Y
		V_a = 250 V V_g = −2.5 V	I_a = 2	S = 2 mA/V R_i = 35 kΩ μ = 70	
ECL 80 Triode output pentode Class A final amplifier (pentode system) Sync separator (pentode system) Typical characteristics (triode system) A.F. amplifier (triode system)	V_f = 6.3 V I_f = 0.3 A	V_a = V_b = 170 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = −6.7 V	I_a = 15 I_{g2} = 2.8	S = 3.2 mA/V R_i = 0.15 MΩ R_a = 11 kΩ W_o = 1.0 W W_a = 3.5 W	 Noval
		V_a = 20 V V_{g3} = 0 V V_{g2} = 12 V V_{g1} = 0 V	I_a = 2		
		V_a = 100 V V_g = 0 V	I_a = 8	S = 1.9 mA/V μ = 20	
		V_b = 170 V R_a = 0.22 MΩ V_g = −3.5 V R_{g1} = 0.68 MΩ V_{g3} = 0 V	I_a = 0.5	g = 11	

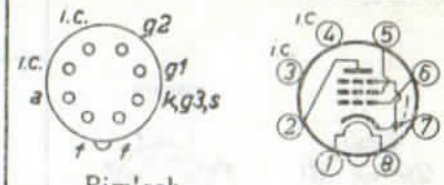
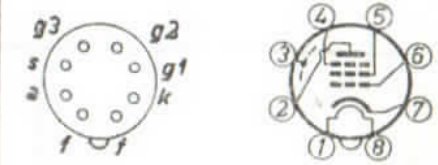
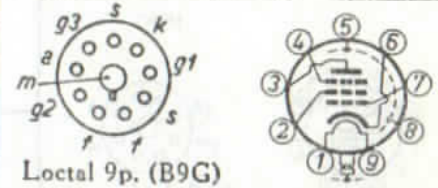
EEP 1 Secondary emission tetrode (phase splitter) Typical characteristics	V_f = 6.3 V I_f = 0.6 A	V_a = 250 V V_{g2} = 150 V V_{k2} = 150 V V_{g1} = −2.5 V	I_a = 8 I_{g2} = 0.45 I_{k2} = −6.5	S = 17 mA/V R_i = 50 kΩ	 P 
EF 6 Pentode R.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 2.5 MΩ C_{ag1} < 3 mpF	
		V_a = 100 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 1.0 MΩ	 P 
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.4 MΩ R_k = 3 kΩ V_{g3} = 0 V	I_a = 0.9 I_{g2} = 0.35	g = 140	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.4 MΩ R_k = 5 kΩ V_{g3} = 0 V	I_a = 0.30 I_{g2} = 0.12	g = 100	

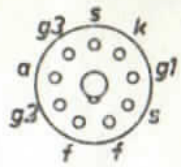
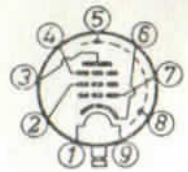
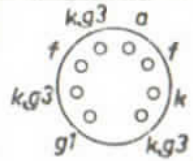
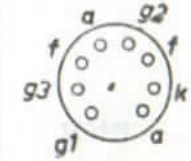
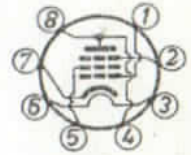
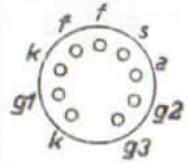
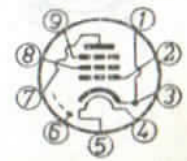
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 9 Variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 90 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.25 MΩ C_{ag1} < 2 mpF	 P
		$V_a = V_b$ = 200 V R_{g2} = 60 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 0.9 MΩ	
		$V_a = V_b$ = 100 V V_{g2} = 100 V V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 0.4 MΩ	
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 1.8 kΩ V_{g3} = 0 V	I_a = 0.87 I_{g2} = 0.26	g = 105	
EF 11 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 75 kΩ V_{g1} = −2 V	I_a = 6 I_{g2} = 2.0	S = 2.2 mA/V R_i = 2.0 MΩ C_{ag1} < 2 mpF	 Y
		$V_a = V_b$ = 200 V R_{g2} = 50 kΩ V_{g1} = −2.2 V	I_a = 5.7 I_{g2} = 2.0	S = 2 mA/V R_i = 1.5 MΩ	
		$V_a = V_b$ = 100 V R_{g2} = 50 kΩ V_{g1} = −1 V	I_a = 2.5 I_{g2} = 0.9	S = 1.3 mA/V R_i = 0.4 MΩ	

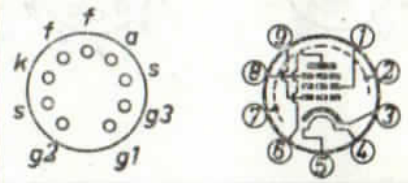
EF 11 A F. amplifier		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.6 MΩ R_k = 1.5 kΩ	I_a = 1.0 I_{g2} = 0.35	g = 98	
EF 12 Pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 3.0 I_{g2} = 1.0	S = 2.1 mA/V R_i = 2.0 MΩ C_{ag1} < 2 mpF	 Y
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.5 MΩ R_k = 1.6 kΩ	I_a = 0.90 I_{g2} = 0.37	g = 181	
		V_b = 200 V R_a = 0.2 MΩ R_{g2} = 0.5 MΩ R_k = 2.2 kΩ	I_a = 0.67 I_{g2} = 0.27	g = 166	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.5 MΩ R_k = 2.2 kΩ	I_a = 0.32 I_{g2} = 0.14	g = 128	
EF 22 Variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2} = 90 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Loctal 8p.
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 1.8 kΩ V_{g3} = 0 V	I_a = 0.87 I_{g2} = 0.26	g = 106	

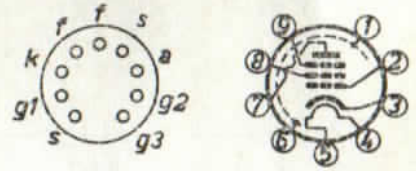
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 37A Low microphony pentode R.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 2.5 MΩ C_{ag1} < 20 mpF	 Octal
		V_a = 200 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 2.0 MΩ	
		V_a = 100 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 1.0 MΩ	
		V_b = 250 V R_a = 0.3 MΩ R_{g2} = 0.8 MΩ R_k = 4 kΩ V_{g3} = 0 V	I_a = 0.6 I_{g2} = 0.2	g = 165	
		V_b = 200 V R_a = 0.3 MΩ R_{g2} = 0.6 MΩ R_k = 6.4 kΩ V_{g3} = 0 V	I_a = 0.45 I_{g2} = 0.17	g = 130	
		V_b = 100 V R_a = 0.3 MΩ R_{g2} = 0.6 MΩ R_k = 6.4 kΩ V_{g3} = 0 V	I_a = 0.22 I_{g2} = 0.08	g = 105	

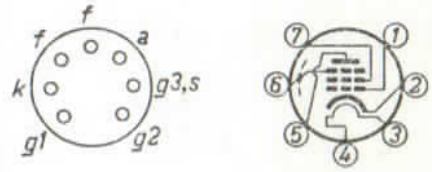
EF 39 Variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2} = 90 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.2 MΩ C_{ag1} < 3 mpF	 Octal
		V_a = 200 V R_{g2} = 60 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 0.9 MΩ	
		V_a = 100 V V_{g2} = 100 V V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 0.4 MΩ	
		V_b = 250 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 1.8 kΩ V_{g3} = 0 V	I_a = 0.87 I_{g2} = 0.26	g = 105	
EF 40 Low noise preamplifier pentode Typical characteristics A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 140 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.55	S = 1.85 mA/V R_i = 2.5 MΩ C_{ag1} < 0.04 pF	 Rimlock
		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 1.0 MΩ R_k = 1.5 kΩ V_{g3} = 0 V	I_a = 0.86 I_{g2} = 0.18	g = 190	
		V_b = 250 V R_a = 0.33 MΩ R_{g2} = 1.5 MΩ R_k = 2.2 kΩ V_{g3} = 0 V	I_a = 0.58 I_{g2} = 0.12	g = 210	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 41 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = V_b = 250 V R_{g2} = 90 kΩ V_{g1} = −2.5 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.0 MΩ C_{ag1} < 2 mpF	 Rimlock
EF 42 R.F. pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.33 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 2.4	S = 9 mA/V R_i = 0.5 MΩ μ_{g2g1} = 83 R_{eq} = 840 Ω C_{ag1} < 6 mpF	
EF 43 Variable mu pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.33 A	V_a = V_b = 250 V R_{g2} = 33 kΩ V_{g3} = 0 V V_{g1} = −2 V	I_a = 15 I_{g2} = 3.5	S = 6.4 mA/V R_i = 0.5 MΩ R_{eq} = 1.7 kΩ C_{ag1} < 6 mpF	Rimlock
EF 50 R.F. pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 3	S = 6.5 mA/V R_i = 1 MΩ μ_{g2g1} = 75 R_{eq} = 1.4 kΩ C_{ag1} < 7 mpF	 Loctal 9p. (B9G)
EF 51	U.H.F. tube, see p. 174				

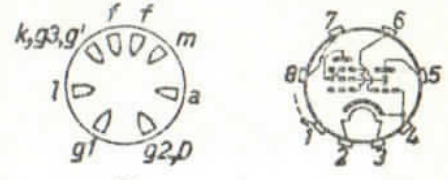
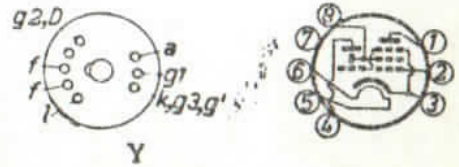
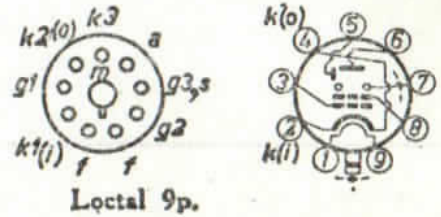
EF 55 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 1.0 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −4.5 V V_{g3} = 0 V	I_a = 40 I_{g2} = 5.5	S = 12 mA/V R_i = 55 kΩ μ_{g2g1} = 28 C_{ag1} = 0.15 pF	 Loctal 9p. (B9G)	
EF 72 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V V_{g1} = −1.4 V V_{g3} = 0 V	I_a = 7 I_{g2} = 2.2	S = 5 mA/V R_i = 250 kΩ μ_{g2g1} = 36 R_{eq} = 1.6 kΩ	 Subminiature	
EF 73 A.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.2 A	V_a = 100 V V_{g2} = 100 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 7.5 I_{g2} = 2.5	S = 5.25 mA/V R_i = 250 kΩ μ_{g2g1} = 28	 Subminiature	
EF 80 R.F. pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = −2 V	I_a = 10 I_{g2} = 2.5	S = 7.4 mA/V R_i = 0.5 MΩ C_{ag1} < 7 mpF R_{eq} = 1 kΩ		
EF 85 R.F. variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = V_b = 250 V R_{g2} = 60 kΩ V_{g1} = −2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 2.5	S = 6 mA/V R_i = 0.5 MΩ R_{eq} = 1.5 kΩ	 Noval	

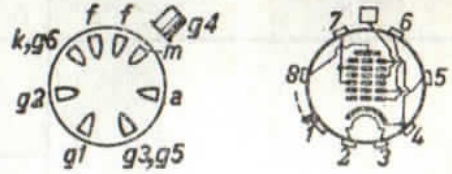
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 86 Low noise preamplifier pentode Typical characteristics A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 140 V V_{g3} = 0 V V_{g1} = −2 V	I_a = 3 I_{g2} = 0.55	S = 1.85 mA/V R_i = 2.5 MΩ μ_{g2g1} = 38	 Noval
		V_b = 250 V R_a = 0.1 MΩ R_{g2} = 0.39 MΩ R_k = 1 kΩ V_{g3} = 0 V	I_b = 2.05	g = 112	
		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 1 MΩ R_k = 2.2 kΩ V_{g3} = 0 V	I_b = 0.95	g = 180	

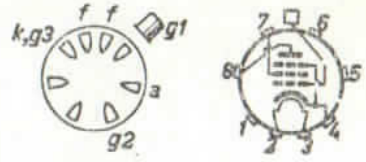
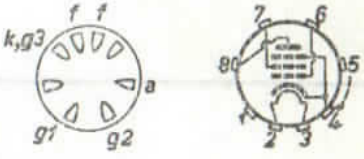
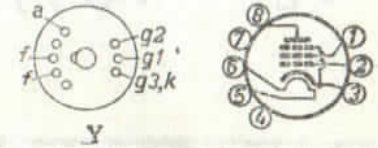
EF 89 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a=V_b= 250 V R_{g2} = 50 kΩ V_{g1} = −2 V V_{g3} = 0 V	I_a = 9 I_{g2} = 3	S = 3.6 mA/V R_i = 1 MΩ C_{ag1} < 2 mpF R_{eq} = 4.2 kΩ	 Noval

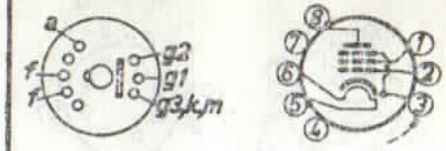
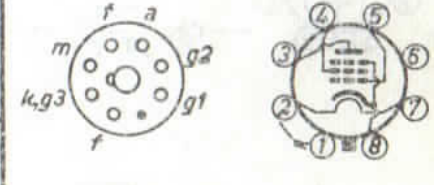
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 91 R.F. pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 250 V V_{g1} = −2 V	I_a = 10 I_{g2} = 2.55	S = 7.65 mA/V R_i = 1 MΩ R_{eq} = 1.2 kΩ C_{ag1} < 8 mpF	 Miniature
EF 92 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 150 V V_{g1} = −0.65 V	I_a = 8 I_{g2} = 2	S = 2.5 mA/V C_{ag1} < 7 mpF	
		V_a = 250 V V_{g3} = 0 V V_{g2} = 200 V V_{g1} = −2.5 V	I_a = 8 I_{g2} = 2.1	S = 2.5 mA/V	
EF 93 Variable mu pentode	see 6 BA 6				

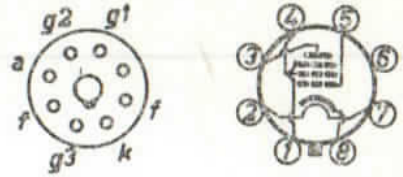
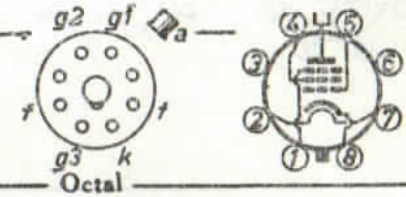
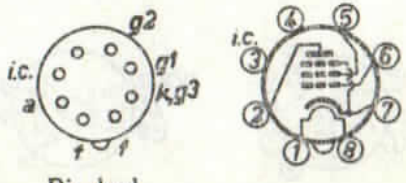
EF 95 R.F. pentode	see 6 AK 5

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EFF 51	U.H.F. tube, see p. 174				
EFM 1 A.F. pentode and tuning indicator A.F. amplifier and tuning indicator	V_f = 6.3 V I_f = 0.2 A	$V_b = V_l$ = 250 V R_a = 0.13 MΩ R_{g2} = 0.35 MΩ V_{g1} = −2/−20V	I_a = 0.8/0.5 I_{g2} = 0.6/0.2 I_l = 0.65/0.8	g = 60/13 a = 70°/5°	 P
EFM 11 A.F. pentode and tuning indicator A.F. amplifier and tuning indicator	V_f = 6.3 V I_f = 0.2 A	$V_b = V_l$ = 250 V R_a = 0.13 MΩ R_{g2} = 0.35 MΩ V_{g1} = −1.5/−20V	I_a = 1.0/0.58 I_{g2} = 0.63/0.26 I_l = 0.65/1.0	g = 80/12 a = 70°/3°	 Y
EFP 60 Secondary emission pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.37 A	V_a = 250 V V_{g2} = 250 V V_{k2} = 150 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 20 I_{g2} = 1.5 I_{k2} = −15.6	S = 25 mA/V R_i = 70 kΩ C_{ag1} < 4 mpF	 Loctal 9p.

EK 2 Octode Frequency changer	V_f = 6.3 V I_f = 0.2 A	V_a = 200-250 V V_{g3+g5} = 50 V V_{g4} = −2 V V_{g2} = 200 V R_{g1} = 50 kΩ	I_a = 1.0 I_{g3+g5} = 1.1 I_{g2} = 2.5 I_{g1} = 0.3	S_c = 0.55 mA/V R_i = 2.0 MΩ	 P
		V_a = 100 V V_{g3+g5} = 50 V V_{g4} = −2 V V_{g2} = 100 V R_{g1} = 50 kΩ	I_a = 1.0 I_{g3+g5} = 1.0 I_{g2} = 1.5 I_{g1} = 0.2	S_c = 0.55 mA/V R_i = 1.2 MΩ	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EL 2 Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −18 V R_k = 485 Ω	I_a = 32 I_{g2} = 5	S = 2.8 mA/V R_i = 70 kΩ R_a = 8 kΩ W_o = 3.6 W W_a = 8 W	 P
		V_a = 250 V V_{g2} = 250 V R_k = 305 Ω	$I_{a\,min}$ = 2×27.5 $I_{a\,max}$ = 2×32.5 I_{g2min} = 2× 4.5 I_{g2max} = 2× 8	R_{aa} = 8 kΩ W_o = 8 W	
EL 3 N Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 9 W	 P
		V_a = 250 V V_{g2} = 250 V R_k = 140 Ω	$I_{a\,min}$ = 2× 24 $I_{a\,max}$ = 2×28.5 I_{g2min} = 2× 2.8 I_{g2max} = 2× 4.6	R_{aa} = 10 kΩ W_o = 8.2 W	
EL 6 Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.35 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −7 V R_k = 90 Ω	I_a = 72 I_{g2} = 8	S = 14.5 mA/V R_i = 20 kΩ R_a = 3.5 kΩ W_o = 8 W W_a = 18 W	
		V_a = 250 V V_{g2} = 250 V R_k = 90 Ω	$I_{a\,min}$ = 2× 45 $I_{a\,max}$ = 2× 53 I_{g2min} = 2×5.1 I_{g2max} = 2×8.5	R_{aa} = 5 kΩ W_o = 14.5 W	
EL 11 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −6 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = 9 W	 Y

EL 12 Output pentode Class A final amplifier	$V_f =$ 6.3 V $I_f =$ 1.2 A	$V_a =$ 250 V $V_{g2} =$ 250 V $V_{g1} =$ −7 V $R_k =$ 90 Ω	$I_a =$ 72 $I_{g2} =$ 8	$S =$ 15 mA/V $R_i =$ 25 kΩ $R_a =$ 3.5 kΩ $W_o =$ 8 W $W_a =$ 18 W	 Y
EL 33 Output pentode Class A final amplifier	$V_f =$ 6.3 V $I_f =$ 0.9 A	$V_a =$ 250 V $V_{g2} =$ 250 V $V_{g1} =$ −6 V $R_k =$ 150 Ω	$I_a =$ 36 $I_{g2} =$ 4	$S =$ 9 mA/V $R_i =$ 50 kΩ $R_a =$ 7 kΩ $W_o =$ 4.5 W $W_a =$ 9 W	 Octal
Class AB push-pull amplifier		$V_a =$ 250 V $V_{g2} =$ 250 V $R_k =$ 140 Ω	$I_{a\,min} =$ 2× 24 $I_{a\,max} =$ 2×28.5 $I_{g2min} =$ 2× 2.8 $I_{g2max} =$ 2× 4.6	$R_{aa} =$ 10 kΩ $W_o =$ 8.2 W	
EL 34 Class A final amplifier		$V_a =$ 250 V $V_{g2} =$ 265 V $V_{g1} =$ −13.5 V $V_{g3} =$ 0 V	$I_a =$ 100 $I_{g2} =$ 15	$S =$ 11 mA/V $R_i =$ 15 kΩ $R_a =$ 2 kΩ $W_o =$ 11 W $W_a =$ 25 W	

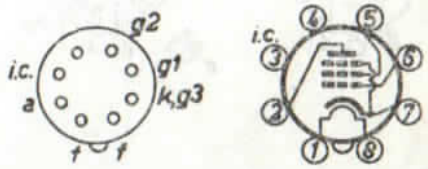
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EL 34 Output pentode Class AB push-pull amplifier Class B push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_b = 375 V R_{g2} [1]) = 470 Ω R_k = 130 Ω V_{g3} = 0 V	$I_{a\,min}$ = 2× 75 $I_{a\,max}$ = 2× 95 $I_{g2\,min}$ = 2×11.5 $I_{g2\,max}$ = 2×22.5	R_{aa} = 4 kΩ W_o = 37 W	 Octal
		V_b = 425 V R_{g2} [1]) = 1 kΩ V_{g1} = −38 V V_{g3} = 0 V	$I_{a\,min}$ = 2× 30 $I_{a\,max}$ = 2× 120 $I_{g2\,min}$ = 2× 4.4 $I_{g2\,max}$ = 2× 25	R_{aa} = 3.4 kΩ W_o = 55 W	
		V_{ba} = 800 V V_{bg2} = 400 V V_{g1} = −39 V R_{g2} = 750 Ω V_{g3} = 0 V	$I_{a\,min}$ = 2× 25 $I_{a\,max}$ = 2× 91 $I_{g2\,min}$ = 2× 3 $I_{g2\,max}$ = 2× 19	R_{aa} = 11 kΩ W_o = 100 W	
EL 38 Output pentode Typical characteristics	V_f = 6.3 V I_f = 1.4 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −7 V V_{g3} = 0 V	I_a = 100 I_{g2} = 13	S = 14.3 mA/V R_i = 21 kΩ C_{ag1} = 1.2 pF	 Octal
EL 41 Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.71 A	V_a = 250 V V_{g2} = 250 V R_k = 170 Ω	I_a = 36 I_{g2} = 5.2	S = 10 mA/V R_i = 40 kΩ R_a = 7 kΩ W_o = 4.8 W W_a = 9 W	 Rimlock
		V_a = 250 V V_{g2} = 250 V R_k = 85 Ω	$I_{a\,min}$ = 2× 36 $I_{a\,max}$ = 2×39.5 $I_{g2\,min}$ = 2× 5.2 $I_{g2\,max}$ = 2× 8	R_{aa} = 7 kΩ W_o = 9.4 W	

EL 42

Output pentode
Class A final amplifier
Class AB push-pull amplifier
Class B push-pull amplifier

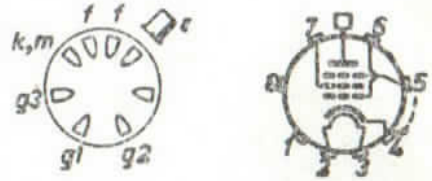
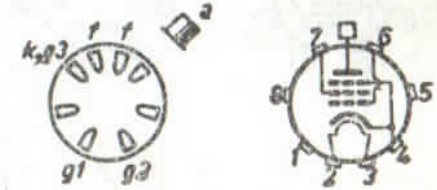
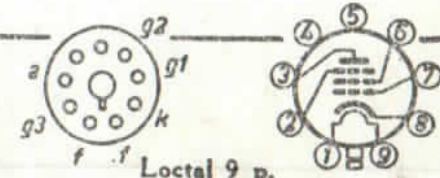
V_f = 6.3 V
I_f = 0.2 A

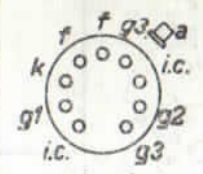
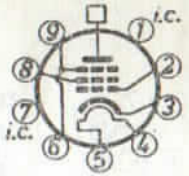
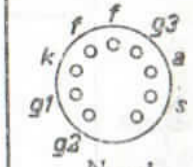
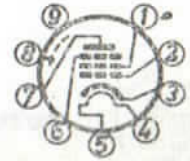
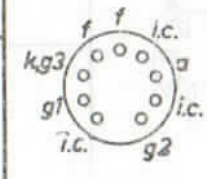
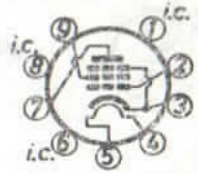
V_a = 225 V V_{g2} = 225 V R_k = 360 Ω	I_a = 26 I_{g2} = 4.1	S = 3.2 mA/V R_i = 90 kΩ R_a = 9 kΩ W_o = 2.8 W W_a = 6 W	
V_a = 200 V V_{g2} = 200 V R_k = 360 Ω	I_a = 22.5 I_{g2} = 3.5	S = 3.2 mA/V R_i = 90 kΩ R_a = 9 kΩ W_o = 2.1 W	
V_a = 250 V V_{g2} = 250 V R_k = 310 Ω	I_{amin} = 2× 20 I_{amax} = 2×21.5 I_{g2min} = 2× 3.2 I_{g2max} = 2× 6.7	R_{aa} = 15 kΩ W_o = 7 W	
V_a = 200 V V_{g2} = 200 V R_k = 310 Ω	I_{amin} = 2× 16 I_{amax} = 2× 17 I_{g2min} = 2× 2.6 I_{g2max} = 2× 5.6	R_{aa} = 15 kΩ W_o = 4.1 W	
V_a = 250 V V_{g2} = 250 V V_{g1} = −22.5 V	I_{amin} = 2× 5 I_{amax} = 2× 20 I_{g2min} = 2× 0.8 I_{g2max} = 2× 6.5	R_{aa} = 16 kΩ W_o = 6.5 W	



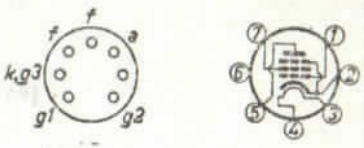
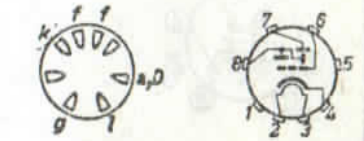
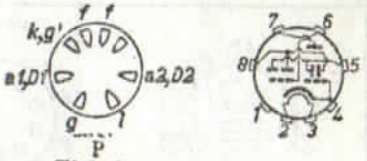
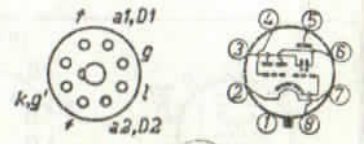
Rimlock

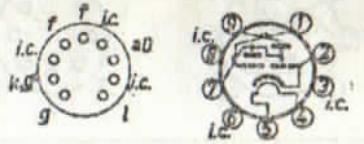
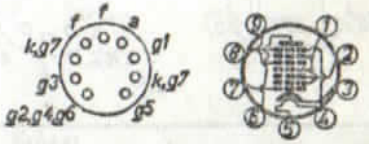
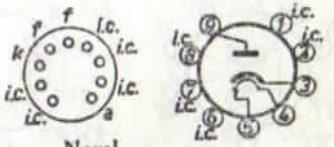
[1]) Common screen-grid resistor

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EL 50 Output pentode Typical characteristics Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 800 V V_{g2} = 400 V V_{g1} = −37 V V_{g3} = 0 V	I_a = 22.5 I_{g2} = 2.5	S = 4 mA/V R_i = 50 kΩ W_a = 18 W	 P
		V_a = 800 V V_{g2} = 400 V V_{g1} = −37.5 V V_{g3} = 0 V	I_{amin} = 2× 15 I_{amax} = 2× 70 I_{g2min} = 2× 1.3 I_{g2max} = 2× 20	R_{aa} = 16 kΩ W_o = 84 W	
		V_a = 400 V V_{g2} = 425 V V_{g1} = −35 V V_{g3} = 0 V	I_{amin} = 2× 25 I_{amax} = 2× 95 I_{g2min} = 2× 2.5 I_{g2max} = 2× 2	R_{aa} = 5 kΩ W_o = 50 W	
EL 51 Output pentode Typical characteristics Class AB push-pull amplifier Class B push-pull amplifier	V_f = 6.3 V I_f = 1.9 A	V_a = 750 V V_{g2} = 750 V V_{g1} = −37.5 V	I_a = 60 I_{g2} = 10	S = 8 mA/V R_i = 50 kΩ W_a = 45 W	 P
		V_a = 500 V V_{g2} = 500 V R_k = 100 Ω	I_{amin} = 2× 87 I_{amax} = 2× 110 I_{g2min} = 2× 13 I_{g2max} = 2× 23	R_{aa} = 4.8 kΩ W_o = 67.5 W	
		V_a = 750 V V_{g2} [1]) = 750 V V_{g1} = −40 V	I_{amin} = 2× 40 I_{amax} = 2× 145 I_{g2min} = 2× 7.5 I_{g2max} = 2× 30	R_{aa} = 6 kΩ W_o = 140 W	
EL 60 Output pentode	= EL 34 with different base				 Loctal 9 p.

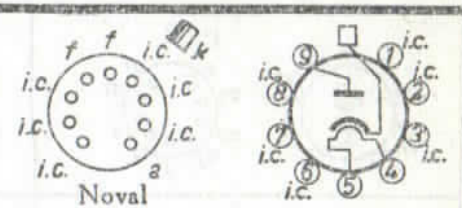
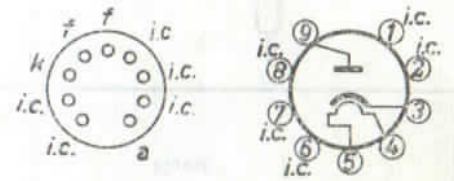
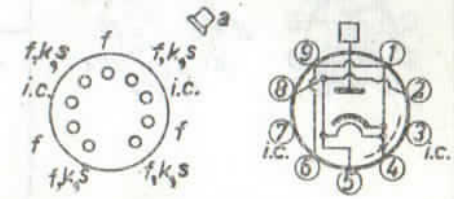
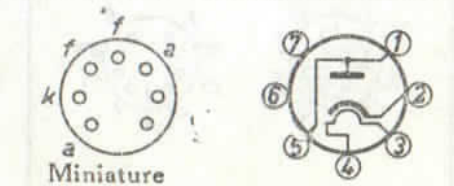
EL 81 Line output pentode Typical characteristics	V_f = 6.3 V I_f = 1.05 A	V_a = 250 V V_{g2} = 250 V V_{g3} = 0 V V_{g1} = 38.5 V	I_a = 32 I_{g2} = 2.4	S = 4.6 mA/V W_a = 8 W V_{ap} = max. 7 kV[2]	 Noval	
EL 83 Video amplifying pentode Typical characteristics	V_f = 6.3 V I_f = 0.71 A	V_a = 250 V V_{g2} = 250 V V_{g3} = 0 V V_{g1} = −5.5 V	I_a = 36 I_{g2} = 5.0	S = 10 mA/V R_i = 0.13 MΩ W_a = 9 W C_{g1} = 10.4 pF C_a = 6.6 pF	 Noval	
EL 84 Output pentode Class A Class B Class AB	V_f = 6.3 V I_f = 0.76 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −7.3 V	I_a = 48 I_{g2} = 5.5	S = 11.3 mA/V R_i = 38 kΩ R_a = 5.2 kΩ W_o = 6 W W_a = 12 W		
		V_a = 250 V V_{g2} = 250 V V_{g1} = −11.6 V	I_{amin} = 2× 10 I_{amax} = 2×37.5 I_{g2min} = 2× 1.1 I_{g2max} = 2× 7.5	R_{aa} = 8 kΩ W_o = 11 W		
		V_a = 250 V V_{g2} = 250 V R_k = 130 Ω	I_{amin} = 2× 31 I_{amax} = 2×37.5 I_{g2min} = 2× 3.5 I_{g2max} = 2× 7.5	R_{aa} = 8 kΩ W_o = 11 W.		Noval

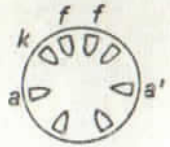
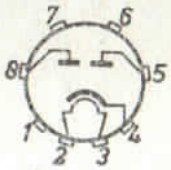
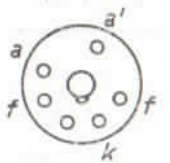
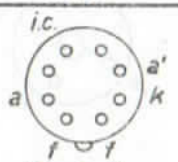
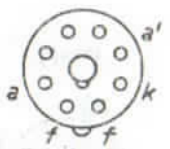
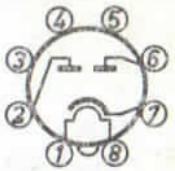
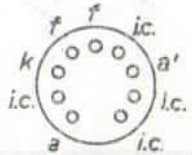
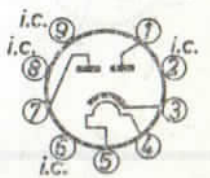
[1]) In the common screen-grid circuit a lamp of 550V/68W must be inserted.
[2]) Max. pulse time 18% of one cycle with a max. of 18 μ sec.

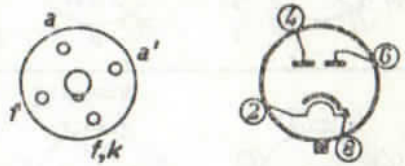
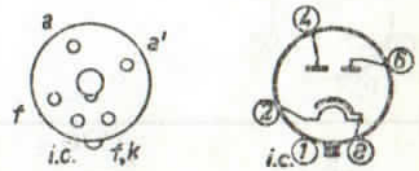
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EL 91 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_s = 250 V R_k = 680 Ω	I_a = 16 I_{g2} = 2.4	S = 2.6 mA/V R_i = 130 kΩ R_a = 16 kΩ W_o = 1.4 W W_a = 4 W	
EM 1 Tuning indicator	V_f = 6.3 V I_f = 0.2 A	V_b=V_l= 250 V R_a = 2 MΩ V_g = 0/—5 V	I_a = 0.095/0.021 I_l = 0.13/0.14	a = 74°/0°	
		V_b=V_l= 200 V R_a = 2 MΩ V_g = 0/—4 V	I_a = 0.075/0.02 I_l = 0.13/0.14	a = 70°/0°	
EM 4/EM 34 Tuning indicators (sensitive system) (insensitive system)	V_f = 6.3 V I_f = 0.2 A	V_b=V_l= 250 V R_{a1} = 1 MΩ V_g = 0/—5 V	I_l = 2.0/2.5	a_1 = 90°/5°	
		V_b=V_l= 200 V R_{a1} = 1 MΩ V_g = 0/—4.2 V	I_l = 1.4/1.8	a_1 = 90°/5°	
		V_b=V_l= 250 V R_{a2} = 1 MΩ V_g = 0/—16 V	I_l = 2.0/2.7	a_2 = 90°/5°	
		V_b=V_l= 200 V R_{a2} = 1 MΩ V_g = 0/—12.5V	I_l = 1.4/2.0	a_2 = 90°/5°	

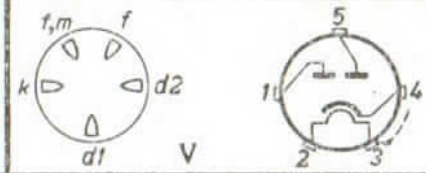
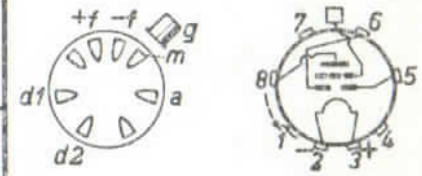
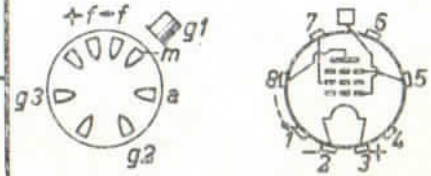
EM 80 Tuning indicator	V_f = 6.3 V I_f = 0.3 A	$V_b = V_l$ = 250 V R_a = 0.5 MΩ V_g = −1/−16 V R_g = 3 MΩ	I_a = 0.4/0.01	β = 5°/50°	 Noval
EQ 80 Enneode F.M. detector A.A.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_b = 250 V R_a = 0.47 MΩ R_1 = 34 kΩ R_2 = 3.9 kΩ R_4 = 560 Ω	I_a = 0.28 I_{g2} = 15 I_{g3} = 0.09 I_{g5} = 0.03	R_i = 5 MΩ	 Noval
		V_b = 250 V R_a = 0.47 MΩ $R_{g2+g3+g5}$ = 0.27 MΩ R_k = 2.2 kΩ	I_a = 0.4 $I_{g2+g3+g5}$ = 0.7	g = 150	
EY 51 E.H.T. rectifying tube Rectifier 50 c/s Rectifier 10-500 kc/s Pulse rectifier	V_f = 6.3 V I_f = 90 mA	V_{tr} = max. 5 kV V_{ainvp} = max. 17 kV V_{ainvp} = max. 17 kV	I_o = max. 3 I_o = max. 0.3 I_o = max. 0.35 I_{ap} = max. 80 [3]	C_{filt} = max. 0.1 µF R_f = min. 0.1 MΩ C_{filt} = max. 0.01 µF R_f = min. 0.1 MΩ C_{filt} = max. 5000 pF	
EY 80 Booster diode Booster	V_f = 6.3 V I_f = 0.9 A	V_{ainvp} [1] = max. 4 kV	I_a = max. 180 I_{ap} = max. 400	V_{kfp} = max. 650 V [2] C_{ak} = 5.5 pF C_{filt} = max. 4 µF	 Noval

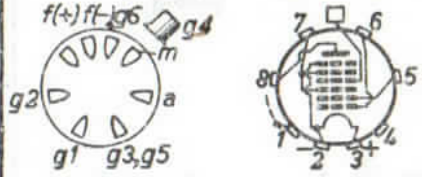
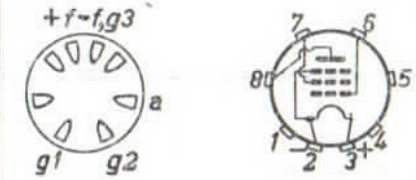
[1]) Max. pulse time 18% of one cycle with a max. of 18 µsec.
[2]) Max. 160 V (r.m.s.) A.C.+450 V.D.C. cathode positive with respect to heater.
[3]) Max. pulse time 4% of one cycle with a maximum of 5 µsec.

