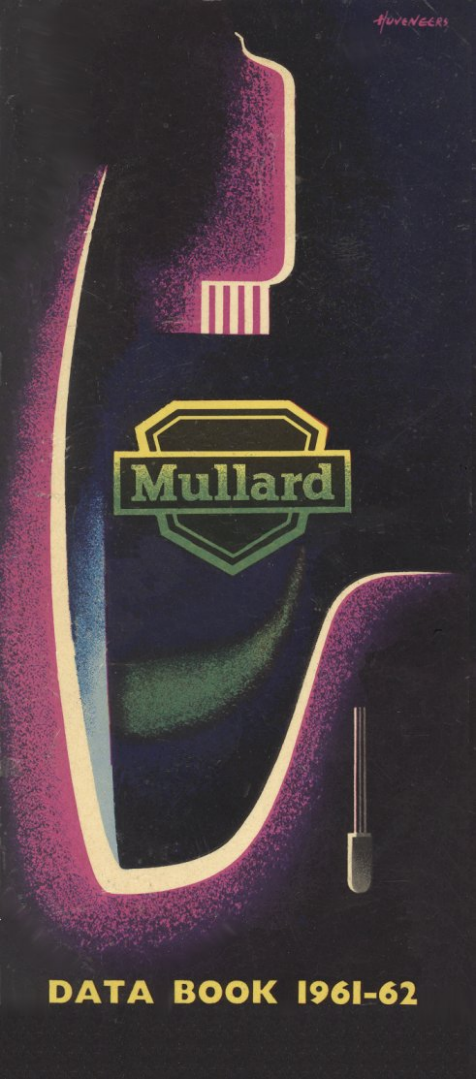


DATA BOOK 1961-62

Mullard Pocket Data Book

1961/62 Edition

IMPORTANT: DO NOT DESTROY YOUR 1960/61 EDITION OF THIS BOOK. IT CONTAINS REFERENCES TO OBSOLETE VALVE TYPES WHICH MAY PROVE USEFUL.

Mullard Ltd.,
Mullard House, Torrington Place, London, W.C.1

FOREWORD

The Mullard Pocket Data Book has proved a useful source of valve information for many years. However, it has been decided to present this information in a different manner so as to provide easier reference to the many types in the Mullard range which are in common use.

In order to achieve this, it has been necessary to omit certain types which are now considered to be obsolescent, and include only valves, cathode ray tubes and semi-conductor devices with which the Service Engineer is most concerned.

It is suggested that previous editions of this Pocket Data Book be retained for reference to the obsolescent types, a list of which is contained in this edition.

Information on these types may also be found in the original edition of the Mullard Maintenance Manual.

The valve data and replacement lists contained in this booklet have been prepared by the Technical Service Department, Mullard Limited. Comprehensive data is published in the Mullard Technical Handbook which is available on a subscription basis. Details of this service and further data on individual valves may be obtained on request to this Department.

CONTENTS

SYMBOLS AND ABBREVIATIONS

1. Base and Connections

a	Anode.
b	Base.
c	Collector.
e	Emitter.
f	Filament.
f+	Filament positive.
f−	Filament negative.
fct	Filament centre tap.
g	Grid.
h	Heater.
hct	Heater centre tap.
htap	Heater tap.
IC	Internal connection (must **not** be connected externally).
k	Cathode.
M	Metallising (external) or base sleeve.
NC	No connection.
NP	No pin.
s	Internal shield.
t	Fluorescent screen or target.

NOTE 1—In valves having more than one grid, the grids are distinguished by numbers : g1, g2, etc., g1 being the grid nearest the cathode.

NOTE 2—In multiple valves, electrodes of the different sections are distinguished by adding one of the following letters :

Diode	d
Triode	t
Pentode	p
Hexode	h
Heptode	h
Octode	h

Thus the grid of the triode section of a triode pentode is denoted by gt.

NOTE 3—Two or more similar electrodes which cannot be distinguished by any of the above means may be denoted by adding one or more primes to indicate of which electrode system the electrode forms a part. Thus, the anode of the first diode in a double diode valve is denoted by a′.

2. Characteristics

f	Frequency.
gc	Conversion conductance.
gm	Mutual conductance.
Ia	Anode current.
ia(pk)max. ...	Maximum peak anode current.
Ia(av)max. ...	Maximum mean anode current.
Ic	Collector current.
I′c(o)	Collector leakage current (grounded emitter).
If	Filament current.
Ig2	Screen-grid current.
Ig2+g4 ...	Screen-grid current (frequency changers).
Ih	Heater current.
Iout max. ...	Maximum output current
It	Target current (tuning indicators).
pa max. ...	Maximum anode dissipation.
pc max. ...	Maximum collector dissipation.
P.I.V. max. ...	Maximum peak inverse voltage.
Pout	Power output (for 10% distortion).
ra	Anode impedance.
Ra	Anode load.
Tamb. ...	Ambient temperature.
Va	Anode voltage.
va(pk)max. ...	Maximum peak anode voltage.
Vb	Supply voltage.
Vc	Collector voltage.
Vf	Filament voltage.
Vgl	Negative grid voltage.
Vg2	Screen-grid voltage.
Vg2+g4 ...	Screen-grid voltage (frequency changers).
Vh	Heater voltage.
vh−k(pk)max.	Maximum peak voltage between heater and cathode.
α	Current gain (grounded emitter).
μ	Amplification factor.

MULLARD COMPREHENSIVE VALVE, CATHODE RAY TUBE AND SEMI-CONDUCTOR DEVICE EQUIVALENTS LIST

Only valves listed by other manufacturers as equivalents and indicated by them as available appear in the other equivalents column. Before carrying out a substitution it is important to ensure that the manufacturer's catalogue is studied to ensure that any special limitations are not violated.

Whilst every care has been taken in the compilation of this list, Mullard Ltd. cannot accept any responsibility for the accuracy thereof. Furthermore, the fact that a Mullard equivalent is given for another manufacturer's valve in this list does not imply that the reverse process will operate satisfactorily in all cases.

References

* No direct equivalent, see Mullard Maintenance Manual, original edition.

** No direct equivalent, see Mullard Maintenance Manual, 2nd edition. The majority of these types are also contained in the original edition.

† Valves having a different heater current, and therefore not direct replacements, in a.c./d.c. receivers.

Where necessary, the name of the manufacturer is indicated in bracketed italics immediately following the valve type number.

Examples : AC/DD(*EM*), DD6(*C*), P.T.4(*F*).

C	Cossor	*H*	Hivac
EK	Ekco	*M*	Mullard
EM	Ediswan Mazda	*MO*	Marconi Osram
F	Ferranti	*T*	Tungsram

Valve Type	Mullard Direct Equivalent	Other Equivalents
A11B... ...	IW4–350	R2, R42, 1867
A11C... ...	IW4–500	MU14, R3, UU5, 43IU
A11D ...	IW4–350	R2, R42, 1867
A20B... ...	*	DDL4, V914
A23A ...	TDD4	AC/HL/DD, DDT
A27D ...	PEN4DD	—
A30D ...	*	AC/HL, 41MHL
A36A ...	*	41STH
A36B... ...	*	41STH
A36C... ...	*	AC/TH1, 4THA
A40M ...	—	AC/SG/VM
A50A ...	—	MS/PEN, SPT4A
A50B... ...	—	MS/PENB
A50M ...	—	AC/VP1, MVS/PEN, VPT4
A50N ...	—	MVS/PEN
A50P	VP4B	AC/VP2, MVS/PENB
A70B... ...	*	AC/PEN, MP/PEN, 7A2
A70C... ...	PENA4	PT4(*F*), 7A3, 42MP/PEN
A70D ...	PENA4	AC2PEN, PT4(*F*), 42MP/PEN
A70E... ...	PENB4	AC4PEN
A80A ...	FC4	VHT4, 15A2, 41MPG
A430N ...	*	—
AB1	*	—
AB2	*	—
ABC1 ...	*	—
ABL1 ...	*	—
AC/DD(*EM*) ...	*	—
AC/DD(*H*) ...	*	—
AC/DDT ...	TDD4	MHD4
AC/HL ...	*	MH4, 41MHL

Valve Type	Mullard Direct Equivalent	Other Equivalents
AC/HL/DD ...	TDD4	DDT, MHD4
AC/HP (5-pin)	—	—
AC/HP (7-pin)	—	SPT4A
AC/P	•	—
AC/PEN ...	—	MKT4, MP/PEN, 7A2
AC/Q ...	—	—
AC/Qa ...	•	—
AC/SG ...	—	—
AC/SGVM ...	—	—
AC/SH ...	—	MS4B
AC/SL ...	—	SPT4A
AC/SIVM ...	—	VPT4
AC/S2 ...	•	MS4B, SPT4A
AC/S2PEN ...	•	MS/PEN
AC/TH1 ...	•	X41
AC/TH1A ...	•	TH41
AC/TP ...	—	—
AC/VH ...	—	—
AC/VP ...	—	—
AC/VPB ...	VP4B	—
AC/VP1 ...	•	MVS/PEN
AC/VP2 ...	VP4B	MVS/PENB
AC/VS ...	—	—
AC/Y ...	•	—
AC/Z... ...	PENA4	PT4(*F*)
AC/ZDD ...	•	PT4D
AC2HL ...	—	—
AC2PEN ...	PENA4	KT41, PT4(*F*), 7A3, 42MP/PEN
AC2PENDD ...	•	PTD4
AC4PEN ...	PENB4	—
AC5PEN ...	—	PT10
AC5PENDD ...	—	—
ACO42 ...	•	2P
ACO44 ...	•	LP4, PP3/250, PX4, 4XP
ACO54 ...	•	—
ACO64 ...	•	—
ACO84 ...	•	—
ACO84N ...	•	—
AC104 ...	•	—
AF2	—	—
AF7	—	—
AK2	•	—
AL4	•	—
AL5	•	—
AL60	•	—
APP4A ...	•	AC/PEN, MKT4
APP4As ...	•	—
APP4B ...	PENA4	AC2PEN, KT41, PT4(*F*)
APP4Bs ...	•	—
APP4E ...	PENB4	—
APV4 ...	IW4–350	MU14, R42, 1867
AS4120 ...	—	AC/SG, MS4B, SPT4A
AS4125 ...	—	AC/SG/VM
AX50 ...	•	—
AW36–20 ...	AW36–20	—
AW36–21 ...	AW36–21	—
AW36–80 ...	AW36–80	—
AW43–80 ...	AW43–80	17BTP4
AW43–88 ...	AW43–88	C17AA
AW43–89 ...	AW43–89	—
AW53–80 ...	AW53–80	21CLP4
AW53–88 ...	AW53–88	C21AA
AW53–89 ...	AW53–89	—
AZ1	AZ1	—
AZ2	•	—
AZ3	•	—
AZ31... ...	AZ31	U143
AZ32... ...	•	—
AZ41... ...	AZ41	—
AZ50... ...	•	—
B36	12SN7GT	—
B65	6SN7GT	—
B109	UCC85	10L14
B152	ECC81	B309, 12AT7
B228	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
B309	ECC81	B152, 12AT7
B319	PCC84	7AN7, 30L1
B329	ECC82	12AU7
B339	ECC83	6L13, 12AX7
B719	ECC85	6AQ8, 6L12
B729	—	6/30L2
BVA211	DW4–350 or IW4–350	R42
BVA214		
BVA215		
BVA216		
BVA243	EF39	6K7G†
BVA246		
BVA247		
BVA264	EL33	—
BVA265		
BVA266	EL33	—
BVA267		
BVA274		
BVA275	ECH35	6K8G†
BVA276		
C9A	—	CRM92, CRM92A
C9B	—	—
C10B	UR1C	CY1C
C12A... ...	—	CRM121, CRM121A, CRM121B
C12B... ...	—	—
C12D	—	—
C12FM ...	MW31–74	121K, 12XP4
C14BM ...	—	—
C14FM ...	—	—
C14HM ...	—	—
C14JM ...	—	—
C14PM ...	—	—
C15B... ...	—	—
C17–1 ...	—	—
C17–1A ...	MW43–69	—
C17–2 ...	—	—
C17AA ...	AW43–88	—
C17BM ...	—	—
C17FM ...	—	—
C17HM ...	—	—
C17JM ...	—	—
C17PM ...	—	—
C20C... ...	•	—
C21AA ...	AW53–88	—
C21HM ...	—	—
C21KM ...	MW53–80	—
C21NM ...	—	—
C21TM ...	—	—
C23B... ...	•	—
C27D	•	—
C30B... ...	•	4D1
C36–24 ...	MW36–24	—
C36A... ...	—	TH2321, 202STH
C36C... ...	—	TH2321, 302THA
C50B... ...	—	8D2
C50N	•	VP1322, 9D2, 13VPA
C70D	•	7D6
C80B... ...	—	—
CB1	•	—
CB2	•	—
CBC1	•	—
CBL1	CBL1	—
CBL31	CBL31	—
CC2	•	—
CCH35	CCH35	—
CF1	•	—
CF2	•	—
CF7	•	—
CG1–E	—	GD4, GD5
CG3–E	—	—
CG4–E	—	GD5
CG6–E	—	GD4
CG10–E	—	—
CG12–E	—	GD3

Valve Type	Mullard Direct Equivalent	Other Equivalents
CK1	—	—
CL4	*	—
CL6	*	—
CL33	CL33	332PEN
CME141 ...	—	—
CME1402 ...	—	—
CME1702 ...	—	—
CME1703 ...	—	—
CME2101 ...	—	—
CRM71 ...	—	—
CRM91 ...	—	—
CRM92 ...	—	C9A
CRM92A ...	—	C9A
CRM93 ...	—	—
CRM121 ...	—	C12A
CRM121A ...	—	C12A
CRM121B ...	—	—
CRM122 ...	—	—
CRM123 ...	—	—
CRM124 ...	—	—
CRM141 ...	—	—
CRM142 ...	—	—
CRM143 ...	—	—
CRM144 ...	—	—
CRM151 ...	—	—
CRM152 ...	—	—
CRM152A ...	—	—
CRM152B ...	—	—
CRM153 ...	—	—
CRM171 ...	—	—
CRM172 ...	—	—
CRM173 ...	—	—
CRM211 ...	—	—
CRM212 ...	—	—
CY1	CY1	—
CY1C ...	UR1C	—
CY2	*	—
CY31	CY31	—
CY32	*	—
D1	*	—
D4	*	AC/HL, MH4, 41MHL
D41	*	DDL4, V914
D42	—	—
D43	—	—
D63	EB34†	6H6G/GT
D77	EB91	D152, DD6(*C or F*), 6AL5, 6D2
D152	EB91	DD6(*C or F*), D77, 6AL5, 6D2
D400	*	—
D1300	*	—
DA	*	4D1
DA30	—	—
DA40	—	—
DA41	—	—
DA90	DA90	1D13
DAC1	*	—
DAC32 (C1) ...	1H5G / DAC32 (C1)	HD14
DAC32 (Met)	—	1H5GT
DAF91 ...	DAF91	ZD17, 1FD9, 1S5
DAF96 ...	DAF96	ZD25, 1AH5, 1FD1
DC90	—	—
DCC90 ...	DCC90	—
DD4	*	DDL4, V914
DD4s	*	—
DD6 (*C or F*)	EB91	D77, D152, 6AL5, 6D2
DD6 } DD6ds }	*	—
DD6G ...	EB91	D77, D152, 6AL5, 6D2
DD13 } DD13s }	*	—
DD41	—	—
DD465	*	—
DD620	*	—
DDA1	*	—
DDL4	*	V914

