Radio Valves and Tubes – 1

Numbering Systems

by Geoff Arnold

In the pioneering days of radio, the stage was soon reached where the latest valve to emerge from the laboratory could no longer be adequately identified by the name of its inventor, or some fancy name dreamed up by him. Beginning with just a single letter, valve type numbers were born!

It is fascinating to try to divine the reasons behind the selection of those earliest numbers. Many were obviously chosen quite arbitrarily, but there is a certain logic to others. Some are well documented in the records of the day, or are glaringly obvious from the study of advertisements, etc. The prefix 'DE' for dull emitter valves from the MO Valve Co., for example. But why on earth 'FE' for their bright emitters?

Among the first attempts to bring some sanity and standardisation into the whole affair were the systems of type numbering devised by the British Armed Services (see page 8) around the end of the First World War. These were expanded to take account of new devices, and remained in use until the introduction of the 'CV' (Common Valve) numbering system, first published in December 1944.

It was inevitable that numbering systems devised by different manufacturers or official bodies should clash. Perhaps one of the most confusing examples is the prefix 'VT'. In the RAF system it indicates 'Valve, Transmitting', in the British Post Office system, 'Valve, Thermionic', and in the system used by the US Army from 1917 to about 1943 it stands for 'Vacuum Tube'. Numbers in the three systems are totally unrelated.

Miscellaneous early British codes

A selection of some of those codes from the era of British 4, 5 and 7-pin based valves, and also Mazda Octals. Some codes were used by one manufacturer only, some by more than one.

We have tried to limit this table to those codes that, in general, always had the same meaning, though some had different shades of meaning under different brand names. Sometimes code letters were combined to identify a multiple valve, for example the AC/2PenDD, a double-diode output pentode with 4V heater from Mazda.

AC	4-volt heater
D	Single or double diode
DD	Double diode
DDT	Double-diode triode
FC	Frequency changer
H	High-impedance triode
M	4-volt heater
ME	'Magic eye' tuning indicator
Pen	Output pentode
PM	Philips/Mullard
PP	Power (output) pentode
PT	Output pentode
R	Full-wave rectifier
SP	Straight RF pentode
TH	Triode-heptode or triode-hexode
TP	Triode-pentode
U	Rectifier (usually half-wave)
UU	Full-wave rectifier
VP	Variable-mu RF pentode

GEC/Osram/MO Receiving valves

(i) Construction

A	Valve for specialised industrial application
B	Double triode
D	Diode or double diode
GU	Gas-filled rectifier
GT	Gas-filled triode (thyratron)
H	High impedance triode
HL	Medium impedance triode
KT	Kinkless tetrode (beam tetrode)
KTW	Vari-mu RF kinkless tetrode
KTZ	Sharp cut-off RF kinkless tetrode
L	Low impedance triode
N	Output pentode
PX	Output triode
U	Rectifier
W	Vari-mu RF pentode
X	Frequency changer
Y	Tuning indicator
Z	Sharp cut-off RF pentode

(ii) Serial number

•One figure for early valves
•Two or three figures for later valves
NOTE – Suffix 'M' indicates external metallising

eg:	(i)	(ii)
	B	309
	KTW	63
	X	61M

MAZDA Receiving valves

(i) Filament or heater rating

1	1.4V
6	6.3V
10	100mA
20	200mA
30	300mA

(ii) Construction

C	Frequency changer with special oscillator section
D	Signal diode(s)
F	Voltage amplifier tetrode or pentode
K	Small gas triode or tetrode
L	Voltage amplifier triode or double triode, including oscillator triode
M	Tuning indicator
P	Power amplifier tetrode or pentode

NOTE – two letters may be used for multiple valves

(iii) **Serial number**

•One or two figures

eg:	(i)	(ii)	(iii)
	6	F	13
	30	FL	1

PRO-ELECTRON/European Receiving valves

Pro-Electron, based in Brussels, is a European organisation which maintains registers and allocates type numbers for valves and semiconductors. Once they have been registered by one manufacturer, other manufacturers can 'second-source' devices to the same specification and with the same type number.

(i) Filament or heater rating

A 4V
B 180mA
C 200mA
D 0V–1.5V *(previously 1.4V)*
E 6.3V
F 12.6V
G Misc. *(previously 5V)*
H 150mA
K 2V
L 450mA
P 300mA.
T 7.4V
U 100mA
V 50mA
X 600mA
Y 450mA

(ii) Construction

A Diode (excluding rectifier)
B Double diode with common cathode (excluding rectifier)
C Triode (excluding power output)
D Power output triode
E Tetrode (excluding power output)
F Pentode (excluding power output)
H Hexode or heptode (of the hexode type)
K Octode or heptode (of the octode type)
L Power output tetrode or pentode
M Tuning indicator
N Thyratron
Q Nonode
Y Half-wave rectifier
Z Full-wave rectifier

NOTE – For multiple valves, 2 or 3 letters may be used, in alphabetical sequence

(iii) Base type

1 Miscellaneous
2 B10B *(previously B8B/B8G (Loctal))*
3 International Octal
4 B8A (Rim-fit)
5 B9D (Magnoval) & Noval *(previously B9G)*
6 Various sub-miniature or wired-in bases
7 ditto
8 B9A (Noval)
9 B7G (Miniature 7-pin)

(iv) Serial number

•One figure for early valves
•Two figures for later entertainment valves
•Three or four figures for later professional valves.

NOTE – In some 3-figure type numbers commencing with a '1', the second digit indicates the base type

eg:	(i)	(ii)	(iii)	(iv)
	E	F	9	1
	G	Z	3	0
	P	CL	8	2
	U	Y	4	1

USA RMA Receiving valves

This coding scheme, and the one on the following page for Special-purpose Tubes, were devised by the Radio Manufacturers Association (RMA), now renamed the Electronic Industries Association (EIA).

(i) Filament or heater rating

0 Cold cathode
1 Up to 1.6V
5 4.5–5.6V
6 5.6–6.6V
7 5.6–6.6V with Loctal base

•Above this, figures represent the nominal working voltage

NOTE – For tapped filaments or heaters, the figure indicates rating with sections in series

(ii) Serial & code letters

•Allotted in sequence commencing with A (omitting I and O). Rectifiers follow the sequence backwards commencing at Z.
•When all the single letters are exhausted, the sequence continues using two letters commencing with AB (combinations of identical letters are not normally used).
•Single-ended valves usually have the first letter S. The second letter may be that of the nearest equivalent double-ended valve.
•The initial letter L indicates a lock-in type in the battery range.

(iii) Number of 'Useful elements' brought out

•Metal valve envelopes, lock-in metal bases and internal screens on separate and exclusive terminals count as useful elements.
•A filament or heater, whether single or tapped, counts as one except for unequally-rated tapped sections.
•In octal-based glass valves, count pin No. 1 as one, even if unconnected.
•Combinations of elements connected to the same pin count as one

(iv) Suffix letters

•A, B, C, etc., indicate a later/modified version which can be substituted for a previous one but not vice-versa.
•W indicates a military version.
•X indicates a low-loss base.
•Y indicates a medium-loss base.

In Octal valves, the envelope type is indicated as follows:

•G indicates a large glass bulb.
•GT indicates a smaller glass tube.
•M indicates a metal-coated glass bulb.
•No-suffix indicates a metal envelope

eg:	(i)	(ii)	(iii)	(iv)
	0	Z	4	
	5	R	4	GY
	6	SN	7	GT
	25	L	6	

In the examples given in these tables, the spaces between the various parts of the type number are included to emphasise the relationship of each part to the listed codes. Normally, the type numbers are printed without spaces.

USA RMA Special-purpose valves

(i) Filament or heater rating (watts)

1 Cold cathode/no filament or heater
2 Up to 10W
3 >10 to 20W
4 >20 to 50W
5 >50 to 100W
6 >100 to 200W
7 >200 to 500W
8 >500 to 1000W
9 >1000W

(ii) Type of device

A Single-element (ballasts, vacuum resistors, etc.)
B Diode (including protective tubes, voltage regulators, etc.)
C Triode
D Tetrode
F Hexode
G Heptode
H Octode
J Magnetically controlled (magnetron)
K Electrostatically controlled (klystron)
L Vacuum capacitor
N Crystal rectifier *(later used for all solid-state devices)*
P Photo-emissive
Q Cavity
R Ignitron, pool tube
S Switch
T Storage, radial beam
V Photoflash
W Travelling-wave
X X-ray
Y Thermionic converter

NOTE – Although allocated, letters T – Y were probably never used

(iii) Serial number

•A 2-figure number assigned sequentially, beginning at 21 to avoid confusion with RMA receiving valves

eg:	(i)	(ii)	(iii)
	2	C	43
	2	K	25

This code was used from about 1942 to 1950, and was superseded by a system of simple 4-digit numbers.
It found a new lease of life with the arrival of the transistor. The first number was re-defined: '1' had always applied to crystal diodes, '2' now covered triode transistors, '3' described tetrode or dual-gate transistors, and '4' or '6' referred to multi-lead devices like diode-phototransistor opto-isolators.
The '1N' numbers reached about 1N6300; '2N' about 2N6800, '3N' about 3N260, '4N' about 4N50, '6N' around 6N140. A changeover to non-registered (manufacturer-assigned) numbers slowly occurred, and was largely complete by the time integrated circuits arrived.

The above data is based on an article which appeared in the October 1990 issue of *The Old Timer's Bulletin*, official journal of the Antique Wireless Association, Inc., of America, by kind permission.

MULLARD Transmitting valves (old system)

(i) Functional class

B Backward-wave tube
J Magnetron
K Klystron
L Travelling-wave tube
M LF amplifier or modulator triode
P RF power pentode
Q RF power tetrode
R Power rectifier
T RF power triode
X Large thyratron

NOTE – Two letters may be used for multiple valves

(ii) Structural property

A Backward & travelling wave tubes, output <1W
B Backward & travelling wave tubes, output ≥1W
D Disc-seal construction
G Mercury-vapour filled
H Hydrogen-filled
N Magnetron (external magnet)
P Magnetron (packaged magnet)
R Inert-gas filled
S Klystron (reflex type)
T Klystron (multi-resonator)
V Indirectly-heated, oxide-coated cathode
X Directly-heated tungsten filament
Y Directly-heated, thoriated-tungsten filament
Z Directly-heated, oxide-coated filament

(iii) Rating (1)

•Approx. V_a in kV* for transmitting valves and rectifiers (peak voltage for pulse valves)
•Approx. PIV in kV* for thyratrons
•Approx. operating frequency in GHz for microwave devices

***NOTE** – Below 1kV, zero followed by a figure indicating hundreds of volts. For example, 06 = 600V

(iv) Rating (2)

•Approx. maximum anode dissipation in W for transmitting valves (total for all sections in multiple valves)
•Max. I_{pk} in A for pulse transmitting valves, prefixed by P
•Output power in mW or W for backward and travelling-wave tubes.
•Pulse output power in kW for magnetrons
•Output power in mW for klystrons
•Output current in mA for rectifiers
•Max $I_{A\,MEAN}$ in mA for thyratrons

(v) Suffix

•A letter (A, B, C, etc.) indicating a later design or development

eg:	(i)	(ii)	(iii)	(iv)	(v)
	K	S	9 - 20		A
	QQ	V	06 - 40		A
	Q	Y	3 - 125		

In the examples given in these tables, the spaces between the various parts of the type number are included to emphasise the relationship of each part to the listed codes. Normally, the type numbers are printed without spaces.

MULLARD Transmitting and industrial valves (new system)

(i) Class

X	Photo-sensitive tube
Y	Vacuum valve or tube
Z	Gas-filled valve or tube

(ii) Construction

A	Diode
C	Trigger tube
D	Triode or double triode
G	Miscellaneous
H	Travelling-wave tube
J	Magnetron
K	Klystron
L	Tetrode, pentode, double tetrode or double pentode
M	Cold-cathode indicator or counter tube
P	Photo-multiplier or radiation counter tube
Q	Camera tube
T	Thyratron
X	Ignitron, image intensifier or image converter
Y	Rectifier
Z	Voltage stabiliser

(iii) Serial number

•A group of 4 figures. The final figure is 0 for the basic tube, changing to 1, 2, 3, etc., for variants

eg: **(i) (ii) (iii)**

Y L 1130

Special Quality valves

These are electrically similar to a number of standard types, but have improved mechanical construction to reduce microphony and vibration failures. They are also more closely controlled in manufacture and testing.

NUMBERING SYSTEMS

USA

•System 1: A 4-figure reference number. For example, a 6060 is a special quality 12AT7

•System 2: The RMA system followed by the suffix W indicating a military type. For example, a 12AT7WA is a special quality 12AT7.

Marconi-Osram

•The prefix Q is added to the standard type number. For example, the QZ77 is a special-quality Z77.

Mullard

•System 1: Uses the Pro-Electron code, but with the figures for base type and serial number placed after the letter for filament or heater rating. For example, the E88CC is a special quality ECC88.

•System 2: An initial letter M followed by a 4-figure serial number. For example an M8083 is a high-quality EF91.

UK Military

•Most special quality valves used in military equipment have 'Common Valve' numbers in the CV4000 group.

Voltage stabilisers

As for other types of valve, a wide range of different numbering systems have been used. For shunt gas-filled stabilisers, among the most commonly encountered are:

USA

•System 1: The prefix VR followed by two numbers separated by a dash or an oblique stroke, depending on manufacturer. The first number indicates the nominal working voltage and the second number indicates the maximum rated current. For example, a VR150-30, a 150V stabilisiser with a maximum current of 30mA. Presumably because of improvements in design or manufacture, the VR150-30 was later uprated to 40mA maximum current, without a change of type number.

•System 2: Based on the RMA Receiving valve system, the type number for more recent tubes begins with the figure 0 (indicating a cold-cathode tube), followed by a reference letter, followed by the figure 2 for simple 2-electrode tubes or the figure 3 for tubes incorporating a primer electrode or link. For example, the 0D3, a VR150-30 under its new name!

•System 3: This was apparently a transitional system, combining the first two, under which the VR150-30 became an 0D3/VR150.

UK

•System 1: The prefix QS followed by two numbers separated by an oblique stroke. The first number indicates the nominal working voltage and the second number indicates the maximum rated current. For example, a QS150/40, a 150V stabilisiser with a maximum current of 40mA, equivalent to the 0D3.

•System 2: The prefix QS followed by a 4-figure serial number. For example the QS1215.

•System 3: A number, followed by a single letter (A, B, C, etc.), followed by a single figure. The first number indicates the nominal working voltage. The remainder of the type number has no apparent significance. For example, the 150C3 (equivalent to our old friend the OD3).

Our front cover picture

On the left, an Audion of US manufacture dating from about 1914, bearing an original label stating 'Audion Amplifier, 3½ volts, Hudson Filament, for second & third step only, Pat. Feb. 18, 1908'.

The Hudson filament used fine tantalum wire wrapped around a tungsten filament to form a cathode in which the tungsten carried the current to heat the tantalum, which was an efficient emitter of electrons. The tungsten wire was more mechanically robust than the plain tantalum wire previously used for the filament, which had a tendency to warp out of its original plane, in some cases touching the grid and rendering the valve useless.

