

"PALEC" MODEL V.C.T.

Valve Emission Tester

**Manufactured by
PATON ELECTRICAL PROPRIETARY LTD.**

This is a copy of the PALEC VCT-2 valve tester created by scanning and reading an original manual using OCR (Optical Character Recognition). I made this manual to share with people who might have such an instrument.

It took many nights of effort to produce this manual and I wish that it be made freely available to anyone that needs a copy.

I do not permit anyone to make money from this document by selling it for any amount of money whatsoever.

If you have paid for this manual please challenge the seller as they are ripping you off and make money from my labour against my wishes.

Lou Blasco radio@ozemail.com.au

METHOD OF VALVE TESTING

Just what constitutes the best method of testing a valve to describe its general condition, has been the subject of much discussion among radio engineers.

Opinions at one time were divided between the relative merits of the four existing methods viz, the true mutual conductance, the power output, the grid shift and the emission test. An avalanche of new valves settled the controversy by bringing the emission tester into general favour as a commercial valve tester because it was the only system, which could be adapted to incorporate all the following points:

- 1 - Ability to cope with hundreds of existing valves as well as future releases.
- 2 - Simplicity and quickness of operation.
- 3 - Reasonably low selling price.
- 4 - Practical accuracy.

The true mutual conductance tester, *whilst the most accurate*, is purely a laboratory instrument requiring as many controls and meters as there are elements in a valve. Therefore it can be regarded as impractical for commercial purposes.

The limitation of the so called "grid shift" and power output systems, combined with the fact that a well designed emission tester may be more accurate, has brought the latter into universal use. It will be realised that the only thing likely to happen to a radio valve in service (apart from leakage between elements) is a depreciation of the emitting qualities of the cathode element. So why not test a tube for its emission current?

When the emission type valve test was first developed, the mistake was made of applying a high voltage to the valve through a voltage-dropping resistor. Consequently, the voltage applied to the valve (tested as a diode) depended on the current drain. This meant that a poor valve which had a low emission, was tested at a higher potential than a good one and that true differences of merit could not be arrived at. Then again, there arose the danger of harming a poorish valve through excessive voltage being applied to the grid and injuring the cathode coating.

In the "Palec" valve tester, a constant low voltage is applied and the current drain limited to well below saturation point.

This low voltage is not sufficient to ionise gas if present in a valve and produce extra emission. Consequently, the "Palec" valve tester is a true emission tester and shows the true condition of the cathode.

With regard to a gas test it must be remembered that the percentage of gassy valves is low among new valves, as the manufacturers are usually careful that no such valves leave their factory.

The percentage of valves which become gassy with use is also extremely low, less than 1/4 % actually.

Before a valve becomes gassy, it must usually be seriously overloaded. This overloading causes a drop in the emission capabilities of the cathode. Our tester detects this condition.

Thus, the tester does, in almost every case, class a gassy tube as poor on account of it's usually showing poor emission under the test applied.

METHOD OF CALIBRATING VALVES NOT LISTED

Take two or three Valves of any particular type of which the calibration figures are required and follow this procedure

- (1) Check line voltage in the usual manner.
- (2) Turn Filament Selector Switch to the voltage at which the particular tube is rated.
- (3) Turn left bottom switch to Merit test, turn Range Control to about five and plug in valve. (Be sure to connect up the grid cap, if any).
- (4) Depress the merit button, and, then rotate Selector Switch through each One of its six points and leave set at the point which gives the greatest deflection on the meter.
- (5) Now slowly turn the Range control until the Meter needle reads to within about 1/2 inch of full-scale deflection.

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Now plug one or two more valves of the same type with the purpose of getting an average reading, as there is some discrepancy between new Valves of even the same make. The various points (such as Filament, Range Degree and Selector position) should then be noted for future reference.

CAUTION

Allow valve under test to heat up **BEFORE** pressing the Merit button, this usually takes 30 to 60 seconds. Press button for the **SHORTEST POSSIBLE PERIOD** necessary to take a reading. This instruction should be applied to all valves, particularly diodes.

The socket marked "Diode" is for testing all diode valves with octal bases, test to be carried out in the same manner as all other valves.

To use, the instrument as an output meter it must first be connected to the power, this being necessary to bring the rectifier into use, turn left hand switch to output volt position, connect leads where it is desired to take the measurement of output voltage usually from the plate of the output, valve through a series condenser to earth.