Valve Type	Mullard Direct Equivalent	Other Equivalents
DDPP4B ...	*	AC2PENDD, DN41, PT4D
DDPP4Bs ...	*	—
DDPP4M ...	PEN4DD	—
DDPP6B ...	*	—
DDPP6Bs ...	*	—
DDPP39 ...	*	—
DDPP39M ...	*	—
DDPP39s ...	CBL1	—
DDT	*	AC/HL/DD, MHD4, H4D
DDT2	—	H2D
DDT4 ...	TDD4	AC/HL/DD, MHD4
DDT4s ...	*	—
DDT6s ...	*	—
DDT13 ...	*	—
DDT13s ...	*	—
DDT215 ...	—	—
DDT220 ...	—	H2D
DF1	*	—
DF33	DF33	1N5GT
DF64	DF64	—
DF66	DF66	—
DF70	*	—
DF91	DF91	W17, 1F3, 1T4
DF92	DF92	1F2, 1L4
DF96	DF96	W25, 1AJ4, 1F1
DF97	DF97	—
DH42	TDD4	AC/HL/DD
DH63	6Q7G	—
DH63 (Met) ...	6Q7GT	—
DH76	—	—
DH77	EBC90	6AT6
DH81	**	7B6
DH101	**	—
DH107	**	—
DH109	UABC80	10LD12
DH118	UBC41	10LD3, 14L7
DH119	—	10LD13
DH142	UBC41	10LD3, 14L7
DH147	EBC33	6N4
DH149	*	7C6
DH150	EBC41	6LD3, 62DDT
DH178	EBC41	6LD3
DH719	EABC80	6AK8, 6LD12, 6T8
DK1	*	—
DK32	DK32	1A7GT
DK40	DK40	—
DK91	DK91	X17, 1C1, 1R5
DK92	DK92	X18, 1AC6, 1C2
DK96	DK96	X25, 1AB6, 1C3
DL2	*	—
DL33 ...	DL33 / 3Q5GT	N16
DL35 ...	DL35 / 1C5G	N14
DL63	EBC33†	6R7G
DL64	DL64	—
DL66	—	—
DL68	DL68	—
DL71	*	—
DL72	*	—
DL74M	—	—
DL82	—	—
DL91	**	1S4
DL92	DL92	N17, 1P10, 3S4
DL93	DL93	—
DL94	DL94	N19, 1P11, 3V4
DL96	DL96	N25, 1P1, 3C4
DL145	—	10LD11
DM70	DM70	Y25, 1M1, 1M3
DN41	*	AC2PENDD, PT4D
DN143	EBL21	—
DO24	*	PP5/400, PX25
DO26	*	—
DO30	*	DA30
DO42	PEN4DD	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
DP61 ...	EF95	6AK5
DP495 ...	PEN4DD	—
DP4480 ...	*	—
DT3 }	*	—
DT30 }		
DT41 ...	TDD4	—
DT436 ...	TDD4	AC/HL/DD
DT1336 ...	*	—
DTU1 ...	*	—
DW2 ...	*	506BU, 1821
DW3 ...	DW4–350	R2, R4
DW4 ...	DW4–500	R3, R43, U14, 1561
DW4–350 ...	DW4–350	R4
DW4–500 ...	DW4–500	U14, 1561
E235 ...	—	—
E446 ...	—	—
E447 ...	—	—
EA50 ...	EA50	SD61, 6D1(*EM*)
EAB1 ...	*	—
EABC80 ...	EABC80	DH719, 6AK8, 6LD12, 6T8
EAC91 ...	EAC91	—
EAF41 ...	**	—
EAF42 ...	EAF42	WD150, 6CT7
EB4	*	—
EB34	EB34	D63†
EB41	EB41	—
EB91	EB91	DD6 (*C or F*), D77, D152, 6AL5, 6D2
EBC3 ...	*	—
EBC33 ...	EBC33	DH63†, DH147, OM4
EBC41 ...	EBC41	DH150, 6CV7, 6LD3, 62DDT
EBC81 ...	EBC81	6BD7A, 6LD13
EBC90 ...	EBC90	DH77, 6AT6
EBC91 ...	EBC91	6AV6
EBF2	**	—
EBF32 ...	**	—
EBF80 ...	EBF80	ZD152, 6N8, WD709
EBF83 ...	EBF83	6DR8
EBF89 ...	EBF89	6DC8, 6FD12
EBL1	*	—
EBL21 ...	EBL21	DN143
EBL31 ...	EBL31	—
EC31	*	—
EC50	*	—
EC52	EC52	—
EC53	*	—
EC54	EC54	—
EC90	EC90	6C4
EC91	EC91	6L34
EC92	EC92	—
ECC31	*	—
ECC32	ECC32	—
ECC33	ECC33	—
ECC34	ECC34	—
ECC35	ECC35	6SL7GT
ECC40 ...	ECC40	—
ECC81 ...	ECC81	B152, B309, 12AT7
ECC82 ...	ECC82	B329, 12AU7
ECC83 ...	ECC83	B339, 6L13, 12AX7
ECC84 ...	ECC84	6CW7, 6L16
ECC85 ...	ECC85	B719, 6AQ8, 6L12
ECC88 ...	ECC88	6DJ8
ECC91 ...	ECC91	6J6
ECF80 ...	ECF80	6BL8, 6C16
ECF82 ...	ECF82	6U8
ECH2 ...	*	—
ECH3 ...	ECH3	—
ECH4 ...	*	—
ECH21 ...	ECH21	X143
ECH33 ...	CCH35 (a.c./d.c.) ECH35 (a.c.)	— —
ECH35 ...	ECH35	OM10, X61M, X147
ECH41 ...	**	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
ECH42 ...	ECH42	X150, 6C10, 6CU7, 62TH
ECH81 ...	ECH81	X719, 6AJ8, 6C12
ECH83 ...	ECH83	6DS8
ECL80 ...	ECL80	LN152, 6AB8, 63TP
ECL82 ...	ECL82	6BM8
ECL83 ...	ECL83	—
EE50	**	—
EF2	*	—
EF5	EF9	—
EF6	*	—
EF8	EF9	—
EF9	EF9	—
EF22	EF22	W143
EF36	EF36	—
EF37	EF37A	—
EF37A ...	EF37A	OM5B
EF38	EF39	—
EF39	EF39	OM6, W147
EF40	EF40	—
EF41	EF41	W150, 6F16, 7F16, 62VP
EF42	EF42	Z150, 6CJ5
EF50	EF50	63SPT
EF54	EF54	—
EF55	EF55	—
EF80	EF80	Z152, Z719, 6BX6, 64SPT
EF85	EF85	W719, 6BY7, 6F19
EF86	EF86	Z729, 6F22, 6267
EF89	EF89	6DA6
EF91	EF91	SP6, Z77, 6AM6, 8D3, 6F12
EF92	EF92	VP6, W77, 6CQ6, 6F21, 9D6
EF93	EF93	W727, 6BA6
EF94	EF94	6AU6
EF95	EF95	DP61, 6AK5
EF97	EF97	6ES6
EF98	EF98	—
EF183	EF183	6EH7
EF184	EF184	6EJ7
EFM1	*	—
EH2	*	—
EK2	—	—
EK3	*	—
EK32	—	—
EK90	EK90	X77, X727, 6BE6
EL2	EL2	—
EL3	*	—
EL3N ...	*	—
EL5 }	*	—
EL6 }		
EL31	*	—
EL32	EL32	—
EL33	EL33	6AG6G
EL34	EL34	6CA7
EL35	*	—
EL36	EL36	—
EL37	EL37	KT66
EL38	EL38	—
EL38M ...	EL38	—
EL41	EL41	N150, 6FPT, 6CK5
EL42	EL42	N151
EL50	*	—
EL81	EL81	6CJ6
EL83	EL83	—
EL84	EL84	N709, 6BQ5, 6P15
EL85	EL85	—
EL90	EL90	N727, 6AQ5
EL91	EL91	N77, N144, 6AM5
EL95	EL95	6DL5
EL820	—	—
EL821	EL821	6CH6
EL822	EL822	—
EM1	*	—
EM3	*	—
EM4	*	—
EM34	EM34	64ME
EM71	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
EM80 ...	EM80	65ME, 6BR5
EM81 ...	EM81	6DA5
EM84 ...	EM84	6FG6
EM85 ...	—	—
EM840 ...	EM84†	—
EN31 ...	EN31	—
EW53 ...	—	—
EW58 ...	—	—
EW59 ...	—	—
EY51... ...	EY51	R12, SU61, U43, U151, 6X2
EY81... ...	EY81	6R3
EY83... ...	—	—
EY86... ...	EY86	6S2
EY91... ...	EY91	—
EZ1	**	—
EZ2	**	—
EZ3	**	—
EZ35	EZ35 / 6X5GT	U147
EZ40... ...	EZ40	U150, 66KU, UU9, 6BT4
EZ41	EZ41	—
EZ80	EZ80	6V4
EZ81	EZ81	U709, UU12, 6CA4
EZ90	EZ90	U78, 6X4
FC2	—	X22, 210PG
FC2A ...	—	VHT2A
FC4	FC4	MX40, VHT4, 15A2, 41MPG
FC13... ...	—	—
FC13C ...	—	—
FC141 ...	*	—
FW4–500 ...	FW4–500	U18/20, 451U
FW4–800 ...	FW4–800	U18/20
FY	*	—
G431	*	1821
G470	*	1821
G2080 (P base)	CY1	—
G2080 (5-pin)	UR1C	CY1C
G4120 ...	DW4–500	1561
G4120N ...	IW4–500	UU5, 431U, 1861
GD3	—	—
GD4	—	—
GD5	—	—
GDT4B ...	—	—
GDT4C ...	—	—
GET1 ...	—	—
GET2 ...	—	—
GEX34 ...	—	—
GEX35 ...	—	GD3
GEX45/1 ...	—	GD4
GEX54 ...	—	GD5
GEX54/3 ...	—	—
GEX55/1 ...	—	—
GEX64 ...	—	—
GEX66 ...	—	—
GJ3D ...	—	—
GJ5D ...	—	—
GN24 ...	—	1821
GZ30... ...	GZ30 / 5Z4GT	R52, 5Z4GT
GZ32... ...	GZ32	54KU
GZ33... ...	GZ33	—
GZ34... ...	GZ34	—
GZ37... ...	GZ37	53KU, U54
H2	—	—
H2D	—	210DDT
H4D	*	AC/HL/DD, DDT
H63	—	—
H141D ...	*	—
H210	—	—
HAD... ...	*	11D3
HBC90 ...	HBC90	12AT6
HBC91 ...	HBC91	12AV6
HD14 ...	1H5G / DAC32 (C1)	—
HD22 ...	—	H2D

Valve Type	Mullard Direct Equivalent	Other Equivalents
HD23 ...	—	H2D
HD24 ...	—	H2D, 210DDT
HF93... ...	HF93	12BA6
HK90 ...	HK90	12BE6
HL2	—	210HF
HL2K ...	—	—
HL4+ ...	*	AC/HL
HL4G ...	*	MH4
HL4Gs ...	*	—
HL13(*H*) ...	*	—
HL13(*M*) ...	*	—
HL13(*T*) ...	*	—
HL13C ...	*	4D1
HL13s ...	*	—
HL21DD ...	*	H2D, 210DDT
HL22... ...	*	—
HL23... ...	*	—
HL23DD ...	*	—
HL41... ...	*	—
HL41DD ...	*	—
HL42DD ...	—	—
HL92... ...	HL92	50C5
HL133 ...	*	—
HL133DD ...	*	—
HL210 ...	—	—
HL1320 ...	*	4D1
HL/DD1320...	*	11D3
HLA2 ...	*	AC2HL, 41MHL
HLB1 ...	—	210HF
HN309 ...	—	—
HP2	—	—
P13... ...	*	—
HP13s ...	*	—
HP210nc (4-pin)	—	SPT2, Z21
HP210nc (7-pin)	—	—
HP215(*H*) ...	—	Z21
HP4101c ...	—	SPT4A
HP4105 ...	—	VPT4 (5-pin)
HP4106 ...	—	—
HP4106c ...	—	VPT4 (5-pin)
HP4115c ...	—	—
HR1	—	—
HR2	—	—
HR210 ...	—	—
HVR1 ...	—	—
HVR2 ...	—	—
HVR2A ...	—	—
HY90 ...	HY90	35W4
IW2	*	1881
IW2A ...	IW4–350	—
IW3	IW4–350	R2, R42, 1867
IW4	IW4–500	UU5, R42
IW4–350 ...	IW4–350	R2, R42, 1867
IW4–500 ...	IW4–500	MU14, R3, R43, UU5, 43IU
K23A ...	—	—
K23B... ...	—	H2D, 210DDT
K30A	—	—
K30B... ...	—	210LF
K30C ...	—	210HF
K30D ...	—	—
K30G ...	—	L2(*F*), 220PA
K30K ...	—	—
K33A ...	—	—
K40B... ...	—	—
K40N ...	—	VS2
K50M ...	—	VP210, 210VPT
K50N ...	—	VP210
K70B... ...	—	PEN220, PT2, 220OT
K70D ...	—	—
K77B... ...	—	—
K80A ...	—	210PG, VHT2A
K80B... ...	—	—
K435–10 ...	*	LP4
KBC32 ...	—	—
KCF30 ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
KF35...	—	—
KK2 ...	—	—
KK32	—	—
KL4 ...	—	—
KL35...	—	—
KLL32	—	—
KT2 ...	—	PEN220, PT2, 220OT
KT24...	—	PT2
KT32...	25L6GT	—
KT33C	—	—
KT36...	—	—
KT41...	*	AC2PEN, 7A3, 42MP/PEN
KT42...	*	AC/PEN, 7A2
KT44...	—	—
KT45...	—	—
KT55...	—	—
KT61...	*	6AG6G, 6P25
KT63...	6F6G	—
KT66...	EL37	6L6G
KT71...	—	—
KT76...	—	—
KT81...	—	—
KT88...	—	—
KT101	—	—
KTW61	*	—
KTW61M	*	—
KTW63	*	—
KTW74M	—	—
KTZ41	—	—
KTZ63	*	—
L2(*EM*)	—	210LF
L2(*F*)...	—	210LF
L2/B ...	—	—
L2/DD	—	—
L4 ...	—	AC/P
L21 ...	—	210LF
L21/DD	—	H2D
L63 ...	6J5G	—
L77 ...	EC90	—
L210 ...	—	—
LD210	—	—
LL2 ...	—	—
LL2s ...	—	—
LL4 ...	*	—
LN119	UCL82	10PL12, 50BM8
LN152	ECL80	6AB8, 63TP
LN309	PCL83	—
LN319	—	30PLI
LP2(*MO*)	—	220PA
LP2(*F*)	—	—
LP4 ...	*	PP3/250, PX4, 4XP
LP220	—	L2(*F*)
LZ319	PCF80	9A8, 30C1, LZ329, 8A8
LZ329	PCF80	30C1, LZ319, 8A8, 9A8
ME41	—	—
ME91	—	—
MH4...	*	AC/HL, 41MHL
MH41	—	AC2HL
MH4105	—	MX40
MHD4	*	AC/HL/DD, DDT, H4D
MHL4	*	AC/HL
MKT4	*	AC/PEN, MP/PEN, 7A2
ML4 ...	*	AC/P
MM4V	—	AC/SG/VM
MP4106C	—	VPT4
MP/PEN	*	AC/PEN, MKT4, 7A2
MPT4	*	AC/PEN, MP/PEN, 7A2
MS4B	—	AC/SG, SPT4A
MS4C	—	SPT4A
MSG/HA	—	AC/SG, MS4B, SPT4A
MSG/LA	—	AC/SG, MS4B, SPT4A
MSP4	—	MS/PEN
MSP41	—	—
MS/PEN	—	—
MS/PENA	*	SPT4A

Valve Type	Mullard Direct Equivalent	Other Equivalents
MS/PENB	—	—
MU12	IW4-350	R2, R42, UU5, 1867
MU12/14	IW4-500	—
MU14	IW4-500	R3, UU5, 431U
MV/SG	—	AC/SG/VM
MVS/PEN	—	AC/VP1
MVS/PENB	*	AC/VP2
MW6-2	MW6-2	—
MW22-7	*	—
MW22-14	*	—
MW22-14C	*	—
MW22-16	MW22-16	—
MW22-17	*	—
MW22-18	*	—
MW31-7	*	—
MW31-14	*	—
MW31-14C	*	—
MW31-16	MW31-74	CF12M, 121K
MW31-17	*	—
MW31-18	*	—
MW31-20	*	—
MW31-21	*	—
MW31-22	*	—
MW31-23	*	—
MW31-74	MW31-74	12XP4A
MW36-22	MW36-24	—
MW36-24	MW36-24	C36-24, 14KP4A, 14LP4, 141K
MW36-44	MW36-44	—
MW41-1	MW41-1	—
MW43-43	MW43-43	—
MW43-64	MW43-69	172K
MW43-69	MW43-69	173K
MW43-80	MW43-80	—
MW53-20	MW53-20	21CJP4
MW53-80	MW53-80	212K
MX40	—	15A2, 41MPG
N14 ...	DL35 / 1C5G	—
N15 ...	*	—
N16 ...	DL33	—
N16 ...	3Q5GT	—
N17 ...	DL92	1P10, 3S4
N18 ...	**	3Q4
N19 ...	DL94	1P11, 3V4
N25 ...	DL96	1P1, 3C4
N30 ...	—	7D5
N37 ...	**	—
N40 ...	*	7A2
N41 ...	PENA4	AC2PEN, PT4(*F*), 7A3, 42MP/PEN
N63 ...	*	—
N66 ...	EL37	—
N77 ...	EL91	6AM5
N78 ...	—	—
N108 ...	—	—
N118 ...	—	10P13
N119 ...	UL84	10P18, 45B5
N142 ...	UL41	451PT
N144 ...	EL91	N77, 6AM5
N145 ...	—	10P13
N147 ...	EL33	6AG6G
N148 ...	—	7C5
N150 ...	EL41	67PT
N151 ...	EL42	—
N152 ...	PL81	N359, 21A6
N153 ...	PL83	N309, 15A6
N154 ...	PL82	N329, 16A5, 30P16
N155 ...	EL85	—
N308 ...	—	30P4
N309 ...	PL83	N153, 15A6
N329 ...	PL82	N154, 16A5, 30P16
N339 ...	—	—
N349 ...	—	—
N359 ...	PL81	N152, 21A6
N369 ...	—	30P12

Valve Type	Mullard Direct Equivalent	Other Equivalents
N379	PL84	30P18, 15CW5
N709	EL84	6BQ5, 6P15
N727	EL90	6AQ5
O202	—	—
O406	FC4	VHT4
O1307 (P base)	—	—
O1307 (7-pin)	—	—
OA60 ...	OA70	GD3
OA61 ...	OA81	GD5
OA70 ...	OA70	—
OA71 ...	OA81	—
OA79 ...	OA79	—
OA81 ...	OA81	—
OC16... ...	OC16	—
OC19... ...	OC19	—
OC26... ...	OC26	—
OC44... ...	OC44	—
OC45... ...	OC45	—
OC57... ...	OC57	—
OC58... ...	OC58	—
OC59... ...	OC59	—
OC60... ...	OC60	—
OC65... ...	OC65	—
OC66... ...	OC66	—
OC70... ...	OC70	—
OC71... ...	OC71	—
OC72... ...	OC72	—
OC75... ...	OC75	—
OC78... ...	OC78	—
OC81... ...	OC81	—
OC82... ...	OC82	—
OC170 ...	OC170	—
OC171 ...	OC171	—
OM1	CY31	—
OM3	EB34	—
OM4	EBC33	DH147
OM5	EF36	OM5B
OM5A ...	EF37A	OM5B
OM5B ...	EF37A	—
OM6	EF39	W147
OM7	EF39	—
OM9	EL32	—
OM10 ...	CCH35 (a.c./d.c.) ECH35(a.c.)	X147
OP41	PENB4	AC4PEN
OP42	PENA4	AC2PEN, PT4(*F*)
P2	—	—
P12–250 ...	*	LP4, PP3/250, PX4
P27–500 ...	—	PP5/400, PX25
P41	—	—
P61	—	—
P220(*T*) ...	—	—
P220(*EM or H*)	—	L2(*F*), 220PA
P220A ...	—	—
P225 (5-pin) ...	—	PT2
P240	—	—
P435	*	—
P440N ...	*	—
P441N ...	—	—
P495	PENA4	PT4(*F*)
PA1	—	41MXP
PA20	*	2P
PABC80 ...	PABC80	9AK8
PB1	*	L2(*F*), 220PA
PC95	PC95	—
PCC84 ...	PCC84	B319, 7AN7, 30L1
PCC85 ...	PCC85	9AQ8
PCC88 ...	PCC88	7DJ8
PCC89 ...	PCC89	—
PCF80 ...	PCF80	LZ319, 30C1, 9A8, LZ329, 8A8
PCF82 ...	PCF82	9U8
PCF84 ...	PCF84	—
PCF86 ...	PCF86	8HG8
PCL82 ...	PCL82	16A8

