

# 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 (thyatron)
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 C L 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 ( <i>later used for all solid-state devices</i> )
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  $I_{A\text{ MEAN}}$  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 Thyatron
- 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 stabiliser with a maximum current of 30mA. Presumably because of improvements in design or manufacture, the VR150-30 was later updated 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 stabiliser 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 0D3).

## 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.

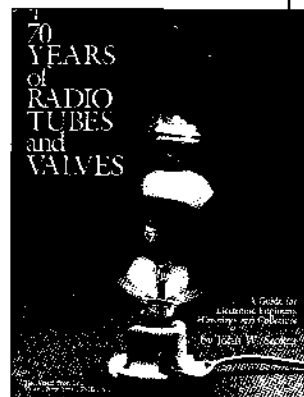
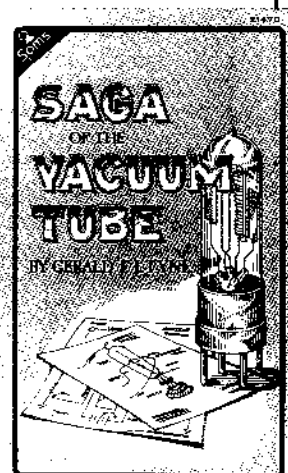
More recently, special-purpose valves manufactured in the United States (and elsewhere to similar specifications) have been allotted 4-figure type numbers (see also the item on Special Quality valves).

## 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 worldwide 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
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**CRTs**

NC1	W.306	950	4053
NC2	W.307	951	32A
NC3	W.308	952	4081
NC4	W.1070	953	32G

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & Notes
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**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
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**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
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**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
<b>Transmitting (continued)</b>			
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

Navy No.	Stores Ref. AP...	CV No (near equiv.)	Possible Commercial Substitute & Notes
<b>Transmitting (continued)</b>			
NT98A	-	1491	
NT98B	-	1492	
NT98C	-	1493	
NT98D	-	1494	
NT99	W.2514	1256	E.1232
NT100	W.2536	1257	E.1155
<b>Rectifiers</b>			
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
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**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)

**Army No. Stores Ref. CV No. (or nearest equiv.) Possible Commercial Substitute & Notes**

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

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

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**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.

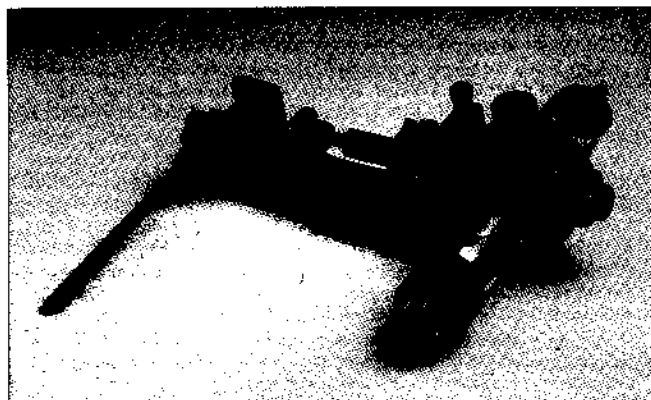
Sometimes, as circuit and valve technology developed with the passing years, an even more closely specified valve was needed, and a new CV number would be issued based on the same commercial equivalent. It is important to understand that although we talk loosely about 'equivalents', they are more correctly 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
M Magnetron	V Regulator & control
P Transmitting tetrode or pentode	X Crystal
	Y Thyatron

