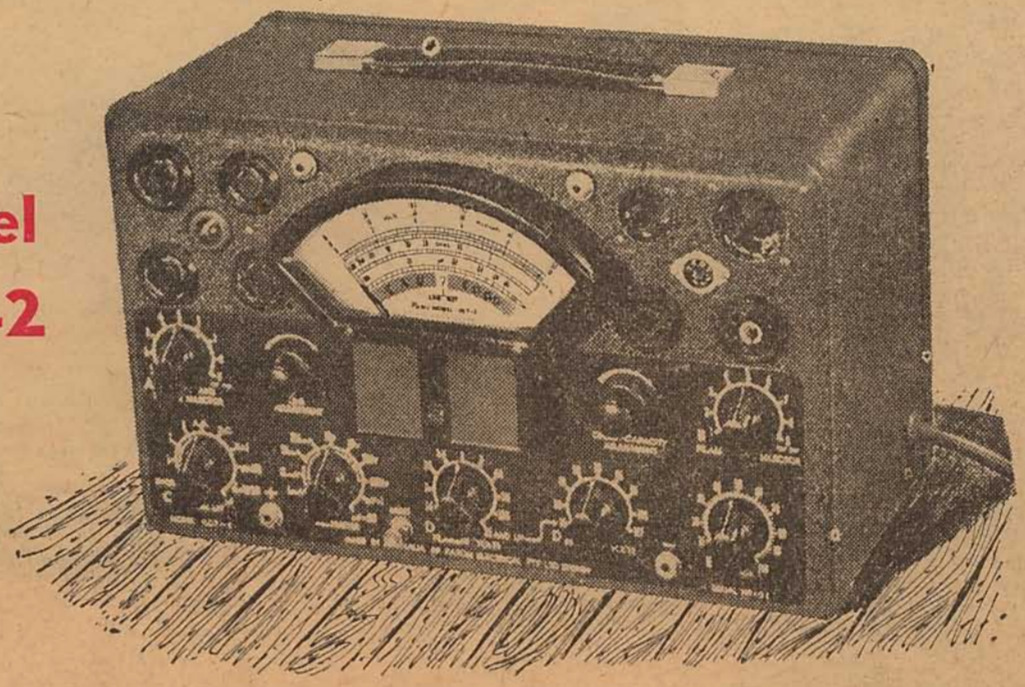
THE *NEW* PALEC
VALVE and CIRCUIT TESTER

Model VCT-2



10,000 ohms per volt

This new Valve and Circuit Tester, Model VCT-2, should prove a worthy successor to the well known Model VCT. The latter, since its inception in 1937, proved to be the most popular and best selling radio test instrument ever marketed in Australia. The Model VCT-2 is A.C. operated 200-260 volts and can be operated from battery by using an external vibrator unit.

TRADE PRICE **£29/17/6, plus tax**
(subject to alteration without notice)
Wooden, leatherette covered carrying case £2/5/0 extra, plus tax. Available at leading wholesalers in all States.

11 OUTSTANDING FEATURES

- Fitted with large six-inch, 100 microamp, sector type meter. A new release.
- Housed in our standard size steel case to match other instruments in the Palec range for a neat bench display. Also portable for outside work.
- Full floating element selector switching obsolescence free.
- Heater voltages catered for up to 117 volts.
- *Neon shorts Test for leakage at a low voltage (50 v. Max.)* to safeguard against electrostatic attraction shorts developing. Particularly necessary for testing 1.4 volt series of valves.
- Comprehensive valve data booklets supplied testing over 800 types of valves.
- D.C. Volts (at 10,000 Ohms per volt) 10-50-250-1000 volts.
- A.C. Volts (at 10,000 Orms per volt) 10-50-250-1000 volts.
- D.C. Milliamps 0.1-1-10-50-250 Milliamps.
- Ohms (internal battery operation) 0-500-50,000-5,000,000 Ohms.
- Capacity 0.001-0.1 and 0.1-10 MFD.

Paton Electrical PTY. LTD.
Manufacturers of all Types of Radio & Electrical Test Equipment & Meters
90 VICTORIA STREET ASHFIELD SYDNEY.
Tels. UA 5266 (5 lines) Telegrams: Palec

P21-FP

1. Summary

Paton Electrical Model V.C.T.-2 Valve Tester, S.N. 869.

Original condition good. Possibly one chicken head knob swapped out. No external probes (use 4mm banana plug probes). No internal batteries. Marking for batteries – 15V , and "Hi top 15/4/65".

1.1 Original design

Batteries are 1.5V and 2x 9V = 18V. Neon is 25x10 screw base. No secondary winding switch for neon (taps provided but hard-wired). Heater voltage switched from 0.6 to 117V in 19 steps using 2 switchs 'D'.

Issues:
Aged AC cable. No AC fuse or main switch (active taken to line adjustment wafer switch common, with an end off position). Protective earth to transformer mounting bolt. Side and rear chassis with no earthing cables. Secondary circuitry floating – capacitor coupled to protective earth – low impedance short somewhere to chassis. Transformer hums. Missing some panel bolts. Some resistors drifted.

Schematic differences:

- Neon hardwired to 140V tap (DCR of 110-140 taps is 73, 78, 85, 91).
- 5MΩ in parallel with Neon.
- The 0.6-25V Filament Volts switch has a fully clockwise position where the filament is disconnected.
- The 'C' circuit selector 4th wafer does not switch the grid pin selection for Line-to-3 positions – the grid pin selection connects directly to the common terminal (which connects to NEG terminal.
- Line adjust switch has off position (FCW).
- Meter has 99Ω series resistor.

Model variations: S.N. 554 has some different valve bases.

2. Modifications

- Replaced AC input cable with IEC socket/fuse/switch/indicator combo. PE to rear and front panels.
- Cleaned Line Adjustment wafer switch (breakdown on 1kV megger).
- Cleaned Shorts selector wafer switch (low resistance to chassis).
- Check/replace caps and resistors.
- Added battery eliminators for 1.5V, and 17.2V levels. 1.5V uses small plugpack. 17.2V supply uses 12.5 to 32V heater tappings.
- Reduced power transformer vibration/hum. Mounting bolts insulated from laminations, and tightened. Lamination face separated from chassis by solid insulation sheet.

To do:

- Testing where indicated.

2.1 Modified design for enhanced performance

2.1.1 Soak testing

Valve operating only with heater power. Insulator sleeve with a temp probe covering valve to allow getter temperature to be raised, without pushing internal temps too high so as to outgas significantly. Monitor leakage current (shorts test).

2.1.2 Heater-cathode leakage

Measure heater-cathode leakage, and apply controlled over-voltage on a heater to try and resurrect a degraded heater-cathode resistance (in a very hummy 12AX7).