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FOREWORD

The object of Paton Electrical Proprietary Ltd. in releasing the "Palec" Model V.C.T. is to place in the hands of the serviceman, a single self-contained instrument that will adequately cope with all general outside service problems and yet be conveniently portable.

The instrument will be found extremely easy and quick to operate and can be relied upon for a high degree of accuracy if treated with reasonable care and not subjected to excessive overload.

INSTRUCTIONS FOR OPERATION.

The first test usually made on a service call is to test out the valves this operation is carried out in the following order:

No. 1-ADJUST LINE VOLTAGE Plug instrument into power and switch on left rotary switch to "LINE CHECK" The meter needle should now swing over to full-scale deflection. Should the needle stop above or below this position, adjust by means of the top rotary switch marked "LINE ADJ". It is important in some districts to constantly check the line voltage.

No. 2- Select correct filament voltage as shown on chart.

No. 3- Plug in valve.

No. 4-Test for inter-element shorts and leakage. While the valve is heating, move bottom left rotary switch to "ELEMENT SHORTS". Now rotate, the selector switch (middle right) from point to point round the full circle. A shorted element or leakage even as high as 100,000 ohms will cause the neon electrodes to give off a distinct and definite glow. A very faint glow, which sometimes may be apparent, can be disregarded.

If the valve passes the above test, proceed as follows,

No. 5-Move bottom left rotary switch to "Merit."

No. 6-Turn selector switch to the point as shown on chart.

No. 7-Adjust range degree control, also as per chart.

No. 8 -Press button marked "Press for Merit" and the meter will show directly the condition of the valve.

In the case of cathode type valves, allow plenty of time for the valve to become fully heated. This will show when the meter needle stops creeping and remains stationary.

N.B.-The meter dial is calibrated to show the percentage efficiency of a valve. A variation of 10% or so may be noted in same valves, particularly those of different manufacture. This is quite normal.

DIODE PLATES

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A comparative test can be made on the Diode plates by turning "Range Control" to maximum Position (unless otherwise stated) and "Selector Switch" to the respective point as shown on chart, marked DA.

The readings of both plates generally register between the 40% and 60% margin on meter dial, and should be approximately the same.

TO IDENTIFY THE SHORTING OR LEAKAGE ELEMENTS.

The points of the Selector Switch correspond to the various elements of a valve and are numbered according to 1935 standard practice, with the exception that Valve Cap is numbered 8.

No. 6 is the plate position of all American valves, while No. 5 is the general cathode position. Filament pins 3 and 4 are not represented on switch, being unnecessary. A glow at any one point denotes a short to filament while a glow at any two points shows the short to be between the two elements.

Selector positions.

1. Control grid or screen grid
2. Plate
- 3 and 4 Filament
5. Cathode
6. Suppressor grids or oscillator grid
7. Oscillator grids or plate
8. Top cap or control grid on screen grid valves

MULTITESTER RANGES.

The operation of the instrument is straightforward. All measurements are taken from the lower middle pair of wanda socket marked "Ext. Volts", in conjunction with either one or both of the bottom lower rotary switches.

All test with exception of mAs, Ohms and D.C. volts necessitate the instrument being connected to the power supply. When this is done and the test prods are plugged into the wanda sockets, proceed as follows: -

MEGOHMS. Turn left rotary switch to "MEGOHMS"

It is perhaps desirable to connect the special alligator clips supplied, onto the end of the prods as the voltage across same is about 225 volts. The maximum power present however is only a fraction of a watt so that a shock would be more unpleasant than dangerous. Now place the prods across the point to be measured and note reading on the top scale of meter dial marked "Ohms". Multiply figure indicated by 500.

The megohm range is very useful for not only measuring high resistors and potentiometers but also for testing the insulation properties of wires, sockets and paper condensers, etc.

The range extends from 0 - 1- megohms.

ELECTROLYTIC CONDENSERS.

One of the most essential tests in the preliminary check of a radio set is to measure the condition of the electrolytic condensers therein.

Turn left rotary switch to "Electrolytic 500V type" for all types usually found in the filter network of the power supply. Fit the clips onto the test prods and attach across the electrolytic under test. Make sure to observe the correct polarity. Note - it may be, necessary to disconnect the positive lead of the condenser from the circuit before making the test.

If the electrolytic has not been, used for some time, it will be necessary to allow a minute or two for it to "form." It will be noted that the meter needle will gradually go down the scale, finally becoming stationary. The direct reading dial will then show the condition, which is a measure of the condensers leakage. Turning rotary switch to the next lower stud tests the low voltage types.