Valve Type	Mullard Direct Equivalent	Other Equivalents
PCL83 ...	PCL83	LN309
PCL84 ...	PCL84	15DQ8
PCL85 ...	PCL85	18GV8
PD220 ...	—	—
PEN4DD ...	PEN4DD	—
PEN4V ...	*	—
PEN4VA ...	*	AC/PEN, MKT4, MP/PEN, 7A2
PEN4VB ...	PENA4	AC2PEN, KT41, PT4(*F*), 7A3
PEN13C ...	—	—
PEN24 ...	—	—
PEN25 ...	—	—
PEN26 ...	*	—
PEN36C ...	*	7D6
PEN40DD ...	*	—
PEN44 ...	*	—
PEN45 ...	—	—
PEN45DD ...	—	—
PEN46 ...	—	—
PEN220 ...	—	KT2, PT2, 220OT
PEN230 ...	—	—
PEN231 ...	—	—
PEN383 ...	—	—
PEN384 ...	—	—
PEN428 ...	PENB4	—
PEN453DD ...	—	—
PEN650 ...	*	—
PEN1340 ...	—	7D8
PEN3520 ...	*	7D6
PENA1 ...	*	PT41
PENA4 ...	PENA4	AC2PEN, KT41, PT4(*F*), 7A3, 42MP/PEN
PENB1 ...	—	KT2, PEN220, PT2, 220OT
PENB4 ...	PENB4	AC4PEN
PENDD61 ...	*	—
PENDD4020 ...	*	—
PL33	PL33	—
PL36	PL36	25E5
PL38	PL38	—
PL38M ...	PL38M	—
PL81	PL81	N152, N359, 21A6
PL82	PL82	N154, N329, 16A5, 30P1
PL83	PL83	N153, N309, 15A6
PL84	PL84	N379, 30P18, 15CW5
PL820 ...	PL820	—
PM1A ...	—	—
PM1HF ...	—	210HF
PM1HL ...	—	—
PM1LF ...	—	—
PM2	—	220P
PM2A ...	—	L2(*F*)
PM2B ...	—	—
PM2BA ...	—	—
PM2DL ...	—	—
PM2DX ...	—	—
PM2HL ...	—	—
PM12 } PM12A }	—	Z21, 215SG
PM12M ...	—	VS2, W21
PM22 ...	—	220PT
PM22A ...	—	KT2, PEN220, PT2, 220OT
PM22D ...	—	—
PM24 ...	—	—
PM24A ...	—	—
PM24B ...	*	—
PM24C ...	*	—
PM24M ...	*	PT41
PM84 ...	PM84	—
PM202 ...	—	—
PM252 ...	—	—
PP2	—	PEN220, PT2
PP2s	—	—
PP3–250	—	LP4, PX4, 4XP
PP4	*	—
PP4s	*	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
PP5–400 ...	—	PX25
PP6As ...	EL2	—
PP6BG ...	EL33	—
PP6Bs ...	*	—
PP34	*	—
PP34s ...	*	—
PP35	*	—
PP36	*	—
PP220 ...	—	—
PT2	—	KT2, PEN220, 220OT
PT4(*F*) ...	PENA4	AC2PEN, 7A3, 42MP/PEN
PT4(*MO*) ...	*	PT41
PT4D ...	*	AC2PENDD
PT10	—	AC5PEN
PT25H ...	—	—
PT41	*	—
PT240	—	—
PTZ	*	—
PV4	DW4–350	R42
PV29s ...	*	—
PV30	*	—
PV30s	*	—
PV495	*	1821
PV4200 ...	DW4–500	1561
PVB6s ...	*	—
PX4	*	LP4, PP3/250, 4XP
PX5	—	PX25
PX25	—	PP5/400
PX41	*	LP4, PX4
PX230	—	LP2, P2
PY31	PY31	—
PY32	PY32	U291
PY80	PY80	U152, 19X3
PY81	PY81	U153, 17Z3
PY82	PY82	U154, U192, U319, 19SU, 19Y3
PY83	—	—
PY88	PY88	—
PZ30	PZ30	—
QP21	—	QP230, 240QP
QP22A ...	—	—
QP22B ...	—	QP230, 240QP
QP25	—	—
QP230	—	240QP
QP240(*H*) ...	—	—
QP240(*EM*) ...	—	—
QPT2 ...	—	QP230, 240QP
R1	*	U10, UU5, 506BU
R2	IW4–350	MU14, R42, UU5, 1867
R3	IW4–500	MU14, UU5, 431U
R4	DW4–350	R2
R4A	DW4–500	R3, UU5, 1561
R10	—	HR2
R12	EY51	SU61, U43, U151, 6X2
R12A ...	EY51	6X2
R14	PZ30	—
R16	—	U37, 1T2
R19	—	—
R20	—	U26
R41	DW4–500	1561
R42	IW4–350	UU5, 1867, 431U
R43	*	—
R52	GZ30 / 5Z4GT	—
RL7	EF54	—
RL16	EC52	—
RL18	*	—
RL37	EC54	—
RV120/350 ...	DW4–350	R4, U14
RV120/350s ...	*	—
RV120/500 ...	DW4–500	U14, UU5, 1561
RV120/500s ...	*	—
RV200/600 ...	FW4–500 or FW4–800	U18/20
RZ	UR1C	CY1C
S4V	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
S4VA... / S4VB...	—	MS4B
S11A ...	*	506BU, 1821
S11D ...	DW4–350	R2, R4
S21	—	—
S22 ... / S23 ...	—	—
S24	—	—
S30C	*	LP4, PP3/250, 4XP
S30D	*	2P
S213	—	VS2, W21
S215 ... / S215A / S215B	—	—
S215VM ...	—	VS2, W21
S218	—	Z22
S420	VP4B	—
S434N ...	—	VPT4 (5-pin)
S435N ...	—	MSB4, SPT4A
S1324	—	—
S1328 ...	SP13	—
SD2	—	—
SD4	*	—
SD6	—	—
SD61	EA50	6D1(*EM*)
SE14/70 ...	—	C14PM
SE17/70 ...	—	C17PM
SE211C ...	—	VS2
SG215	—	VS2, 215SG
SG215A ...	—	VS2, 215SG
SP2	—	SP42, 210SPT
SP4(*M*) ...	—	MS/PEN, SPT4A
SP4(*T*) ...	—	—
SP4B	—	MS/PENB
SP4C	—	—
SP4s	—	—
SP6	EF91	Z77, 6AM6, 6F12, 8D3
SP6s	*	—
SP13(*M*) ...	*	—
SP13(*T*) ...	*	—
SP13B ...	—	—
SP13C ...	—	8D2, 13SPA
SP13s	—	—
SP22	—	—
SP41	—	—
SP42	—	—
SP61	—	—
SP181	—	—
SP210	—	210SPT
SP215	—	—
SP220	—	—
SP1320	—	—
SPT2	—	210SPT
SPT4A	—	MS/PEN
SS210	—	—
SU25	—	—
SU61	EY51	R12, U43, U151, 6X2
SU2150 ...	—	—
SU2150A ...	—	—
T4D	*	D1
T6D	EA50	—
T9/2	—	T9/3
T9/3	—	—
T9/4	—	—
T9/5	—	—
T12/2	—	—
T12/44	—	—
T12/46	—	—
T12/54	—	—
T12/56	—	—
T12/71U ...	—	—
T12/72U ...	—	—
T12/81U ...	—	—
T12/82U ...	—	T12/72U
T12/91 ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
T12/92 ...	—	—
T12/100 ...	—	—
T12/404 ...	—	T12/44
T12/449 ...	—	T12/44
T12/504 ...	—	T12/549
T12/549 ...	—	—
T41(*EK*) ...	*	—
T41(*EM*) ...	—	—
T900	—	—
T901	MW41–1	—
T901A ...	MW41–1	—
T908	—	—
T911	—	—
TA10... ...	—	—
TA10J ...	—	—
TA15... ...	—	—
TA15/J ...	—	—
TDD2 ...	—	—
TDD2A ...	—	HD24, H2D, 210DDT
TDD4 ...	TDD4	AC/HL/DD, DDT, MHD4
TDD13 ...	*	—
TDD13C ...	*	—
TH2	—	X24, 220TH
TH4	*	X41, 41STH
TH4A ...	*	AC/THI
TH4B ...	*	AC/TH1, 4THA
TH13C ...	**	—
TH21C ...	—	TH2321, 202STH
TH22C ...	*	TH2321
TH29... ...	—	TH2321
TH30... ...	—	TH2321
TH30C ...	—	TH2321, 302THA
TH41... ...	*	—
TH62... ...	CCH35 (a.c./d.c.)	—
TH62 ...	ECH35(a.c.)	—
TH233 ...	*	—
TH2320 ...	*	TH2321
TH2321 ...	*	202STH
TJ1	—	—
TJ2	—	—
TJ3	—	—
TP1	—	—
TP2	—	—
TP22	—	—
TP23	—	—
TP25	—	—
TP2620 ...	—	—
TR14/1 ...	—	—
TR14/2 ...	—	—
TR14/4 ...	—	—
TR14/6 ...	—	—
TR14/12 ...	—	—
TR14/13 ...	—	—
TR14/15 ...	—	—
TR14/21 ...	*	—
TR17/1 ...	—	—
TR17/2 ...	—	—
TR17/7 ...	—	—
TR17/8 ...	—	TR17/10
TR17/10 ...	—	—
TR17/21 ...	—	—
TR17/22 ...	—	—
TR21/20 ...	—	—
TR21/21 ...	—	—
TSE4	—	—
TSP4	**	—
TT4	*	AC/P, ML4
TT4A ...	*	—
TV4	*	—
TV4A ...	*	—
TV6	*	—
TX4	*	AC/TH1, X41
TX21	—	TH2321
TX41... ...	*	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
TY86F ...	TY86F	—
U10	*	UU5, 506BU
U12/13 ...	DW4–350	R4
U14	DW4–500	R3, 1561
U16	—	—
U17	—	—
U18/20 ...	FW4–500 or FW4–800	—
U19	—	—
U22	—	—
U24	—	—
U25	—	U47
U26	—	U49, R20
U31	*	—
U33	—	—
U35	—	—
U37	—	R16, 1T2
U41	—	—
U43	EY51	R12, SU61, U151, 6X2
U45	—	—
U47	—	U25
U49	—	U26
U50	5Y3G/GT	—
U52	5U4G	—
U54	GZ37	53KU
U70	EZ35 6X5GT	—
U74	—	—
U76	—	—
U78	EZ90	6X4
U81	—	—
U82	*	—
U84	*	—
U101	*	—
U107	**	—
U118	*	U404
U119	UY85	U381, 38A3
U142	UY41	31A3, 311SU
U143	AZ31	—
U145	**	U404
U147	EZ35 6X5GT	—
U149	*	7Y4
U150	EZ40	66KU, JU9, 6BT4
U151	EY51	R12, U43, SU61, 6X2
U152	PY80	19X3
U153	PY81	17Z3
U154	PY82	U192, U319, 19Y3, 19SU
U191	—	—
U192	PY82	U154, U319, 19SU, 19Y3
U193	—	—
U201	CY31	—
U251	—	U329
U281	—	—
U282	—	—
U291	PY32	—
U301	—	—
U309	—	—
U319	PY82	U154, U192, 19SU, 19Y3
U329	—	U251
U339	—	U191
U381	UY85	U119, 38A3
U403	*	—
U404	**	U118, U145
U709	EZ81	UU12, 6CA4
U718	—	UU9
U801	—	—
U4020	*	40SUA
UABC80 ...	UABC80	10LD12, DH109
UAF41 ...	**	—
UAF42 ...	UAF42	WD142, 12S7
UB41... ...	UB41	—
UBC41 ...	UBC41	DH142, 10LD3, 14L7, 141DDT
UBC81 ...	UBC81	10LD13
UBF80 ...	UBF80	171DDP, 17C8