The 'C' Shorts selection with the 'A' grid pin set for the cathode pin will apply a 140Vrms voltage across the cathode to heater interface (and also cathode to grid etc). The leakage current is limited by C1 (64kΩ impedance) and the neon (with its parallel 5MΩ) to at most 2.2mA.

The AC leakage current could be measured if the POS terminal was inserted into the current path through the NEG node – perhaps with a separate push-to-open button in the current path, and a push to close connection to the POS (but all rated for circa 1kV).

2.1.3 Cathode emission

Apply controlled over-voltage on a heater to try and resurrect a degraded cathode.

2.1.4 Heater current monitoring

Add a current transformer and burden resistor and measure across the burden with the AC voltmeter on the 10V range – burden wiring needs to be extended. A 5V 3A filament will sag DUT heater by 10%. **Need to identify a suitable CT sensor**.

2.1.5 General purpose AC and DC supply

The heater supply provides a general purpose AC power supply, with settings from 0.6V up to 117VAC, and further minor adjustment using the Line Adjustment setting. The AC can be rectified and filtered to provide a similar wide range DC supply – which can have either polarity grounded.

The supply can be measured by the VCT-2 ACV or DCV measurement settings, as that circuitry is independent. Similarly, the supply current to a load can be measured by the VCT-2 ACmA or DCmA measurement settings.

Applications include using the heater supply as an AC supply for choke inductance measurement, and output transformer turns ratio testing.

3. Measurements

Primary meggers ok at 1kV after line adjust wafer switch spray cleaned. Secondary had a ground on negative input side (tracked to the grid-pin wafer switch), but now floats to 500V.

Meter resistance measured as 169 Ω with C in '3' setting and E pot at max. Meter then has a parallel circuit comprising 99Ω in series with [R26 (110.5Ω) in parallel with R25 + R17 = 1830Ω]. So meter resistance is 1009Ω (or 1108Ω when external series 99Ω included). Schematic indicates meter resistance is 1136Ω.

Line adjustment switch appears to have settings for 215 to 265V in 5V increments (given 215 to 265V description in Operating Manual, although adverts identify a range from 200-260V), with off setting on FCW. Line voltage calibration is likely to be set for 12.6V on secondary with 240V when unloaded. **TEST**

Meter calibration using 0.1mA DC range, was reading 0.078mA; opening R20 only increases 0.086mA – repaired by opening meter from front 2 bolts, and taking off 3 screen nuts to allow inspection of rear of meter – spring coil was caught over end stop 0.1mA reads about 0.097mA, but R20 disconnected (reduces reading to 90%). No readings for higher ranges – R1 was missing.

R1 added: 1k5//12k trimmed readings for 1mA, 10mA, 50mA and 250mA when R20 disconnected, or 1k1 when R20 connected.

Bridge rectifier connects to 4 terminals on end of terminal board: AC (yellow); POS (black) ; NEG (white); AC (Black). But 1mA only reads 0.18mA with OA79 germanium bridge when R12 and R13 are shorted – this increases to 0.3mA using SR140 schottky diodes.

Voltage measurements: 10VDC needs R11+R12 reduced from 95k to 82k (meant to be 100k). 10VAC needs R11=65.5+3.6=69k. 50VAC needs R6=92.5k+350K//82k=340k.

Capacitance measurement needed R10 modified to place Ohms-capacitance adjust in mid-rotation for full-scale.

Resistance x10kΩ measurement needed 17.2V regulated supply (generated from full wave rectified 12.6 to 32V taps feed 7815 reg with 3V Zener in common leg, and series diode in output), and R28 at 5k6 (old resistors removed).

Resistance x1 and x100Ω measurement needed 2.4V regulated supply (generated from small plugpack with internal full wave rectifier, and external filter capacitor and 317 reg. R22 and R21 tweaked for calibration at 10x external resistance. Regulator output voltage stable for loading up to short-circuit setup with ohms-capacity adjustment.

Merit resistor R18 drifted from 5k to 6k – returned to spec. Merit pot 216Ω. Pot wiper has about 7Ω to max end terminal.

Meter zero changes a bit between vertical and horizontal, but zeroed meter reads the same value for any position.

Can check ACV, DCV, ACmA, DCmA, without power.

Can check ohms with 1.5V and 17.2V regulated supplies (requires mains supply).
Can check mains voltage, capacitance, shorts, emission, with mains supply.

4. Operation

4.1 Shorts test

One end of heater is selected by 'B' filament pin connector, which connects the filament voltage tap selected by 'D' filament volts. All other valve pins are connected to the heater 0V supply, except the pin selected by 'A' shorts selector which is connected via a Neon bulb through a 30VAC winding to 0V. If the 'A' selected pin has a short to any other pin then the Neon flashes, which is what will happen when 'A' selects the other end of the heater.

Heater-cathode leakage can be indicated by selecting the cathode with 'A' pin selector. **TEST**

4.2 Emission Merit Test

As per Shorts test, one end of heater is connected to filament supply, and all other pins are connected to 0V except the 'A' selected control grid pin. The 'C' Circuit switch setting (1, 2 or 3) and the 'E' range pot setting (0 to 100) determine the emission level reading when the MERIT pushbutton is pressed.

For an indirectly heated cathode, the chart identifies the 'B' filament pin that is not connected to the cathode (some valves have an internal heater-cathode connection). As such, 32Vac is applied between the 'A' selected pin and cathode is a sinewave with $\sqrt{2}*32$ = +45Vpk level, and -45Vpk. A half-sine dc current waveform is passed during the +ve portion of the 32Vac waveform, which forces the meter to provide an averaged response to the positive voltage pulses developed across the MERIT pot.

For a directly heated cathode, the 32Vac waveform applied to the 'A' selected pin is in common with one end of the valve's filament/heater, and in phase to the other end of the valve's filament/heater. As such, the ac voltage applied between the 'A' selected pin and filament is not symmetric and if say a rectifier diode has two anodes (eg. a 5U4) one anode will see a different level of positive peak than the other anode unless the 'B' filament pin is swapped as well as the 'A' selected anode pin.

The operating manual identifies that this tester applies Vac to just one pin (the input grid pin by default in the chart) and so is a short-cut version of the formal RMA emission test - where Vac is applied to all pins connected together (apart from the cathode).

Caution when 'C' circuit is set for 3 and the valve has a short from grid to other terminals, as 'E' range pot and R26 may dissipates a few watt when MERIT button is pushed.