NEON PAPER FLASH TEST.

Another very useful test can be applied to the paper and mica condensers, as open circuit by-passing condensers are ordinarily very difficult to locate and can be the cause of much trouble in the way of oscillation and distortion.

Turn left rotary switch to, "NEON COND. TEST." Now apply the prods across the condenser. (If the, latter is, paralleled by a resistor or any other component it will be necessary to disconnect one end).

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For sizes from 0.1 and over, clip on the prods and observe the neon. If the condenser is in good condition, it will flash regularly, the period of flash depending on the size of the capacity. For lower values than 0.1 it may be necessary to touch the prods across and watch for a single flash that should occur. Extremely low values (0.001) will only generate a very minute flash and should be watched for very closely. A second flash will not take place unless either the prods are reversed or the condenser is discharged.

A pronounced continuous glow in the neon will indicate a leakage. This must not be confused with a faint glow, which may sometimes be present, especially when the flexible cords of test prods are together or the operator's hands are on same.

MA'S. Four ranges of D.C. MAs are available by turning the left rotary switch to MAs position and selecting the required range by means of the right hand rotary Switch. Care should be, taken to always take an initial reading on the highest range as the majority of accidental overloads applied to the average meter occur while, on the current ranges.

It is therefore advisable to take precautions by also cultivating the habit of turning the switch either to the blank stud or to the 1000V position, the moment the current measurements have been finished with.

LOW OHMS. This range (0 - 30 ohms) will be found extremely valuable, especially as values of resistance as low as 0.1 on the ohm (half a division) can be indicated. The main uses will be found in checking for, poor contacts, shorted turns in, Oils and dry joints, etc.

NOTE:

When testing for dry joints, place the prods on the wire and solder lug respectively.

The, low ohms range is operated on the, shunt method and consequently, current flows continually from the battery when the rotary switches are on this setting. Therefore to avoid running down the 4.5-volt cell prematurely, care should be taken to turn either one or the other of the switches off the above mentioned position when not actually using same.

When the switches are positioned for "Low Ohms", the needle will go up scale. Adjust to the usual full-scale deflection by means of the control marked "OHMS ADJ."

NOTE:

When the test prods are shorted, the needle turns to within about half a division from zero. The resistance of the test cords themselves being responsible for the slight reading.

OHMS. Two ranges of series ohms are available; both being operated from the dry cell supplied and are read on the top scale. Before taking a reading, short prods together and adjust to full-scale deflection by means of the control marked "OHMS ADJ".

D.C. VOLTS. Four ranges of D.C. volts can be utilised by turning the left rotary switch to D.C. volts the right to range required. Start with the highest range and switch down if permissible.

A.C. VOLTS. The most advanced and important development of the V.C.T. is the inclusion of valve rectification for the measurement of A.C. volts. The valve is rapidly replacing the copperoxide rectifier in overseas test equipment. The advantages are that it can be made to follow a linear scale; then again applying an overload cannot damage it. This is a great feature as copperoxide units are extremely sensitive to overload and are costly to replace. Then again, the degree, of accuracy obtained is very high, especially if an aged tube working at only a fraction of its normal output is used. (This is the case with the rectifier in our instrument.)

The procedure is similar to that of D.C. volts previously described, except that the instrument must be connected to the power supply to allow rectifier tube to Operate. Measurements of A.C. line voltage can be taken notwithstanding that the instrument is plugged into same.

QUIESCENT CURRENT.

It will be noted that when the turned to the lower A.C. range, the meter needle will advance two, or three degrees off zero. This is quite normal when a valve is being worked as a diode.

The generation of this "idle" current is caused by the velocity at which some electrons are thrown from the heated cathode, thus causing them to reach the plate even though no positive attraction is applied to same.

The presence of this quiescent current at no input, however, does not influence or bring about the slightest inaccuracy when taking an actual measurement, on the contrary, should it be "bucked out" so that the needle starts off at zero, the

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inaccuracy will be on a linear scale, particularly at the lower end of same. The effect will not be so apparent on higher ranges.

Should the purchaser of this instrument desire any further information re the operation of same, write direct to Paton Electrical Proprietary Ltd., 90 Victoria Street, Ashfield, Sydney. When writing, please quote the serial number of instrument, which will be found on the front panel.

NOTES ON THE OPERATION
Of the,
MODEL V.C.T., A.C. -- VIBRATOR TYPE

The operation of the A.C. - D.C. model is identical on both A.C. and D.C. with the exception that when on A.C. the power cord is inserted into the 5-pin connection (in compartment) and the plugged into the power supply.