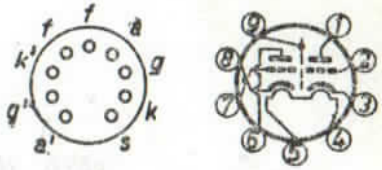
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EY 81 Booster	V_f = 6.3 V I_f = 0.8 A	$V_{a\,inv\,p}$ = max. 4.5 kV	I_a = max. 150 I_{ap} = max. 450		 Noval
EY 82 Half-wave high vacuum rectifying tube	V_f = 6.3 V I_f = 0.9 A	V_{tr} = 250 V = 240 V = 220 V = 200 V = 127 V	I_o = max. 180 = max. 180 = max. 180 = max. 180 = max. 180	R_t = min. 125 Ω = min. 105 Ω = min. 65 Ω = min. 30 Ω = 0 Ω C_{filter} = max. 60 µF	 Noval
EY 86 H.T. rectifier for T.V. receivers	V_f = 6.3 V I_f = 90 mA	V_o = 18 kV	I_o = 0.15	I_o = max. 0.8 mA	 Noval
EY 91 Half-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.42 A	V_{tr} = 250 V V_{tr} = 200 V	I_o = max. 75 I_o = max. 75	C_{filt} = 32 µF R_t = min. 100 Ω R_t = min. 70 Ω V_{kfp} = max. 300 V	 Miniature

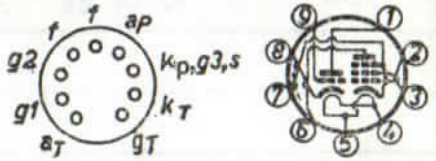
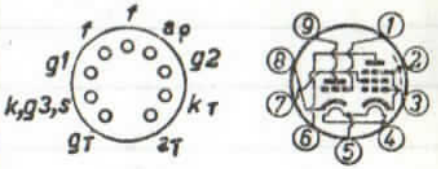
EZ 2 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.4 A	V_{tr} = 2×300 V = 2×350 V	I_o = max. 60 = max. 60	C_{filt} = max. 32 µF R_t = min. 500 Ω C_{filt} = max. 16 µF R_t = min. 500 Ω V_{kfp} = max. 500 V	 P 
EZ 35 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2×325 V	I_o = max. 70	R_t = min. 350 Ω C_{filt} = max. 16 µF V_{kfp} = max. 350 V	 Octal 
EZ 40 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2×250 V = 2×300 V = 2×350 V	I_o = max. 90 = max. 90 = max. 90	R_t = min. 125 Ω = min. 215 Ω = min. 300 Ω C_{filt} = max. 50 µF V_{kfp} = max. 500 V	 Rimlock 
EZ 41 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.4 A	V_{tr} = 2×250 V	I_o = max. 60	C_{filt} = max. 32 µF R_t = min. 300 Ω V_{kfp} = max. 350 V	 Rimlock 
EZ 80 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2×350 V = 2×300 V = 2×275 V = 2×250 V	I_o = max. 90 = max. 90 = max. 90 = max. 90	R_t = min. 300 Ω = min. 215 Ω = min. 175 Ω = min. 125 Ω C_{filt} = max. 50 µF V_{kfp} = max. 500 V	 Noval 

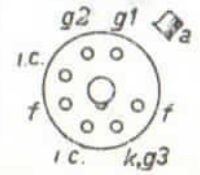
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
GZ 32 Full-wave rectifying tube Rectifier	V_f = 5 V I_f = 2 A	V_{tr} = 2×500 V = 2×350 V = 2×300 V	I_a = max. 125 = max. 250 = max. 300	C_{filt} = max. 64 µF R_t = min. 150 Ω C_{filt} = max. 32 µF R_t = min. 100 Ω C_{filt} = max. 16 µF R_t = min. 50 Ω	 Octal
GZ 34 Full-wave rectifying tube Rectifier	V_f = 5 V I_f = 1.9 A	V_{tr} = 2×550 V = 2×500 V = 2×450 V = 2×400 V = 2×350 V = 2×300 V	I_o = max. 160 = max. 200 = max. 250 = max. 250 = max. 250 = max. 250 I_{ap} = max. 750	R_t = min. 175 Ω = min. 150 Ω = min. 125 Ω = min. 100 Ω = min. 75 Ω = min. 50 Ω C_{filter} = max. 60 µF	 Octal
K 50 A **K 81 A**	Noise diodes, see p. 245				

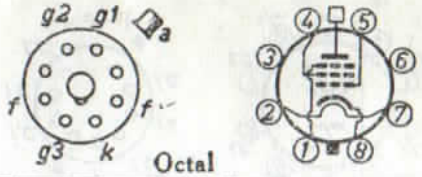
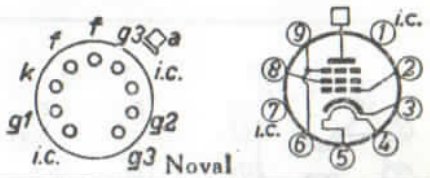
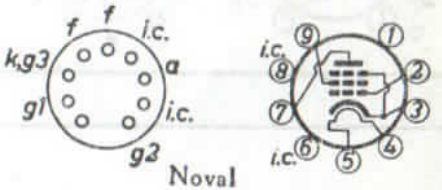
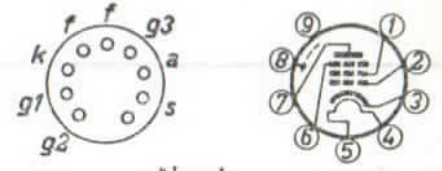
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
KB 2 Double diode Detector and A.G.C.	$V_f =$ 2 V $I_f =$ 95 mA				
KBC 1 Double diode triode Typical characteristics A.F. amplifier	$V_f =$ 2 V $I_f =$ 0.115 A	V_a = 135 V V_g = −4.5 V	I_a = 2.5	S = 1.0 mA/V R_i = 16 kΩ μ = 16	
		V_a = 90 V V_g = −3.4 V	I_a = 1.0	S = 0.7 mA/V R_i = 23 kΩ μ = 16	
		V_b = 135 V R_a = 0.2 MΩ V_g = −2.0 V	I_a = 0.35	g = 12.5	
		V_b = 90 V R_a = 0.2 MΩ V_g = −2.0 V	I_a = 0.19	g = 11	
KF 3 Variable mu pentode R.F. or I.F. amplifier	$V_f =$ 2 V $I_f =$ 45 mA	V_a = 135 V V_{g2} = 135 V V_{g1} = −0.5 V V_{g3} = 0 V	I_a = 2.0 I_{g2} = 0.6	S = 0.65 mA/V R_i = 1.3 MΩ $C_{ag1} <$ 6 mpF	
		V_a = 90 V V_{g2} = 90 V V_{g1} = −0.5 V V_{g3} = 0 V	I_a = 1.0 I_{g2} = 0.2	S = 0.5 mA/V R_i = 2 MΩ	

KK 2 Octode Frequency changer	$V_f = 2$ V $I_f = 0.13$ A	$V_a = 135$ V $V_{g3+g5} = 45$ V $V_{g4} = -0.5$ V $V_{g2} = 135$ V $R_{g1} = 50$ kΩ $V_{osc} = 8.5$ V	$I_a = 0.7$ $I_{g3+g5} = 1.0$ $I_{g2} = 2.2$ $I_{g1} = 0.16$	$S_c = 0.27$ mA/V $R_i = 2.5$ MΩ	 P
		$V_a = 90$ V $V_{g3+g5} = 45$ V $V_{g4} = -0.5$ V $V_{g2} = 90$ V $R_{g1} = 50$ kΩ $V_{osc} = 8.5$ V	$I_a = 0.7$ $I_{g3+g5} = 1.0$ $I_{g2} = 1.6$ $I_{g1} = 0.16$	$S_c = 0.27$ mA/V $R_i = 2.0$ MΩ	
KL 4 Output pentode Class A final amplifier	$V_f = 2$ V $I_f = 0.15$ A	$V_a = 135$ V $V_{g2} = 135$ V $V_{g1} = -5$ V	$I_a = 7$ $I_{g2} = 1.1$	$S = 2.1$ mA/V $R_i = 130$ kΩ $R_a = 19$ kΩ $W_o = 0.44$ W $W_a = 1$ W	 P
		$V_a = 90$ V $V_{g2} = 90$ V $V_{g1} = -2.6$ V	$I_a = 4.7$ $I_{g2} = 0.8$	$S = 1.8$ mA/V $R_i = 150$ kΩ $R_a = 19$ kΩ $W_o = 0.16$ W	

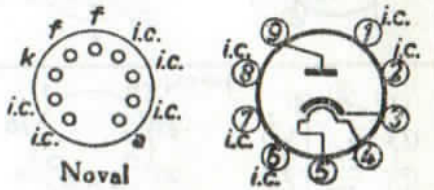
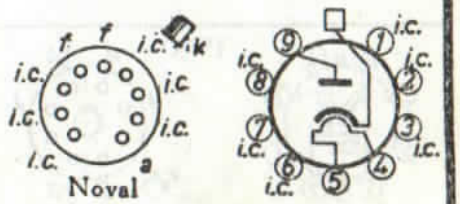
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
PABC 80 Triple diode high-mu triode	V_f = 9.5 V I_f = 0.3 A	See UABC 80 except for heater rating			
PCC 84 Double triode	V_f = 7 V I_f = 0.3 A	See ECC 84 except for heater rating			
PCC 85 Double triode Typical characteristics (per system)	V_f = 9 V I_f = 0.3 A	V_a = 200 V V_g = −2.1 V	I_a = 10	S = 5.8 mA/V R_i = 8.3 kΩ μ = 48	 Noval
		V_a = 170 V V_g = −1.5 V	I_a = 10	S = 6.2 mA/V R_i = 8 kΩ μ = 50	
		V_a = 100 V V_g = −1.1 V	I_a = 4.5	S = 4.6 mA/V R_i = 11 kΩ μ = 50	

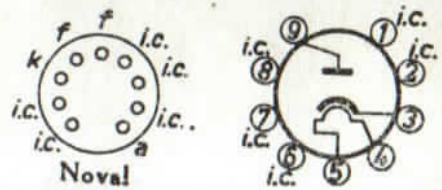
PCF 80 Triode pentode Typical characteristics (pentode system) Typical characteristics (triode system) Frequency changer	V_f = 9 V I_f = 0.3 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −2 V	I_a = 10 I_{g2} = 2.8	S = 6.2 mA/V R_i = 0.4 MΩ R_{eq} = 1.5 kΩ	 Noval
		V_a = 100 V V_g = −2 V	I_a = 14	S = 3.6 mA/V R_i = 4 kΩ μ = 20	
		V_a = 170 V V_{g2} = 170 V R_{g1} = 0.1 MΩ R_k = 330 Ω	I_a = 6.5 I_{g2} = 2 I_{g1} = 0.025	S_c = 2.2 mA/V R_i = 800 kΩ	
PCL 82 Triode output pentode Typical characteristics (pentode system) Typical characteristics (triode system)	V_f = 16 V I_f = 0.3 A	V_a = 170 V V_{g2} = 170 V V_{g2} = −11 V	I_a = 41 I_{g2} = 7.5	S = 7.5 mA/V R_i = 25 kΩ $\mu g_1 g_2$ = 12	 Noval
		V_a = 100 V V_g = 0 V	I_a = 4	S = 8 mA/V μ = 70	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
MAW	Transmitting tube, see p. 190				
MC	Flying spot, see p. 181				
MF	Radar tubes, see p. 181				
MV	X-Ray tubes, see p. 220				
MW	Picture tubes, see p. 182				
OA	Germanium diodes, see p. 250				
OC	Transistors, see p. 252				
OA 2 **OB 2**	Voltage Stabilizers see p. 231				
PA **PB** **PE**	Transmitting tubes, see p. 190				
PL 2 D 21	Thyratron, see p. 210				
PL 5	Senditron, see p. 209				
PL 10	Thyratron, see p. 211				
PL 36 Line output pentode Typical characteristics	V_f = 25 V I_f = 0.3 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −21 V	I_a = 100 I_{g2} = 8.5	S = 11 mA/V R_i = 5.5 kΩ W_a = 10 W	 Octal 

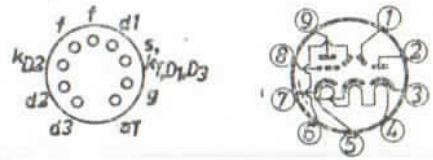
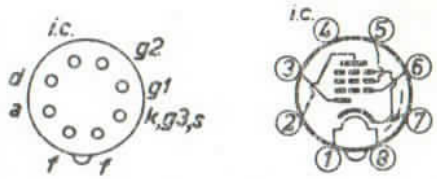
PL38 Output pentode Typical characteristics	V_f = 30 V I_f = 0.3 A	V_a = 200 V V_{g2} = 200 V V_{g1} = −5.5 V V_{g3} = 0 V	I_a = 75 I_{g2} = 9.0	S = 13.5 mA/V R_i = 20 kΩ C_{ag1} < 1.2 pF W_a = 25 W	
PL 81 Line output pentode Typical characteristics	V_f = 21.5 V I_f = 0.3 A	V_a = 170 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = −22 V	I_a = 45 I_{g2} = 3.0	S = 6.2 mA/V W_a = 8 W V_{ap} [1]) = max. 7 kV	
PL 82 Frame or sound output pentode Typical characteristics	V_f = 16.5 V I_f = 0.3 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −10.4 V	I_a = 53 I_{g2} = 10	S = 9.0 mA/V R_i = 20 kΩ W_a = 9 W V_{ap} [2]) = max. 2.5 kV	
PL 83 Video amplifying pentode Typical characteristics	V_f = 15 V I_f = 0.3 A	V_a = 200 V V_{g3} = 0 V V_{g2} = 200 V V_{g1} = −3.5 V	I_a = 36 I_{g2} = 5	S = 10.5 mA/V R_i = 0.1 MΩ W_a = 9 W C_{g1} = 11.2 pF C_a = 6.6 pF C_{ag1} < 0.1 pF	
PL 105 **PL 150** **PL 255** **PL 260**	Thyratrons, see p. 211				
PL 1267	= Z 300 T, Trigger tube, see p. 247				

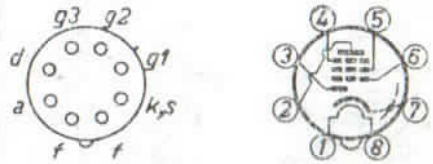
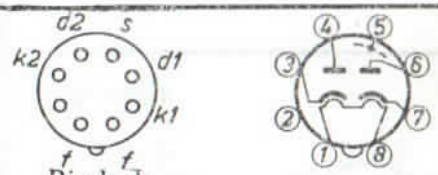
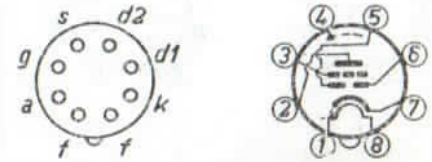
[1]) Max. pulse time 18% of one cycle with a maximum of 18 µsec.
[2]) Max. pulse time 10% of one cycle with a maximum of 2000 µsec.

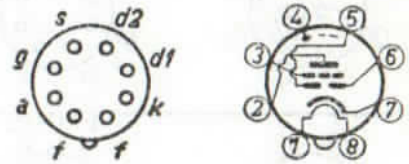
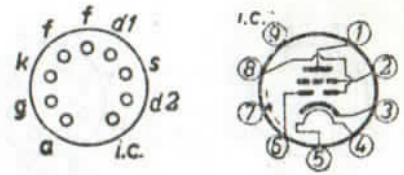
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
PL 1607 **PL 5544** **PL 5545**	Thyratrons, see p. 212				
PL 5551 **PL 5552** **PL 5555**	Ignitrons see p. 213				
PL 5557/ PL 17 **PL 5559/ PL 57**	Thyratrons see p. 212				
PL 5822	Ignitron, see p. 214				
PY 80 Booster diode Booster	V_f = 19 V I_f = 0.3 A	V_{ainvp} [1]) = max. 4 kV	I_a = max. 180 I_{ap} = max. 400	V_{kfp} = max. 650 V [2]) C_a = 5.5 pF C_{filt} = max. 4 µF	
PY 81 Booster diode Booster	V_f = 17 V I_f = 0.3 A	V_{ainvp} = max. 4.5 kV	I_a = max. 150 I_{ap} = max. 450		

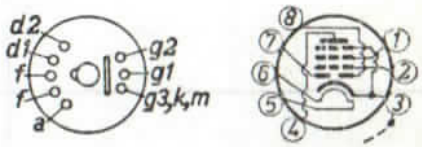
PY 82 Half-wave rectifying tube Rectifier	V_f = 19 V I_f = 0.3 A	V_{tr} = 220 V V_{tr} = 127 V	I_o = max. 180 I_o = max. 180	R_t = min. 40 Ω C_{filt} = max. 60 µF R_t = 0 Ω V_{ainvp} = max. 700 V V_{kfp} = max. 550 V[3])	
QB **QE** **QQC** **QQE** **TA** **TB**	Transmitting tubes, see p. 192				
TH	Thermocouples, see p. 238				
U 30	Current regulator, see p. 239				

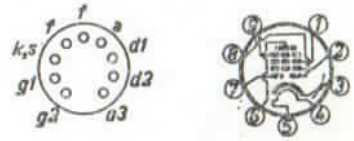
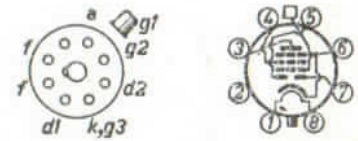
[1]) Max. pulse time 18% of one cycle with a maximum of 18 µsec.
[3]) Max. 160 V (r.m.s.) A.C. + 450 V D.C. Cathode positive with respect to heater.
[4]) Max. 220 V (r.m.s.) A.C. + 250 V D.C. Cathode positive with respect to heater.

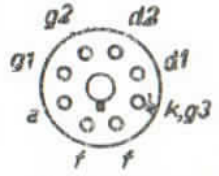
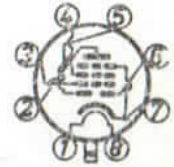
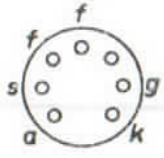
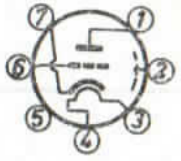
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UABC 80 Triple diode high mu triode Typical characteristics (diode system) Typical characteristics (triode system)	V_f = 28 V I_f = 0.1 A	$V_{d1inv p}$ = max. 350 V $V_{d2inv p}$ = max. 350 V $V_{d3inv p}$ = max. 350 V	I_{d1} = max. 1 I_{d1p} = max. 6 I_{d2} = max. 10 I_{d2p} = max. 75 I_{d3} = max. 10 I_{d3p} = max. 75	R_{id1} = 5 kΩ (V_{d1} = 10 V) R_{id2} = 200 Ω (V_{d2} = 5 V) R_{id3} = 200 Ω (V_{d3} = 5 V)	 Noval
		V_a = 170 V V_g = −2 V	I_a = 0.8	S = 1.2 mA/V R_i = 58 kΩ μ = 70	
		V_a = 100 V V_g = −1 V	I_a = 0.8	S = 1.3 mA/V R_i = 54 kΩ μ = 70	
UAF 41 Diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 12.6 V I_f = 0.1 A	$V_a = V_b$ = 170 V R_{g2} = 44 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Rimlock
		$V_a = V_b$ = 100 V R_{g2} = 44 kΩ V_{g1} = −1.1 V	I_a = 2.8 I_{g2} = 0.9	S = 1.65 mA/V R_i = 1.0 MΩ	
		V_b = 170 V R_a = 0.2 MΩ R_{g2} = 0.73 MΩ R_k = 2.7 kΩ	I_a = 0.58 I_{g2} = 0.18	g = 78	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.73 MΩ R_k = 2.7 kΩ	I_a = 0.34 I_{g2} = 0.10	g = 73	

UAF 42 Diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	$V_f = 12.6$ V $I_f = 0.1$ A	$V_a = V_b = 170$ V $R_{g2} = 56$ kΩ $V_{g1} = -2.0$ V $V_{g3} = 0$ V	$I_a = 5.0$ $I_{g2} = 1.5$	$S = 2.0$ mA/V $R_i = 0.9$ MΩ $C_{ag1} < 2$ mpF	 Rimlock
		$V_a = V_b = 100$ V $R_{g2} = 56$ kΩ $V_{g1} = -1.2$ V $V_{g3} = 0$ V	$I_a = 2.8$ $I_{g2} = 0.9$	$S = 1.7$ mA/V $R_i = 0.85$ MΩ	
		$V_b = 170$ V $R_a = 0.22$ MΩ $R_{g2} = 0.82$ MΩ $R_k = 2.7$ kΩ $V_{g3} = 0$ V	$I_a = 0.50$ $I_{g2} = 0.17$	$g = 80$	
		$V_b = 100$ V $R_a = 0.22$ MΩ $R_{g2} = 0.82$ MΩ $R_k = 2.7$ kΩ $V_{g3} = 0$ V	$I_d = 0.29$ $I_{d2} = 0.09$	$g = 75$	
UB 41 Double diode Detector and A.G.C.	$I_f = 19$ V $V_t = 0.1$ A	$V_{dinvp} = \max. 420$ V	$I_d = \max. 9$ $I_{dp} = \max. 54$		 Rimlock
UBC 41 Double diode high mu triode Typical characteristics	$V_f = 14$ V $I_f = 0.1$ A	$V_a = 170$ V $V_g = -1.55$ V	$I_a = 1.5$	$S = 1.65$ mA/V $R_i = 42$ kΩ $\mu = 70$	 Rimlock
		$V_a = 100$ V $V_g = -1.0$ V	$I_a = 0.8$	$S = 1.4$ mA/V $R_i = 50$ kΩ $\mu = 70$	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UBC 41 Double diode high mu triode (continued) A.F. amplifier	V_f = 14 V I_f = 0.1 A	V_b = 170 V R_a = 0.1 MΩ R_k = 3.9 kΩ	I_a = 0.45	g = 37	 Rimlock
		V_b = 100 V R_a = 0.1 MΩ R_k = 3.9 kΩ	I_a = 0.28	g = 34	
UBC 81 Double diode high mu triode Typical characteristics A.F. amplifier	V_f = 14 V I_f = 0.1 A	V_a = 170 V V_g = −1.55 V	I_a = 1.5	S = 1.65 mA/V R_i = 42 kΩ μ = 70	 Noval
		V_a = 100 V V_g = −1 V	I_a = 0.8	S = 1.4 mA/V R_i = 50 kΩ μ = 70	
		V_b = 170 V R_a = 0.1 MΩ R_k = 3.9 kΩ	I_a = 0.45	g = 37	
		V_b = 100 V R_a = 0.1 MΩ R_k = 3.9 kΩ	I_a = 0.28	g = 34	

UBF 11 Double diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 20 V I_f = 0.1 A	V_a=V_b= 200 V R_{g2} = 70 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.7	S = 1.8 mA/V R_i = 1.5 MΩ C_{ag1} < 2 mpF	 Y
		V_a=V_b= 100 V R_{g2} = 70 kΩ V_{g1} = −1 V	I_a = 2.6 I_{g2} = 0.85	S = 1.3 mA/V R_i = 0.9 MΩ	
		V_b = 200 V R_a = 0.2 MΩ R_{g2} = 0.7 MΩ R_k = 2.4 kΩ	I_a = 0.66 I_{g2} = 0.24	g = 82	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.7 MΩ R_k = 2.4 kΩ	I_a = 0.33 I_{g2} = 0.12	g = 76	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UBF 80 Double diode variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 17 V I_f = 0.1 A	V_a=V_b= 170 V R_{g2} = 47 kΩ R_k = 295 Ω V_{g3} = 0 V	I_a = 5.0 I_{g2} = 1.75	S = 2.2 mA/V R_i = 0.9 MΩ C_{ag1} < 2.5 mpF	 Noval
		V_a=V_b= 100 V R_{g2} = 47 kΩ R_k = 295 Ω V_{g3} = 0 V	I_a = 2.8 I_{g2} = 1.0	S = 1.9 mA/V R_i = 0.9 MΩ	
		V_b = 170 V R_a = 0.22 MΩ R_{g2} = 0.68 MΩ R_k = 2.7 kΩ V_{g3} = 0 V	I_a = 0.56 I_{g2} = 0.20	g = 85	
		V_b = 100 V R_a = 0.22 MΩ R_{g2} = 0.68 MΩ R_k = 2.7 kΩ V_{g3} = 0 V	I_a = 0.32 I_{g2} = 0.12	g = 82	
UBL 1 Double diode output pentode Class A final amplifier	V_f = 55 V I_f = 0.1 A	V_a = 200 V V_{g2} = 200 V V_{g1} = −11.5 V R_k = 175 Ω	I_a = 55 I_{g2} = 11	S = 8.5 mA/V R_i = 20 kΩ R_a = 3.5 kΩ W_o = 5.2 W W_a = 11 W	 Octal
		V_a = 185 V V_{g2} = 185 V V_{g1} = −10 V R_k = 140 Ω	I_a = 59 I_{g2} = 11.3	S = 8.8 mA/V R_i = 23 kΩ R_a = 3 kΩ W_o = 5 W	
		V_a = 100 V V_{g2} = 100 V V_{g1} = −5 V R_k = 145 Ω	I_a = 28.5 I_{g2} = 5.3	S = 7 mA/V R_i = 25 kΩ R_a = 3 kΩ W_o = 1.05 W	

UBL 21 Double diode output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 55 V I_f = 0.1 A	V_a = 180 V V_{g2} = 180 V V_{g1} = −10 V R_k = 140 Ω	I_a = 61 I_{g2} = 10	S = 9 mA/V R_i = 22 kΩ R_a = 3 kΩ W_o = 4.8 W W_a = 11 W	 Loctal 8p. 
		V_a = 100 V V_{g2} = 100 V V_{g1} = −5.3 V R_k = 140 Ω	I_a = 32.5 I_{g2} = 5.5	S = 7.5 mA/V R_i = 25 kΩ R_a = 3 kΩ W_o = 1.35 W	
		V_a = 200 V V_{g2} = 200 V R_k = 116 Ω	$I_{a\,min}$ = 2× 50 $I_{a\,max}$ = 2× 56 I_{g2min} = 2×7.8 I_{g2max} = 2× 14	R_{aa} = 4 kΩ W_o = 12.5 W	
UC 92 R.F. triode Typical characteristics	V_f = 9.5 V I_f = 0.1 A	V_a = 100 V V_g = −1 V	I_a = 3	S = 3.5 mA/V R_i = 16.5 kΩ μ = 58 freq.=max.300Mc/s	  Miniature
		V_a = 170 V V_g = −1 V	I_a = 8.5	S = 5.5 mA/V R_i = 12 kΩ μ = 66	

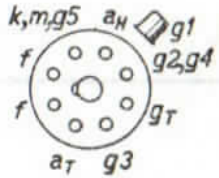
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UCC 85 Double triode	$V_f =$ 26 V $I_f =$ 0.1 A	see PCC 85 except for heater rating			

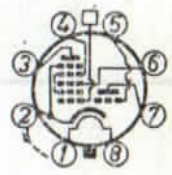
UCH 4

Triode heptode
Frequency changer
(heptode system)
Oscillator
(triode system)
R.F. or I.F. amplifier
(heptode system)

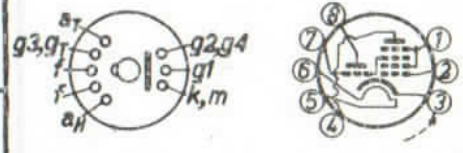
V_f = 20 V
I_f = 0.1 A

$V_a = V_b$ = 200 V R_{g2+g4} = 15.5 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.0 I_{g2+g4} = 6.5 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.3 MΩ
$V_a = V_b$ = 100 V R_{g2+g4} = 15.5 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −1 V	I_a = 1.5 I_{g2+g4} = 3.0 I_{g3+gT} = 0.095	S_c = 0.6 mA/V R_i = 1.0 MΩ
V_b = 200 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.1 I_{g2+gT} = 0.19	S_{eff} = 0.45 mA/V V_{osc} = 7.5 V
V_b = 100 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 1.9 I_{g3+gT} = 0.095	S_{eff} = 0.44 mA/V V_{osc} = 4 V
$V_a = V_b$ = 200 V R_{g2+g4} = 30 kΩ V_{g3} = 0 V V_{g1} = −2 V	I_a = 5.2 I_{g2+g4} = 3.5	S = 2.2 mA/V R_i = 0.7 MΩ C_{ag1} < 2 mpF
$V_a = V_b$ = 100 V R_{g2+g4} = 30 kΩ V_{g3} = 0 V V_{g1} = −1 V	I_a = 2.6 I_{g2+g4} = 1.9	S = 2.0 mA/V R_i = 0.7 MΩ





Octal

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UCH 4 A.F. amplifier (triode system) Typical characteristics (triode system)		V_b = 200 V R_a = 100 kΩ V_g = −2 V	I_a = 1.5	g = 10.5	
		V_b = 100 V R_a = 100 kΩ V_g = −1 V	I_a = 0.68	g = 10.5	
		V_a = 100 V V_g = 0 V	I_a = 12	S = 3.2 mA/V R_i = 7 kΩ μ = 22	
UCH 11 Triode hexode Frequency changer (hexode system) Oscillator (triode system)	V_f = 20 V I_f = 0.1 A	$V_a = V_b$ = 200 V R_{g2+g4} = 40 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 2.5 I_{g2+g4} = 3.0 I_{g3+gT} = 0.16	S_c = 0.75 mA/V R_i = 1.0 MΩ	 Y
		$V_a = V_b$ = 100 V R_{g2+g4} = 40 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −1 V	I_a = 1.2 I_{g2+g4} = 1.5 I_{g3+gT} = 0.10	S_c = 0.45 mA/V R_i = 0.6 MΩ	
		V_b = 200 V R_a = 30 kΩ R_{g3+gT} = 50 kΩ	I_a = 2.8 I_{g3+gT} = 0.16	V_{osc} = 7 V	
		V_b = 100 V R_a = 30 kΩ R_{g3+gT} = 50 kΩ	I_a = 1.4 I_{g3+gT} = 0.10	V_{osc} = 4 V	

UCH 21

Triode heptode

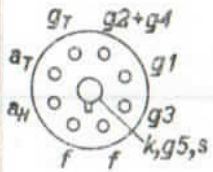
Frequency changer (heptode system)

Oscillator (triode system)

R.F. or I.F. amplifier (heptode system)

V_f = 20 V
I_f = 0.1 A

V_a = 200 V R_{g2+g4} = 15.5 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.5 I_{g2+g4} = 6.5 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.0 MΩ
V_a = 100 V R_{g2+g4} = 15.5 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −1 V	I_a = 1.5 I_{g2+g4} = 3.0 I_{g3+gT} = 0.095	S_c = 0.58 mA/V R_i = 1.0 MΩ
V_b = 200 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.1 I_{g3+gT} = 0.19	S_{eff} = 0.45 mA/V V_{osc} = 7.5 V
V_b = 100 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 1.9 I_{g3+gT} = 0.095	S_{eff} = 0.44 mA/V V_{osc} = 4 V
V_a = 200 V R_{g2+g4} = 30 kΩ V_{g3} = 0 V V_{g1} = −2 V	I_a = 5.2 I_{g2+g4} = 3.5	S = 2.2 mA/V R_i = 0.7 MΩ C_{ag1} < 2 mpF
V_a = 100 V R_{g2+g4} = 30 kΩ V_{g3} = 0 V V_{g1} = −1 V	I_a = 2.6 I_{g2+g4} = 1.9	S = 2.0 mA/V R_i = 0.7 MΩ



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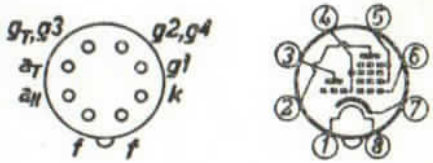
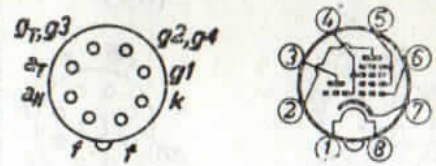
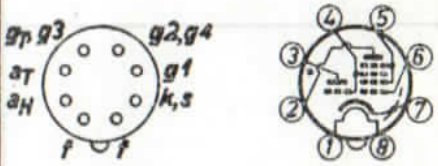
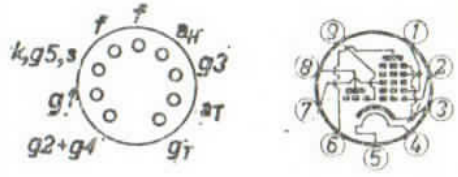
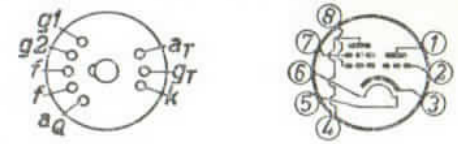
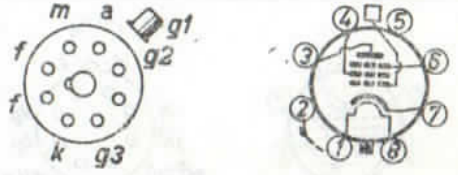
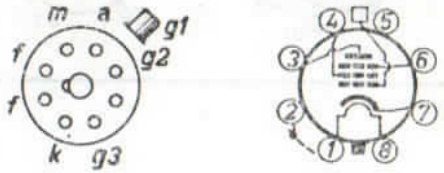
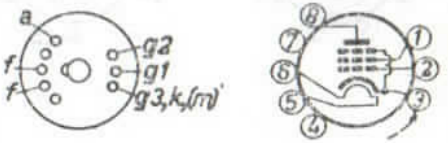
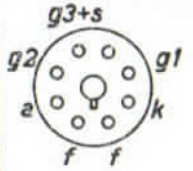
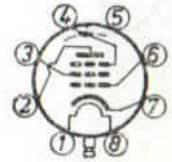
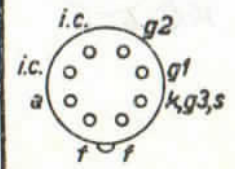
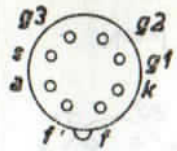
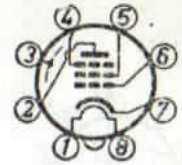
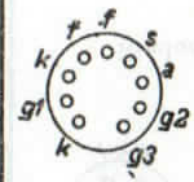
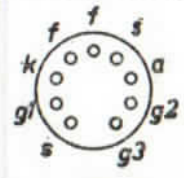
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UCH 21 A.F. amplifier (triode system) Typical characteristics (triode system)		V_b = 200 V R_a = 100 kΩ V_g = −2 V	I_a = 1.5	g = 10.5	
		V_b = 100 V R_a = 100 kΩ V_g = −1 V	I_a = 0.68	g = 10.5	
		V_a = 100 V V_g = 0 V	I_a = 12	S = 3.2 mA/V R_i = 6 kΩ μ = 19	
UCH 41 Triode hexode Frequency changer (hexode system) Oscillator (triode system)	V_f = 14 V I_f = 0.1 A	$V_a = V_b$ = 170 V R_1 = 22 kΩ R_2 = 47 kΩ R_{g3+gT} = 20 kΩ V_{g1} = −1.8 V	I_a = 2.2 I_{g2+g4} = 1.9 I_{g3+gT} = 0.32	S_c = 0.45 mA/V R_i = 1.2 MΩ	 Rimlock
		$V_a = V_b$ = 100 V R_1 = 22 kΩ R_2 = 47 kΩ R_{g3+gT} = 20 kΩ V_{g1} = −1.0 V	I_a = 1.0 I_{g2+g4} = 1.0 I_{g3+gT} = 0.20	S_c = 0.32 mA/V R_i = 1.4 MΩ	
		V_b = 170 V R_a = 10 kΩ R_{g3+gT} = 20 kΩ	I_a = 4.9 I_{g3+gT} = 0.32	S_{eff} = 0.6 mA/V V_{osc} = 7 V	

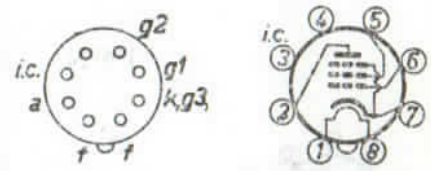
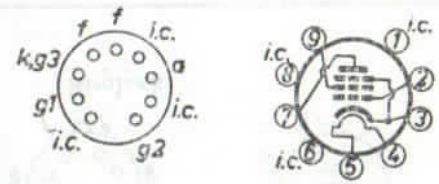
UCH 41 (continued) Oscillator (triode system)	V_f = 14 V I_f = 0.1 A	V_b = 100 V R_a = 10 kΩ R_{g3+gT} = 20 kΩ V_{osc} = 4 V	I_a = 2.8 I_{g3+gT} = 0.20	S_{eff} = 0.56 mA/V S_o = 1.9 mA/V μ = 19	 Rimlock
UCH 42 Triode hexode Frequency changer (hexode system) Oscillator (triode system)	V_f = 14 V I_f = 0.1 A	V_a=V_b= 170 V R_1 = 18 kΩ R_2 = 27 kΩ R_{g3+gT} = 47 kΩ V_{g1} = −1.85 V	I_a = 2.1 I_{g2+g4} = 2.6 I_{g3+gT} = 0.20	S_c = 0.67 mA/V R_i = 1.0 MΩ	
		V_a=V_b= 100 V R_1 = 18 kΩ R_2 = 27 kΩ R_{g3+gT} = 47 kΩ V_{g1} = −1.0 V	I_a = 1.2 I_{g2+g4} = 1.5 I_{g3+gT} = 0.10	S_c = 0.53 mA/V R_i = 1.2 MΩ	 Rimlock
		V_b = 170 V R_a = 10 kΩ R_{g3+gT} = 47 kΩ V_{osc} = 8 V	I_a = 5.7 I_{g3+gT} = 0.20	S_{eff} = 0.65 mA/V	
		V_b = 100 V R_a = 10 kΩ R_{g3+gT} = 47 kΩ V_{osc} = 4 V	I_a = 3.1 I_{g3+gT} = 0.10	S_{eff} = 0.6 mA/V S_o = 2.8 mA/V μ = 22	

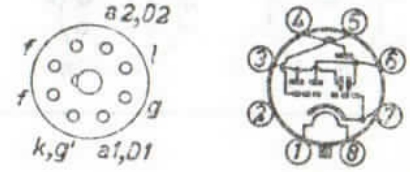
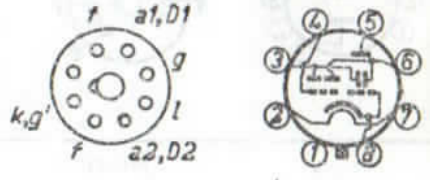
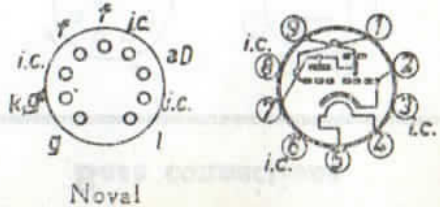
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UCH 81 Triode heptode R.F. or I.F. amplifier (heptode system) Typical characteristics (triode system) • Oscillator (triode system)	V_f = 19 V I_f = 0.1 A	$V_a = V_b$ = 170 V R_{g2+g4} = 10 kΩ R_{g3+gT} = 47 kΩ V_{g1} = −2 V	I_a = 3.25 I_{g2+g4} = 6.7 I_{g3+gT} = 0.2	S_c = 0.775 mA/V R_i = 1 MΩ R_{eq} = 70 kΩ	 Noval
		$V_a = V_b$ = 170 V R_{g2+g4} = 18 kΩ V_g = −2 V	I_a = 6.8 I_{g2+g4} = 3.5	S = 2.4 mA/V R_i = 0.7 MΩ	
		V_a = 100 V V_g = 0 V	I_a = 13.5	S = 3.7 mA/V R_i = 6 kΩ μ = 22	
		V_b = 170 V R_a = 22 kΩ R_{g3+gT} = 47 kΩ	I_a = 4.5 I_{g3+gT} = 0.2	S_{eff} = 0.55 mA/V	
UCL 11 Triode output tetrode Typical characteristics (triode system) Class A final amplifier (tetrode system)	V_f = 60 V I_f = 0.1 A	V_a = 200 V V_g = −2 V	I_a = 2.0	S = 2.1 mA/V R_i = 30 kΩ μ = 65	 Y
		V_a = 200 V V_{g2} = 200 V V_{g1} = −8.5 V	I_a = 45 I_{g2} = 6	S = 9 mA/V R_i = 18 kΩ R_a = 4.5 kΩ W_o = 4 W	
UF 9 Variable mu pentode R.F. or I.F. amplifier	V_f = 12.6 V I_f = 0,1 A	$V_a = V_b$ = 200 V R_{g2} = 60 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Octal
		$V_a = V_b$ = 100 V R_{g2} = 60 kΩ V_{g1} = −1.3 V V_{g3} = 0 V	I_a = 3.2 I_{g2} = 0.85	S = 2.0 mA/V R_i = 0.0 MΩ	