Valves of the same type can be sorted for similar cathode emission. The highest reading occurs with the electrode nearest the cathode (eg. input grid), and the lowest reading by the anode. Adjust the 'E' range pot (and the 'C' setting 1-3) to obtain a reading on the meter near FSD, and use that as a benchmark for sorting. **TEST against other measurements**

For rectifier diodes, one anode is tested with 'C' set for 3. Imbalance in anode emission should be observable. **TEST**

Another comparison when sorting valves is to check the drop in emission level when the heater voltage is reduced by a set level – a form of life-test. The simplest means to reduce heater voltage is with the Filament Volts switch (ie. 5V reduced to 4V), although a smaller step can be achieved by stepping down the Line Adjustment switch by say 2 steps (-10%).

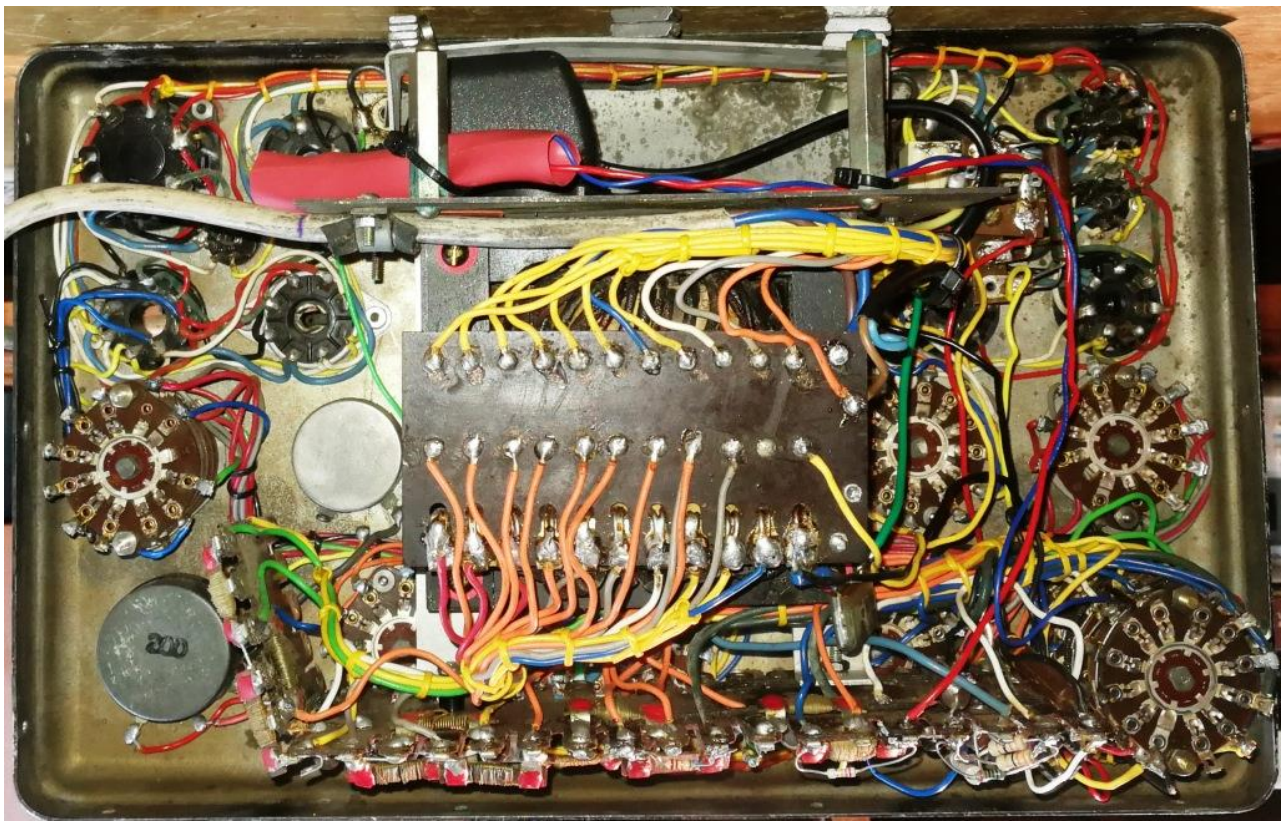
4.3 Filament Volts

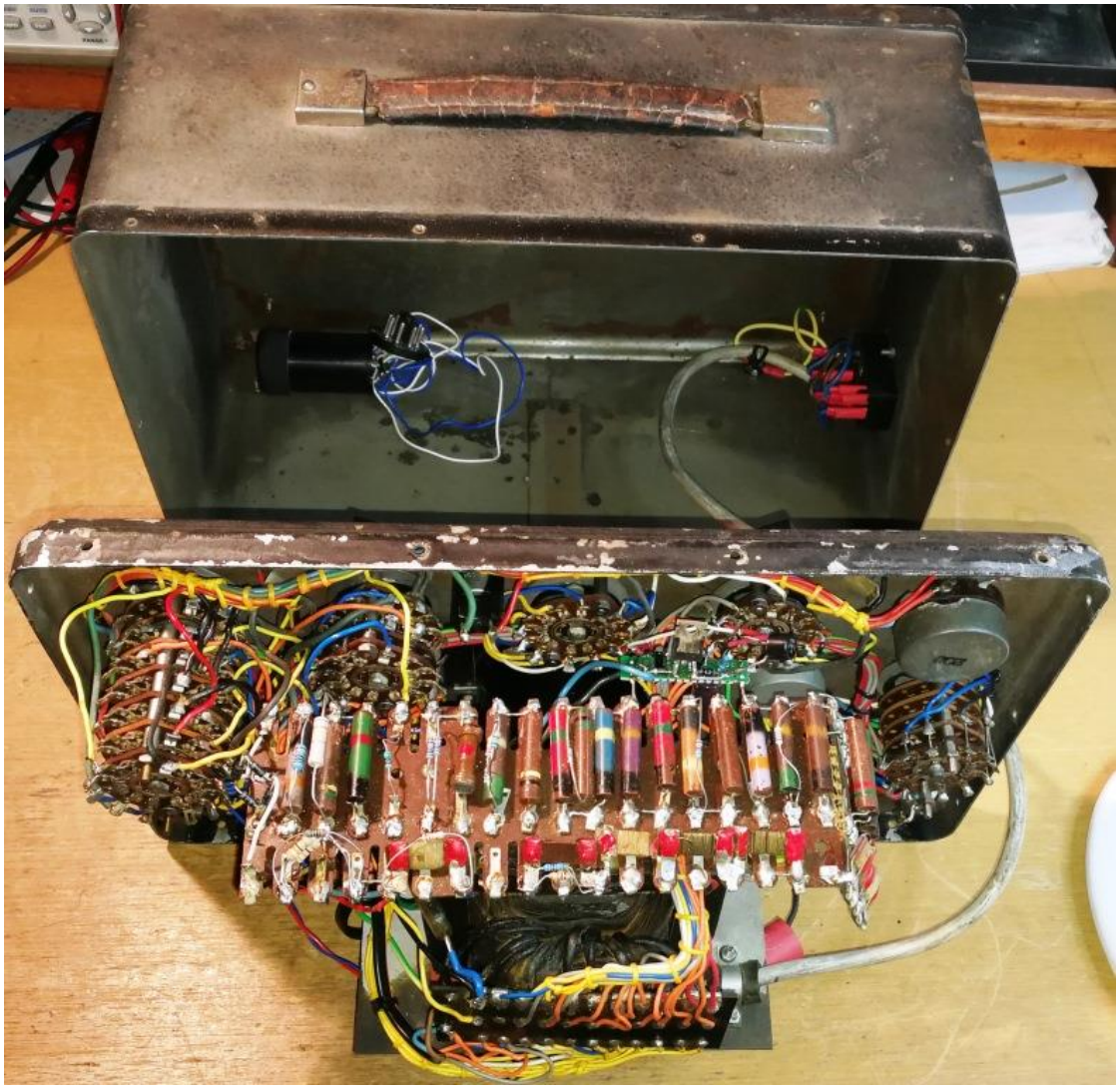
The 0.6-25V Filament Volts switch has a fully clockwise position where the filament is disconnected – not shown on schematic.