On the right of the picture is a Naval triode Type NT.9X of about 1920, manufactured by the MO Valve Co. Ltd, GEC, and bearing the crown and anchor badge. The filament connections are made via the E12 screw base and two wires stretching up the outside of the valve to the top.

British Armed Services valves

Prior to the introduction of the Common Valve (CV) Register, each of the three British Armed Services had its own type numbering system. Although there was a certain similarity between them in the abbreviations used, there was no correspondence whatever between the serial number suffixes issued to the same valve when used by the three services.

The 'Construction' prefix reveals in each case what the main application of the valve might be. However, as in any system which aims to sort items into categories, there were the inevitable 'grey areas', so that some receiving valves were allocated VT numbers by the RAF. The prefixes are self-obvious, except for the use of 'U' as an identifier for rectifiers, necessary since 'R' has already been used to indicate 'receiving'. It stood for 'uni-directional' – obvious when you know!

Royal Navy

Construction

NGT	Gas triode
NR	Receiving
NS	Stabilising/regulating
NT	Transmitting
NU	Rectifier
NC	Cathode ray tube

Serial number
Assigned sequentially, beginning at 1

Army

Construction

ACR	Cathode ray tube
AR	Triode or triode with diode(s)
ARD	Diode
ARDD	Double diode
ARH	Hexode or heptode
ARP	Pentode
ARS	Screen grid (tetrode)
ARTH	Triode hexode
ARTP	Triode pentode
AT	Transmitting triode
ATP	Transmitting pentode
ATS	Transmitting tetrode
AU	Rectifier
AW	Stabiliser or tuning indicator

Serial number
Assigned sequentially, beginning at 1

RAF

Construction

VCR	Cathode ray tube
VGT	Gas triode
VI	Neon or tuning indicator
VR	Receiving
VS	Stabiliser
VT	Transmitting
VU	Rectifier
VW	Wavemeter (?)

Serial number
Assigned sequentially, beginning at 1

Numerical systems

In valve type codes comprised exclusively of figures, the numbers are merely serial numbers and have no hidden significance. In the 1920s, American valve manufacturers produced the same valve under different type numbers such as 145, 245, 345, etc. From about 1930, the first figure was dropped, and the valve was known by only the two latter figures, regardless of manufacturer.

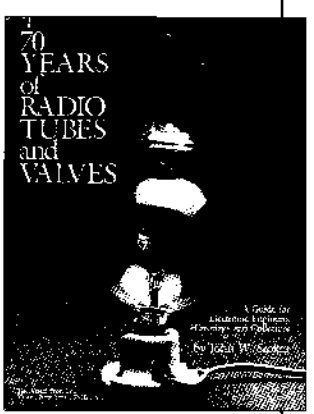
More recently, special-purpose valves manufactured in the United States (and elsewhere to similar specifications) have been allotted 4-figure type numbers (see also the item on Special Quality valves).

Further Reading

Valve data-books are hard to come by nowadays. Enthusiasts should certainly have at least one edition of the Wireless World/Iliffe *Radio Valve (and Transistor) Data* on their bookshelves, plus any manufacturers' data-books that they can lay hands on at second-hand book shops, sales or radio rallies.

For an in-depth treatment of the development of radio valve technology, I would recommend two books. First, *Saga of the Vacuum Tube* by Gerald F. J. Tyne, published by Howard W. Sams, Inc., Indianapolis – a wealth of information and photographs covering developments world-wide up to 1930, and with an excellent index. Second, *70 Years of Radio Tubes and Valves* by John W. Stokes, published by The Vestal Press Ltd., New York – again, an enthralling work covering the period up to the years after WWII. I just wish it had a more comprehensive index.

Both these titles contain further information on early valve type numbering.



Towards the Modern Era...

Are you, too, fascinated by valve numbering systems and the thinking behind them? Do your interests also extend to semiconductor equipment?

If so, see the April 1991 issue of *Ham Radio Today* magazine, due out on UK newsagents' shelves on March 1st, for an article on transistor and diode numbering systems.

Geoff Arnold

Radio Valves and Tubes – 2

UK & US Military Equivalents, pre-1944

by Geoff Arnold

As mentioned in the last issue of *Radio Bygones*, the systems of type numbering for valves which were introduced in the British Armed Services during the First World War were seemingly among the first to try to bring some sanity and order to the matter.

These systems were expanded to take account of new devices as they appeared, and remained in use up to the introduction of the 'CV' (Common Valve) numbering system, following the first publication of the *CV Register of Electronic Valves* in December 1944.

The type codes used by the Royal Navy all began with the letter 'N' for Naval, as in NR for Naval Receiving, or NT for Naval Transmitting. Similarly the Army used the letter 'A', as in ARP for Army Receiving Pentode, or AU for Army Uni-directional (i.e., rectifier).

The Royal Air Force, rather than choosing a Service-related initial letter, decided instead to use the letter 'V' for Valve, as in VCR for Valve, Cathode Ray (i.e., a cathode-ray tube) or VT for Valve, Transmitting (see page 8 of *RB* No. 9 for the full lists of identifying prefixes).

That use of VT brought an unfortunate complication in that the same abbreviation had been used by the British Post Office from the earliest days as a prefix to the type numbers for the valves used in its telephone repeaters, etc. In that case the letters stood for 'Valve, Thermionic'. As if that was not enough, the United States Army used VT, standing this time for 'Vacuum Tube', as the prefix in its numbering system from 1917 to about 1943!

In the following pages, you will find lists of the valves used in the three British Armed Services and in the US Army. In each of those lists, the Services type number is related to the corresponding number in the CV Register, and to the comparable commercial type. Note that the commercial types are not necessarily **direct** equivalents or replacements, but only **comparable** types. Often, the military valves will be modified or specially selected versions of commercial types. It is particularly important to remember this fact if you are tempted to try to use the lists 'in reverse', to find a commercial type to fit as a replacement in a piece of military equipment.

For the three British Services lists, you will also find a column headed 'Stores Ref.' Anyone who has delved inside much British military radio equipment is likely to have come across sets where the only identification of valve types consists of a table pasted inside the cover bearing mystic numbers beginning with such identifiers such as '10E/' or 'ZA' or 'APW'. Sometimes this happens in the parts lists printed in handbooks and technical manuals as well. These are the Old Stores Reference Numbers, which were also replaced, so far as valves were concerned, by the CV system.

Stores-handling organisations, whether military or civilian, take delight in allocating numbers of their own to any item, no matter that it is already adequately numbered by its manufacturer or supplier. Yes! I own up! I did the same in the days when I was responsible for running a stores department. The reason behind this confusing practice is, of course, that identical goods from different suppliers may have different catalogue or type numbers. Giving every stock line your own identifying code number can actually save a lot of confusion, both in the stores and in the field when the end-user is looking for a replacement part.

Further details of the Stores References used by each Service are given at the beginning of each table. When co-operation between the armed services of several countries was extended under the aegis of the North Atlantic Treaty Organisation (NATO), the separate systems for each Service were replaced by one under which each item of stores (not only radio and electronic) was allocated a 'NATO Stock Number' (prefix 'NSN'), alternatively known as an 'Identification' or 'Joint Services Catalogue Number' ('J.S. Cat. No.'). These are instantly recognisable by their format of 4 digits - 2 digits - 3 digits - 4 digits, for example a CV7085 power transistor has a Stores Number 5960-99-037-2160.

Yes! The CV numbering system was later extended to incorporate semiconductor devices!

Royal Navy

The Old Stores Reference Numbers used by the Royal Navy are known as 'Admiralty Pattern' (AP) Numbers. The general form of the code is 'AP' followed by a number consisting of three or more digits. Some items were allocated 'Admiralty Pattern, Wireless' (APW) Numbers.

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & *Notes*
CRTs			
NC1	**W.306**	**950**	**4053**
NC2	**W.307**	**951**	**32A**
NC3	**W.308**	**952**	**4081**
NC4	**W.1070**	**953**	**32G**
CRTs (continued)			
NC5	W.1071	954	20K
NC6	W.1307	955	4409
NC7	W.1308	956	4602 *with magnetic shield*
NC8	W.1920	957	32E
NC9	W.1921	958	26J
NC10	W.1851	959	*as NC5, wider spec*
NC11	W.2170	(960)	4503 *replaced by NC12*
NC12	W.3128	960	4201(modified)
NC13	W.6138	961	
NC13A	W.6138A	987	
NC14	W.6601	962	
NC15	-	1596	
NC16	53162	964	
NC17	53270	965	

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & *Notes*
CRTs (continued)			
NC18	53271	966	*replaced by CV1052*
NC19	54218	967	
NC20	-	989	
Gas-filled triodes			
NGT1	4803	1141	DQP
NGT2	W.269	1128	GT1C
NGT3	W.612	1142	MR75
NGT4	W.614	1143	GT1A
NGT5	W.1244	1144	BT19
NGT6	W.1306	1145	BT9A
NGT6A	W.1306A	1146	*as NGT6, high voltage test*
NGT7	W.1290	1147	BT35
NGT8	W.2512	1148	E.1191
NGT9	W.2973	1149	BT41
Receiving			
NR14	7406	1150	
NR15	7404	1151	PM3
NR15A	7404A	1152	L410, 610LF, PM4DX
NR16	7405	1153	PM254
NR16A	7405A	1154	P415, P425, 610XP
NR17	7407	1155	
NR18	7408	1156	DEQ
NR19	7409	1157	
NR22	7410	1158	S410, PM14
NR23	7412	1159	S410, PM14
NR26	8751	1038	164V, MHL4
NR27	8752	1160	104V, ML4
NR27A	W.1039	1161	104V, ML4 *as NR27, special tests*
NR28	8753	1019	P215, PM2
NR31	7413	399	AC/HL, MH4, 354V
NR35	7414	1163	PD220A
NR37	4408	1164	MS4, AC/SG
NR38	4427	1165	VMS4, VM4V, MVSG
NR39	3777	1118	PEN.220, PM22A, 220 OT
NR40	-	(1237)	
NR41	3795	1083	VP21, VP210, 210VPT
NR42	4407	1166	LP2, 220PA, P220, PM2A
NR43	3704	1167	PM24A
NR44	3832	1168	PX4, 4XP, AC044
NR45	3807	1169	VMP4/G, VP4A
NR46	3813	1170	D41
NR47	816	1040	PX25, DO24, PP5/400
NR48	850	1055	EBC33
NR49	1260	1056	EF36
NR50	412	1171	HA1, AT4, A40
NR51	1166	1172	VP4A, VMP4G
NR52	1607	1173	354V, MH4, AC/HL, 41MTL
NR53	1457	1174	PEN.4VA, KT42, MP/PEN, AC/PEN
NR54	5381	1175	ZA1, AP4
NR54A	W.790	1176	*as NR54, looser specification*
NR55	5382	1109	HL13C, HA1320
NR56	5529	1178	DA30, DO30, V503
NR57	5631	1179	TT4, ML4, ACP
NR58	W.122	1180	V312, 244V
NR59	W.263	1181	KT41, PEN.A4, AC2/PEN
NR60	W.264	1182	H42
NR61	W.265	1183	W42
NR62	W.266	1184	A373
NR64	W.281	1100	KTW61
NR65	W.282	1282	AC/S2/PEN, MSP4
NR66	W.283	1187	D41
NR67	W.1525	1280	X64, 6L7G

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & *Notes*
Receiving (continued)			
NR68	W.1526	587	DH63, 6Q7G
NR69	W.1527	1103	Y63
NR70	W.1065	1124	MS.PEN, SP4
NR71	W.1066	1129	MS.PEN.T
NR72	W.1067	1188	N43
NR73	W.1280	1285	ECC31, 6N7G
NR74	W.1301	1189	AC6/PEN
NR75	W.1302	1190	ACP4 *matched pair of NR94*
NR76	W.1303	1191	KTZ41
NR77	W.1295	1286	EL35, 6L6G
NR78	W.1528	581	6C5G
NR78A	-	(1932)	
NR79	W.1529	1192	Z62
NR80	W.1530	-	E.1148 *obsolete, see VR135*
NR81	W.1531	1941	6K7G
NR82	W.1532	1193	X65
NR83	W.1533	1074	6J7G, KTZ63
NR84	W.1534	1194	X41, 41STH, AC/TH1, TH4
NR85	W.1535	1186	KT63, 6F6G
NR86	W.1536	1195	KTW63
NR87	W.1628	1196	AC5/PEN.DD
NR88	W.1927	1197	RL18
NR89	W.2970	(35)	
NR94	W.2529	1198	AC/P4
NR95	W.3446	1287	
-	W.2164	1837	2B7
-	W.2161	612	57
-	W.2162	613	58
-	W.1528A	1932	6J5G
-	W.2077	509	6V6G
-	W.2165	1891	6B7
-	W.2166	585	6C6
-	W.2167	1900	6D6
-	W.2160	609	42
-	W.3446	1287	25L6G
Current & voltage stabilisers			
NS1	5458	1069	STV280/80
NS2	5459	1199	
NS3	7021	1200	Barreter 202
NS4	W.285	1201	4317
NS5	W.2697	1202	304
Transmitting			
NT1	4869	1203	
NT3	5232	1292	
NT4A	5199A	1204	
NT10	7050	1294	
NT13	-	2788	
NT17	7435	1205	
NT18	7436	1206	DA60, DO60
NT19	7437	1207	
NT20	7439	1208	P625, PM256
NT22B	7420B	1209	
NT22C	7420C	1210	
NT23B	6237B	1211	
NT23D	7419	1212	
NT24	7120	1213	
NT30	7430	1214	
NT31	7425	1215	
NT32B	1348B	1216	
NT33	7438	1217	
NT35	1959	1218	
NT36	3830	1219	DA100, MZ1-100
NT37	4656	1220	4033A

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & *Notes*
Transmitting (continued)			
NT38	4562	1293	
NT38A	4562A	1221	PZ1-75, PT6, SW75.PEN
NT39	813	1222	ACT.6
NT40	4687	1223	DET.5
NT41A	7429	1224	
NT43	7431	1225	
NT45A	1347	1226	
NT46R	-	1227	
NT48	1349	1228	
NT52	3910	1229	
NT54	3798	1230	
NT57	-	1231	
NT57A	W.337	1232	
NT57D	6675D	1233	
NT57T	W.560	1234	
NT58	4889	1288	DET.12, TY1-50
NT58A	W.580	1235	*as NT58, flexible a & g leads*
NT59A	4738A	1236	
NT62	3794	1237	PM24D
NT62A	3794A	1238	
NT63A	798A	1239	
NT65	-	(1240)	
NT65A	1512A	1240	PZ1-35
NT68	3191	1241	
NT68A	W.1699	1242	*as NT68, special cutoff test*
NT69	W.1231	1243	
NT75	W.267	1244	
NT77A	-	(50)	
NT78A	W.1691A	1245	
NT82	7418	1246	P2, PM202
NT83	7417	1247	
NT84	4556	1248	
NT86	W.1241	1249	
NT87	W.628	1250	4279A
NT90	W.1240	1251	
NT92	W.1069	1252	4212E
NT93	W.1305	1253	E.1161
NT97	W.2511	1254	E.1161(modified)
NT98	W.2510	1255	E.1189
Transmitting (continued)			
NT98A	-	1491	
NT98B	-	1492	
NT98C	-	1493	
NT98D	-	1494	
NT99	W.2514	1256	E.1232
NT100	W.2536	1257	E.1155
Rectifiers			
NU1	5233	1258	
NU2	5433	1259	
NU3	7403	1064	U12/14, DW4/500, UU1 0/500
NU4	7415	1260	
NU5	7416	1261	RX3-120
NU7	3822	1262	
NU8	3828	1263	
NU12	803	1264	U.18
NU13	4476	1265	U.15, RZ1-250
NU13A	4476A	1266	*as NU13, special HV tests*
NU15	6380	1267	U.4020
NU17	W.268	1039	1W4, UU5, 441U
NU17S	W.3394	1296	
NU18	W.284	1113	U17
NU20	W.1624	1268	U50
NU22B	7440	1269	
NU22C	7201C	1270	
NU23	7446	1271	
NU24	7449	1272	
NU25	7447	1273	
NU26	7448	1274	
NU26C	7448C	1275	
NU28	4589	1276	
NU29	3776	1277	
NU30	5476	1278	
NU31	W.613	1279	MU2
NU33	W.1068	1290	SU2150A
NU33A	W.1068A	1291	HVR2A
NU34	W.1304	1134	HVR2
-	W.4000	575	5U4G
-	W.3792	1863	5Z4G

British Army

The Old Stores Reference Number system used by the Army is far and away the most complex of the three British Armed Services, and I hope that there is a *Radio Bygones* reader somewhere who may be able to throw some more light on its 'ins and outs'!

