Which Those CV Valves?

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The majority of people are likely to have CV lettered/numbered valves in some of their equipment but unless one is an avid collector they may not be of any significance.

A little history.

The CV (Common Valve) was introduced during WW 2 as a means of standardisation between the three principal fighting services, Army, RN and RAF. Prior to the war each service had it's own preferred range of valves and each adopted a method of classification whereby the original function of the valve was easily determined.

Army valves were all prefixed A – Army, followed by the function e.g. R – receiving and then by the type e.g. P – pentode. A sequential number followed which uniquely identified each valve e.g. 35. Thus an ARP35 was based on the commercial EF50.

The RN likewise prefixed their valves N – Navy. Whereas the RAF chose V as the initial letter –Valve. In RAF nomenclature an EF50 was a VR91.

When the CV system started it commenced not unexpectedly with CV1 which was satisfied by a commercial DC51 – a 1.5V triode on a B4 base supposedly supplied by Mullard. This was almost certainly an experimental number and probably did not proceed further. The author is not aware of any 1.5V filament triodes on a B4 base.

The early CV numbers did include a number of experimental devices, CVs 3, 4, 7, and 8 having Marconi-Osram (MOV) numbers E1228, E1229, E1209, and E1248 respectively.

A perusal of a CV equivalents list suggests that many of the old individual service numbers were simply transposed. For example, RAF receiving types VRxx and VRxxx appear in the CV list as CV10xx and CV1xxx.

An interesting case is the VR135, the MOV DET20 widely by the RAF as a VHF oscillator and also by the Army in the WS 19, B set.

It is interesting because it appears not only as a CV1135 but also as a CV6 suggesting that the specification for the "common" version was in some way modified from the original RAF specification. There are a number of examples of this type.

Also as requirements became more demanding and manufacturing techniques improved preferred ranges of vales were introduced. The immediate post war B7G valves, CV 131 (EF92), CV 138 (EF91) etc were superseded in the late 1950s by the special quality versions CV 4015, CV 4014. The CV4000 types were often substituted for the earlier types during servicing.

CV designation continued throughout the valve era and into transistors and diodes but was not used for integrated circuits which were given the designation CN – Common Network.

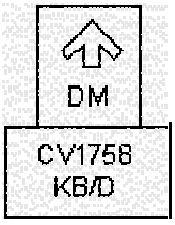
With semiconductors the preferred range is in the CV7000 series.

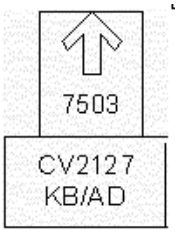
Although introduced early in the war the tri-service scheme continued for some time and it is unlikely that CV devices were in widespread use much before 1944.

The CV scheme introduced not only a common valve but also a far more information about each valve.

The letters and numbers on CV valves

Shown below are the identifications on 2 valves:





A quick look at an equivalents list shows a CV 1758 to be similar to commercial types 1F2, 1L4, DF92 and the CV 2127 similar to commercial 6CH6, EL821. The degree of similarity is determined on a case by case basis and the safest way is to consult the CV specification if one can be found.

But what of the other markings on the valves? They all have a meaning and convey a significant amount of information.

The arrow is simply a government mark.

The letters in the box containing the arrow are the date code, the first two being the year and the latter two the month or in an alternative scheme the week using calendar date format. They show the date when the lettering was applied which may not be the same date as when the valve was manufactured.

In the other box the first letter is the approval status and the second the qualification level. There may be one or two letters following the oblique stroke. These show the valve supplier; being defined as the place where the pumping process was completed i.e. the electrode assembly could have been manufactured elsewhere or even by another manufacturer. This scheme was often used by members of the BVA for commercial valves and by semiconductor manufacturers e.g. some Ferranti transistors used RCA dice.

Sometimes a serial or batch number may be shown. This is not shown in a box and may, in the case of clear glass valves, be on the electrode structure.

There may be other markings such as a US designation which have a particular feature e.g.CV591 – 6SJ7Y with the letter "Y" signifying a low loss base.

Valves which may exhibit a hazard such as containing radioactive material are marked with the appropriate symbol.

Date Coding

Sequential alphabetical coding was used initially starting with the letter A for 1945. As is normal practice the letters I and O are not used.

		Similarly,	
A	1945	A	January
B	1946	B	February
Etc..		Etc..	

The valve shown on the left with letters DM is thus 1948, December.

This scheme was superseded, and for a time may have been concurrent, by a numerical identification.

The first two numbers show the final two numbers of the year

The remaining numbers show the calendar week with week 1 (this normally started with the 1st January except where this date occurred on a Saturday in which case week 1 commenced on 2nd .

The valve shown on the right above is thus 1975, week 3.

Specification and Approval

The first letter is one of two alternatives; K where the valve meets a UK specification, K1101 or K1006; J where the valve meets a US specification, JAN or MIL.