Selected ‘D’ Filament winding tap is switched to ‘B’ Filament Pin Selector which switches tap to selected socket pin – eg Chart Element Selector column B shows pin 8 for a 5U4 diode. All other socket pins are connected to the filament winding 0V except the ‘A’ Selector pin (which is separately taken to NEG terminal). So the heater is normally energised except if the ‘A’ Selector chooses the other heater pin (pin 2 for the 5U4) – when pin 2 is selected then the heater is not powered but alternatively connected through the NEG path to C7 shorts switch to the neon which lights as the neon connects through the filament to pin 8 and through the heater tap to 0V.

5.03Vrmsac drops to 4.5Vrms at the octal pins with a sample 5U4 (ie. -10% at 3A), but the pin voltage can be increased to 5.0Vrms using the line adjust.

The heater of a valve is always energised as long as the ‘A’ selector is not selecting the other heater pin (than the heater pin selected by ‘B’). The heater voltage can be measured with ‘C’ circuit set for AC, and MM set for 10V, and the front panel POS and NEG probe terminals connected to the same heater pins of a valve socket near the socket with the inserted valve. Eg. with a 5U4 in the octal socket, then probe the 8-pin Loctal socket or the Philips P socket (also known as Continental P, Transcontinental, side-pin, Ct8 or Au8) with an appropriate plug or pins. The AC volts circuitry is isolated from the heater circuitry. The Line Adjust switch can then be used to achieve an accurate heater voltage if that is needed for a particular test (although for Emission merit testing that may alter the 32Vac level).





INSTRUCTION MANUAL

MODEL VCT-2 — MODEL ET-3

PATON ELECTRICAL PTY. LTD.
90-94 VICTORIA STREET, ASHFIELD, N.S.W.
Telephones: UA 5266 (5 lines)

VCT-2 OPERATING INSTRUCTIONS

To Test Valves

The valve testing section af the Valve and Circuit Tester VCT-2 is identical with that af the Model ET-3 Valve Tester, and the accompanying instructians for the use of that instrument should be followed when testing valves.

Multimeter

The multimeter functians and ranges of this instrument are as follows:—

DC Volts: 0-10-50-250-1,000 valts at 10,000 Ohms per volt.

AC Volts: 0-10-50-250-1,000 volts at 10,000 Ohms per volt.

DC Milliamps: 0-0.1-1.0-10-50-250 at 250 millivalts.

Ohms: From less than one Ohm to 5 megohms in three ranges, having centre scale values of 15 Ohms (Ohms x 1), 1,500 Ohms (Ohms x 100) and 150,000 Ohms (Ohms x 10,000).

Capacity: From .001 micrafarad to 10 microfarads in two ranges, having centre scale values of approximately .015 and 1.5 microfarad.

To Measure DC Voltages

The Red and Black test leads supplied should be plugged into the "+" (positive) and "—" (negative) sockets, observing correct polarity.

The "Circuit" selector switch shauld now be set to DC and the "Multimeter" switch set to the range of volts required.

If the valtage ta be measured is unknown, it is advisable to set the "Multimeter" switch to the 1,000 volts range, and, after ascertaining the voltage, turn the switch to the range required. When measuring voltage in high resistance circuits, best accuracy will be obtained when using the highest ronge consistent with a reasonable indication on the meter. On the 1,000 volt range the instrument provides a load of 10 megohms, while on the 10 volt range the resistance of the meter is 100,000 Ohms only.

To Measure AC Voltages

Set the "Circuit" selectar to "AC" and the "Multimeter" switch to the range af volts required. The same precautions suggested far DC volts relative to the selectian af the highest range initially ta prevent overload, and to provide the minimum loading of high resistance circuits shauld be fallowed.

Although na polarity is observed when measuring AC, best accuracy will be obtained if the negative lead is connected ta the neutral or "earthy" terminal of the valtage being measured.

To Measure DC Milliamperes

Set the "Circuit" switch to "DC" and the "Multimeter" switch to the range of milliamperes required. Connect the test leads to the circuit in which the current is to be measured, observing the correct polarity. Where the current to be measured is unknawn, the "Multimeter" switch should be set to the highest range of milliamperes and reset to a more suitable range after the current has been ascertained.

The voltage drop is constant ot 250 millivolts on all ranges of milliamperes.

To Measure Ohms

Set the "Circuit" switch to the range of Ohms required. The "Multimeter" switch has no bearing on the operation of the instrument and may be left in any position. The test leads should now be connected together and the meter pointer will move across the scale. The pointer should be brought precisely to full scale (zero Ohms) by manipulation of the "Ohms-Capacity Adjustment" potentiometer.

The test leads may now be connected across the resistance to be meosured and the value read from the Ohms scale applying the multiplying factor indicated by the position of the "Circuit" switch. Resistance from less than 1 Ohm to 5 Megohms may be measured.

Important.—No current should be flowing in the resistor under test.

When full scale deflection (zero Ohms) can be no longer reached with the test leads short circuited and the "Ohms-Capacity Adjustment" in the maximum clockwise positian, the internal batteries related to the range in use should be replaced.

The "Ohms x 1" and "Ohms x 100" ranges are supplied from 1 Eveready type 950 dry cell, while the "Ohms x 10,000" range is supplied from two Eveready type 793 volt dry batteries. The 793 batteries are connected in series and the negative lead connected to 15 volts (— 6v tap). The batteries are readily accessible for replacement after removing the instrument from its case.