When D.C. operation is required, remove the power cord and replace with the special battery cable. Connect alligator clips across a 6-volt accumulator observing the correct polarity.

To adjust the vibrator output to the correct, voltage, turn bottom left selector to "Line Check" and adjust top left control marked "Line Adj." for full scale deflection. In other words the procedure is the same as when on the A.C. supply (see instructions,).

NOTE:

When checking the line before testing a valve, it is advisable, when using the D.C. section to have the valve in the instrument, otherwise, when the valve is plugged in there will be a slight drop in voltages due to the wattage required to light the filament, as the regulation of the transformer is naturally not as good when on the vibrator as when on the A.C. supply.

It will also be noticed that when on the paper condenser test, that only one flash is obtained from a good condenser. This is a sufficient indication that the condenser is 100%.

A slight constant glow may be noticed even when the hands are not touching the cords. This indicates a leakage, but as every condenser has a certain amount of leakage, the amount of same can be verified by applying the "Megohms Test."

American Valves

Valve Type	Socket	Filament	Selector	Range Control
01A	2	5.0	1	18.0
1A4P	2	2.0	8	21.0
1A5G	7	1.4	1	16.0
1A6	4	2.0	6	22.0
1A7G	7	1.4	1	23.0
1A7GT	7	1.4	1	23.0
1B4P	2	2.0	8	21.0
1B5	4	2.0	5	17.25
1C4	2	2.0	8	11.5
1C5G	7	1.4	1	10.5
1C6	4	2.0	6	18.0
1C7G	7	2.0	1	16.0
1D4	3	2.0	1	9.5
1D5G	7	2.0	8	16.0
1D7G	7	2.0	1	22.0
1D8GT	7	1.4	1PA	14.5
do	7	1.4	8TA	17.5
1D8GT	7	1.4	8TA	17.5
do	7	1.4	5DA	Max.
do	7	1.4	6DA	Max.
1E5GP	7	2.0	8	17.5
1E7G	7	2.0	1	11.0
do	7	2.0	6	11.0
1F4	3	2.0	1	12.5
1F5G	7	2.0	1	10.0
1F6	4	2.0	8PA	21.0
do	4	2.0	5DA	Max.
1F7G	7	2.0	8PA	21.0
do	7	2.0	1DA	Max.
do	7	2.0	6DA	Max.
1G4G	7	1.4	1	14.0
1G5G	7	2.0	1	11.0
1G6G	7	1.4	1	13.0
do	7	1.4	6	13.0
1H4G	7	2.0	1	20.5
1H5G	7	1.4	8TA	14.0
do	7	1.4	6DA	Max.
1H5GT	7	1.4	8TA	14.0
do	7	1.4	6DA	Max.
1H6G	7	2.0	7TA	16.5
do	7	2.0	1DA	Max.
do	7	2.0	6DA	Max.
1J6G	7	2.0	1	15.0
do	7	2.0	6	15
1K4	2	2.0	8	10.5
1K5G	7	2.0	8	12.0
1K6	4	2.0	8PA	12.0
do	4	2.0	1DA	Max.
do	4	2.0	6DA	Max.
1K7G	7	2.0	8PA	12.0
Valve	Socket	Filament	Selector	Range