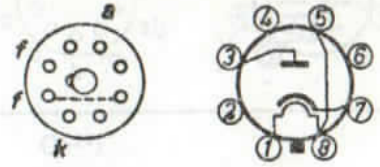
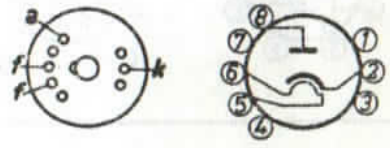
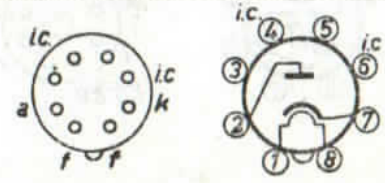
UF 9 (continued) A.F. amplifier	V_f = 12.6 V I_f = 0.1 A	V_b = 200 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 2.5 kΩ V_{g3} = 0 V	I_a = 0.65 I_{g2} = 0.17	g = 88	 Octal
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 2.5 kΩ V_{g3} = 0 V	I_a = 0.33 I_{g2} = 0.08	g = 82	
UF 11 Variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 15 V I_f = 0.1 A	V_a = 200 V R_{g2} = 70 kΩ V_{g1} = −2 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.5 MΩ C_{ag1} < 2 mpF	 Y
		V_a=V_b = 100 V R_{g2} = 70 kΩ V_{g1} = −1 V	I_a = 2.8 I_{g2} = 0.95	S = 1.8 mA/V R_i = 1.1 MΩ	
		V_b = 200 V R_a = 0.2 MΩ R_{g2} = 0.6 MΩ R_k = 2 kΩ	I_a = 0.76 I_{g2} = 0.26	g = 77	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.6 MΩ R_k = 2 kΩ	I_a = 0.37 I_{g2} = 0.12	g = 66	

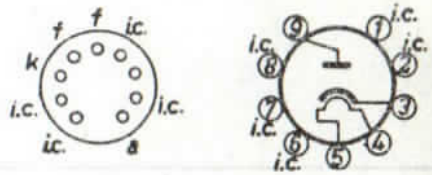
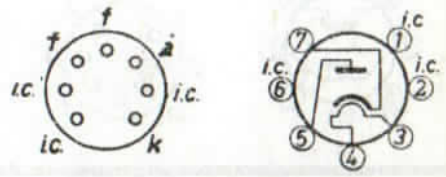
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UF 21 Variable mu pentode R.F. or I.F. amplifier A.F. amplifier	V_f = 12.6 V I_f = 0.1 A	$V_a = V_b$ = 200 V R_{g2} = 60 kΩ V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.0 MΩ C_{ag1} < 2 mpF	 Loctal 8p. 
		$V_a = V_b$ = 100 V R_{g2} = 60 kΩ V_{g1} = −1.3 V V_{g3} = 0 V	I_a = 3.2 I_{g2} = 0.85	S = 2.0 mA/V R_i = 1.0 MΩ	
		V_b = 200 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 2.5 kΩ V_{g3} = 0 V	I_a = 0.65 I_{g2} = 0.17	g = 88	
		V_b = 100 V R_a = 0.2 MΩ R_{g2} = 0.8 MΩ R_k = 2.5 kΩ V_{g3} = 0 V	I_a = 0.33 I_{g2} = 0.08	g = 82	
UF 41 Variable mu pentode R.F. or I.F. amplifier	V_f = 12.6 V I_f = 0.1 A	V_a = 170 V R_{g2} = 40 kΩ V_{g1} = −2.5 V	I_a = 6 I_{g2} = 1.75	S = 2.2 mA/V R_i = 1.0 MΩ C_{ag1} < 2 mpF	 Rimlock 
		V_a = 100 V R_{g2} = 40 kΩ V_{g1} = −1.4 V	I_a = 3.3 I_{g2} = 1.0	S = 1.9 mA/V R_i = 0.8 MΩ	

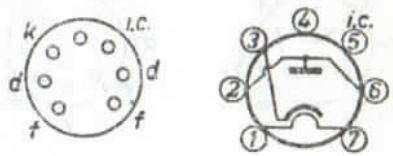
UF 42 R.F. pentode Typical characteristics	V_f = 21 V I_f = 0.1 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 2.8	S = 8 mA/V R_i = 0.3 MΩ C_{ag1} < 6 mpF R_{eq} = 1060 Ω	 Rimlock 
UF 80 R.F. pentode R.F. or I.F. amplifier	V_f = 19 V I_f = 0.1 A	V_a = 170 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = −2 V	I_a = 10 I_{g2} = 2.5	S = 7.4 mA/V R_i = 0.4 MΩ C_{ag1} < 7 mpF	 Noval 
UF 85 R.F. variable mu pentode R.F. or I.F. amplifier	V_f = 19 V I_f = 0.1 A	$V_a = V_b$ = 170 V R_{g2} = 27 kΩ V_{g1} = −2 V V_{g3} = 0 V	I_a = 9.7 I_{g2} = 2.6	S = 5.8 mA/V R_i = 0.2 MΩ R_{eq} = 1.4 kΩ	
UF 89 Variable mu pentode R.F. or I.F. amplifier	V_f = 12.6 V I_f = 0.1 A	V_a = 170 V V_{g2} = 100 V V_{g3} = 0 V V_{g1} = −1 V	I_a = 12 I_{g2} = 4.4	S = 4.4 mA/V R_i = > 0.3 MΩ C_{ag1} < 2 mpF	 Noval 

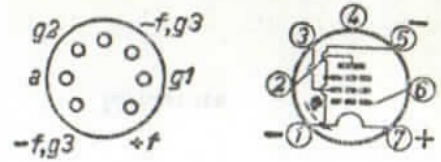
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UL 41 Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 45 V I_f = 0.1 A	V_a = 170 V V_{g2} = 170 V V_{g1} = −10.4 V	I_a = 53 I_{g2} = 10	S = 9.5 mA/V R_i = 20 kΩ R_a = 3 kΩ W_o = 4 W W_a = 9 W	 Rimlock
		V_a = 100 V V_{g2} = 100 V V_{g1} = −5.7 V	I_a = 29 I_{g2} = 5.5	S = 8.0 mA/V R_i = 18 kΩ R_a = 3 kΩ W_o = 1.35 W	
		V_a = 170 V V_{g2} = 170 V R_k = 100 Ω	I_{amin} = 2× 44 I_{amax} = 2× 49 I_{g2min} = 2× 8.8 I_{g2max} = 2×16.5	R_{aa} = 4 kΩ W_o = 9 W	
UL 84 Output pentode Class A final amplifier	V_f = 45 V I_f = 0,1 A	V_a = 165 V V_{g2} = 165 V V_{g1} = −11.3 V	I_a = 73 I_{g2} = 4.5	S = 10.5 mA/V R_i = 20 kΩ R_a = 2.4 kΩ W_o = 6 W W_a = 12 W	 Noval
		V_a = 100 V V_{g2} = 100 V V_g = −6.7 V	I_a = 43 I_{g2} = 2.8	S = 9 mA/V R_i = 20 kΩ R_a = 2.4 kΩ W_o = 1.9 W	

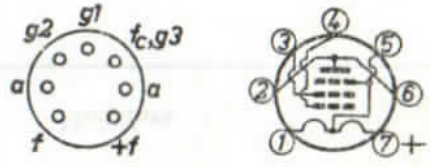
UM 4 Tuning indicator (sensitive system) (insensitive system)	$V_f = 12.6$ V $I_f = 0.1$ A	$V_b = V_l = 200$ V $R_{a1} = 1.0$ MΩ $V_g = 0/-4.2$ V	I_l = 1.4/1.8	α_1 = 90°/5°	 Octal
		$V_b = V_l = 100$ V $R_{a1} = 1.0$ MΩ $V_g = 0/-2.5$ V	I_l = 0.40/0.52	α_1 = 90°/0°	
		$V_b = V_l = 200$ V $R_{a2} = 1.0$ MΩ $V_g = 0/-12.5$ V	I_l = 1.4/2.0	α_2 = 90°/5°	
		$V_b = V_l = 100$ V $R_{a2} = 1.0$ MΩ $V_g = 0/-8$ V	I_l = 0.40/0.61	α_2 = 90°/0°	
UM 34 Tuning indicator (sensitive system) (insensitive system)	$V_f = 12.6$ V $I_f = 0.1$ A	$V_b = V_l = 200$ V $R_{a1} = 1$ MΩ $V_g = 0/-4.2$ V	I_l = 1.4/1.8	α_1 = 90°/5°	 Octal
		$V_b = V_l = 200$ V $R_{a2} = 1$ MΩ $V_g = 0/-12.5$ V	I_l = 1.4/2.0	α_2 = 90°/5°	
UM 80 Tuning indicator	$V_f = 19$ V $I_f = 0.1$ V	$V_b = V_l = 170$ V $R_a = 0.5$ MΩ $R_g = 3$ MΩ $V_g = -1/-12$ V	I_a = 03/0.01	β = 5/50°	 Noval

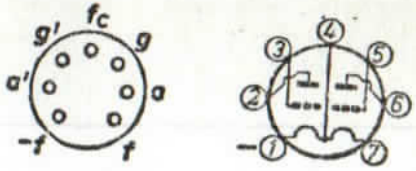
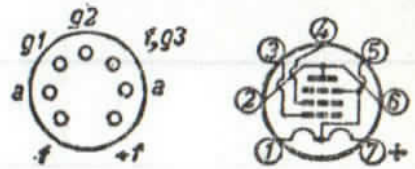
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
UY 1 N Half-wave rectifying tube Rectifier	V_f = 50 V I_f = 0.1 A	V_{tr} = 250 V V_{tr} = 127 V	I_o = max. 140 I_o = max. 140	R_t = min. 175 Ω R_t = 0 Ω C_{filt} = max. 60 µF	 Octal
UY 11 Half-wave rectifying tube Rectifier	V_f = 50 V I_f = 0.1 A	V_{tr} = 250 V	I_o = max. 140	R_t = min. 175 Ω C_{filt} = max. 60 µF	 Y
UY 41 Half-wave rectifying tube	= UY 42				
UY 42 Half-wave rectifying tube Rectifier	V_f = 31 V I_f = 0.1 A	V_{tr} = max. 250 V V_{tr} = max. 220 V V_{tr} = max. 127 V V_{tr} = max. 110 V	I_o = max. 100 = max. 100 = max. 100 = max. 100 I_{op} = max. 600	R_t = min. 210 Ω = min. 160 Ω 0 Ω 0 Ω C_{filt} = max. 50 µF	 Rimlock

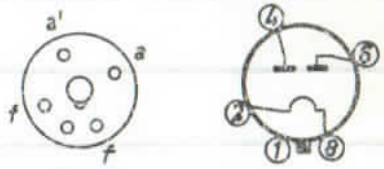
UY 82 Half-wave rectifying tube	V_f = 55 V I_f = 0.1 A	see EY 82 except for heater rating			
UY 85 Half-wave rectifier	V_f = 38 V I_f = 0.1 A	V_{tr} = 250 V = 220 V = 127 V = 110 V	I_o = max. 110 = max. 110 = max. 110 = max. 110 I_{op} = max. 660	R_t = min. 100 Ω = min. 90 Ω = 0 Ω = 0 Ω C_{filter} = 100 µF	 Noval
UY 92 Half-wave high-vacuum rectifier	V_f = 26 V I_f = 0.1 A	V_{tr} = 127 V V_{tr} = 110 V	I_o = max. 70	R_t = 0 Ω C_{filter} = 100 µF	 Miniature

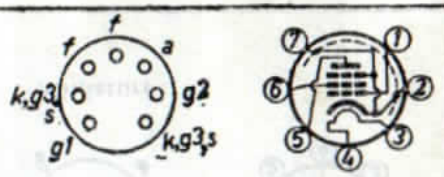
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
1 A 3 Single diode Detector	V_f = 1.4 V I_f = 0.15 A	V_{dinvp} = max. 330 V	I_d = max. 0.5 I_{dp} = max. 5	V_{kf} = max. 140 V	 Miniature
1 AB 6 Heptode Frequency changer	see DK 96				
1 AC 6 Heptode Frequency changer	see DK 92				
1 AH 5 Diode pentode	see DAF 96				
1 AJ 4 R.F. pentode	see DF 96				
1 B 24 A **1 B 35**	TR and ATR switches, see p. 243				

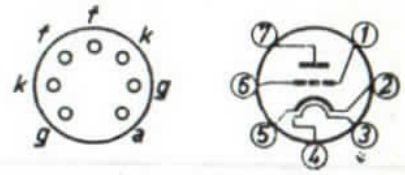
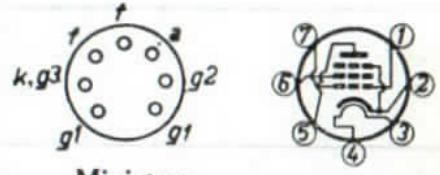
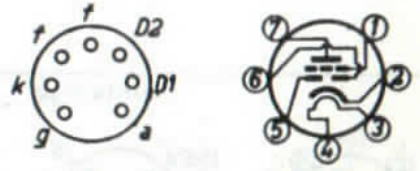
1 L 4 Pentode R.F. or I.F. amplifier	V_f = 1.4 V I_f = 50 mA	V_a = 90 V V_{g2} = 90 V V_{g1} = 0 V	I_a = 4.5 I_{g2} = 2.0	S = 1.025 mA/V R_i = 0.35 MΩ C_{ag1} < 8 mpF	 Miniature
		V_a = 90 V V_{g2} = 67.5 V V_{g1} = 0 V	I_a = 2.0 I_{g2} = 1.3	S = 0.925 mA/V R_i = 0.6 MΩ	
1 M 3 Tuning indicator	see DM 70				
1 R 5 Heptode Frequency changer	see DK 91				
1 S 5 Diode pentode	see DAF 91				
1 T 4 Variable mu pentode	see DF 91				

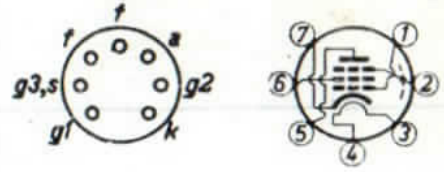
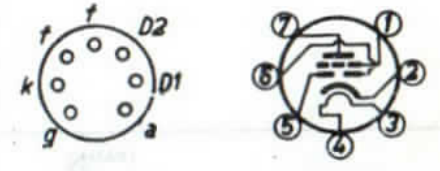
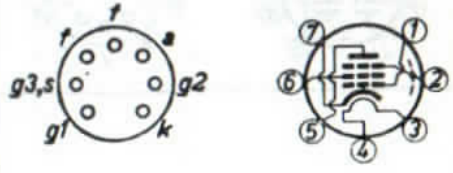
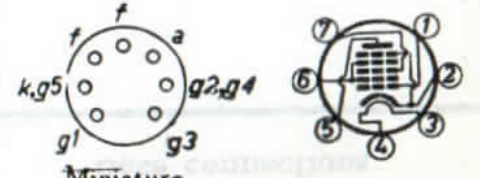
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
2 J 42 **2 J 42A** **2 J 49** **2 J 50**	Magnetrons, see p. 243				
2 K 25	Klystron, see p. 243				
3 A 4 Output pentode Class A A.F. final amplifier R.F. final amplifier (intermittent operation	V_f = 1.4 V I_f = 0.2 A V_f = 2.8 V I_f = 0.1 A	V_f = 1.4 V V_a = 135 V V_{g2} = 90 V V_{g1} = −7.5 V	I_a = 14.8 I_{g2} = 2.6	S = 1.9 mA/V R_i = 90 kΩ R_a = 8 kΩ W_o = 0.6 W W_a = 2 W	 Miniature
		V_f = 1.4 V V_a = 150 V V_{g2} = 90 V V_{g1} = −8.4 V	I_a = 13.3 I_{g2} = 2.2	S = 1.9 mA/V R_i = 100 kΩ R_a = 8 kΩ W_o = 0.7 W	
		V_f = 1.4 V V_a = 150 V V_{g2} = 135 V R_{g1} = 0.2 V	I_a = 18.3 I_{g2} = 6.5 I_{g1} = 0.13	freq. = 50 Mc/s W_o = 1.2 W	

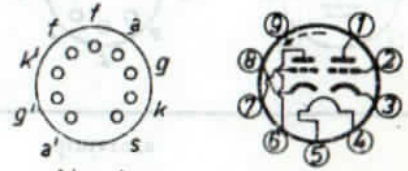
3 A 5 Double triode Typical characteristics (per system) R.F. push-pull amplifier or oscillator (intermittent operation)	V_f = 1.4 V I_f = 0.22 A	V_a = 90 V V_g = −2.5 V	I_a = 3.7	S = 1.8 mA/V R_i = 8.3 kΩ μ = 15	 Miniature
	V_f = 2.8 V I_f = 0.11 A	V_a = 135 V V_{g1} = −20 V V_{ip} = 2×45 V	I_a = 2×15 I_g = 2×2.5	freq. = 40 Mc/s W_o = 2 W	
3 C 4 Output pentode	see DL 96				
3 C 45	Thyratron, see p. 210				
3 Q 4 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 0.1 A	V_a = 86 V V_{g2} = 86 V V_{g1} = −4.5 V	I_a = 8 I_{g2} = 1.8	S = 2.0 mA/V R_i = 0.11 MΩ R_a = 8 kΩ W_o = 0.29 W W_a = 1.2 W	 Miniature
	V_f = 2.8 V I_f = 50 mA	V_a = 86 V V_{g2} = 86 V V_{g1} = −4.3 V	I_a = 7.0 I_{g2} = 1.5	S = 1.9 mA/V R_i = 0.12 MΩ R_a = 10 kΩ W_o = 0.27 W	
3 S 4 Output pentode	see DL 92				
3 V 4 Output pentode	see DL 94				

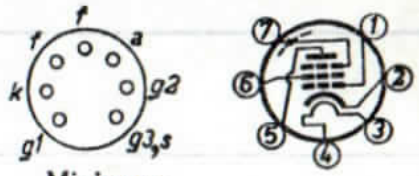
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
4 C 35	Thyratron, see p. 210				
4 J 50 **4 J 78**	Magnetrons, see p. 243				
5 C 22	Thyratron, see p. 210				
5 J 26	Magnetron, see p. 243				
5 Y 3 GT Full-wave rectifying tube	V_f = 5 V I_f = 2 A	V_{tr} = 2×500 V V_{tr} = 2×350 V	I_a = 84 I_a = 125	R_t = min. 140 Ω R_t = min. 50 Ω C_{filter} = 10 µF	 Octal
6 AB 8 Triode Output pentode	see ECL 80				
6 AJ 8 Triode heptode Frequency changer	see ECH 81				

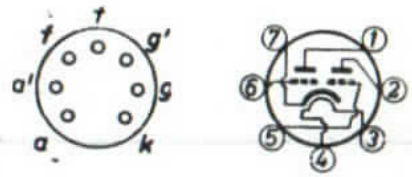
6 AK 5 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.175 A	V_a = 180 V V_{g2} = 120 V V_{g1} = −2 V	I_a = 7.7 I_{g2} = 2.4	S = 5.1 mA/V R_i = 0.7 MΩ R_{eq} = 2 kΩ C_{ag1} < 0.02 pF	 Miniature
6 AK 8 Triple diode high mu triode	see EABC 80				
6 AL 5 Double diode	see EAA 91				
6 AM 5 Output pentode	see EL 91				
6 AM 6 R.F. pentode	see EF 91				

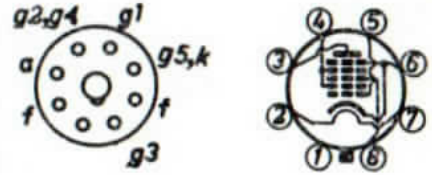
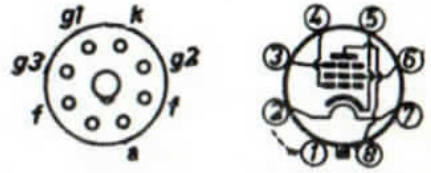
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6 AQ 4 Grounded-grid triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −1.5 V R_k = 150 Ω	I_a = 10	S = 8.5 mA/V R_i = 12 kΩ μ = 100 W_a = 2.5 W R_{eq} = 400 Ω freq.=max.250 Mc/s	 Miniature
6 AQ 5 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −12.5 V	I_a = 45 I_{g2} = 4.5	S = 4.1 mA/V R_i = 52 kΩ R_a = 5 kΩ W_o = 4.5 W W_a = 12 W	 Miniature
6 AQ 8 Double triode	see ECC 85				
6 AT 6 Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −3 V V_a = 100 V V_g = −1 V	I_a = 1 I_a = 0.8	S = 1.2 mA/V R_i = 58 kΩ μ = 70 S = 1.3 mA/V R_i = 54 kΩ μ = 70	 Miniature

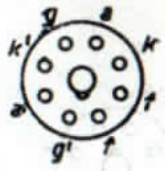
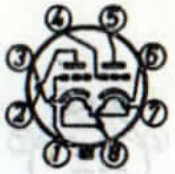
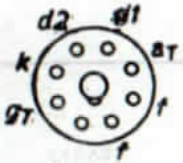
6 AU 6 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 150 V V_{g1} = −1 V V_{g3} = 0 V	I_a = 10.8 I_{g2} = 4.3	S = 5.2 mA/V R_i = 1 MΩ	 Miniature
		V_a = 100 V V_{g2} = 100 V V_{g1} = −1 V V_{g3} = 0 V	I_a = 5.2 I_{g2} = 2	S = 3.9 mA/V R_i = 0.5 MΩ	
6 AV 6 Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −2 V	I_a = 1.2	S = 1.6 mA/V R_i = 62.5 kΩ μ = 100	 Miniature
6 BA 6 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a=V_b= 250 V V_{g3} = 0 V R_{g2} = 33 kΩ V_{g1} = −1 V	I_a = 11.6 I_{g2} = 4.5	S = 4.5 mA/V R_i = 1 MΩ R_{eq} = 4 kΩ C_{ag1} < 3.5 mpF	 Miniature
		V_a=V_b= 100 V V_{g3} = 0 V V_{g2} = 100 V V_{g1} = −1 V	I_a = 10.8 I_{g2} = 4.4	S = 4.3 mA/V R_i = 0.25 MΩ R_{eq} = 4.3 kΩ	
6 BE 6 Heptode Frequency changer	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2+g4} = 100 V V_{g3} = −1.5 V R_{g1} = 20 kΩ	I_a = 3 I_{g2+g4} = 7.1 I_{g1} = 0.5	S_c = 0.475 mA/V R_i = 1 MΩ	 Miniature

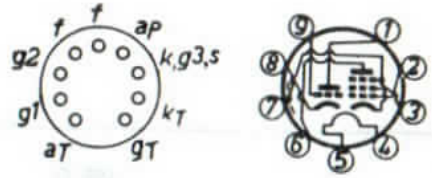
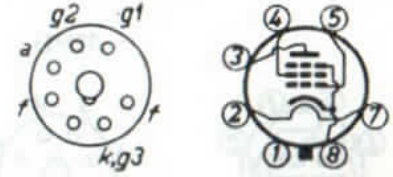
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6 BE 7 Enneode	see EQ 80				
6 BQ 5 Output pentode	see EL 84				
6 BQ 7 A Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.4 A	V_a = 150 V R_k = 220 Ω	I_a = 9	S = 6.4 mA/V R_i = 6.1 kΩ μ = 39	 Noval
6 BR 5 Tuning indicator	see EM 80				
6 BX 6 R.F. pentode	see EF 80				
6 BY 7 R.F. variable mu pentode	see EF 85				

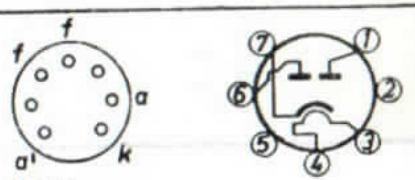
6 CA 7 Output pentode	see EL 34				
6 CB 6 R.F. sharp-cut off pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 200 V V_{g2} = 150 V V_{g3} = 0 V R_k = 180 Ω	I_a = 9.5 I_{g2} = 2.8	S = 6.2 mA/V R_i = 0.6 MΩ	 Miniature
6 CD 7 Tuning indicator	see EM 34				
6 CJ 6 Line output pentode	see EL 81				
6 CK 6 Video amplifying pentode	see EL 83				
6 CN 6 Output pentode	see EL 38				

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6 CQ 6 Variable mu pentode	see EF 92				
6 DA 6 Varibale mu pentode	see EF 89				
6 J 6 Double triode Typical characteristics (per system) R.F. class C telegr. amplifier and oscillator	V_f = 6.3 V I_f = 0.45 A	V_a = 100 V R_k = 100 Ω	I_a = 8.5	S = 5.3 mA/V R_i = 7.1 kΩ μ = 38	 Miniature
		V_a = 150 V V_g = −10 V R_g = 625 Ω R_k = 220 Ω	I_a = 2×15 I_g = 2× 8	W_{ig} = 0.35 W W_o = 3.5 W	
6 N 8 Double diode var. mu pentode	see EBF 80				
6 Q 4 Grounded-grid triode	see EC 80				
6 R 3 Booster	see EY 81				
6 R 4 Oscillator triode	see EC 81				

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6 SA 7 GT Heptode Frequency changer	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2+g4} = 100 V V_{g3} = 0 V R_{g1} = 20 kΩ	I_a = 3.5 I_{g2+g4} = 8.5 I_{g1} = 0.5	S_c = 0.45 mA/V R_i = 1 MΩ	 Octal
		V_a = 250 V V_{g2+g4} = 100 V V_{g3} = −2 V R_{g1} = 20 kΩ	I_a = 3.5 I_{g2+g4} = 8.5 I_{g1} = 0.5	S_c = 0.45 mA/V R_i = 1 MΩ	
6 SK 7 GT Variable mu pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −3 V V_{g3} = 0 V	I_a = 9.2 I_{g2} = 2.6	S = 2 mA/V R_i = 0.8 MΩ	 Octal
		V_a = 100 V V_{g2} = 100 V V_{g1} = −1 V V_{g3} = 0 V	I_a = 13 I_{g2} = 2.6	S = 2.35 mA/V R_i = 0.12 MΩ	

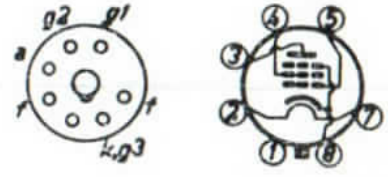
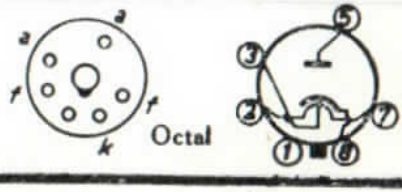
6 SN 7 GT Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.6 A	V_a = 250 V V_g = −8 V	I_a = 9	S = 2.6 mA/V R_i = 7.7 kΩ μ = 20	  Octal
		V_a = 90 V V_g = 0 V	I_a = 10	S = 3 mA/V R_i = 6.7 kΩ μ = 20	
6 SQ 7 GT Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = −2 V	I_a = 0.9	S = 1.1 mA/V R_i = 91 kΩ μ = 100	  Octal
		V_a = 100 V V_g = −1 V	I_a = 0.4	S = 0.9 mA/V R_i = 110 kΩ μ = 100	

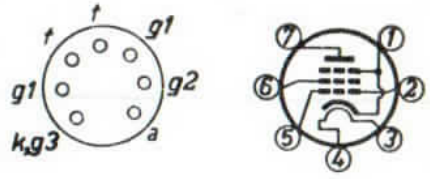
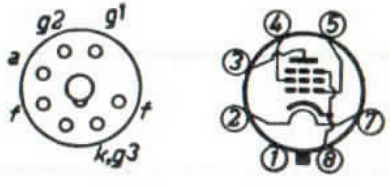
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6 U 8 Triode pentode Typical characteristics (pentode system) Typical characteristics (triode system)	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 110 V R_k = 68 Ω	I_a = 10 I_{g2} = 3.5	S = 5.2 mA/V R_i = 0.4 MΩ	
		V_a = 150 V R_k = 56 Ω	I_a = 18	S = 8.5 mA/V R_i = 4.8 kΩ μ = 40	Noval
6 V 6 GT Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −12.5 V	I_a = 45 I_{g2} = 4.5	S = 4.1 mA/V R_i = 50 kΩ R_a = 5 kΩ W_o = 4.5 W W_a = 12 W	
		V_a = 250 V V_{g2} = 250 V V_{g1} = −15 V	$I_{a\,min}$ = 2×70 $I_{a\,max}$ = 2×79 $I_{g2\,min}$ = 2× 5 $I_{g2\,max}$ = 2×13	S = 3.75 mA/V R_i = 60 kΩ R_{aa} = 10 kΩ W_o = 10 W	Octal

6 X 2 E.H.T. Rectifying tube	see EY 51				
6 X 4 Full-wave high vacuum rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2×325 V	I_o = 70	R_t = min. 300 Ω C_{filter} = max. 4 µF	 Miniature
7 AN 7 Double triode	see PCC 84				
8 A 8 Triode pentode	see PCF 80				
9 AK 8 Triple diode high-mu triode	see PABC 80				
9 AQ 8 Double triode	see PCC 85				
12 AT 6 Double diode high-mu triode	V_f = 12.6 V I_f = 0.15 A	see 6 AT 6 except for heater rating			
12 AT 7 Double triode	see ECC 81				
12 AU 6 R.F. pentode	V_f = 12.6 V I_f = 0.15 A	see 6 AU 6 except for heater rating			

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
12 AU 7 Double triode	see ECC 82				
12 AV 6 Double diode high mu triode	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 AV 6 except for heater rating			
12 AX 7 Double high mu triode	see ECC 83				
12 BA 6 Variable mu pentode	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 BA 6 except for heater rating			
12 BE 6 Pentode grid frequency changer	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 BE 6 except for heater rating			

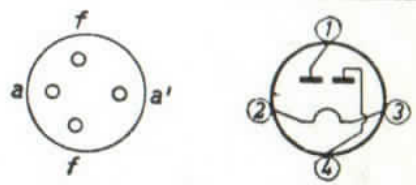
12 SA 7 GT Heptode	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 SA 7 GT except for heater rating
12 SK 7 GT Variable mu pentode	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 SK 7 GT except for heater rating
12 SN 7 GT Double triode	$V_f = 12.6$ V $I_f = 0.3$ A	see 6 NS 7 GT except for heater rating
12 SQ 7 GT Double diode high mu triode	$V_f = 12.6$ V $I_f = 0.15$ A	see 6 SQ 7 GT except for heater rating
15 A 6 Video amplifying pentode	see PL 83	
16 A 5 Frame or sound output pentode	see PL 82	

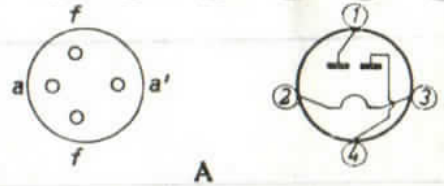
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
17 Z 3 Booster diode	see PY 81				
19 D 8 Triode heptode	see UCH 81				
19 X 3 Booster diode	see PY 80				
19 Y 3 Half-wave rectifying tube	see PY 82				
21 A 6 Line output pentode	see PL 81				
25 L 6 GT Output pentode Class A final amplifier	V_f = 25 V I_f = 0.3 A	V_a = 200 V V_{g2} = 125 V R_k = 180 Ω	I_a = 46 I_{g2} = 2.2	S = 8 mA/V R_i = 28 kΩ R_a = 4 kΩ W_o = 3.8 W W_a = 10 W	 Octal
		V_a = 110 V V_{g2} = 110 V V_{g1} = −7.5 V	I_a = 49 I_{g2} = 4	S = 8 mA/V R_i = 13 kΩ R_a = 2 kΩ W_o = 2.1 W	
35 Z 5 GT Half-wave rectifying tube Rectifier	V_f = 35 V I_f = 0.15 A	V_{tr} = 117 V V_{tr} = 235 V	I_o = 100 I_o = 100	R_t = min. 15 Ω R_t = min. 100 Ω C = 40 µF	 Octal

50 C 5 Output pentode	$V_f = 50$ V $I_f = 0.15$ A	$V_a = 110$ V $V_{g1} = 110$ V $V_{g2} = -7.5$ V	$I_a = 49$ $I_{g2} = 4.5$	$S = 7.5$ mA/V $R_i = 10$ kΩ $R_a = 2.5$ kΩ $W_o = 1.9$ W $W_a = 5.5$ W	 Miniature
50 L 6 GT Output pentode Class A final amplifier	$V_f = 50$ V $I_f = 0.15$ A	$V_a = 200$ V $V_{g2} = 110$ V $V_{g1} = -8$ V	$I_a = 50$ $I_{g2} = 2$	$S = 9.5$ mA/V $R_i = 30$ kΩ $R_a = 3$ kΩ $W_o = 4.3$ W $W_a = 10$ W	 Octal
		$V_a = 110$ V $V_{g2} = 110$ V $V_{g1} = -7.5$ V	$I_a = 49$ $I_{g2} = 4$	$S = 9$ mA/V $R_i = 13$ kΩ $R_a = 2$ kΩ $W_o = 2.1$ W	

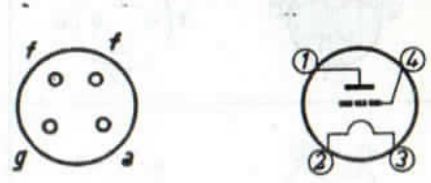
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
58 CG 58 CV	Phototubes, see p. 228				
85 A1 85 A2	Voltage reference tubes, see p. 230				
90 AG 90 AV 90 CG 90 CV	Phototubes, see p. 228				
90 C1 100 E1 150 A1 150 B2 150 C1	Voltage stabilizers, see p. 231				
328	Industrial rectifying tube, see p. 204				
329 340	Current regulators, see p. 239				
354 367 451	Industrial rectifying tubes, see p. 204				

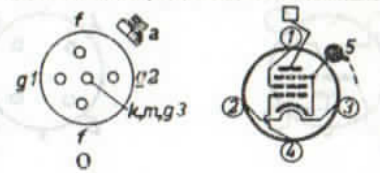
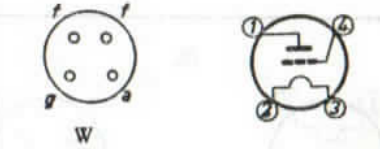
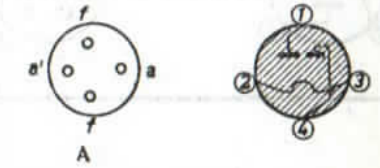
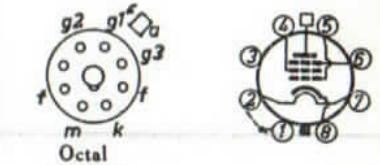
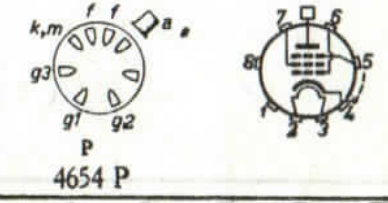
723 AB **725 A**	Klystron, see p. 243 Magnetron, see p. 243
1002 **1010**	Industrial rectifying tubes, see p. 204
1012	Current regulator, see p. 239
1037 **1039** **1048** **1049** **1053** **1054** **1059** **1063A** **1069K** **1089** **1110** **1119**	Industrial rectifying tubes, see p. 205
1120	Current regulator, see p. 239
1129 **1138** **1163** **1164** **1173** **1174** **1176** **1177**	Industrial rectifying tubes, see p. 206

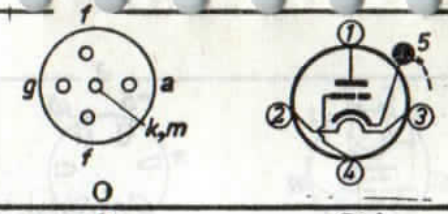
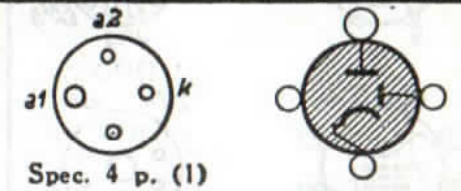
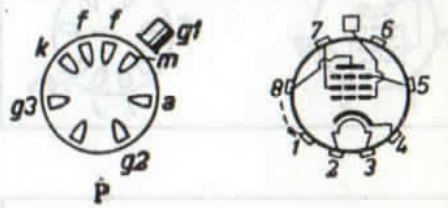
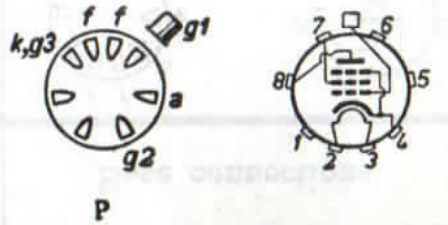
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
1331	Current regulator, see p. 239				
1533 **1534** **1543** **1544** **1553** **1554**	Industrial rectifying tubes, see p. 207				
1561 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 2 A	V_{tr} = 2×500 V = 2×400 V = 2×300 V	I_o = max. 120 = max. 140 = max. 160	C_{filt} < 60 µF R_t = min. 50 Ω C_{filt} > 60 µF R_t = min. 100 Ω	 A
1564 **1710** **1725A** **1729** **1738** **1749A** **1759** **1768** **1788**	Industrial rectifying tubes, see p. 207				

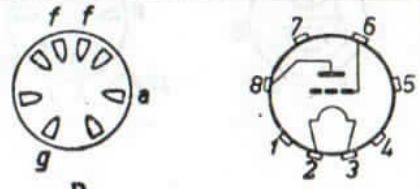
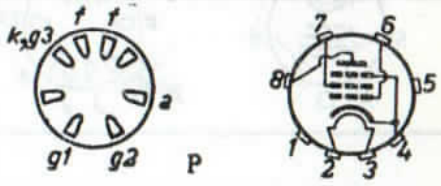
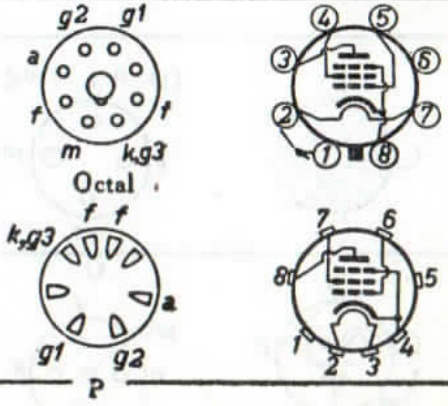
1805 Full-wave rectifying tube Rectifier	V_f = 4 V I = 1 A	V_{tr} = 2×500 V = 2×300 V	I_o = max. 60 = max. 100	R_t = min. 100 Ω = min. 60 Ω C_{filt} = max. 60 µF	 A
1838 **1849** **1859**	Industrial rectifying tubes, see p. 208.				