Valve Type	Mullard Direct Equivalent	Other Equivalents
UBF89 ...	UBF89	WD119, 10FD12, 19FL8
UBL21 ...	UBL21	—
UC92 ...	UC92	—
UCC84 ...	UCC84	—
UCC85 ...	UCC85	B109, 10LD14
UCF80 ...	UCF80	—
UCH4 ...	*	—
UCH21 ...	UCH21	—
UCH41 ...	**	—
UCH42 ...	UCH42	X142, 141TH, 14K7
UCH81 ...	UCH81	10C14, X119, 19D8
UCL82 ...	UCL82	LN119, 10PL12, 50BM8
UCL83 ...	UCL83	—
UD2	—	—
UF41... ...	UF41	W142, 12AC5, 121VP
UF42... ...	UF42	Z142
UF80... ...	UF80	—
UF85... ...	UF85	—
UF86... ...	UF86	—
UF89... ...	UF89	—
UL41... ...	UL41	N142, 451PT
UL44... ...	UL44	—
UL46... ...	UL46	—
UL84... ...	UL84	10P18, N119, 45B5
UM4	UM4	—
UM34 ...	*	—
UM80 ...	UM80	Y119
UM84 ...	UM84	—
UR1	CY1	—
UR1C ...	UR1C	CY1C
UR2	*	—
UR3	*	—
UR3C ...	*	—
UU2	*	R2, R41
UU3	IW4–350	MU14, R2, R42, 1867
UU4	IW4–350	MU14, R2, R42, 1867
UU5	IW4–500	MU14, R3, 431U
UU6	*	—
UU7	—	—
UU8	**	—
UU9	—	66KU
UU10 ...	*	—
UU12 ...	EZ81	U709, 6CA4
UU160–250 ...	IW4–350	R2, R42, 1867
UU120–350 ...	IW4–350	MU14, R2, R42, 1867
UU120–350A	IW4–350	R42, 1867
UU120–500(*H*)	IW4–500	MU14, R3, R43
UU120–500 (*EM*)	DW4–500	1561
UY1N ...	UY1N	—
UY21 ...	*	—
UY31 ...	*	—
UY41 ...	UY41	U142, 311SU, 31A3
UY85 ...	UY85	U381, U119, 38A3
V6/R2 ...	—	—
V6/R4M ...	—	—
V10/3A ...	—	—
V10/15 ...	—	—
V10/30 ...	—	—
V10/30A ...	—	—
V10/50 ...	—	—
V10/50B ...	—	—
V20	UR1C	CY1C
V20s	CY1	—
V30	*	—
V312	—	41MTL
V503	—	—
V914	*	DDL4, D41
V1907 ...	—	—
VF16	—	6M1
VHT2 ...	—	X22
VHT2A ...	—	210PG
VHT4 ...	FC4	MX40, 15A2, 41MPG
VHTA ...	—	—
VM4V ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
VMP4 ...	—	VPT4 (5-pin)
VMP4G ...	—	MVS/PEN (7-pin)
VMS4 ...	—	—
VMS4B ...	—	AC/SG/VM
VO2	—	X22
VO2s... ...	—	—
VO4	FC4	MX40, VHT4
VO4s... ...	*	—
VO6s... ...	—	—
VO13... ...	—	—
VO13s ...	—	—
VP2	—	W21, 210VPT
VP2B... ...	—	—
VP4	—	AC/VP1, MVS/PEN, VPT4
VP4A ...	—	AC/VP1, MVS/PEN
VP4B... ...	VP4B	AC/VP2, MVS/PENB
VP4C ...	*	—
VP6	EF92	W77, 6CQ6, 6F21, 9D6
VP12D ...	—	—
VP13	*	—
VP13A ...	*	—
VP13B ...	*	—
VP13C ...	*	VP1322, 9D2, 13VPA
VP21	—	VP210
VP22	—	—
VP23	—	—
VP41(*EK*) ...	VP4B	AC/VP2
VP41(*EM*) ...	*	—
VP133 ...	*	—
VP210	—	W21, 210VPT
VP215	—	W21
VP1322	*	9D2, 13VPA
VPT2... ...	—	VP210, 210VPT
VPT4... ...	—	AC/VP1, MVS/PEN
VPT4B ...	—	AC/VP1
VS2	—	W21
VS24	—	VS2
VS24K ...	—	VS2
VS210	—	VS2, W21
VS215	—	VS2, W21
VX2	—	—
VX2s... ...	—	—
W17	DF91	1F3, 1T4
W21	—	VP210, 210VPA
W25	DF96	1F1, 1A34
W42	—	AC/VP2, MVS/PENB
W61	—	—
W61M ...	*	—
W63	*	—
W76	—	—
W77	EF92	6CQ6, 9D6, VP6, 6F21
W81	—	—
W101... ...	**	—
W107... ...	—	—
W118... ...	—	10F9
W119... ...	—	10F18
W142... ...	UF41	—
W143... ...	EF22	—
W145... ...	—	10F9
W147... ...	EF39	OM6
W148... ...	—	7H7
W149... ...	—	7B7
W150... ...	EF41	62VP
W719... ...	EF85	6BY7, 6F19
W727... ...	EF93	6BA6
W729... ...	—	—
W739... ...	—	6F18
WD119 ...	UBF89	10FD12, 19FL8
WD142 ...	UAF42	—
WD150 ...	EAF42	—
WD709 ...	EBF80	ZD152, 6N8
WG4A ...	—	—
WG4B ...	—	—
WG5A ...	—	—
WG5B ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
WG6A ...	—	—
WG7A ...	—	—
WG7B ...	—	—
WG7C ...	—	—
WG7D ...	—	—
X14 ...	*	—
X17 ...	DK91	1C1, 1R5
X18 ...	DK92	X20, 1AC6, 1C2
X20 ...	DK92	1C2, X18, 1AC6
X21 ...	—	VHT2A
X22 ...	—	210PG
X24 ...	—	220TH
X25 ...	DK96	1C3, 1AB6
X30 ...	—	—
X31 ...	—	—
X41 ...	—	AC/TH1, 41STH
X42 ...	*	15A2, 41MPG
X61M ...	ECH35†	OM10†
X63 ...	6A8G	—
X64 ...	—	6L7G
X65 ...	*	—
X71M ...	—	—
X76M ...	—	—
X77 ...	EK90	6BE6, X727
X78 ...	—	—
X79 ...	—	—
X81 ...	—	7S7
X101 ...	*	—
X109 ...	—	—
X118 ...	—	10C1
X119 ...	UCH81	10C14, 19D8
X142 ...	UCH42	141TH, 14K7
X143 ...	ECH21	—
X145 ...	—	10C1
X147 ...	ECH35	OM10†
X148 ...	—	7S7
X150 ...	ECH42	6C10, 62TH
X719 ...	ECH81	6AJ8, 6C12
X727 ...	EK90	6BE6
XA101 ...	—	XB103
XA102 ...	—	XB104
XB102 ...	—	XC101
XFT1 ...	—	—
XFT2 ...	—	—
Y25 ...	DM70	1M1
Y61 ...	*	6M1, 6U5G
Y62 ...	*	—
Y63 ...	*	6M1, 6U5G, 63ME
Y119 ...	UM80	—
Y220 ...	—	KT2, PT2
Z14 ...	1N5G	—
Z21 (4-pin) ...	—	SPT2
Z21 (7-pin) ...	—	210SPT
Z22 ...	—	SPT2, 210SPT
Z63 ...	6J7G	—
Z66 ...	—	—
Z77 ...	EF91	SP6, 6AM6, 6F12, 8D3
Z90 ...	EF50	63SPT
Z142 ...	UF42	—
Z145 ...	**	10F1
Z150 ...	EF42	—
Z152 ...	EF80	Z719, 6BX6, 64SPT
Z309 ...	—	—
Z329 ...	—	30F5
Z359 ...	—	—
Z719 ...	EF80	6BX6, Z152, 64SPT
Z729 ...	EF86	6F22, 6267
Z759 ...	—	—
ZD17 ...	DAF91	1FD9, 1S5
ZD25 ...	DAF96	1FD1, 1AH5
ZD152 ...	EBF80	6N8, WD709
0Z4 ...	—	—
054V ...	*	41MXP
1A3 ...	DA90	—
1A4E ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
1A4P ...	—	—
1A5GT ...	—	—
1A7G ...	*	X14
1A7GT ...	DK32	—
1A7VG ...	DK32	X14
1AB6 ...	DK96	1C3
1AC6 ...	DK92	X18, 1C2
1AH5 ...	DAF96	1FD1, ZD25
1AJ4 ...	DF96	1F1, W25
1C1(*EM*) ...	DK91	X17, 1R5
1C2 ...	DK92	X18, 1AC6
1C3 ...	DK96	1AB6
1C5G }	DL35	—
1C5GT }	1C5G	—
1C6 ...	—	—
1C7G ...	—	—
1D5 ...	*	40SUA
1D6 ...	*	—
1D7G ...	—	—
1D13 ...	DA90	—
1E5G ...	—	—
1F1 ...	DF96	1AJ4, W25
1F2 ...	DF92	1L4
1F3 ...	DF91	W17, 1T4
1F4 ...	—	—
1F5G ...	—	—
1FD1 ...	DAF96	1AH5, ZD25
1FD9 ...	DAF91	ZD17, 1S5
1H5G ...	DAC32 (C1)	HD14
	1H5G	
1H5GT ...	DAC32 (C1)	—
1H6G ...	*	—
1L4 ...	DF92	1F2
1LA6E ...	*	—
1LD5 ...	**	—
1LH4 ...	*	—
1LN5 ...	*	—
1M1 ...	DM70	Y25
1M3 ...	DM70	—
1N5G ...	1N5G	Z14
1N5GT ...	DF33	—
1N5VG ...	DF33	Z14
1P1 ...	DL96	3C4
1P10 ...	DL92	N17, 3S4
1P11 ...	DL94	N19, 3V4
1Q5GT ...	*	—
1R5 ...	DK91	X17, 1C1(*EM*)
1S4 ...	**	—
1S5 ...	DAF91	ZD17, 1FD9
1T2 ...	—	R16
1T4 ...	DF91	W17, 1F3
1T5GT ...	—	—
1U4 ...	—	—
1U5 ...	**	—
2D2 ...	—	—
2D4 ...	*	—
2D4A ...	*	DDL4, V914
2D4B ...	*	—
2D13 ... }		
2D13A ... }	*	—
2D13C ...	*	—
2-QA79 ...	2-QA79	—
2-QC72 ...	2-QC72	—
2P ...	*	—
2XP ...	*	—
3/1 ...	—	—
3/2 ...	—	—
3/3 ...	—	—
3/4 ...	—	—
3/5 ...	—	—
3/6A ...	—	—
3/16 ...	—	—
3/18 ...	—	—
3/20 ...	—	—
3/31 ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
3/32	—	—
3A4	DL93	—
3A5	DCC90	—
3C4	DL96	1P1
3D6	—	—
3NP4... ...	MW6–2	—
3Q4	**	N18
3Q5G }	DL33	N16
3Q5GT }	3Q5GT	
3S4	DL92	N17, 1P10
3V4	DL94	N19, 1P11
4/13	—	—
4/14	—	—
4/14G	—	—
4/15	—	—
4/15G ...	—	—
4/100BU ...	FW4–500	U18/20
4D1	*	—
4THA ...	*	—
4TPB... ...	—	—
4TSA... ...	—	—
4TSP... ...	—	—
4XP	*	LP4, PP3/250, PX4
5/2	—	—
5/2T	—	—
5/3	—	—
5/3T	—	—
5U4G ...	5U4G	U52
5V4G ...	5V4G	—
5X4G ...	*	—
5Y3G/GT ...	5Y3G/GT	U50
5Y4G ...	*	—
5Z3	*	—
5Z4 }	GZ30	
5Z4G }	5Z4GT	—
5Z4GT	GZ30	
	5Z4GT	—
6/5	—	—
6/6	—	—
6/7	—	—
6A6	*	—
6A7	*	—
6A8G ...	6A8G	X63
6A8GT ...	*	—
6AB4... ...	EC92	—
6AB7... ...	*	—
6AB8... ...	ECL80	LN152, 63TP
6AC7... ...	—	—
6AD8	—	—
6AG6G ...	EL33	KT61
6AJ8	ECH81	X719, 6C12
6AK5	EF95	DP61
6AK6 ...	*	—
6AK8	EABC80	DH719, 6LD12, 6T8
6AL5... ...	EB91	DD6(*C or F*), D77, D152, 6D2
6AM5 ...	EL91	N77, N144
6AM6 ...	EF91	SP6, Z77, 6F12, 8D3
6AN7	—	—
6AQ4	EC91	—
6AQ5	EL90	N727
6AQ8 ...	ECC85	B719, 6L12
6AS5	—	—
6AS7G ...	—	A1834
6AT6... ...	EBC90	DH77
6AU6	EF94	—
6AV4... ...	—	—
6AV6... ...	EBC91	—
6B7	—	—
6B8G... ...	—	—
6B8GT	—	—
6BA6... ...	EF93	W727
6BD7A ...	EBC81	6LD13
6BE6	EK90	X727
6BG6G ...	—	—
6BH6... ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
6BJ5	—	N78
6BJ6	—	—
6BL8	ECF80	—
6BM8	ECL82	—
6BN5... ...	EL85	—
6BQ5... ...	EL84	N709, 6P15
6BR5... ...	EM80	65ME
6BR7... ...	—	—
6BT4... ...	EZ40	U150, UU9, 66KU
6BW6 ...	—	—
6BW7 ...	—	—
6BX6... ...	EF80	Z152, Z719, 64SPT
6BY7... ...	EF85	W719, 6F19
6C4	EC90	L77
6C5G ...	6C5GT	—
6C5GT ...	6C5GT	—
6C6	*	—
6C9	**	—
6C10	ECH42	X150, 62TH
6C11	—	—
6C12	ECH81	X719, 6AJ8
6C16	ECF80	6BL8
6C31	*	—
6CA4... ...	EZ81	U709, UU12
6CA7... ...	EL34	—
6CD6G ...	—	—
6CD7 ...	EM34	—
6CH6 ...	EL821	7D10
6CJ5	EF41	—
6CJ6	EL81	—
6CK5 ...	EL41	—
6CM5 ...	EL36	—
6CN6 ...	EL38	—
6CQ6... ...	EF92	9D6, W77, 6F21
6CS6	EH90	—
6CT7... ...	EAF42	—
6CU7 ...	ECH42	—
6CV7... ...	EBC41	—
6CW7 ...	ECC84	6L16
6D1(*EM*) ...	EA50	SD61
6D2	EB91	DD6(*C or F*), D77, 6AL5, D152
6D3	—	—
6D6	*	—
6DA5 ...	EM81	—
6DA6 ...	EF89	—
6DC8 ...	EBF89	—
6D18 ...	ECC88	—
6DL5... ...	EL95	—
6DR8 ...	EBF83	—
6DS8	ECH83	—
6E5GT ...	—	—
6E8G... ...	ECH35†	—
6EH7... ...	EF183	—
6EJ7	EF184	—
6ER5... ...	EC95	—
6ES6	EF97	—
6ES8	ECC189	—
6ET6	EF98	—
6F1	**	—
6F5G... ...	—	H63
6F6G... ...	6F6G	KT63
6FG8... ...	*	—
6F11	—	—
6F12	EF91	SP6, Z77, 6AM6, 8D3
6F13	**	—
6F14	—	—
6F15	**	—
6F16	EF41	62VP
6F17	—	—
6F18	*	W739
6F19	EF85	W719, 6BY7
6F21	EF92	VP6, W77, 6CQ6, 9D6
6F22	EF86	Z729, 6267
6F23	—	—
6F24	**	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
6F25	**	—
6F27	—	—
6F32	—	—
6F33	—	—
6FD12 ...	EBF89	—
6FG6... ...	EM84	—
6G5G ...	—	6M1
6H6G ...	—	D63
6H6GT ...	—	—
6J5G	6J5G	L63
6J5GT ...	6J5GT	—
6J6	ECC91	—
6J7G	6J7G	Z63
6J7GT ...	6J7GT	—
6J8G	*	—
6K5G ...	—	—
6K6G ...	*	—
6K7G ...	6K7G	—
6K7GT ...	*	—
6K8G ...	6K8G	—
6K8GT ...	6K8GT	—
6K25	—	—
6L1	—	—
6L6G... ...	—	—
6L7G... ...	—	—
6L12	ECC85	B719, 6AQ8
6L13	ECC83	B339, 12AX7
6L15	—	—
6L16	ECC84	—
6L18	—	—
6L19	—	—
6L34	EC91	—
6LD3... ...	EBC41	DH150, 62DDT
6LD12 ...	EABC80	DH719, 6AK8, 6T8
6LD13 ...	EBC81	6BD7A
6LD20 ...	—	—
6M1	*	63ME
6M2	—	—
6M6G ...	EL33	—
6N6G ...	—	—
6N7GT ...	—	—
6N8	EBF80	WD709, ZD152
6P1	—	—
6P8G... ...	ECH35†	—
6P15	EL84	N709, 6BQ5
6P25	—	KT61
6P26	—	—
6P28	*	—
6Q7G ...	6Q7G	DH63
6Q7GT ...	6Q7GT	—
6R3	EY81	—
6R6G ...	—	—
6R7G ...	—	DL63
6S2	EY86	—
6SA7	**	—
6SC7 }	*	—
6SC7GT }		
6SG7	**	—
6SH7	—	—
6SJ7 ...	*	—
6SJ7GT ...	*	—
6SK7GT ...	6SK7GT	—
6SL7GT ...	ECC35†	—
6SN7GT ...	6SN7GT	B65
6SQ7GT ...	*	—
6SS7	—	—
6T8	EABC80	DH719, 6AK8
6U4GT ...	—	—
6U5/6G5 ...	*	—
6U5G ...	*	6M1, 63ME
6U7G ...	6K7G	—
6U8	ECF82	—
6V4	EZ80	—
6V6G ...	6V6G	—
6V6GT ...	6V6GT	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
6W2	—	—
6W7G ...	*	—
6X2	EY51	R12, SU61, U43, U151
6X4	EZ90	U78
6X5G ...	EZ35	—
6X5G ...	6X5GT	
6X5GT ...	EZ35	—
	6X5GT	
6ZY5G ...	*	—
6/30L2 ...	—	B729
7A2	—	AC/PEN, MKT4, MP/PEN
7A3	PENA4	AC2PEN, KT41, PT4(*F*), 42MP/PEN
7A4	*	—
7A7	*	—
7A8	*	—
7AN7 ...	PCC84	B319, 30L1
7B5	*	—
7B6	*	DH81
7B7	*	—
7B8	*	—
7C5	*	—
7C6	*	DH149
7D3	—	—
7D6	*	—
7D8	—	—
7D9	EL91	N77, N144, 6AM5
7D10... ...	EL821	6CH6
7DJ8	PCC88	—
7F7	*	—
7F16	EF41	—
7H7	**	—
7K7	—	—
7N7	*	—
7Q7	**	—
7R7	—	—
7S7	*	—
7Y4	*	U82
7Z4	—	—
8A1	—	AC/SG, MSP4, MS/PEN, SPT4A
8A8	PCF80	LZ319, 30C1, LZ329, 9A8
8D2	—	13SPA
8D3	EF91	SP6, Z77, 6AM6, 6F12
8D8	EF86†	—
8HG8 ...	PCF86	—
9A1	—	AC/VP1, MVS/PEN
9A8	PCF80	LZ319, LZ329, 8A8, 30C1
9AK8 ...	PABC80	—
9AQ8 ...	PCC85	—
9BW6 ...	—	—
9D2	*	VP1322, 13VPA
9D6	EF92	W77, 6CQ6, VP5, 6F21
9D7	—	—
9U8	PCF82	—
10C1	—	X118, X145
10C2	—	—
10CI4 ...	UCH81	X119, 19D8
10D1	*	—
10D2	—	—
10F1	**	ZI45
10F3	**	—
10F9	—	W145
10F18	*	W119
10FD12 ...	UBF89	WD119
10L1	—	—
10L14	UCC85	B109
10LD3 ...	UBC41	DH142, 14L7
10LD11 ...	—	DL145
10LD12 ...	UABC80	DH109
10LD13 ...	UBC81	—
10M1... ...	—	—
10M2... ...	—	—
10P13 ...	—	N145
10P14	**	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
10P18 ...	UL84	N119, 45B5
10PL12 ...	UCL82	LN119,T, 50BM8
11A2 ...	*	AC/HL/DD, DDMHD4
11D3 ...	—	—
11D5 ...	—	—
12A6 ...	—	—
12AC5 ...	UF41	—
12AC6 ...	—	—
12AD6 ...	—	—
12AE6 ...	—	—
12AH7 ...	—	—
12AH8 ...	—	—
12AT6 ...	HBC90	—
12AT7 ...	ECC81	B309, B152
12AU7 ...	ECC82	B329
12AV6 ...	HBC91	—
12AX7 ...	ECC83	B339, 6L13
12BA6 ...	HF93	—
12BE6 ...	HK90	—
12BH7 ...	—	—
12C8GT ...	—	—
12J7GT ...	12J7GT	—
12K5 ...	—	—
12K7GT ...	12K7GT	—
12K8GT ...	12K8GT	—
12Q7GT ...	12Q7GT	—
12S7 ...	UAF42	—
12SA7GT ...	—	—
12SC7 ...	—	—
12SJ7GT ...	*	—
12SK7GT ...	12SK7GT	—
12SL7GT ...	—	—
12SNGT ...	12SN7GT	B36
12SQ7GT ...	*	—
12SR7 ...	—	—
12U5G ...	—	—
12XP4 ...	MW31–74	C12FM, 121K
12XP4A ...	MW31–74	121K
12Z3 ...	*	—
13PGA ...	—	—
13SPA ...	—	8D2
13VPA ...	*	VP1322, 9D2
14B6 ...	*	—
14H7 ...	**	—
14K7 ...	UCH42	X142, 141TH
14KP4 ...	MW36–24	141K, C36–24, 14LP4
14KP4A ...	MW36–24	141K, C36–24, 14LP4
14L7 ...	UBC41	10LD3, DH142
14LP4 ...	MW36–24	141K, C36–24, 14KP4
14R7 ...	—	—
14S7 ...	—	—
14XP4A ...	—	—
15 ...	—	—
15A2 ...	*	MX40, 41MPG
15A6 ...	PL83	N153, N309
15CW5 ...	PL84	N379, 30P18
15D1 ...	—	—
15D2 ...	—	—
15DQ8 ...	PCL84	—
15EP4 ...	—	—
16A5 ...	PL82	N154, N329, 30P16
16A8 ...	PCL82	—
17ARP4 ...	—	171K
17ASP4 ...	—	171K
17AXP4 ...	—	171K
17BTP4 ...	AW43–80	—
17C8 ...	UBF80	171DDP
17Z3 ...	PY81	U153
18 ...	—	—
18GV8 ...	PCL85	—
19AQ5 ...	—	—
19BG6G ...	—	—
19D8 ...	UCH81	10C14, X119
19FL8 ...	UBF89	WD119, 10FD12
19SU ...	PY82	U154, U319, U192, 19Y3

Valve Type	Mullard Direct Equivalent	Other Equivalents
19T8 ...	—	—
19X3 ...	PY80	U152, U309
19Y3 ...	PY82	U154, U319, U192, 19SU
20A1 ...	*	AC/TH1, X41, 41STH
20D1 ...	—	—
20D2 ...	—	—
20F2 ...	—	—
20L1 ...	—	—
20P1 ...	—	—
20P2 ...	—	—
20P3 ...	—	—
20P4 ...	—	—
20P5 ...	—	—
21A6 ...	PL81	N152, N359
21CJP4 ...	AW53–20	—
21CLP4 ...	AW53–80	—
25A6G ...	25A6G	—
25E5 ...	PL36	—
25L6GT ...	25L6GT	KT32
25RE ...	—	—
25U4GT ...	—	—
25Y5 ...	—	—
25Z4G ...	25Z4G	—
25Z4GT ...	25Z4G	—
25Z5 ...	—	—
25Z6GT ...	—	—
27SU ...	—	—
30C1 ...	PCF80	LZ319, 9A8, LZ329, 8A8
30C13 ...	—	—
30C15 ...	—	—
30C17 ...	—	—
30F5 ...	—	Z329
30F27 ...	—	—
30FL1 ...	—	—
30L1 ...	PCC84	B319, 7AN7
30L15 ...	—	—
30P4 ...	—	N308
30P12 ...	—	N369
30P14 ...	—	—
30P16 ...	PL82	N154, N329, 16A5
30P18 ...	PL84	N379, 15CW5
30PL1 ...	—	—
30PL13 ...	—	—
30PL14 ...	—	—
31A3 ...	UY41	U142, 311SU
35A5 ...	—	—
35L6GT ...	—	—
35RE ...	*	—
35W4 ...	HY90	—
35Z3 ...	*	—
35Z5GT ...	35Z5GT	—
36 ...	*	—
38A3 ...	UY85	U381, U119
39/44 ...	*	—
40SUA ...	*	U4020, 1D5
41E ...	*	—
41FP ...	—	AC/P
41MH ...	—	AC2HL
41MHF ...	*	41MHL
41MHL ...	*	—
41MP ...	*	—
41MPG ...	FC4	MX40, VHT4, 15A2
41MPL ...	*	—
41MPT ...	—	—
41MSG ...	—	AC/SG, MS/PEN, SPT4A
41MTA ...	—	41MTL
41MTL ...	*	—
41MTS ...	—	—
41MXP ...	—	—
41STH ...	*	AC/TH1
42 ...	42	—
42/42E ...	—	—
42MP/PEN ...	PENA4	AC2PEN, KT41, PT4(*F*), 7A3
42MPT ...	—	—
42OT ...	PENA4	AC2PEN, KT41, 42MP/PEN