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	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort
<b>I</b>			CV99	E1373	M	CV260	SP61	R	CV505	MT16	T
CV1	DC51	R				CV261	R10	U	CV509	6V6G	R
CV2	DAG1	Y	<b>100</b>			CV268	E1330	Y	CV510	6V6	R
CV3	E1228	Y				CV272	KR6/4	K	CV511	6V6GT	R
CV4	E1229	R	CV105	E1371	R	CV281	X61M	R	CV512	6W7G	R
CV5	GU21spec	U	CV109	9PK5	K	CV283	6AL5	R	CV513	4J53	M
CV6	E1148	R	CV116	KR6/1	K	CV284	STV70/20	V	CV514	2J36	M
CV7	E1209	Y	CV118	SP61	R	CV285	VA35	H	CV515	6Y6G	R
CV8	E1248	R	CV121	V1920	U				CV516	3GP1	C
CV9	AL60	R	CV122	E1336	T	<b>300</b>			CV517	0Z4A	U
CV12	E1191	Y	CV123	E1330	Y	CV302	ECH22	R	CV518	AC/VP1	R
CV13	BT9B	Y	CV124	807	P	CV303	EF22	R	CV519	PEN4DD	R
CV15	E1266	T	CV127	3B/401J	T	CV304	EL22	R	CV520	VP2B	R
CV16	S25A	R	CV128	SU750	U	CV305	EF51	R	CV522	7B7	R
CV18	2C34	T	CV129	KRN2A	K	CV319	E1463	Y	CV523	12Y4	R
CV19	EHT1	U	CV130	KRN3	K	CV327	EF52	R	CV524	TT12	P
CV20	V1906	U	CV131	EF92	R	CV344	E1323	T	CV525	12A6	R
CV21	VP41	R	CV133	EC90	R	CV346	EZ22	U	CV526	12A6GT	R
CV22	BT45	Y	CV135	EY91	U	CV347	EBC21	R	CV527	DA60	T
CV23	E1287	M	CV136	EL91	R	CV358	EF37	R	CV528	VA61	H
CV24	HL41	R	CV138	EF91	R	CV367	1N21B	X	CV529	12AH7GT	R
CV25	4242A	T	CV140	EB91	R	CV369	1B35	S	CV530	GT1E	Y
CV26	813	P	CV150	PK150	K	CV379	ACT19	T	CV531	12C8	R
CV27	4357A	T	CV152	GU21	U	CV380	EF54	R	CV532	GU11	U
CV28	ACT9	T	CV154	E1419	T	CV385	CK502	R	CV533	CAT17	T
CV29	E1235	T	CV155	E1190	T	CV386	CK505	R	CV534	12J5	R
CV30	4270A	T	CV158	KR3	K	CV387	CK506	R	CV535	12J5GT	R
CV31	U20	U	CV161	VS26	H	CV391	5B/252M	P	CV536	4120/AA	V
CV32	866/A	U	CV171	W21 (4-pin)	R	CV394	EM34	I	CV537	12SA7	R
CV33	4077A	U	CV172	E1468	R				CV538	12SA7GT	R
CV34	MR10	U	CV175	XSG1.5	R	<b>400</b>			CV539	1B23	S
CV38	E1198	M	CV176	XP1.5	R	CV404	FVD7	U	CV540	12SC7	R
CV39	S22AF	K	CV178	3C27	T	CV405	GS47	H	CV541	8016	U
CV40	E1255	M	CV180	KR4	K	CV417	6AQ4	R	CV542	5J23	M
CV41	E1267	M	CV181	ECC32	R	CV423	25SN7GT	R	CV543	12SK7	R
CV42	E1256	M	CV185	PM202	R	CV424	QOE06/40	P	CV544	12SK7GT	R
CV44	E1155	P	CV187	U19	U	CV425	CG1-C	X	CV545	ACS/P3	P
CV45	S130P	V	CV188	E1436	V	CV426	EY51	U	CV546	12SQ7	R
CV46	8011	T	CV190	DLS10	S	CV428	5B/251M	P	CV547	12SQ7GT	R
CV49	HK54	T	CV191	E1494	M	CV430	29C1	R	CV548	LP2	R
CV51	E1320	I	CV192	E1481	M	CV431	85A1	V	CV549	25A6	R
CV52	E1231	T				CV433	BIC/1E	V	CV550	25A6GT	R
CV53	S26A	R	<b>200</b>			CV436	E1996	T	CV551	25L6G	R
CV55	E1190	T	CV200	MZ2-200	T	CV437	KT67	R	CV552	25L6	R
CV56	E1325	M	CV207	AC/P4	R	CV438	G120/1B	V	CV553	25L6GT	R
CV57	E1271	P	CV212	LS594	Y	CV443	CK505AX	P	CV554	D63	R
CV58	E1273	R	CV214	E1531	M	CV444	MZ1-75	T	CV555	25Z5	U
CV63	E1323	T	CV215	E1497	R	CV445	5J/180E	P	CV556	QP25	R
CV64	E1342	M	CV216	0D3/VR150	V	CV446	3Q/260E	T	CV557	D42	R
CV65	PEN25	R	CV217	KRN3	K	CV447	4078GA	U	CV558	25Z6	U
CV66	EC54	R	CV218	KRN3	K	CV450	EL38	R	CV559	25Z6GT	U
CV69	E1326	M	CV219	E1046	T	CV452	EBC90	R	CV560	TSP4	P
CV71	Osglim	V	CV225	ACT17	T	CV453	EK90	R	CV561	35L6	R
CV72	V1120	R	CV228	DV40B	K	CV454	EF93	R	CV562	35L6GT	R
CV73	V1120B	R	CV230	DV55	K	CV455	ECC81	R	CV563	DA30	T
CV74	V1922	U	CV234	DV56	K	CV491	ECC82	R	CV564	35Z3	U
CV75	4313C	Y	CV235	U23	U	CV492	ECC83	R	CV565	35Z3GT	U
CV76	E1359	M	CV237	KR6/2	K	CV493	EZ90	U	CV566	35Z5	U
CV78	E1474	T	CV238	KR6/3	K	CV496	CG14	H	CV568	35Z5GT	U
CV79	E1379	M	CV240	E1496	T				CV569	ECC35	R
CV80	VFO1	K	CV242	CMG25	H				CV570	3Q/191E	T
CV81	VFO8	K	CV243	4045A	P				CV571	50L6GT	R
CV82	S27A	R	CV244	4046A	P				CV572	6X5G	U
CV84	3B/102B	T	CV245	4328D	P	<b>500</b>			CV573	6X5	U
CV87	KRN2	K	CV248	GS16	H	CV500	6T7G	R	CV574	6X5GT	U
CV88	3A/148J	T	CV249	4019A	R	CV501	EBF32	R	CV575	5U4G	U
CV89	E1380	M	CV250	CMG25RS	H	CV502	LD210	R	CV576	1B26	S
CV90	E1368	T	CV257	E1457	T	CV503	5W4GT	U	CV577	1B36	S
CV92	4C27	T	CV259	E1495	T	CV504	6U5/6G5	I	CV578	6A8G	R
CV93	V625	T							CV579	6A8	R
CV94	DS103	R							CV580	6A8GT	R
									CV581	6C5G	R





CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort
CV880	7B5	R	CV958	32J	C	CV1088	832	P	CV1175	AP4	R
CV881	7B5LT	R	CV960	4607	C	CV1090	E1046	T	CV1176	AP4	R
CV882	7B6	R	CV995	6AJ5	R	CV1091	EF50	R	CV1178	DA30	R
CV883	7B8LM	R	CV996	EL32	R	CV1092	EA50	R	CV1179	ML4	R
CV884	7BP7	C	CV997	2J58	M	CV1095	954	R	CV1180	244V	R
CV885	7C5	R	CV998	2000T	T	CV1096	5B/502A	P	CV1181	AC2/Pen	R
CV886	7C5LT	R	CV999	3C22	T	CV1097	ECR60	C	CV1182	H42	R
CV887	7C6	R				CV1098	E960T	T	CV1183	W42	R
CV889	7D8	R				CV1099	X66	R	CV1186	6F6G	R
CV890	7E5	R							CV1187	D41	R
CV891	7E6	R							CV1188	N43	R
CV892	7E7	R							CV1189	AC6Pen	R
CV893	7F7	R							CV1190	ACP4	R
CV894	7G7	R							CV1191	KTZ41	R
CV895	7H7	R							CV1192	Z62	R
CV896	7K7	R							CV1193	X65	R
CV897	7J7	R							CV1194	20A1	R
CV898	7N7	R							CV1195	KTW63	R
CV899	7Q7	R							CV1196	AC5PenDD	R
									CV1197	RL18	R
									CV1198	ACP4	R
									CV1199	NS2	V
<b>900</b>											
CV900	7R7	R	CV1000	4D1	R						
CV901	7Y4	U	CV1018	215SG	R	<b>1100</b>					
CV902	7W7	R	CV1019	PM2	R	CV1100	KTW62	R			
CV904	892R	T	CV1020	220P	R	CV1101	MHLD6	R			
CV905	9HP7	C	CV1021	210LF	R	CV1102	BL63	R			
CV906	1602	T	CV1022	220PA	R	CV1103	Y63	I			
CV908	12A5	R	CV1023	230XP	R	CV1104	PT15	P			
CV909	12A7	R	CV1025	DET25	T	CV1105	ML6	R			
CV910	12A8GT	R	CV1027	210LF	R	CV1106	9D2	R			
CV911	12B8GT	R	CV1028	220VSG	R	CV1107	15D2	R			
CV913	12DP7	C	CV1030	4060A	T	CV1108	8D2	R			
CV914	12DP8	C	CV1031	SG250	P	CV1109	4D1	R			
CV915	12FP7	C	CV1032	220B	R	CV1110	S130	V			
CV916	12H6	R	CV1034	DET3	T	CV1111	R11	U			
CV917	12J7GT	R	CV1035	QP21	R	CV1113	U17	U	<b>1200</b>		
CV918	12K7GT	R	CV1037	MH4	R	CV1114	E1024	P	CV1200	202	V
CV919	12SF5	R	CV1038	MHL4	R	CV1116	V872	R	CV1201	4317	V
CV920	12SF5GT	R	CV1039	R3/UU5	U	CV1117	41MTL	R	CV1202	304	V
CV921	12SF7	R	CV1040	PX25	R	CV1119	DDL4	R	CV1206	DA60	T
CV922	12SH7	R	CV1041	PM12M	R	CV1120	SU2150A	U	CV1207	ES450	T
CV924	12SL7GT	R	CV1042	210LF	R	CV1121	VGT121	Y	CV1208	PM256	R
CV925	12SN7GT	R	CV1043	210PG	R	CV1122	41MXP	R	CV1219	MZ1-100	T
CV927	12Z3	U	CV1044	210DDT	R	CV1123	EF8	R	CV1220	4033A	T
CV929	13SPA	R	CV1046	PT25H	R	CV1124	MS/Pen	R	CV1221	PZ1-75	P
CV930	14F7	R	CV1047	TZ05-20	T	CV1125	MS/Pen V	R	CV1222	ACT6	T
CV931	15	R	CV1049	210SPT	R	CV1127	Pen46	R	CV1223	DET5	T
CV932	2C40	R	CV1050	HL2	R	CV1128	NGT2	Y	CV1234	VLS532	T
CV933	4C30	T	CV1051	PEN220A	R	CV1128	VGT128	Y	CV1235	TY1-50	T
CV934	4B30	U	CV1052	EL32	R	CV1129	MS/Pen	R	CV1237	PM24D	R
CV936	24A	R	CV1053	EF39	R	CV1130	HL23	R	CV1238	PM24D	R
CV937	25A7GT	R	CV1054	EB34	R	CV1134	HVR2	U	CV1240	PZ1-35	P
CV938	25AC5GT	R	CV1055	EBC33	R	CV1136	EF54	R	CV1246	PM202	R
CV939	25B6G	R	CV1056	EF36	R	CV1137	EC52	R	CV1250	4279A	T
CV940	25B8GT	R	CV1057	EK32	R	CV1141	NGT1	Y	CV1252	4212E	T
CV941	HK24	T	CV1058	E960	T	CV1142	NGT3	Y	CV1253	E1161	T
CV942	25Y5	U	CV1059	955	R	CV1143	NGT4	Y	CV1256	E1232	T
CV943	26	R	CV1060	807	P	CV1144	NGT5	Y	CV1262	GU1	U
CV944	27	R	CV1061	2C34	T	CV1145	NGT6	Y	CV1263	RG1-125	U
CV945	28D7	R	CV1062	TY1-50	T	CV1146	NGT6A	Y	CV1264	U18	U
CV946	28D7GT	R	CV1064	U12/14	U	CV1147	NGT7	Y	CV1266	U15	U
CV947	31	R	CV1065	SP61	R	CV1148	NGT8	Y	CV1267	U4020	U
CV948	32L7GT	R	CV1066	P61	R	CV1149	NGT9	Y	CV1268	5Y3G	U
CV949	33	R	CV1067	6J5	R	CV1151	PM3	R	CV1280	6L7	R
CV950	4053	C	CV1070	7475	V	CV1152	PM4DX	R	CV1281	KTW61	R
CV951	32A	C	CV1071	5U4	U	CV1153	PM254	R	CV1282	AC/S2Pen	R
CV953	32G	C	CV1072	GU50	U	CV1154	PM4DX	R	CV1283	SP4	R
CV955	4409	C	CV1073	H63	R	CV1156	DEQ	R	CV1285	6N7	R
CV956	4602	C	CV1074	6J7	R	CV1158	PM14	R	CV1286	6L6	R
CV957	32E	C	CV1075	KT66	R	CV1159	PM14	R	CV1287	25L6G	R
			CV1076	TZ40	T	CV1160	104V	R	CV1288	TY1/50	T
			CV1077	EM31	I	CV1161	104V	R	CV1296	MU14	U
			CV1078	2B36	R	CV1163	PD22A	R			
			CV1079	KT8	P	CV1164	ACSG	R			
			CV1080	4307A/AF	P	CV1165	VMS4	R			
			CV1081	4052A	P	CV1166	P220	R			
			CV1082	220TH	R	CV1167	PM24A	R			
			CV1083	210VPT	R	CV1168	PX4	R			
			CV1084	4407	C	CV1169	VMP4G	R			
			CV1085	4605	C	CV1170	D41	R			
			CV1086	4502	C	CV1171	AT4	R			
			CV1087	14L/4410	C	CV1174	AC/Pen	R			

CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	
CV1307	PM1LF	R	CV1415	4011A	T	<b>1600</b>			CV1763	6J4	R	
CV1308	TDD2A	R	CV1419	11D3	R				CV1764	CE2	H	
CV1311	4022AR	R	CV1420	4078A	U		CV1600	CAT1	T	CV1765	3C31	Y
CV1312	220RC	R	CV1422	3D/100A	T		CV1601	CAR1	U	CV1766	CX25	H
CV1313	220LF	R	CV1424	20A1	R		CV1602	CAR4	U	CV1769	2A6	R
CV1316	4021B	R	CV1425	7D5	R		CV1604	3Q/211E	T	CV1770	7A4	R
CV1318	VS24	R	CV1426	EK2	R		CV1606	CAT2	T	CV1771	39/44	R
CV1319	PM12V	R	CV1427	EF9	R		CV1607	OC2.5	T	CV1772	47	R
CV1320	SP2	R	CV1428	EBC3	R		CV1610	MT4	T	CV1773	82	U
CV1321	9D2	R	CV1429	EL2	R		CV1611	MR4	U	CV1774	12A	R
CV1322	SP210	R	CV1430	ACSP3	R		CV1614	ES1500	T	CV1775	36	R
CV1323	VP2	R	CV1431	ACT16	T		CV1618	ES250M	T	CV1776	6D7	R
CV1324	SP4	R	CV1432	CMG8	H		CV1619	4212D	T	CV1777	7C7	R
CV1325	42MPT	R	CV1433	EC31	R		CV1620	DET6	T	CV1778	101D	T
CV1326	AC4Pen	R	CV1434	EM4	I	CV1628	GU8	U	CV1779	102D	T	
CV1327	Pen1340	R	CV1435	GU20	U	CV1633	3V4	R	CV1780	Twin30	T	
CV1328	7D8	R	CV1438	6AG6G	R	CV1640	4102D	R	CV1781	310B	T	
CV1329	PenA4	R	CV1439	MT9F	T	CV1641	4102E	R	CV1782	340A	T	
CV1330	TSP4	R	CV1440	MT9L	T	CV1642	DER	R	CV1783	9JP1	C	
CV1331	VP23	R	CV1441	MT12A	T	CV1643	E132	R	CV1784	6AK7	R	
CV1332	VP21	R	CV1442	MT14	T	CV1645	E133	R	CV1785	1N26	X	
CV1333	220IPT	R	CV1443	U10	U	CV1650	LS5A	R	CV1786	2K33	K	
CV1334	KT24	R	CV1444	42SPT	R	CV1651	G445B	R	CV1787	4C35	Y	
CV1335	SP41	R	CV1445	4012A	T	CV1653	4020A	R	CV1788	3J31.	M	
CV1336	SP42	R	CV1446	4017B	U	CV1655	4019B	R	CV1789	5FP7	C	
CV1337	116Pen	R	CV1447	4030C	T	CV1656	LS8	R	CV1790	724	U	
CV1338	220VPT	R	CV1448	4043C	T	CV1657	4020B	R	CV1791	5JP1	C	
CV1340	KT44	R	CV1449	4064B	U	CV1658	LS9B	R	CV1793	724B	S	
CV1341	MSP4	R	CV1450	4228A	T	CV1659	4022B	R	CV1794	959	R	
CV1342	QP25	R	CV1451	4247A	U	CV1660	LS7	R	CV1795	723A/V	K	
CV1343	KTZ73	R	CV1452	4300A	T	CV1671	4021A	R	CV1796	DW4/350	U	
CV1344	TP22	R	CV1454	225DU	U	CV1672	7D6	R	CV1797	4081A	T	
CV1345	TP25	R	CV1456	Pen383	R	CV1676	LS8A	R	CV1798	2051	Y	
CV1347	ECH35	R	CV1457	VP133	R	CV1677	AC/S2	R	CV1799	350B	P	
CV1352	EM80	I	CV1458	41MP	R	CV1683	AC/PEN	R				