There are four options for the second letter; B for UK approval; U for approval by both UK and US; and D for Australian approval. Some valves supplied the Mutual Defence Aid Programme but not meeting any of the above approvals were given a letter X.

Both of the examples above are to a UK specification and have achieved UK approval.

Manufacturers Codes

This is an extensive list and shows how extensive the supply organisation once was. It is believed to be correct up to 1967.

Ref.	Manufacturer	Ref.	Manufacturer
FDA	STC, N.S.W., Australia	FE	STC, Oldway, Devon
FF	STC, Harlow	G	Ericsson, Beeston
GA	Ericsson AB, Sweden	H	Hivac, Harrow
HC	Hivac, Chesham	HR	Hivac, Ruislip
J	STC, Crewkerne to Jan 1946	JA	SGS Fairchild, Ruislip
JB	SGS Fairchild, Milan	JD	Elliot Brothers, Borehamwood
JE	Elliot-Litton, Borehamwood	JK	La Radio Technique, Paris
JN	International Rectifier (GB), Oxted	JQ	Associated Transistors, Ruislip
JT	Microwave Associates, Luton	K	Electronic Tubes, High Wycombe
L	MOV to Oct 1951	L	CSF, Paris
LB	CSF, Isere, France	M	Gramophone Co., Hayes
MA	EMI, Research Labs, Hayes	MB	EMI, Ruislip
ME	EMI, Hayes	MR	EMI, Valve Div, Ruislip
MT	EMI, Treorchy	N	STC, Footscray to Aug 1951
N	Nore Electric, Southend	NP	Texas Instrument, Bedford
NQ	Texas Instrument, Bedford	NR	Texas Instrument, Nice, France
O	Rank Cintel, Lower Sydenham	OR	Rank Cintel, Rotunda
OS	Rank Cintel, Sidcup	P	GEC, Shaw to Aug 1948
P	Philips, Eindhoven	PA	Philips, Stockholm
PDA	Philips, Hendon, Australia	Q	English Electric, Chelmsford
QB	Marconi W.T,,Great Baddow	QC	Marconi W.T., Chelmsford
QD	English Electric, Stafford	QE	English Electric, Kidsgrove
QF	English Electric, Hixon	QG	English Electric, Lincoln
R	Ferranti, Chadderton to July 1947	R	Ferranti, Moston
RA	Ferranti, Edinburgh	RB	Ferranti, Dundee
RC	Ferranti, Chadderton	S	AEI, Rugby
SA	AEI, Lutterworth	SB	AEI, Lincoln
SC	C.F.T.H., Seine, France	SD	S.E.S.C.O., Paris
SDA	Amalgamated Wireless, Australia	SF	C.F.T.H., Paris
SL	AEI, Leicester	SP	AEI, Peterborough
T	British Tungsram, Tottenham	U	MOV, Bulmer to Oct 1945
V	Cossor, Highbury to Sept 1945	VA	Westinghouse, Chippenham
VF	M.C.P. Electronics, Alperton	VL	Hughes, Glenrothes
VR	Brush Crystal, Hythe	W	GEC, Hirst Research, Wembley
WB	GEC, Coventry	WD	Claude General Neon Lights, Wembley
WE	A.S.M. Ltd, Hazel Grove	WF	A.S.M. Ltd, Broadstone
X	MOV, Springvale to Oct 1951	Y	MOV, Moray to Apr 1945
YA	Leigh Electronics, Havant	YC	Semiconductors Ltd, Swindon
YD	Semiconductors Ltd, Towcester	Z	MOV, Hammersmith
ZA	MOV, Gateshead to March 1957	ZB	MOV, Perivale
ZC	MOV, Springvale to Aug 1957	ZD	MOV, Dover to Dec 1956
ZE	Osram GEC Lamp Works to Mar 1957		

In the two examples above the valve on the left was supplied by Mullard, Mitcham and the one on the right by Brimar, Rochester.

A lot has thus been learnt about these valves, far more than is available from a commercial device.

This has been a brief insight into CV valves. Brief because if anybody has access to Joint Service Specifications or a CV Register such as Av.P.59 or that issued by each of the Services there is a lot more information; the originating government department; the prototype on which the valve is based; Service stores reference; and latterly NATO stock number.

There is a belief that CV valves are “better” than the commercial equivalent.. For general usage this is not true and indeed many CV specifications show electrical relaxations from that best achievable. However they are subject to more rigorous testing and parameters are more tightly controlled.

Not all CV valves have commercial equivalents. Others have been allocated commercial types but it is unlikely that any were ever supplied. A case in point is the VR101/ CV1101 which is stated to be an MHLD6. Has anyone ever seen an MOV labelled MHLD6?

A question for members. Does anybody know why the VR101 was developed? Its principal usage was as detector/audio output in the R1155. Why did Marconi not use their DH63? It was available at the same time and would have performed the same task with significantly lower heater current, an important factor in an airborne application.