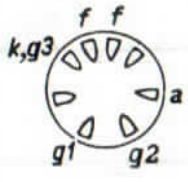
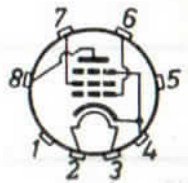
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
1904 1905 1908 1909 1909A 1910 1913 1918-01 1923 1926 1927 1928 1941 1945	Current regulators, see p. 239				
3530 3533 3538 3545 3546 3554	Phototubes, see p. 228				
4060 4065 4066	Electrometer tubes, see p. 236				
4152	Bimetal relay, see p. 238				

4349 **4369** **4370** **4371** **4372** **4373**	Surge arresters, see p. 234				
4378 **4379** **4380** **4383** **4390** **4397**	Surge arresters, see p. 235				
4624 Output triode Class A final amplifier	V_f = 7.2 V I_f = 1.1 A	V_a = 800 V V_g = −90 V	I_a = 35	S = 2.3 mA/V R_i = 3 kΩ μ = 7 R_a = 11 kΩ W_o = 9 W W_a = 32 W	 W
4630 Triode Pre-amplifier	V_f = 4.2 V I_f = 0.25 A	V_a = 130 V R_a = 6 kΩ V_g = −8.4 V	I_a = 8.5	S = 1.3 mA/V R_i = 5.5 kΩ g = 1.3 N W_a = 1.1 W	
4631 Triode Pre-amplifier	V_f = 2 V I_f = 0.25 A	V_a = 130 V R_a = 0.6 MΩ V_g = −1.5 V	I_a = 0.7	S = 0.5 mA/V R_i = 55 kΩ g = 3.24 N W_a = 1.1 W	Spec. 4 p. (3)

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
4636 Pentode Typical characteristics	V_f = 4 V I_f = 1.1 A	V_a = 200 V V_{g2} = 100 V V_{g1} = −2 V	I_a = 3 I_{g2} = 1.2	S = 2.3 mA/V R_i = 2.2 MΩ C_{ag1} < 6 mpF	
4641 Output triode Typical characteristics	V_f = 4 V I_f = 2.1 A	V_a = 1500 V V_{g1} = −140 V	I_a = 15	S = 2 mA/V R_i = 4.6 kΩ μ = 10 W_a = 25 W	
4652 = AX 1 Gasfilled full-wave rectifying tube Rectifier	V_f = 4 V I_f = 2.4 A	V_{tr} = 2×500 V V_{arc} = max. 15 V	I_a = max. 125	R_t = min. 200 Ω C_{filt} = max. 64 µF R_t = min. 150 Ω C_{filt} = max. 32 µF R_t = min. 100 Ω C_{filt} = max. 16 µF	
4654 Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 250 V V_{g2} = 275 V R_k = 175 Ω V_{g3} = 0 V	I_a = 72 I_{g2} = 8	S = 8.5 mA/V R_i = 22 kΩ R_a = 3.5 kΩ W_o = 9.2 W W_a = 18 W	
		V_b = 375 V R_{g2} = 500 Ω R_k = 195 Ω V_{g3} = 0 V	$I_{a\ min}$ = 2× 53 $I_{a\ max}$ = 2× 67 $I_{g2\ min}$ = 2×6.5 $I_{g2\ max}$ = 2× 16	R_{aa} = 5 kΩ W_o = 26 W	

4657 Triode Typical characteristics	V_f = 4 V I_f = 1.0 A	V_a = 200 V V_g = −1.5 V	I_a = 1	S = 2.2 mA/V R_i = 45 kΩ μ = 99 C_{ag} < 3 pF	
4662 Neon tuning indicator Tuning indicator		V_a = 150—170 V V_{ab} = 165—190 V	I_a = 2 I_{ab} = 0.04—0.05		 Spec. 4 p. (1)
4671 **4672**	U.H.F. tubes, see p. 171				
4673 R.F. pentode R.F. amplifier	V_f = 4 V I_f = 1.35 A	V_a = 250 V V_{g2} = 200 V V_{g1} = −2.5 V V_{g3} = 0 V	I_a = 8 I_{g2} = 1.5	S = 5 mA/V R_i > 1.5 MΩ C_{ag_1} < 12 mpF	
4682 Output pentode Class AB push-pull amplifier	V_f = 4 V I_f = 1.1 A	V_a = 375 V V_{g2} = 250 V R_k = 540 Ω	I_a min = 2× 24 I_a max = 2× 29 I_{g2} min = 2×3.5 I_{g2} max = 2× 4	R_{aa} = 15 kΩ W_o = 14 W	
Class B push-pull amplifier		V_a = 375 V V_{g2} = 250 V V_{g1} = −32 V	I_a min = 2× 20 I_a max = 2× 45 I_{g2} min = 2× 3 I_{g2} max = 2×5.5	R_{aa} = 9 kΩ W_o = 19 W	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
4683 Output triode Class AB push-pull amplifier Class B push-pull amplifier	V_f = 4 V I_f = 0.95 A	V_a = 350 V R_k = 850 Ω V_a = 350 V V_g = −75 V	$I_{a\,min}$ = 2× 43 $I_{a\,max}$ = 2× 46 $I_{a\,min}$ = 2× 35 $I_{a\,max}$ = 2× 70	R_{aa} = 8 kΩ W_o = 15.6 W R_{aa} = 5 kΩ W_o = 20 W	
4687	Voltage stabilizer, see p. 233				
4688 Output pentode Class AB push-pull amplifier	V_f = 4 V I_f = 2 A	V_a = 375 V V_{g2} = 275 V R_k = 165 Ω	$I_{a\,min}$ = 2× 48 $I_{a\,max}$ = 2× 62 $I_{g2\,min}$ = 2× 5 $I_{g2\,max}$ = 2× 9	R_{aa} = 6.5 kΩ W_o = 28.5 W	
4689 Output pentode Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 375 V V_{g2} = 275 V R_k = 165 Ω	$I_{a\,min}$ = 2× 48 $I_{a\,max}$ = 2× 62 $I_{g2\,min}$ = 2× 5 $I_{g2\,max}$ = 2× 9	R_{aa} = 6.5 kΩ W_o = 28.5 W	
4690	Thyratron, see p. 210				

4694 Output pentode Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 375 V V_{g2} = 250 V R_k = 145 Ω	I_a min = 2× 24 I_a max = 2× 30 I_{g2}min = 2×2.5 I_{g2}max = 2× 5	R_{aa} = 13 kΩ W_o = 12 W	
4699N Output pentode Class A final amplifier Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 250 V V_{g2} = 250 V R_k = 90 Ω	I_a = 72 I_{g2} = 8	S = 14.5 mA/V R_i = 20 kΩ R_a = 3.5 kΩ W_o = 8 W W_a = 18 W	 P 
		V_b = 375 V R_{g2} [1] = 700 Ω R_k = 125 Ω	I_a min = 2× 52 I_a max = 2× 64 I_{g2}min = 2×6.5 I_{g2}max = 2× 17	R_{aa} = 6 kΩ W_o = 27.5 W	
5823	Trigger tube, see p. 247				
5854	Image iconoscope, see p. 241				
6007 Output pentode	see DL 67				
6008 Pentode	see DF 67				
6084 A.F. pentode	see E 80 F				

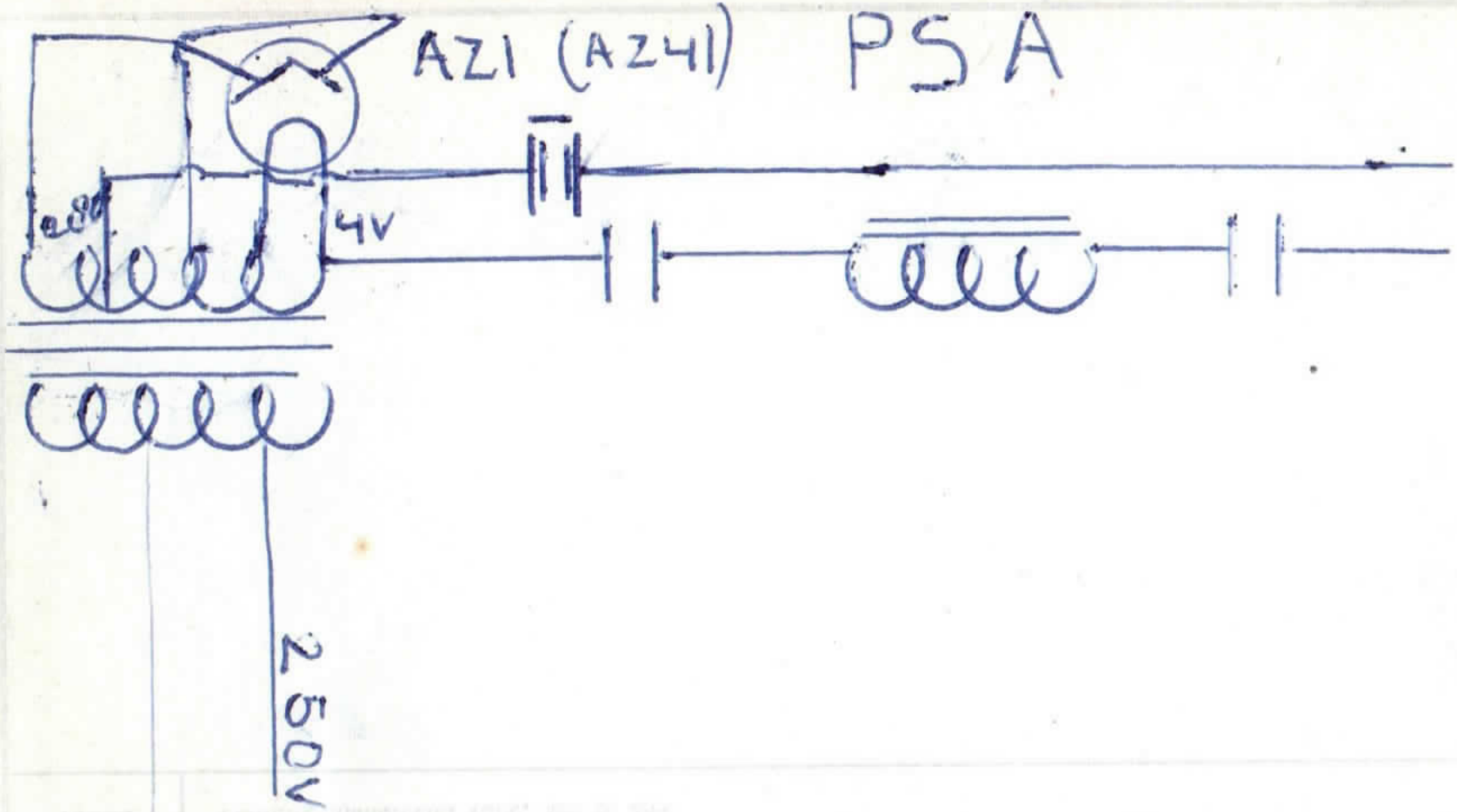
[1]) Common screen-grid resistor.

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
6085 Double triode	see E 80 CC				
6227 Output pentode	see E 80 L				
6267 Low-noise Preamplifier pentode	see EF 86				
6375 Triode	see DC 70				
7475	Voltage stabilizer, see p. 233				
8020	H.V. diode, see p. 243				
13201	Voltage stabilizer, see p. 233				

18004 **18040** **18042** **18045** **18046**	Repeater tubes, see p. 164
18120 **18121** **18130**	Image converters, see p. 237

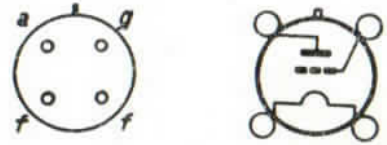
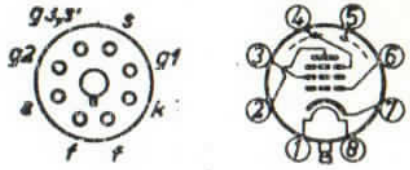
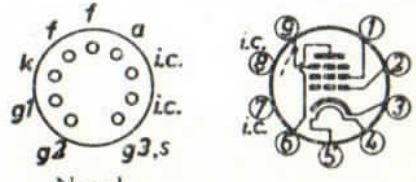
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
18500 18501 18502 18503 18504 18505 18506 18513 18514	Radiation counter tubes, see p. 242				
20610 to 28137	X-ray tubes, see p. 216				
55029 55030 55031 55032 55085-01 55085-02 55085-03 55085-04 55100-01 55100-02 55100-03 55100-04	Magnetrons, see p. 243				

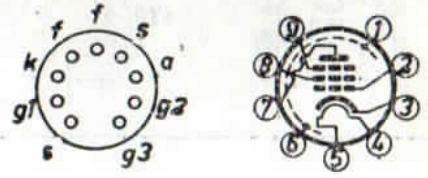
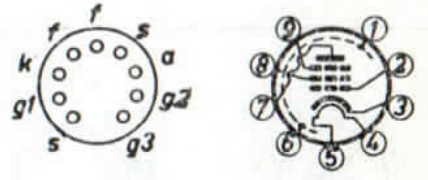
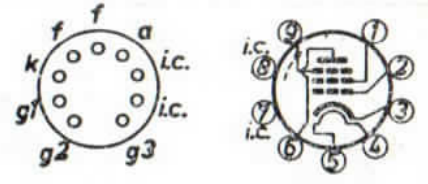
55334 **55395**	Klystrons, see p. 243
95322	Penning manometer tube, see p. 244


AZ1 (AZ41)
PSA
4V
250V

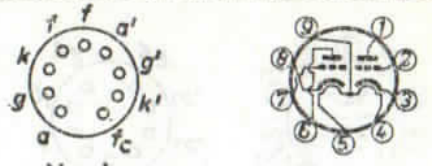
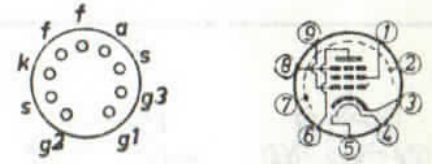
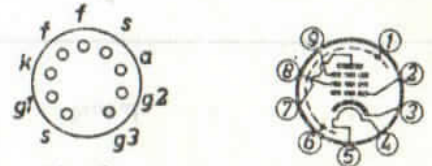
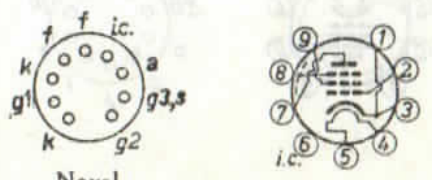
SPECIAL A. F. AND R. F. AMPLIFYING TUBES

REPEATER TUBES

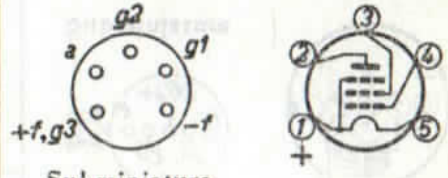
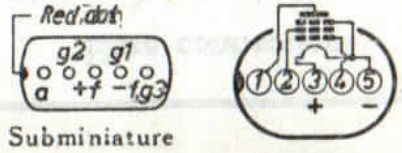
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
18004 Triode Final amplifier	V_f = 4.4 V I_f = 0.97 A	V_a = 130 V V_g = −25 V	I_a = 22	S = 1.0 mA/V R_i = 2.3 kΩ R_a = 2.1 kΩ W_o = 0.2 W W_a = 3.5 W d_{tot} < 5%	 Medium 4 p.
18040 Pentode Pre-amplifier Final amplifier	V_f = 18 V I_f = 0.27 A	V_a = 210 V R_a = 20 kΩ V_{g2} = 210 V R_k = 185 Ω V_{g3} = 0 V	I_a = 15 I_{g2} = 4	S = 10 mA/V R_i = 0.4 MΩ g = 5.15 N	 Loctal 8 p.
		V_a = 210 V V_{g2} = 210 V R_k = 120 Ω V_{g3} = 0 V	I_a = 20 I_{g2} = 5.3	S = 11 mA/V R_i = 0.3 MΩ R_a = 15 kΩ W_o = 1.4 W d_{tot} = 10% W_a = 4.5 W	
18042 Pentode Typical characteristics	V_f = 18 V I_f = 0.1 A	V_a = 210 V V_{g2} = 120 V R_b = 165 Ω V_{g3} = 0 V	I_a = 10 I_{g2} = 2.1	S = 9 mA/V R_i = 0.5 MΩ R_{eq} = 750 Ω	 Noval

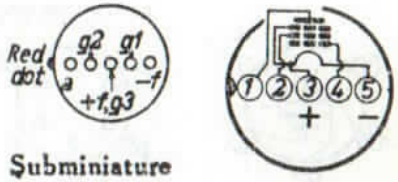
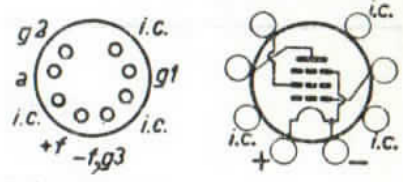
18045 Output pentode Class A final amplifier	V_f = 18 V I_f = 0.135A	V_a = 210 V V_{g3} = 0 V V_{g2} = 210 V R_k = 120 Ω	I_a = 20 I_{g2} = 5.3	S = 11 mA/V R_a = 15 kΩ W_o = 1 W d_{tot} = 5% W_a = 4.5 W	 Noval
18046 Output pentode Class A final amplifier	V_f = 20 V I_f = 0.135A	V_a = 210 V V_{g3} = 0 V V_{g2} = 210 V R_k = 120 Ω	I_a = 20 I_{g2} = 5.3	S = 11 mA/V R_a = 15 kΩ W_o = 1 W d_{tot} = 5% W_a = 4.5 W	
E 81 L Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 210 V V_{g3} = 0 V V_{g2} = 210 V V_{g1} = −3 V	I_a = 20 I_{g2} = 5.3	R_a = 15 kΩ W_o = 2.1 W W_a = 4.5 W	 Noval
E 83 F Pentode Typical characteristics Class A final amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 210 V V_{g2} = 120 V R_k = 165 Ω V_{g3} = 0 V	I_a = 10 I_{g2} = 2.1	S = 9.0 mA/V R_i = 0.5 MΩ R_{eq} = 750 Ω	 Noval
		V_{ba} = 210 V V_{bg2} = 120 V R_{g2} = 5.6 kΩ R_k = 180 Ω V_{g3} = 0 V	I_a = 8.3 I_{g2} = 1.7	S = 8.2 mA/V R_i = 0.44 MΩ R_a = 20 kΩ W_o = 0.87 W W_a = 2.1 W	

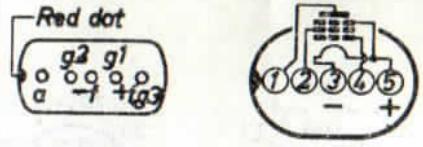
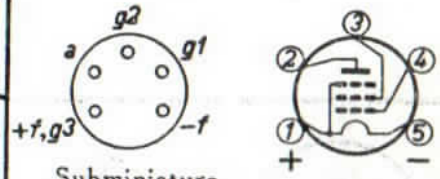
RELIABLE, RUGGEDIZED AND LONG LIFE TUBES

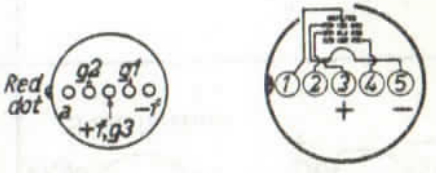
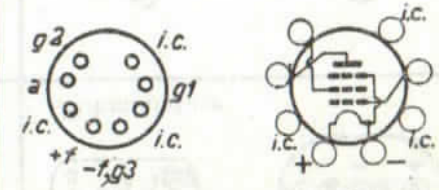
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
E 80 CC Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.6 A V_f = 12.6 V I_f = 0.3 A	V_a = 250 V V_g = −5.5 V	I_a = 6	S = 2.7 mA/V R_i = 10 kΩ μ = 27 W_a = 1.5 W	 Noval
E 80 F A. F. pentode Typical characteristics A.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 100 V R_k = 560 Ω V_{g3} = 0 V V_b = 400 V R_a = 0.22 MΩ R_{g2} = 1.2 MΩ R_k = 1.0 kΩ V_{g3} = 0 V	I_a = 3 I_{g2} = 0.55 I_a = 1.35 I_{g2} = 0.28	S = 1.85 mA/V R_i = 1.5 MΩ μ_{g2g1} = 25 g = 200	 Noval
E 80 L Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.75 A	V_a = 200 V V_{g2} = 200 V R_k = 130 Ω V_{g3} = 0 V	I_a = 30 I_{g2} = 4.2	S = 9.0 mA/V R_a = 7 kΩ W_o = 2.7 W W_a = 8 W	 Noval
E 180 F Broadband amplifier pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 190 V V_{g2} = 160 V V_{g1} = + 9 V R_k = 630 Ω V_{g3} = 0 V	I_a = 13 I_{g2} = 3	S = 16.5 mA/V R_i = 35 kΩ μ_{g2g1} = 50 —	 Noval

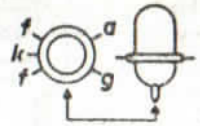
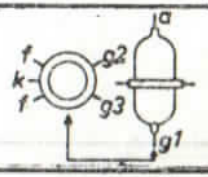
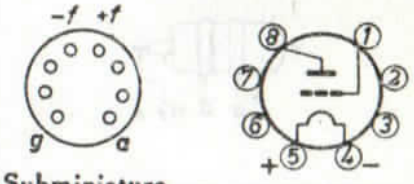
HEARING-AID TUBES

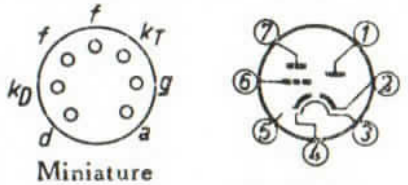
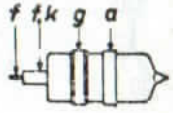
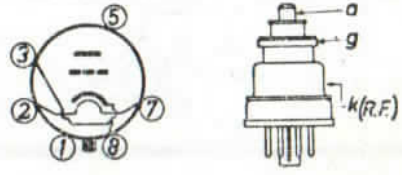
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DF 64 Pentode Typical characteristics A.F. amplifier	V_f = 0.625 V I_f = 10 mA	V_a = 15 V V_{g2} = 15 V V_{g1} = −0.62 V	I_a = 0.06 I_{g2} = 0.02	S = 0.1 mA/V R_i = 1 MΩ μ_{g2g1} = 7.5	 Subminiature
		V_b = 15 V R_a = 2.2 MΩ R_{g2} = 4.7 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ R_{g1} = 5 MΩ	I_k = 0.0064	g = 25	
DF 65 Pentode Typical characteristics A.F. amplifier	V_f = 0.625 V I_f = 13.3 mA	V_a = 22.5 V V_{g2} = 18 V V_{g1} = −1.15 V	I_a = 0.05 I_{g2} = 0.01	S = 0.1 mA/V R_i = 4 MΩ	 Subminiature
		V_b = 22.5 V R_a = 1 MΩ R_{g2} = 3.9 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ R_{g1} = 5 MΩ	I_a = 0.0117 I_{g2} = 0.0025	g = 31	
DF 66 Pentode Typical characteristics	V_f = 0.625 V I_f = 15 mA	V_a = 22.5 V V_{g2} = 22.5 V V_{g1} = −1.05 V	I_a = 0.05 I_{g2} = 0.015	S = 0.1 mA/V R_i > 2 MΩ	 Subminiature

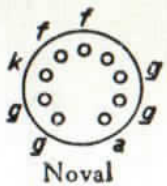
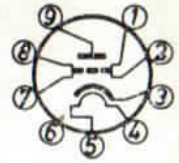
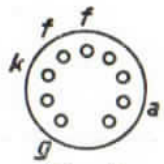
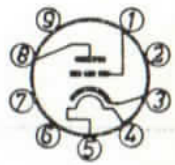
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DF 67 Pentode Typical characteristics A.F.amplifier	$V_f = 0.625$V $I_f = 13.3$mA	$V_a = 22.5$ V $V_{g2} = 18$ V $V_{g1} = -1.15$ V	$I_a = 0.05$ $I_{g2} = 0.01$	$S = 0.1$ mA/V $R_i = 4$ MΩ	 Subminiature
		$V_b = 22.5$ V $R_a = 1$ MΩ $R_{g2} = 3.9$ MΩ $V_{g1} = 0$ V $R_{g1}, = 10$ MΩ $R_{g1}' = 5$ MΩ	$I_a = 0.0117$ $i_{g2} = 0.0025$	$g = 31$	
DF 70 Pentode Typical characteristics	$V_f = 0.625$V $I_f = 25$ mA	$V_a = 30$ V $V_{g2} = 30$ V $V_{g1} = -1.85$ V	$I_a = 0.05$ $I_{g2} = 0.018$	$S = 0.1$ mA/V $R_i = 2.5$ MΩ $\mu_{g2g1} = 12.5$	 Subminiature

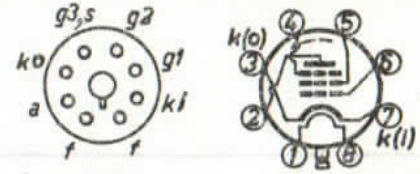
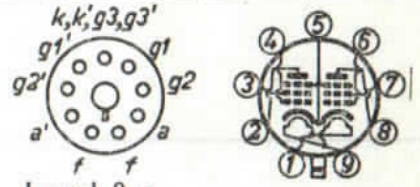
DL 64 Output pentode Typical characteristics	$V_f = 1.25$ V $I_f = 10$ mA	$V_b = 15$ V $V_{g2} = 15$ V $V_{g1} = -1.5$ V	$I_a = 0.16$ $I_{g2} = 0.04$	$S = 0.18$ mA/V $R_i = 0.4$ MΩ $R_a = 100$ kΩ $W_o = 0.95$ mW $W_a = 25$ mW	 Subminiature
DL 65 Output pentode Class A final amplifier	$V_f = 1.25$ V $I_f = 13$ mA	$V_b = V_{g2} = 22.5$ V $R_{g1} = 10$ MΩ $R_k = 0$ Ω	$I_a = 0.34$ $I_{g2} = 0.09$	$S = 0.42$ mA/V $R_i = 0.4$ MΩ $R_a = 0.1$ MΩ $W_o = 1.8$ mW	 Subminiature
		$V_b = V_{g2} = 22.5$ V $R_{g1} = 3$ MΩ $R_k = 4$ kΩ	$I_a = 0.19$ $I_{g2} = 0.07$	$R_a = 0.1$ MΩ $W_o = 1.6$ mW $W_a = 25$ mW	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
DL 66 Output pentode Class A final amplifier	$V_f = 1.25$ V $I_f = 15$ mA	$V_b = 22.5$ V $V_{g2} = 22.5$ V $V_{g1} = -1.4$ V	$I_a = 0.30$ $I_{g2} = 0.075$	$S = 0.35$ mA/V $R_i = 0.3$ MΩ $R_a = 75$ kΩ $W_o = 2.7$ mW	
		$V_b = 45$ V $V_{g2} = 45$ V $V_{g1} = -3$ V	$I_a = 0.90$ $I_{g2} = 0.2$	$R_a = 50$ kΩ $W_o = 16.5$ mW	
DL 67 Output pentode Class A final amplifier	$V_f = 1.25$ A $I_f = 13$ mA	$V_b = V_{g2} = 22.5$ V $R_{g1} = 10$ MΩ $R_k = 0$ Ω	$I_a = 0.34$ $I_{g2} = 0.09$	$S = 0.42$ mA/V $R_i = 0.4$ MΩ $R_a = 0.1$ MΩ $W_o = 1.8$ mW	
		$V_b = V_{g2} = 22.5$ V $R_{g1} = 3$ MΩ $R_k = 4$ kΩ	$I_a = 0.19$ $I_{g2} = 0.07$	$R_a = 0.1$ MΩ $W_o = 1.6$ mW $W_a = 25$ mW	
DL 71 Output pentode Typical characteristics	$V_f = 1.25$ V $I_f = 25$ mA	$V_a = 45$ V $V_{g2} = 45$ V $V_{g1} = -1.25$ V	$I_a = 0.6$ $I_{g2} = 0.15$	$S = 0.5$ mA/V $R_i = 0.35$ mΩ $R_a = 0.1$ MΩ $W_o = 6$ mW $W_a = 30$ mW	
DL 72 Output pentode Typical characteristics	$V_f = 1.25$ V $I_f = 25$ mA	$V_a = 45$ V $V_{g2} = 45$ V $V_{g1} = -4.5$ V	$I_a = 1.25$ $I_{g2} = 0.4$	$S = 0.5$ mA/V $R_i = 225$ kΩ $R_a = 30$ kΩ $W_o = 23$ mW $W_a = 60$ mW	Subminiature

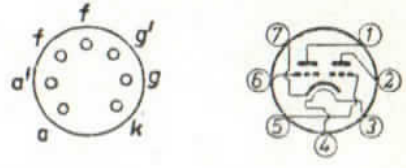
Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
4671 Acorn triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 180 V V_g = −5 V	I_a = 4.5	S = 2 mA/V R_i = 12.5 kΩ μ = 25 freq.=max.430 Mc/s	
4672 Acorn pentode R.F. amplifier	V_f = 6.3 V I_f = 0.15 A	V_a = 250 V V_{g2} = 100 V V_{g1} = −3 V	I_a = 2 I_{g2} = 0.7	S = 1.4 mA/V R_i = 1.5 MΩ C_{ag1} < 7 mpF freq.=max.430 Mc/s	
DC 70 Triode Typical characteristics Oscillator	V_f = 1.25 V I_f = 0.2 A	V_a = 150 V V_g = −4.5 V	I_a = 12	S = 3.4 mA/V R_i = 4 kΩ μ = 14 W_a = 2.4 W	 Subminiature
		V_a = 150 V	I_k = 20	freq. = 500 Mc/s W_o = 0.45 W	

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EAC 91 Diode triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 200 V V_g = −2.8 V	I_a = 7.5	S = 2.8 mA/V R_i = 12.8 kΩ μ = 36 freq. = max. 300 Mc/s	 Miniature
EC 55 Disc seal triode Typical characteristics	V_f = 6.3 V I_f = 0.4 A	V_a = 250 V V_g = −3.5 V	I_a = 20	S = 6 mA/V μ = 30 freq. = max. 3000 Mc/s	
EC 56 Disc seal triode Typical characteristics	V_f = 6.3 V I_f = 0.65 A	V_a = 180 V V_g = −3.5 V	I_a = 30	S = 16 mA/V μ = 35 freq. = max. 4000 Mc/s	
EC 57 Disc seal triode Typical characteristics	V_f = 6.3 V I_f = 0.65 A	V_a = 180 V V_g = 1.8 V	I_a = 60	S = 19 mA/V μ = 35 freq. = max. 4000 Mc/s	

EC 80 Grounded-grid triode Typical characteristics	V_f = 6.3 V I_f = 0.43 A	V_a = 250 V V_g = −1.5 V	I_a = 15	S = 12 mA/V μ = 80 freq.=max.750 Mc/s	 Noval 
EC 81 Oscillator triode Typical characteristics	V_f = 6.3 V I_f = 0.2 A	V_a = 150 V V_g = −2 V	I_a = 30	S = 5.5 mA/V μ = 16 freq.=max.750 Mc/s	 Noval 
EC 91 Grounded-grid triode	see 6 AQ 4				

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
EF 51 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.35 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −2 V V_{g3} = 0 V	I_a = 14 I_{g2} = 2.6	S = 9.5 mA/V R_i = 0.5 MΩ R_{eq} = 1 kΩ C_{ag1} < 7 mpF freq.=max.150 Mc/s	 Loctal 8 p.
EFF 51 Double pentode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.75 A	V_a = 250 V V_{g2} = 200 V V_{g1} = −2 V	I_a = 6 I_{g2} = 1.2	S = 7.5 mA/V R_i = 0.35 MΩ R_{eq} = 800 Ω C_{ag1} < 0.04 pF freq.=max.150 Mc/s	 Loctal 9 p.

TUBE FOR COMPUTERS

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
E 90 CC Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.4 A	V_a = 100 V V_g = −2.1 V	I_a = 8.5	S = 6 mA/V R_i = 4.5 kΩ μ = 27	 Miniature
E 92 CC Double triode Typical characteristics (per system)	V_f = 6.3 V I_f = 0.4 A	V_a = 150 V V_g = −1.7 V	I_a = 8.5	S = 6 mA/V R_i = 8.3 kΩ μ = 50	

CATHODE RAY TUBES

PREFERRED TYPES

PICTURE TUBES

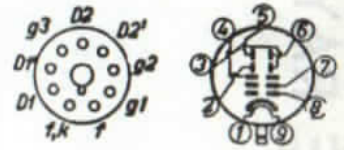
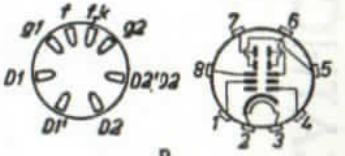
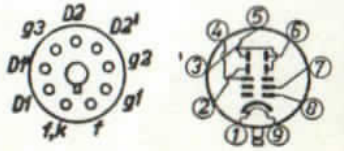
	Type of tube	Projection	Direct view	View finder
DIAMETER OF SCREEN	6 cm (2.5″)	**MW 6-2**		
	13 cm (5″)			**MW 13-35**
	36 cm (14″)		**MW 36-44**	
	43 cm (17″)		**MW 43-64**	
	53 cm (21″)		**MW 53-80**	

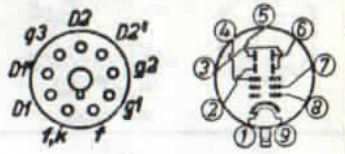
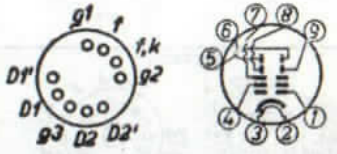
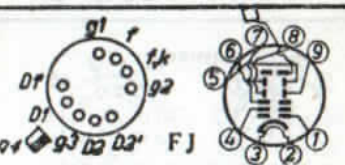
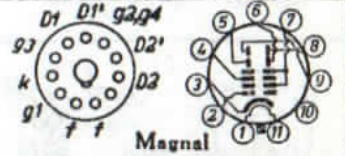
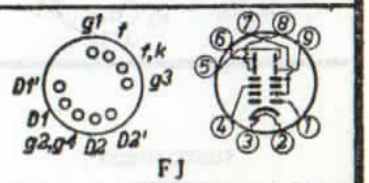
INSTRUMENT AND RADAR TUBES

	Screen	Short persistence	Medium persistence	Long persistence	Very long persistence
DIAMETER OF SCREEN	7 cm (3″)	**DB 7-5** **DB 7-6**	**DG 7-5** **DG 7-6**	**DR 7-5** **DR 7-6**	**DP 7-5** **DP 7-6**
	10 cm (4″)	**DB10-2** **DB10-6**	**DG10-2** **DG10-6**	**DR10-2** **DR10-6**	**DP10-2** **DP10-6**
	13 cm (5″)	**DB13-2**	**DG13-2**	**DR13-2**	**DP13-2** **MF13-1**
	31 cm (12″)				**MF31-55**
	41 cm (16″)				**MF41-15**

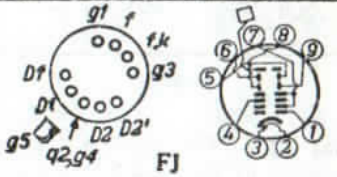
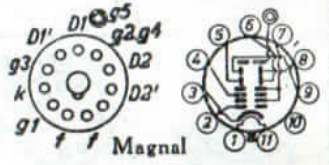
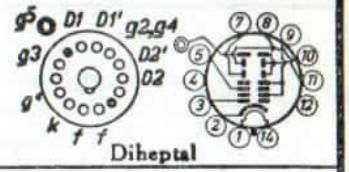
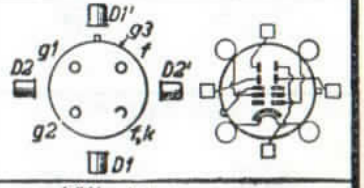
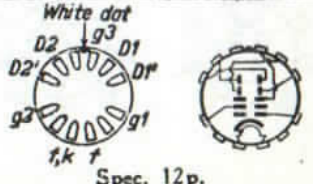
CATHODE-RAY TUBES

INSTRUMENT TUBES

Type	Screen[1]	Deflection system	Heater		Operating characteristics					Sensitivity		Capacitances			Length (excl. pins)		Base connections
	Max. diam. (mm)	Double electrostatic	V_f (V)	I_f (A)	V_{g5} (V)	V_{g4} (V)	V_{g3} (V)	V_{g2} (V)	$-V_{g1}$[2] (V)	N_1 (mm/V)	N_2 (mm/V)	C_{g1} (pF)	$C_{D_1D_1'}$ (pF)	$C_{D_2D_2'}$ (pF)	max. (mm)	min. (mm)	
DB DG DP 4-1	44	sym-metrical	6.3	0.31			800	200-300	0-50	0.25	0.16	10	0.6	0.8	145	139	 Loctal 9 p. (B9G)
DB DG DP 4-2	44	D_2D_2' asymme-trical															
DB DG DN 7-2	71	D_2D_2' asymme-trical	4.0	1.0			800	150-350	0-30	0.22	0.14	7	0.65	2.5	163	151	 P
DB DG DR 7-3	71	sym-metrical	6.3	0.4			800	200-300	0-50	0.25	0.16	9	0.6	0.6	145	139	 Loctal 9 p.
DB DG DR 7-4	71	D_2D_2' asymme-trical											0.5	0.8			

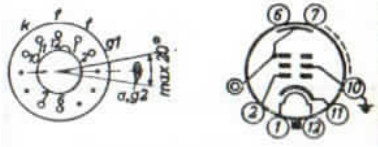
DB DG DP DR	7-5	71	sym-metrical	6.3	0.31			800	200-300	0-50	0.25	0.16	10	0.6	0.8	145	139	 Loctal 9 p. (B9G)
DB DG DP DR	7-6	71	D_2D_2' asymme-trical															
DB DG DN	9-3	97.5	D_2D_2' asymme-trical	4.0	1.0			1000	200-400	0-40	0.40	0.31	8	1.1	1.4	327	312	 FJ
DB DG DN	9-4	97.5	sym-metrical												1.3			
DB DG DN	9-5	97.5	D_2D_2' asym-metrical with accel-eration	4.0	1.0		1000 5000	1000 1000	200-400 230-430	0-40 0-40	0.38 0.18	0.32 0.15	8	1.1	1.4	327	312	 FJ
DB DG DR DP	10-2	97.5	sym-metrical	6.3	0.3		2000	400-720	2000	45-100	0.30	0.23	4.6	1.9	2.5	327	312	 Magnal
DB DG DR	10-3	97.5	D_2D_2' asym-metrical	4.0	0.55		1000	200-340	1000	18-46	0.65	0.57	5	1.9	2.6	327	312	 FJ

[1]) [2]) See p. 185

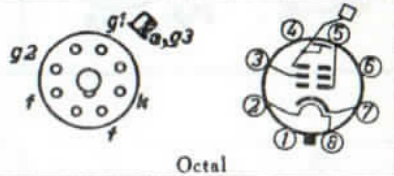
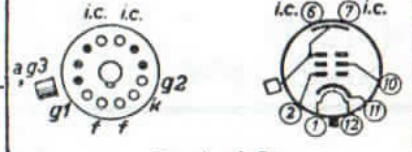
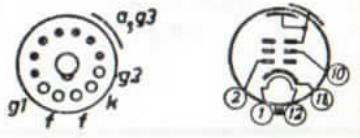
Type	Screen[1])	Deflection system	Heater		Operating characteristics					Sensitivity		Capacitances			Length (excl. pins)		Base connections
	Max. diam. (mm)	Double electrostatic	V_f (V)	I_f (A)	V_{g5} (V)	V_{g4} (V)	V_{g3} (V)	V_{g2} (V)	$-V_{g1}$ (V)	N_1 (mm/V)	N_2 (mm/V)	C_{g1} (pF)	$C_{D_1D_1'}$ (pF)	$C_{D_2D_2'}$ (pF)	max (mm)	min. (mm)	
DB DG DR 10-5	97.5	D_2D_2' asymm. with acceler-ation	4.0	0.56	1000 2500	1000 1000	200-340 200-340	1000 1000	18-46 18-46	0.65 0.37	0.55 0.32	5	1.9	2.6	327	312	 FJ
DB DG DP DR 10-6	97.5	symm. with accel-eration	6.3	0.3	2000 4000	2000 2000	400-720 400-720	2000 2000	45-100 45-100	0.35 0.28	0.27 0.22	4.6	1.9	2.5	327	312	 Magnal
DB DG DP DR 13-2	136	symm. with accel-eration	6.3	0.3	2000 4000	2000 2000	400-720 400-720	2000 2000	45-100 45-100	0.47 0.38	0.41 0.33	4.6	1.9	2.5	415	395	 Diheptal
DB DG DN 16-1	167	sym-metrical	4.0	1			1000	175-250	0-20	0.50	0.35	9.5	1.2	2	440	415	
DB DG DN 16-2	167	sym-metrical					2000	350-500	0-40	0.25	0.17	7.3	2.1	2.7	450	425	 Spec. 12p.