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Type				Control
do	7	2.0	1DA	Max.
do	7	2.0	6DA	Max.
1L5G	7	2.0	1	10.0
1M5G	7	2.0	8	11.0
1N5G	7	1.4	8	12.0
1P5GT	7	1.4	8	12.0
1Q5GT	7	1.4	1	9.75
1T5GT	7	1.4	1	14.0
3Q5GT	5	1.4	5	9.75
1V	2	6.3	2	6.0
2A3	2	2.5	1	9.0
2A5	4	2.5	6	11.0
2A6	4	2.5	8TA	9.0
do	4	2.5	1DA	Max.
do	4	2.5	6DA	Max.
2A7	6	2.5	6	8.75
2B7	6	2.5	8PA	17.0
do	6	2.5	7DA	max.
do	6	2.5	6DA	max
5T4	5	5.0	1	7.0
do	5	5.0	2 (2nd P)	7.0
5U4G	5	5.0	1	8.0
do	5	5.0	2 (2nd P)	8.0
5V4G	5	5.0	1	5.5
do	5	5.0	2 (2nd P)	5.5
5W4	5	5.0	1	13.0
do	5	5.0	2 (2nd P)	13.0
5X3G	5	5.0	1	12.0
do	5	5.0	2 (2nd P)	12.0
5X4G	5	5.0	1	8.0
do	5	5.0	2 (2nd P)	8.0
5Y3G	5	5.0	2	11.0
do	5	5.0	1	11.0
5Y4G	5	5.0	1	12.0
do	5	5.0	2 (2nd P)	12.0
5Z3	2	5.0	1	7.0
do	2	5.0	2 (2nd P)	7.0
5Z4	5	5.0	1	8.0
do	5	5.0	2 (2nd P)	8.0
6A3	2	6.3	1	10.0
6A4	3	6.3	1	9.75
6A6	6	6.3	1	9.5
do	6	6.3	6 (2nd P)	9.5
6A7	6	6.3	6	8.75
6A8	7	6.3	1	9.5
6A8G	7	6.3	1	9.5
6A8GT	7	6.3	1	9.5
6AB5/6N5	4	6.3	1	17.0
6AE5GT	7	6.3	1	9.0
6AC7	5	6.3	6	9.0
6AC5G	7	6.3	1	8.75
6B4G	7	6.3	1	9.0
6B5	4	6.3	6	18.0
Valve Type	Socket	Filament	Selector	Range Control

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6B6G	7	6.3	8TA	8.5
do	7	6.3	1DA	Max.
6B7	6	6.3	8PA	16.0
do	6	6.3	7DA	Max.
do	6	6.3	6DA	Max.
6B7S	6	6.3	8PA	13.0
do	6	6.3	7DA	Max.
6B7S	6	6.3	6DA	Max.
6B8G	7	6.3	8PA	16.0
do	7	6.3	1DA	Max.
do	7	6.3	6DA	Max.
6C5G	7	6.3	1	9.75
6C6	4	6.3	8	9.0
6C8G	7	6.3	1	9.5
do	7	6.3	8	9.5
6D6	4	6.3	8	10.0
6D8G	7	6.3	1	10.5
6E5	4	6.3	1	17.0
6F5	7	6.3	8	7.0
6F5G	7	6.3	8	7.0
6F5GT	7	6.3	8	7.0
6F6	7	6.3	1	12.5
6F6G	7	6.3	1	11.0
6F7	6	6.3	8	17.5
do	6	6.3	6 (2nd P)	Max.
6F8G	7	6.3	1	7.0
do	7	6.3	8	7.0
6G5	4	6.3	1	13.0
6G6G	7	6.3	1	10.0
6G8G	7	6.3	8PA	15.0
do	7	6.3	1DA	Max.
do	7	6.3	6DA	Max.
6H6	7	6.3	1DA	6.5
do	7	6.3	2DA	6.5
6J5G	7	6.3	1	7.0
6J7	7	6.3	8	9.0
6J7G	7	6.3	8	9.5
6J7GT	7	6.3	8	9.5
6J8	7	6.3	1TA	10.0
do	7	6.3	8PA	7.5
6K6G	7	6.3	1	10.5
6K6GT	7	6.3	1	10.5
6K7	7	6.3	8	9.5
6K7G	7	6.3	8	9.5
6K7GT	7	6.3	8	9.5
6K8	7	6.3	1	6.5
6K8G	7	6.3	1	6.5
6L5G	7	6.3	1	10.5
6L6	7	6.3	1	7.25
6L6G	7	6.3	1	7.25
6L7	7	6.3	8	7.5
6L7G	7	6.3	8	7.5
6N5	4	6.3	1	17.0
Valve Type	Socket	Filament	Selector	Range Control