Valve Type	Mullard Direct Equivalent	Other Equivalents
42OT/DD ...	*	AC2PENDD
42PTB ...	—	—
42SPT ...	—	—
43 } ...	43	—
43E }		
43IU	*	MU14, R2, UU5
44IU	IW4–500	MU14, R3, UU5
45A5	UL41	—
45B5	UL84	10P18, N119
45IU	*	—
50A5	—	—
50B5	*	—
50BM8 ...	UCL82	—
50C5	HL92	—
50CD6G ...	—	—
50L6GT ...	50L6GT	KT71
52KU ...	—	—
53KU ...	GZ37	U54
54KU ...	GZ32	—
61BT	—	—
61SPT ...	—	—
62BT	—	—
62DDT ...	EBC41	DH150, 6LD3
62TH... ...	ECH42	X150, 6C10
62VP	EF41	W150
63ME ...	*	Y63, 6M1
63SPT ...	EF50	—
63TP	ECL80	—
64ME ...	EM34	6M2
64SPT ...	EF80	Z152, Z719, 6BX6
65K	—	—
65K/2 ...	—	—
65ME ...	EM80	—
66KU ...	EZ40	U150, UU9, 6BJ4
67PT	EL41	N150
75	*	—
75K	—	—
77/77E ...	*	—
78/78E ...	*	—
79	—	—
80	80	—
83	—	—
83V	*	—
84/6Z4 ...	*	—
85K	—	—
105K	—	—
108K	—	—
112K	*	—
121K	MW31–74	C12FM
121VP ...	UF41	—
141DDT ...	UBC41	10LD3, 14L7, DH142
141K	MW36–24	14KP4A, C36–24, 14LP4
141TH ...	UCH42	X142, 14K7
142BT ...	—	—
154V	*	MHL4
164V	*	MHL4
171DDP ...	UBF80	17C8
171K	—	17ASP4
172K	MW43–69	—
173K	MW43–69	—
185BT ...	—	—
185BTA ...	—	—
202DDT ...	*	—
202STH ...	TH21C	TH2321
202VP ...	—	—
202VPB ...	—	—
203THA ...	—	—
210DDT ...	—	HD2
210DET ...	—	210HF
210HF ...	—	—
210HL ...	—	210HF
210HPT ...	—	—
210LF ...	—	—
210PG ...	—	X22
210RC ...	—	—

Valve Type	Mullard Direct Equivalent	Other Equivalents
210SPG ...	—	—
210SPT ...	*	Z22
210VPA ...	—	—
210VPT ...	—	VP210, W21
212K	MW53–80	—
215P	—	—
215SG	—	Z21
220B	—	—
220HPT ...	—	KT2, PEN220, PT2, 220OT
220OT ...	—	KT2, PEN220, PT2
220P	—	—
220PA	—	L2
220PT	—	—
220SG	—	Z21, 215SG
220TH ...	—	X24
220Vs	—	VS2, W21
220VSG	—	VS2, W21, 210VPT
225DU ...	—	—
230PT ...	—	—
230XP	—	—
240QP	—	QP230
244V	*	MH4
302THA ...	—	TH2321
311SU ...	UY41	U142, 31A3
332PEN ...	CL33	—
345V	*	AC/HL, MH4
402P	—	—
402PEN ...	—	—
402PENA ...	—	—
405BU	—	—
408BU ...	*	506BU, 1821
442BU ...	DW4–350	R2, U14, UU5
451PT ...	UL41	N142
460BU ...	DW4–500	R3, U14, UU5, 1561
484V	*	—
506BU ...	*	U10, 1821
904V	—	—
994V	—	—
1561	DW4–500	U14
1629	—	—
1821	*	U10
1861	IW4–500	MU14
1867	IW4–350	MU14, R42
1877	—	—
1881	*	—
2101	—	—
2102	—	—
6153T ...	*	—
6267	EF86	Z729, 6F22
6504A ...	—	—
6505A ...	—	—
6506A ...	—	—
6703A ...	—	—
6704A ...	—	—
6705A ...	—	—
6706A ...	—	—
6801A ...	—	—
6802A ...	—	—
6901A ...	—	—
7101A ...	—	—
7102A ...	—	—
7201A ...	—	—
7202	—	—
7203A ...	—	—
7204	—	—
7204A ...	—	CRM144
7205A ...	—	CME1402
7401A ...	—	—
7404A ...	—	CRM172
7501A ...	—	—
7502A ...	—	CRM212
7503A ...	—	—

NOTES ON ADJUSTMENT OF ION TRAP MAGNETS

With tubes which incorporate an ion trap, it is necessary to provide an external magnetic field to deflect the electron beam through the final aperture of the gun towards the luminescent screen. This magnetic field is normally provided by a permanent magnet fitted with an adjustable mount so that it can be moved along and around the neck of the tube. The limits of field strength for ion trap magnet assemblies are given in individual data sheets.

Care should be exercised in the choice of an ion trap magnet in order to preserve the good spot centrality and spot quality of the tube. Any variation in the field strength of the ion trap magnet, within the normal tolerance limits, will not affect the spot centrality but it will alter the optimum position of the magnet on the neck. The spot centrality is a function of the field distribution along an axis perpendicular to the plane of the magnet assembly. This distribution is fairly constant for one type of construction but differences may occur between types.

Ion trap magnet assemblies fitted with only one energising magnet usually have an asymmetrical field distribution along an axis which passes through the magnet and the centre of the assembly. With this type, it will be found that better spot quality can be obtained if it is mounted on the neck in a particular way. In general, the magnet will be marked to facilitate mounting in the preferred direction.

The following procedure has been found to give the better spot size and should be adopted :—

1. With the supplies to the tube switched off and the base socket removed, slip the magnet assembly over the tube base in the preferred direction. Adjust the assembly so that it is slightly in advance of the tube base.
2. Fit the socket to the tube. Switch on the supplies and adjust the brightness control. If necessary, adjust the position of the ion trap magnet until a raster is obtained. Ensure that the picture centring controls are set at zero shift.
3. Move the magnet assembly along the neck of the tube towards the screen until the raster brightness begins to decrease. Then move the magnet back towards the base until the brightness once more begins to decrease. Return the magnet to the position of maximum brightness lying between these two extremes. The magnet should now be rotated slightly to find the midpoint of the range which gives maximum brightness.
4. Lock the magnet in place, taking care not to alter its position.

With magnetically focused tubes, penetration of the focus field into the ion trap region, will move the beam in the final aperture when the focus control is being adjusted. This movement may be sufficiently large to 'black-out' the picture. Accurate alignment of the focus unit with the electron beam will prevent this.

It is desirable that, after adjustment of the focus control (either electrostatic or magnetic) and picture centring, the ion trap setting be checked with a normal picture.

DATA SECTION

LIST OF EARLIER TYPES AND TYPES NOT IN COMMON USE

(See Foreword)

AZ1	ECH35	PENB4	12K7GT
AZ31	EF9	PL33	12K8GT
	EF22	PL38	12Q7GT
CBL1	EF37A	PL38M	12SK7GT
CBL31	EF39	PL820	12SN7GT
CCH35	EF50	PY31	25A6G
CL33	EF54	PZ30	25L6GT
CY1	EF55		25Z4G
CY31	EF98	TDD4	35Z5GT
	EL2		42
DA90	EL32	UBL21	43
DAC32	EL33	UC92	50L6GT
DCC90	EL36	UCH21	80
DF33	EL37	UM4	
DF64	EL38	UR1C	
DF66	EL83	UY1N	
DF92	EL85		
DF97	EL90	VP4B	
DK32	EL91		
DL33	EL821	1C5G	
DL35	EL822	1H5G	
DL64	EM34	1N5G	
DL68	EY91	3Q5GT	
DL93	EZ35	5U4G	
DW4–350		5V4C	
DW4–500	FC4	5Y3G/GT	
	FW4–500	5Z4GT	
EA50	FW4–800	6A8G	
EAC91		6C5GT	
EB34	GZ30	6F6G	
EBC33	GZ33	6J5G	
EBL21	GZ37	6J5GT	
EBL31		6J7GT	
EC52	IW4–350	6K7G	
EC90	IW4–500	6K8G	
EC91		6K8GT	
EC92	MW6–2	6Q7G	
ECC32	MW22–16	6Q7GT	
ECC33	MW31–74	6SK7GT	
ECC34	MW41–1	6SN7GT	
ECC35	MW43–43	6V6G	
ECC91		6V6GT	
ECH3	PEN4DD	6X5GT	
ECH21	PENA4	12J7GT	

AW36-20
AW36-21

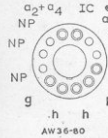
B12A

14-in. Television tube. Electrostatic focusing. 70° magnetic deflection. Incorporates ion trap. Ion trap magnet IT9, centring magnet BC11. AW36-20 has metal-backed screen.

Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3+a5	12	kV
Va2+a4 (focus electrode)	−55 to +145	V
Va1	300	V
Vg1 for cut-off	−40 to −80	V

AW36-80



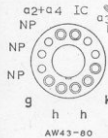
B12A

14-in. Television tube. Electrostatic focusing. 90° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9, centring magnet BC11. Metal-backed screen.

Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3+a5	12	kV
Va2+a4 (focus electrode)	−55 to +145	V
Va1	300	V
Vg for cut-off	−40 to −80	V

AW43-80



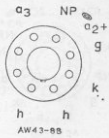
B12A

17-in. Television tube. Electrostatic focusing. 90° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9, centring magnet BC11. Metal-backed screen.

Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3+a5	16	kV
Va2+a4	0 to 200	V
Va1	300	V
Vg for cut-off	−40 to −80	V

AW43-88

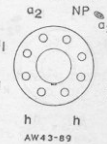


17-in. Television tube. Electrostatic focusing. 110° Magnetic deflection. Metal-backed screen.

Final anode cavity connector type CT8. B8H

Vh	6·3	V
Ih	300	mA
Va2+a4	16	kV
Va3 (focus electrode)	0 to 400	V
Va1	400	V
Vg for cut-off	−38 to −94	V

AW43-89

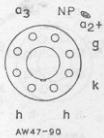


17-in. Television tube. Electrostatic focus. 110° Magnetic deflection. Short neck. Metal-backed screen.

Final anode cavity connector type CT8. B8H

Vh	6·3	V
Ih	300	mA
Va3	16	kV
Va2 (focus electrode)	0 to 400	V
Va1	500	V
Vg for cut-off	−35 to −75	V

AW47-90



19-in. Television tube. Electrostatic focus. 110° Magnetic deflection. Metal-backed screen.

Final anode cavity connector type CT8. B8H

Vh	6·3	V
Ih	300	mA
Va2+a4	16	kV
Va3 (focus electrode)	0 to 400	V
Va1	400	V
Vg for cut-off	−38 to −94	V

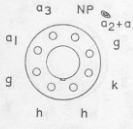
AW53-80

21-in. Television tube. Electrostatic focus. 90° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9, centring magnet BC11. Metal-backed screen.

B12A Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3+a5	16	kV
Va2+a4	0 to 200	V
Va1	300	V
Vg for cut-off	–40 to –80	V

AW53-88

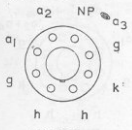


21-in. Television tube. Electrostatic focus. 110° Magnetic deflection. Metal-backed screen.

B8H Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va2+a4	16	kV
Va3 (focus electrode)	0 to 400	V
Va1	400	V
Vg for cut-off	–38 to –94	V

AW53-89

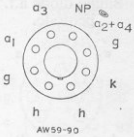


21-in. Television tube. Electrostatic focus. 110° Magnetic deflection. Short neck. Metal-backed screen.

B8H Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3	16	kV
Va2 (focus electrode)	0 to 400	V
Va1	500	V
Vg for cut-off	–35 to –75	V

AW59-90



23-in. Television tube. Electrostatic focusing. 110° Magnetic deflection. Metal-backed screen.

Final anode cavity connector type CT8. B8H

Vh	6·3	V
Ih	300	mA
Va2+a4	16	kV
Va3 (focus electrode)	0 to 400	V
Va1	400	V
Vg for cut-off	–38 to –94	V

AZ41

Full-wave rectifier

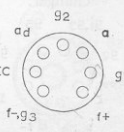
Vf	4·0			V
If	720			mA
Va(r.m.s.) (per anode)	300	400	500	V
Iout	70	60	60	mA
Cmax.	50	50	50	µF
Rlim min. (per anode)	100	150	200	Ω

B8A

DAF91

Single diode a.f. pentode.

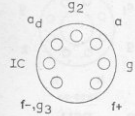
Vf	1·4		V
If	50		mA
Va	67·5	90	V
Vg2	67·5	90	V
Vg1	0	0	V
Ia	1·6	2·7	mA
Ig2	400	630	µA
gm	625	720	µA/V
µg1–g2	13·5	13·5	



B7G

DAF96

Single diode a.f. pentode.

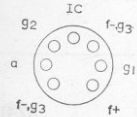


B7G

Vf	1·4	V
If	25	mA
Va	67·5	V
Vg2	67·5	V
Vg1	−1·5	V
Ia	170	μA
Ig2	55	μA
gm	170	μA/V
μg1–g2	16	

DF91

Variable-mu .f. pentode.

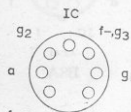


B7G

Vf	1·4			V
If	50			mA
Va	45	67·5	90	V
Vg2	45	67·5	67·5	V
Vg1	0	0	0	V
Ia	1·7	3·4	3·5	mA
Ig2	0·7	1·5	1·4	mA
gm	700	875	900	μA/V

DF96

I.F. pentode.

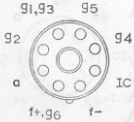


B7G

Vf	1·4		V
If	25		mA
Va=Vb	64	85	V
Rg2	0	39	kΩ
Vg1	0	0	V
Vg2	64	64	V
Ia	1·65	1·65	mA
Ig2	550	550	μA
gm	850	850	μA/V
μg1–g2	18	18	

DK40

Octode frequency changer.



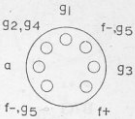
B8A

Vf	1·4	V
If	50	mA
Va=Vb	90	V
Vg5	67·5	V
Vg4	0	V
Vg2	67·5	V
Vosc(r.m.s.)	8·0	V
Ia	1·0	mA
Ig5	250	μA
Ig2	2·6	mA
gc	425	μA/V

DK91

Vf	1·4		V
If	50		mA
Va	67·5	90	V
Vg2+g4	67·5	67·5	V
Vg3	0	0	V
Rg1–f	100	100	kΩ
Ia	1·4	1·6	mA
Ig2+g4	3·2	3·2	mA
Ig1	250	250	μA
Ik	5·0	5·0	mA
gc	280	300	μA/V

Heptode frequency changer.

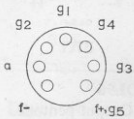


B7G

DK92

Vf	1·4		V
If	50		mA
Va=Vb	85		V
Vg3	0		V
Rg4	180		kΩ
Rg2	33		kΩ
Rg1–f+	27		kΩ
Vosc	4·0		V
Ik	2·55		mA
Ia	700		μA
Ig4	150		μA
Ig2	1·6		mA
Ig1	100		μA
gc	325		μA/V

Heptode frequency changer.

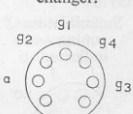


B7G

DK96

Vf	1·4		V
If	25		mA
Va=Vb	64	85	V
Vg3	0	0	V
Rg4	0	120	kΩ
Rg2	18	33	kΩ
Rg1–f+	27	27	kΩ
Vosc	4·0	4·0	V
Ik	2·45	2·4	mA
Ia	550	600	μA
Ig4	120	140	μA
Ig2	1·6	1·5	mA
Ig1	85	85	μA
gc	275	300	μA/V

Heptode frequency changer.

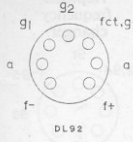


B7G

DL92

Output pentode.

	Series	Parallel	
Vf	2·8	1·4	V
If	50	100	mA
Parallel filament connection			
Va	45	90	V
Vg2	45	67·5	V
Vg1	−4·5	−7·0	V
Ia	3·8	7·4	mA
Ig2	0·8	1·4	mA
gm	1·15	1·57	mA/V
Ra	8·0	8·0	kΩ
Pout	65	270	mW



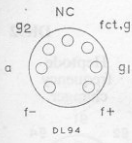
B7G

DL94

Output pentode.

Filament connection

	Series	Parallel	
Vf	2·8	1·4	V
If	50	100	mA
Va	90	90	V
Vg2	90	90	V
Vg1	−4·5	−4·5	V
Ia	7·7	9·5	mA
Ig2	1·7	2·1	mA
gm	2·0	2·15	mA/V
Ra	10	10	kΩ
Pout	240	270	mW

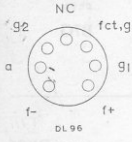


B7G

DL96

Output pentode.

	Series	Parallel	
Vf	2·8	1·4	V
If	25	50	mA
Parallel filament connection			
Vb	67·5	90	V
Va	64	85	V
Vg2	64	85	V
Vg1	−3·3	−5·2	V
Ia	3·5	5·0	mA
Ig2	650	900	μA
gm	1·3	1·4	mA/V
Ra	15	13	kΩ
Pout	100	200	mW

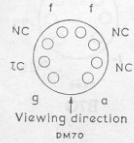


B7G

DM70

Subminiature tuning indicator.

	Pin 4 earthed	Pin 5 earthed	
Vf		1·4	V
If		25	mA
Battery-operated receivers			
Vb	90	67·5	V
Va	85	60	V
Vg	0	0	V
Ia	170	105	μA
Vg (for complete extinction)			
	−10	−7·0	V

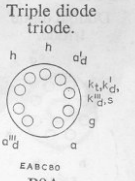


B8D

EABC80

Triple diode triode.

Vh	6·3	V
Ih	450	mA
Va	100 / 250	V
Vg	−1·0 / −3·0	V
Ia	0·8 / 1·0	mA
gm	1·45 / 1·4	mA/V
μ	70 / 70	

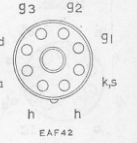


B9A

EAF42

Single diode r.f. pentode.

Vh	6·3	V
Ih	200	mA
Va = Vb	250	V
Rg2	110	kΩ
Vg2	85	V
Rk	310	Ω
Ia	5·0	mA
Ig2	1·5	mA
gm	2·0	mA/V
μg1–g2	18	



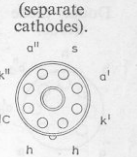
B8A

EB41

Double diode (separate cathodes).