[1]) See p. 185

FLYING SPOT SCANNER

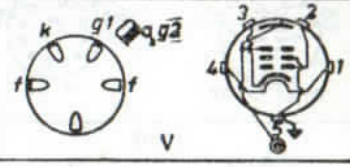
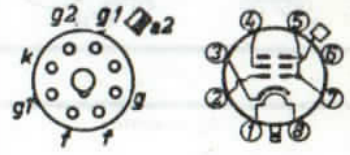
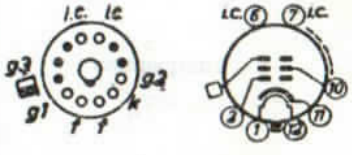
Type	Screen [1]			Deflection system	Heater		Operating characteristics				Capacitances	Length (excl. pins)		Base connections
	Round	Rectangular												
	Useful diam. min. (mm)	Useful diagonal min. (mm)	Useful width min. (mm)	Double magnetic	V_f (V)	I_f (A)	V_{g4} (V)	V_{g3} (V)	V_{g2} (V)	$-V_{g1}$ [2] (V)	C_g (pF)	max. (mm)	min. (mm)	
MC 13-16	108				6.3	0.3			25000	50-100	6.5	360	342	 Duodecal 7p.

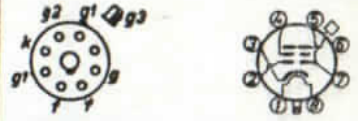
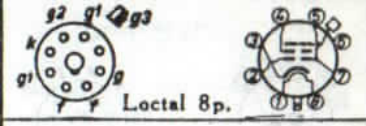
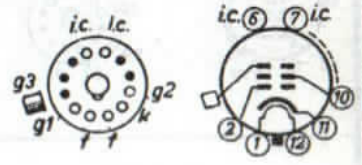
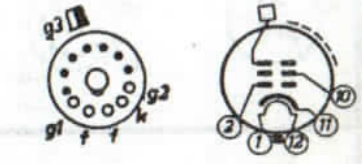
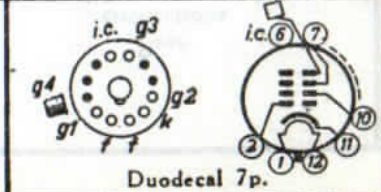
RADAR TUBES

MF 13-1	108				6.3	0.3		7000	250	28-63	<10	275	256	 Octal
MF 31-22	287				6.3	0.3		9000	300	32-81	<10	457	441	 Duodecal 7p.
MF 31-55	260				6.3	0.3		12000	300	30-70	<10	506		
MF 41-15	360				6.3	0.3		12000	300	30-70	<10	501		 Duodecal 5p.

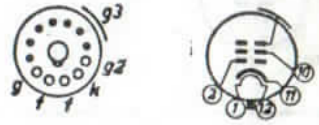
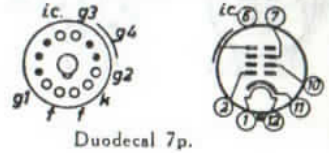
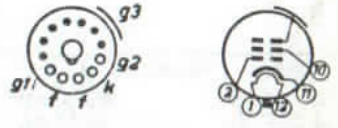
[1] [2] See p. 185

PICTURE TUBES

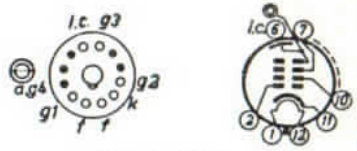
Type	Screen [1]			Deflection system	Heater		Operating characteristics				Capacitances	Length (excl. pins)		Base connections
	Round	Rectangular												
	Useful diam. min. (mm)	Useful diagonal min. (mm)	Useful width min. (mm)	Double magnetic	V_f (V)	I_f (A)	V_{g4} (V)	V_{g3} (V)	V_{g2} (V)	$-V_{g1}$ [2] (V)	C_g (pF)	max. (mm)	min. (mm)	
MW 6-2 Projection tube	57.5				6.3	0.3			25000	40-90	6.3	268	256	
MW 13-35	Viewfinder: = MF 13-1 with W-screen													
MW 22-7	= MW 22-17 with different base and I_f = 0.6 A													 Loctal 8p.
MW 22-14	= MW 22-17 with different base													
MW 22-16	214			with ion trap type 55400	6.3	0.3		7000 7000 9000 9000	160 200 160 200	20-50 25-60 20-50 25-60	8	366	350	 Duodecal 7p.
MW 22-17	= MW 22-16 without ion trap and outer coating													
MW 22-18	= MW 22-16 without ion trap													

MW 31-7	= MW 31-17 with different base and I_f = 0.6 A											457	441	
MW 31-14	= MW 31-17 with different base											457	441	 Loctal 8p.
MW 31-16	287			with ion trap type 55400	6.3	0.3		7000 7000 9000 9000	160 200 160 200	20-50 25-60 20-50 25-60	8	457	441	
MW 31-17	= MW 31-16 without ion trap and outer coating													 Duodecal 7p.
MW 31-18	= MW 31-16 without ion trap													
MW 31-74	= MW 31-16 with filter glass													
MW 36-22		318	288	with ion trap type 55402	6.3	0.3		10000	250	33-72	6	416	395	 Duodecal 5p.
MW 36-24	= MW 36-22 with filter glass													
MW 36-44		318	288	with ion trap type 55402	6.3	0.3	12000	0-250	250	33-72	7	416	395	 Duodecal 7p.

[1]) [2]) See p. 185

Type	Screen [1]			Deflection system	Heater		Operating characteristics				Capacitances	Length (excl. pins)		Base connections
	Round	Rectangular												
	Useful diam. min. (mm)	Useful diagonal min. (mm)	Useful width min. (mm)	Double magnetic	V_f (V)	I_f (A)	V_{g4} (V)	V_{g3} (V)	V_{g2} (V)	$-V_{g1}$ [2] (V)	C_g (pF)	max. (mm)	min. (mm)	
MW 41-1	365			with ion trap type 55402	6.3	0.3		12000	250	33-72	6	446		 Duodecal 5p.
MW 43-43		388	365	with ion trap type 55402	6.3	0.3	14000	0-250	300	40-86	7	469		 Duodecal 7p.
MW 43-43/02		388	365	with ion trap type 55402	6.3	0.6		14000	300	33-77	7	469		 Duodecal 5p.
MW 43-64	= 43-43 with glass envelope											477	457	

MW 53-20		511	485	with ion trap type 55402	6.3	0.3	16000	0-300	300	40-80	7	574	554
MW 53-80		511	482	with ion trap type 55402	6.3	0.3	16000	0-300	300	40-80	7	504	484

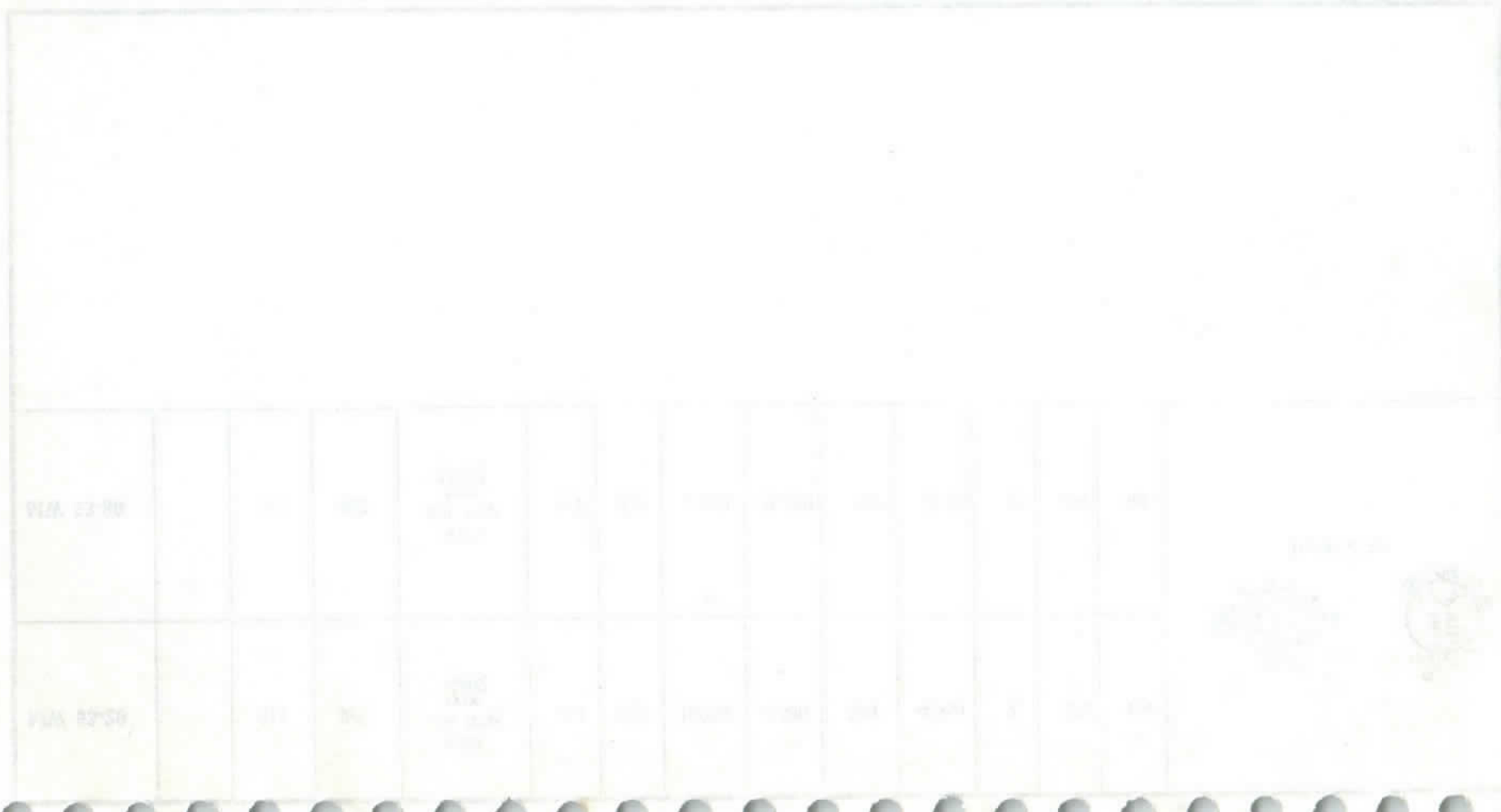


Duodecal 7p.

[1]) The second letter of the typenumber indicates the colour of the luminescent screen:

B = blue, short persistence
F = orange, very long persistence
G = green, medium persistence
N = green, long persistence
P = double layer screen. Blue of short persistence followed by greenish yellow of long persistence
R = greenish-yellow, long persistence
W = white, medium persistence

[2]) Grid voltage for visual cutt-off



TRANSMITTING TUBES

PREFERRED
TRANSMITTING

TUBE OUTPUT IN CLASS C TELEGRAPHY AT:	Type of Tube	QQE 03/12 Tetrode (6360)	QQC 04/15 Double Tetrode (5895)	QQE 03/20 Double Tetrode (6252)	QE 05/40* Tetrode (6146)	QQE 06/40 Double Tetrode (5894)	QEL 1/150 Tetrode (4X150A)	PE 1/100 Pentode (6083)	TB 2.5/300 Triode (5866)	QB 3/300 Tetrode (6155)	TBL 2/300* Triode
		(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)
	2 Mc/s	14.5 18.5 ■	26.6 35	48	52 69	90	195	132	390	375	500
	20 Mc/s	14.5 18.5 ▲	26.6 35	48	52 69	90	195	132	390	375	500
	30 Mc/s	14.5 18.5 ■	26.6 35	48	52 69	90	195	132	390	375	500
	60 Mc/s	14.5 18.5 ▲	26.6 35	48	52 69	90	195	132	390	375	500
	100 Mc/s	14.5 18.5 ■	26.6 35	48	40 53	90	195		390	375	480
	120 Mc/s	14.5 18.5 ■	26.6 35	48	35 47	90	195		390	375	475
	150 Mc/s	14.5 18.5 ▲	26.6 35	48	29 40	90	195		390	360	465
	200 Mc/s	14.5 18.5 ■	20 24	48		90	185		197	225	445
	300 Mc/s		6.5 8	34.5		75	170				400
	430 Mc/s			23		66	155				350
	500 Mc/s			22		60	140				325
	600 Mc/s			20							290
	890 Mc/s										180

■ Intermittent

● Aircooled TAL 12/10

▲ Watercooled TAW 12/10

● See p. 200

TYPES

TUBES

TB 3/750 Triode (5867)	QB3.5/750 Tetrode (6156)	TB 4/1250 Triode (5868)	QB 5/1750 Tetrode (6079)	QBL 5/3500 QBW 5/3500 Tetrode (6076) (6075)	TBL 6/6000 TBW 6/6000 Triode (5924) (5923)	TAL 12/10 TAW12/10 Triode	TAL 12/20 TAW12/20 Triode	TBL 12/25* TBW12/25 Triode	TAL 12/35 TAW12/35G Triode	TBL 12/100 TBW 12/100 Triode (6078) (6077)
(W)	(W)	(W)	(W)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)
840	1000	1690	1760	4.1	6.9	10.5 ● 15 □	22	28	48.5	108
840	1000	1690	1760	4.1	6.9	10.5 ● 12 □	22	28	48.5	95
840	1000	1690	1760	4.1	6.9	10 ● 11 □	18	28	39	50
840	1000	1690	1760	4.1	6.9	5 ● 5 □				
840	750	1690	1300	3.95	5.7					
600	500	1125		3.7	5.0					
				3.3	4.1					
				2.81	2.8					

HIGH-TENSION RECTIFYING TUBES

Max. D.C. output current		0.25 A	1.25 A	1.5 A	2.5 A	3 A	15 A
MAX. PEAK INVERSE VOLTAGE	3 kV	DCG 1/250					
	10 kV	DCG 4/1000G (866 A) DCX 4/1000 (3B28)	DCX 4/5000 (4B32)				
	12 kV			DCG 5 5000GB (872A)			
	15 kV					DCG 6 18*	DCG7/100 [1]) DCG7/100B [1])*
	21 kV				DCG 9 20 (6508)		
	27 kV				DCG 12/30 (5870) [1])		

[1]) Grid controlled

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} max. (V)	W_a max. (W)	Full ratings: Max. freq. (Mc/s)	Full ratings: W_o (W)	Full ratings: η (%)	Operation
MAW 12/15	21.5	79	12 000	—	15 000	— —	1 950 42 000	16 66	A mod. B mod. [1]
PAL 12/15	22	80	12 000	2 000	8 000	20 20 20 20	13 000 4 000 2 900 7 500	62 33 37 70	C telegr. B teleph. C g_2g_3 mod. C ag_2 mod.
PAW 12/15	22	80	12 000	2 000	12 000	20 20 20 20	15 900 3 500 2 900 7 500	61 33 37 70	C telegr. B teleph. C g_2g_3 mod. C ag_2 mod.
PB 2/200	12	..3.35	2 000	400	110	20 20 20 20 20 —	270 45 147 124 43 400	71 29 72 69 32 70	C telegr. B teleph. C ag_2 mod. C an. mod. C g_3 mod. B mod. [1]
PB 2/500	12	7.3	2 500	500	250	10 20 10 20 —	600 90 325 100 1 000	70 26 69 28 70	C telegr. B teleph. C ag_2 mod. C g_3 mod. B mod. [1]
PB 3/800	12	8.5	3 000	600	450	10 10 10 10 —	1 200 190 580 200 1 600	72 30 71 35 69	C telegr. [2] B teleph. C ag_2 mod. C g_3 mod. B mod. [1]
PE 04/10E	12	0.65	500	300	10	20 20 20 20	15 4 10 2	60 31 62 33	C telegr. B teleph. C ag_2 mod. C g_3 mod.
PE 05/25	12.6	0.7	500	300	12	100 100 100 55/165	33 6 20 9	73 33 71 43	C telegr. B teleph. C ag_2 mod. C freq. mult.

[1]) Two tubes [2]) $V_{g2} = V_{g3}$.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Typenumber	Description	max. diam. (mm)	max. length (mm)
—	2700	22	—	K 707	Water jacket	104	811
—	—	—	—	40614	Grid bracket		
				40632 (2×)	Protective cap for grid seal		
				62 960 53	Rubber washer		
				62 961 23 (2×)	Rubber washer		
50	—	—	—	K 500	Housing	234	525
50	—	—		40602	Supporting ring		
50	—	—		40632 (6×)	Protective cap for grid and filament seals		
50	—	—					
50	—	—	—	K 710	Water jacket	140	541
50	—	—		K 712	Filter		
50	—	—		40607	Key		
50	—	—		40632 (6×)	Protective cap for grid and filament seals		
				Z4 287 46	Rubber washer		
				62 960 81	Rubber washer		
60	152	58	Spec. 7p. 40207	40600 (2×)	Clip	53	167
60	35	25					
60	77	51					
60	75	50					
60	32	24					
—	—	—					
60	312	55	Special 40200	40600 (2×)	Clip	82	276
60	50	22					
60	175	51					
60	45	22					
60	488	55	Special 40201	40626 (2×)	Clip	106	293
60	67	21					
—	—	—					
—	—	—					
—	—	—					
60	10	50	Medium 7p. 40220	28 906 022	Cap	51	150
60	2	17					
60	6.3	49					
60	1.8	20					
167	15	55	Spec. 8p. 40210/02	—		36.2	104.5
—	—	—					
—	—	—					

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} max. (V)	W_a max. (W)	Full ratings: Max. freq. (Mc/s)	Full ratings: W_o (W)	Full ratings: η (%)	Operation
PE 06/40 E	12.6	0.65	600	300	25	20	45	69	C telegr.
						20	11	31	B teleph.
PE 06/40 N	6.3	1.3				20	40	70	C ag_2 mod.
						2/4	27	52	C freq. mult.
PE 06/40 P	6.3	1.3				—	100	71	B mod. [1]
PE 1/100	12.6	1.35	1 000	300	45	60	132	74	C telegr.
						60	23	34	B teleph.
						60	75	78	C ag_2 mod.
						60	27	37	C g_3 mod.
						—	194	72	B mod. [1][2]
QB 2/250	10	5	2250	800	100	30	275	76	C telegr.
						30	50	33	B teleph.
						30	180	70	C ag_2 mod.
						—	515	73	B mod. [1]
QB 3/300	5	6.5	3000	600	125	120	375	75	C telegr.
						120	58	32	B teleph.
						120	300	79	C ag_2 mod.
						—	345	64	B mod. [1]
QB 3.5/750	5	14.1	4000	600 1000 [5]	250	75	1 000	80	C telegr.
						75	126	33	B teleph.
						75	510	75	C ag_2 mod.
						—	635	68	B mod. [1][2]
QB 5/1750	10	9.9	5000	1000	500	60	2 000	80	C telegr.
						60	250	33	B teleph.
						60	1 270	79	C ag_2 mod.
						—	2 000	66	B mod. [1]
QBL 5/3500 **QBW 5/3500**	6.3	32.5	5000	800	2500	75	4100	74	C telegr.
						75	2700	75	C ag_2 mod.
QE 04/10	6.3	0.6	300	250	7.5	60	8	62	C telegr.
						75/150	2.3	25	C freq. mult.
						50/150	1.5	19	C freq. mult.
						60	5.8	60	C ag_2 mod.
QE 06/50	6.3	0.9	600	300	25	60	40	67	C telegr.
						60	12.5	33	B teleph.
						60	27.5	70	C ag_2 mod.
						—	80	67	B mod. [1]
QEL 1/150	6	2.6	1250	300	150	165	195	78	C telegr.
						—	425	72	B mod.
						165	140	70	C ag_2 mod.
QQC 04/15	6.3	0.68	600	250	2×6	186	33.6	70	C telegr. [3]
					2×8 [3]	186	17	77	C ag_2 mod. [3]
						93/186	8	50	C freq.mult. [3][4]
						62/186	10	38	C freq. mult. [3]
						—	16	63	B mod.
QQE 03/12	6.3	0.82	300	200	2×5	200	18.5	62	C telegr. [3]
	12.6	0.41			2×7 [3]	66.6/200	7.8	40	C freq. mult. [3]
						200	9.8	57	C ag_2 mod. [3]
QQE 03/20	6.3	1.3	600	250	2×10	200	48	80	C telegr.
	12.6	0.65				66.6/200	10	37	C freq. mult.
						200	31	77	C ag_2 mod.
QQE 04/20	6.3	1.6	600	250	2×7.5	200	26	72	C telegr.
	12.6	0.8				200	17	76	C ag_2 mod.
QQE 06/40	6.3	1.8	750	250	2×20	200	90	75	C telegr.
	12.6	0.9				200	50	73	C ag_2 mod.
						50/150	20	33	C freq. mult.
						—	86	71	B mod.

[1]) Two tubes. [2]) $I_{g1} = 0$. [3]) Intermittent operation. [4]) Per system. [5]) In water jacket.
[6]) A.F operation as cathode follower. Bottompinsea.temp. max. 120° C.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Typenumber	Description	max. diam. (mm)	max. length (mm)
60	36	62	Medium 7p. 40220	28 906 022	Cap	51	146
60	6.5	20	Medium 5p. 40219	28 906 022	Cap	51	146
60	20	55					
—	—	—	P 5900/02	28 906 022	Cap	51	134
—	—	—					
—	—	—					
—	—	—					
—	—	—	Septar 40202	—		49	110
—	—	—					
—	—	—					
120	126	70					
120	34	30	Giant 7p.	40619	Cap	65	190
120	80	67					
—	—	—					
200	225	65					
—	—	—	Giant 5p. 40211/01	40624	Clip	62	130
—	—	—					
—	—	—					
120	500	67					
—	—	—	Giant 5p. 40211/01	40624	Clip	87	151
—	—	—					
—	—	—					
120	800	60	Super Giant 40216	40626	Clip	118	213
—	—	—					
—	—	—					
				40622	Grid connector		
			—	40634 (4×)	Filament clip	92	196
220	2600	60		40635	Insulating collar		
				K 713	Water jacket		
				40622	Grid connector		
			—	40631	Key	70	246 [5])
				40634 (4×)	Filament clip		
175	5.4	42					
—	—	—	Loctal 9p. 40212	—		38	78
—	—	—					
—	—	—					
125	20	60					
125	8	30	Medium 5p. 40219	28 906 022	Cap	51	146
125	14	65					
—	—	—					
						42	63
300	8	34					
—	—	—					
—	—	—	Loctal 8p. 40213	—		32	100
—	—	—					
—	—	—					
—	—	—	Noval 5908/36	49 623 67			
				49 623 79 (2×)	Fixing arrangement	22	78
				08 534 03 (2×)			
600	20	50					
133.3/400	8	30	Septar 40202	40623	Clip	47	79
400	13	54					
300	22	61	Septar 40202	40615 (2×)	Clip	51	84
—	—	—					
500	60	60					
—	—	—	Septar 40402	40623 (2×)	Clip	49	110
75/225	12	23					
—	—	—					

Type	V_f (V)	I_f (A)	V_a max. (V)	W_a max. (W)	Full ratings			Operation
					Max. freq. (Mc/s)	W_o (W)	η (%)	
TA 4/800	23	14.7	4 000	500	2	1 530	76	C telegr.
					2	260	34	B teleph.
					2	710	76	C an. mod.
					50	510	72	C osc. [2]
TA 18/100	33	207	20 000	70 000	2	130 000	72	C telegr.
					2	31 000	36	B teleph.
					2	38 000	70	C an. mod.
TA 20/250	35	420	20 000	130 000	2	250 000	76	C telegr.
					2	60 000	32	B teleph.
					2	65 000	64	C an. mod.
TAL 12/10	22	2×39	12 000	4 000	5	10 500	72	C telegr.
					5	2 000	33	B teleph.
					5	7 700	77	C an. mod.
					—	17 000	75	B mod. [1]
TAL 12/20	21.5	78	12 000	18 000	28	22 000	68	C telegr.
					28	5 000	27	B teleph.
					28	9 500	68	C an. mod.
					—	42 000	72	B mod. [1]
TAL 12/35	28.3	3×48.5	15 000	18 000	—	48 500	77	C telegr.
					20	9 000	33	B teleph.
					20	27 000	77	C an. mod.
					20	80 000	74	B mod. [1]
TAW 12/10	22	2×39	12 000	7 500	5	15 000	73	C telegr.
					5	3 700	33	B teleph.
					5	7 700	77	C an. mod.
					—	30 000	73	B mod. [1]
TAW 12/20	21.5	78	12 000	18 000	28	22 000	68	C telegr.
					28	5 000	27	B teleph.
					28	9 500	68	C an. mod.
					—	42 000	72	B mod. [1]
TAW 12/35 G	28.3	3×48.5	15 000	20 000	20	48 500	77	C telegr.
					20	9 000	33	B teleph.
					20	27 000	77	C an. mod.
					—	107 000	74	B mod. [1]
TB 1/60 A	7.5	3.25	1 250	50	60	70	58	C telegr.
					60	20	28	B teleph.
TB 1/60 G					60	58	64	C an. mod.
					—	110	69	B mod. [1]

[1]) Two tubes. [2]) Diathermy operation. [3]) In housing or jacket.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Typenumber	Description	max. diam. (mm)	max. length (mm)
—	—	—	—	—		118	306
—	—	—					
—	—	—					
—	—	—					
—	—	—	—	K 708	Water jacket	330	1333
—	—	—		K 709	Water jacket for grid connection (freq. > 3Mc/s)		
—	—	—		40610 (3×)	Protective cap for grid seal		
20	125 000	65	—			330	1393
20	40 000	30		62 960 76	Rubber washer		
20	56 000	66		62 961 25 (2×)	Rubber washer		
20	10 500	72	—	K 501 or 40629	Foot Insulating collar	194	471
20	2 000	33		40603	Supporting ring		
20	6 000	75		40604 (2×)	Filament bracket		
—	—	—		40632 (2×)	Protective cap for grid seal		
—	—	—	—	K 503/01 or K 504/01	Housing with canalized outlet Housing with free outlet	226 226	730 811[3]
—	—	—		40614	Grid bracket		
—	—	—		40632 (2×)	Protective cap for grid and filament seals		
37.5	26 000	62	—	K 505	Housing	226	618 720[3]
—	—	—		40686	Filament bracket		
27	26 000	74		40632 (6×)	Protective cap for grid and filament seals		
—	—	—					
75	3 500	51	—	K 700	Water jacket	194	495[3]
20	3 300	33		40604	Filament bracket		
20	6 000	75		40632	Protective cap for grid seal		
—	—	—		R1 366 43	Rubber washer		
				62 960 81 (2×)	Rubber washer		
—	—	—	—	K 707	Water jacket	226 226	730 811[3]
—	—	—		40614	Grid bracket		
—	—	—		40632 (2×)	Protective cap for grid seal		
—	—	—		R1 367 50	Contact washer		
				62 960 53	Rubber washer		
				62 960 81 (2×)	Rubber washer		
				62 961 23	Rubber washer		
37.5	26 000	62	—	K 715	Water jacket ("grip-o-matic")	226	650 720[3]
—	—	—		40606	Filament bracket		
27	26 000	74		40632 (6×)	Protective cap for grid and filament seals		
—	—	—		89 039 63	Rubber washer		
300	18	27	A 40465	—		72	174
—	—	—					
—	—	—	Medium 4p. 40218/03	—			
—	—	—					

Type	V_f (V)	I_f (A)	V_a max. (V)	W_a max. (W)	Full ratings			Operation
					Max. freq. (Mc/s)	W_o (W)	η (%)	
TB 2/200	12	2.7	2 000	130	46	275	72	C telegr.
					46	60	31	B teleph.
					46	160	74	C an. mod.
					—	540	75	B mod. [1]
TB 2/500	12	7.3	2 000	300	20	635	68	C telegr.
					20	124	29	B teleph.
					20	430	71	C an. mod.
					—	900	71	B mod. [1]
TB 2.5/300	6.3	5.4	2 500	135	150	390	76	C telegr.
					150	65	34	B teleph.
					150	204	80	C an. mod.
					—	700	78	B mod. [1]
TB 3/750	5	14.1	3 000	250	100	840	77	C telegr.
					100	140	36	B teleph.
					100	482	77	C an. mod.
					—	1 280	75	B mod. [1]
TB 3/1000	12	8.5	3 000	500	20	1 200	72	C telegr.
					20	200	30	B teleph.
					20	720	72	C an. mod.
					—	1 750	68	B mod. [1]
TB 3/2000	12	17	3 500	1 100	2	2 900	72	C telegr.
					2	600	35	B teleph.
					2	1 625	75	C an. mod.
					—	3 300	66	B mod. [1]
TB 4/1250	10	9.9	4 000	450	100	1 690	79	C telegr.
					100	1 053	78	C an. mod.
					—	2 290	77	B mod. [1]
TBL 6/6000	12.6	33	6 000	6 000	75	6 900	76	C telegr.
					75	1 900	32	B teleph.
					75	4 700	78	C an. mod.
					—	13 300	74	B mod. [1]
TBL 12/100	17.5	196	15 000	45 000	15	108 000	75	C telegr.
					15	80 000	76	C an. mod.
					—	202 000	70	B mod. [1]
TBW 6/6000	12.6	33	6 000	6 000	75	6 900	76	C telegr.
					75	1 900	32	B teleph.
					75	4 700	78	C an. mod.
					—	13 300	74	B mod. [1]
TBW 12/25	8	100	13 000	25 000	30	28 000	73	Industr. osc.
TBW 12/100	17.5	196	15 000	50 000 [2]	15	108 000	75	C telegr.
					15	51 500	35	B teleph.
					15	80 000	76	C an. mod.
					—	202 000	70	B mod. [1]

[1]) Two tubes. [2]) For B teleph. 100 kW. [3]) In housing or jacket.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Typenumber	Description	max. diam. (mm)	max. length (mm)
100 60 60 —	140 47 85 —	57 30 59 —	Spec. 2p. 40206	40600 (2×) 40608	Clip Key	63	174
150 — — —	250 — — —	46 — — —	Spec. 2p. 40204	40608 40626	Key Clip	86	243
200 — — —	200 — — —	57 — — —	Giant 5p. 40211/01	40624	Clip	62	132
143 — — —	425 — — —	61 — — —	Giant 5p. 40211/01	40624	Clip	87	151
75 — 60 —	450 — 562 —	37 — 72 —	Spec. 2p. 40204	40608 40626 (2×)	Key Clip	106	262
20 20 20 —	2 600 520 1 300 —	70 32 74 —	Spec. 2p. 40205	40608 40626 (2×)	Key Clip	154	334
120 — —	1 125 — —	71 — —	Super Giant 40216	40626	Clip	118	213
220 — — —	2 050 — — —	50 — — —	—	40622 40630 40634 (3×)	Grid connector Insulating collar Clip	122.5	200
30 30 —	50 000 30 000 —	75 71 —	—	K 506 40628 (6×)	Housing Filament clip	286 510 [3]	635 1130 [3]
220 — —	2 050 — —	50 — —	—	K 713 40622 40631 40634 (3×) R1 15 811	Water jacket Grid connector Key Filament clip Rubber washer	70	192 260 [5]
				K 717 40644 (2×) 40643	Cooling jacket Grid ring filament connector	160 [3]	425 [3]
30 — 30 —	50 000 — 30 000 —	75 — 71 —	—	K 714 40628 (6×) 89 039 63	Water jacket Filament clip Rubber washer	240	620 710 [3]

Type	V_f (V)	I_f (A)	$V_{a\ invp}$ (kV)	I_o max. (A)	Circuit		Number of tubes
					Number of secondary phases	Rectification	
DCG 1/250	4	2.5	3	0.25	2 3 3	half wave half wave full wave	2 3 6
DCG 1.5/250	4	2.5	4.25	0.25	2 3 3	half wave half wave full wave	2 3 6
DCG 4/1000 ED **DCG 4/1000 G**	2.5	4.8	10	0.25	2 3 3	half wave half wave full wave	2 3 6
DCG 4/5000	4	7	13	1.25	2 3 3	half wave half wave full wave	2 3 6
DCG 5/30	5	30	13	6	2 3 3	half wave half wave full wave	2 3 6
DCG 5/5000 EG **DCG 5/5000 GB**	5	7	12	1.5	2 3 3	half wave half wave full wave	2 3 6
DCG 6/6000	5	6.5	13	1	2 3 3	half wave half wave full wave	2 3 6
DCG 7/100	5	20	15	15	2 3 3	half wave half wave full wave	2 3 6
DCG 9/20	5	12.5	21	2.5	2 3 3	half wave half wave full wave	2 3 6
DCG 12/30	5	13.5	27	2.5	2 3 3	half wave half wave full wave	2 3 6
DCX 4/1000	2.5	5	10	0.25	2 3 3	half wave half wave full wave	2 3 6
DCX 4/5000	5	7.1	10	1.25	2 3 3	half wave half wave full wave	2 3 6

TRANSMITTING PURPOSES

V_{tr} (kV)	V_a (kV)	I_a (A)	W_a tot. (kW)	Base Socket	Accessories		Dimensions	
					Typenumber	Description	max. diam. (mm)	max. length (mm)
1.1 1.2 2.1	0.96 1.4 2.8	0.5 0.75 0.75	0.48 1.1 2.2	A 40465	—		48	115
1.5 1.7 3.0	1.3 2.0 4.1	0.5 0.75 0.75	0.7 1.5 3.0		—		47	138
3.5 4.1	3.2 4.8	0.5 0.75	1.6 3.6	Edison E3 000 22	—		49	147
7.1	9.6	0.75	7.2	Medium 4p. 40218/03	40619	Cap	49	157
4.6 5.3 9.2	4.1 6.2 12.4	2.5 3.75 3.75	10.2 23 4 46.8	Goliath 65909BG/01	—		53	225
4.6 5.3 9.2	4.1 6.2 12.4	12 18 18	50 112 224	— —	40612 08 281 72	Anode cap Plug pin for grid connection	225	581
4.2 4.9	3.8 5.7	3 4.5	11.4 25.6	Goliath 65909BG/01	40619	Cap	52	235
8.4	11.4	4.5	51.3	Jumbo 4p. 40408	40619	Cap	52	213
4.6 5.3 9.2	4.1 6.2 12.4	2 3 3	8.3 18.6 37.2	Jumbo 4p. 40408	40616	Anode cap	120	232
5.3 6.1 10.6	4.8 7.2 14.4	20 30 30	96 216 432	Spec. 4p. 40409	40620	Cap	175	460
7.4 8.6 14.8	6.7 10.0 20.0	5 7.5 7.5	34 75 150	Spec. 3p. 40209	40616 40620	Anode cap Cap	120	381
9.5 11 19.1	8.6 12.9 25.8	5 7.5 7.5	43 97 194	Spec. 3p. 40209	40616 40620	Anode cap Cap	120	384
3.5 4.1 7.1	3.2 4.8 9.6	0.5 0.75 0.75	1.6 3.6 7.2	Medium 4p. 40218/03	40619	Cap	53	156
3.5 4.1 7.1	3.2 4.8 9.6	2.5 3.75 3.75	8 18 36	Jumbo 4p. 40408	40619	Cap	59	216

TRANSMITTING

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} max. (V)	W_a max. (W)	Full ratings: Max. freq. (Mc/s)	Full ratings: W_o (W)	Full ratings: η (%)	Operation
QE 05/40	6.3	1.25	600	250	20 25[3])	60 60 —	69 52 90	76 76 72	C telegr.[2]) C ag_2 mod.[2]) B mod.[1])
TBL 2/300	3.4	19.5	2500	—	300	200	440	72	C telegr.
TBL 12/25	8	100	13000	—	15000	30	28000	73	Industr. osc.

RECTIFYING TUBES FOR

Type	V_f (V)	I_f (A)	V_a invp (kV)	I_o max. (A)	Circuit: Number of secondary phases	Circuit: Rectification	Number of tubes
DCG 6/18	5	11.5	15	3	2 3 3	half wave half wave full wave	2 3 6
DCG 7/100B	5	20	15	15	2 3 3	half wave half wave full wave	2 3 6

[1]) Two tubes. [2]) Inter mittent operation.

TUBES

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Typenumber	Description	max. diam. (mm)	max. length (mm)
175	35	58	Octal 8 p.			44	97
890	180	37	Coaxial	40644 40643 (2×)	Grid ring Filament connector	41.3 255	69 350

TRANSMITTING PURPOSES

V_{tr} (kV)	V_o (kV)	I_o (A)	W_o tot. (kW)	Base Socket	Accessories		Dimensions	
					Typenumber	Description	max. diam. (mm)	max. length (mm)
5.3 6.1 10.6	4.8 7.2 14.4	6 9 9	28.8 64.8 129.6	super jumbo 4 p. 40403	40619	Medium cap. M6 screw	75	325
5.25 6.1 10.6	4.75 7.15 14.3	20 30 30	95 214 430	spec. 4 p.	40620	20 mm cap M8 screw	117	387

INDUSTRIAL TUBES

PREFERRED TYPES

IGNITRONS

	Single phase welding service		
Type	PL 5551	PL 5552	PL 5555
Max. Demand Power	600 kVA	1200 kVA	2400 kVA
Max. RMS Line Voltage	600 V	600 V	2400 V

Three phase welding service				
Type	PL 5551		PL 5822	
Max. Peak Anode Volt.	1200 V	1500 V	1200 V	1500 V
Max. Peak Anode Current	600 A	480 A	1500 A	1200 A

Rectifier service		
Type	PL 5555	
Peak Anode Voltage	900 V	2100 V
Peak Anode Current	1800 A	1200 A
Average Anode Current	200 A	150 A

INDUSTRIAL RECTIFYING TUBES

Max. D.C. output current per tube		Double-anode types								
		1.3 A	2 A	3 A	4 A	6 A	15 A	25 A	50 A	60 A
MAX. A.C. ANODE VOLTAGE	28 V	**328**								
	45 V			**1119**		**367**				
	55 V									**1069K**[1])
	60 V	**1610**	**1110**			**1048**	**1039**	**1049**		
	115 V						**1838**	**1849**	**1859**	
	150 V	**1725A**		**1710**						
	275 V				**1173**[2])	**1174**[2])	**1176**[2])	**1177**[2])		

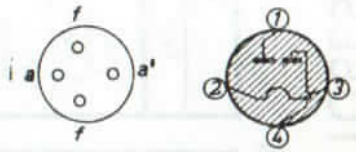
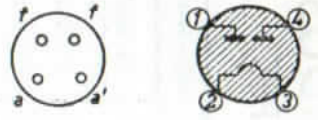
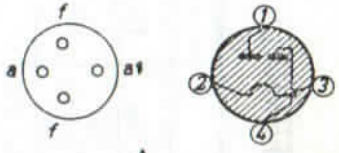
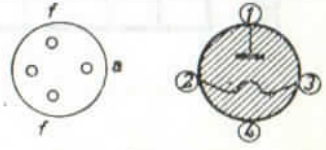
[1]) To be used only for D.C. arc welding apparatus. [2]) Single-anode types.