To Measure Capacity

The instrument should be plugged into the 215-265 volt 50 cycle supply, the "Circuit" switch set to "line" and the "Line Adjustment" control manipulated until the meter point coincides with the "Line Test" point at centre scale.

The "Circuit" switch should then be set to "μF" and the "Multimeter" switch to "μF x 1" or "μF x 100," depending on the value af the condenser to be measured. With the test leads connected together the meter pointer should be set precisely to full scale by manipulation of the "Ohms-Capacity Adjustment" potentiometer. The setting of the potentiometer will be found to be common to both ranges of capacity.

The capacity to be measured may now be connected between the test leads and its value read directly from the capacity scale, using the appropriate multiplier as indicated by the positian of the "Multimeter" switch.

While no palority is observed when moking this measurement, greatest accuracy will be obtained when making measurements on condensers that are connected to other circuits when the "—" (negative) terminal of the instrument is connected to the "earthy" end of the condenser under test.

Important.—No AC or DC voltage must be present across the condenser while this measurement is being made. All condensers should be short circuited befare connection to the instrument to ensure they hold no charge.

The capacity scale employed is based on a supply frequency of 50 cycles and should the instrument be used on another supply frequency ar with a vibrator power supply the capacity readings will be in error.

Should the instrument be used on a 40 cycle supply, the capacity indicated should be multiplied by 1.2 to obtain the correct value. Na reasonable correction is possible when the instrument is used with a vibrator power supply due to the variable frequency and waveform of the output of such units. Doubtful condensers may be compared with those of known capacity, however, when a vibrator power supply is used.

Condensers which are to be checked for quality should first be tested for leakage resistance using the Ohms x 10,000 scale, and if the leakage is found satisfactary they may then be checked for capacity.

A voltage of 12.5 volts R.M.S. is used for measurement on both capacity ranges and electrolytic condensers may therefore be tested far capacity without deforming, pravided that the lower voltage types are left connected no langer than necessary. When testing electralytic condensers the carrect capacity will be indicated immediately the candenser is connected to the instrument, and the scale shauld therefore be read immediately. Any falling off in reading if the candenser is left connected to the instrument indicates deforming of the candenser, but daes not necessarily indicate that the condenser is foulty. The condenser will re-form when re-connected ta its usual circuit.

DESCRIPTION OF PALEC VALVE TESTER—MODELS VCT/2 & ET-3

Valve Tester Model ET-3 is an Instrument for indication of the end of life point of radio valves by the measurement of the emission under certain fixed conditions.

Circuit.

The Instrument employs a standard RMA emission test circuit with the exception that only No. 1 grid is selected as the test element in place of the grid, plate, screen, etc., together. The grid only is selected in this Instrument to reduce the complication of element selection, thereby rendering the Instrument more foolproof in operation. Little of the effectiveness of the test is lost, as a large percentage of the current flows to the grid in the standard RMA Instrument. Load resistances of 200, 1,000 and 5,000 ohms are used in conjunction with 30 volts RMS AC and appropriate variable and fixed resistances in the meter circuit.

Element Selection.

Element selection is accomplished by two nine position selector switches, one of which selects one of the heater pins without interrupting the remaining eight connections. A further element switch selects the grid and connects all remaining pins together.

The element selection switches are numbered with the RMA numbers of the valve pins and with the accepted Continental numbering where applicable. Provided the RMA numbers of grid No. 1 and one heater or filament connection are known, the element selectors may be set for any valve without reference to the Instruction Manual.

It is also an advantage that the system of element selection cannot become obsolete, in fact the tester may always be brought up-to-date by the addition of adaptors to cater for any new sockets which may be released in the future. At the time of release, all available American sockets, with the exception of special purpose types, have been included as well as the Continental "P" type. Two sockets for insertion of the top cap connection are provided, and these are connected together internally.

Shorts Test.

A shorts test has been provided and employs a neon lamp as an indicator of leakage between electrodes. Shorts tests may be made with the valve either in a hot or cold condition.

The grid pin selector is also used for shorts selection and the socket numbering system is applicable to element shorts. As the shorts selector is rotated, it will be found that the neon tube will glow brightly on the filament or heater pin not already selected by the "Filament Pin Selector". In this position, the shorts indicator is used to indicate continuity of the filament or heater, a feature which is useful when testing metal type valves where the heater is not visible. While the shorts selector is on this position, the heater is disconnected from the transformer and the valve will cool.

Should the neon lamp glow on positions other than the heater connection mentioned above, it is an indication that a short circuit exists between the pins on which the glow occurs, e.g., should the neon tube show a glow on position 2 when testing a 6V6 valve, heater continuity is indicated, but should a glow occur when the selector is placed on positions 4 and 5, a short is indicated between these pins. In this case, the short is between control and screen grids. Exceptions to the above rule occur where valves have topped filaments or heaters or where certain base pins are connected together internally. Such valves have notes beneath their test figures indicating the positions on which shorts can be expected.

The voltage applied to the valve when shorts tests are being made never exceeds 30 volts RMS and decreases in the presence of leakage through the valve. The shorts test circuit has been adjusted so that a barely discernible glow occurs for a leakage of 200,000 ohms. A very slight glow may occur for higher leakage resistances and this should be disregarded.

Line Adjustment.

For reliable results it is necessary to maintain the correct voltages on the filament or heater and grid of the valve being tested. A "Line Adjustment" control is provided consisting of a switch selecting 11 taps at 5 volt intervals between 215 and 265 volts on the primary of the transformer. When the "Circuit Selector" "C" is placed on the "line" position, the meter will read and may be set to the position "line test" at the centre of the scale by manipulation of the "Line Adjustment" control. The setting may be made within 1 per cent. for line voltages between 215 and 265 volts RMS.

Filament-Heater Voltages.

Filament voltages are provided for all receiving valves at present in use, two switches being used for the selection of these voltages. The first filament voltage switch provides voltages from 0.6 to 25 volts, and the second from 25 to 117 volts when the first switch is in the 25 volt position.

Care should always be exercised in setting the filament voltage correctly before a valve is inserted in the Instrument. No additional care is required in the setting of the two switches, as the second switch is inoperative until the first has been placed on the "25 volts and up" position.

VALVE TESTING (Models VCT-2 & ET-3)

OPERATING INSTRUCTIONS

(Follow in order listed)

Line Test.

(1) Insert power cord into a 215-265 volt 40-60 cycle supply.

(2) Set "Circuit" selector "C" to "line" position.

(3) Adjust "Line Adjustment" knob until meter pointer coincides with "line test" point at centre scale.

Shorts Test.

(4) Set "Filoment Volts" Knobs "D" ta values shown in "filament" column.