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6N6G	7	6.3	1	18.0
6N7	7	6.3	1	10.0
do	7	6.3	6 (2nd P)	10.0
6P5	7	6.3	1	10.0
6P7G				
Adapter Needed	7	6.3	8	17.5
6Q7	7	6.3	8TA	10.0
do	7	6.3	1DA	Max.
do	7	6.3	6DA	Max.
6R7	7	6.3	8TA	11.0
do	7	6.3	1DA	Max.
do	7	6.3	6DA	Max.
6S7	7	6.3	8	10.0
6S7G	7	6.3	8	10.0
6SA7	5	6.3	1	7.5
6SC7	7	6.3	6	11.0
6SK7	7	6.3	6	9.0
6T7G	4	6.3	8	10.0
6U5	7	6.3	1	13.0
6U7G	7	6.3	8	10.0
6V6G	7	6.3	1	9.0
6V7G	7	6.3	8	18.0
do	7	6.3	1DA	Max.
do	7	6.3	6DA	Max.
6W5	7	6.3	1	8.0
do	7	6.3	2	8.0
6W7G	7	6.3	8	9.5
6X5	7	6.3	1	7.25
6X5G	7	6.3	1	7.25
6X5GT	7	6.3	1	7.25
6Y6G	7	6.3	1	6.5
6Y7G	7	6.3	1	8.75
do	7	6.3	6	8.75
6Z7G	7	6.3	1	9.0
do	7	6.3	6	9.0
6ZY5G	7	6.3	1	9.5
do	5	6.3	2	9.5
7A7LM	5	6.3	6	10.5
7B5LT	5	6.3	6	11.0
7B6LM	5	6.3	1	8.5
7B8LM	5	6.3	8	9.0
7C5LT	2	6.3	6	9.0
10	2	7.5	1	18.0
12	2	5.0	1	11.5
12A7	6	12.5	8	17.5
12A8GT	7	12.5	1	9.0
1208	7	12.5	8	15.0
do	7	12.5	6	Max.
do	7	12.5	1	Max.
12F5GT	7	12.5	8	7.0
12J5GT	7	12.5	1	7.0
12J7GT	7	12.5	8	10.0
Valve Type	Socket	Filament	Selector	Range Control
KK2	1	2.0	6	14.75

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L2K7GT	7	12.5	8	11.5
12K8	7	12.5	1	6.5
12Q7GT	7	.12.5	8	8.5
do	7	12.5	1	Max.
do	7	12.5	6	Max.
12SA7	7	12.5	1	7.5
12B07	5	12.5	2	.5
do	5	12.5	6	8.5
12SF5	5	12.5	6	0
12SJ7	7	12.5	6	7.0
12SK7	7	12.5	6	9.0
12Z3	2	12.5	2	5.0
15	3	2.5	8	17.0
19	4	2.0	1	14.75
do	4	2.0	6 (2nd P)	14.75
24A	3	2.5	8	10.0
25A05GT	7	25.0	1	8.75
25A6G	7	25.0	1	7.75
25A7G	7	25.0	1	10.0
do	7	25.0	7	7.0
25B6G	7	25.0	1	9.0
25L6GT	7	25.0	1	5.75
25L6	7	25.0	1	7.0
25Z5	4	25.0	2	5.0
do	4	25.0	5 (2nd P) P)	5.0
25Z6	7	25.0	1	6.0
do	7	25.0	2	6.0
26	2	1.5	1	16.0
27	3	2.5	1	12.5
30	2	2.0	1	16.5
31	2	2.0	1	23.0
32	2	2.0	8	19.0
33	3	2.0	1	13.0
34	2	2.0	8	17.0
35	3	2.5	8	10.0
35Z4GT	7	30.0	1	5.0
36	2	6.3	8	10.0
37	3	6.3	1	10.0
38	3	6.3	8	11.0
39/44	3	6.3	8	8.0
41	4	6.3	6	10.0
42	4	6.3	6	10.0
43	4	25.0	6	7.75
44	3	6.3	8	8.0
45	2	2.5	1	10.0
46	3	2.5	1	13.0
47	3	2.5	1	11.0
49	3	2.0	1	17.5
50	2	7.5	1	21.0
53	6	2.5	1	9.5
do	6	2.5	6 (2nd P)	9.5
55	4	2.5	8TA	17.0
Valve Type	Socket	Filament	Selector	Range Control
do	4	2.5	1DA	Max.
do	4	2.5	6DA	Max.

Palec Model V.C.T. Valve Tester

56	3	2.5	1	11.5
57	4	2.5	8	9.0
58	4	2.5	8	9.0
59	6	2.5	7	11.5
71A	2	5.0	1	16.5
75	4	6.3	8TA	8.5
do	4	6.3	1DA	Max.
do	4	6.3	6DA	max.
76	3	6.3	1	11.0
77	4	6.3	8	9.5
78	4	6.3	8	10.5
79	4	6.3	1	8.75
do	4	6.3	8 (2nd P)	8.75
80	2	5.0	2	12.0
do	2	5.0	1 (2 nd P)	12.0
81	2	2.5	2	11.5
82	2	2.5	2	14.5
do	2	2.5	1 (2nd P)	14.5
83	2	5.0	2	4.0
do	2	5.0	1 (2nd P)	4.0
83V	2	5.0	2	5.0
do	2	5.0	1 (2nd P)	5.0
84/6Z4	3	6.3	2	6.0
do	3	6.3	1 (2nd P)	6.0
85	4	6.3	8TA	18.0
do	4	6.3	1DA	Max
do	4	6.3	6DA	Max
89	4	6.3	8	12.0
1603		6.3	8	9.5
1613		6.3	1	11.0
1615		6.3	6	11.0
1617		6.3	6	11.0
1621		6.3	1	11.0
1622		6.3	1	9.0