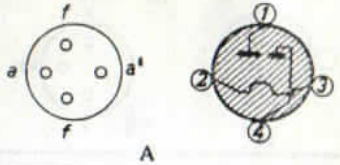
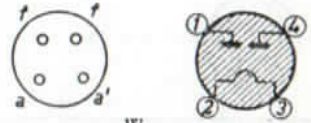
THYRATRONS

Max. D.C. output current		Mercury and rare gas								Hydrogen		
		0.1 A	0.5 A	2.5 A	3.2 A	6.4 A	12.5 A	15 A	25 A	35 A[1])	90 A[1])	325 A[1])
MAX. FORWARD PEAK ANODE VOLTAGE	240 V							**PL 150**				
	650 V	**PL21**	**PL 1607**									
	1000 V			**PL57**								
	1500 V				**PL 5544**	**PL 5545**	**PL 255**		**PL 260**			
	2500 V		**PL 17**			**PL 105**						
	3000 V									**3C45**		
	8000 V										**4C35**	
	16000 V											**5C22**

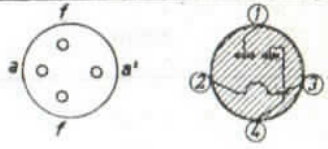
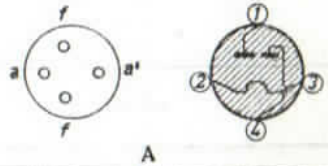
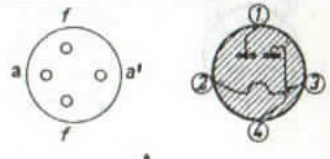
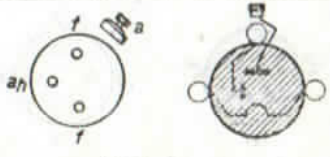
[1]) Max. peak anode current

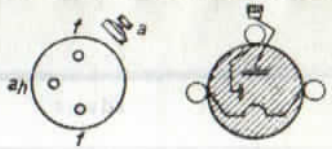
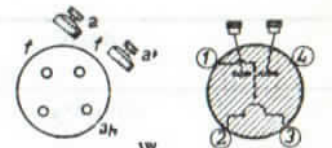
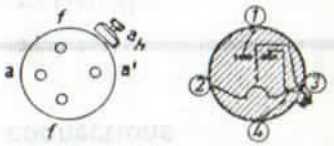
INDUSTRIAL RECTIFYING TUBES

Type	m	Filament data		Voltages		Currents		Typical characteristics			Diimensions		Base connections
		V_f (V)	I_f (A)	V_{tr} max. (V)	V_{invp} max. (V)	I_a max. (A)	I_{ap} max. (A)	R_t min. (Ω)	V_{ign} max. (V)	V_{arc} (V)	Diam. max. (mm)	Height max. (mm)	
328	2	1.9	3.0	28	90	0.65	4	3	16	7	33	112	 A
354	1	1.9	5.5	20 130	65 400	2 0.25	10 1.25	4 50	16	8	62	125	Edison
367	2	1.9	8,0	45	140	3	18	1	16	9	81	170	 W
451	2	1.9	2.8	16	50	0.65	4	3	11	7	33	112	 A
1002	1	1.9	2.8	160	500	0.1	0.6	15	16	7	39	121	 A

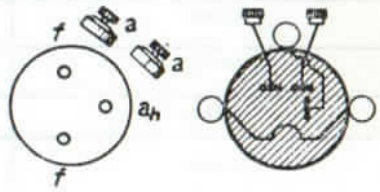
1010	2	1.9	3.5	60	185	0.65	4	10	16	9	37	120	 A
1037	2	1.9	11	60	185	3	18	1.75	16	9	85	240	Goliath
1039	2	1.9	20	60	185	7.5	45	0.75	16	9	94	264	Goliath
1048	2	1.9	7	60	185	3	18	1.75	16	9	81	170	 W
1049	2	1.9	28.5	60	185	12.5	75	0.3	16	9	101	280	straps
1053	2	1.9	45	48	150	12.5	75	0.25	16	9	101	287	straps
1054	2	1.9	68	48	150	20	120	0.18	16	9	111	350	straps
1059	2	1.9	40	60	185	20	120	0.2	11	9	111	350	straps
1063A	3	1.9	11	250	770	2	12	—	—	15	175	255	Edison
1069K [1]	2	3.25	70	55	170	30 [2]	200	0.12	16	10	114	365	straps

[1]) For welding equipment. [2]) With fan cooling.

Type	m	Filament data		Voltages		Currents		Typical characteristics			Dimensions		Base connections
		V_f (V)	I_f (A)	V_{tr} max. (V)	V_{invp} max. (V)	I_a max. (A)	I_{ap} max. (A)	R_t min. (Ω)	V_{ign} max. (V)	V_{arc} (V)	Diam. max. (mm)	Height max. (mm)	
1089	2	1.9	11	60	185	5	30	1.2	11	9	94	259	Goliath
1110	2	1.9	3.5	60	185	0.85	5	4	16	9	39	131	 A
1119	2	1.9	5.8	45	140	1.5	9	1.8	16	9	71	124	 A
1129	2	1.9	5.5	60	185	1.5	9	2.5	16	9	71	140	 A
1138	1	2.5	27	85	275	15	85	0.3	16	10	115	269	Goliath
1163	1	2.25	17	130	375	6	36	0.5	16	9	83	178	Goliath
1164	1	2.5	25	80	225	15	90	0.3	16	9	98	220	Goliath
1173	1	1.9	13	275 220	850 685	4	20 24	0.75	22[1])	12	62	189	 Spec. 3p.

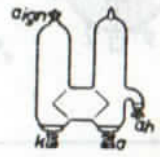
1174	1	1.9	12	275 220	850 685	6	30 36	0.5	22 [1])	12	77	218	 Spec. 3p.
1176	1	1.9	28	275 220	850 685	15	75 90	0.2	22 [1])	12	92	301	straps
1177	1	1.9	60	275 220	850 685	25	135 150	0.1	28 [1])	12	128	362	straps
1533	3	1.9	23	275	850	5	45	0.6	45 [2])	15	192	270	straps
1534	2	1.9	23	275	850	7.5	45	—	45 [2])	15	197	270	straps
1543	3	1.9	36	275	850	8.3	70	0.4	50 [2])	15	207	265	cables
1544	2	1.9	36	275	850	12,5	70	—	50 [2])	15	242	278	cables
1553	3	1.9	70	275	850	13,3	135	0.25	50 [2])	15	297	355	cables
1554	2	1.9	70	275	850	20	135	—	50 [2])	15	317	355	cables
1564	2	1.9	70	275	850	30	135	—	50 [2])	15	372	390	cables
1710	2	1.9	7	150	470	1.5	9	2.5	22 [3])	10	69.5	205	 W
1725A	2	1.9	3.5	150	470	0.65	4	5	22 [3])	10	71	135	 A

[1]) With auxiliary ignition unit type 1289 (40 V, 10 mA). [2]) With auxiliary ignition unit type E3 108 03 (100 V, 25 mA).
[3]) Screen connected with filament via a resistor of 10000 Ω, 0.5 W.

Type	m	Filament data		Voltages		Currents		Typical characteristics			Dimensions		Base connections
		V_f (V)	I_f (A)	V_{tr} max. (V)	V_{invp} max. (V)	I_a max. (A)	I_{ap} max. (A)	R_t min. (Ω)	V_{ign} max. (V)	V_{arc} (V)	Diam. max. (mm)	Height max. (mm)	
1729	2	1.9	8	95	300	3	18	0.4	30 [1])	10	81	240	Goliath
1738	2	1.9	18	95	300	7.5	45	0.2	20	9	94	284	Goliath
1749A	2	1.9	25	95	300	12.5	75	0.1	22	10	101	290	straps
1759	2	1.9	60	95	300	25	150	0.05	22	10	141	435	straps
1768	2	1.9	11	285	880	3	10	—	—	15	176	240	straps
1788	2	1.9	11	95	300	5	30	0.3	22 [1])	9	94	284	Goliath
1838	2	1.9	21.5	115	360	7.5	45	0.25	22 [2])	10	97	262	 Spec. 3p.
1849	2	1.9	29	115	360	12.5	75	0.2	22 [2])	10	105	294	straps
1859	2	1.9	60	115	360	25	150	0.1	28	12	143	436	straps

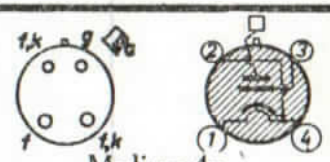
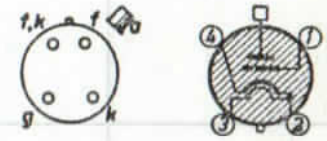
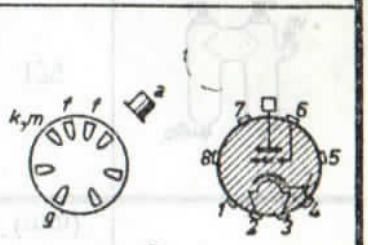
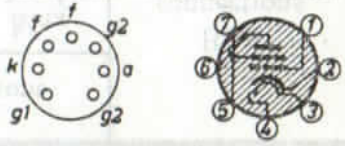
[1]) Screen connected with filament via resistor of 10000 Ω, 0,5 W.
[2]) With auxiliary ignition unit type 1289 (40 V, 10 mA).

SENDITRON

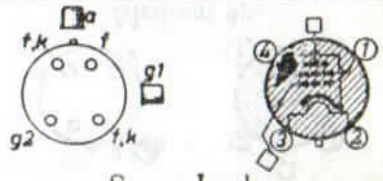
Type	Filament data			Voltages	Currents	Typical characteristics	Dimensions		Base connections
	V_f (V)	I_f (A)	T_h (sec)	max. (V)	max. (A)		Max. diam. (mm)	Max. height (mm)	
PL 5 Triode with capacitive ignition	—	—	—	V_{ainvp} = 1500 V_{arms} = 500 = min. 20	I_a = 3.5 [1] I_a = 1 I_{ap} = 3000 [2]	V_{arc} = 20 V T_{av} = max. 1 sec V_{ign} = max. 25 V freq. = max. 300 c/s V_{ignp} = max. 8000 V [3] t_{Hg} = +10-+40 °C	135	179	

[1]) With fan cooling. [2]) Freq. ≧ 25 c/s. [3]) Ignitor voltage.

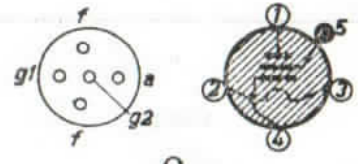
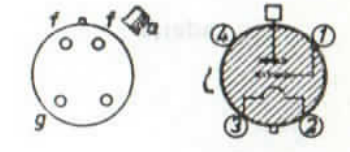
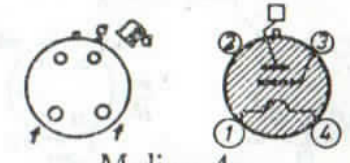
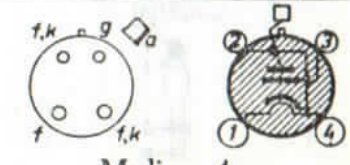
THYRATRONS

Type	Filament data V_f (V)	I_f (A)	T_h (sec)	Voltages max. (V)	Currents max. (A)	Typical characteristics	Dimensions Max. diam. (mm)	Max. height (mm)	Base connections
3C 45 Triode hydrogen filled	6.3	2.25	120	V_{ap} = 3000 V_{ainvp} = 3000 V_{gp} = min. 175 V_{ginvp} = 200	I_a = 0.045 I_{ap} = 35	T_{imp} = max. 6 µsec [3] $V_{ap} \times I_{ap} \times$ freq. $< 0.3 \times 10^9$ [4]	40	127	 Medium 4p.
4C 35 Triode hydrogen filled	6.3	6.1	180	V_{ap} = 8000 V_{ainvp} = 8000 V_{gp} = min. 175 V_{ginvp} = 200	I_a = 0.1 I_{ap} = 90 [1]	T_{imp} = max. 6 µsec [3] $V_{ap} \times I_{ap} \times$ freq. $< 2 \times 10^9$ [4]	65	175	 Super Jumbo
5C 22 Triode hydrogen filled	6.3	10.6	300	V_{ap} = 16000 V_{ainvp} = 16000 V_{gp} = min. 200 V_{ginvp} = 200	I_a = 0.2 I_{ap} = 325 [1]	T_{imp} = max. 6 µsec [3] $V_{ap} \times I_{ap} \times$ freq. $< 3.2 \times 10^9$ [4]	65	222	
4690 Triode inert-gas filled	4	1.3	—	V_{ap} = 500	I_a = 0.01 I_{ap} = 0.75 [2]	V_{arc} = 50 V freq. = max. 150 kc/s	43	98	 P
EC 50 Triode inert-gas filled	6.3	1.3	10	V_{ap} = 1000 V_{ainvp} = 1000	I_a = 0.01 I_{ap} = 0.75 [2] I_{ap} = 0.10 I_g = 0.0002 I_{gp} = 0.0014	V_{arc} = 33 V freq. = max. 150 kc/s T_{dion} = 1 µsec	43	108	
PL 2D 21 Tetrode inert-gas filled	6.3	0.6	10	V_{ap} = 650 V_{ainvp} = 1300 V_{g2p} = −100 $V_{g2(arc)}$ = −10 V_{g1p} = −100 $V_{g1(arc)}$ = −10	I_k = 0.1 I_{kp} = 0.5 [2] I_{g2} = 0.01 I_{g1} = 0.01	V_{arc} = 8 V T_{ion} = 0.5 µsec T_{dion} = 30-75 µsec T_{av} = max. 30 sec t_{amb} = −75-+90 °C t_{rec} = +20 °C	19	54	 Miniature

[1]) With fan cooling. [2]) Freq. ≦ 20 c/s. [3]) Measured at half amplitude. [4]) Freq. = pulse repetition frequency.

PL 10 Triode for pulse and relay circuits	1.85	3.4	—	V_{ap} = 400 V_{ainvp} = 400 V_{gp} = +1800 V_{gp} = −1800	I_a = 0.1 I_{ap} = 4 [1]	V_{arc} = 20—35 V T_{av} = max. 10 sec freq. = max. 100 c/s t_{amb} = −75-+90 °C	21.5	108	 Mignon
PL 105 Tetrode mercury-vapour filled	5	10	300	V_{ap} = 2500 V_{ainvp} = 2500 V_{g2} = −500 $V_{g2(arc)}$ = −10 V_{g1} = −1000 $V_{g1(arc)}$ = −10	I_a = 6.4 I_{ap} = 40 [1] I_{ap} = 12.8 I_{g2} = 0.5 I_{g2p} = 2 I_{g1} = 0.25 I_{g1p} = 1 I_{surge} = 400 [2]	V_{arc} = 16 V T_{ion} = 10 µsec T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = +40-+80 °C t_{rec} = +40 °C	123	289	 Super Jumbo
PL 150 Triode mercury-vapour filled	1.9	28	120	V_{ap} = 240 V_{ainvp} = 500 V_g = −150 [3] V_g = −50 [4]	I_a = 15 I_{ap} = 90 [1] I_g = 0.25 I_{gp} = 1	V_{arc} = 12 V T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = +40-+80 °C t_{rec} = +40 °C	92	293	straps
PL 255 Triode mercury vapour filled	5	14	300	V_{ap} = 1500 V_{ainvp} = 2500 V_{g1} = −300 $V_{g1(arc)}$ = −10	I_a = 12.5 I_{ap} = 80 I_g = 0.25 I_{gp} = 1	V_{arc} = 10 V T_{ion} = 10 µsec T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = +40-+80 °C t_{rec} = +60 °C	102	334	straps
PL 260 Tetrode mercury vapour filled	5	25	600	V_{ap} = 1500 V_{ainvp} = 2500 V_{g1} = −300 $V_{g1(arc)}$ = −10	I_{ap} = 25 I_{ap} = 160 I_g = 0.25 I_{gp} = 1	V_{arc} = 10 V T_{ion} = 10 µsec T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = −40-+80 °C t_{rec} = +60 °C	127	405	straps

[1]) Freq. ≧ 25 c/s.
[2]) Max. duration 0.1 sec.
[3]) At positive anode voltage.
[4]) At negative anode voltage.

Type	Filament data			Voltages max.	Currents max.	Typical characteristics	Dimensions		Base connections
	V_f (V)	I_f (A)	T_h (sec)	(V)	(A)		Max. diam. (mm)	Max. height (mm)	
PL 1607 Triode inert-gas filled	2	2.6	60	V_{ap} = 600 V_{ainvp} = 600 V_{g2} = −100 $V_{g2(arc)}$ = −10 V_{g1} = −100 $V_{g1(arc)}$ = −10	I_a = 0.5 I_{ap} = 2 [1] I_{ap} = 1 I_{g2} = 0.05 I_{g2p} = 0.25 I_{g1} = 0.05 I_{g1p} = 0.25	V_{arc} = 15 V T_{dion} = 500 µsec T_{av} = max. 15 sec t_{amb} = −75-+90 °C t_{rec} = +20 °C	48	142	 O
PL 5544 Triode inert-gas filled	2.5	12	60	V_{ap} = 1500 V_{ainvp} = 1500 V_g = −250 $V_{g(arc)}$ = −10	I_a = 3.2 I_{ap} = 40 [1] I_g = 0.2 I_{gp} = 2.5 I_{surge} = 560 [2]	V_{arc} = 16 V T_{ion} = 10 µsec T_{dion} = 40-400 µsec T_{av} = max. 15 sec t_{amb} = −55-+70 °C	67	190	
PL 5545 Triode inert-gas filled	2.5	21	60	V_{ap} = 1500 V_{ainvp} = 1500 V_g = −250 $V_{g(arc)}$ = −10	I_a = 6.4 I_{ap} = 80 [1] I_g = 0.2 I_{gp} = 2.5 I_{surge} = 1120 [2]	V_{arc} = 16 V T_{ion} = 10 µsec T_{dion} = 50—500 µsec T_{av} = max. 15 sec t_{amb} = −55-+70 °C	67	229	Medium 4p.
PL 5557/ PL 17 Triode mercury-vapour filled	2.5	5	5	V_{ap} = 2500 V_{ainvp} = 5000 V_g = −500 $V_{g(arc)}$ = −10	I_a = 0.5 I_{ap} = 2 [1] I_{ap} = 1 I_g = 0.05 I_{gp} = 0.25	V_{arc} = 16 V T_{ion} = 10 µsec T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = +40-+80 °C t_{rec} = +40 °C	62	169	 Medium 4p.
PL 5559/ PL 57 Triode mercury-vapour filled	5	4.5	300	V_{gp} = 1000 V_{ainvp} = 1500 V_g = −500 $V_{g(arc)}$ = −10	I_a = 2.5 I_{ap} = 15 [1] I_{ap} = 5 I_g = 0.25 I_{gp} = 1 I_{surge} = 200 [2]	V_{arc} = 16 V T_{ion} = 10 µsec T_{dion} = 1000 µsec T_{av} = max. 15 sec t_{Hg} = +40-+80 °C t_{rec} = +45 °C	62	185	 Medium 4p.

IGNITRONS

Type	A.C. control (two tubes in inverse parallel connection)							Rectifier (intermittent operation, phase control angle = 0)						
	V_{arms} (V)	Maximum demand (kVA)		I_a (A)	I_a max. (A)	T_{av} max. (sec)	I_{surge} [1]) max. (A)	V_{aP} max. (V)	V_{ainvP} max. (V)	I_a max. (A)	I_{aP} max. (A)	I_{surge} [1]) max. (A)	T_{av} max. (sec)	Freq. (c/s)
PL 5551	220	530 —	— 180	30.2 —	— 56	18	6720	500	500	40	700	8000	6	25-60
	250	600 —	— 200	30.2 —	— 56	18	6720							
	600	600 —	— 200	30.2 —	— 56	7.5	2800							
PL 5552	220	1060 —	— 350	75.6 —	— 140	14	13450	500	500	100	1600	6000	6	25-60
	250	1200 —	— 400	75.6 —	— 140	14	13450							
	600	1200 —	— 400	75.6 —	— 140	5.8	5600							
								Rectifier (continuous operation, phase control angle = 0)						
PL 5555	max. 2400	2400	—	max. 135	—	1.66	6000	900	900	200	1800	12000	—	25-60
		—	1105	—	207			2100	2100	150	1200	9000	—	

[1]) Design values only. Max. duration 0.15 sec.

FREQUENCY CHANGER RESISTANCE WELDING SERVICE

Type	V_{ap} max. (V)	V_{ainv} max. (V)	I_{ap} max. (A)	I_a corresp (A)	I_{surge} [1] max. (A)	T_{av} (sec)	Freq. input (c/s)	Freq. output min. (c/s)
PL 5822	1200	1200	1500	20	18750	6.25	50-60	5
	1500	1500	1200	16	15000	6.25	50-60	5

[1]) Design values only max. duration 0.15 sec.

CATHODE-RAY TUBES

X-RAY TUBES

DIAGNOSTIC RAYPROOF TUBES

Type	Max. peak anode voltage (kV) Circuit [1])						Focus	Max. ratings		Insulation	Cooling	Anode	
	1	2	3	4	5	6	(mm)	Radiography (kW)	Fluoroscopy HU/sec			Type	Heat capacity (HU)
20610 **20611**	100 —	— 110	— 110	— 110	— —	— —	1.7	2	450	air	air	stationary	—
20620 **20621**	100 —	— 110	— 110	— 110	— —	— —	3.1	6	450				
20630 **20631**	100 —	— 110	— 110	— 110	— —	— —	4.1	10	450				
20650/01 **20650/02**	100 —	— 110	— 110	— 110	— —	— —	1.7/3.1	2/6	450				
20651/01 **20651/02**	100 —	— 110	— 110	— 110	— —	— —	1.7/4.1	2/10	450				

[1]) 1 = self-rectified operation.
2 = one- and two-valve circuit (half-wave)
3 = single-phase full-wave circuit
4 = three-phase full-wave circuit
5 = Villard circuit
6 = Greinacher circuit

21825	—50	—	—	—	—	—	0.8	0.3	32				11000
21836	—83	—	—	—	—	—	1.0	0.8	240				25000
21837	—90	—	—	—	—	—	1.5	1.0	240			sta-	25000
21838	—95	—	—	—	—	—	1.5	1.0	240	oil	oil	tion-	25000
21839	—85	—	—	—	—	—	1.5	1.0	225			ary	12000
21840	—100	—	—	—	—	—	2.3	2.6	240				60000
21905							1.5	2					
21906							2.3	4					
21907							3.1	6				sta-	
21908	—110	+110	+110	—	—	—	4.1	10	500	oil	oil	tion-	85000
21910							1.5/3.1	2/6				ary	
21911							1.5/4.1	2/10					
21912							2.3/4.1	4/10					
21920							1.5/3.1	2/6				sta-	
21921	—110	+125	+125	—	—	—	1.5/4.1	2/10	500	oil	oil	tion-	150000
21922							2.3/4.1	4/10				ary	

Type	Max. peak anode voltage (kV)						Focus	Max. ratings		Insulation	Cooling	Anode	
	Circuit							Radiography	Fluoroscopy			Type	Heat capacity
	1	2	3	4	5	6	(mm)	(kW)	HU/sec				(HU)
21933 **21934** **21935** **21936** **21937** **21938**	—100	+100	+100	+100	—	—	1/2 0.3/1 0.3/2 1 2 1.5/1.5	21/42 2.2/21 2.2/42 21 42 32/32	500[1]	oil	oil	rotating	80 000[2]
21940 **21941** **21942**	—110	+110	+110	+110	—	—	1 1.5 0.8/1.8	10 17 10/23	500	oil	oil	rotating	60 000
21943 **21944** **21945** **21952**	—110	+125	+125	+125	—	—	1/2 0.3/1 0.3/2 0.8/1.8	21/42 2/21 2/42 10/23	500[1]	oil	oil	rotating	80 000[2] 60000

[1]) 425 in circuit 1. [2]) 50000 in circuit 1.

OIL-INSULATED SHIELDS

Type	Max. peak operating voltage (kV)	Heat capacity (HU)	Cooling capacity (HU/min)		Angle between cables and central beam	Receptacles [2]
			with air circulator	without air circulator		
22116/13 [1] **22116/23** [1] **22116/63** [1] **22116/73** [1]	100	1 500 000	30 000	25 000	90° 90° 135° 135°	tri-polar both sides bi-polar anode side tri-polar both sides bi-polar anode side
22117/33	100	1 000 000	18 000	30 000	90°	tri-polar both sides
22118/03 **22118/53**	125	1 500 000	30 000	25 000	90° 135°	tri-polar both sides bi-polar anode side
22120/08 **22120/28**	125	1 750 000	39 000	25 000	90° 135°	tri-polar both sides
22156/13 **22156/23**	100	500 000	12 500	25 000	90°	tri-polar both sides bi-polar anode side
22157/03	125	750 000	15 000	30 000	90°	tri-polar both sides
MV 0276/01	140	2 300 000	70 000	70 000	90° or 135°	tri-polar both sides

[1]) Built-in exposure counter optional.
[2]) The cores of the bi- or tri-polar anode cables are shortcircuited in the receptacles.

INSERTTUBES FOR THERAPY

Type	Max.peak anode voltage (kV) Circuit 1	2	3	4	5	6	Focus (mm)	Max. ratings (mA)	Insulation	Cooling	Anode material
23400	—220	—	—	—	—	—	5×5	10	oil	oil	—
23405	—260	—	—	—	—	—	6×6	18			
23604	—	—	—	—	+220	+220	5 Ø	15	air	water	—
23605	—	—	—	—	+220	+220	7 Ø	30			
24008	—	—	—	—	—	+50	—	2	air	air	—
MV 0675	—	+140	+140	—	—	—	4×4	8	oil	oil	—

INSERTTUBES FOR INDUSTRIAL PURPOSES

Macrostructure

25250	—	—	—	—	150	150	8	20	air	water	W
25252	—	—	—	—	150	150	4	12			
25275	—	—	—	—	—	300	8	10			

Diffraction and Spectrography [1])

25293/32								850	air	water	Cu
25294/32								850			W
25295/32								850			Mo
25296/32	50	50	50	—	—	—	1	350			Co
25297/32								350			Fe
25298/32								300			Cr

[1]) All types have 4 windows of Mica Be.

Type	V_f max. (V)	I_f max. (A)	V_{invp} max. (kV)	I_a max. (mA)		Total length max. (mm)	Base	Insulation	Vacuum or gas-filled	Filament type
				intermittent	continuous					
28000	17	8	125	500	200	478	DE	air	vacuum	tungsten
28001	19.5	8.5	125	1 000	200	478	DE	air		
28115	12.5	8	160	300	50	685	DE	air		
28117	12	8	180	300	50	825	DE	air		
28118	12	8	200	300	50	825	DE	air		
28119	12	8	220	300	50	825	DE	air		
28121	12	8	150	300	50	500	DE	oil		
28125	13	8	125	300	50	250	DE	air		
28129	12	12.5	140	700	70	285	E, DE, K	oil		
28130	12	12.5	125	700	70	268	E, DE, K	oil		
28136	6.5	6.0	125	1 400	500	267	D, DE, K	oil	vacuum	thoriated tungsten
28137			150	1 000	400	285	D, DE, K			

MISCELLANEOUS

PREFERRED

VOLTAGE STABILIZING TUBES

	Current	1—10 mA	5—15 mA	5—30 mA	1—40 mA
OPERATING VOLTAGE	85	**85A2**[1])			
	90				**90C1**
	108			**OB2**	
	150		**150B2**	**OA2**	

[1]) Voltage reference tube

PHOTO TUBES

Colour	Red sensitive	Blue sensitive
HIGH VACUUM	**58 CV** **90 CV** **3545**	**90 AV**
GAS-FILLED	**58 CG** **90 CG** **3546** **3554**	**90 AG**

RADIATION COUNTER TUBES

Radiation	Type
γ	**18503**
α, β, γ	**18504** **18505** **18506**

TRIGGER TUBES

PL 1267	**Z 50 T**	**5823**

H.V. SURGE LIMITING DIODE

8020

GAS NOISE SOURCE

3 cm Band	**K50A**

DECADE COUNTER TUBE

E1T

CAMERA TUBE

5854

TYPES

SURGE ARRESTERS

	Max. temporary current	2.5A/1 sec	5A/1 sec	5A/3 sec	10A/1 sec	10A/3 sec
STARTING VOLTAGE	80—120 V					**4378**
	130—180 V			**4349**		
	150—200 V			**4371**		**4369**
	280—350 V	**4372**				**4379**
	400—500 V		**4397**			
	700—850 V				**4300**	

MAGNETRONS

	Minimum peak output	7 kW	15 kW	40 kW	225 kW	360 kW	400 kW	500 kW
FREQUENCY IN Mc/s	1220—1350							**5J26** [1]
	2940—3060						**55100**	
	3450—3614					**55085**		
	8750—8900			**2J50**				
	9000—9160			**2J49**				
	9003—9168				**55032**			
	9168—9345				**55031**			
	9210—9270	**CV370**						
	9345—9405	**2J42**	**2J42A**	**725A**	**4J50** **55030**			
	9405—9505				**55029**			

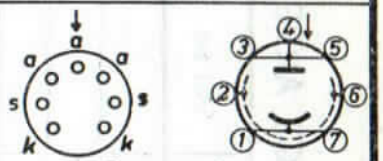
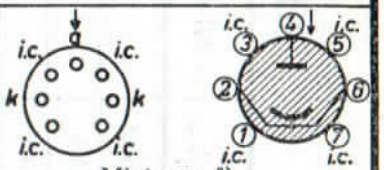
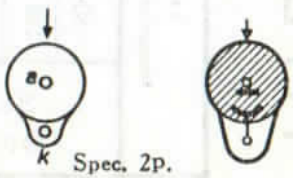
[1]) Tunable

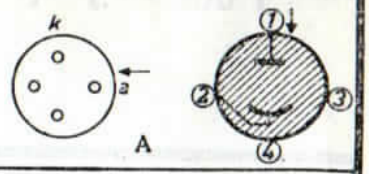
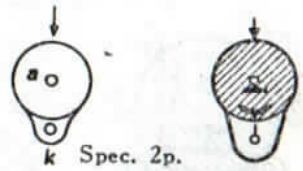
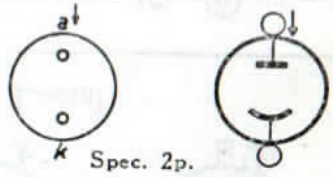
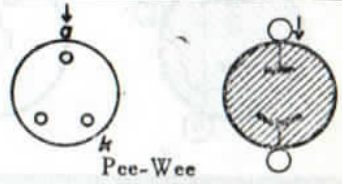
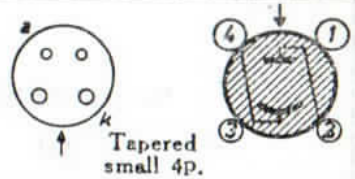
KLYSTRONS

	Max. continuous output	20 mW	10 W	200 W
FREQUENCY	8702—9548 Mc/s	**723A/B, 2K25**		
	3320—3450 Mc/s		**55334** [1]	
	8600—10.000 Mc/s			**55395**

[1]) Fixed frequency.

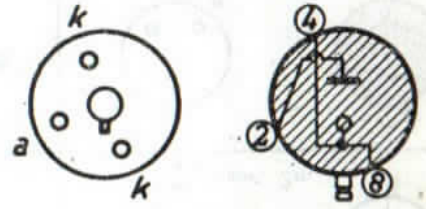
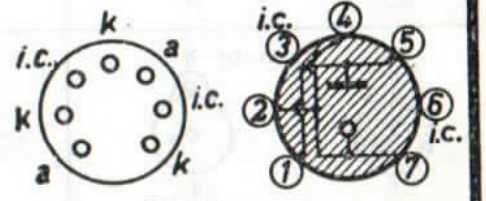
PHOTOTUBES

Type	Vacuum	Gas-filled	Radiation sensitivity	Cathode		Typical characteristics				Max. ratings			C_{ak}	Dimensions		Base connections
				Type	Projected area	V_b	Dark current max.	N [1]	R_a	V_b	I_k per cm²	t_{amb}		Tot. height max.	Diameter max.	
					(cm²)	(V)	(μA)	(μA/lm)	(MΩ)	(V)	(μA)	(°C)	(pF)	(mm)	(mm)	
58 CG	—	G	red	caesium on oxidized silver	1.1	85	0.1	85	1	90	1.5	100	3.0	33	16	
58 CV	V	—				50	0.05	20	1	100	3					
90 AG	—	G	blue	caesium on antimony	4	85	0.1	130	1	90	0.6	70	0.7	54	19	 Miniature [2]
90 AV	V	—				85	0.05	45	1	100	1.25					
90 CG	—	G	red	caesium on oxidized silver	2.4	85	0.1	125	1	90	0.7	100	1.1	54	19	 Miniature [2]
90 CV	V	—				50	0.05	20	1	100	3					
3530	—	G	red	caesium on oxidized silver	—	100	—	150	1	100	7.5 [3]	5	3.0	76	18	 Spec. 2p.

3533	—	G	red	caesium on oxidized silver	—	85	—	120	1	100	2	50	3.4	80	28	 A
3538	—	G	red	caesium on oxidized silver	—	85	—	120	1	100	2	50	2.5	73	23	 Spec. 2p.
3545	V	—	red	caesium on oxidized silver	0.8	90	0.05	20	1	250	5	50	2	73 64 (PW)	16.5	 Spec. 2p.
3546	—	G	red	caesium on oxidized silver	0.8	85	0.1	150	1	90	2	50	2	73 64 (PW)	16.5	 Pee-Wee
3554	—	G	red	caesium on oxidized silver	4.5	85	0.1	150	1	90	2	50	3.4	103	30	 Tapered small 4p.

[1]) Measured with a lamp of colour temperature 2700 °K.
[2]) All cathode connections must be interconnected externally.
[3]) Total cathode current.

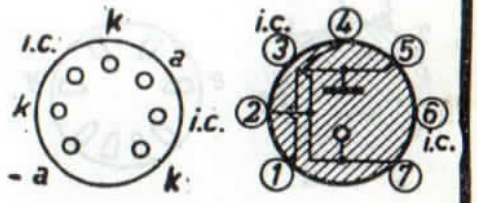
VOLTAGE REFERENCE TUBES

Type	V_a (V)	$I_{a\,rec}$ (mA)	V_{ign} [1] max. (V)	V_a [3] spread (V)	I_a (mA)	ΔV_a max. (V)	Dimensions: Total heihgt max. (mm)	Dimensions: Diam. max. (mm)	Base connections
85 A1	85 [2]	4	125	83—87	1—8	4	80	32	 Loctal
85 A2	85 [2]	6	125	83—87	1—10	4	54	19	 Miniature

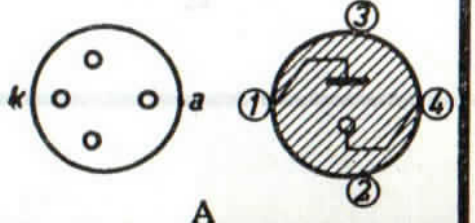
[1]) In complete darkness V_{ign} may have a higher value.
[2]) Variation of V_a ($I_a = I_{a\,rec}$): max. 0.3% during the first 300 hours of live
max. 0.2% during the subsequent 1000 hours
max. 0.1% in short term (100 hours max.) after the first 300 hours.
[3]) $I_a = I_{a\,rec}$.