Vh	6·3	V
Ih	300	mA
*Va max.	150	V
*Ia max.	9·0	mA
*ia(pk) max.	54	mA
*Vh–k max.	300	V

*Each section



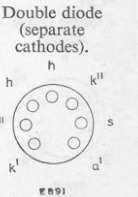
B8A

EB91

Double diode (separate cathodes).

Vh	6·3	V
Ih	300	mA
*P.I.V. max.	420	V
*Ia max.	9·0	mA
*ia(pk) max.	54	mA
*vh–k(pk) max.	330	V

*Each section



B7G

EBC41

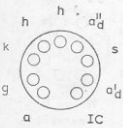
Double diode triode.

B8A

Vh	6·3	V
Ih	230	mA
Va	250	V
Vg	−3·0	V
Ia	1·0	mA
gm	1·2	mA/V
μ	70	

EBC81

Double diode triode.

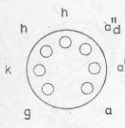


B9A

Vh	6·3	V
Ih	230	mA
Va	250	V
Vg	−3·0	V
Ia	1·0	mA
gm	1·2	mA/V
μ	70	

EBC90

Double diode triode.

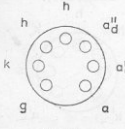


B7G

Vh	6·3		V
Ih	300		mA
Va	100	250	V
Vg	−1·0	−3·0	V
Ia	0·8	1·0	mA
gm	1·3	1·2	mA/V
μ	70	70	

EBC91

Double diode triode.

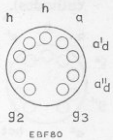


B7G

Vh	6·3		V
Ih	300		mA
Va	100	250	V
Vg	−1·0	−2·0	V
Ia	0·5	1·2	mA
gm	1·25	1·6	mA/V
μ	100	100	

EBF80

Double diode pentode.

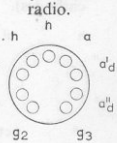


B9A

Vh	6·3	V
Ih	300	mA
Va=Vb	250	V
Rg2	95	kΩ
Vg2	85	V
Vg3	0	V
Rk	300	Ω
Ia	5·0	mA
Ig2	1·75	mA
gm	2·2	mA/V
μg1–g2	18	

EBF83

Double diode pentode for use in hybrid car radio.



B9A

Vh	6·3			V
Ih	300			mA
Va	6·3	12·6	25	V
Vg3	0	0	0	V
Vg2	6·3	12·6	25	V
Rg1	2·2	2·2	2·2	MΩ
Ia	0·12	0·45	1·7	mA
Ig2	0·04	0·14	0·5	mA
gm	0·45	1·0	2·1	mA/V
ra	0·65	1·0	0·2	MΩ

EBF89

Double diode pentode.

B9A

Vh	6·3		V
Ih	300		mA
Va	250	250	V
Vg3	0	0	V
Vg2	80	100	V
Vg1	−1·0	−2·0	V
Ia	9·0	9·0	mA
Ig2	2·7	2·7	mA
gm	4·5	3·8	mA/V
ra	0·9	1·0	MΩ
μg1–g2	20	20	

ECC40

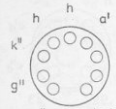
Double triode (separate cathodes).

B8A

Vh	6·3	V
Ih	600	mA
Characteristics (Each section)		
Va	250	V
Vg	−5·2	V
Ia	6·0	mA
gm	2·7	mA/V
μ	30	

ECC81

R.F. double triode (separate cathodes).

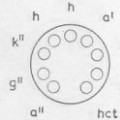


B9A

	Series	Parallel	
Vh	12·6	6·3	V
Ih	150	300	mA
Characteristics (Each section)			
Va	200	250	V
Vg	−1·0	−2·0	V
Ia	11·5	10	mA
gm	6·7	5·5	mA/V
μ	70	60	

ECC82

Double triode (separate cathodes).

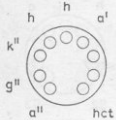


B9A

	Series	Parallel	
Vh	12·6	6·3	V
Ih	150	300	mA
Characteristics (Each section)			
Va	100	250	V
Vg	0	−8·5	V
Ia	11·8	10·5	mA
gm	3·1	2·2	mA/V
μ	19·5	17	

ECC83

Double triode (separate cathodes).

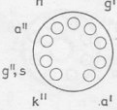


AB9

	Series	Parallel	
Vh	12·6	6·3	V
Ih	150	300	mA
Characteristics (Each section)			
Va	100	250	V
Vg	−1·0	−2·0	V
Ia	0·5	1·2	mA
gm	1·25	1·6	mA/V
μ	100	100	

ECC84

R.F. double triode (separate cathodes).

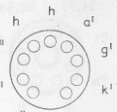


B9A

Vh	6·3	V
Ih	330	mA
Characteristics (Each section)		
Va	90	V
Vg	−1·5	V
Ia	12	mA
gm	6·0	mA/V
μ	24	

ECC85

R.F. double triode (separate cathodes).

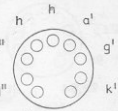


B9A

Vh	6·3	V
Ih	435	mA
Characteristics (Each section)		
Va	250	V
Vg	−2·3	V
Ia	10	mA
gm	5·9	mA/V
μ	57	

ECC88

V.H.F. double triode (separate cathodes).

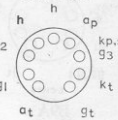


B9A

Vh	6·3	V
Ih	365	mA
Characteristics (Each section)		
Va	90	V
Vg	−1·3	V
Ia	15	mA
gm	12·5	mA/V
μ	33	

ECF80

Triode pentode (separate cathodes).

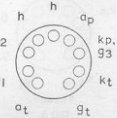


B9A

	Triode	Pentode	
Vh	6·3		V
Ih	430		mA
Va	100	250	V
Vg2	—	200	V
Vg1	−2·0	3·2	V
Ia	14	7·0	mA
Ig2	—	1·8	mA
gm	5·0	5·5	mA/V
μ	20	—	

ECF82

Triode pentode (separate cathodes).



B9A

	Triode	Pentode	
Vh	6·3		V
Ih	450		mA
Va	150	250	V
Vg2	—	110	V
Vg1	−1·0	−0·9	V
Ia	18	10	mA
Ig2	—	3·5	mA
gm	8·5	5·2	mA/V
μ	40	—	

ECH42

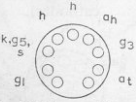
Triode hexode frequency changer.

B8A

Vh	6·3	V
Ih	230	mA
Vah=Vb	250	V
Vg2+g4	85	V
Rk	180	Ω
Rg3+gt	47	kΩ
Ig3+gt	200	μA
Iah	3·0	mA
Ig2+g4	3·0	mA
gc	750	μA/V
Vat	90	V
Iat	4·8	mA

ECH81

Triode heptode frequency changer.

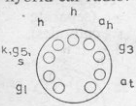


B9A

Vh	6·3	V
Ih	300	mA
Vah=Vb	250	V
Rg2+g4	22	kΩ
Rg3+gt	47	kΩ
Rk	140	Ω
Iah	3·25	mA
Ig2+g4	6·7	mA
Ig3+gt	200	μA
gc	775	μA/V
Vat	100	V
Iat	4·5	mA

ECH83

Triode heptode for use in hybrid car radio.

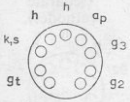


B9A

Vh	6·3	V
Ih	300	mA
Vah=Vb	12·6	V
Vg2+g4	12·6	V
Vg1	0	V
Iah	150	μA
Ig2+g4	350	μA
Ig3+gt	42	μA
Vosc(r.m.s.)	1·7	V
gc	200	μA/V
ra	1·5	MΩ
Vat=Vb	12·6	V
Iat	750	μA

ECL80

Triode output pentode. (pa max.=3·5W)



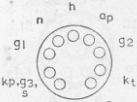
B9A

		Triode	Pentode	
Vh		6·3		V
Ih		300		mA
Va		100	200	V
Vg2		—	200	V
Vg3		—	0	V
Vg1		–2·3	–8·0	V
Ia		4·0	17·5	mA
Ig2		—	3·3	mA
gm		1·4	3·3	mA/V
μ		17·5	—	
Ra		—	11	kΩ
Pout		—	1·4	W

ECL82

Vh	6·3		V
Ih	780		mA
	Triode	Pentode	
Va	100	250	V
Vg2	—	250	V
Ia	3·5	28	mA
Ig2	—	6·5	mA
Vg1	0	–22·5	V
gm	2·2	5·0	mA/V
Ra	—	9·0	kΩ
Pout	—	3·4	W

Triode output pentode. (pa max.=5·4W

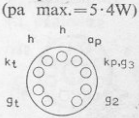


B9A

ECL83

Vh	6·3		V
Ih	600		mA
	Triode	Pentode	
Va	200	200	V
Vg2	—	200	V
Ia	2·4	27	mA
Ig2	—	4·4	mA
Vg1	–1·5	–13	V
gm	2·5	5·0	mA/V
ra	34	65	kΩ
Ra		7·5	kΩ
Pout		2·5	W

Triode output pentode. (pa max.=5·4W)

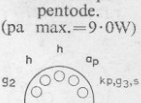


B9A

ECL86

Vh	6·3		V
Ih	700		mA
	Triode	Pentode	
Va	250	250	V
Vg2	—	250	V
Ia	1·2	36	mA
Ig2	—	6·0	mA
Vg1	–1·9	–7·0	V
gm	1·6	10	mA/V
ra	62	48	kΩ
Ra	—	7·0	kΩ
Pout	—	4·0	W

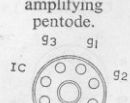
Triode output pentode. (pa max.=9·0W)



B9A

EF40

Voltage amplifying pentode.

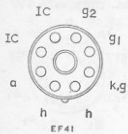


B8A

Vh	6·3	V
Ih	200	mA
Va	250	V
Vg2	140	V
Vg1	–2·0	V
Ia	3·0	mA
Ig2	600	μA
gm	1·8	mA/V
μg1–g2	38	

EF41

Variable-mu r.f. pentode.

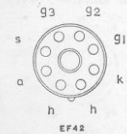


B8A

Vh	6·3	V
Ih	200	mA
Va	250	V
Rg2	90	kΩ
Rk	325	Ω
Ia	6·0	mA
Ig2	1·7	mA
gm	2·2	mA/V

EF42

High slope r.f. pentode.

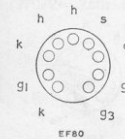


B8A

Vh	6·3	V
Ih	330	mA
Va	250	V
Vg2	250	V
Rk	160	Ω
Ia	10	mA
Ig2	2·3	mA
gm	9·5	mA/V

EF80

High slope r.f. pentode.

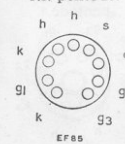


B9A

Vh	6·3	V
Ih	300	mA
Va	170	V
Vg2	170	V
Vg3	0	V
Rk	160	Ω
Ia	10	mA
Ig2	2·5	mA
gm	7·4	mA/V
μg1–g2	50	

EF85

Variable-mu r.f. pentode.

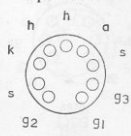


B9A

Vh	6·3	V
Ih	300	mA
Vb=Va	250	V
Rg2	60	kΩ
Vg2	100	V
Rk	160	Ω
Ia	10	mA
Ig2	2·5	mA
gm	6·0	mA/V

EF86

Low noise a.f. voltage amplifying pentode.

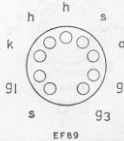


B9A

Vh	6·3	V
Ih	200	mA
Va	250	V
Vg3	0	V
Vg2	140	V
Vg1	−2·0	V
Ia	3·0	mA
Ig2	600	μA
gm	2·0	mA/V
μg1–g2	38	

EF89

Variable-mu r.f. pentode.

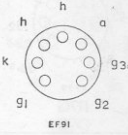


B9A

Vh	6·3	V
Ih	200	mA
Va	250	V
Vg3	0	V
Vg2	100	V
Rk	160	Ω
Ia	9·0	mA
Ig2	3·0	mA
gm	3·6	mA/V

EF91

High slope r.f. pentode.

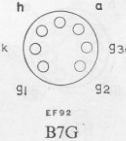


B7G

Vh	6·3	V
Ih	300	mA
Va	250	V
Vg2	250	V
Vg3	0	V
Rk	160	Ω
Ia	10	mA
Ig2	2·5	mA
gm	7·6	mA/V
μg1–g2	70	

EF92

Variable-mu r.f. pentode.

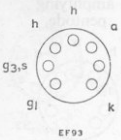


B7G

Vh	6·3		V
Ih	200		mA
Va	250	250	V
Vg2	150	200	V
Vg3	0	0	V
Rk	65	250	Ω
Ia	8·0	8·0	mA
Ig2	2·0	2·1	mA
gm	2·5	2·5	mA/V
μg1–g2	30	30	

EF93

Variable-mu r.f. pentode.

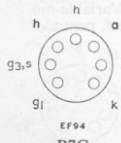


B7G

Vh	6·3		V
Ih	300		mA
Va	100	250	V
Vg3	0	0	V
Rg2	0	33	kΩ
Vg2	100	100	V
Rk	65	65	Ω
Ia	10·8	11	mA
Ig2	4·4	4·2	mA
gm	4·3	4·4	mA/V

EF94

R.F. pentode.

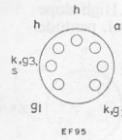


B7G

Vh	6·3		V
Ih	300		mA
Va	100	250	V
Vg3	0	0	V
Vg2	100	150	V
Vg1	−1·0	−1·0	V
Ia	5·0	10·6	mA
Ig2	2·1	4·3	mA
gm	3·9	5·2	mA/V
ra	0·5	1·0	MΩ

EF95

V.H.F. pentode.

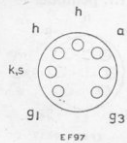


B7G

Vh	6·3		V
Ih	175		mA
Va	120	180	V
Vg2	120	120	V
Rk	200	200	Ω
Ia	7·5	7·7	mA
Ig2	2·5	2·4	mA
gm	5·0	5·1	mA/V

EF97

R.F. pentode for use in hybrid car radios.

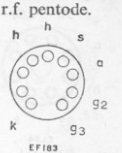


B7G

Vh	6·3			V
Ih	300			mA
Va	6·3	12·6	25	V
Vg3	0	0	0	V
Vg2	3·2	6·3	6·3	V
Rg1	10	10	10	MΩ
Ia	1·0	3·0	3·3	mA
Ig2	0·4	1·1	0·95	mA
gm	1·0	1·9	2·1	mA/V
ra	70	150	50	kΩ

EF183

Frame-grid variable-mu r.f. pentode.

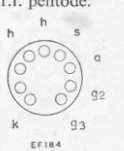


B9A

Vh	6·3		V
Ih	300		mA
Va	200		V
Vg2	90		V
Vg3	0		V
Ia	12		mA
Ig2	4·5		mA
Vg1	−2·0		V
gm	12·5		mA/V
ra	500		kΩ

EF184

Frame-grid r.f. pentode.

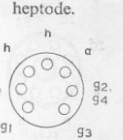


B9A

Vh	6·3		V
Ih	300		mA
Va	170	200	V
Vg3	0	0	V
Vg2	170	200	V
Vg1	−2·0	−2·5	V
Ia	10	10	mA
Ig2	4·1	4·1	mA
gm	15·6	15	mA/V
ra	330	380	kΩ
μg1–g2	60	60	

EH90

Dual control heptode.

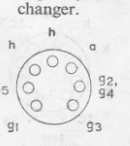


B7G

Vh	6·3			V
Ih	300			mA
Va	10	100	100	V
Vg2+g4	30	30	30	V
Vg1	0	0	−1·0	V
Vg3	0	−1·0	0	V
Ia	2·0	0·8	0·75	mA
Ig2+g4	3·5	4·0	1·1	mA
gm(g1–a)	—	—	1·2	mA/V
gm(g3–a)	—	1·55	—	mA/V
ra	—	0·4	0·9	MΩ

EK90

Heptode frequency changer.

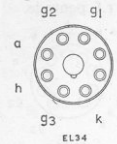


B7G

Vh	6·3		V
Ih	300		mA
Va	100	250	V
Vg2+g4	100	100	V
Rk	140	140	Ω
Rg1–k	20	20	kΩ
Ik	10·6	10·6	mA
Ia	2·8	3·0	mA
Ig2+g4	7·3	7·1	mA
Ig1	500	500	μA
gc	455	475	μA/V

EL34

Output pentode (pa max.=25W).



Octal

Vh	6·3	V
Ih	1·5	A
Va	250	V
Vg2	250	V
Vg3	0	V
Rk	106	Ω
Ia	100	mA
Ig2	15	mA
gm	11	mA/V
Ra	2·0	kΩ
Pout	11	W

EL41

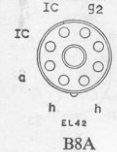
Output pentode (pa max.=9W).

B8A

Vh	6·3	V
Ih	700	mA
Va	250	V
Vg2	250	V
Rk	170	Ω
Ia	36	mA
Ig2	5·2	mA
gm	10	mA/V
Ra	7·0	kΩ
Pout	4·2	W

EL42

Output pentode pa max.=6W).

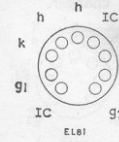


B8A

Vh	6·3		V
Ih	200		mA
Va	200	225	V
Vg2	200	225	V
Rk	360	360	Ω
Ia	22·5	26	mA
Ig2	3·6	4·1	mA
gm	3·2	3·2	mA/V
Ra	9·0	9·0	kΩ
Pout	2·0	2·6	W

EL81

Line timebase output pentode (pa max.=8W).



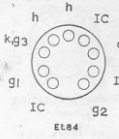
B9A

Vh	6·3	V
Ih	1·05	A
Va	250	V
Vg2	250	V
Vg3	0	V
Vg1	–38·5	V
Ia	32	mA
Ig2	2·4	mA
gm	4·6	mA/V
μg1–g2	5·1	

EL84

Vh	6·3	V
Ih	760	mA
Va	250	V
Vg2	250	V
Rk	135	Ω
Ia	48	mA
Ig2	5·5	mA
gm	11·3	mA/V
Ra	4·5	kΩ
Pout	5·7	W

Output pentode (pa max.=12W).