PHILIPS VALVES

A103	2	1.5	1	24.0
A209	2	2.0	1	17.0
A409	2	4.0	1	14.5
A415	2	4.0	1	10.5
A425	2	4.0	1	12.75
A442	2	4.0	1	18.5
A609	2	5.0	1	13.5
A615	2	5.0	1	10.25
A630	2	5.0	1	12.0
A635	2	5.0	1	20.5
A642	2	5.0	1	13.25
AB2	1	4.0	1	9.0
do	1	4.0	2	9.0
Valve Type	Socket	Filament	Selector	Range Control
ABC1	8	4.0	8TA	8.0
do	8	4.0	7DA	8.0
do	8	4.0	6DA	8.0

Palec Model V.C.T. Valve Tester

AC2	8	4.0	8	6.5
AF2	6	4.0	6	5.5
AF3	8	4.0	8	7.5
AF7	8	4.0	8	1.5
AK1	6	4.0	6	6.0
AK2	8	4.0	7	7.5
AL2	8	4.0	8	8.0
AL3	8	4.0	7	5.25
AL5	8	4.0	7	5.5
AZ3	8	4.0	2	6.0
do	8	4.0	6 (2nd P)	6.0
B217	2	2.0	1	17.0
B240	4	2.0	1	8.0
do	4	2.0	6(2nd P)	8.0
B255	2	2.0	1	12.25
B262	2	2.0	1	8.75
B403	2	4.0	1	19.5
B405	2	4.0	1	13.5
B406	2	4.0	1	1.0
B409	2	4.0	1	10.0
B443	2	4.0	1	13.0
B605	2	5.0	1	17.0
C243N	3	2.0	1	9.25
C443	3	4.0	1	14.5
C603	2	5.0	1	15.0
C643	3	5.0	1	15.0
CB1	1	12.5	1	11.0
do	1	12.5	8	11.0
CBC1	8	12.5	8TA	13.0
do	8	12.5	6DA	Max.
do	8	12.5	DA	Max.
CC1	8	12.5		6.75
CF1	8	12.5	8	7.25
CF2	8	12.5	8	7.0
CK1	8	12.5	7	65
CL2	8	25.0	8	1.0
C14	8	30.0	8	6.0
CY2	8	30.0	6	5.25
do	8	30.0	2 (2nd P)	5.25
D243	3	2.5	1	11.5
D243N	3	2.5	1	14.5
E406	2	4.0	1	10.5
E406N	2	4.0	7	13.0
E409	3	4.0	1	6.5
E415	3	4.0	1	9.0
E424	3	4.0	1	6.0
E442	3	4.0	1	9.5
E442S	3	4.0	1	11.5
E443H	3	4.0	1	10.0
E443N	3	4.0	1	18.0
Valve Type	Socket	Filament	Selector	Range Control
EBF2G	5	6.3	8	18.0
do	5	6.3	6DA	Max.
do	5	6.3	7DA	Max.
E444N	4	4.0	6	5.5