VOLTAGE STABILIZERS

OA2	150	17.5	180	144—164	5—30	6	67	19
OB2	108	17.5	127	106—111	5—30	4	67	19
90 C1	90	20	125	86—94	1—40	14	54	19
100 E1	100	125	140	90—105	50—200	4	168	55.5

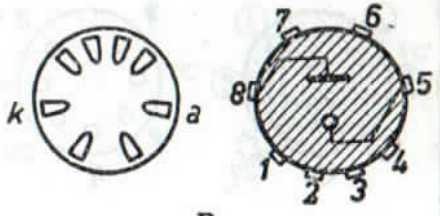
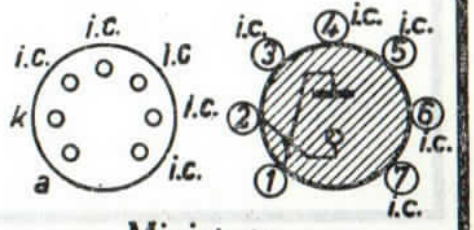


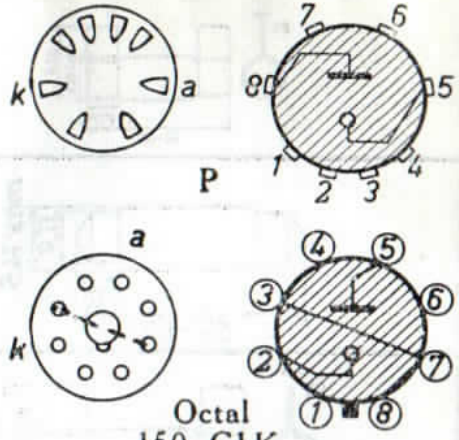
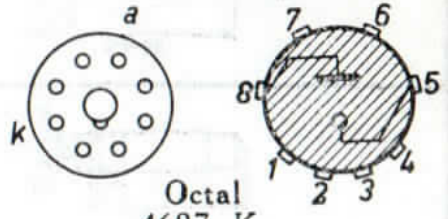
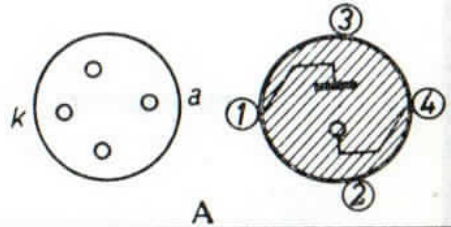
Miniature



A

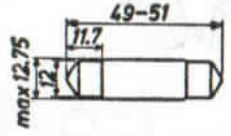
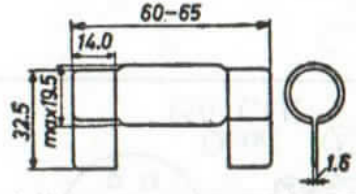
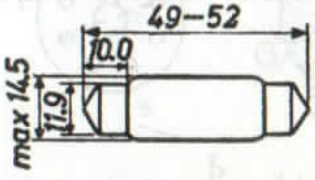
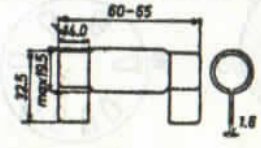
VOLTAGE STABILIZERS

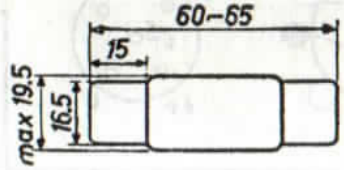
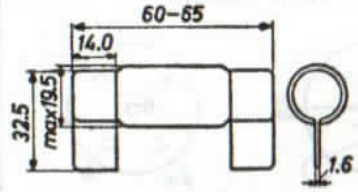
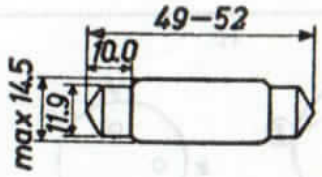
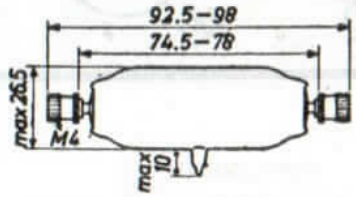
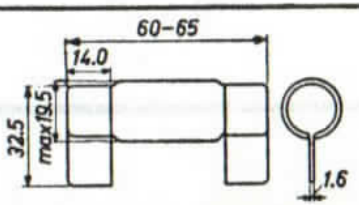
Type	V_a (V)	$I_{a\ rec}$ (mA)	V_{ign} [1] max. (V)	V_a [2] spread (V)	I_a (V)	ΔV_a max (V)	Dimensions: Total height max. (mm)	Dimensions: Diam. max. (mm)	Base connection
150 A1	156	4	205	146—166	1—8	8	72	27	 P
150 B2	150	10	180	146—154	5—15	5	54	19	 Miniature

150 C1	156	20	205	146—166	5—40	8	99 (P) 114 (K)	43 (P) 43 (K)	 Octal 150 C1K
4687	90	20	125	85—100	10—40	10	94 (P) 109 (K)	43 (P) 29 (K)	 Octal 4687 K.
7475	100	4	140	90—110	1—8	4	84	26	
13201	100	100	140	90—110	15—200	20	154	54	

[1]) In complete darkness V_{ign} may have a higher value. [2]) $I_a = I_{a\ rec.}$

SURGE ARRESTERS

Type	Ignition voltage (Vd.c.)	Extinguishing voltage (Vd.c.)	Max. ratings: Temporary I (A)	Max. ratings: Temporary I (sec)	Max. ratings: Fuse in series (A)	Max. ratings: Capacitive discharge (repeatedly (Ws)	Mains voltage: D.C. max. (V)	Mains voltage: A.C. value r.m.s. max. (V)	Dimensions
4349	130—180	110	5	3	6	10	70	75	
4369	150—200	110	10	3	10	10	70	75	
4370	80—120	60	10	3	10	10	36	50	
4371	150—200	110	5	3	6	10	70	75	
4372	280—300	250	2.5	1	6	10	200	180	

4373	150—200	110	10	3	10	10	70	75	
4378	80—120	60	10	3	10	10	36	50	
4379	280—350	130	10	3	10	10	50	180	
4380	280—350	250	2.5	1	6	10	200	180	
4383	280—350	130	5	3	6	10	50	180	
4390	460—660 ($V_{eff.}$)	400 ($V_{eff.}$)	10	1	25	500	—	300	
4397	400—500	200	5	1	10	10	150	230	

ELECTROMETER TUBES

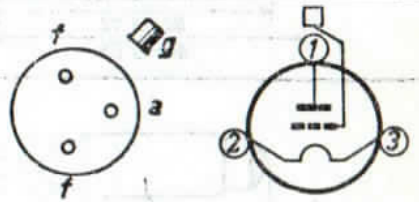
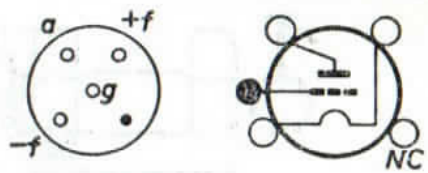
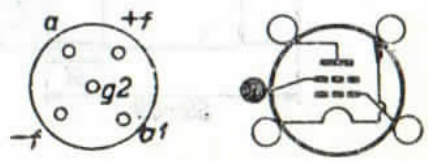
Type	V_f (V)	I_f (mA)	V_a (V)	V_{g2} (V)	I_a (μA)	V_{g1} (V)	S (μA/V)	μ	I_{g2} (A)	I_{g1} (A)	Base connections
4060 Triode	0.7	300	4	—	100	—2.5	28	0.5	—	$<10^{-14}$	 H
4065 Triode	1.25	13	9	—	100	—2.5	80	2	—	$<12.5\times10^{-14}$	 Subminiature
4066 Tetrode	1.25	13	4.5	—3.2	20	3	17	1	2.5×10^{-15}		 Subminiature

IMAGE CONVERTERS

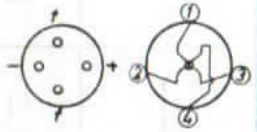
Type	Execution [1]	Photocathode eff. diam. (mm)	Screen diam. (mm)	N [2] (μA/lm)	Voltages V_a (kV)	V_g (kV)	$-V_g$ [3] (V)	V_a max. (kV)	V_g max. (kV)	V_{ag} max. (kV)	Linear magnification	Picture resolution (lines/cm)	Dimensions Tot. length max. (mm)	Dimensions Diam. max. (mm)
18120 Diode	AA AB AG	30	116	20	6	—	—	6	—	—	3—7	200	240	117
	CA CB CG			15										
18121 Diode	AA AB AG	28	28	20	5	—	—	6	—	—	1	200—500	97	65
	CA CB CG			15										
18130 Triode	AA AB AG	25	115	20	6	3	20	6	6	6.1 [4] 5 [5]	2.5-3.5	200	240	117

[1]) The first letter indicates the type of photocathode:
A = caesium on antimony, blue sensitive.
C = caesium on oxidized silver, red sensitive.
The second letter indicates the colour of the luminescent screen:
A = blue, very short persistence.
B = blue, short persistence.
G = green, medium persistence.

[2]) At a colour temperature of 2700 °K.
[3]) Grid cut-off voltage.
[5]) At picture extinction.
[4]) At exposure.

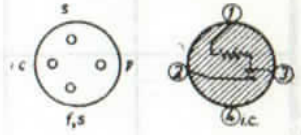
All types are magnetically focused.

THERMOCOUPLES

Type	I_f (mA)				R_f (Ω)	R_E (Ω)	Dimensions		Base connections
	E.M.F. = approx. 12mV	Limit of proportionality	Max. continuous	Max. dwing 1 min.			Tot. length max. (mm)	Diam. max. (mm)	
TH 1	10	5	20	20	75	5.5	63	24	 A
TH 2	20	10	30	40	23	3.0			
TH 3	40	20	75	100	7.3	3.0			
TH 4	100	50	150	200	2.2	3.0			
TH 5	200	100	300	350	1.1	3.0			

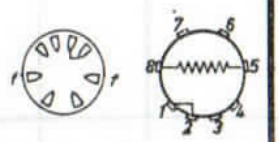
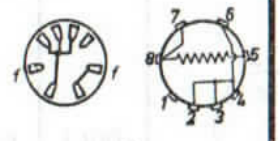
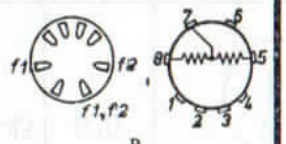
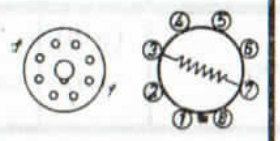
[1]) The E.M.F is proportional to the square of I_f up to the stated current values (max. deviation ± 2%).

BIMETAL RELAY

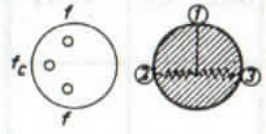
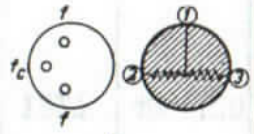
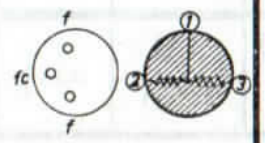
Type	Typical characteristics	Max current			Base connections
		Mains voltage	At switching on	At switching off	
4152	I_f = 92 mA (± 13%) R_f = 340—372 Ω Timing = 80 sec (I_f = 92 mA)	220 V D.C.	1.5 A	0.25 A	 A
		220 V A.C.	1.5 A	0.25 A	
		380 V A.C.	0.7 A	0.075 A	

CURRENT REGULATORS

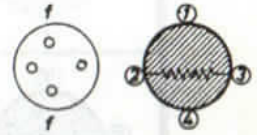
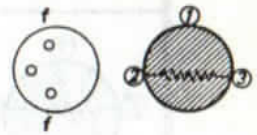
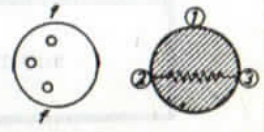
General applications

Type	V_{contr} (V)	I_{reg} (mA)	Base connections
C 8	80—200	200	 P
C 10	35—100	200	 P
C. 12	f_1—f_2: 80—200 f_1—f_1f_2: 35—100	200	 P
U 30	70—122	100	 Octal

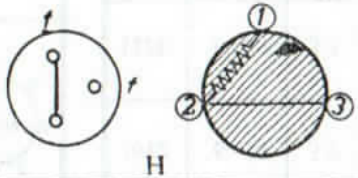
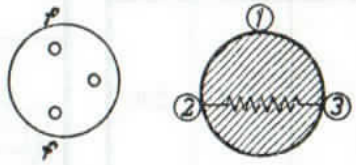
Industrial applications

Type	V_{contr} (V)	I_{reg} (mA)	Base connections
329	10—30	1.15	 H
340	3—10	5.9	Edison
452	7—20	1.15	 H
1012	6—18	5.7	Edison
1120	6—18	3.2	Edison
1331	15—40	1.45	 H

Special applications

Type	V_{contr} (V)	I_{reg} (mA)	Base connections
1904	30—80	100	 A
1905	2—6	1000	Edison Mignon
1908	5—15	800	 /H
1909	15—45	620	 H

Special applications

Type	V_{contr} (V)	I_{reg} (mA)	Base connections
1909A	15—45	620	 H
1910	5—15	1400	 H
1913	4—12	2000	Edison
1918-01	4—10	100	Edison Mignon
1923	15—46	430	Edison

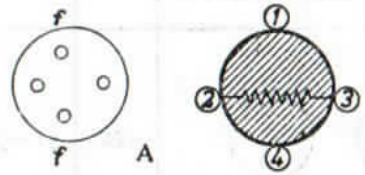
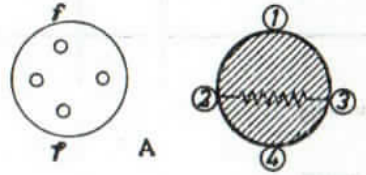
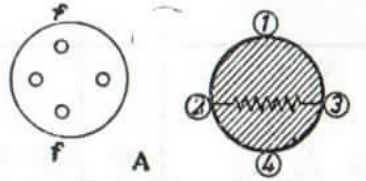
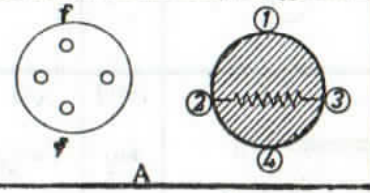
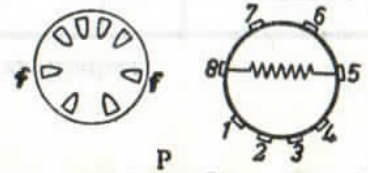
Type	V_{contr} (V)	I_{reg} (mA)	Base connections
1926	8—26	180	 A
1927	40—120	180	 A
1928	80—240	180	 A
1941	80—200	300	 A
1945	80—120	275	 P

IMAGE ICONOSCOPE

Type	V_f (V)	I_f (A)	Scanning system	Image system	Operating characteristics	
5854	6.3	0.63	Focusing: magn. Deflection: magn. Cut-off voltage: —30 to —70 V	Photocath: 12×16 mm Signal electrode: 45×60 mm Focusing: magn.	Voltage of g_2 and collector Supply voltage of signal electrode Voltage of photocathode Beam current Current of focusing coil Current of image coil Signal electrode resistor	930 V 930 V —70 V 0.1—0.2 μA 10 mA 25 mA 0.1 MΩ

RADIATION COUNTER TUBES

Type	Description	Radiation sensitivity	Window thickness (mg/cm²)	Threshold voltage (V)	Operating voltage (V)	Plateau length min. (V)	Plateau slope (% per 100 V)	Dead time (μsec)	Background (counts/min)	Dimensions	
										Tot. length (mm)	Diam. (mm)
18500	Non self quenching	X-ray, γ and neutron	250	900	1050	150	< 2	< 75	< 20	max. 135	max. 19
18501	Non self quenching	γ, β	75	900	1050	150	< 2	< 75	< 20	max. 135	max. 19
18502	Self quenching	γ, β	75	max. 300	350	100	< 15	< 150	< 40	max. 118	max. 19
18503	Self quenching	γ	250	> 275	[1])	250	< 2	< 100	< 20	49	17
18504	Self quenching	α, γ, β	250	> 275	[1])	250	< 2	< 100	< 20	49	17
18505	Self quenching	α, γ, β		> 300	[1])	250	< 2	< 200	< 25	55	25.5
18506	Self quenching	α, γ, β		> 325	[1])	250	< 2	< 250	< 40	55	33.5
18513	Self quenching Mica window	α, β	1.6-2.1	575	725	150	< 15	< 70	< 6 [2])	max. 86	max. 12.8
18514	Self quenching Mica window	α, β	3.5-4	650	750	200	< 15	< 250	< 40 [2])	max. 99	max. 33.5

[1]) Arbitrary within plateau. [2]) Shielded.

MAGNETRONS

Type	Inter-changeable with type	Wave-length band (cm)	Frequency (Mc/s)	Peak output power min. (kW)
2J 42	—	3	9345-9405	7
2J 42A	—		9345-9405	20
2J 49	—		9000-9160	40
2J 50	CV 2793		8750-8900	40
4J 50	CV 2284		9345-9405	225
4J 78	—		9003-9168	225
5J 26 Tunable	—	25	1220-1350	500
CV 370	—	3	9210-9270	7
725 A	CV 722		9345-9405	40
55029			9405-9505	at 1 μs
55030			9345-9405	225
55031			9168-9345	at 0.1 μs
55032			9003-9168	180
55085-01	CV 1483	8.5	3570-3614	360
55085-02	CV 1484		3530-3570	
55085-03	CV 1485		3490-3530	
55085-04	CV 1486		3450-3490	
55100-01	CV 1479	10	3030-3060	400
55100-02	CV 1480		3005-3030	
55100-03	CV 1481		2980-3005	
55100-04	CV 1482		2940-2980	

TR AND ATR SWITCHES

Type	Interchangeable with type	Application	Frequency (Mc/s)
1B 24A	CV 725	TR	8490-9600
1B 35	CV 369	ATR	9000-9600

HIGH-VACUUM DIODE

Type	Inter-changeable with type	V_f (V)	I_f (A)	T_h (sec)	Appli-cation	Typical characteristics	
8020	CV 2967	5	6	5	Rectifier	V_{ainvp} = max. 40 kV I_a = max. 100 mA I_{ap} = max. 750 mA	
					Limiter	V_f = 5.5 V V_{ap} = 10 kV I_{ap} = min. 2A	V_f = max. 5.8 V V_{ap} = max. 12.5 kV W_a = max. 75 W

KLYSTRONS

Type	Inter-changeable with type	Wave-length band (cm)	Frequency (Mc/s)	Output power (W)
2K 25 reflex	CV 2792	3	8500-9660	0.025
723 AB reflex	CV 1795	3	8702-9548	0.03
55334 multi reflex fixed freq.	—	8.8	3320-3450	10
55395 Tunable 2-cavity water cooled	—	3	8600/10000	50/180

IONISATION VACUUM GAGE

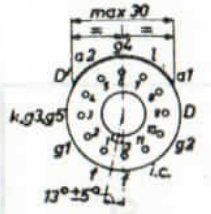
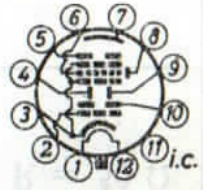
FOR MEASUREMENT OF GAS PRESSURES

Type	Supply voltage	Gas pressures	Field intensity of required permanent magnet
95322 Cold cathode	2000 V_{dc}	10^{-3}—10^{-5} mm Hg	abt 370 Gauss

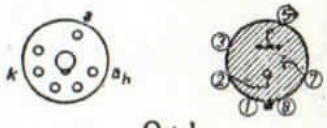
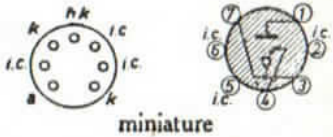
NOISE DIODES

Type	V_f (V)	I_f (A)	λ (cm)	V_{ign} (V)	V_d (V)	I_d (mA)	Noise level (d.b.)
K 50 A Neon filled noise diode	2	2	3	6000	165	125	$\frac{19.3}{R = 2700\ \Omega}$
K 81 A Noise diode	1.85	2.7			100	15	$\frac{13}{R = 50\ \Omega}$

DECADE COUNTER TUBE

Type and Application	Filament data	Voltages Resistors	Currents (mA)	Characteristic data	Base connections
E1T Decade counter tube	V_f = 6.3 V I_f = 0.3 A	V_b = 300 V V_{bg1} = 11.9 V V_{bD} = 156 V R_k = 15 Ω	I_k = 0.95	R_{a1} = 39 kΩ R_{a2} = 1 MΩ R_{g1} = 47 kΩ	 Duodecal 

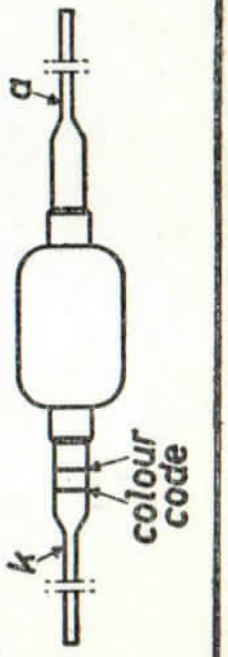
TRIGGER TUBES

Type	Typical characteristics	Maximum ratings: Voltages	Maximum ratings: Currents	Dimensions: Tot. length max. (mm)	Dimensions: Diam. max. (mm)	Base connections
Z 50 T Gas-filled triode	$V_{ah\,ing}$ (V_a = 130V) 71 V $V_{a\,arc}$ (I_a 2—6 mA) 61 V	$V_{a\,p}$ = max. 175 V $V_{ah\,ing}$ (V_a = 130 V) min. 66 V max. 80 V $V_{a\,arc}$ (I_a = 2-6mA) = min. 54 V min. 67 V	I_a = max. 6 mA I_{ap} = max. 24 mA	92	13	
PL 1267/ Z 300T Gas-filled triode	$V_{ar\,ms}$ = 105-130 V $V_{ah\,p}$ = 70 V $V_{ah\,p}$ (H.F.) = 55 V $V_{a\,arc}$ = 60 V $V_{ah\,arc}$ = 70 V	V_{ap} (V_{ch}=0V) = max. 225 V $V_{a\,arc}$ (V_{ah}=0V) = min. 225 V $V_{ah\,ign}$ = max. 90 V = min. 70 V	I_a = max. 25 mA I_{ap} = max. 100 mA I_{ah} (V_{ah} = 140 V) = max. 100 µA	99	33	 Octal
5823 Gas-filled triode	$V_{a\,ign}$ ($V_a \geq 0$ V) = 290 V $V_{a\,arc}$ (I_a = 25 mA) = 62 V $V_{a\,h\,ign}$ ($V_a \geq 0$ V) = 80 V $V_{a\,h\,ign}$ (I_a = 25mA) = 61 V	V_a = max. 200 V [1] $V_{a\,h}$ = min. 105 V [2] $V_{a\,h}$ = max. 73 V [1] [1]) not ignited [2]) for ignition	I_a = max. 25 mA $I_{a\,p}$ = max. 100 mA $I_{a\,h}$ ($V_{a\,hp}$ = 140 V) = max. 400 µA	54	19	 miniature

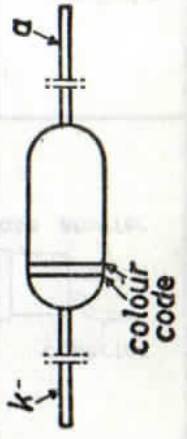
SEMI-CONDUCTORS

GERMANIUM DIODES

Type	Description	I_d min. (mA) $V_d = +1V$	$-I_d$ max. (μA) $V_d = -3V$	$V_d = -10V$	$V_d = -50V$	$V_d = -100V$	I_d max. (mA)	I_{dp} max. (mA)	I_{surge} max. (mA)	V_{dinv} max. (V)	Turn over voltage (V)	C_{dk} (pF)	t_{amb} (°C)	Base connections
OA 50	General purpose diode	5	—	30	500	—	50	150	500	60 [1]	75	1	−50 to +60	
OA 51	High back resistance diode	5	—	7	100	—	50	150	500	50 [1]	75	1	−50 to +60	
OA 53	100-volt diode	4	—	—	—	600	50	150	500	100 [1]	120	1	−50 to +60	
OA 55	100-volt diode	4	5	—	—	500	50	150	500	100 [1]	120	1	−50 to +60	
OA 56	General purpose diode	4	—	50	800	—	50	150	400	70 [1]	85	1	−50 to +60	
OA 60	Video detector diode	η = 60% and $R_{damping}$ = 3000 Ω [3]					5	—	—	25 [2]	30	1	−50 to +60	
OA 61	D.C. restorer diode	2.5	—	—	100	—	5	15	500	85 [2]	100	1	−50 to +60	

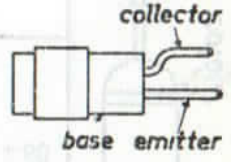
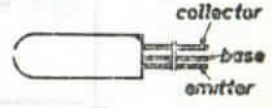


OA 70	Video detector diode	V_d at I_d = 0.1 mA max. + 0.25 V	$-I_d$ at V_d = −1.5 V max. 30 µA				50	150	400	22.5 p 15 d.c.		1	−50 to +75	
OA 71	General purpose diode	V_d at I_d = 3 mA max. + 1.05 V	$-I_d$ at V_d = −1.5 V max. 7 µA			$-I_d$ at V_d = −90 V max. 250 µA	35	150	200	90 p. 60 d.c.			−50 to +60	
2 OA 72	Matched pair for ratio detector circuits	V_d at I_d = 0.1 mA + 0.2 V	$-I_d$ at V_d = −1.5 V 0.8 µA			$-I_d$ at V_d = −45 V 130 µA	10	100	200	45 p. 30 d.c.		1	−50 to +60	
OA 73	Video detector general purpose	V_d at I_d = 0.1 mA max. + 0.2 V	$-I_d$ at V_d = −1.5 V max. 18 µA	100		$-I_d$ at V_d = −30 V max. 1200	50	150	400	30 p. 20 d.c.			−50 to +75	
OA 74	General purpose	V_d at I_d = 4 mA max. + 1.05 V	$-I_d$ at V_d = −1.5 V max. 12 µA			$-I_d$ at V_d = −60 V max. 400 µA	35	150	200	60 p. 40 d.c.			−50 to +75	



[1]) The diode should not be operated at the max. values for voltage, current and temperature simultaneously. [2]) The diode should not be operated at the max. values for voltage and temperature simultaneously. [3]) Diode in series with parallel circuit consisting of R = 3900 Ω and C = 10 pF. Freq. = 30 Mc/s. Peak input voltage = 5 V. Capacitance of oscillator = 17 pF, temp. = 20 °C. The oscillator must have a negligible internal impedance at its harmonic frequencies. [4]) When soldering, the metal diode extension should be held with a pair of cool pliers in order to avoid damage to the diode through excessive heat.

TRANSISTORS *

Type	Description	$-V_{c(dc)}$ max. (V)	$-V_{c(p)}$ max. (V)	$-I_c$ max. (mA)	I_e max. (mA)	W_c max. (mW)	T_{amb} max. (°C)	$-V_e$ max. (V)	W_e max. (mW)	Noise (1000 c/s) (d.b)	Base connections
OC 50	Point contact	20	30			75	35	20	15	53	
OC 51	Point contact	30				75	35	30	15	53	
OC 70	Junction (all-glass)	4.5	10	10	10	6	45			10—15	 17
OC 71	Junction (all-glass)	4.5	10	10	10	6	45			10—22	

*) Provisional data.

INTERCHANGEABILITY LIST

INTRODUCTION

In the first column of this interchangeability list only those electronic tube types are indicated for which equivalent types exist. The second column lists the corresponding Philips type numbers and the third the CV numbers.

With respect to the second column it must be noted that the type numbers without brackets are **direct** equivalents whereas those between brackets are **near** equivalents It can be assumed, however, that in practically all cases the near equivalents can replace the types indicated in the first column.

The fact that a tube is listed does not imply that it can always be supplied.

INTERCHANGEABILITY LIST

Type number	Philips type	CV number
OA2	OA2	1832
OB2	OB2	1833
OD3	OD3	216
OE3	85A1; OE3	431
OG3	85A2; OG3	449
1A3	1A3; DA90	753
1A7GT	(1A7GT); (DK32)	1802
1AB6	DK96; 1AB6	
1AC6	DK92; 1AC6	
1AH5	DAF96; 1AH5	
1AJ4	DF96; 1AJ4	
1B24A	1B24A	3548
1B35	1B35	369
1C1	DK91; 1R5	
1C2	DK92; 1AC6	
1C3	DK96; 1AB6	
1C5GT	1C5GT; DL35	1805
1D13	1A3; DA90	
1F1	DF96; 1AJ4	
1F2	1L4; DF92	
1F3	DF91; 1T4	
1FD1	DAF96; 1AH5	
1FD9	DAF91; 1S5	
1H5GT	(1H5GT); (DAC32)	1820
1L4	1L4; DF92	1758
1M1	DM70; 1M3	
1M3	DM70; 1M3	2980
1N5GT	(1N5GT); (DF33)	1823
1N34A	OA50; 1N34A; (OA71)	
1N38A	OA55; 1N38A; (OA71)	
1N54A	OA51; 1N54A; (OA71)	
1N58A	OA53; 1N58A; (OA71)	
1N60	(OA70)	
1N64	(OA70)	
1N86	OA56; 1N86; (OA71)	
1N87	OA60; 1N87; (OA70)	
1N88	OA61; 1N88; (OA71)	
1P1	DL96; 3C4	
1P10	DL92; 3S4	
1P11	DL94; 3V4	
1Q5GT	1Q5GT; DL36	1826
1R5	DK91; 1R5	782
1S5	DAF91; 1S5	784
1T4	DF91; 1T4	785
1U5	1U5; DAF92	
1V6	1V6; DCF60	
2B35	EA50	1092
2D4A	(AB2)	795
2D21	2D21; PL2D21	797
2J42	2J42	3676
2J49	2J49	3687
2J50	2J50	2793
2K25	2K25	2792
2V/400A	DCG4/1000G	
3A4	3A4; DL93	807
3A5	3A5; DCC90	808
3B4	3B4	2240
3B28	3B28; DCX4/1000	1835
3C4	DL96; 3C4	
3C45	3C45; PL345	372
3NP4	(MW6-2)	
3Q4	3Q4; DL95	818
3Q5GT	3Q5GT; DL33	819
3S4	DL92; 3S4	820
3V4	DL94; 3V4	2983
4/100BU	AZ50	
4-125A	(QB3/300)	2130
4-250A	(QB3.5/750)	2131
4B26	1163	1836
4B32	4B32;DCX4/5000	2518
4C35	4C35; PL435	1787
4D21	(QB3/300)	2130
4G/280K	PL2D21; 2D21	
4J50	4J50	2284
4X150A	4X150A; QEL1/150	2519
5B21	1164	
5B/250A	QE06/50	
5C22	5C22; PL522	2520
5C/100A	QB2/250	
5CP1A	(DG13-2)	
5CP7A	(DP13-2)	
5D22	(QB3.5/750)	2131
5FP4A	(MW13-35)	
5FP7A	(MF13-1)	
5J26	5J26	3602
5T4	(GZ34)	1846
5U4G	(GZ34)	575
5V4G	(GZ34)	729
5X4G	(GZ34)	1851
5Y3GT	5Y3GT	1856

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
5Z4GT	(GZ34)	2748
6A8GT	(EK32)	580
6AB4	(EC92)	
6AB8	ECL80; 6AB8	
6AF4	(EC93)	
6AJ8	ECH81; 6AJ8	2128
6AK5	6AK5; EF95	850
6AK8	EABC80; 6AK8	
6AL5	EAA91; 6AL5; (EB91)	283
6AM5	EL91; 6AM5	136
6AM6	EF91; 6AM6	138
6AQ4	6AQ4; EC91	417
6AQ5	6AQ5	1862
6AQ8	ECC85; 6AQ8	
6AT6	6AT6	452
6AU6	6AU6	2524
6AV6	6AV6	2526
6B8	(EBF32)	1894
6B8G	(EBF32)	1893
6BA6	6BA6	454
6BE6	6BE6	453
6BE7	EQ80; 6BE7	
6BN5	6BN5; EL85	3526
6BQ5	EL84; 6BQ5	2975
6BQ7A	(ECC84)	
6BR5	EM80; 6BR5	
6BX6	EF80; 6BX6	
6BY7	EF85; 6BY7	
6C4	6C4; EC90	133
6C10	ECH42	
6CA7	EL34; 6CA7	
6CB6	6CB6	
6CD7	EM34; 6CD7	394
6CJ6	EL81; 6CJ6	2721
6CK6	EL83; 6CK6	2726
6CN6	EL38; 6CN6	450
6CQ6	EF92; 6CQ6	131
6CS6	EH90; 6CS6	
6D1	EA50	1092
6D2	EB91; 6AL5; (EAA91)	140
6DA6	EF89; 6DA6	
6E8G	(ECH35)	
6F12	EF91; 6AM6	
6F13	(EF42)	1839
6F16	EF41	

Type number	Philips type	CV number
6J6	6J6; ECC91	858
6J7GT	(EF37A)	1937
6J8G	(ECH35)	859
6K7GT	(EF39)	1943
6L19	(ECC40)	1850
6L34	6AQ4; EC91	
6LD3	EBC41	
6M2	EM34; 6CD7	
6N8	EBF80; 6N8	
6Q4	EC80; 6Q4	1886
6Q7G	(EBC33)	587
6R3	EY81; 6R3	
6R4	EC81; 6R4	1865
6R7G	(EBC33)	1962
6SA7GT	6SA7GT	1967
6SK7GT	6SK7GT	1982
6SN7GT	6SN7GT	1988
6SQ7GT	6SQ7GT	1991
6T8	(EABC80)	
6U3	EY80; 6U3	
6U7G	(EF39)	706
6U8	(ECF80)	
6V3	(EY81)	
6V3A	(EY81)	
6V4	(EZ80); 6V4	
6V6GT	6V6GT	511
6W2	(EY51)	
6X2	EY51; 6X2	426
6X4	6X4	493
6X5GT	(EZ35)	574
7AN7	PCC84; 7AN7	
7D9	EL91; 6AM5	136
7F16	EF41	
8A8	PCF80; 8A8	
8D3	EF91; 6AM6	
9AK8	PABC80; 9AK8	
9AQ8	PCC85; 9AQ8	
9D6	EF92; 6CQ6	
10F9	(UF41)	
10LD3	UBC41	
10M2	UM4	
12AT6	12AT6	
12AT7	ECC81; 12AT7	455
12AU6	12AU6	1961
12AU7	ECC82; 12AU7	491

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
12AV6	12AV6	
12AX7	ECC83; 12AX7	492
12BA6	12BA6	1928
12BE6	12BE6	
12SA7GT	12SA7GT	538
12SK7GT	12SK7GT	544
12SN7GT	12SN7GT	925
12SQ7GT	12SQ7GT	547
12XP4A	MW 31-74	
14LP4	(MW 36-44)	
15A6	PL83; 15A6	
16A5	PL82; 16A5	
16AP4	(MW41-1)	
17	PL5557/PL17	2957
17BP4A	(MW43-64)	
17CP4	(MW43-43)	
17Z3	PY81;17Z3	
19BD	PY80; 19X3	
19D8	UCH81	
19SU	PY82; 19Y3	
19X3	PY80; 19X3	
19Y3	PY82; 19Y3	
20A3	PL2D21; 2D21	
21A6	PL81; 21A6	
21AMP4A	(MW53-80)	
25L6GT	25L6GT	553
30C1	PCF80; 8A8	
30L1	PCC84; 7AN7	
35C5	(HL94)	
35Z5GT	35Z5GT	568
43 IU	(1561)	
44 IU	(1561)	
50C5	50C5; (HL94)	1959
50L6GT	50L6GT	571
53KU	(GZ 34)	378
54KU	GZ32; (GZ34)	
57	PL5559/PL57	
62DDT	EBC41	
62TH	ECH42	
62VP	EF41	
63SPT	EF50	
63TP	ECL80; 6AB8	
64ME	EM34; 6CD7	
64SPT	EF80; 6BX6	
65ME	EM80; 6BR5	

Type number	Philips type	CV number
66KU	EZ40	
67PT	EL41	
80	80	617
85A1	85A1; OE3	431
85A2	85A2; OG3; 5651	449
90AG	90AG	2270
90AV	90AV	2132
90CG	90CG	2133
90CV	90CV	2134
100TH	100TH; TB 3/350	2552
105	PL105	
121K	(MW31-74)	
121VP	UF41	
141DDT	UBC41	
141TH	UCH42	
150B2	150B2; 6354	2225
150C2	OA2	1832
171DDP	UBF80	
171K	(MW43-64)	
172K	MW43-64	
213Pen	PL81; 21A6	
238B	PL5555	
250TH	250TH; TB4/800	2589
311SU	UY41	
408BU	(1805)	
442BU	(1561)	
451PT	UL41	1977
451U	AZ50	
460BU	1561	2644
653B	PL5555	
723A/B	723A/B	1795
725A	725A	722
807	807; QE06/50	124
813	813; QB2/250	26
829B	(QQE06/40)	2666
832A	832A; QQE04/20	788
834	834; TB1/60G	
837	837; PE04/10E	637
866A }	866A;	32
866AX }	DCG4/1000G	
868	(3554)	2680
869B	(DCG9/20)	2723
872A; }	872A;	642
872AX }	DCG5/5000GB	
928	(3533G)	
1163	1163	1836

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
1267/0A4G	PL1267/Z300T	1992
1625	(PE06/40E)	659
1877	1877	1134
2000	1163	
2183	1164	
3078A	6508; DCG9/20	1240
3304B	834; TB1/60G	1062
3874A	813;QB2/250	26
5544	PL5544	2210
5545	PL5545	2215
5551	PL5551	
5552	PL5552	
5555	PL5555	
5557/17	PL5557/PL17	2957
5559/57	PL5559/PL57	612
5651	[1]) 85A2;5651	2573
5672	5672	2238
5676	5676	2239
5678	5678	2254
5727	PL5727	4018
5763	5763	2129
5800/VX41	(4066)	
5802/VX32	(4065)	
5822	PL5822	
5823	5823	
5861	EC55; 5861	273
5866	5866; TB2.5/300	1924
5867	5867; TB3/750	
5868	5868; TB4/1250	
5869	5869; (DCG6/6000)	
5870	5870; DCG12/30	
5894	5894; QQE06/40	2797
5895	5895; QQC04/15	1838
5920	E90CC; 5920	
5923	5923; TBW6/6000	
5924	5924; TBL6/6000	
6007	DL67; 6007	
6008	DF67; 6008	
6075	6075; QBW5/3500	
6076	6076; QBL5/3500	
6077	6077; TBW12/100	
6078	6078; TBL12/100	
6079	6079; QB5/1750	3522
6083	6083;PE1/100	
6084	E80F; 6084	2729

Type number	Philips type	CV number
6085	E80CC; 6085	
6086	18042; 6086	
6146	6146; QE05/40	3523
6155	6155; QB3/300	2130
6156	6156; QB3.5/750	2131
6218	E80T; 6218	
6227	E80L; 6227	
6252	6252;QQE03/20	2799
6267	EF86; 6267	2901
6268	6268/4C35	1787
6279	6279/5C22	2520
6354	150B2; 6354	2225
6360	6360; QQE03/12	2798
6370	E1T; 6370	
6374	EY84; 6374	2235
6375	DC70; 6375	2275
6508	6508; DCG9/20	
7475	7475	1070
8020	8020	2967
18042	18042; 6086	
38116	1163	
55390	2K25	2792
55391	723A/B	1795
56000	8020	2967
56030	1B35	369
56031	1B24A	3548
68506	1163	2775
68508	1164	
178148	(1163)	
178149	(1163)	
180238	(1164)	
189048	(1163)	
189049	1163	1836
217283	1164	
289414	(1163)	
289416	(1163)	
766776	1164	
A11B/C/D	(1561)	
AA61	ECC40	
AGR9950	5869; (DCG6/6000)	
AGR9951	5870; DCG12/30	
AH217	872A;DCG5/5000GB	
APP4Bs	(AL4)	
APV4	(1561)	1039
AR21	EBC33	1055

Type numbers between brackets are **near** equivalents

[1]) Philips 85A2 fulfils the requirements of the 5651.