The Old Stores Ref. may commonly take any of the following six forms:
'ZA' followed by 4 or 5-digit number;
'ZC' followed by a 4 or 5-digit number;
'ZA/' or 'ZC/' followed by the Navy's 'AP...' or 'APW...' Stores Code;
'ZA/' or 'ZC/' followed by 'AY' followed by the Navy's Stores Code with its 'AP' prefix omitted;
'ZA/' or 'ZC/' followed by the RAF's '10E/...' or '110E/...' Stores Code;
'Z/', 'ZA/' or 'ZC/' followed by the CV number.
You may also come across:
'ZA/' followed by 'US/' followed by an apparently arbitrary 4-digit number for certain valves of US origin;
'JC' followed by an apparently arbitrary 4-digit number.

Confusing enough, you may think, but there's more to come. Some valves have been given more than one Army Old Stores Reference No. – the worst I've come across is 12 codes for one valve. We simply do not have room in this issue to publish **all** the different numbers given in the official listings, and to some extent the one included in the table has been chosen by the time-honoured method of pin and blindfold.

My research into the background to this multiplicity of codes has proved fruitless. It has been suggested that different Stores References were issued to similar or equivalent valves from different manufacturers, or that a different Stores Reference was issued for the valve for each equipment that it was used in. Both of these run contrary to the whole principle of Stores Reference Number systems as mentioned earlier, so I'm sceptical.

There must surely be someone among the readership of *Radio Bygones* with past experience in stores administration in the British Army, who can explain the system for the benefit of all our readers.

Army No.	Stores Ref.	CV No. (or nearest equiv.)	Possible Commercial Substitute & *Notes*
Cathode ray tubes			
ACR1	ZC0123	1379	-
ACR2	-	(1379)	*2nd grade ACR1*
ACR2X	ZC0697	1380	-
ACR3	-	1386	-
ACR4	-	1387	-
ACR5	-	1388	-
ACR6	ZC0926	1389	-
ACR7	-	2745	4050AG
ACR8	ZC3081	1381	-
ACR10	ZC3141	1382	3223D
ACR11	ZC3595	1383	*ext. metallised ACR8*
ACR12	ZC1955	1384	-
ACR13	ZC3596	1385	-
ACR14	-	1390	-
ACR15	ZC13369	1391	-
ACR16	-	1392	-
ACR17	-	1393	-
ACR18	-	1394	-
ACR19	-	1395	-
ACR20	-	964	-
ACR21	ZC23359	1397	-
ACR22	-	252	-
ACR23	-	1398	-
ACR23(mod)	-	1399	-
Receiving triodes			
AR2	ZA7080	2838	-
AR4	ZA7100	1303	PM1HF, HL210, 210HF
AR5	ZA7112	1166	LP2, PM2A, P220
AR6	ZA6778	1304	LP2 *selected*
AR7	ZA6073	1109	HL133 (modified)
AR8	ZA7022	1306	HL23DD
AR9	ZA7021	1307	210LF, L21, L2, PM1LF
AR10	ZA7176	1308	L21DD, 210DDT, HD24, TDD2A
AR11	ZA5163	1655	4019B
AR12	ZA5165	1653	4020A
AR13	ZA5712	1664	4022AR
AR14	ZA6065	1312	220RC
AR15	ZA6066	1313	220LF
AR16	ZA6067	1032	220B
AR17	ZA7186	1037	MH4, AC/HL, 354V
AR20	ZA4329	1663	4021B
AR21	ZA3497	1055	EBC33
Diodes			
ARDD1	ZA7101	1300	10D1
ARD2	ZA5167	1078	D1
ARDD3	ZA7079	1301	D63, 6H6G
ARD4	ZA5169	1302	D42
ARDD5	ZA3056	1054	EB34
Receiving heptodes			
ARH1	ZA14980	1280	X64, 6L7G
Receiving pentodes			
ARP1	ZA7102	1118	PT2, Pen.220, PM22A
ARP2	ZA7074	1320	SP2
ARP3	ZA7103	1321	9D2
ARP4	ZA7075	1322	SP210
ARP5	ZA7113	1323	VP2
ARP6	ZA7008	1324	SP4
ARP7	ZA7076	1325	42MPT
ARP8	ZA6997	1326	AC4/Pen
ARP9	ZA6953	1327	Pen.1340(modified)
ARP9A	ZA2931	1328	7D8S
ARP10	ZA6085	1329	Pen.A4(modified)
ARP11	ZA6086	1330	TSP4
ARP12	ZA7073	1331	VP23
ARP12T	ZA7023/T	2841	-
ARP13	ZA7243	1332	VP210
ARP14	ZA4333	1333	220IPT
ARP15	ZA6981	1195	KTW63, 6K7G
ARP16	ZA6982	1074	KTZ63, 6J7G
ARP17	ZA6983	1186	KT63, 6F6G
ARP18	ZA6772	1334	KT24
ARP19	ZA5171	1335	SP41
ARP20	ZA5173	1336	SP42
ARP21	ZA5304	1192	Z62
ARP22	ZA6843	1337	116/Pen
ARP23	ZA5174	1124	MS/Pen
ARP24	ZA6064	1338	220VPT
ARP25	ZA5175	1181	KT61(modified)
ARP26	ZA5176	1340	KT44(modified)
ARP33	ZA21338	1341	MSP4
ARP34	ZA3493	1053	EF39
ARP35	ZA3058	1091	EF50
ARP36	ZA3796	1065	SP61
ARP37	ZA2938	1342	QP25
ARP38	ZA1879	1343	KTZ73(modified)
Receiving screen-grid			
ARS6	ZA7110	1317	S625
ARS7	ZA7114	1318	VS24, PM12M, S215VM
ARS8	ZA7115	1319	VS2, PM12V
Receiving triode-hexodes			
ARTH2	ZA2985	1347	ECH35
Receiving triode pentodes			
ARTP1	ZA7077	1344	TP22
ARTP2	ZA3062	1345	TP25
Transmitting triodes			
AT15	ZA7116	2845	-
AT16	ZA7117	2846	-
AT20	ZA7118	1361	MZ05-20
AT26	ZA7130	1360	-
AT35	ZA7153	1025	DET25
AT75	ZA5178	1222	ACT6
AT80	-	(25)	-
AT200A	ZA7136	2850	-
AT200B	ZA6126	1363	DET16
Transmitting pentodes			
ATP4	ZA5502	1366	V248A
ATP5	ZA6119	1367	V245
ATP7	ZA7084	1368	V226
ATP10	ZA5181	1369	4061A
ATP35	ZA7012	1370	PV1/35
ATP75	ZA7011	1371	PT6, PZ1/75, SW75PEN
ATP100	ZA5189	1372	4069A
ATP600	ZA7009	1373	PY3-600
Transmitting tetrodes			
ATS25	ZA3496	1374	5C250/A, 807
ATS25A	ZA10813	1364	*as ATS25, higher heater current*
ATS70	ZA7138	1365	4282B
ATS250	ZA7139	1031	

Army No.	Stores Ref.	CV No. (or nearest equiv.)	Possible Commercial Substitute & *Notes*
Rectifiers			
AU1	ZA7001	1264	U18, FW4/500
AU2	ZA7007	1349	RG5/500, RG4/1000
AU3	ZA7089	1064	U12/14, DW4/500
AU3A	ZA7189	1039	MU12/14, IW4/500, UU4
AU4	ZA5191	1113	U17
AU5	ZA5193	1111	E1132, V1907
AU6	ZA6999	1072	GU50, RG1-240, MU4250
AU7	ZA8996	1355	ESU300, RG3/1250, 4049C
AU8	ZA5198	1356	U22
AU12	ZA3495	1266	U15, RZ1-250
AU13	-	(1863)	

Army No.	Stores Ref.	CV No. (or nearest equiv.)	Possible Commercial Substitute & *Notes*
Indicators/Stabilisers			
AW1	ZA7200	1358	*neon indicator*
AW2	ZA7119	1070	7475
AW3	ZA7013	1110	S.130
AW4	ZA6961	1068	STV.280/40
AW5	ZA6076	1359	ME41
AW6	ZA1880	1077	EM31

Royal Air Force

Old Store Reference numbers in the RAF (Air Ministry) system mostly consist of the prefix '10E/' followed by a number of between one and five digits.

Some later valves were instead assigned numbers prefixed '10CV/' followed by the relevant CV number.

The prefix '110E/' was also used, allocated to valves and tubes bearing type numbers in the US RMA systems for receiving and special-purpose valves (see *RB* No. 9).

RAF No	Stores Ref. 10E/...	CV No. (nearest equiv.)	Possible Commercial Substitute & *Notes*
Cathode ray tubes			
VCR84	10	1084	4407
VCR85	11	1085	4605
VCR86	12	1086	4502
VCR87	13	1087	14L, 4410
VCR97	222	1097	4201, 4/6
VCR112	171	1112	V.1026
VCR131	156	1131	41DS
VCR131A	-	1548	
VCR138	407	1138	4203, 4/3
VCR138A	759	1587	
VCR139A	466	1588	23D, 4101
VCR140	420	1140	
VCR511	586	1511	4608
VCR511A	786	1589	
VCR511B	808	1590	
VCR511C	-	1549	
VCR514	658	1514	9R.TEB
VCR515	13026	1515	MX1
VCR516	13027	1516	
VCR516A	841	262	
VCR517	758	1517	
VCR517A	811	1591	
VCR517B	818	1592	
VCR517C	819	1593	
VCR517D	831	1594	
VCR517E	840	1595	
VCR518	767	1518	
VCR518A	810	1596	
VCR519	768	1519	
VCR520	771	1520	
VCR521	796	1521	

RAF No	Stores Ref. 10E/...	CV No. (nearest equiv.)	Possible Commercial Substitute & *Notes*
Cathode ray tubes (continued)			
VCR522	797	1522	
VCR522A	832	1597	
VCR522B	-	(335)	
VCR522C	-	(336)	
VCR523	798	1523	
VCR524	816	1524	
VCR524A		1547	
VCR525	817	1525	
VCR526	824	1526	
VCR527	826	1527	
VCR528	828	1528	
VCR529	835	1529	
VCR530	837	1530	
VCR531	-	1531	
VCR532	-	1532	
VCR533	-	1533	
VCRX156	-	300	
VCRX166	-	282	
VCRX190	-	376	
VCRX210	-	389	
VCRX244	-	390	
VCRX245	-	396	
VCRX246	-	401	
VCRX247	-	400	
Gas-filled triodes			
VGT121	164	1121	T41
VGT121A	630	1585	
VGT128	15	1128	GT1C
Indicators			
VI77	11539	1077	EM31
VI103	305	1103	Y63
VI132	6	1132	*neon indicator*
VI507	467	1507	*gas-filled spark gap*
Receiving valves			
VR17	7232	1017	
VR18	7607	1018	215SG
VR19	7846	1019	215P
VR21	7738	1021	210LF
VR22	7958	1022	220PA
VR27	8239	1027	*selected VR21*
VR28	8399	1028	220VSG

RAF No	Stores Ref. 10E/...	CV No. (nearest equiv.)	Possible Commercial Substitute & *Notes*
Receiving valves (continued)			
VR32	9141	1032	220B
VR35	9779	1035	QP21
VR37	9598	1037	MH4
VR38	9599	1038	MHL4
VR40	9601	1040	PP5/400
VR41	9049	1041	PM12M
VR43	10541	1043	210PG
VR44	10542	1044	HL21DD
VR49	10931	1049	210SPT
VR53	11399	1053	EF39
VR54	11400	1054	EB34
VR55	11401	1055	EBC33
VR56	11402	1056	EF36
VR57	11403	1057	EK32
VR57A	609	1570	*VR57, different test spec.*
VR59	11452	1059	955, HA2, 4671
VR65	11446	1065	SP61
VR65A	149	1574	SP41
VR66	11447	1066	P61
VR67	11448	1067	L63, 6J5G
VR78	11540	1078	D1
VR82	4	1082	220TH
VR83	5	1083	210VPT
VR91	92	1091	EF50
VR91A	287	1578	*VR91 selected for 'tail'*
VR92	105	1092	EA50
VR95	95	1095	954, ZA2, 4672
VR95A	286	1579	*VR95 to closer tolerances*
VR99	1277	1099	X66
VR99A	757	1581	
VR100	278	1100	KTW62
VR101	280	1101	MHLD6
VR102	279	1102	BL63
VR106	11095	1106	9D2
VR106A	821	1598	
VR107	11097	1107	15D2
VR108	11096	1108	8D2
VR108A	822	1599	
VR109	11098	1109	4D1
VR109A	823	1000	
VR116	266	1116	V872
VR117	176	1117	41MTL(MET)
VR117A	625	1584	*VR117 selected by HV test*
VR118	88	1118	KT2
VR119	28	1119	DDL4
VR122	31	1122	41MXP
VR123	-	1123	
VR124	24	1124	MS/PEN
VR125	25	1125	MS/PEN.B
VR126	172	1126	4SH
VR129	307	1129	MS/PEN
VR130	159	1130	HL23
VR130A	752	1586	
VR135	392	1135	E1148
VR136	386	1136	RL7
VR137	394	1137	RL16
VR502	312	1502	KT32
VR503	382	1503	KT33C
VR505	631	1505	MH41
Stabilisers			
VS68	11449	1068	STV280/40
VS69	11450	1069	STV280/80
VS70	11451	1070	7475
VS110	10914	1110	S.130
VS110A	423	1582	*selected VS110*