Note: One value only is given for filament voltages up to 12.6. When no second value is given, the second "D" "Filoment Volts" selector may be left in any position.

(5) Set "Filament Pin Selector" "B" to number shown in column marked "Element Selector" "B."

(6) Insert valve in appropriate socket.

(7) Set "C" "Circuit" selector knab to "shorts" position.

(8) Rotate "Grid Pin and Shorts Selector" "A" throughout its range.

Note : The neon lamp will glow on shorted elements and also on the position shown in column "A" under "heater continuity" indicating continuity of the filament or heater. Should selectar "A" be left an the heater position, the tube will cool. The valve may be lightly tapped with the switch an each position to assist in locating intermittent shorts.

Merit Test.

(9) Set "Grid Pin and Sharts Selector" "A" to number shown in "element selector" "merit" column.

(10) Set "C" "Circuit" knab to setting shown in "circuit" column.

(11) Set "Range" control "E" ta value shown in "range" column.

(12) Press "Merit" button and read valve condition from meter.

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	A Heater Continuity	B	CIRCUIT C	FILAMENT D	RANGE E
00A	3	1	4	2	5	34
01A	3	1	4	2	5	51
1A4.P	9	1	4	1	2	33
1A5	5	2	7	2	1.4	57
1A6	4	1	6	2	2	44
1A7	5	2	7	1	1.4	50
1B4.P	9	1	4	2	2	39
1B5	5	1	6	1	2	37
1B5 Test 2	4	1	6	1	2	40
1B5 Test 3	3	1	6	1	2	40
1B5/25S	5	1	6	1	2	37
1B5/25S Test 2	4	1	6	1	2	40
1B5/25S Test 3	3	1	6	1	2	40
1B7	5	2	7	2	1.4	37
1B8	5	2	7	2	1.4	36
1B8 Test 2	9	2	7	2	1.4	68
1B8 Test 3	8	2	7	1	1.4	95
1C4	9	1	4	3	2	36
1C5	5	2	7	2	1.4	42
1C6	4	1	6	2	2	45
1C7	5	2	7	2	2	51
1D4	3	1	5	3	2	29
1D5	9	2	7	2	2	44
1D5 GP	9	2	7	2	2	37
1D7	5	2	7	2	2	47
1D8	5	2	7	2	1.4	42
1D8 Test 2	9	2	7	2	1.4	54
1D8 Test 3	8	2	7	1	1.4	95
1E4	5	2	7	2	1.4	51
1E5 GP	9	2	7	1	2	42
1E7	4	2	7	2	2	34
1E7 Test 2	5	2	7	2	2	34
1F4	3	1	5	3	2	53
1F5	5	2	7	2	2	40
1F6	9	1	6	1	2	45
1F6 Test 2	4	1	6	1	2	95
1F6 Test 3	5	1	6	1	2	95
1F7	9	2	7	1	2	42

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	A Heater Continuity	B	CIRCUIT C	FILAMENT D	RANGE E
1F7 Test 2	4	2	7	1	2	95
1F7 Test 3	5	2	7	1	2	95
1F7-GV	9	2	7	1	2	42
1F7-GV Test 2	4	2	7	1	2	95
1F7-GV Test 3	5	2	7	1	2	95
1G4	5	2	7	1	1.4	36
1G5	5	2	7	2	2	44
1G6	4	2	7	1	1.4	42
1G6 Test 2	5	2	7	1	1.4	42
1H4	5	2	7	2	2	46
1H5	9	2	7	1	1.4	39
1H5 Test 2	5	2	7	1	1.4	40
1H6	6	2	7	1	2	36
1H6 Test 2	4	2	7	1	2	40
1H6 Test 3	5	2	7	1	2	40
1J5	5	2	7	2	2	43
1J6	4	2	7	2	2	44
1J6 Test 2	5	2	7	2	2	44
1K4	9	1	4	3	2	32
1K5	9	2	7	3	2	38
1K6	9	1	6	3	2	38
1K6 Test 2	3	1	6	3	2	100
1K6 Test 3	4	1	6	3	2	100
1K7	9	2	7	3	2	38
1K7 Test 2	4	2	7	3	2	100
1K7 Test 3	5	2	7	3	2	100
1L4	6	Nil	7	2	1.4	42
	Shows Short on 1 and 5.					
1L5	5	2	7	3	2	30
1LA4	6	1	8	2	1.4	45
1LA6	4	1	8	1	1.4	42
1LB4	6	1	8	2	1.4	45
1LB6	6	1	8	1	1.4	38
1LC5	6	Nil	1	1	1.4	38
	Shows short on 2, 4, 5 and 8.					
1LC6	4	1	8	1	1.4	52
1LD5	6	1	8	1	1.4	38
1LD5 Test 2	4	1	8	1	1.4	95
	Good Tube Reads 20.					

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
1LE3	6	1	8	2	1.4	42
1LH4	6	1	8	1	1.4	47
1LH4 Test 2	4	1	8	1	1.4	95
	Good Tube Reads 20.					
1LN5	6	Nil	1	2	1.4	45
	Shows Short 5 and 8.					
1M5	9	2	7	3	2	34
1N5	9	2	7	1	1.4	32
1N6	5	2	7	2	1.4	43
1N6 Test 2	6	2	7	1	1.4	95
	Good Tube Reads 20.					
1P5	9	2	7	1	1.4	37
1Q5	5	2	7	2	1.4	37
1R5	4	Nil	7	2	1.4	45
	Shows Short on 1 and 5.					
1S4	3	Nil	7	2	1.4	34
	Shows Short on 1, 2, 5 and 6.					
1S5	6	1	7	1	1.4	50
1S5 Test 2	3	1	7	1	1.4	55
1SA6-GT	4	2	7	2	1.4	34
1SB6-GT	8	2	7	1	1.4	43
1SB6-GT Test 2	5	2	7	1	1.4	90
1T4	6	Nil	7	2	1.4	40
	Shows Short on 1 and 5.					
1T5	5	2	7	2	1.4	45
1V	2	1	4	3	6.3	24
2A3	3	1	4	3	2.5	31
2A4	5	2	7	3	2.5	25
2A4 Test 2	3	2	7	3	2.5	25
	No Short Test.					
2A5	4	1	6	3	2.5	40
2A6	9	1	6	3	2.5	29
2A6 Test 2	3	1	6	1	2.5	40
2A6 Test 3	4	1	6	1	2.5	40
2A7	5	1	7	3	2.5	34