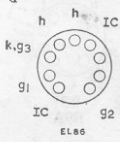


B9A

EL86

Vh	6·3	V
Ih	760	mA
Va(b)	200	V
Vg2(b)	200	V
Rk	215	Ω
Ia	64	mA
Ig2(o)	3·2	mA
gm	10	mA/V
Ra	2·5	kΩ
Pout	5·3	W

Output pentode (pa max.=12W).

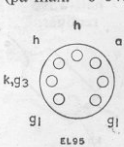


B9A

EL95

Vh	6·3	V
Ih	200	mA
Va	250	V
Vg2	250	V
Vg1	–9·0	V
Ia	24	mA
Ig2	4·5	mA
gm	5·0	mA/V
Ra	8·0	kΩ
Pout	2·3	W

Output pentode (pa max.=6·0W).

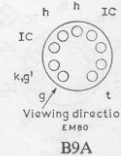


B7G

EM80

Vh	6·3		V
Ih	300		mA
Vb	250		V
Vt	250		V
Ra	500		kΩ
Rg–k	3		MΩ
Vg	–1·0	–14	V
β	5	50	deg
Ia	370	10	μA
It	2·0	2·3	mA

Tuning indicator.



B9A

EM81

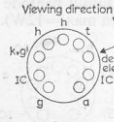
Tuning indicator.

B9A

Vh	6·3		V
Ih	300		mA
Vb	250		V
Vt	250		V
Ra	500		kΩ
Rg–k	3		MΩ
Vg	–1·0	10·5	V
β	65	5	deg
Ia	370	20	μA
It	2·0	2·3	mA

EM84

Voltage indicator.



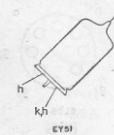
B9A

Vh	6·3		V
Ih	210		mA
Vb	250		V
Vt	250		V
Ra	470		kΩ
Rg–k	3		MΩ
Vg	0	–22	V
Ia	450	60	μA
It	1·0	1·8	mA
*L	21	0	mm

Deflection electrode connected to anode.
*Length of column.

EY51

High voltage half-wave rectifier.

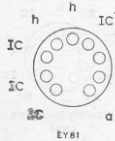


Wired-in

Vh	6·3	V
Ih	90	mA
Pulsed input		
P.I.V. max.	17	kV
Iout	350	μA
Ik(pk) max.	80	mA
C max.	5000	pF

EY81

Booster diode.



B9A

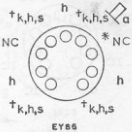
Vh	6·3	V
Ih	800	mA
P.I.V. max.	4·75	kV
Ia max.	150	mA
C max.	40	μF

EY86

High voltage half-wave rectifier.

Vh	6·3	V
Ih	90	mA
Pulsed input		
P.I.V. max.	22	kV
Iout	800	μA
ik(pk) max.	40	mA
C max.	2000	pF

†Pins 1, 4, 6 and 9 may be used for fitting an anti-corona shield.
*Pins 3 and 7 may only be connected to points in the heater circuit and must not be earthed.

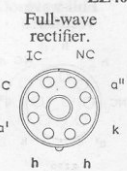


B9A

EZ40

Full-wave rectifier.

Vh	6·3	V
Ih	600	mA
Va(r.m.s.) max.	2×350	V
Iout max.	90	mA
C max.	50	μF
Rlim min. (per anode)	300	Ω

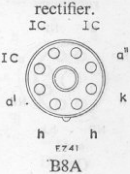


B8A

EZ41

Full-wave rectifier.

Vh	6·3	V
Ih	400	mA
Va(r.m.s.) max.	2×250	V
Iout max.	60	mA
C max.	50	μF
Rlim min. (per anode)	325	Ω

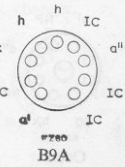


B8A

EZ80

Full-wave rectifier.

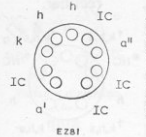
Vh	6·3	V
Ih	600	mA
Va(r.m.s.) max.	2×350	V
Iout max.	90	mA
C max.	50	μF
Rlim min. (per anode)	300	Ω



B9A

EZ81

Full-wave rectifier.



B9A

Vh	6·3	V
Ih	1·0	A
Va(r.m.s.) max.	2×350	V
Iout max.	150	mA
C max.	50	μF
Rlim min. (per anode)	240	Ω

EZ90

Full-wave rectifier.

B7G

Vh	6·3	V
Ih	600	mA
Va(r.m.s.) max.	2×325	V
Iout max.	70	mA
C max.	16	μF
Rlim min. (per anode)	520	Ω

GZ32

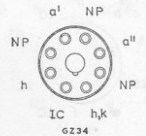
Full-wave rectifier.

Octal

Vh	5·0	V
Ih	2·3	A
Va(r.m.s.) max.	2×500	V
Iout max.	125	mA
C max.	60	μF
Rlim min. (per anode)	150	Ω

GZ34

Full-wave rectifier.

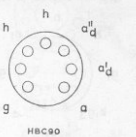


Octal

Vh	5·0	V
Ih	1·9	A
Va(r.m.s.)	2×450	V
Iout max.	250	mA
C max.	60	μF
Rlim min. (per anode)	125	Ω

HBC90

Double diode triode.

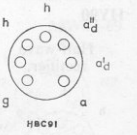


B7G

Ih	150		mA
Vh	12·6		V
Va	100	250	V
Vg	−1·0	−3·0	V
Ia	0·8	1·0	mA
gm	1·3	1·2	mA/V
μ	70	70	

HBC91

Double diode triode.

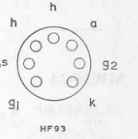


B7G

Ih	150		mA
Vh	12·6		V
Va	100	250	V
Vg	−1·0	−2·0	V
Ia	0·5	1·2	mA
gm	1·25	1·6	mA/V
μ	100	100	

HF93

Variable-mu r.f. pentode.

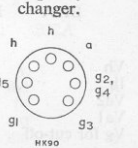


B7G

Ih	150		mA
Vh	12·6		V
Va	100	250	V
Vg2	100	100	V
Rk	68	68	Ω
Ia	10·8	11	mA
Ig2	4·4	4·2	mA
gm	4·3	4·4	mA/V

HK90

Heptode frequency changer.

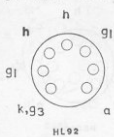


B7G

Ih	150		mA
Vh	12·6		V
Va	100	250	V
Vg2+g4	100	100	V
Rk	140	140	Ω
Rg1–k	20	20	kΩ
Ik	10·6	10·6	mA
Ia	2·8	3·0	mA
Ig2+g4	7·3	7·1	mA
Ig1	500	500	μA
gc	455	475	μA/V

HL92

Output pentode (pa max. = 5·5W).

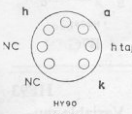


B7G

Ih	150	Am
Vh	50	V
Va	110	V
Vg2	110	V
Rk	140	Ω
Ia	49	mA
Ig2	4·0	mA
gm	7·5	mA/V
Ra	2·5	kΩ
Pout	1·9	W

HY90

Half-wave rectifier.



B7G

Ih	150		mA
Vh	35		V
Va(r.m.s.)	117	240	V
Iout max.	100	100	mA
C max.	40	40	μF
Rlim min.	15	120	Ω

A panel lamp may be connected between pins 4 and 6.

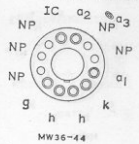
MW36-24

14-in. Television tube. Magnetic focus. 70° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9.

B12A Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va2	12	kV
Va1	250	V
Vg for cut-off	–33 to –72	V

MW36-44



14-in. Television tube. Magnetic focusing. 70° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9.

Final anode cavity connector type CT8. B12A

Vh	6·3	V
Ih	300	mA
Va3	12	kV
Va2	0	V
Va1	250	V
Vg for cut-off	–33 to –72	V

MW43-69

17-in. Television tube. Magnetic focusing. 70° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9. Metal-backed screen.

Final anode cavity connector type CT8. B12A

Vh	6·3	V
Ih	300	mA
Va3	14	kV
Va2	0	V
Va1	300	V
Vg for cut-off	–40 to –86	V

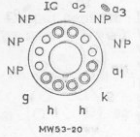
MW43-80

17-in. Television tube. Magnetic focusing. 90° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9. Metal-backed screen.

Final anode cavity connector type CT8. B12A

Vh	6·3	V
Ih	300	mA
Va3	14	kV
Va2	0	V
Va1	300	V
Vg for cut-off	–40 to –86	V

MW53-20



21-in. Television tube. Magnetic focusing. 70° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9. Metal-backed screen.

B12A Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3	16	kV
Va2	0	V
Va1	300	V
Vg for cut-off	–40 to –80	V

MW53-80

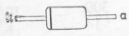
21-in. Television tube. Magnetic focusing. 90° Magnetic deflection. Incorporates ion trap. Ion trap magnet IT9. Metal-backed screen.

B12A Final anode cavity connector type CT8.

Vh	6·3	V
Ih	300	mA
Va3	16	kV
Va2	0	V
Va1	300	V
Vg for cut-off	–40 to –80	V

OA70

Germanium vidoe detector diode.



Max. inverse voltage		
Peak	22·5	V
Average	15	V
Max. forward current		
Peak	150	mA
*Average	50	mA

*At Tambient=25°C and with zero inverse voltage.

OA71

Germanium diode.

Max. inverse voltage		
Peak	90	V
Average	60	V
Max. forward current		
Peak	150	mA
*Average	35	mA

*At Tambient=25°C and with zero inverse voltage.

OA79

Germanium diode.

2-OA79 Matched pair of OA79 for f.m. detector circuits.

Measured at Tambient ≤ 60°C		
Max. inverse voltage		
Peak	45	V
Average	30	V
Max. forward current		
Peak	100	mA
Average	4·0	mA
Ambient temperature range		
Max.	+60	°C
Min.	–50	°C

OA81

Germanium diode.

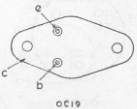
At Tambient	25	75	°C
Max. inverse voltage			
Peak	115	100	V
Average	90	75	V
Max. forward current			
*Peak	150	150	mA
Average	50	17	mA
Surge (1s max.)	500	500	mA
Ambient temperature range			
Max.		+75	°C
Min.		–50	°C

*With zero inverse voltage.

OC19

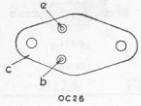
P-N-P power junction transistor.

Measured at Tjunction=25°C		
Vc	–7·0	V
Ic	300	mA
f	1·0	kc/s
α'	45	
Ico(Vc=–14V)	20	μA
pc max. (Tmounting base=45°C)	24	W
θ junction to mounting base	1·0	°C/W



OC26

P-N-P power junction transistor.



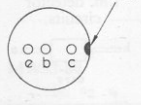
OC26

Measured at Tjunction=25°C

Vc	−1·0	V
Ic	1·0	A
α'	>20	
Ico (Vcb=−14V)	<100	μA
pc max. (Tmounting base ≤75°C)	12·5	W
θ junction to mounting base	1·2	°C/W

OC44

R.F. P-N-P junction transistor fα=15Mc/s.



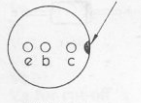
OC44

Measured at Tjunction=25°C

Vc	−6·0	V
Ic	1·0	mA
f	1·0	kc/s
α'	40 to 225	
Ico (Vc=−2·0V)	0·5	μA
pc max. (Tambient =45°C)	43	mW
θ	0·7	°C/mW

OC45

R.F. P-N-P junction transistor fα=6Mc/s.



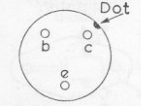
OC45

Measured at Tjunction=25°C

Vc	−6·0	V
Ic	1·0	mA
f	1·0	kc/s
α'	25 to 125	
Ico (Vc=−2·0V)	0·5	μA
pc max. (Tambient =45°C)	43	mW
θ	0·7	°C/mW

OC57

Subminiature P-N-P junction transistor.



OC57

Measured at Tambient=25°C

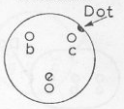
Vc	−0·5	V
Ic	250	μA
$f\alpha'$	10	kc/s
α'	35	
Ico (Vc=−2·0V)	1·5	μA
ptot (Tambient ≤40°C)	10	mW
θ	1·5	°C/mW

OC58

Measured at Tambient=25°C

Vc	−0·5	V
Ic	250	μA
$f\alpha'$	10	kc/s
α'	55	
Ico (Vc=−2·0V)	1·5	μA
ptot (Tambient ≤40°C)	10	mW
θ	1·5	°C/mW

Subminiature P-N-P junction transistor.



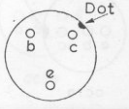
OC58

OC59

Measured at Tambient=25°C

Vc	−0·5	V
Ic	250	μA
$f\alpha'$	10	kc/s
α'	80	
ptot (Tambient ≤40°C)	10	mW
θ	1·5	°C/mW

Subminiature P-N-P junction transistor.



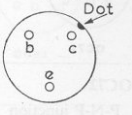
OC59

OC60

Measured at Tambient=25°C

Ic (Vc=−2V, Ib=50μA)	3·75	mA
Ico (Vc=−2·0V)	1·5	μA
ptot (Tambient ≤40°C)	10	mW
θ	1·5	°C/mW

Subminiature P-N-P junction output transistor.



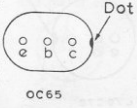
OC60

OC65

Measured at Tambient=25°C

Vc	−2·0	V
Ic	0·5	mA
f	1·0	kc/s
α'	20 to 40	
Ico (Vc=−4·5V)	5·0	μA
pc max. (Tambient=40°C)	25	mW
θ	0·65	°C/mW

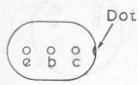
Subminiature P-N-P junction transistor.



OC65

OC66

Subminiature P-N-P junction transistor.

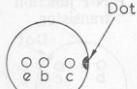


OC66

Measured at Tambient=25°C		
Vc	−2·0	V
Ic	3·0	mA
f	1·0	kc/s
α′	30 to 80	
Ico (Vc=−4·5V)	5·0	μA
pc max. Tambient=45°C)	25	mW
θ	0·65	°C/mW

OC70

P-N-P junction transistor.

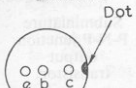


OC70

Measured at Tjunction=25°C		
Vc	−2·0	V
Ic	−0·5	mA
f	1·0	kc/s
α′	20 to 40	
Ico (Vc=−4·5V)	5·0	μA
pc max. (at 45°C)	75	mW
θ	0·4	°C/mW

OC71

P-N-P junction transistor.



OC71

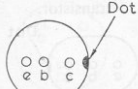
Measured at Tjunction=25°C		
Vc	−2·0	V
Ic	−3·0	mA
f	1·0	kc/s
α′	30 to 80	
Ico (Vc=−4·5V)	4·5	μA
pc max. (at 45°C)	75	mW
θ	0·4	°C/mW

OC72

P-N-P junction transistor.

2-OC72

Matched pair of OC72 for push-pull output stages.

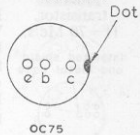


OC72

Measured at Tambient=25°C		
Vc	−5·4	V
Ic	−10	mA
α′	45 to 120	
Ico (Vc=−10V)	4·5	μA
pc max. (at 45°C)		
Without fin	75	mW
θ	0·4	°C/mV
With fin, on heat sink	100	mW
θ	0·3	°C/mW

OC75

P-N-P junction transistor.

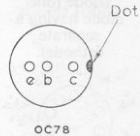


OC75

Measured at Tambient=25°C		
Vc	−2·0	V
Ic	3·0	mA
α′	90	
Ico (Vc=−4·5V)	4·5	μA
pc (Tambient=45°C)	75	mW
θ	0·4	°C/mW

OC78

P-N-P junction transistor.

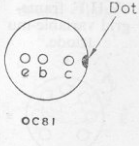


OC78

Measured at Tjunction=25°C		
Vc	−1·0	V
Ic	125	mA
α̃′	>25	
Ico (Vc=−10V)	<10	μA
θ (free air)	0·25	°C/mW
θ (With fin, on heat sink)	0·15	°C/mW

OC81

P-N-P junction transistor.



OC81

Measured at Tjunction=25°C		
Vc	−1·0	V
Ic	300	mA
α̃′	>45	
Ico (Vcb=−10V)	4·5	μA
pc max. (at 45°C)		
In free air	200	mW
θ	0·2	°C/mW
With fin, on heat sink	400	mW
θ	0·1	°C/mW

OC170

R.F. P-N-P alloy diffused junction transistor

f1=70 Mc/s.

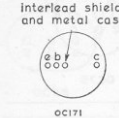
Interlead shield and metal case

OC170

Measured at Tambient=25°C		
Vce	−6·0	V
Ie	1·0	mA
f	1·0	kc/s
α′	100	
Ico (Vcb=−6·0V)	1·5	μA
pc max. (Tambient =45°C)	50	mW
θ	0·6	°C/mW

OC171

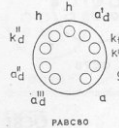
R.F. P-N-P alloy diffused junction transistor. f1=70 Mc/s.



Measured at Tambient=25°C		
Vce	−6·0	V
Ie	1·0	mA
f	1·0	kc/s
α′	100	
Ico (Vcb=−6·0V)	1·5	μA
pc max. (Tambient =45°C)	50	mW
θ	0·6	°C/mW

PABC80

Triple diode triode (one diode having a separate cathode).

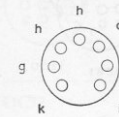


B9A

Ih	300		mA
Vh	9·5		V
Va	170	200	V
Vg	−1·85	−2·3	V
Ia	1·0	1·0	mA
gm	1·45	1·4	mA/V
ra	48	50	kΩ
μ	70	70	

PC95

V.H.F. frame-grid variable-mu triode.

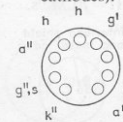


B7G

Ih	300	mA
Vh	3·6	V
Va	200	V
Vg	−1·2	V
Ia	10	mA
gm	10·5	mA/V
μ	80	

PCC84

Double triode (separate cathodes).

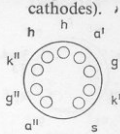


B9A

Ih	300	mA
Vh	7·0	V
Characteristics (Each section)		
Va	90	V
Vg	−1·5	V
Ia	12	mA
gm	6·0	mA/V
μ	24	

PCC85

Double triode (separate cathodes).

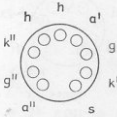


B9A

Ih	300		mA
Vh	9·0		V
Characteristics (Each section)			
Va	170	200	V
Vg	−1·5	−2·1	V
Ia	10	10	mA
gm	6·2	5·8	mA/V
μ	50	48	

PCC88

Frame-grid double triode.