RAF No	Stores Ref. 10E/...	CV No. (nearest equiv.)	Possible Commercial Substitute & *Notes*
Transmitting valves			
VT4B	5203	1553	
VT20	7813	1020	220P
VT23	8062	1023	230XP
VT23A	521	1565	*selected VT23*
VT25	7312	1025	DET25
VT26	8185	1026	
VT26A	9122	1568	
VT30	8738	1030	
VT31	8739	1031	SG250
VT34	7787	1034	DET3
VT45	10557	1045	X56
VT46	10558	1046	PT25H
VT47	10559	1047	TZ05-20, VLS417
VT50	10945	1050	HL2K
VT51	10946	1051	PEN220A
VT52	11398	1052	EL32
VT58	11405	1058	
VT58A	410	1571	
VT60	11441	1060	807
VT60A	587	1572	807 *VT60 to wider tolerances*
VT61	11442	1061	RK34, DET19, 4074A
VT61A	142	1573	TV03-10
VT62	11443	1062	DET12, 834, TY1-50
VT73	11531	1073	H63, 6F5G
VT74	11532	1074	KTZ63, 6J7G
VT75	11533	1075	KT66
VT75A	387	1576	KT44T
VT75B	472	1577	KT44
VT76	11534	1076	TZ40, DA41
VT79	11752	1079	KT8
VT80	11756	1080	4307A
VT81	3	1081	4052A
VT82	4	-	220TH
VT88	9	1088	832
VT89	78	1089	
VT90	97	1090	
VT93	107	1093	
VT94	108	1094	
VT96	147	1096	5B/502A
VT98	224	1098	
VT98A	740	1580	
VT104	215	1104	PT15
VT105	216	1105	ML6
VT114	168	1114	
VT114A	567	1583	
VT127	231	1127	PEN.46
VT501	389	1501	E1192
VT501A	784	1002	
VT506	457	1506	5C/450A
VT509	-	(62)	
VT510	572	1510	
VT513	-	(44)	
Rectifiers			
VU7A	5433	1556	
VU29	8087	1029	
VU33	9829	1033	
VU39	9600	1039	U12/14, UU5
VU39A	574	1569	
VU64	11445	1064	U12/14
VU71	11529	1071	U52, 5U4G
VU71A	597	-	U52, 5U4G
VU72	11530	1072	GU5, GU50
VU111	146	1111	V1907
VU113	19	1113	U17

RAF No.	Stores Ref. 10E/...	CV No. (nearest equiv.)	Possible Commercial Substitute & *Notes*
Rectifiers (continued)			
VU120	121	1120	SU2150A
VU133	211	1133	V960
VU134	100	1134	HVR2
VU504	150	1504	V1901
VU508	520	1508	V1913
Special			
VW36	9851	1036	*VR22 selected for capacitances*
VW42	10299	1042	*VR27 selected for capacitances*
VW48	10585	1048	*VR18 selected for capacitances*

References

The tables in the preceding pages were compiled from information contained in the *CV Register of Electronic Valves*, AP.1186V, January 1946 with corrections and amendments to April 1949; *The Services Radio Valve Manual*, BR.783, November 1942; *Services List of Preferred Valves*, June 1950; *International Radio Tube Encyclopædia*, published by Bernards (publishers) Ltd, 1949.

Cross-Index of US Army VT-Numbers and Commercial Identifiers

This article was first published in the October 1990 issue of The *Old Timer's Bulletin*, official journal of the Antique Wireless Association, Inc., of America, and is reproduced here by kind permission, with additional data taken from the British *CV Register of Electronic Valves*.

Tube collectors and restorers of early military equipment have a continuing need for a reference source on US Army VT-numbered tubes. The following list attempts to provide more depth of coverage than the usual cross-reference chart. It combines locally available references with material kindly supplied by Bro. Pat Dowd W2GK; Bill Smith N9TT; and John Walker. Three specific sources were MIL-HDBK-213A, *Military Handbook – Electron Tubes – Cross Index and Type Identification*, 1963; NavShips 900119, *Cross Index of Electron Tube Types*, 1946; and the RSGB *Service Valve Equivalents*, 1947. Comments have been added to identify some of the more obscure items. The list has been cross-checked for errors.

A few of these tubes, for example the 'special' VT-155, 156, and 159, remain a mystery. Some of these must have been highly secret at the time, like the subminiature tubes in the then-classified variable-time (VT) artillery fuze, the one based on a small radar. Others may have simply been items that never went into substantial production. Yet other numbers (VT-32, for example) were cancelled. Reader inputs on the 'special' VTs are welcome!

Receiving tubes with a 'Y' suffix (e. g., VT-132/12K8Y) have low-loss base material. Full information on most of the items not otherwise explained can be found in the tube listings in any ARRL *Radio Amateur's Handbook* of 1945–52 vintage.

The list includes, inside square brackets, the British CV (Common Valve) numbers that were assigned to most of these items. A warning: CV-numbers are not unique: several such numbers may apply to a given tube. Also be warned that there were Royal Air Force VTs (Valve, Transmitting) that were totally unrelated to US tubes of the same VT-numbers: the VT20, VT25, VT45 ... up through VT510.

The informed observer can detect clusters of VT-numbers that must have been added to accommodate specific new sets of equipment: VT-65, -66, and 86–88, for the BC-312 receiver (in the SCR-177B and related sets); the VT-131 through 139, for the BC-45x (SCR-274N) aircraft gear, c.1940; the VT-171 through VT-174, for the BC-611 (SCR-536) handi-talkie and BC-745 (SCR-511) 'pogo stick' transceiver. Other likely clusters: the VT-177 to 179, 182, 183, and 185, for the BC-620 (SCR-509 et al.) 'jeep radio'; or the VT-188 through 191, for the BC-645 (SCR-515) IFF set, c.1941. Some types are traceable to early Army radars of 1937-40.

A final note: the speed with which military electronics developed as WWII drew closer can be seen in this list. It took about 33 years (1917 to c.1940) for the first half of the list (VT-1 to VT-140, say) to develop. The second half required only about 2½ years more (c.1940 to c.1943). At that point the Army gave up its special numbering system in favour of the Joint Army-Navy (JAN) prefix system for regular civilian type numbers.

Some of the civilian type numbers for transmitting tubes reflect specific manufacturers. For reference purposes, letter prefixes used (over the time span of the VT-types and later) were as follows:

Amperex: A, CEP, HF, P, and ZB
Bomac Labs: BL (on experimental types)
Continental Electric: CE
Dumont: B, K (experimental)
Eitel-McCullough: RX, UH, and numbers like 100TH or 304TL
Electronic Enterprises: EE
Electrons Inc.: EL
Federal Telephone and Radio: F
General Electric: FA, FG, FJ, FP, FR, GL, NE, PJ, PR, and PT (Z, ZP, and ZG on experimentals)
Heintz and Kaufman: HK
Hytron: HY (D and HD on experimentals)
Machlett Labs: ML (EP on experimentals)
RCA: A, C, or R (on experimentals)
Raytheon: CK, RK, RKR, RM, and RX (QF, QG, QK, QL, QM, QMG, QT, and QY on experimentals, klystrons, etc.)
Sperry: SAC, SAL, SRC, SRL, and SRX (on experimentals and klystrons)
Sylvania: R (SB, SD, SN, and X on experimentals and special items)
Taylor: R, T, TT, TZ, and TW
Tung-Sol: DT (on experimentals)
United Electronics: BM, CV, CW, HV, UE, and UX (yes, UX!)
Varian Associates: VA (V on experimentals)
Western Electric: D, GA, and WE (XQ as a suffix on experimentals)
Westinghouse: DK1, DRJ, DRO, KU, KX, K1, RO, and WL (WX on experimentals)

US Army VT No.	Commercial Number [CV No.]
VT-1	WE 203A (Navy CW-933)
VT-2	WE 205B (Navy CW-931)
VT-3	None (WE)
VT-4A	WE 211A (Navy CW-1818)
VT-4B	211 (PR-11-A; WL-410; Navy CG-1984) and WE 211D (Navy CW-1818A)
VT-4C	211 [CV620]
VT-5	WE 215A (Navy CW-1344)
VT-6	WE 212A (Navy CW-1819)
VT-7	WX-12
VT-8	UV-204 (PR-4-A)
VT-10	GE 'P' (prototype of the UV-204), Navy CG-916
VT-11	GE 'G', Navy CG-890 (early version)
VT-12	GE 'T'
VT-13	GE 'G' ruggedized (prototype of the UV-201), Navy CG-890 (later version)
VT-14	GE 'T' (prototype of the UV-202), Navy CG-1162
VT-16	GE 'T' ruggedized
VT-17	860 (PT-860; WL-415) [CV640]
VT-18	GE 'U' (prototype of the UV-203), Navy CG-1144
VT-19	861 (PR-861; WL-407) [CV641]
VT-20	None (de Forest)
VT-21	None (de Forest)
VT-22	204A (PR-4-B; Navy CG-1860A) [CV2563]
VT-23	
VT-24	864 (FR-300; Navy 38064) [CV2675]
VT-25	10 (PT-10-A) [CV603]
VT-25A	10Y
VT-26	22
VT-27	30 [CV604]
VT-28	24; 24A [CV936]
VT-29	27 [CV944]
VT-30	01A (PR-1-B; Navy SE-4374) [CV750]
VT-31	31 [CV947]
VT-33	33 [CV949]
VT-34	207 (Navy CG-1971)
VT-35	35/51 [CV1752]
VT-36	36 [CV1775]
VT-37	37 [CV606]
VT-38	38 [CV712]
VT-39	869 (PJ-26; Navy SE-3071)
VT-39A	869A [CV2723]
VT-40	40 [CV2501]
VT-41	851 (PR-51-A; Navy CG-2172) [CV2671]
VT-42	872 (FG-19; Navy SE-3070) [CV642]
VT-42A	872A special filament
VT-43	845 (WL-412) [CV735]
VT-44	32 [CV711]
VT-45	45 [CV596]
VT-46	866 (PJ-28; Navy SE-3069) [CV32]
VT-46A	866A
VT-47	47 [CV1772]
VT-48	41 [CV608]
VT-49	39/44 [CV1771]
VT-50	50 [CV2533]
VT-51	841
VT-52	45 special
VT-53	(replaced by VT-42A)
VT-54	34 [CV1751]
VT-55	865 (PJ-27; Navy SE-3294) [CV2676]
VT-56	56 [CV611]
VT-57	57 [CV612]
VT-58	58 [CV613]
VT-59	59 [CV2538]
VT-60	850
VT-62	801/801A [CV621]
VT-63	46 [CV2531]
VT-64	800 [CV2657]
VT-65	6C5 [CV582]
VT-65A	6C5G [CV581]
VT-66	6F6 [CV1186]
VT-66A	6F6G [CV1911]
VT-67	30 (porcelain base)
VT-68	6B7 [CV1891]
VT-69	6D6 [CV1900]
VT-70	6F7 [CV1915]
VT-72	842
VT-73	843 [CV639]
VT-74	5Z4 [CV1864]
VT-75	75 [CV614]
VT-76	76 [CV615]
VT-77	77 [CV616]
VT-78	78 [CV2544]
VT-80	80 [CV617]
VT-83	83 [CV618]
VT-84	84/6Z4 [CV619]
VT-86	6K7 [CV1942]
VT-86A	6K7G [CV1941]
VT-86B	6K7GT [CV1943]
VT-87	6L7 [CV1951]
VT-87A	6L7G [CV1950]
VT-88	6R7 [CV1963]
VT-88A	6R7G [CV1962]
VT-88B	6R7GT [CV1964]
VT-89	89 [CV833]
VT-90	6H6 [CV1301]
VT-90A	6H6GT [CV1931]
VT-91	6J7 [CV1074]
VT-91A	6J7GT [CV1937]
VT-92	6Q7 [CV588]
VT-92A	6Q7G [CV587]
VT-93	6B8 [CV1894]
VT-93A	6B8G [CV1893]
VT-94	6J5 [CV1067]
VT-94A	6J5G [CV1932]
VT-94B	6J5 selected
VT-94C	6J5G selected
VT-94D	6J5GT [CV1934]
VT-95	2A3 [CV1831]
VT-96	6N7 [CV1957]
VT-96B	6N7 selected
VT-97	5W4 [CV1849]
VT-98	6U5/6G5 [CV504]
VT-99	6F8G [CV1917]
VT-100	807 [CV124]
VT-100A	807 modified
VT-101	837 [CV637]
VT-103	6SQ7 [CV1990]
VT-104	12SQ7 [CV546]
VT-105	6SC7 [CV1969]
VT-106	803 [CV623]
VT-107	6V6 [CV510]
VT-107A	6V6GT [CV511]
VT-107B	6V6G [CV509]
VT-108	450TH
VT-109	2051 [CV1798]
VT-111	5BP4; 1802P4 [CV836]
VT-112	6AC7/1852 [CV660]
VT-114	5T4 [CV1846]
VT-115	6L6 [CV1948]
VT-115A	6L6G [CV1947]
VT-116	6SJ7 [CV591]
VT-116A	6SJ7GT [CV592]
VT-116B	6SJ7Y [CV866]
VT-117	6SK7 [CV1981]
VT-117A	6SK7GT [CV1982]
VT-118	832 [CV634]
VT-119	2X2/879 [CV597]
VT-120	954 [CV1095]
VT-121	955 [CV1059]
VT-122	WL-530; GL-530
VT-123	RCA A-5586 (replaced by VT-128)
VT-124	1A5GT [CV756]
VT-125	1C5GT [CV1805]
VT-126	6X5 [CV573]
VT-126A	6X5G [CV572]
VT-126B	6X5GT [CV574]
VT-127	100S
VT-127A	100TS; WL-534; 534; 3-100D2
VT-128	1630 (A-5588A) [CV2715]
VT-129	304TL
VT-130	250TL
VT-131	12SK7 [CV543]
VT-132	12K8Y [CV703]
VT-133	12SR7 [CV700]
VT-134	12A6 [CV525]
VT-135	12J5GT [CV535]
VT-135A	12J5 [CV534]
VT-136	1625 (12V, 7-pin 807) [CV659]
VT-137	1626 (12V triode intended for stable VFOs) [CV1755]
VT-138	1629 (12V, octal-based 6E5) [CV1756]
VT-139	0D3/VR-150 [CV216]
VT-140	1628
VT-141	WL-531
VT-142	WE 39DY1 (doorknob)
VT-143	805 [CV625]
VT-144	813 [CV26]
VT-145	5Z3 [CV1861]
VT-146	1N5GT [CV1823]
VT-147	1A7GT [CV1802]
VT-148	1D8GT [CV1811]
VT-149	3A8GT
VT-150	6SA7 [CV1966]
VT-150A	6SA7GT [CV1967]
VT-151	6A8G [CV578]
VT-151B	6A8GT [CV580]
VT-152	6K6GT [CV1940]
VT-152A	6K6G [CV1938]
VT-153	12C8Y [CV837]
VT-154	814 [CV629]
VT-155 to 157	'Special'
VT-158	'Special' (Zahl 600MHz oscillator)