CV1356	U22	U	CV1459	MU2	U	CV1691	DDL4	R				
CV1359	ME41	I	CV1460	X41	R	CV1694	4104D	R				
CV1360	AT26	T	CV1462	A915	R	CV1695	DH30	R	<b>1800</b>			
CV1361	MZ05-20	T	CV1463	CBL31	R	CV1696	B21	R	CV1800	1A7G	R	
CV1363	DET16	T	CV1466	P57	P	CV1697	X41	R	CV1801	GS11B	H	
CV1364	807	P	CV1471	4049A	U	CV1698	A819	R	CV1802	1A7GT	R	
CV1365	4282B	P	CV1472	CMG25	H	CV1699	SP41	R	CV1803	1C5G	R	
CV1366	V248A	P	CV1473	CMG22	H				CV1805	1C5GT	R	
CV1367	V245	P	CV1474	CE20	H				CV1806	1D5GT	R	
CV1369	4061A	P				<b>1700</b>			CV1807	2J31	M	
CV1370	PV1-35	P				CV1700	SP41	R	CV1808	2J32	M	
CV1371	PZ1-75	P	<b>1500</b>			CV1701	XLO	R	CV1809	2J33	M	
CV1372	4069A	P				CV1702	XP	R	CV1810	2J34	M	
CV1373	PY3-600	P	CV1502	KT32	R	CV1715	EBC3	R	CV1811	1D8GT	R	
CV1374	807	P	CV1503	KT33C	R	CV1718	ACTP	R	CV1812	1E7G	R	
CV1375	EF85	R	CV1504	V1901	U	CV1720	XL 1.5	R	CV1813	2DP1	C	
CV1376	EF80	R	CV1505	MH41	R	CV1721	XP 1.5	R	CV1814	5LP1	C	
CV1377	GZ34	U	CV1508	V1913	U	CV1722	A901	R	CV1815	6Q5G	Y	
			CV1511	4608	C	CV1727	Z22	R	CV1816	6Y3G	U	
			CV1515	MX1	C	CV1732	ML4	R	CV1817	1G4GT	R	
<b>1400</b>			CV1518	O9J	C	CV1733	4018AG	C	CV1818	1H5G	R	
CV1400	C1C	V	CV1535	EZ80	U	CV1734	3Q/213E	T	CV1819	6P5GT	R	
CV1401	CL33	R	CV1567	2C25	T	CV1734	3Q/213E	T	CV1820	1H5GT	R	
CV1402	CY31	U	CV1568	4062A	T	CV1741	EL34	R	CV1821	1N5G	R	
CV1403	DD41	R	CV1569	R3	U	CV1750	33A/100A	T	CV1823	1N5GT	R	
CV1404	EF36	R	CV1572	807	P	CV1751	34	R	CV1824	1Q5G	R	
CV1405	E1199	R	CV1573	4074B	T	CV1752	35/51	R	CV1825	KT45	R	
CV1406	HL41	R	CV1574	SP41	R	CV1753	35A5LT	R	CV1826	1Q5GT	R	
CV1407	Pen45	R	CV1576	KT38	R	CV1754	35TG	T	CV1827	M510	M	
CV1408	P41	R	CV1577	E1143	R	CV1755	1626	T	CV1828	M512	M	
CV1409	SP2	R	CV1578	EF50	R	CV1756	1629	I	CV1829	1T5GT	R	
CV1410	TH2	R	CV1579	954	R	CV1757	9001	R	CV1830	1B3GT	U	
CV1411	TH41	R	CV1582	VS110A	V	CV1758	1L4	R	CV1831	2A3	R	
CV1412	TV4	I	CV1585	VGT121A	Y	CV1759	2C26A	R	CV1832	0A2	V	
CV1413	UU6	U	CV1587	4203	C	CV1760	2J26	M	CV1833	0B2	V	
CV1414	VP41	R	CV1588	23U	C	CV1761	3FP7	C	CV1834	2A5	R	
			CV1596	O9U	C	CV1762	6AK6	R	CV1835	3B28	U	

CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort
CV1836	4B26	U	CV1920	6LD20	R	CV2159	BR153	T	CV2549	85	R
CV1837	2B7	R	CV1921	U24	U	CV2162	12L01A	C	CV2552	100TH	T
CV1838	QQZ04-15	P	CV1924	TY2-125	T	CV2164	K302	K	CV2553	101F	T
CV1839	6F13	R	CV1926	6G6G	R	CV2174	G240/2D	Y	CV2554	111A	V
CV1841	BS52	S	CV1927	B142	T	CV2175	DG7/5	C	CV2556	117L7GT	R
CV1842	2G	V	CV1928	12BA6	R	CV2179	E2134	P	CV2557	117N7GT	R
CV1844	CS3-V	X	CV1929	6H6G	R	CV2189	V240C/2K	K	CV2558	117Z6GT	U
CV1846	5T4	U	CV1930	6H6	R	CV2190	V233A/1K	K	CV2560	121A	V
CV1847	19H4	R	CV1931	6H6GT	R	CV2191	DG13/2	C	CV2561	122A	V
CV1848	20A2	Y	CV1932	6J5G	R	CV2192	9MW5AX	C	CV2562	164V	R
CV1849	5W4	U	CV1933	6J5	R	CV2193	89D	C	CV2563	204A	T
CV1850	6L19	R	CV1934	6J5GT	R	CV2194	G400/1K	V	CV2565	2050	Y
CV1851	5X4G	U	CV1935	6J7G	R				CV2566	205E	T
CV1852	5X4	U	CV1936	6J7	R				CV2567	205F	T
CV1853	6P25	R	CV1937	6J7GT	R				CV2569	210DET	R
CV1854	5Y3G	U	CV1938	6K6G	R	<b>2200</b>			CV2570	210HF	R
CV1855	UU9	U	CV1940	6K6GT	R	CV2208	G50/1G	V	CV2571	210HL	R
CV1856	5Y3GT	U	CV1941	6K7G	R	CV2212	13D3	R	CV2574	210VPA	R
CV1857	5Y4G	U	CV1942	6K7	R	CV2214	3B/240M	T	CV2576	4C21	T
CV1860	30D5	C	CV1943	6K7GT	R	CV2216	30E8/P1	C	CV2577	212E	T
CV1861	5Z3	U	CV1944	6K8G	R	CV2217	6K25	Y	CV2579	218	U
CV1862	6AQ5	R	CV1945	6K8	R	CV2218	R17	U	CV2580	220C	T
CV1863	5Z4G	U	CV1946	6K8GT	R	CV2224	G1/370K	Y	CV2581	220/OT	R
CV1864	5Z4	U	CV1947	6L6G	R	CV2235	R18	U	CV2582	220VS	R
CV1865	EC81	R	CV1948	6L6	R	CV2237	1AD4	R	CV2584	231D	T
CV1866	M503	M	CV1950	6L7G	R				CV2586	240B	R
CV1867	6A6	R	CV1951	6L7	R				CV2587	242C	T
CV1868	5T01A	C	CV1953	6N6G	R	<b>2300</b>			CV2588	244A	T
CV1869	12T01A	C	CV1954	6N6	R	CV2370	DL92	R	CV2589	RK36	T
CV1870	6A7	R	CV1956	6N7G	R				CV2591	RK38	T
CV1871	K307	K	CV1957	6N7	R				CV2592	256B	Y
CV1873	6AB7	R	CV1958	6N7GT	R				CV2593	257A	T
CV1876	6AC7	R	CV1959	50C5	R	<b>2400</b>			CV2594	258B	U
CV1878	6AD7G	R	CV1960	6R6G	R	CV2492	E88CC	R	CV2595	259A	P
CV1880	7MB1A	C	CV1961	12AU6	R				CV2597	262A/V	T
CV1882	6AG7	R	CV1962	6R7G	R				CV2598	264A	R
CV1885	6B5	R	CV1963	6R7	R				CV2599	264C	T
CV1886	EC80	R	CV1964	6R7GT	R	<b>2500</b>					
CV1887	6B6G	R	CV1966	6SA7	R	CV2500	35Z4GT	U	<b>2600</b>		
CV1889	TYS4/500	T	CV1967	6SA7GT	R	CV2501	40	R	CV2600	267B	U
CV1891	6B7	R	CV1969	6SC7	R	CV2502	41FP	R	CV2601	271A	T
CV1892	2K28	K	CV1970	6SC7GT	R	CV2503	41MH	R	CV2602	272A	T
CV1893	6B8G	R	CV1972	6SF5	R	CV2504	41MHL	R	CV2603	274A	U
CV1894	6B8	R	CV1973	6SF5GT	R	CV2505	41MPG	R	CV2604	275A	T
CV1895	STV70/60	V	CV1974	6S7G	R	CV2506	41MPT	R	CV2605	282A	P
CV1896	6C8G	R	CV1975	6S7	R	CV2508	41STH	R	CV2608	300A	R
CV1897	4J34	M	CV1977	UL41	R	CV2511	420T	R	CV2609	300B	T
CV1898	4J35	M	CV1978	6SG7	R	CV2512	420TDD	R	CV2610	303	V
CV1899	6L18	R	CV1981	6SK7	R	CV2514	43	R	CV2611	304TH	T
			CV1982	6SK7GT	R	CV2524	6AU6	R	CV2612	RK75	P
<b>1900</b>			CV1985	6SL7GT	R	CV2526	6AV6	R	CV2613	310A	P
CV1900	6D6	R	CV1988	6SN7GT	R	CV2528	45DS	C	CV2614	311A	P
CV1901	6F11	R	CV1989	SD6	U	CV2529	45IU	U	CV2615	313C	Y
CV1902	6D8G	R	CV1990	6SQ7	R	CV2530	45Z5GT	U	CV2616	314A	U
CV1903	GL592	T	CV1991	6SQ7GT	R	CV2531	46	R	CV2617	323A	Y
CV1904	CAA322	R	CV1993	6SS7	R	CV2532	49	R	CV2618	327A	T
CV1905	4-65A	P	CV1995	6ST7G	R	CV2533	50	R	CV2619	328A	P
CV1906	6E5	I	CV1996	6ST7	R	CV2534	50L6G	R	CV2620	329A	P
CV1907	CS2-C	X	CV1999	1V	U	CV2535	53	R	CV2621	330B	C
CV1908	6F5G	R				CV2536	53A	T	CV2622	331A	T
CV1909	6F5	R	<b>2100</b>			CV2537	55	R	CV2623	332A	P
CV1910	6F5GT	R	CV2106	DL66	R	CV2538	59	R	CV2624	337A	P
CV1911	6F6G	R	CV2107	DF66	R	CV2539	61P	T	CV2625	338A	Y
CV1912	6F6	R	CV2108	9M06A	C	CV2540	63D	C	CV2626	346A	Y
CV1913	GS44X	H	CV2115	1B3	U	CV2541	71A	R	CV2627	349A	P
CV1914	4J31	M	CV2127	6CH6	R	CV2543	73	R	CV2628	349B	P
CV1915	6F7	R	CV2128	ECH81	R	CV2544	78	R	CV2629	350A	P
CV1916	4J33	M	CV2129	5763	P	CV2545	79	R	CV2630	351A	U
CV1917	6F8G	R	CV2135	6BR7	R	CV2546	81	U	CV2631	352A	R
CV1919	6F14	R	CV2136	6BW6	R	CV2547	83V	U	CV2632	354A	Y
						CV2548	84	U			

CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort		
CV2633	362A	P	CV2728	29D	C	CV2870	CC3D	R	<b>3500</b>	CV3500	HL210	R	
CV2634	367	U	CV2731	63DS	C	CV2871	CAT6	T		CV3501	HL610	R	
CV2636	375A	U	CV2735	4015A	T	CV2872	CAT9	T		CV3502	HL1320	R	
CV2637	388A	T	CV2743	4033AF	T	CV2874	CK1005	U		CV3503	HLDD1320	R	
CV2638	393A	Y	CV2745	4050AG	C	CV2875	CL4	R		CV3505	HY114B	R	
CV2639	394A	Y	CV2746	4064A	U	CV2878	CRT1	C		CV3506	HY615	R	
CV2640	405BU	U	CV2747	6U5G	I	CV2879	CRT2	C		CV3513	2J32	M	
CV2642	417A	K	CV2749	4081	C	CV2880	CRT 4/1	C		CV3515	KB2	R	
CV2643	2C40	R	CV2751	4096AB	C	CV2887	DAC1	R		CV3516	KK2	R	
CV2644	460BU	U	CV2755	4251AX	T	CV2888	ECH42	R		CV3519	KT30	R	
CV2645	506BU	U	CV2756	4260A	P	CV2889	DD620	R		CV3520	KT31	R	
CV2653	714AY	M	CV2759	4304	T	CV2890	DDT(met)	R		CV3523	6146	P	
CV2654	715A	P	CV2760	4304B	T	CV2891	DE5	R		CV3527	KTW73M	R	
CV2655	715B	P	CV2761	4304BB	T	CV2892	DE5B	R		CV3529	KTZ41	R	
CV2656	724A	S	CV2764	4606	C	CV2895	DET1SW	T		CV3530	KTZ73	R	
CV2657	800	T	CV2765	4673	P	CV2899	DET9	T		CV3531	L2	R	
CV2658	806	T	CV2766	4687	V	<b>2900</b>				CV3532	L21	R	
CV2660	809	T	CV2767	4690	Y		CV2900	DET10		T	CV3533	L22DD	R
CV2661	812	T	CV2768	8003	T		CV2901	EF86		R	CV3534	L30	R
CV2663	815	P	CV2769	9006	R		CV2907	DF1		R	CV3537	L600	T
CV2664	822	T	CV2773	68503mod	U		CV2909	DH73M		R	CV3538	L610	R
CV2665	825	R	CV2774	68504	U		CV2910	DK1		R	CV3541	LS6A	R
CV2666	829B	P	CV2775	68506	U		CV2911	DL2		R	CV3542	LS532	R
CV2668	846	T	CV2776	68510mod	U		CV2912	DL63		R	CV3546	MHD4	R
CV2669	849	T	CV2777	4B28	U		CV2920	E1148(US)		T	CV3552	MPT4K	R
CV2670	849H	T	CV2778	2J21A	M		CV2925	EBF2	R	CV3553	MS4B	R	
CV2671	851	T	CV2779	859	R		CV2926	EBL31	R	CV3554	MPT42	R	
CV2672	852	T	CV2786	26J	C		CV2929	ECH3	R	CV3557	MR300	Y	
CV2673	857B	U	CV2789	ZP455	C		CV2930	ECH33	R	CV3558	MR300/E	Y	
CV2674	863	T	<b>2800</b>				CV2936	4B22	U	CV3561	MS/PEN	R	
CV2675	864	T		CV2800	A40		R	CV2938	EL33	R	CV3562	MSP41	R
CV2676	865	P		CV2801	A40/N3		C	CV2940	EL36	R	CV3563	MT11SW	T
CV2679	866JR	U		CV2803	A915met		R	CV2941	EL50	R	CV3564	MT12	T
CV2680	868	H		CV2804	A915Amet		R	CV2944	ESU1500	U	CV3565	ME41	I
CV2683	878/A	U		CV2805	A924		R	CV2945	ESU75	U	CV3567	MU1	U
CV2685	880	T		CV2806	AC/2HL		R	CV2946	ESU150	U	CV3570	MU4250	U
CV2686	889	T		CV2807	AC/2HLmet		R	CV2947	ESU300	U	CV3571	MVSPen	R
CV2687	889R	T		CV2808	AC/2Pen		R	CV2949	F123A	T	CV3572	MVSPenB	R
CV2688	891R	T		CV2809	AC/5Pen		R	CV2950	F129B	T	CV3573	MZ05-20	T
CV2689	893R	T		CV2811	AC/HL		R	CV2954	FC2A	R	CV3574	MZ1-76	T
CV2690	904V	R		CV2812	AC/HLmet		R	CV2955	FC4	R	CV3576	15A2	R
CV2691	913	C		CV2813	AC/HLDD	R	CV2956	15D1	R	CV3577	PM22D	R	
CV2692	918	H		CV2815	AC/P	R	CV2957	FG17	Y	CV3578	PT5E	P	
CV2693	929	H		CV2817	6L6GA	R	CV2958	FG27A	Y	CV3579	PT5E	P	
CV2694	930	H		CV2818	AC/PT8	P	CV2959	3B21	U	CV3581	V1501	T	
CV2695	931	H		CV2819	AC/S	R	CV2960	FP54	P	CV3582	VP4B	R	
CV2696	931A	H		CV2820	AC/SP1	R	CV2966	EY86	U	CV3583	5HP1	C	
CV2697	935	H		CV2822	AC/SG	R	CV2967	8020	U	CV3584	21/2	V	
<b>2700</b>				CV2823	AC/SP3	R	CV2969	GT1	Y	CV3587	705A	U	
	CV2700	957		R	CV2824	AC/S Pen	R	CV2973	GU7	U	CV3588	706A	M
	CV2701	958A		R	CV2825	ACT6	T	CV2975	EL84	R	CV3589	707A	K
	CV2704	7E5/1201		R	CV2827	ACT10	T	CV2977	H2	R	CV3590	708A	R
	CV2705	1203		R	CV2829	293A	R	CV2978	H12	R	CV3593	713A	R
	CV2706	7C4/1203A		R	CV2830	AC/TH1	R	CV2979	H30	R	CV3594	717A	R
	CV2707	1231	R	CV2832	AC/VP2	R	CV2981	H410	R	CV3595	721A	S	
	CV2709	1R4/1294	R	CV2833	AF3	R	CV2982	H610	R	CV3596	722A	Y	
	CV2710	3D6.1299	R	CV2834	AGT1	Y	CV2983	DL94	R	CV3597	726B	K	
	CV2711	1500T	T	CV2836	APP4G	R	CV2984	6080	R	CV3599	829A	P	
	CV2712	1609	R	CV2837	APP4G*	R	CV2985	HD24	R	<b>3600</b>	CV3600	902	C
	CV2713	1610	P	CV2839	AR300	T	CV2986	HD203A	T		CV3601	7193	R
	CV2714	1614	P	CV2845	LS5	R	CV2987	HF100	T		CV3607	NP90	Y
	CV2715	1630	R	CV2846	LS5B	R	CV2988	HF200	T		CV3620	P220	R
	CV2716	1655	R	CV2860	AZ1	U	CV2989	HK354E	T		CV3621	P410	R
	CV2717	1729	U	CV2861	AZ2	U	CV2991	HL2 met	R		CV3622	P610	R
	CV2718	1876	U	CV2862	AZ31	U	CV2994	HL23	R		CV3623	PA40	R
	CV2719	1924	C	CV2864	B21	R	CV2995	HL23DD	R		CV3624	PE7B	H
	CV2723	869B	U	CV2865	B30	R	CV2996	HL41DD	R		CV3625	PE8	H
	CV2725	O9	C	CV2869	3FP7	C	CV2998	HL133	R				
	CV2727	26D	C				CV2999	HL133DD	R				

CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort	CV No.	Comp.	Sort
CV3626	PenB4	R	CV3756	U600	U	CV3848	RS260	T	CV4023	6AU6WA	R
CV3630	Pen44	R	CV3758	UR3C	U	CV3849	RS217	T	CV4024	6060	R
CV3631	Pen45DD	R	CV3759	UU4	U	CV3850	RS207	T	CV4025	6058	R
CV3633	Pen231	R	CV3761	UU7	U	CV3851	RS253	T	CV4026	5R4WGA	U
CV3634	Pen428	H	CV3762	V120	R	CV3852	RS285	T	CV4027	5Y3WGTA	U
CV3635	Pen1340	R	CV3763	V123B	Y	CV3853	RS15	T	CV4033	6060~	R
CV3636	Pen1346	R	CV3765	V226	R	CV3854	RS47	T	CV4034	6067~	R
CV3638	PenA4	R	CV3766	V312	R	CV3856	RV300	T	CV4035	6057~	R
CV3640	PJ8	R	CV3767	V339	R	CV3857	RS283A	T	CV4037	5750~	R
CV3641	PM1HL	R	CV3768	V503	R	CV3858	RS18	T	CV4039	6062	P
CV3642	PM1LF	R	CV3769	V877	R	CV3859	RV271A	T	CV4043	6061	P
CV3643	PM2A	R	CV3770	V955/V	U	CV3860	RS282	T	CV4045	6061~	P
CV3645	PM2DX	R	CV3772	V970	R	CV3861	RS281	P	CV4049	5726~	R
CV3647	PM22A	R	CV3773	V1010	C	CV3862	RS55	T	CV4055	6132	R
CV3648	PM24E	R	CV3774	V1020	C	CV3863	RS289	P	CV4056	6132~	R
CV3649	PM22	R	CV3775	V1021	C	CV3864	RS389	P	CV4063	6516	R
CV3652	PT5	P	CV3776	V1023	C	CV3865	RS288	P	CV4068	6158	R
CV3653	PT6	P	CV3777	V1029	C	CV3867	RG44	U	CV4069	6158~	R
CV3654	PT11	P	CV3778	V1105	R	CV3868	RSQ15/40	Y	~ Signifies flying-lead base		
CV3656	PT425	R	CV3784	VLS452	R	CV3869	RSQ15/5	Y	<b>5000</b>		
CV3657	PV05-15	P	CV3787	VP2	R	CV3870	RGQ10/4d	U	CV5041	6CL6	R
CV3658	PV1-35	P	CV3788	VP4(met)	R	CV3871	RS254	T	CV5042	12BH7	R
CV3667	RG1-250	U	CV3790	VP13C	R	CV3872	RS255	T	CV5055	EM81	I
CV3670	RG4-1000	U	CV3792	VP23	R	CV3873	RS566	P	CV5065	ECF82	R
CV3672	RK28	P	CV3793	VP23	R	CV3881	EB41	R	CV5072	EZ81	U
CV3673	RK28A	P	CV3793	VP24(met)	R	CV3882	EBC41	R	CV5073	6AM4	R
CV3674	RK31	T	CV3794	VP210	R	CV3883	EAF42	R	CV5074	6AF4A	R
CV3677	RK47	P	CV3795	VP215	R	CV3884	ECC40	R	CV5077	PLB1	R
CV3679	RK49	P	CV3796	VP1322	R	CV3885	EF40	R	CV5086	6BS7	R
CV3680	RK60	U	CV3797	V944A	H	CV3886	EF41	R	CV5121	6870	R
CV3681	RK62	Y	CV3798	0A3/VR75	V	CV3887	EF42	R	CV5144	PCL83	R
CV3683	RKR47	P	CV3799	OB3/VR90	V	CV3888	ECH42	R	CV5156	EF89	R
CV3688	2C33	U	<b>3800</b>			CV3889	EL41	R	CV5192	PCC84	R
CV3690	RZ1-150	U	CV3800	VS2	R	CV3890	EL42	R	CV5215	ECF80	R
CV3691	S23	R	CV3802	VS24	R	CV3891	EZ40	U	CV5220	7D11	R
CV3692	S23(met)	R	CV3803	VS24K(met)	R	CV3892	AZ41	U	CV5264	ECC804	R
CV3694	S130A	R	CV3804	W21 7-pin	R	<b>3900</b>			CV5281	ECC84	R
CV3695	S215	R	CV3805	W30K	R	CV3908	6BH6	R	CV5287	6U4GT	R
CV3696	S215A	R	CV3806	W31	R	CV3909	6BJ6	R	CV5307	807	P
CV3698	S610	R	CV3810	WD30	R	CV3912	1U5	R	CV5317	12AH8	R
<b>3700</b>			CV3812	1P31	H	CV3927	12K8GT	R	CV5331	ECC189	R
CV3702	SG215	R	CV3813	8A	V	CV3936	14S7	R	CV5358	ECC88	R
CV3703	SP4B	R	CV3816	X21	R	CV3937	14R7	R	CV5365	6BQ7A	R
CV3704	SP13C	R	CV3817	X21(met)	R	CV3998	6688	R	CV5409	9D7	R
CV3709	STV150/200	V	CV3818	X22	R	<b>4000</b>			CV5427	R19	U
CV3712	STV280/80A	V	CV3819	X24	R	CV4001	6063~	U	CV5434	EM84	I
CV3715	SW5	P	CV3820	X24(met)	R	CV4002	6064~	R	CV5810	EF184	R
CV3719	SW7	T	CV3821	X31	R	CV4003	6067	R	CV5831	EF183	R
CV3721	T4D	R	CV3822	X31(met)	R	CV4004	6057	R	<b>Key to Valve Sort</b>		
CV3722	T20	T	CV3823	X41(met)	R	CV4005	6057	R	<i>C</i> Cathode ray tube		
CV3723	T41	Y	CV3825	X63	R	CV4006	6063	U	<i>H</i> Photo-tube		
CV3724	T200	T	CV3826	X65	R	CV4007	6059	R	<i>I</i> Indicator		
CV3726	TDD2A	R	CV3827	12C8GT	R	CV4008	5726	R	<i>K</i> Velocity-modulated tube (klystron, etc.)		
CV3727	TDD4	R	CV3829	293A	R	CV4009	5719	R	<i>M</i> Magnetron		
CV3730	TMC15B	R	CV3830	XH 1.5	R	CV4010	6AK5W	R	<i>P</i> Transmitting tetrode or pentode		
CV3731	TMC16B	R	CV3831	XL2	R	CV4011	6AS6W	R	<i>R</i> Receiving type		
CV3732	TMC20B	U	CV3832	XP2	R	CV4012	5750	R	<i>S</i> Switch		
CV3735	TP26	R	CV3833	XSG 2.0	R	CV4013	5670	R	<i>T</i> Transmitting triode		
CV3739	TX3-200	T	CV3834	XW2	R	CV4014	6064	R	<i>U</i> Rectifier		
CV3740	TX5-400	T	CV3836	Z21	R	CV4015	6065	R	<i>V</i> Regulator & control		
CV3741	TZ2-300	T	CV3837	Z21 7-pin	R	CV4016	5814	R	<i>X</i> Crystal		
CV3742	TZ20	T	CV3838	Z62	R	CV4017	5751	R	<i>Y</i> Thyatron		
CV3743	U5	U	CV3839	Z66	R	CV4018	2D21W	Y			
CV3744	U6	U	CV3842	5J29	M	CV4019	6AQ5W	R			
CV3747	U15	U	CV3843	5J30	M	CV4021	3B24WA	U			
CV3750	U22	U	CV3844	5J31	M	CV4022	6135	R			
CV3751	U21	U	CV3845	RS366	T						
CV3752	U30	U	CV3846	RS261	T						
CV3753	U31	U	CV3847	RS250	T						