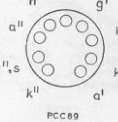


B9A

Ih	300		mA
Vh	7·0		V
Characteristics (Each section)			
Va	90		V
Vg	−1·2		V
Ia	15		mA
gm	12·5		mA/V
μ	33		

PCC89

Frame-grid double triode.

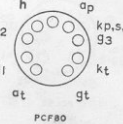


B9A

Ih	300		mA
Vh	7·5		V
Characteristics (Each section)			
Va	90		V
Ia	15		mA
Vg	−1·2		V
gm	12·3		mA/V

PCF80

Triode pentode (separate cathodes).

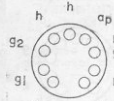


B9A

Ih	300		mA
Vh	9·0		V
	Triode	Pentode	
Va	100	170	V
Vg2	—	170	V
Vg1	−2·0	−2·0	V
Ia	14	10	mA
Ig2	—	2·8	mA
gm	5·0	6·2	mA/V
μ	20	—	

PCF82

Triode pentode (separate cathodes).

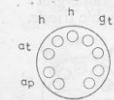


B9A

	Ih	300	mA
	Vh	9·5	V
		Triode / Pentode	
Va		150 / 250	V
Vg2		— / 110	V
Vg1		−1·0 / −0·9	V
Ia		18 / 10	mA
Ig2		— / 3·5	mA
gm		8·5 / 5·2	mA/V
μ		40 / —	

PCF84

Triode pentode.

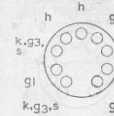


B9A

	Ih	300	mA
	Vh	9·0	V
		Triode / Pentode	
Va		100 / 170	V
Vg2		— / 170	V
Vg1		−2·0 / 0	V
Ia		14 / 8·0	mA
Ig2		— / 2·7	mA
gc		— / 2·5	mA/V
ra		4·0 / 400	kΩ

PCF86

Triode frame-grid pentode.

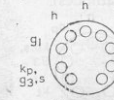


B9A

	Ih	300	mA
	Vh	8·0	V
		Triode / Pentode	
Va		100 / 150	V
Vg2		— / 150	V
Vg1		−3 / −1·2	V
Ia		14 / 10	mA
Ig2		— / 3·3	mA
gm		5·5 / 12	mA/V
ra		2·8 / 350	kΩ

PCL82

Triode output pentode (pa max.=7·0W).



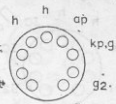
B9A

	Ih	300	mA
	Vh	16	V
		Triode / Pentode	
Va		100 / 170	V
Vg2		— / 170	V
Vg1		0 / −11·5	V
Ia		3·5 / 41	mA
Ig2		— / 9·0	mA
gm		2·5 / 7·5	mA/V
μ		70 / —	
Ra		— / 3·9	kΩ
Pout		— / 3·3	W

PCL83

	Ih	300	mA
	Vh	12·6	V
		Triode / Pentode	
Va		250 / 170	V
Vg2		— / 170	V
Vg1		−8·5 / −9·5	V
Ia		10·5 / 30	mA
Ig2		— / 5·0	mA
gm		2·2 / 5·5	mA/V
μ		17 / —	
Ra		— / 5·5	kΩ
Pout		— / 2·2	W

Triode output pentode (pa max.=5·4W).

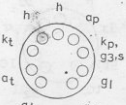


B9A

PCL84

	Ih	300	mA
	Vh	15	V
		Triode / Pentode	
Va		200 / 200	V
Vg2		— / 200	V
Vg1		−1·7 / −2·9	V
Ia		3·0 / 18	mA
Ig2		— / 3·0	mA
gm		4·0 / 10·4	mA/V
ra		16·2 / 130	kΩ
μg1–g2		— / 36	

Triode output pentode (pa max.=4·0W).

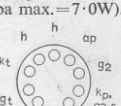


B9A

PCL85

	Ih	300	mA
	Vh	18	V
		Triode / Pentode	
Va		100 / 170	V
Vg2		— / 170	V
Vg1		0 / −15	V
Ia		10 / 41	mA
Ig2		— / 2·7	mA
gm		5·5 / 7·5	mA/V
ra		9 / 25	kΩ
μg1–g2		— / 7·0	

Triode output pentode (pa max.=7·0W).

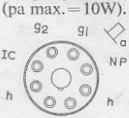


B9A

PL36

Line timebase output pentode (pa max.=10W).

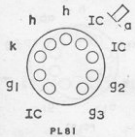
	Ih	300	mA
	Vh	25	V
	Va	100	V
	Vg2	100	V
	Vg1	−8·2	V
	Ia	100	mA
	Ig2	7·0	mA
	gm	14	mA/V
	μg1–g2	5·6	



Octal

PL81

Line timebase output pentode (pa max. = 8W).

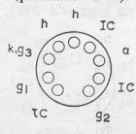


B9A

Ih		300	mA
Vh		21·5	V
Va		170	V
Vg2		170	V
Vg3		0	V
Vg1		–24	V
Ia		45	mA
Ig2		3·0	mA
gm		6·5	mA/V
μg1–g2		5·5	

PL82

Output pentode (pa max. = 9W).

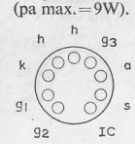


B9A

Ih	300		mA
Vh	16·5		V
Va	170	200	V
Vg2	170	200	V
Rk	165	270	Ω
Ia	53	45	mA
Ig2	10	8·5	mA
gm	9·0	7·6	mA/V
Ra	3·0	4·0	kΩ
Pout	4·0	4·2	W

PL83

Video output pentode (pa max. = 9W).

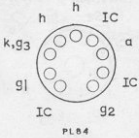


B9A

Ih	300		mA
Vh	15		V
Va	170	200	V
Vg2	170	200	V
Vg3	0	0	V
Vg1	–2·3	–3·5	V
Ia	36	36	mA
Ig2	5·0	5·0	mA
gm	10	10	mA/V
μg1–g2	24	24	

PL84

Output pentode (pa max. = 12W).

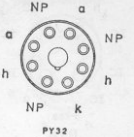


B9A

Ih	300		mA
Vh	15		V
Va	170	200	V
Vg2	170	200	V
Ia	70	60	mA
Ig2	3·5	3·0	mA
Vg1	–12·5	–17·3	V
gm	11	8·8	mA/V
ra	26	28	kΩ
μg1–g2	8·0	8·0	

PY32

Half-wave rectifier.

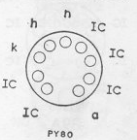


Octal

Ih	300	mA
Vh	29	V
Va(r.m.s.) max.	250	V
Iout max.	325	mA
C	100	μF
Rlim min.	76	Ω

PY80

Booster diode.

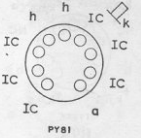


B9A

Ih	300	mA
Vh	19	V
P.I.V. max.	4·0	kV
Ia(av) max.	180	mA
vh–k(pk) max.	650	V

PY81

Booster diode.

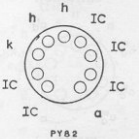


B9A

Ih	300	mA
Vh	17	V
P.I.V. max.	4·75	kV
Ia(av) max.	150	mA
C max.	4·0	μF
vh–k(pk) max. (cathode positive)	4·75	kV

PY82

Half-wave rectifier.

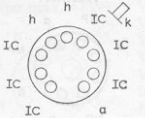


B9A

Ih	300	mA
Vh	19	V
Va(r.m.s.) max.	250	V
Iout max.	180	mA
C max.	60	μF
Rlim min.	45	Ω

PY88

Booster diode.

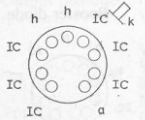


B9A

Ih	300	mA
Vh	30	V
P.I.V. max.	6·6	kV
Ia(av) max.	220	mA
vh–k(pk) max. (cathode positive)	6·6	kV

PY800

Booster diode.

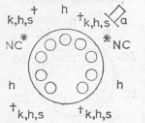


B9A

Ih	300	mA
Vh	19	V
P.I.V. max.	5·25	kV
Ia(av) max.	150	mA
vh–k(pk) max. (cathode positive)	5·75	kV

TY86F

High voltage half-wave rectifier.

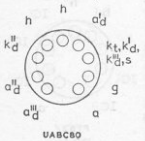


B9A

Vh	7·4	V
Ih	77	mA
Pulsed input		
P.I.V. max.	22	kV
Iout max.	800	μA

UABC80

Triple diode triode (one diode having a separate cathode).



B9A

Ih	100		mA
Vh	28		V
Va	170	200	V
Vg	–1·8	–2·3	V
Ia	1·0	1·0	mA
gm	1·45	1·4	mA/V
μ	70	70	

UAF42

Single diode r.f. pentode.

B8A

Ih	100			mA
Vh	12·6			V
Va=Vb	100	170	200	V
Rg2	56	56	76	kΩ
Vg2	50	85	85	V
Rk	310	310	310	Ω
Ia	2·8	5·0	5·0	mA
Ig2	0·9	1·5	1·5	mA
gm	1·7	2·0	2·0	mA/V
μg1–g2	18	18	18	

UB41

Double diode (separate cathodes).

B8A

Ih	100	mA
Vh	19	V
*Va(r.m.s.) max.	150	V
*Ia max.	9·0	mA
*ia(pk) max.	54	mA
*Vh–k max.	300	V
*Each section		

UBC41

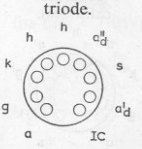
Double diode triode.

B8A

Ih	100		mA
Vh	14		V
Va	100	170	V
Vg	–1·0	–1·6	V
Ia	0·8	1·5	mA
gm	1·4	1·65	mA/V
μ	70	70	

UBC81

Double diode triode.

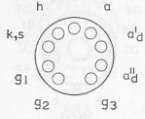


B9A

Ih	100		mA
Vh	14		V
Va	100	170	V
Vg	–1·0	–1·6	V
Ia	0·8	1·5	mA
gm	1·4	1·65	mA/V
μ	70	70	
ra	50	42	kΩ

UBF80

Double diode pentode.

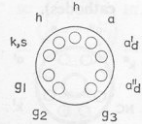


B9A

Ih		100		mA
Vh		17		V
Va=Vb	100	170	200	V
Rg2	47	47	68	kΩ
Vg2	50	85	85	V
Vg3	0	0	0	V
Rk	300	300	300	Ω
Ia	2·8	5·0	5·0	mA
Ig2	1·0	1·75	1·75	mA
gm	1·9	2·2	2·2m	A/V
μg1–g2	18	18	18	

UBF89

Double diode pentode.

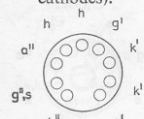


B9A

Ih		100		mA
Vh		19		V
Va	100		200	V
Vg3	0		0	V
Vg2	100		100	V
Vg1	−2·0		−1·5	V
Ia	8·5		11	mA
Ig2	2·8		3·3	mA
gm	3·5		4·5	mA/V
ra	300		600	kΩ
μg1–g2	—		20	

UCC84

Double triode (separate cathodes).

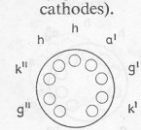


B9A

Ih	100		mA
Vh	21		V
Characteristics (Each section)			
Va	90		V
Vg	−1·5		V
Ia	12		mA
gm	6·0		mA/V
μ	24		

UCC85

Double triode (separate cathodes).



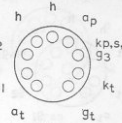
B9A

Ih	100		mA
Vh	26		V
Characteristics (Each section)			
Va	170	200	V
Vg	−1·5	−2·1	V
Ia	10	10	mA
gm	6·2	5·8	mA/V
μ	50	48	

UCF80

Ih		100		mA
Vh		27		V
	Triode	Pentode		
Va	100	170		V
Vg2	—	170		V
Vg1	−2·0	−2·0		V
Ia	14	10		mA
Ig2	—	2·8		mA
gm	5·0	6·2		mA/V
μ	20	—		

Triode pentode (separate cathodes).



B9A

UCH42

Ih		100		mA
Vh		14		V
Vah=Vb	100	170	200	V
Rk	180	180	180	Ω
Rg3+gt	47	47	47	kΩ
Ig3+gt	100	200	200	μA
Vg2+g4	43	70	85	V
Iah	1·2	2·1	3·0	mA
Ig2+g4	1·5	2·6	3·0	mA
gc	530	670	750	μA/V
Vat	70	113	85	V
Iat	3·1	5·7	5·2	mA

Triode hexode frequency changer.

B8A

UCH81

Ih	100		mA
Vh	19		V
Vah=Vb	170	200	V
Rg2+g4	10	10	kΩ
Rg3+gt	47	47	kΩ
Rk	150	150	Ω
Vg2+g4	102	119	V
Iah	3·2	3·7	mA
Ig2+g4	6·8	8·1	mA
Ig3+gt	200	230	μA
gc	750	775	μA/V
Vat	102	120	V
Iat	4·5	5·4	mA

Triode heptode.

B9A

UCL82

Ih		100		mA
Vh		50		V
	Triode	Pentode		
Va	100	200		V
Vg2	—	200		V
Ia	3·5	35		mA
Ig2	—	7·0		mA
Vg1	0	−16		V
gm	2·2	6·8		mA/V
Ra	—	5·6		kΩ
Pout	—	3·5		W

Triode output pentode (pa max.=7·0W).

B9A

UCL83

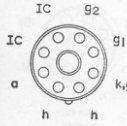
Triode output pentode (pa max. = 5·4W).

B9A

	Ih	100		mA
	Vh	38		V
		Triode	Pentode	
Va		170	170	V
Vg2		—	170	V
Vg1		−1·5	−9·5	V
Ia		1·6	30	mA
Ig2		—	5·0	mA
gm		2·1	5·5	mA/V
μ		82	—	
Ra		—	5·5	kΩ
Pout		—	2·2	W

UF41

Variable-mu r.f. pentode.

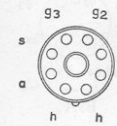


B8A

	Ih	100			mA
	Vh	12·6			V
Va = Vb		100	170	200	V
Rg2		39	39	39	kΩ
Rk		330	330	330	Ω
Ia		3·3	6·0	7·2	mA
Ig2		1·0	1·75	2·1	mA
gm		1·9	2·2	2·3	mA/V
μg1–g2		18	18	18	

UF42

High slope r.f. pentode.

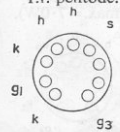


B8A

	Ih	100	mA
	Vh	21	V
Va		170	V
Vg2		170	V
Rk		160	Ω
Ia		10	mA
Ig2		2·8	mA
gm		8·5	mA/V

UF80

High slope r.f. pentode.

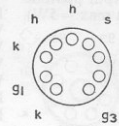


B9A

	Ih	100	mA
	Vh	19	V
Va		170	V
Vg2		170	V
Rk		160	Ω
Ia		10	mA
Ig2		2·5	mA
gm		7·4	mA/V
μg1–g2		50	

UF85

Variable-mu r.f. pentode.

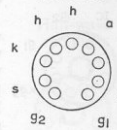


B9A

	Ih	100	mA
	Vh	19	V
Va		170	V
Vg2		100	V
Rk		160	Ω
Ia		9·7	mA
Ig2		2·6	mA
gm		5·9	mA/V

UF86

Low noise a.f. voltage amplifying pentode.

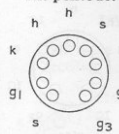


B9A

	Ih	100	mA
	Vh	12·6	V
Va		200	V
Vg3		0	V
Vg2		140	V
Vg1		−2·0	V
Ia		3·0	mA
Ig2		600	μA
gm		2·0	mA/V
μg1–g2		38	

UF89

Variable-mu r.f. pentode.

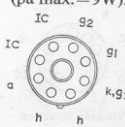


B9A

	Ih	100	mA
	Vh	12·6	V
Va		170	V
Vg3		0	V
Rg2		15	kΩ
Rk		130	Ω
Ia		11	mA
Ig2		3·9	mA
gm		3·8	mA/V

UL41

Output pentode (pa max. = 9W).



B8A

	Ih	100	mA
	Vh	45	V
Va		170	V
Vg2		170	V
Rk		165	Ω
Ia		53	mA
Ig2		5·5	mA
gm		8·0	mA/V
Ra		4·3	kΩ
Pout		4·2	W

UL44

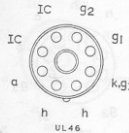
Line timebase output pentode (pa max.=5W).

B8A

Ih	100	mA
Vh	45	V
Va	175	V
Vg2	175	V
Vg1	−13·5	V
Ia	30	mA
Ig2	4·7	mA
gm	7·1	mA/V
μg1–g2	10	

UL46

Video output pentode (pa max.=9W).

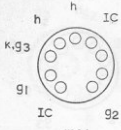


B8A

Ih	100			mA
Vh	45			V
Va	100	170	200	V
Vg2	100	170	200	V
Vg1	−5·7	−10·4	−14·2	V
Ia	29	53	45	mA
Ig2	5·5	10	8·5	mA
gm	8·0	9·5	8·2	mA/V

UL84

Output pentode (pa max.=12W).



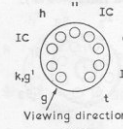
B9A

Ih	100			mA
Vh	45			V
Va	100	170	200	V
Vg2	100	170	*	V
Rk	150	170	270	Ω
Ia	43	70	60	mA
Ig2	3·0	5·0	4·1	mA
gm	9·0	10	8·8	mA/V
Ra	2·4	2·4	2·4	kΩ
Pout	1·9	5·6	5·2	W

*Vg2(b)=200V, Rg2=470Ω

UM80

Tuning indicator.



B9A

Ih	100		mA
Vh	19		V
Vb	200		V
Vt	200		V
Ra	500		kΩ
Rg–k	3·0		MΩ
Vg	−1·0	−14	V
β	4·0	50	deg
It	5·7	7·0	mA
Ia	350	10	μA

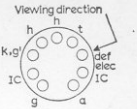
UM84

Ih	100		mA
Vh	12		V
Vb	170		V
Vt	170		V
Ra	470		kΩ
Rg–k	3·0		MΩ
Vg	0	−15	V
Ia	300	40	μA
It	0·6	1·05	mA
*L	20	0	mm

Deflection electrode connected to anode.

*Length of column.

Voltage indicator.



B9A

UY41

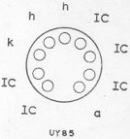
Half-wave rectifier.

B8A

Ih	100	mA
Vh	31	V
Va(r.m.s.) max.	250	V
Iout max.	100	mA
C max.	50	μF
Rlim min.	210	Ω

UY85

Half-wave rectifier.



Ih	100	mA
Vh	38	V
Va(r.m.s.) max.	250	V
Iout max.	110	mA
C max.	100	μF
Rlim min.	100	Ω

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