US Army VT No.	Commercial Number [CV No.]
VT-159 to 160	'Special'
VT-161	12SA7 [CV537]
VT-162	12SJ7 [CV697]
VT-163	6C8G [CV1896]
VT-164	1619 (2.5V filament-type 6L6) [CV723]
VT-165	1624 (2.5V filament-type 807)
VT-166	WE 371A
VT-167	6K8 [CV1945]
VT-167A	6K8G [CV1944]
VT-168A	6Y6G [CV515]
VT-169	12C8 [CV531]
VT-170	1E5GP [CV766]
VT-171	1R5 [CV782]
VT-171A	(Loctal version of 1R5)
VT-172	1S5 [CV784]
VT-173	1T4 [CV785]
VT-174	3S4 [CV820]
VT-175	1613 (like 6F6) [CV655]
VT-176	6AB7/1853 [CV1873]
VT-177	1LH4 [CV780]
VT-178	1LC6 [CV778]
VT-179	1LN5 [CV781]
VT-180	3LF4
VT-181	7Z4 [CV1790]
VT-182	3B7/1291 [CV811]
VT-183	1R4/1294 [CV2709]
VT-184	0B3/VR-90 [CV3799]
VT-185	3D6/1299 [CV815]
VT-186	'Special'
VT-187	575A/975A/UE975A/F375A/GL512A/WL575A/AM575A/EE575A/512/375A (not WE 375A!) (mercury transmitting rectifier)
VT-188	7E6 [CV891]
VT-189	7F7 [CV893]
VT-190	7H7 [CV895]
VT-191	WE 316A (doorknob) [CV683]
VT-192	7A4 [CV1770]
VT-193	7C7 [CV1777]
VT-194	7J7 [CV897]
VT-195	1005/CK1005 [CV2874]
VT-196	6W5G [CV574]
VT-197A	5Y3GT/G [CV1268]
VT-198A	6G6G [CV1926]
VT-199	6SS7 [CV1993]
VT-200	0C3/VR-105 [CV686]
VT-201	25L6 [CV552]
VT-201C	25L6GT [CV553]
VT-202	9002 [CV664]
VT-203	9003 [CV665]
VT-204	HK24G; 3C24; 3-25D3 [CV789]
VT-205	6ST7 [CV1996]
VT-206A	5V4G [CV729]
VT-207	12AH7GT [CV529]
VT-208	7B8
VT-209	12SG7 [CV694]
VT-210	1S4 [CV783]
VT-211	6SG7 [CV1978]
VT-212	958 [CV650]
VT-213A	6L5G [CV862]
VT-214	12H6 [CV916]
VT-215	6E5 [CV1906]
VT-216	816 [CV724]
VT-217	811 [CV628]
VT-218	100TH [CV2552]
VT-220	250TH; 3-250A3 [CV2589]
VT-221	3Q5GT [CV819]
VT-222	884 [CV647]
VT-223	1H5GT [CV1820]
VT-224	2C34/RK34 [CV18]
VT-225	WE 307A; RK75 [CV2612]
VT-226	3EP1; 1806P1 [CV817]
VT-227	7187; KR7187 (pentode similar to 6V6)
VT-228	8012 [CV662]
VT-229	6SL7GT [CV1985]
VT-230	WE 350A [CV2629]
VT-231	6SN7GT [CV1988]
VT-232	E-1148 (British 3.5W UHF transmitting triode) [CV6]
VT-233	6SR7 [CV867]
VT-234	HY-114B [CV3505]
VT-235	HY-615 [CV3506]
VT-236	836 [CV636]
VT-237	957 [CV2700]
VT-238	956 [CV649]
VT-239	1LE3
VT-240	WE 710A; 8011 [CV46]
VT-241	7E5/1201 [CV2704]
VT-243	7C4/1203A [CV2705]
VT-244	5U4G [CV575]
VT-245	2050 [CV2565]
VT-246	918; CE-1 [CV2692]
VT-247	6AG7 [CV1882]
VT-248	3CP1; 1808P1
VT-249	1006; CK1006
VT-250	EF50 (9-pin British 'Loctal-style' pentode, metal can) [CV1091]
VT-251	WL-441 (GL-441 phototube?)
VT-252	923; CE-23
VT-254	304TH; 3-300A3 [CV2611]
VT-255	WE 705A; RK-705A; 8021 [CV3587]
VT-256	GL-486/ZP486
VT-257	K-7/2J30 (magnetron)
VT-259	829 [CV2666]
VT-260	0A3/VR-75 [CV3798]
VT-264	3Q4 [CV818]
VT-266	1616 (2B26) [CV2679]
VT-267	WL-578 (578; 2-100A; 100R; 100A; 451; GL451; ZP451; 8020; EE8020; GL8020) (xmitting vacuum rectifier) [CV2967]
VT-268	12SC7 [CV540]
VT-269	WE 717A [CV3594]
VT-277	417; WL417; WL417A (not the WE 417A/5842!) (klystron)
VT-279	GY-2 (D-161-83; 1278-GY2) (thyratron)
VT-280	C7063 (1P24; RCA 936; 516; GL-516; ZP516 (vacuum phototube)
VT-281	HY-145ZT (HY-115)
VT-282	ZG489 (thyratron)
VT-283	QF-206; 2E27 (subminiature pentode)
VT-284	QF-197; 2B24 (subminiature filament-type diode)
VT-285	QF-200C; 2C27 (subminiature triode)
VT-286	832A [CV1088]
VT-287	815 [CV2663]
VT-288	12SH7 [CV922]
VT-289	12SL7GT [CV924]

In the next issue of

RADIO BYGONES

Due out May 28

Photo-feature and articles – Test Equipment

The Mysterious A. J. Alan

A Spark of Nostalgia

Radio Valves & Tubes Part 3 – CV Equivalents

Contents subject to last-minute revision

Radio Valves and Tubes – 3

Military 'Common Valve' (CV) Equivalents

by Geoff Arnold

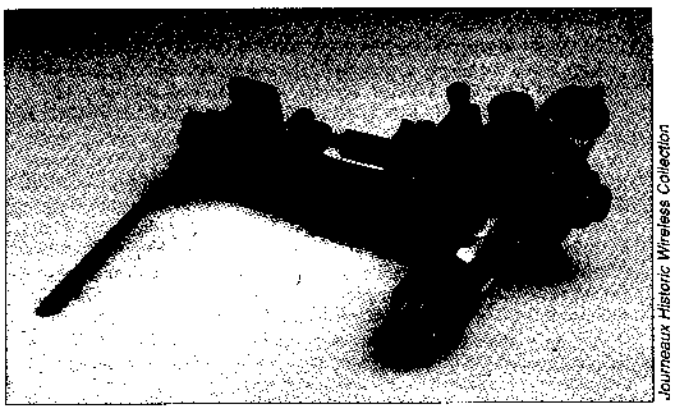
In this, the final part of our series on valve and tube type numbering, we come to the military CV system, which first came into use in 1944, and gradually took over from the earlier military systems described in *Radio Bygones* No. 10.

Each CV number has a comprehensive design and test specification associated with it. Such specifications are usually more stringent than the commercial designs on which they are based (but see (b) below), which means that although you can generally use a CV-spec valve in a piece of equipment in place of its commercial equivalent type without loss of performance, you may well not get full performance by substituting a commercial type for its CV-spec equivalent in a military set.

Sometimes, as circuit and valve technology developed with the passing years, an even more closely specified valve was needed, and a new CV number would be issued based on the same commercial equivalent. It is important to understand that although we talk loosely about 'equivalents', they are more correctly called comparables; they are not truly direct equivalents, simply because they are tested to different specifications. Sometimes the new CV number and its associated specification would replace the old one in its entirety; sometimes the two would exist in parallel, both based on the same commercial design.

One of the first things which you will notice about the listing is that there are many gaps in the numerical sequence. There are a number of reasons for this, including the following:
1. There were lots of gaps, large and small, left when the original list was put together. Anything from single numbers to groups of as many as 500 consecutive numbers were initially left blank. Some of these were later filled, either for newly developed valves, or as a result of the need to allocate numbers to valves which had been used in equipment designs subsequently taken into military service. When the CV system became firmly established, lists of 'preferred types' were issued to encourage equipment designers to stick to valves already on the register wherever possible.
2. Some numbers were allocated to valves which were later declared obsolete.
3. Some numbers were later cancelled or declared 'in abeyance'.
4. Some numbers were later declared cancelled and the user referred to a different CV number.

In order to make this list as useful as possible, and yet keep it to a manageable size, the following ground-rules were applied in its compilation:
(a) Where still available, information on CV numbers cancelled under '4' above has been included for ease of reference.
(b) Many CV numbers do not have a commercial comparable type listed in the register, instead it quotes the number of an experimental prototype from which the valve was developed. Since this information is of little general use, such numbers have been omitted.
(c) Only a single commercial comparable type number has been quoted for each CV number. You will need to refer to a commercial equivalents list to find, for example, that a CV138 is comparable not only to an EF91, but also a 6AM6, a Z77, a 6F12, an 8D3 and so on!
(d) Some of the more esoteric devices, such as spark gaps, dummy-load lamps, Geiger-Muller tubes and some neons and



Journeaux Historic Wireless Collection

Reflex klystron type CV67, giving 10mW output at 3298Mc/s, complete with its tuning assembly Stores Ref. 10AB/2919 and clamp bar Ref. 10AB/2920

bits of microwave plumbing, have been omitted, on the grounds that interest in them among readers would be limited.

Finally, the list as printed here represents a distillation of all the information I have been able to lay hands on in official lists, valve manufacturers' data books, etc. I am sure that there is more information to be had, if only I knew where to find it! If readers care to send me verified data on any CV numbered valves or tubes not mentioned here (or any corrections they may know of) I will compile a supplementary list to be published in a future issue of *Radio Bygones*.

To assist in telling the difference between valves with similar numbers from different manufacturers, an indication of the valve type has been included in the table in the column headed **Sort**. The indicator have the following meanings:

KEY TO 'SORT' COLUMN

C	Cathode ray tube	R	Receiving type
H	Photo-tube	S	Switch
I	Indicator	T	Transmitting triode
K	Velocity-modulated tube (klystron, etc.)	U	Rectifier
		V	Regulator & control
M	Magnetron	X	Crystal
P	Transmitting tetrode or pentode	Y	Thyratron

Should any reader having a device whose identity and origins have been baffling them, and which bears a CV number not listed here, care to send me details **together with a stamped addressed envelope (or an International Reply Coupon for overseas readers)**, I will endeavour to dig out what information on it that I can from the numerous cross-referenced lists appended to the CV Register. *Geoff Arnold*

CV No.	Comp.	Sort
1		
CV1	DC51	R
CV2	DAG1	Y
CV3	E1228	Y
CV4	E1229	R
CV5	GU21spec	U
CV6	E1148	R
CV7	E1209	Y
CV8	E1248	R
CV9	AL60	R
CV12	E1191	Y
CV13	BT9B	Y
CV15	E1266	T
CV16	S25A	R
CV18	2C34	T
CV19	EHT1	U
CV20	V1906	U
CV21	VP41	R
CV22	BT45	Y
CV23	E1287	M
CV24	HL41 ·	R
CV25	4242A	T
CV26	813	P
CV27	4357A	T
CV28	ACT9	T
CV29	E1235	T
CV30	4270A	T
CV31	U20	U
CV32	866/A	U
CV33	4077A	U
CV34	MR10	U
CV38	E1198	M
CV39	S22AF	K
CV40	E1255	M
CV41	E1267	M
CV42	E1256	M
CV44	E1155	P
CV45	S130P	V
CV46	8011	T
CV49	HK54	T
CV51	E1320	I
CV52	E1231	T
CV53	S26A	R
CV55	E1190	T
CV56	E1325	M
CV57	E1271	P
CV58	E1273	R
CV63	E1323	T
CV64	E1342	M
CV65	PEN25	R
CV66	EC54	R
CV69	E1326	M
CV71	Osglim	V
CV72	V1120	R
CV73	V1120B	R
CV74	V1922	U
CV75	4313C	Y
CV76	E1359	M
CV78	E1474	T
CV79	E1379	M
CV80	VFO1	K
CV81	VFO8	K
CV82	S27A	R
CV84	3B/102B	T
CV87	KRN2	K
CV88	3A/148J	T
CV89	E1380	M
CV90	E1368	T
CV92	4C27	T
CV93	V625	T
CV94	DS103	R
CV99	E1373	M
100		
CV105	E1371	R
CV109	9PK5	K
CV116	KR6/1	K
CV118	SP61	R
CV121	V1920	U
CV122	E1336	T
CV123	E1330	Y
CV124	807	P
CV127	3B/401J	T
CV128	SU750	U
CV129	KRN2A	K
CV130	KRN3	K
CV131	EF92	R
CV133	EC90	R
CV135	EY91	U
CV136	EL91	R
CV138	EF91	R
CV140	EB91	R
CV150	PK150	K
CV152	GU21	U
CV154	E1419	T
CV155	E1190	T
CV158	KR3	K
CV161	VS26	H
CV171	W21 (4-pin)	R
CV172	E1468	R
CV175	XSG1.5	R
CV176	XP1.5	R
CV178	3C27	T
CV180	KR4	K
CV181	ECC32	R
CV185	PM202	R
CV187	U19	U
CV188	E1436	V
CV190	DLS10	S
CV191	E1494	M
CV192	E1481	M
200		
CV200	MZ2-200	T
CV207	AC/P4	R
CV212	LS594	Y
CV214	E1531	M
CV215	E1497	R
CV216	0D3/VR150	V
CV217	KRN3	K
CV218	KRN3	K
CV219	E1046	T
CV225	ACT17	T
CV228	DV40B	K
CV230	DV55	K
CV234	DV56	K
CV235	U23	U
CV237	KR6/2	K
CV238	KR6/3	K
CV240	E1496	T
CV242	CMG25	H
CV243	4045A	P
CV244	4046A	P
CV245	4328D	P
CV248	GS16	H
CV249	4019A	R
CV250	CMG25RS	H
CV257	E1457	T
CV259	E1495	T
CV260	SP61	R
CV261	R10	U
CV268	E1330	Y
CV272	KR6/4	K
CV281	X61M	R
CV283	6AL5	R
CV284	STV70/20	V
CV285	VA35	H
300		
CV302	ECH22	R
CV303	EF22	R
CV304	EL22	R
CV305	EF51	R
CV319	E1463	Y
CV327	EF52	R
CV344	E1323	T
CV346	EZ22	U
CV347	EBC21	R
CV358	EF37	R
CV367	1N21B	X
CV369	1B35	S
CV379	ACT19	T
CV380	EF54	R
CV385	CK502	R
CV386	CK505	R
CV387	CK506	R
CV391	5B/252M	P
CV394	EM34	I
400		
CV404	FVD7	U
CV405	GS47	H
CV417	6AQ4	R
CV423	25SN7GT	R
CV424	QQE06/40	P
CV425	CG1-C	X
CV426	EY51	U
CV428	5B/251M	P
CV430	29C1	R
CV431	85A1	V
CV433	BIC/1E	V
CV436	E1996	T
CV437	KT67	R
CV438	G120/1B	V
CV443	CK505AX	P
CV444	MZ1-75	T
CV445	5J/180E	P
CV446	3Q/260E	T
CV447	4078GA	U
CV450	EL38	R
CV452	EBC90	R
CV453	EK90	R
CV454	EF93	R
CV455	ECC81	R
CV491	ECC82	R
CV492	ECC83	R
CV493	EZ90	U
CV496	CG14	H
500		
CV500	6T7G	R
CV501	EBF32	R
CV502	LD210	R
CV503	5W4GT	U
CV504	6U5/6G5	I
CV505	MT16	T
CV509	6V6G	R
CV510	6V6	R
CV511	6V6GT	R
CV512	6W7G	R
CV513	4J53	M
CV514	2J36	M
CV515	6Y6G	R
CV516	3GP1	C
CV517	0Z4A	U
CV518	AC/VP1	R
CV519	PEN4DD	R
CV520	VP2B	R
CV522	7B7	R
CV523	12Y4	R
CV524	TT12	P
CV525	12A6	R
CV526	12A6GT	R
CV527	DA60	T
CV528	VA61	H
CV529	12AH7GT	R
CV530	GT1E	Y
CV531	12C8	R
CV532	GU11	U
CV533	CAT17	T
CV534	12J5	R
CV535	12J5GT	R
CV536	4120/AA	V
CV537	12SA7	R
CV538	12SA7GT	R
CV539	1B23	S
CV540	12SC7	R
CV541	8016	U
CV542	5J23	M
CV543	12SK7	R
CV544	12SK7GT	R
CV545	ACS/P3	P
CV546	12SQ7	R
CV547	12SQ7GT	R
CV548	LP2	R
CV549	25A6	R
CV550	25A6GT	R
CV551	25L6G	R
CV552	25L6	R
CV553	25L6GT	R
CV554	D63	R
CV555	25Z5	U
CV556	QP25	R
CV557	D42	R
CV558	25Z6	U
CV559	25Z6GT	U
CV560	TSP4	P
CV561	35L6	R
CV562	35L6GT	R
CV563	DA30	T
CV564	35Z3	U
CV565	35Z3GT	U
CV567	35Z5	U
CV568	35Z5GT	U
CV569	ECC35	R
CV570	3Q/191E	T
CV571	50L6GT	R
CV572	6X5G	U
CV573	6X5	U
CV574	6X5GT	U
CV575	5U4G	U
CV576	1B26	S
CV577	1B36	S
CV578	6A8G	R
CV579	6A8	R
CV580	6A8GT	R
CV581	6C5G	R