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
2B6	4	1	7	3	2.5	56
2B7	9	1	7	3	2.5	53
2B7 Test 2	5	1	7	1	2.5	40
2B7 Test 3	4	1	7	1	2.5	40
2E5	3	1	6	2	2.5	50
2G5	3	1	6	2	2.5	50
2W3	4	2	8	3	2.5	50
2Y2	9	1	4	1	2.5	95
	Good Tube Reads 40.					
2Z2	2	1	4	3	2.5	56
3A4	4	1 & 7	5	2	1.4	29
	Shows short on 2 and 6.					
3A5	3	1 & 7	4	2	1.4	34
3A5 Test 2	5	1 & 7	4	2	1.4	34
3A8	9	2 & 7	1	1	1.4	43
3A8 Test 2	5	2 & 7	1	1	1.4	43
3A8 Test 3	8	2 & 7	1	1	1.4	45
3B5	5	2 & 7	8	2	1.4	40
3C5	5	2 & 7	8	2	1.4	38
3LE4	6	1 & 8	7	2	1.4	38
3Q4	3	1 & 7	5	2	1.4	37
	Shows Short on 2 and 6.					
3Q5	5	2 & 7	8	3	1.4	37
3S4	3	1 & 7	5	2	1.4	40
	Shows Short on 2 and 6.					
4A6	4	2 & 7	8	3	2	51
4A6 Test 2	5	2 & 7	8	3	2	51
5R4-GY	4	2	8	3	5	34
5R4-GY Test 2	6	2	8	3	5	34
5T4	4	2	8	3	5	35
5T4 Test 2	6	2	8	3	5	35
5U4	4	2	8	3	5	35
5U4 Test 2	6	2	8	3	5	35
5V4	4	2	8	3	5	25
5V4 Test 2	6	2	8	3	5	25
5W4	4	2	8	3	5	48
5W4 Test 2	6	2	8	3	5	48
5X3	2	1	4	3	5	43

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
5X3 Test 2 ..	3	1	4	3	5	43
5X4	3	7	8	3	5	33
5X4 Test 2 ..	5	7	8	3	5	33
5Y3	4	2	8	3	5	57
5Y3 Test 2 ..	6	2	8	3	5	57
5Y4	3	7	8	3	5	57
5Y4 Test 2 ..	5	7	8	3	5	57
5Z3	2	1	4	3	5	35
5Z3 Test 2 ..	3	1	4	3	5	35
5Z4	4	2	8	3	5	27
5Z4 Test 2 ..	6	2	8	3	5	27
6A3	3	1	4	3	6.3	31
6A4/LA	3	1	5	3	6.3	40
6A5	5	2 & 7	8	3	3.3	28
6A6	3	1	7	3	6.3	40
6A6 Test 2 ..	5	1	7	3	6.3	40
6A7	5	1	7	3	6.3	35
6A8	5	2	7	3	6.3	28
6AB5..	3	1	6	2	6.3	100
6AB6..	5	2	7	3	6.3	71
6AB7..	4	2	7	3	6.3	26
6AC5..	5	2	7	3	6.3	38
6AC6..	5	2	7	3	6.3	50
6AC7..	4	2	7	3	6.3	24
6AD7..	5	2	7	3	6.3	37
6AD7 Test 2	1	2	7	3	6.3	96
6AE5..	5	2	7	3	6.3	33
6AE6..	5	2	7	2	6.3	37
6AE7..	4	2	7	3	6.3	31
6AE7 Test 2..	6	2	7	3	6.3	31
6AF5..	5	2	7	3	6.3	27
6AG5..	1	3	4	3	6.3	23
	Shows Short on 2 and 7.					
6AG7..	4	2	7	3	6.3	27
6AL5..	2	3	4	1	6.3	23
6AL5 Test 2..	7	3	4	1	6.3	23
6AL6..	5	2	7	3	6.3	27
6AQ6..	1	3	4	3	6.3	36
6AQ6 Test 2..	5	3	4	1	6.3	40
6AQ6 Test 3..	6	3	4	1	6.3	40

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
6B4	5	2	7	3	6.3	31
6B5	4	1	6	3	6.3	72
6B6	9	2	7	3	6.3	36
6B6 Test 2 ..	4	2	7	1	6.3	40
6B6 Test 3 ..	5	2	7	1	6.3	40
6B7	9	1	7	3	6.3	56
6B7 Test 2 ..	4	1	7	1	6.3	40
6B7 Test 3 ..	5	1	7	1	6.3	40
6B7S..	9	1	7	3	6.3	41
6B7S Test 2 ..	4	1	7	3	6.3	100
6B7S Test 3 ..	5	1	7	3	6.3	100
6B8	9	2	7	3	6.3	50
6B8 Test 2 ..	4	2	7	1	6.3	40
6B8 Test 3 ..	5	2	7	1	6.3	40
6C4	6	3	4	3	6.3	29
	Shows Short on 1 and 5.					
6C5	5	2	7	3	6.3	38
6C6	9	1	6	3	6.3	35
6C7	9	1	7	3	6.3	37
6C7 Test 2 ..	4	1	7	1	6.3	40
6C7 Test 3 ..	5	1	7	1	6.3	40
6C8	9	2	7	3	6.3	32
6C8 Test 2 ..	5	2	7	3	6.3	32
6D6	9	1	6	3	6.3	45
6D7	9	1	7	3	6.3	34
6D8	5	2	7	3	6.3	38
6E5	3	1	6	2	6.3	41
6E6	3	1	7	3	6.3	35
6E6 Test 2 ..	5	1	7	3	6.3	35
6E7	9	1	7	3	6.3	34
6F5	9	2	7	3	6.3	34
6F6	5	2	7	3	6.3	36
6F7	9	1	7	3	6.3	48
6F7 Test 2 ..	5	1	7	3	6.3	96
6F8	9	2	7	3	6.3	29
6F8 Test 2 ..	5	2	7	3	6.3	29
6G5	3	1	6	2	6.3	40
6G6	5	2	7	3	6.3	40
6G8G..	9	2	7	3	6.3	48
6G8G Test 2..	4	2	7	3	6.3	100