Type number	Philips type	CV number
ARP34	EF39	1053
ARP35	EF50	1091
ASG5121	PL2D21	
ASG5544	PL5544	
ASG5545	PL5545	
AX4-125A	QB3/300	2130
AX4-250A	QB3.5/750	2131
AX9900	5866; TB2.5/300	1924
AX9901	5867; TB3/750	
AX9902	5868; TB4/1250	
AX9903	5894; QQE06/40	2797
AX9904	5923; TBW6/6000	
AX9904R	5924; TBL6/6000	
AX9905	5895; QQC04/15	1838
AX9906	6077; TBW12/100	
AX9906R	6078; TBL12/100	
AX9907	6075; QBW5/3500	
AX9907R	6076; QBL5/3500	
AX9908	6079; QB5/1750	3522
AX9909	6083; PE1/100	
AX9910	6252; QQE03/20	2799
AX9911	6268; 4C35; PL435	1787
AX9912	6279; 5C22; PL522	2520
B152	ECC81; 12AT7	
B309	ECC81; 12AT7	
B319	(PCC84)	
B329	ECC82; 12AU7	
BK24	PL5552	
BK34	PL5553	
BK42	PL5551	
BK46	PL5555	
BT69	DCG7/100B	
C12FM	MW31-74	
C143	813; QB2/250	
C180	832A; QQE04/20	
CE225	(1163)	
CE226	1163	
CE235	1164	
	CV numbers see page 16	
D2M9	EAA91; 6AL5; (EB91)	
D77	EAA91; 6AL5; (EB91)	
D121	(UAF42)	
D152	EAA91; (EB91)	
DA90	1A3; DA90	753
DAF70	DAF70	2104

Type number	Philips type	CV number
DAF91	DAF91; 1S5	784
DAF92	1U5; DAF92	
DAF96	DAF96; 1AH5	
DAF191	(DAF91)	
DC70	DC70; 6375	2275
DCC90	3A5; DCC90	808
DCF60	1V6; DCF60	
DCG1/250	DCG1/250	3667
DCG1.5/250	DCG1.5/250	1072
DCG4/1000ED	DCG4/1000ED	1625
DCG4/1000G	866A; DCG4/1000G	32
DCG5/5000EG	872; DCG5/5000EG	
DCG5/5000GB	872A; DCG5/5000GB	642
DCG9/20	6508; DCC9/20	
DCG12/30	5870; DCG12/30	
DCX4/1000	3B28; DCX4/1000	1835
DCX4/5000	4B32; DCX4/5000	2518
DD6(Ferr. Coss.)	EB91	
DD6S	(EB91)	
DDPP4BS	ABL1	
DDPP6S	EBL1	
DDPP39S	CBL1	
DDR2	EF55	173
DDR3	EY91	135
DDR7	EL91; 6AM5	
DDT4S	ABC1	
DDT6S	EBC3	
DET12	834; TB1/60G	1288
DET22	EC55; 5861	273
DF11	(DF91)	
DF64	DF64	2260
DF66	DF66	2107
DF67	DF67; 6008	
DF91	DF91; 1T4	785
DF92	1L4; DF92	1758
DF96	DF96; 1AJ4	

CV numbers see page 270 Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
DF191	(DF91)	
DG7-5	DG7-5	2175
DH77	6AT6	
DH142	UBC41	
DH147	EBC33	
DH149	(EBC21)	
DH150	EBC41	
DK32	DK32; (1A7GT)	
DK91	DK91; 1R5	782
DK92	DK92; 1AC6	
DK96	DK96; 1AB6	
DK192	(DK92)	
DL33	3Q5GT; DL33	
DL35	1C5GT; DL35	
DL36	1Q5GT; DL36	
DL66	DL66	2106
DL67	DL67; 6007	
DL68	DL68	2239
DL91	(DL92)	783
DL92	DL92;3S4	820
DL93	3A4; DL93	807
DL94	DL94; 3V4	2983
DL95	3Q4; DL95	818
DL96	DL96; 3C4	
DL98	3B4	2240
DL192	(DL92)	
DL193	(DL94)	
DM70	DM70; 1M3	2980
DN143	EBL21	
DP6	(OA50); (OA71)	
DP6C	(OA50); (OA71)	
DP61	EF95; 6AK5	
DQ2	866A;DCG4/1000G	
DQ2a	DCG4/1000ED	
DQ4	872A; DCG5/5000GB	
DQ4a	DCG5/5000EG	
DQ6	6508; DCG9/20	
DS60	OA50; (OA71)	
DS77	(EAA91); (EB91)	
DT3	(1561)	
DT30	(1561)	
DW2	(1805)	
DW3	(1561)	
DW4	1561	
DW4-350	(1561)	1796
DW4-500	1561	
DX2	3B28; DCX4/1000	
E1T	E1T; 6370	
E2dIII	AL4	
E80CC	E80CC; 6085	
E80F	E80F; 6084	2729
E80L	E80L; 6227	
E80T	E80T; 6218	
E81L	E81L	
E83F	E83F	
E90CC	E90CC; 5920	
E91H	E91H	
E125A	6155; QB3/300	
E180F	E180F	
E250A	6156; QB3.5/750	
E900	250TH; TB4/800	
E1200	TB3/1000	
E2385	(EY86)	
EA50	EA50; 2B35	1092
EAA91	EAA91; 6AL5; (EB91)	283
EAA171	(EAA91); (EB91)	
EABC80	EABC80; 6AK8	
EAC91	EAC91	137
EAF42	EAF42	3883
EB41	EB41	3881
EB91	EB91; (6AL5); (EAA91)	140
EBC3	EBC3	1428
EBC33	EBC33	1055
EBC41	EBC41	3882
EBC90	6AT6	452
EBC91	6AV6	2526
EBF2	EBF2	2925
EBF32	EBF32	501
EBF80	EBF80; 6N8	
EBF171	(EBF80)	
EC55	EC55; 5861	273
EC56	EC56	
EC80	EC80; 6Q4	1886
EC81	EC81; 6R4	1865
EC90	6C4; EC90	133
EC91	6AQ4; EC91	417
EC93	EC93	

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
EC94	(EC93)	
ECC32	ECC32	181
ECC35	ECC35	569
ECC40	ECC40	3884
ECC81	ECC81; 12AT7	455
ECC82	ECC82; 12AU7	491
ECC83	ECC83;12AX7	492
ECC85	ECC85; 6AQ8	
ECC91	6J6; ECC91	858
ECH3	ECH3	2929
ECH35	ECH35	1347
ECH42	ECH42	3888
ECH71	(ECH21)	
ECH81	ECH81; 6AJ8	2128
ECH171	(ECH81)	
ECL80	ECL80; 6AB8	
EF9	EF9	1427
EF22	EF22	303
EF36	(EF37A)	1056
EF37A	EF37A	358
EF39	EF39	1053
EF40	EF40	3885
EF41	EF41	3886
EF42	EF42	3887
EF50	EF50	1091
EF55	EF55	173
EF80	EF80; 6BX6	
EF85	EF85; 6BY7	
EF86	EF86; 6267	2901
EF89	EF89; 6DA6	
EF91	EF91; 6AM6	138
EF92	EF92; 6CQ6	131
EF93	6BA6	454
EF94	6AU6	2524
EF95	6AK5; EF95	850
EF174	(EF80)	
EF175	(EF85)	
EH90	EH90; 6CS6	
EK2	EK2	1426
EK32	EK32	1057
EK90	6BE6	453
EL2	EL2	1429
EL33	EL33	2938
EL34	EL34; 6CA7	
EL38	EL38; 6CN6	450

Type number	Philips type	CV number
EL41	EL41	3889
EL42	EL42	3890
EL81	EL81; 6CJ6	2721
EL83	EL83; 6CK6	2726
EL84	EL84; 6BQ5	2975
EL85	6BN5;EL85	3526
EL90	6AQ5	1862
EL91	EL91; 6AM5	136
EL171	(EL84)	
EM4	EM4	1434
EM11	(EM34)	
EM34	EM34; 6CD7	394
EM35	(EM34)	
EM80	EM80; 6BR5	
EM171	(EM34)	
EN91	PL2D21; 2D21	
EQ80	EQ80; 6BE7	
ESU200	(DCG4/5000)	
ESU300	872A;DCG4/5000	2947
ESU866	866A; DCG4/1000G	
ESU872	872A;DCG5/5000GB	
ESU8008	(DCG5/5000GB)	
ET1000	250TH; TB4/800	
EY51	EY51; 6X2	426
EY80	EY80; 6U3	
EY81	EY81; 6R3	
EY84	EY84; 6374	2235
EY91	EY91	135
EZ40	EZ40	3891
EZ90	6X4	493
FG17	PL5557/PL17	2957
FG57	PL5559/PL57	
FG67	(PL5557/PL17)	742
FG105	PL105	
FG235A	PL5552	
FG238B	PL5555	
FG258A	PL5553	
FG271	PL5551	
FW4/500	AZ50	
FX219	5C22; PL522	
F_z9011/G	90AG	
F_z9011/V	90AV	
F_z12/G	(3554)	
G10/4d	872A; DCG5/5000GB	
G49	1163	

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
G180/2M	OD3	
GTE 125000	TA18/100	
GU12	(DCG4/1000G)	
GU21SP	(DCG4/5000)	152
GZ30	(GZ34)	2748
GZ32	GZ32; (GZ34)	593
HBC90	12AT6	
HBC91	12AV6	
HD14	DAC32	
HF61	EF41	
HF62	EF42	
HF93	12BA6	1928
HF94	12AU6	1961
HF121	UF41	
HK90	12BE6	
HL92	50C5	1959
HM04	6BE6	
HVR2	1877	
HY90	35W4	
IW3	(1561)	
IW4/500	(1561)	
JP9-7	2J42	
JP9-15	2J42A	
K2	DCG4/1000ED	
K322	(723A/B)	
KD25	OD3	216
KS9-20	723A/B	
KS9-20A	2K25	
KT8	PE06/40E	
KTZ63	(EF37A)	
L77	6C4; EC90	
LN 152	ECL80; 6AB8	
LN309	(PCL82)	
LZ319	(PCF80)	
M502	4J50	
M503	ME1101D	1866
M506	(725A)	
M513	(2J42A)	
MAZ41	AZ41	
ME1001	EC55; 5861	273
ME1100	2K25	2792
ME1200 AG	18103	
ME1201 AG	18130	

Type number	Philips type	CV number
ME1401	4065	495
ME1402	4066	
ME1503	(4C35);(PL435)	
MT17	PL5557/PL17	1144
MT57	PL5559/PL57	612
MT105	PL105	
MT5544	PL5544	2210
MT5545	PL5545	2215
MX113	18513	
MX114	18514	
MX204	21933	
MX205	21936	
MX206	21937	
N14	(DL35)	
N15	3Q5GT; DL33	
N16	(DL33)	
N17	DL92; 3S4	
N18	3Q4; DL95	
N19	DL94; 3V4	
N77	(EL91); (6AM5)	
N142	UL41	
N144	EL91; 6AM5	136
N147	EL33	
N150	EL41	
N151	EL42	
N152	PL81;21A6	
N153	PL83; 15A6	
N154	PL82; 16A5	
N309	(PL83); (15A6)	
N329	PL82; 16A5	
N709	EL84; 6BQ5	
N727	6AQ5	
NL714	(PL5557/PL17)	
NL715	PL5557/PL17	
NL5822	PL5822	
OA50	1N34A; OA50; (OA71)	
OA51	1N54A; OA51; (OA71)	
OA53	1N58A; OA53; (OA71)	
OA55	1N38A; OA55	
OA56	OA56; 1N86	
OA70	OA70; 1N87G	
OA71	OA71	[1]) 448
OA73	OA73	442
OA150	(OA50) ;(OA71)	
OA159	(OA73); (OA50); (OA56)	

Type numbers between brackets are near equivalents

[1]) CV version

Type number	Philips type	CV number
OA160	(OA70)	
OA161	(OA71)	
OA172	(OA72)	
OC601	(OC70)	
OC602	(OC71)	
OM4	EBC33	
OM5A	(EF37A)	
OM5B	EF37A)	
OM6	EF39	
OM7	(EF39)	
OM9	EL33	
OM10	(ECH35)	
OS12/500	837; PE04/10E	
P2-12	832A; QQE04/20	
P2-40B	(5894); (QQE06/40)	
P15	1164	
PA5021	866A; DCG4/1000G	
PABC80	PABC80; 9AK8	
PCC84	PCC84; 7AN7	
PCC85	PCC85; 9AQ8	
PCF80	PCF80; 8A8	
PCF82	(PCF80)	
PCL41	(PCL82)	
PCL81	(PCL82)	
PCL83	(PCL82)	
PE04/10E	837; PE04/10E	637
PE1/100	6083; PE1/100	
PL2D21	2D21; PL2D21	797
PL81	PL81; 21A6	
PL82	PL82; 16A5	
PL83	PL83; 15A6	
PL345	3C45; PL345	372
PL435	6268/4C35; PL435	1787
PL522	6279/5C22; PL522	2520
PL1267	PL1267/Z300T	1992
PL5544	PL5544	2210
PL5545	PL5545	2215
PL5557/PL17	PL5557/PL17	2957
PL5559/PL57	PL5559/PL57	612
PL5727	PL5727	4018
PM04	6BA6	
PM05	6AK5; EF95	
PM07	EF91; 6AM6	138

Type number	Philips type	CV number
PP2s	KL4	
PP6As	EL2	
PP6BG	EL33	
PP6Bs	EL3	
PV4	(1561)	
PV30s	CY2	
PV495	(1805)	
PV4100	1805	
PV4200	1561	
PY80	PY80; 19X3	
PY81	PY81; 17Z3	
PY82	PY82; 19Y3	
PZ1/75	PC1.5/100	
QA2400	(EF92); (6CQ6) [1]	
QA2401	(6C4); (EC90) [1]	
QA2402	(EL91); (6AM5) [1]	
QA2403	(EF91); (6AM6) [1]	
QA2404	(EAA91); (EB91) [1]	
QA2406	(ECC81); (12AT7) [1]	
QA2407	(6X4) [1]	
QA2408	6SN7GT [1]	
QB2/250	813; QB2/250	26
QB3/300	6155; QB3/300	2130
QB3.5/750	6156; QB3.5/750	2131
QB5/1750	6079; QB5/1750	3522
QBL5/3500	6076; QBL5/3500	
QBW5/3500	6075; QBW5/3500	
QE04/10	QE04/10	1510
QE05/40	6146; QE05/40	3523
QE06/50	807; QE06/50	124
QEL1/150	4X150A; QEL1/150	2519
QQC04/15	5895; QQC04/15	1838
QQE03/12	6360; QQE03/12	2798
QQE03/20	6252; QQE03/20	2799
QQE04/20	832A; QQE04/20	788
QQE06/40	5894; QQE06/40	2797
QQV03-10	6360; QQE03/12	2798
QQV03-20A	6252; QQE03/20	2799
QQV06-40A	5894; QQE06/40	2797
QQV07-40	829B; (QQE06/40)	2666
QQZ04-15	5895; QQC04/15	1838

Type numbers between brackets are **near** equivalents

[1]) No special quality tube.

Type number	Philips type	CV number
QS83/3	85A2; OG3	
QV03-12	5763	2129
QV04-7	QE04/10	1510
QV05-25	807; QE06/50	124
QV06-20	6146; QE05/40	3523
QV1-150A	4X150A; QEL1/150	2519
QY2-100	813; QB2/250	26
QY3-125	6155; QB3/300	2130
QY4-250	6156; QB3.5/750	2131
QY5-500	6079; QB5/1750	3522
QY5-3000A	6076; QBL5/3500	
QY5-3000W	6075; QBW5/3500	
R1	(1805)	
R2	(1561)	
R3	1561	
R4	(1561)	
R4A	(1561)	
R6A	1163	
R12	EY51; 6X2	
R15A	1164	
R42	(1561)	
R52	(GZ34)	
R120	(1725A)	
R121	(EF37A)	
R243	EC55; 5861	273
R290	K81A	
RG1-250	DCG1/250	3667
RG3-250A	866A;DCG4/1000G	32
RG3-1250	DCG4/5000	
RG5-12GC	DCG7/100	
RG250/3000	866A; DCG4/1000G	
RG1000/3000	872A; DCG5/5000GB	
RGN1064	1805	
RGN2004	1561	
RGN4004	AZ50	
RHK6332	723A/B	
RL7	EF54	
RL21	PL2D21; 2D21	
RL57	PL5559/PL57	

Type number	Philips type	CV number
RL105	PL105	
RL150	PL150	
RL1267	PL1267/Z300T	
RL1607	PL1607	
RL5551	PL5551	
RL5552	PL5552	
RL5555	PL5555	
RR3-250	3B28; DCX4/1000	1835
RR3-1250	4B32; DCX4/5000	2518
RS1006	5866; TB2.5/300	
RS1007	6155; QB3/300	
RS1016	5868; TB4/1250	
RV120/350	1561	
RV120/350s	AZ1	
RV120/500	1561	
RV120/500s	AZ4	
RV200/600	(AZ50)	
RX120A	1164	
SAS	(PL5551)	
SBS	PL5551	
SCR	(PL5555)	
SCS	PL5552	
SD61	EA50	
SDR	PL5555	
SDS	PL5553	
SP6	EF91; 6AM6	
SRU1	(TA4/800)	
Ste15000/15/45	DCG7/100	
SU61	EY51; 6X2	
T2MO5	6J6; ECC91	
T300-1	TB3/1000	
T900	(MW41-1)	
T901	(MW41-1)	
T901B	(MW41-1)	
TB1/60G	834; TB1/60G	
TB2.5/300	5866; TB2.5/300	1924
TB3/350	100TH; TB3/350	2552
TB3/750	5867; TB3/750	
TB4/800	250TH; TB4/800	2589
TB4/1250	5868; TB4/1250	
TBL6/6000	5924; TBL6/6000	
TBL12/100	6078; TBL12/100	

Type numbers between brackets are near equivalents

Type number	Philips type	CV number
TBW6/6000	5923; TBW6/6000	
TBW12/100	6077;TBW12/100	
TH108	TA18/100	
TH250TH	250TH; TB4/800	
TH813	813; QB2/250	26
TH5021B	866A;DCG4/1000G	32
TH5021V	DCG4/1000ED	
TH5031B	872A; DCG5/5000GB	642
TH5031V	DCG5/5000EG	
TH5040	(6508); (DCG9/20)	
TH5221 V/B	3B28; DCX4/1000	1835
TH6011	PL5557/PL17	
TH6031	PL5559/PL57	
TH6120	PL105	
TH6220	PL5545	
TH7010	(PL5551)	
TH7020	PL5551	
TH7030	PL5552	
TH7040	PL5553	
TQ2	PL5557/PL17	
TQ2/3	(PL5544)	
TQ2/6	(PL5545)	
TS51/EF95	6AK5; EF95	
TS52/ECC91	6J6;ECC91	
TS53/18042	18042	
TS54/E83F	E83F	
TT10	813; QB2/250	
TT16	6155; QB3/300	
TT17	PL5557/PL17	
TX2/3	PL5544	
TX2/6	PL5545	
TX12-20A	TAL12/20M	
TX12-20W	TAW12/20M	
TXM100	PL2D21;2D21	
TY1-50	TB1/60A	
TY2-125	5866; TB2.5/300	1924
TY3-250	5867; TB3/750	
TY4-500	5868; TB4/1250	

Type number	Philips type	CV number
TY12-50A	6078;TBL12/100	
TY12-50W	6077; TBW12/100	
U9	(1805)	
U10	(1805)	1443
U12	(1561)	
U12/14	1561	
U14	1561	
U18	AZ50	
U18/20	(AZ50)	
U43	EY51; 6X2	
U50	(5Y3GT)	
U52	(GZ34)	
U54	(GZ34)	
U70	(EZ35)	
U78	6X4	
U142	UY41	
U143	AZ31	
U145	(UY41)	
U147	EZ35	
U150	EZ40	
U151	EY51; 6X2	
U152	PY80; 19X3	
U153	PY81; 17Z3	
U154	PY82; 19Y3	
U404	(UY41)	
U2410/P	U30	
UCH71	(UCH21)	
UCH81	UCH81; 19D8	
UCH171	(UCH81)	
UF174	(UF80)	
UF175	(UF85)	
UM11	(UM4); (UM34)	
UM35	(UM34)	
UM171	(UM34)	
UU3; UU4;UU5	(1561)	
UU9	(EZ40)	1855
UU60/250	(1561)	
UU120/350	(1561)	
UU120/350A	(1561)	
UU120/500	(1561)	
V2M70	6X4	

Type numbers between brackets are **near** equivalents

Type number	Philips type	CV number
V41	AZ41	
V61	EZ40	
V100	(AZ50)	
V311	UY41	
V312 (Mazda Fr)	UY42	
V884	EF92; 6CQ6	
VH550	DCG4/1000ED	
VH550A	DCG4/1000G	
VH7400	DCG5/5000GB	
VH7400A	DCG5/5000EG	
VP6(Coss)	EF92; 6CQ6	
VR53	EF39	1053
VR55	EBC33	1055
VR56	(EF37A)	1056
VR57	EK32	1057
VR91	[3])EF50	1091
VR92	EA50	1092
VR150/30	OD3	216
VS70	7475	1070
[1]) VT39	(6508); (DCG9/20)	
VT39A	(6508); (DCG9/20)	
VT42	(872A); DCG5/5000GB)	642
VT42A	(872A); (DCG5/5000GB)	
VT46	(866A); (DCG4/1000G)	
VT46A	866A; DCG4/1000G	32
[2]) VT60A	(807); (QE06/50)	1572
VT74	(GZ34)	1864
[2]) VT75	(EL34)	1075
[2]) VT79	(PE06/40N)	1079
VT80	80	617
[2]) VT88	(QQE04/20)	1088
VT91	(EF37A)	1936
VT91A	(EF37A)	1937
VT92	(EBC33)	588
VT92A	(EBC33)	587
VT93	(EBF32)	1894
VT93A	(EBF32)	1893
VT100	807; QE06/50	
VT100A	(807); (QE06/50)	
VT101	837; PE04/10E	637
VT103	(6SQ7GT)	1990
VT104	(12SQ7GT)	546

Type number	Philips type	CV number
VT107	(6V6GT)	510
VT107A	6V6GT	511
VT107B	(6V6GT)	509
VT117	(6SK7GT)	1981
VT117A	6SK7GT	1982
VT118	(832A); (QQE04/20)	1088
VT125	(DL35)	1805
VT126	(EZ35)	573
VT126A	(EZ35)	572
VT126B	(EZ35)	574
VT131	(12SK7GT)	543
VT139	OD3	
VT144	813; QB2/250	
VT146	(DF33)	1823
[2]) VT146	DCG4/1000ED	1625
VT147	(DK32)	1802
VT150	(6SA7GT)	1966
VT150A	6SA7GT	1967
VT151	(EK32)	578
VT151B	(EK32)	580
VT161	(12SA7GT)	537
[2]) VT168	(DCG1.5/250	1626
VT171	DK91; 1R5	782
VT171A	(DK91); (1R5)	
VT172	DAF91; 1S5	784
VT173	DF91; 1T4	785
VT174	DL92; 3S4	820
[2]) VT180	EF39	1053
[2]) VT194	(EBC33)	587
[2]) VT195	(GZ34)	1863
[2]) VT196	(6V6GT)	509
[2]) VT197	(DCG4/5000)	1629
VT197A	5Y3GT	1856
[2]) VT198	(6CA7); (EL34)	1075
[2]) VT199	807; QE06/50	124
VT201	(25L6GT)	552
[2]) VT201	(EF37A)	1056
VT201C	25L6GT	553
VT206A	(GZ34)	729
[2]) VT207	[3]) EF50	1091
VT218	100TH; TB3/350	2552
VT220	250TH; TB4/800	2589
VT221	3Q5GT; DL33	819
VT223	(DAC32)	1820
VT231	6SN7GT	1988

Type numbers between brackets are near equivalents

[1]) American Army VT-numbers unless otherwise stated. [3]) British VT-numbers. [2]) Small mechanicsl differences.

Type number	Philips type	CV number
[2]) VT244	(GZ34)	575
VT250	[1]) EF50	
VT259	(5894); (QQE06/40)	
VT264	3Q4; DL95	818
VT267	8020	2967
VT286	832A; QQE04/20	788
[3]) VT510	QE04/10	1510
VU64	(1561)	1064
VU72	DCG1.5/250	1072
VU133	(DCG1.5/250)	54
VU134	1877	1134
VX550A	DCX4/1000	
VX7400	DCX4/5000	
W17	DF91; 1T4	
W77	EF92; 6CQ6	
W142	UF41	
W143	EF22	
W147	EF39	
W148	(EF22)	
W150	EF41	
W719	EF85; 6BY7	
W727	6BA6	
WD142	UAF42	
WD150	EAF42	
WE12	EM4	
X14	(DK32)	
X17	DK91; 1R5	
X18	DK92; 1AC6	
X61M	(ECH35)	

Type number	Philips type	CV number
X142	UCH42	
X143	ECH21	
X147	ECH35	
X150	ECH42	
X727	6BE6	
XG1-2500	PL5559/PL57	612
XG2-12	PL255	
XG5-500	PL5557/PL17	2957
XG15-12	DCG7/100	
XGQ2-6400	PL105	
XH8-100	4C35; PL435	1787
XH16-200	5C22; PL522	2520
XR1-3200	PL5544	2210
XR1-6400	PL5545	2215
Z14	(DF33)	
Z77	EF91; 6AM6	
Z90	EF50	
Z142	UF42	
Z150	EF42	
Z152	EF80; 6BX6	
Z719	EF80; 6BX6	
Z729	EF86; 6267	
Z900T	5823	
ZD17	DAF91; 1S5	
ZD152	EBF80; 6N8	

Type numbers between brackets are **near** equivalents

[1]) Small mechanical differences. [2]) American Army VT-numbers unless otherwise stated. [3]) British VT-number.

INTERCHANGEABILITY LIST

Type number	Philips type
CV5	(DCG4/5000)
CV12	(6279/5C22)
CV26	813; QB2/250
CV32	866A;DCG4/1000G
CV54	(DCG1.5/250)
CV124	807; QE06/50
CV131	EF92; 6CQ6
CV133	6C4; EC90
CV135	EY91
CV136	EL91; 6AM5
CV137	EAC91
CV138	EF91; 6AM6
CV139	(EC91)
CV140	EB91; (EAA91)
CV152	(DCG4/5000)
CV173	EF55
CV181	ECC32
CV216	OD3
CV273	5861; EC55
CV283	EAA91; 6AL5
CV303	EF22
CV309	(QE04/10)
CV358	EF37A
CV369	1B35
CV372	3C45; PL345
CV378	(GZ34)
CV394	EM34; 6CD7
CV417	6AQ4; EC91
CV424	(5894); (QQE06/40)
CV425	(OA71)
CV426	EY51; 6X2
CV429	MF31-55
CV431	85A1; OE3
CV442	OA73
CV448	[1]) OA71
CV449	85A2; OG3
CV450	EL38; 6CN6
CV452	6AT6
CV453	6BE6
CV454	6BA6
CV455	ECC81; 12AT7
CV491	ECC82; 12AU7
CV492	ECC83; 12AX7
CV493	6X4

Type number	Philips type
CV495	4065
CV501	EBF32
CV509	(6V6GT)
CV510	(6V6GT)
CV511	6V6GT
CV537	(12SA7GT)
CV538	12SA7GT
CV543	(12SK7GT)
CV544	12SK7GT
CV546	(12SQ7GT)
CV547	12SQ7GT
CV551	(25L6GT)
CV552	(25L6GT
CV553	25L6GT
CV567	(35Z5GT)
CV568	35Z5GT
CV569	ECC35
CV571	50L6GT
CV572	(EZ35)
CV574	(EZ35)
CV575	(GZ34)
CV580	(EK32)
CV587	(EBC33)
CV593	GZ32; (GZ34)
CV600	(DG13-2)
CV617	80
CV637	837; PE04/10E
CV642	872A; DCG5/5000GB
CV659	(PE06/40E)
CV706	(EF39)
CV718	(MF13-1)
CV722	725A
CV725	(1B24A)
CV729	(GZ34)
CV742	(PL5557/PL17)
CV752	(PL1267/Z300T)
CV753	1A3; DA90
CV782	1R5; DK91
CV784	DAF91; 1S5
CV785	DF91; 1T4
CV788	832A;QQE04/20
CV795	(AB2)
CV797	PL2D21; 2D21
CV807	3A4; DL93

Type numbers between brackets are **near** equivalents

[1]) Special CV version

Type number	Philips type
CV808	3A5; DCC90
CV818	3Q4; DL95
CV819	(DL33)
CV820	DL92; 3S4
CV838	(DP13-2)
CV850	6AK5; EF95
CV858	6J6; ECC91
CV859	(ECH35)
CV877	(EF22)
CV925	12SN7GT
CV1053	EF39
CV1055	EBC33
CV1056	(EF37A)
CV1057	EK32
CV1062	TB1/60A; 2x
CV1064	(1561)
CV1070	7475
CV1072	DCG1,5/250
CV1075	(EL34); (6CA7)
CV1088	(832A); (QQE04/20)
CV1091	EF50
CV1092	EA50
CV1134	1877
CV1261	(866A); (DCG4/1000G)
CV1264	AZ50
CV1347	ECH35
CV1426	EK2
CV1427	EF9
CV1428	EBC3
CV1429	EL2
CV1434	EM4
CV1473	(3533G)
CV1479	(55100/01)
CV1480	(55100/02)
CV1481	(55100/03)
CV1482	(55100/04)
CV1483	(55085/01)
CV1484	(55085/02)
CV1485	(55085/03)
CV1486	(55085/04)
CV1510	QE04/10
CV1572	(807); (QE06/50)
CV1581	(ECH35)
CV1625	DCG4/1000ED
CV1626	(DCG1.5/250)

Type number	Philips type
CV1629	(DCG4/5000)
CV1758	1L4; DF92
CV1787	4C35/PL435
CV1795	723A/B
CV1800	(DK32)
CV1802	(DK32)
CV1803	(DL35)
CV1805	1C5GT; DL35
CV1818	(DAC32)
CV1820	(DAC32)
CV1821	(DF33)
CV1823	(DF33)
CV1824	(DL36)
CV1826	1Q5GT; DL36
CV1832	OA2
CV1833	OB2
CV1835	3B28; DCX4/1000
CV1836	1163
CV1838	5895; QQC04/15
CV1839	(EF42)
CV1846	(GZ34)
CV1850	(ECC40)
CV1851	(GZ34)
CV1854	(5Y3GT)
CV1855	(EZ40)
CV1856	5Y3GT
CV1862	6AQ5
CV1863	(GZ34)
CV1864	(GZ34)
CV1865	EC81; 6R4
CV1886	EC80; 6Q4
CV1893	(EBF32)
CV1894	(EBF32)
CV1924	5866; TB2.5/300
CV1928	12BA6
CV1935	(EF37A)
CV1936	(EF37A)
CV1937	(EF37A)
CV1942	(EF39)
CV1943	(EF39)
CV1944	(ECH35)
CV1945	(ECH35)
CV1946	(ECH35)
CV1947	(EL34)
CV1959	50C5

Type numbers between brackets are **near** equivalents

Type number	Philips type
CV1961	12AU6
CV1966	(6SA7GT)
CV1967	6SA7GT
CV1971	(DF91)
CV1976	MV6-5
CV1977	UL41
CV1981	(6SK7GT)
CV1982	6SK7GT
CV1985	(ECC35)
CV1988	6SN7GT
CV1990	(6SQ7GT)
CV1991	6SQ7GT
CV1992	PL1267/Z300T
CV2106	DL66
CV2107	DF66
CV2128	ECH81; 6AJ8
CV2129	5763
CV2130	6155; QB3/300
CV2131	6156; QB3.5/750
CV2132	90AV
CV2133	90CG
CV2134	90CV
CV2166	(4J50)
CV2175	DG7-5
CV2191	DG13-2
CV2195	(EF91)
CV2210	PL5544
CV2215	PL5545
CV2225	150B2; 6354
CV2235	EY84; 6374
CV2238	5672
CV2239	5676
CV2240	3B4
CV2259	DL68
CV2260	DF64
CV2270	90AG
CV2275	DC70; 6375
CV2284	4J50
CV2518	4B32; DCX4/5000
CV2519	4X150A; QEL1/150
CV2520	5C22/PL522
CV2524	6AU6
CV2526	6AV6
CV2552	100TH; TB3/350
CV2573	(85A2)

Type number	Philips type
CV2589	250TH; TB4/800
CV2644	1561
CV2666	(5894); (QQE06/40)
CV2680	(3554)
CV2721	EL81; 6CJ6
CV2723	(DCG9/20)
CV2726	EL83; 6CK6
CV2729	E80F; 6084
CV2730	4066
CV2748	GZ30; (GZ34)
CV2775	1163
CV2792	2K25
CV2793	2J50
CV2797	5894; QQE06/40
CV2798	6360; QQE03/12
CV2799	6252; QQE03/20
CV2860	AZ1
CV2862	AZ31
CV2901	EF86; 6267
CV2925	EBF2
CV2929	ECH3
CV2938	EL33
CV2947	DCG4/5000
CV2957	PL5557/PL17
CV2967	6020
CV2975	EL84; 6BQ5
CV2980	DM70; 1M3
CV2983	DL94; 3V4
CV3522	6079; QB5/1750
CV3523	6146; QE05/40
CV3526	EL85; 6BN5
CV3548	1B24A
CV3602	5J26
CV3667	DCG1/250
CV3676	2J42
CV3687	2J49
CV3881	EB41
CV3882	EBC41
CV3883	EAF42
CV3884	ECC40
CV3885	EF40
CV3886	EF41
CV3887	EF42
CV3888	ECH42
CV3889	EL41

Type numbers between brackets are near equivalents

Type number	Philips type
CV3890	EL42
CV3891	EZ40
CV3892	AZ41
CV4018	PL5727

REPLACEMENT GUIDE FOR OBSOLETE TYPES

This list gives the most suitable replacement types for obsolete tubes. In a number of case the replacement proposed can be carried out without important alterations being required in the equipment. In some cases however, it will be necessary to rewire or change the socket, to use an adapter and/or to modify the circuit. If a triode is replaced by a pentode the latter may be used in triode connection.

Obsolete type	Replacement type	Obsolete type	Replacement type	Obsolete type	Replacement type	Obsolete type	Replacement type
373	1805	AZ21	AZ1, AZ41	DN9-5	DR10-5	EZ12	GZ34
505	1805		1561	DN10-3	DR10-3	F410	4650
506,506K	1805	C1	C8	DN10-5	DR10-5	F443N	4650
1038	328	C2	C10	DN10-6	DG10-6	F460	4673
1326	1010	C3	C8		DR10-6	KC1	KBC1
1560	80	C4	C10	E406N	4613	KC3	KBC1, KF3
1708	367	C9	C10	E408N	4613	KC4	KBC1
1801	1805	C24 3N	KL4	E409	4614	KCH1	KK2
1802	1805	CB1	EB4, UB41	E424N	ABC1	KDD1	DLL21
1803	1805	CB2	EB4, UB41	E424R	ABC1	KF1	KF3
1807	1805	CBC1	EBC3	E428	ABC1	KF2	KF3
1815	AZ50	CBL6	GBL1	E438	ABC1	KF4	KF3
1817	AZ50	CC2	EBC3	E442	4636	KH1	KK2
1821	1805	CF1	CF7, EF6	E443N	4688	KL1	KL4
1823	1805	CF2	CF3, EF9	E444	ABC1	KL5	KL4
1832	4646	CK1	ECH3	E444S	ABC1	MA4/500	TB4/1250
3541	3533	CK3	ECH3	E445	AF3	MC2,5/75	TB2,5/300
4610	4636	CL1	EL2	E445S	AF3	MF31-22	MF31-55
4612	4613	CL2	CBL1, EL2	E446	4636	MW22-7	MW22-16
4623	EA50	CL4	CBL1	E447	AF3	MW22-14	MW22-16
4635	4614	CL6	CBL1	E448	AK2	MW31-7	MW31-74
4652	AX50	CY1	CY2	E449	AK2	MW31-14	MW31-74
4670	DLL21	D404	4613	E452T	AF7	MW31-16	MW31-74
4675	4671	DAC25	DAF91	E453	E443H	MW31-22	MW31-74
4676	4672		DAF96	E455	AF3	MW31-23	MW31-74
4696	EEP1	DB7-1	DB7-5	E462	AF7, 4636	MW31-24	MW31-74
5854/00	5854/03	DB7-2	DB7-6	E463	E44 3H	MW36-22	MW36-44
5854/02	5854/03	DB7-3	DB7-5	E499	4657	MW36-24	MW36-44
18038	1805	DB7-4	DB7-6	E707	4624	OA54	OA56
18103	18120	DB9-3	DB10-3	EAB1	EBC3, EBC81	OA60	OA70
18104	18130	DB9-4	DB10-2	EAF41	EAF42	OA61	OA71
21940	21991	DB9-5	DB10-5	EC40	EC80	PE08/40	PE06/40
21941	21993	DC25	DF91, DF96	ECH2	ECH3	TA12/ 20000K	TAW12/20
22117	22119	DCH25	DK92, DK96	EE1	EEP1		
24006	24008	DDD25	DLL21	EF1	EF6	UAF41	UAF42
28117	28110	DE2/200	DCG1/250	EF2	EF9	UY21	UY1N, UY85
28118	28111		DCG4/1000	EF5	EF9, EF89		
28119	28112	DF26	DAF91	EF8	EF9, EF89		
28138	28139		DAF96	EF13	EF9, EF89		
95210	MW 13-35	DG7-1	DG7-5	EF37	EF37A		
95384/00	95384/03	DG7-2	DG7-6	EFF50	EFF51		
95384/02	95384/03	DG7-3	DG7-5	EH2	ECH3, ECH4		
A414K	A415	DG7-4	DG7-6	EK1	EK2		
AB1	AB2	DG9-3	DG10-3	EK3	ECH3, EK2		
AC2	ABC1	DG9-4	DG10-2	EL1	EL2		
ACH1	AK2	DG9-5	DG10-5	EL5	4689		
AD1	4683	DL25	DL94, DL92,	EL6	4699N		
AF2	AF3	DL91	DL96	EL 43	EL83		
AH1	AK2	DN7-1	DR7-5	EL44	EL81		
AK1	AK2	DN7-3	DR7-5	EM3	EM4		
AL2	4682	DN7-4	DR7-6	EM11	EM34		
AL5	4688	DN7-5	DG7-5	EZ1	EZ2		
AM1	EM4		DR7-5	EZ3	EZ80		
AX1	AX50, AZ50	DN9-3	DR10-3	EZ4	GZ34		
		DN9-4	DR10-2	EZ11	EZ2		

Note: All cathode-ray tubes with N-screen are obsolete, to be replaced by tubes with G- or R-screen.

TUBE SOCKETS

If more than one type of socket is available for a given base, the choice depends on the application of the tube

Tube base	Cat sheet	Type number of socket	Number of contacts	Material
A	EP 3413/2	40404	4	Synthetic resin
Diheptal (B14A)	EP 3412	5914/20	14	Synthetic resin
Duodecal (B12A)	EP 3412	5912/01	7	Resin-bonded paper
	EP 3412	5912/20	12	Synthetic resin
	EP 3412	5912/22	7	Synthetic resin
Edison-E14	EP 3413/5	88168/01	Screw + centre contact	Synthetic resin
-E27	EP 3413/5	40418		Synthetic resin
-E40	EP 3413/5	65 909 BG/01		Ceramic
FJ	EP 3412	5915/00	9	Resin-bonded paper
Giant (B5F)	EP 3413/3	40211/01	5	Ceramic
Jumbo (B4F)	EP 3413/2	40408	4	Ceramic
Loctal (B8G)	EP 3411/2	5902/02	8	Synthetic resin
	EP 3411/2	40213	8	Ceramic
	EP 3413/4	40210/02	8	Ceramic
(B9G)	EP 3411/2	5906/20	9	Synthetic resin
	EP 3411/2	40212	9	Ceramic
Magnal (B11A)	EP 3412	5911/20	11	Synthetic resin
Medium (G)	EP 3413/2	40218/03	4	Ceramic
(N)	EP 3413/3	40219	5	Ceramic
Miniature (B7G)	EP 3410/1	5909/01	7	Resin-bonded paper
	EP 3410/1	5909/36	7	Ceramic
	EP 3410/1	5909/35	7	Ceramic
Screen *H* = 34.9 mm	EP 3410/1	56900		Nickel-plated brass
can = 44.5	EP 3410/1	56901		Nickel-plated brass
= 57.2	EP 3410/1	56902		Nickel-plated brass
Noval (B9A)	EP 3410/3	5908/01	9	Resin-bonded paper
	EP 3410/3	5908/34	8	Ceramic
	EP 3410/3	5908/36	9	Ceramic
	EP 3410/3	5908/35	9	Ceramic
Screen *H* = 38.1 mm	EP 3410/3	56907		Nickel-plated brass
can = 49.2	EP 3410/3	56908		Nickel-plated brass
= 60.3	EP 3410/3	56909		Nickel-plated brass
= 71.4	EP 3410/3	56910		Nickel-plated brass
O	EP 3413/3	40465	5	Synthetic resin
Octal	EP 3411/1	5903/12	8	Synthetic resin
P	EP 3413/4	5900/02	8	Synthetic resin
Rimlock (B8A)	EP 3410/2	5904/01	8	Resin-bonded paper
	EP 3410/2	5904/36	8	Ceramic
Septar (B7A)	EP 3413/4	40202	7	Ceramic
Special	EP 3413/1	40407	2	Resin-bonded paper
	EP 3413/1	1285	2	Ceramic
(B3A)	EP 3413/1	40406	3	Synthetic resin
	EP 3413/1	1287	3	Resin-bonded paper
	EP 3413/1	40209	3	Resin-bonded fabric
Subminiature (B8D)	EP 3410/1	5907/22	8	Synthetic resin
Super giant	EP 3413/3	40216	5	Ceramic
Super jumbo (B4D)	EP 3413/2	40403	4	Ceramic
V	EP 3412	5900/20	5	Synthetic resin
W	EP 3413/2	40221	4	Resin-bonded paper