CV No.	Comp.	Sort
CV582	6C5	R
CV583	6C5GT	R
CV585	6C6	R
CV586	EL37	R
CV587	6Q7G	R
CV588	6Q7	R
CV589	6Q7GT	R
CV590	6SJ7G	R
CV591	6SJ7	R
CV592	6SJ7GT	R
CV593	GZ32	U
CV594	6SH7	R
CV595	6SH7GT	R
CV596	45SP	R
CV597	2X2A	U
CV598	715C	P
CV599	1851	R

600

CV600	5CP1	C
CV601	5BP1	C
CV602	3AP1	C
CV603	10	R
CV604	30	R
CV606	37	R
CV608	41	R
CV609	42	R
CV610	45	R
CV611	56	R
CV612	57	R
CV613	58	R
CV614	75	R
CV615	76	R
CV616	77	R
CV617	80	U
CV618	83	U
CV619	84	U
CV620	211	T
CV621	801/A	T
CV622	802	P
CV623	803	P
CV624	804	P
CV625	805	T
CV626	808	T
CV627	810	T
CV628	811	T
CV629	814	P
CV630	826	T
CV631	828	P
CV632	829	P
CV635	833/A	T
CV636	836	U
CV637	837	P
CV638	838	T
CV639	843	T
CV640	860	P
CV641	861	P
CV642	872/A	U
CV643	874	V
CV644	875A	U
CV645	876	V
CV647	884	Y
CV648	885	Y
CV649	956	R
CV650	958	R
CV651	991	V
CV652	1603	R
CV653	1611	R
CV654	1612	R
CV655	1613	P
CV656	1616	U
CV657	1620	R
CV658	1622	R
CV659	1625	P
CV660	6AC7	R
CV661	6AB7	R
CV662	8012	T
CV663	8025	T
CV664	9002	R
CV665	9003	R
CV666	9004	R
CV667	9005	R
CV668	35T	T
CV669	279A	T
CV676	726A	K
CV677	701A	P
CV678	702A	Y
CV679	703A	T
CV683	316A	T
CV684	274B	U
CV686	OC3/VR105	V
CV687	GL446B	T
CV688	2C43	R
CV689	700A	M
CV690	RK48A	P
CV691	357A	T
CV692	0Z4	U
CV693	HF300	T
CV694	12SG7	R
CV695	700B	M
CV696	700C	M
CV697	12SJ7	R
CV698	12SJ7GT	R

700

CV700	12SR7	R
CV701	ESA892	T
CV702	830B	T
CV703	12K8	R
CV704	RK20A	P
CV705	1D5GP	R
CV706	6U7G	R
CV707	4C25	T
CV709	72	U
CV710	368A	T
CV711	32	R
CV712	38/A	R
CV713	1B27	S
CV716	8013A	U
CV717	5R4GY	U
CV718	5FP7	C
CV719	2J21A	M
CV720	723A	K
CV722	725A	M
CV723	1619	P
CV724	816	U
CV725	1B24	S
CV726	35Z3LT	U
CV727	1N21	X
CV728	1P5GT	R
CV729	5V4G	U
CV730	6A3	R
CV731	6F6GT	R
CV733	REL8D	T
CV734	228A	T
CV735	845	T
CV736	905/A	C
CV737	906	C
CV738	953	R
CV739	3AP1/1A	C
CV740	5MP1	C
CV741	5LP1	C
CV742	FG67	Y
CV743	GET2	I
CV744	GET4-1/2	I
CV745	HK24	T
CV747	6AC7	R
CV749	1N23A	X
CV750	O1A	R
CV751	HY75	T
CV752	1267	Y
CV753	1A3	R
CV754	1A4P	R
CV755	1A5G	R
CV756	1A5GT	R
CV757	1A6	R
CV758	1B4P	R
CV759	1B5/25S	R
CV760	1B7GT	R
CV762	1C21	Y
CV764	1D5	U
CV765	1D7G	R
CV766	1E5GP	R
CV767	1F4	R
CV768	1F5G	R
CV769	1F6	R
CV770	1F7GV	R
CV771	1G5G	R
CV772	1G6G	R
CV773	1G6GT	R
CV774	1H4G	R
CV775	1LA6	R
CV776	1LB4	R
CV777	1LC5	R
CV778	1LC6	R
CV779	1LD5	R
CV780	1LH4	R
CV781	1LN5	R
CV782	1R5	R
CV783	1S4	R
CV784	1S5	R
CV785	1T4	R
CV787	2A7	R
CV788	832A	P
CV789	3C24	T
CV790	2AP1	C
CV792	2C22	R
CV793	2C33	Y
CV794	2D2	R
CV795	2D4A	R
CV796	2D13C	R
CV797	2D21	Y
CV798	2E22	P

800

CV800	2J22	M
CV801	2J54	M
CV802	2C26	T
CV803	2V3	U
CV804	2V3G	U
CV805	50Y6GT	U
CV807	3A4	R
CV808	3A5	R
CV809	3A/105B	T
CV811	3B7/1291	R
CV812	3B24	U
CV814	3BP1	C
CV815	3D6/1299	R
CV816	3DP1	C
CV818	3Q4	R
CV819	3Q5GT	R
CV820	3S4	R
CV821	4A1	V
CV822	4B24	U
CV823	4C29	T
CV824	4E27	P
CV825	4SHA	R
CV826	4THA	R
CV828	4TPB	R
CV829	4TPB(met)	R
CV830	4TSP	R
CV832	5AP1	C
CV833	89	R
CV834	5B/300B	P
CV836	5BP4	C
CV837	12C8	R
CV838	5CP7	C
CV839	5GP1	C
CV840	5H4	V
CV841	5U4GT	U
CV842	5W4G	U
CV843	6AB5/6N5	I
CV844	6AC5G	R
CV845	6AC5GT	R
CV846	6AC7	R
CV847	6AF6G	I
CV848	6AG5	R
CV849	6AJ7/6AC7	R
CV850	6AK5	R
CV851	6B4G	R
CV852	6C4	R
CV854	6C7	R
CV855	6C21	T
CV856	6G8G	R
CV858	6J6	R
CV859	6J8G	R
CV860	6K5G	R
CV861	6K5GT	R
CV862	6L5G	R
CV864	6P7G	R
CV865	6SD7GT	R
CV866	6SJ7Y	R
CV867	6SR7	R
CV870	6V7G	R
CV871	6Z5	U
CV872	6Z7G	R
CV873	6ZY5G	U
CV874	7	V
CV875	1642	R
CV876	7A6	R
CV877	7A7	R
CV878	7A8	R
CV879	7B4	R

Key to Valve Sort

C Cathode ray tube
H Photo-tube
I Indicator
K Velocity-modulated tube (klystron, etc.)
M Magnetron
P Transmitting tetrode or pentode
R Receiving type
S Switch
T Transmitting triode
U Rectifier
V Regulator & control
X Crystal
Y Thyratron

CV No.	Comp.	Sort
CV880	7B5	R
CV881	7B5LT	R
CV882	7B6	R
CV883	7B8LM	R
CV884	7BP7	C
CV885	7C5	R
CV886	7C5LT	R
CV887	7C6	R
CV889	7D8	R
CV890	7E5	R
CV891	7E6	R
CV892	7E7	R
CV893	7F7	R
CV894	7G7	R
CV895	7H7	R
CV896	7K7	R
CV897	7J7	R
CV898	7N7	R
CV899	7Q7	R

900

CV900	7R7	R
CV901	7Y4	U
CV902	7W7	R
CV904	892R	T
CV905	9HP7	C
CV906	1602	T
CV908	12A5	R
CV909	12A7	R
CV910	12A8GT	R
CV911	12B8GT	R
CV913	12DP7	C
CV914	12DP8	C
CV915	12FP7	C
CV916	12H6	R
CV917	12J7GT	R
CV918	12K7GT	R
CV919	12SF5	R
CV920	12SF5GT	R
CV921	12SF7	R
CV922	12SH7	R
CV924	12SL7GT	R
CV925	12SN7GT	R
CV927	12Z3	U
CV929	13SPA	R
CV930	14F7	R
CV931	15	R
CV932	2C40	R
CV933	4C30	T
CV934	4B30	U
CV936	24A	R
CV937	25A7GT	R
CV938	25AC5GT	R
CV939	25B6G	R
CV940	25B8GT	R
CV941	HK24	T
CV942	25Y5	U
CV943	26	R
CV944	27	R
CV945	28D7	R
CV946	28D7GT	R
CV947	31	R
CV948	32L7GT	R
CV949	33	R
CV950	4053	C
CV951	32A	C
CV953	32G	C
CV955	4409	C
CV956	4602	C
CV957	32E	C
CV958	32J	C
CV960	4607	C
CV995	6AJ5	R
CV996	EL32	R
CV997	2J58	M
CV998	2000T	T
CV999	3C22	T

1000

CV1000	4D1	R
CV1018	215SG	R
CV1019	PM2	R
CV1020	220P	R
CV1021	210LF	R
CV1022	220PA	R
CV1023	230XP	R
CV1025	DET25	T
CV1027	210LF	R
CV1028	220VSG	R
CV1030	4060A	T
CV1031	SG250	P
CV1032	220B	R
CV1034	DET3	T
CV1035	QP21	R
CV1037	MH4	R
CV1038	MHL4	R
CV1039	R3/UU5	U
CV1040	PX25	R
CV1041	PM12M	R
CV1042	210LF	R
CV1043	210PG	R
CV1044	210DDT	R
CV1046	PT25H	R
CV1047	TZ05-20	T
CV1049	210SPT	R
CV1050	HL2	R
CV1051	PEN220A	R
CV1052	EL32	R
CV1053	EF39	R
CV1054	EB34	R
CV1055	EBC33	R
CV1056	EF36	R
CV1057	EK32	R
CV1058	E960	T
CV1059	955	R
CV1060	807	P
CV1061	2C34	T
CV1062	TY1-50	T
CV1064	U12/14	U
CV1065	SP61	R
CV1066	P61	R
CV1067	6J5	R
CV1070	7475	V
CV1071	5U4	U
CV1072	GU50	U
CV1073	H63	R
CV1074	6J7	R
CV1075	KT66	R
CV1076	TZ40	T
CV1077	EM31	I
CV1078	2B36	R
CV1079	KT8	P
CV1080	4307A/AF	P
CV1081	4052A	P
CV1082	220TH	R
CV1083	210VPT	R
CV1084	4407	C
CV1085	4605	C
CV1086	4502	C
CV1087	14L/4410	C
CV1088	832	P
CV1090	E1046	T
CV1091	EF50	R
CV1092	EA50	R
CV1095	954	R
CV1096	5B/502A	P
CV1097	ECR60	C
CV1098	E960T	T
CV1099	X66	R

1100

CV1100	KTW62	R
CV1101	MHLD6	R
CV1102	BL63	R
CV1103	Y63	I
CV1104	PT15	P
CV1105	ML6	R
CV1106	9D2	R
CV1107	15D2	R
CV1108	8D2	R
CV1109	4D1	R
CV1110	S130	V
CV1111	R11	U
CV1113	U17	U
CV1114	E1024	P
CV1116	V872	R
CV1117	41MTL	R
CV1119	DDL4	R
CV1120	SU2150A	U
CV1121	VGT121	Y
CV1122	41MXP	R
CV1123	EF8	R
CV1124	MS/Pen	R
CV1125	MS/Pen V	R
CV1127	Pen46	R
CV1128	NGT2	Y
CV1128	VGT128	Y
CV1129	MS/Pen	R
CV1130	HL23	R
CV1134	HVR2	U
CV1136	EF54	R
CV1137	EC52	R
CV1141	NGT1	Y
CV1142	NGT3	Y
CV1143	NGT4	Y
CV1144	NGT5	Y
CV1145	NGT6	Y
CV1146	NGT6A	Y
CV1147	NGT7	Y
CV1148	NGT8	Y
CV1149	NGT9	Y
CV1151	PM3	R
CV1152	PM4DX	R
CV1153	PM254	R
CV1154	PM4DX	R
CV1156	DEQ	R
CV1158	PM14	R
CV1159	PM14	R
CV1160	104V	R
CV1161	104V	R
CV1163	PD22A	R
CV1164	ACSG	R
CV1165	VMS4	R
CV1166	P220	R
CV1167	PM24A	R
CV1168	PX4	R
CV1169	VMP4G	R
CV1170	D41	R
CV1171	AT4	R
CV1174	AC/Pen	R
CV1175	AP4	R
CV1176	AP4	R
CV1178	DA30	R
CV1179	ML4	R
CV1180	244V	R
CV1181	AC2/Pen	R
CV1182	H42	R
CV1183	W42	R
CV1186	6F6G	R
CV1187	D41	R
CV1188	N43	R
CV1189	AC6Pen	R
CV1190	ACP4	R
CV1191	KTZ41	R
CV1192	Z62	R
CV1193	X65	R
CV1194	20A1	R
CV1195	KTW63	R
CV1196	AC5PenDD	R
CV1197	RL18	R
CV1198	ACP4	R
CV1199	NS2	V