Palec Model V.C.T. Valve Tester

do	4	4.0	1DA	Max.
E445	3	4.0	1	9.5
E446	6	4.0	6	5.5
E452T	3	4.0	1	4.75
E454	6	4.0	8TA	8.25
E454	6	4.0	5DA	Max.
do	6	4.0	7DA	Max.
E455	3	4.0	1	5.0
E463	6	4.0	6	7.25
EBC1	8	6.3	8TA	8.5
do	8	6:3	7DA	Max.
do	8	6.3	1DA	Max.
EBC3	8	6.3	8TA	8.75
do	8	6.3	6DA	19.0
do	8	6.3	7DA	19.0
EBF2	8	6.3	8PA	18.0
do	8	6.3	1DA	Max.
do	8	6.3	6DA	Max.
EBL1	8	6.3	8PA	5.5
do	8	6.3	7DA	20.0
do	6	6.3	6DA	20.0
EB4	8	6.3	1DA	8.5
do	8	6.3	6DA	8.5
EF6	8	6.3	8	7.25
EF5	8	6.3	8	7.25
EK1	8	6.3	7	7.0
EK2	8	6.3	7	9.0
EK2G	7	6.3	1	9.0
EL2	8	6.3	8	6.75
EL3N	8	6.3	7	5.25
EL3G	7	6.3	1	5.25
EL5	8	6.3	7	5.5
EM1	8	6.3	7	Max. (40%)
EZ2	8	6.3	2	8.25
do	8	6.3	6	8.25
EZ3	8	6.3	2	6.0
do	8	6.3	6	6.0
EZ4	8	6.3	2	5.0
do	8	6.3	6	5.0
F443	3	4.0	1	12.5
F443N	3	4.0	1	11.5
KBC1	8	2.0	8TA	12.5
do	8	2.0	1DA	Max.
do	8	2.0	6DA	Max.
KC3	8	2.0	7	6.75
KDD1	8	2.0	7	10.0
do	8	2.0	1 (2nd P)	10.0
KF1	4	2.0	6	6.75
KF2	4	2.0	6	7.25
Valve Type	Socket	Filament	Selector	Range Control
KF3	8	2.0	8	14.0
KF3G	7	2.0	8	14.0
KY4	8	2.0	8	12.5
KK2	8	2.0	7	15.0
KK2G	7	2.0	1	15.0

Palec Model V.C.T. Valve Tester

KL4	8	2.0	7	10.0
KL4G	7	2.0	1	10.0
373		4.0	1	7.0
506		4.0	1	11.0
.do		4.0	2 (2nd P)	11.0
1561	8	4.0	1	10.0
do	8	4.0	2 (2nd P)	10.0
1867	2	4.0	1	9.0
do	2	4.0	2 (2nd P)	9.0

MULLARD VALVES

AC3	2	1.5	1	16.0
AC4	2	5.0	1	16.5
AC044	2	4.0	1	12.75
AC064	2	4.0	1	14.5
D026	2	4.0	1	11.0
DU2	2	4.0	1	10.0
do	2	4.0	8 (2nd P)	10.0
DU10	2	4.0	2	7.0
DW4	2	4.0	1	10.0
do	2	4.0	2 (2nd P)	10.0
1W3	2	4.0	1	9.0
do	2	4.0	2	9.0
Pen4VA	6	4.0	6	6.5
PM1A	2	2.0	1	18.5
PM1HF	2	2.0	1	18.0
PM1HL	2	2.0	1	17.5
PM12	2	2.0	1	8.25
PM12A	2	2.0	1	8.25
PM12M	2	2.0	1	8.5
PM14	2	4.0	1	18.5
PM16	2	6.3	1	20.0
PM2A	2	2.0	1	8.25
PM2B	4	2.0	1	8.0
do	4	2.0	6 (2nd P)	8.0
PM2DX	2	2.0	1	13.0
PM3	2	4.0	1	12.0
PM4	2	4.0	1	14.5
PM4DX	2	4.0	1	9.5
PM5X	2	6.0	1	15.0
PM6	2	6.0	1	12.5
PM22	3	2.0	1	20.0
PM22A	3	2.0	1	8.0
PM24	3	4.0	1	12.5
PM202	2	2.0	1	10.5
PM24A	3	4.0	1	10.5
Valve Type	Socket	Filament	Selector	Range Control
PM24B	3	4.0	1	8.25
PM24M	3	4.0	1	10.5
PM243	3	2.5	1	11.5
P1126	3	6.0	1	11.5
PM2BA	4	2.0	1	9.5
do	4	2.0	6 (2nd P)	9.5

Palec Model V.C.T. Valve Tester

SP2	4	2.0	6	7.0
SP4	6	4.0	6	5.5
S4V	3	4.0	1	12.5
S4VA	3	4.0	1	4.5
S4VB	3	4.0	1	4.75
TDD2	4	2.0	8TA	12.25
do	4	2.0	1DA	Max.
do	4	2.0	6DA	Max.
TDD4	6	4.0	8TA	9.0
do	6	4.0	5DA	11.0
do	6	4.0	7DA	11.0
VP2	4	2.0	1	6.25
VP4	6	4.0	6	5.5
102T	3	2.5	1	12.5
104V	3	4.0	1	6.5
164V	3	4.0	1	9.25
244V	3	4.0	1	2.75
354V	3	4.0	1	6.0
904V	3	4.0	1	5.5

TA-Triode Anode

DA-Diode Anode