1200

CV1200	202	V
CV1201	4317	V
CV1202	304	V
CV1206	DA60	T
CV1207	ES450	T
CV1208	PM256	R
CV1219	MZ1-100	T
CV1220	4033A	T
CV1221	PZ1-75	P
CV1222	ACT6	T
CV1223	DET5	T
CV1234	VLS532	T
CV1235	TY1-50	T
CV1237	PM24D	R
CV1238	PM24D	R
CV1240	PZ1-35	P
CV1246	PM202	R
CV1250	4279A	T
CV1252	4212E	T
CV1253	E1161	T
CV1256	E1232	T
CV1262	GU1	U
CV1263	RG1-125	U
CV1264	U18	U
CV1266	U15	U
CV1267	U4020	U
CV1268	5Y3G	U
CV1280	6L7	R
CV1281	KTW61	R
CV1282	AC/S2Pen	R
CV1283	SP4	R
CV1285	6N7	R
CV1286	6L6	R
CV1287	25L6G	R
CV1288	TY1/50	T
CV1296	MU14	U

1300

CV1300	10D1	R
CV1301	6H6	R
CV1302	D42	R
CV1303	PMIHF	R
CV1304	LP2	R
CV1306	HL23DD	R

CV No.	Comp.	Sort
CV1307	PM1LF	R
CV1308	TDD2A	R
CV1311	4022AR	R
CV1312	220RC	R
CV1313	220LF	R
CV1316	4021B	R
CV1318	VS24	R
CV1319	PM12V	R
CV1320	SP2	R
CV1321	9D2	R
CV1322	SP210	R
CV1323	VP2	R
CV1324	SP4	R
CV1325	42MPT	R
CV1326	AC4Pen	R
CV1327	Pen1340	R
CV1328	7D8	R
CV1329	PenA4	R
CV1330	TSP4	R
CV1331	VP23	R
CV1332	VP21	R
CV1333	220IPT	R
CV1334	KT24	R
CV1335	SP41	R
CV1336	SP42	R
CV1337	116Pen	R
CV1338	220VPT	R
CV1340	KT44	R
CV1341	MSP4	R
CV1342	QP25	R
CV1343	KTZ73	R
CV1344	TP22	R
CV1345	TP25	R
CV1347	ECH35	R
CV1352	EM80	I
CV1356	U22	U
CV1359	ME41	I
CV1360	AT26	T
CV1361	MZ05-20	T
CV1363	DET16	T
CV1364	807	P
CV1365	4282B	P
CV1366	V248A	P
CV1367	V245	P
CV1369	4061A	P
CV1370	PV1-35	P
CV1371	PZ1-75	P
CV1372	4069A	P
CV1373	PY3-600	P
CV1374	807	P
CV1375	EF85	R
CV1376	EF80	R
CV1377	GZ34	U

1400

CV1400	C1C	V
CV1401	CL33	R
CV1402	CY31	U
CV1403	DD41	R
CV1404	EF36	R
CV1405	E1199	R
CV1406	HL41	R
CV1407	Pen45	R
CV1408	P41	R
CV1409	SP2	R
CV1410	TH2	R
CV1411	TH41	R
CV1412	TV4	I
CV1413	UU6	U
CV1414	VP41	R
CV1415	4011A	T
CV1419	11D3	R
CV1420	4078A	U
CV1422	3D/100A	T
CV1424	20A1	R
CV1425	7D5	R
CV1426	EK2	R
CV1427	EF9	R
CV1428	EBC3	R
CV1429	EL2	R
CV1430	ACSP3	R
CV1431	ACT16	T
CV1432	CMG8	H
CV1433	EC31	R
CV1434	EM4	I
CV1435	GU20	U
CV1438	6AG6G	R
CV1439	MT9F	T
CV1440	MT9L	T
CV1441	MT12A	T
CV1442	MT14	T
CV1443	U10	U
CV1444	42SPT	R
CV1445	4012A	T
CV1446	4017B	U
CV1447	4030C	T
CV1448	4043C	T
CV1449	4064B	U
CV1450	4228A	T
CV1451	4247A	U
CV1452	4300A	T
CV1454	225DU	U
CV1456	Pen383	R
CV1457	VP133	R
CV1458	41MP	R
CV1459	MU2	U
CV1460	X41	R
CV1462	A915	R
CV1463	CBL31	R
CV1466	P57	P
CV1471	4049A	U
CV1472	CMG25	H
CV1473	CMG22	H
CV1474	CE20	H

1500

CV1502	KT32	R
CV1503	KT33C	R
CV1504	V1901	U
CV1505	MH41	R
CV1508	V1913	U
CV1511	4608	C
CV1515	MX1	C
CV1518	O9J	C
CV1535	EZ80	U
CV1567	2C25	T
CV1568	4062A	T
CV1569	R3	U
CV1572	807	P
CV1573	4074B	T
CV1574	SP41	R
CV1576	KT38	R
CV1577	E1143	R
CV1578	EF50	R
CV1579	954	R
CV1582	VS110A	V
CV1585	VGT121A	Y
CV1587	4203	C
CV1588	23U	C
CV1596	O9U	C

1600

CV1600	CAT1	T
CV1601	CAR1	U
CV1602	CAR4	U
CV1604	3Q/211E	T
CV1606	CAT2	T
CV1607	OC2.5	T
CV1610	MT4	T
CV1611	MR4	U
CV1614	ES1500	T
CV1618	ES250M	T
CV1619	4212D	T
CV1620	DET6	T
CV1628	GU8	U
CV1633	3V4	R
CV1640	4102D	R
CV1641	4102E	R
CV1642	DER	R
CV1643	E132	R
CV1645	E133	R
CV1650	LS5A	R
CV1651	G445B	R
CV1653	4020A	R
CV1655	4019B	R
CV1656	LS8	R
CV1657	4020B	R
CV1658	LS9B	R
CV1659	4022B	R
CV1660	LS7	R
CV1671	4021A	R
CV1672	7D6	R
CV1676	LS8A	R
CV1677	AC/S2	R
CV1683	AC/PEN	R
CV1691	DDL4	R
CV1694	4104D	R
CV1695	DH30	R
CV1696	B21	R
CV1697	X41	R
CV1698	A819	R
CV1699	SP41	R

1700

CV1700	SP41	R
CV1701	XLO	R
CV1702	XP	R
CV1715	EBC3	R
CV1718	ACTP	R
CV1720	XL 1.5	R
CV1721	XP 1.5	R
CV1722	A901	R
CV1727	Z22	R
CV1732	ML4	R
CV1733	4018AG	C
CV1734	3Q/213E	T
CV1741	EL34	R
CV1750	33A/100A	T
CV1751	34	R
CV1752	35/51	R
CV1753	35A5LT	R
CV1754	35TG	T
CV1755	1626	T
CV1756	1629	I
CV1757	9001	R
CV1758	1L4	R
CV1759	2C26A	R
CV1760	2J26	M
CV1761	3FP7	C
CV1762	6AK6	R
CV1763	6J4	R
CV1764	CE2	H
CV1765	3C31	Y
CV1766	CX25	H
CV1769	2A6	R
CV1770	7A4	R
CV1771	39/44	R
CV1772	47	R
CV1773	82	U
CV1774	12A	R
CV1775	36	R
CV1776	6D7	R
CV1777	7C7	R
CV1778	101D	T
CV1779	102D	T
CV1780	Twin30	T
CV1781	310B	T
CV1782	340A	T
CV1783	9JP1	C
CV1784	6AK7	R
CV1785	1N26	X
CV1786	2K33	K
CV1787	4C35	Y
CV1788	3J31	M
CV1789	5FP7	C
CV1790	7Z4	U
CV1791	5JP1	C
CV1793	724B	S
CV1794	959	R
CV1795	723A/V	K
CV1796	DW4/350	U
CV1797	4081A	T
CV1798	2051	Y
CV1799	350B	P

1800

CV1800	1A7G	R
CV1801	GS11B	H
CV1802	1A7GT	R
CV1803	1C5G	R
CV1805	1C5GT	R
CV1806	1D5GT	R
CV1807	2J31	M
CV1808	2J32	M
CV1809	2J33	M
CV1810	2J34	M
CV1811	1D8GT	R
CV1812	1E7G	R
CV1813	2DP1	C
CV1814	5LP1	C
CV1815	6Q5G	Y
CV1816	6Y3G	U
CV1817	1G4GT	R
CV1818	1H5G	R
CV1819	6P5GT	R
CV1820	1H5GT	R
CV1821	1N5G	R
CV1823	1N5GT	R
CV1824	1Q5G	R
CV1825	KT45	R
CV1826	1Q5GT	R
CV1827	M510	M
CV1828	M512	M
CV1829	1T5GT	R
CV1830	1B3GT	U
CV1831	2A3	R
CV1832	0A2	V
CV1833	0B2	V
CV1834	2A5	R
CV1835	3B28	U

CV No.	Comp.	Sort
CV1836	4B26	U
CV1837	2B7	R
CV1838	QQZ04-15	P
CV1839	6F13	R
CV1841	BS52	S
CV1842	2G	V
CV1844	CS3-V	X
CV1846	5T4	U
CV1847	19H4	R
CV1848	20A2	Y
CV1849	5W4	U
CV1850	6L19	R
CV1851	5X4G	U
CV1852	5X4	U
CV1853	6P25	R
CV1854	5Y3G	U
CV1855	UU9	U
CV1856	5Y3GT	U
CV1857	5Y4G	U
CV1860	30D5	C
CV1861	5Z3	U
CV1862	6AQ5	R
CV1863	5Z4G	U
CV1864	5Z4	U
CV1865	EC81	R
CV1866	M503	M
CV1867	6A6	R
CV1868	5T01A	C
CV1869	12T01A	C
CV1870	6A7	R
CV1871	K307	K
CV1873	6AB7	R
CV1876	6AC7	R
CV1878	6AD7G	R
CV1880	7MB1A	C
CV1882	6AG7	R
CV1885	6B5	R
CV1886	EC80	R
CV1887	6B6G	R
CV1889	TYS4/500	T
CV1891	6B7	R
CV1892	2K28	K
CV1893	6B8G	R
CV1894	6B8	R
CV1895	STV70/60	V
CV1896	6C8G	R
CV1897	4J34	M
CV1898	4J35	M
CV1899	6L18	R

1900

CV1900	6D6	R
CV1901	6F11	R
CV1902	6D8G	R
CV1903	GL592	T
CV1904	CAA322	R
CV1905	4-65A	P
CV1906	6E5	I
CV1907	CS2-C	X
CV1908	6F5G	R
CV1909	6F5	R
CV1910	6F5GT	R
CV1911	6F6G	R
CV1912	6F6	R
CV1913	GS44X	H
CV1914	4J31	M
CV1915	6F7	R
CV1916	4J33	M
CV1917	6F8G	R
CV1919	6F14	R

CV No.	Comp.	Sort
CV1920	6LD20	R
CV1921	U24	U
CV1924	TY2-125	T
CV1926	6G6G	R
CV1927	B142	T
CV1928	12BA6	R
CV1929	6H6G	R
CV1930	6H6	R
CV1931	6H6GT	R
CV1932	6J5G	R
CV1933	6J5	R
CV1934	6J5GT	R
CV1935	6J7G	R
CV1936	6J7	R
CV1937	6J7GT	R
CV1938	6K6G	R
CV1940	6K6GT	R
CV1941	6K7G	R
CV1942	6K7	R
CV1943	6K7GT	R
CV1944	6K8G	R
CV1945	6K8	R
CV1946	6K8GT	R
CV1947	6L6G	R
CV1948	6L6	R
CV1950	6L7G	R
CV1951	6L7	R
CV1953	6N6G	R
CV1954	6N6	R
CV1956	6N7G	R
CV1957	6N7	R
CV1958	6N7GT	R
CV1959	50C5	R
CV1960	6R6G	R
CV1961	12AU6	R
CV1962	6R7G	R
CV1963	6R7	R
CV1964	6R7GT	R
CV1966	6SA7	R
CV1967	6SA7GT	R
CV1969	6SC7	R
CV1970	6SC7GT	R
CV1972	6SF5	R
CV1973	6SF5GT	R
CV1974	6S7G	R
CV1975	6S7	R
CV1977	UL41	R
CV1978	6SG7	R
CV1981	6SK7	R
CV1982	6SK7GT	R
CV1985	6SL7GT	R
CV1988	6SN7GT	R
CV1989	SD6	U
CV1990	6SQ7	R
CV1991	6SQ7GT	R
CV1993	6SS7	R
CV1995	6ST7G	R
CV1996	6ST7	R
CV1999	1V	U

2100

CV2106	DL66	R
CV2107	DF66	R
CV2108	9M06A	C
CV2115	1B3	U
CV2127	6CH6	R
CV2128	ECH81	R
CV2129	5763	P
CV2135	6BR7	R
CV2136	6BW6	R

CV No.	Comp.	Sort
CV2159	BR153	T
CV2162	12L01A	C
CV2164	K302	K
CV2174	G240/2D	Y
CV2175	DG7/5	C
CV2179	E2134	P
CV2189	V240C/2K	K
CV2190	V233A/1K	K
CV2191	DG13/2	C
CV2192	9MW5AX	C
CV2193	89D	C
CV2194	G400/1K	V

2200

CV2208	G50/1G	V
CV2212	13D3	R
CV2214	3B/240M	T
CV2216	30E8/P1	C
CV2217	6K25	Y
CV2218	R17	U
CV2224	G1/370K	Y
CV2235	R18	U
CV2237	1AD4	R

2300

CV2370	DL92	R

2400

CV2492	E88CC	R

2500

CV2500	35Z4GT	U
CV2501	40	R
CV2502	41FP	R
CV2503	41MH	R
CV2504	41MHL	R
CV2505	41MPG	R
CV2506	41MPT	R
CV2508	41STH	R
CV2511	420T	R
CV2512	420TDD	R
CV2514	43	R
CV2524	6AU6	R
CV2526	6AV6	R
CV2528	45DS	C
CV2529	45IU	U
CV2530	45Z5GT	U
CV2531	46	R
CV2532	49	R
CV2533	50	R
CV2534	50L6G	R
CV2535	53	R
CV2536	53A	T
CV2537	55	R
CV2538	59	R
CV2539	61P	T
CV2540	63D	C
CV2541	71A	R
CV2543	73	R
CV2544	78	R
CV2545	79	R
CV2546	81	U
CV2547	83V	U
CV2548	84	U

CV No.	Comp.	Sort
CV2549	85	R
CV2552	100TH	T
CV2553	101F	T
CV2554	111A	V
CV2556	117L7GT	R
CV2557	117N7GT	R
CV2558	117Z6GT	U
CV2560	121A	V
CV2561	122A	V
CV2562	164V	R
CV2563	204A	T
CV2565	2050	Y
CV2566	205E	T
CV2567	205F	T
CV2569	210DET	R
CV2570	210HF	R
CV2571	210HL	R
CV2574	210VPA	R
CV2576	4C21	T
CV2577	212E	T
CV2579	218	U
CV2580	220C	T
CV2581	220/OT	R
CV2582	220VS	R
CV2584	231D	T
CV2586	240B	R
CV2587	242C	T
CV2588	244A	T
CV2589	RK36	T
CV2591	RK38	T
CV2592	256B	Y
CV2593	257A	T
CV2594	258B	U
CV2595	259A	P
CV2597	262A/V	T
CV2598	264A	R
CV2599	264C	T

2600

CV2600	267B	U
CV2601	271A	T
CV2602	272A	T
CV2603	274A	U
CV2604	275A	T
CV2605	282A	P
CV2608	300A	R
CV2609	300B	T
CV2610	303	V
CV2611	304TH	T
CV2612	RK75	P
CV2613	310A	P
CV2614	311A	P
CV2615	313C	Y
CV2616	314A	U
CV2617	323A	Y
CV2618	327A	T
CV2619	328A	P
CV2620	329A	P
CV2621	330B	C
CV2622	331A	T
CV2623	332A	P
CV2624	337A	P
CV2625	338A	Y
CV2626	346A	Y
CV2627	349A	P
CV2628	349B	P
CV2629	350A	P
CV2630	351A	U
CV2631	352A	R
CV2632	354A	Y

CV No.	Comp.	Sort
CV2633	362A	P
CV2634	367	U
CV2636	375A	U
CV2637	388A	T
CV2638	393A	Y
CV2639	394A	Y
CV2640	405BU	U
CV2642	417A	K
CV2643	2C40	R
CV2644	460BU	U
CV2645	506BU	U
CV2653	714AY	M
CV2654	715A	P
CV2655	715B	P
CV2656	724A	S
CV2657	800	T
CV2658	806	T
CV2660	809	T
CV2661	812	T
CV2663	815	P
CV2664	822	T
CV2665	825	R
CV2666	829B	P
CV2668	846	T
CV2669	849	T
CV2670	849H	T
CV2671	851	T
CV2672	852	T
CV2673	857B	U
CV2674	863	T
CV2675	864	T
CV2676	865	P
CV2679	866JR	U
CV2680	868	H
CV2683	878/A	U
CV2685	880	T
CV2686	889	T
CV2687	889R	T
CV2688	891R	T
CV2689	893R	T
CV2690	904V	R
CV2691	913	C
CV2692	918	H
CV2693	929	H
CV2694	930	H
CV2695	931	H
CV2696	931A	H
CV2697	935	H

2700

CV2700	957	R
CV2701	958A	R
CV2704	7E5/1201	R
CV2705	1203	R
CV2706	7C4/1203A	R
CV2707	1231	R
CV2709	1R4/1294	R
CV2710	3D6.1299	R
CV2711	1500T	T
CV2712	1609	R
CV2713	1610	P
CV2714	1614	P
CV2715	1630	R
CV2716	1655	R
CV2717	1729	U
CV2718	1876	U
CV2719	1924	C
CV2723	869B	U
CV2725	O9	C
CV2727	26D	C
CV2728	29D	C
CV2731	63DS	C
CV2735	4015A	T
CV2743	4033AF	T
CV2745	4050AG	C
CV2746	4064A	U
CV2747	6U5G	I
CV2749	4081	C
CV2751	4096AB	C
CV2755	4251AX	T
CV2756	4260A	P
CV2759	4304	T
CV2760	4304B	T
CV2761	4304BB	T
CV2764	4606	C
CV2765	4673	P
CV2766	4687	V
CV2767	4690	Y
CV2768	8003	T
CV2769	9006	R
CV2773	68503mod	U
CV2774	68504	U
CV2775	68506	U
CV2776	68510mod	U
CV2777	4B28	U
CV2778	2J21A	M
CV2779	859	R
CV2786	26J	C
CV2789	ZP455	C

2800

CV2800	A40	R
CV2801	A40/N3	C
CV2803	A915met	R
CV2804	A915Amet	R
CV2805	A924	R
CV2806	AC/2HL	R
CV2807	AC/2HLmet	R
CV2808	AC/2Pen	R
CV2809	AC/5Pen	R
CV2811	AC/HL	R
CV2812	AC/HLmet	R
CV2813	AC/HLDD	R
CV2815	AC/P	R
CV2817	6L6GA	R
CV2818	AC/PT8	P
CV2819	AC/S	R
CV2820	AC/SP1	R
CV2822	AC/SG	R
CV2823	AC/SP3	R
CV2824	AC/S Pen	R
CV2825	ACT6	T
CV2827	ACT10	T
CV2829	293A	R
CV2830	AC/TH1	R
CV2832	AC/VP2	R
CV2833	AF3	R
CV2834	AGT1	Y
CV2836	APP4G	R
CV2837	APP4G*	R
CV2839	AR300	T
CV2845	LS5	R
CV2846	LS5B	R
CV2860	AZ1	U
CV2861	AZ2	U
CV2862	AZ31	U
CV2864	B21	R
CV2865	B30	R
CV2869	3FP7	C
CV2870	CC3D	R
CV2871	CAT6	T
CV2872	CAT9	T
CV2874	CK1005	U
CV2875	CL4	R
CV2878	CRT1	C
CV2879	CRT2	C
CV2880	CRT 4/1	C
CV2887	DAC1	R
CV2888	ECH42	R
CV2889	DD620	R
CV2890	DDT(met)	R
CV2891	DE5	R
CV2892	DE5B	R
CV2895	DET1SW	T
CV2899	DET9	T

2900

CV2900	DET10	T
CV2901	EF86	R
CV2907	DF1	R
CV2909	DH73M	R
CV2910	DK1	R
CV2911	DL2	R
CV2912	DL63	R
CV2920	E1148(US)	T
CV2925	EBF2	R
CV2926	EBL31	R
CV2929	ECH3	R
CV2930	ECH33	R
CV2936	4B22	U
CV2938	EL33	R
CV2940	EL36	R
CV2941	EL50	R
CV2944	ESU1500	U
CV2945	ESU75	U
CV2946	ESU150	U
CV2947	ESU300	U
CV2949	F123A	T
CV2950	129B	T
CV2954	FC2A	R
CV2955	FC4	R
CV2956	15D1	R
CV2957	FG17	Y
CV2958	FG27A	Y
CV2959	3B21	U
CV2960	FP54	P
CV2966	EY86	U
CV2967	8020	U
CV2969	GT1	Y
CV2973	GU7	U
CV2975	EL84	R
CV2977	H2	R
CV2978	H12	R
CV2979	H30	R
CV2981	H410	R
CV2982	H610	R
CV2983	DL94	R
CV2984	6080	R
CV2985	HD24	R
CV2986	HD203A	T
CV2987	HF100	T
CV2988	HF200	T
CV2989	HK354E	T
CV2991	HL2 met	R
CV2994	HL23	R
CV2995	HL23DD	R
CV2996	HL41DD	R
CV2998	HL133	R
CV2999	HL133DD	R

3500

CV3500	HL210	R
CV3501	HL610	R
CV3502	HL1320	R
CV3503	HLDD1320	R
CV3505	HY114B	R
CV3506	HY615	R
CV3513	2J32	M
CV3515	KB2	R
CV3516	KK2	R
CV3519	KT30	R
CV3520	KT31	R
CV3523	6146	P
CV3527	KTW73M	R
CV3529	KTZ41	R
CV3530	KTZ73	R
CV3531	L2	R
CV3532	L21	R
CV3533	L22DD	R
CV3534	L30	R
CV3537	L600	T
CV3538	L610	R
CV3541	LS6A	R
CV3542	LS5З2	R
CV3546	MHD4	R
CV3552	MPT4K	R
CV3553	MS4B	R
CV3554	MPT42	R
CV3557	MR300	Y
CV3558	MR300/E	Y
CV3561	MS/PEN	R
CV3562	MSP41	R
CV3563	MT11SW	T
CV3564	MT12	T
CV3565	ME41	I
CV3567	MU1	U
CV3570	MU4250	U
CV3571	MVSPen	R
CV3572	MVSPenB	R
CV3573	MZ05-20	T
CV3574	MZ1-76	T
CV3576	15A2	R
CV3578	PM22D	R
CV3579	PT5E	P
CV3581	V1501	T
CV3582	VP4B	R
CV3583	5HP1	C
CV3584	21/2	V
CV3587	705A	U
CV3588	706A	M
CV3589	707A	K
CV3590	708A	R
CV3593	713A	R
CV3594	717A	R
CV3595	721A	S
CV3596	722A	Y
CV3597	726B	K
CV3599	829A	P

3600

CV3600	902	C
CV3601	7193	R
CV3607	NP90	Y
CV3620	P220	R
CV3621	P410	R
CV3622	P610	R
CV3623	PA40	R
CV3624	PE7B	H
CV3625	PE8	H

CV No.	Comp.	Sort
CV3626	PenB4	R
CV3630	Pen44	R
CV3631	Pen45DD	R
CV3633	Pen231	R
CV3634	Pen428	H
CV3635	Pen1340	R
CV3636	Pen1346	R
CV3638	PenA4	R
CV3640	PJ8	R
CV3641	PM1HL	R
CV3642	PM1LF	R
CV3643	PM2A	R
CV3645	PM2DX	R
CV3647	PM22A	R
CV3648	PM24E	R
CV3649	PM22	R
CV3652	PT5	P
CV3653	PT6	P
CV3654	PT11	P
CV3656	PT425	R
CV3657	PV05-15	P
CV3658	PV1-35	P
CV3667	RG1-250	U
CV3670	RG4-1000	U
CV3672	RK28	P
CV3673	RK28A	P
CV3674	RK31	T
CV3677	RK47	P
CV3679	RK49	P
CV3680	RK60	U
CV3681	RK62	Y
CV3683	RKR47	P
CV3688	2C33	U
CV3690	RZ1-150	U
CV3691	S23	R
CV3692	S23(met)	R
CV3694	S130A	R
CV3695	S215	R
CV3696	S215A	R
CV3698	S610	R

3700

CV3702	SG215	R
CV3703	SP4B	R
CV3704	SP13C	R
CV3709	STV150/200	V
CV3712	STV280/80A	V
CV3715	SW5	P
CV3719	SW7	T
CV3721	T4D	R
CV3722	T20	T
CV3723	T41	Y
CV3724	T200	T
CV3726	TDD2A	R
CV3727	TDD4	R
CV3730	TMC15B	R
CV3731	TMC16B	R
CV3732	TMC20B	U
CV3735	TP26	R
CV3739	TX3-200	T
CV3740	TX5-400	T
CV3741	TZ2-300	T
CV3742	TZ20	T
CV3743	U5	U
CV3744	U6	U
CV3747	U15	U
CV3750	U22	U
CV3751	U21	U
CV3752	U30	U
CV3753	U31	U
CV3756	U600	U
CV3758	UR3C	U
CV3759	UU4	U
CV3761	UU7	U
CV3762	V120	R
CV3763	V123B	Y
CV3765	V226	R
CV3766	V312	R
CV3767	V339	R
CV3768	V503	R
CV3769	V877	R
CV3770	V955/V	U
CV3772	V970	R
CV3773	V1010	C
CV3774	V1020	C
CV3775	V1021	C
CV3776	V1023	C
CV3777	V1029	C
CV3778	V1105	R
CV3784	VLS452	R
CV3787	VP2	R
CV3788	VP4(met)	R
CV3790	VP13C	R
CV3792	VP23	R
CV3793	VP23	R
CV3793	VP24(met)	R
CV3794	VP210	R
CV3795	VP215	R
CV3796	VP1322	R
CV3797	V944A	H
CV3798	0A3/VR75	V
CV3799	OB3/VR90	V

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CV3800	VS2	R
CV3802	VS24	R
CV3803	VS24K(met)	R
CV3804	W21 7-pin	R
CV3805	W30K	R
CV3806	W31	R
CV3810	WD30	R
CV3812	1P31	H
CV3813	8A	V
CV3816	X21	R
CV3817	X21(met)	R
CV3818	X22	R
CV3819	X24	R
CV3820	X24(met)	R
CV3821	X31	R
CV3822	X31(met)	R
CV3823	X41(met)	R
CV3825	X63	R
CV3826	X65	R
CV3827	12C8GT	R
CV3829	293A	R
CV3830	XH 1.5	R
CV3831	XL2	R
CV3832	XP2	R
CV3833	XSG 2.0	R
CV3834	XW2	R
CV3836	Z21	R
CV3837	Z21 7-pin	R
CV3838	Z62	R
CV3839	Z66	R
CV3842	5J29	M
CV3843	5J30	M
CV3844	5J31	M
CV3845	RS366	T
CV3846	RS261	T
CV3847	RS250	T
CV3848	RS260	T
CV3849	RS217	T
CV3850	RS207	T
CV3851	RS253	T
CV3852	RS285	T
CV3853	RS15	T
CV3854	RS47	T
CV3856	RV300	T
CV3857	RS283A	T
CV3858	RS18	T
CV3859	RV271A	T
CV3860	RS282	T
CV3861	RS281	P
CV3862	RS55	T
CV3863	RS289	P
CV3864	RS389	P
CV3865	RS288	P
CV3867	RG44	U
CV3868	RSQ15/40	Y
CV3869	RSQ15/5	Y
CV3870	RGQ10/4d	U
CV3871	RS254	T
CV3872	RS255	T
CV3873	RS566	P
CV3881	EB41	R
CV3882	EBC41	R
CV3883	EAF42	R
CV3884	ECC40	R
CV3885	EF40	R
CV3886	EF41	R
CV3887	EF42	R
CV3888	ECH42	R
CV3889	EL41	R
CV3890	EL42	R
CV3891	EZ40	U
CV3892	AZ41	U

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CV3908	6BH6	R
CV3909	6BJ6	R
CV3912	1U5	R
CV3927	12K8GT	R
CV3936	14S7	R
CV3937	14R7	R
CV3998	6688	R

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CV4001	6063~	U
CV4002	6064~	R
CV4003	6067	R
CV4004	6057	R
CV4005	6063	U
CV4006	6059	R
CV4007	5726	R
CV4008	5719	R
CV4009	5749	R
CV4010	6AK5W	R
CV4011	6AS6W	R
CV4012	5750	R
CV4013	5670	R
CV4014	6064	R
CV4015	6065	R
CV4016	5814	R
CV4017	5751	R
CV4018	2D21W	Y
CV4019	6AQ5W	R
CV4021	3B24WA	U
CV4022	6135	R
CV4023	6AU6WA	R
CV4024	6060	R
CV4025	6058	R
CV4026	5R4WGA	U
CV4027	5Y3WGTA	U
CV4033	6060~	R
CV4034	6067~	R
CV4035	6057~	R
CV4037	5750~	R
CV4039	6062	P
CV4043	6061	P
CV4045	6061~	P
CV4049	5726~	R
CV4055	6132	R
CV4056	6132~	R
CV4063	6516	R
CV4068	6158	R
CV4069	6158~	R

~ Signifies flying-lead base

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CV5041	6CL6	R
CV5042	12BH7	R
CV5055	EM81	I
CV5065	ECF82	R
CV5072	EZ81	U
CV5073	6AM4	R
CV5074	6AF4A	R
CV5077	PL81	R
CV5086	6BS7	R
CV5121	6870	R
CV5144	PCL83	R
CV5156	EF89	R
CV5192	PCC84	R
CV5215	ECF80	R
CV5220	7D11	R
CV5264	ECC804	R
CV5281	ECC84	R
CV5287	6U4GT	R
CV5307	807	P
CV5317	12AH8	R
CV5331	ECC189	R
CV5358	ECC88	R
CV5365	6BQ7A	R
CV5409	9D7	R
CV5427	R19	U
CV5434	EM84	I
CV5810	EF184	R
CV5831	EF183	R

Key to Valve Sort

C Cathode ray tube
H Photo-tube
I Indicator
K Velocity-modulated tube (klystron, etc.)
M Magnetron
P Transmitting tetrode or pentode
R Receiving type
S Switch
T Transmitting triode
U Rectifier
V Regulator & control
X Crystal
Y Thyratron

RB