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
6G8G Test 3	5	2	7	3	6.3	100
6H4	4	2	7	1	6.3	26
6H5	3	1	6	2	6.3	40
6H6	3	2	7	1	6.3	25
6H6 Test 2	5	2	7	1	6.3	25
6J5	5	2	7	3	6.3	30
6J7	9	2	7	3	6.3	35
6J8	9	2	7	3	6.3	34
6J8 Test 2	5	2	7	3	6.3	34
6K5	9	2	7	3	6.3	29
6K6	5	2	7	3	6.3	38
6K7	9	2	7	3	6.3	34
6K8	5	2	7	3	6.3	22
6L5	5	2	7	3	6.3	36
6L6	5	2	7	3	6.3	30
6L7	9	2	7	3	6.3	28
6N5	3	1	6	1	6.3	45
6N6	5	2	7	3	6.3	58
6N7	4	2	7	3	6.3	33
6N7 Test 2	5	2	7	3	6.3	33
6P5	5	2	7	3	6.3	40
6P7	9	2	3	3	6.3	38
6P7 Test 2	7	2	3	3	6.3	91
6Q6	9	2	7	3	6.3	35
6Q6 Test 2	5	2	7	1	6.3	90
6Q7	9	2	7	3	6.3	37
6Q7 Test 2	4	2	7	1	6.3	47
6Q7 Test 3	5	2	7	1	6.3	47
6R6	6	1	8	3	6.3	46
6R7	9	2	7	3	6.3	41
6R7 Test 2	4	2	7	1	6.3	33
6R7 Test 3	5	2	7	1	6.3	33
6S6	9	2	7	3	6.3	27
6S7	9	2	7	3	6.3	36
6SA7	5	2	7	3	6.3	29
6SC7	3	8	7	3	6.3	43
6SC7 Test 2	4	8	7	3	6.3	43
6SD7	4	2	7	3	6.3	26
6SE7	4	2	7	3	6.3	26
6SF5	3	8	7	3	6.3	31
6SF7	2	8	7	2	6.3	25

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
6SF7 Test 2	5	8	7	2	6.3	40
6SG7	4	2	7	3	6.3	20
	Shows Short on 3 and 5.					
6SH7	4	2	7	2	6.3	16
	Shows Short on 3 and 5.					
6SJ7	4	2	7	3	6.3	30
6SK7	4	2	7	3	6.3	32
6SL7	1	8	7	3	6.3	31
6SL7 Test 2	4	8	7	3	6.3	31
6SN7	1	8	7	3	6.3	32
6SN7 Test 2	4	8	7	3	6.3	32
6SQ7	2	8	7	3	6.3	38
6SQ7 Test 2	4	8	7	1	6.3	40
6SQ7 Test 3	5	8	7	1	6.3	40
6SR7	2	8	7	3	6.3	41
6SR7 Test 2	4	8	7	1	6.3	33
6SR7 Test 3	5	8	7	1	6.3	33
6SS7	4	2	7	3	6.3	34
6ST7	2	8	7	3	6.3	34
6ST7 Test 2	4	8	7	1	6.3	95
6ST7 Test 3	5	8	7	1	6.3	95
6T5	3	1	6	3	6.3	55
6T7	9	2	7	3	6.3	39
6T7 Test 2	4	2	7	1	6.3	40
6T7 Test 3	5	2	7	1	6.3	40
6U5	3	1	6	2	6.3	42
6U6	5	2	7	3	6.3	27
6U7	9	2	7	3	6.3	36
6V6	5	2	7	3	6.3	29
6V7	9	2	7	3	6.3	40
6V7 Test 2	4	2	7	1	6.3	50
6V7 Test 3	5	2	7	1	6.3	50
6W5	3	2	7	3	6.3	25
6W5 Test 2	5	2	7	3	6.3	25
6W6	5	2	7	3	6.3	24
6W7	9	2	7	3	6.3	37
6X5	3	2	7	3	6.3	28
6X5 Test 2	5	2	7	3	6.3	28
6X6	5	2	7	2	6.3	46

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
6Y5	3	1	6	3	6.3	28
6Y5 Test 2	5	1	6	3	6.3	28
6Y6	5	2	7	3	6.3	21
6Y7	4	2	7	3	6.3	37
6Y7 Test 2	5	2	7	3	6.3	37
6Z3	2	1	4	3	6.3	24
6Z4	2	1	5	3	6.3	26
6Z4 Test 2	3	1	5	3	6.3	26
6Z7	4	2	7	3	6.3	36
6Z7 Test 2	5	2	7	3	6.3	36
6ZY5	3	2	7	3	6.3	36
6ZY5 Test 2	5	2	7	3	6.3	36
7A4	6	1	8	3	6.3	30
7A5	6	1	8	3	6.3	26
7A6	3	1	8	1	6.3	28
7A6 Test 2	6	1	8	1	6.3	28
7A7	6	1	8	3	6.3	31
7A8	4	1	8	3	6.3	36
7B4	6	1	8	3	6.3	30
7B5	6	1	8	3	6.3	33
7B6	3	1	8	3	6.3	35
7B6 Test 2	5	1	8	1	6.3	58
7B6 Test 3	6	1	8	1	6.3	58
	Shows Short on 4 and 7.					
7B7	6	1	8	3	6.3	37
7B8	4	1	8	3	6.3	30
7C5	6	1	8	3	6.3	33
7C6	3	1	8	3	6.3	37
7C6 Test 2	5	1	8	1	6.3	40
7C6 Test 3	6	1	8	1	6.3	40
	Shows Short on 4 and 7.					
7C7	6	1	8	3	6.3	37
7E6	3	1	8	3	6.3	32
7E6 Test 2	5	1	8	1	6.3	45
7E6 Test 3	6	1	8	1	6.3	45
	Shows Short on 4 and 7.					
7E7	6	1	8	3	6.3	40
7E7 Test 2	4	1	8	1	6.3	40
7E7 Test 3	3	1	8	1	6.3	40

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
7F7	4	1	8	3	6.3	34
7F7 Test 2	5	1	8	3	6.3	34
7G7	6	1	8	3	6.3	21
7H7	6	1	8	3	6.3	25
7J7	4	1	8	3	6.3	37
7J7 Test 2	6	1	8	3	6.3	37
7K7	4	1	8	3	6.3	33
7K7 Test 2	5	1	8	1	6.3	39
7K7 Test 3	6	1	8	1	6.3	39
7L7	6	1	8	3	6.3	26
7N7	4	1	8	3	6.3	31
7N7 Test 2	5	1	8	3	6.3	31
7Q7	4	1	8	3	6.3	27
7R7	6	1	8	3	6.3	22
7R7 Test 2	3	1	8	1	6.3	50
7R7 Test 3	4	1	8	1	6.3	50
7S7	4	1	8	3	6.3	36
7S7 Test 2	6	1	8	3	6.3	36
7V7	6	1	8	3	6.3	20
7W7	6	1	8	3	6.3	22
	Shows Short on 4 and 7.					
7Y4	3	1	8	3	6.3	33
7Y4 Test 2	6	1	8	3	6.3	33
7Z4	6	1	8	3	6.3	41
7Z4 Test 2	3	1	8	3	6.3	41
10	3	1	4	3	7.5	63
12A	3	1	4	3	5.0	42
12A5	4	1 & 7	6	3	6.3	36
12A6	5	2	7	3	12.6	36
12A7	9	1	7	3	12.6	47
12A7 Test 2	5	1	7	1	12.6	23
12A8	5	2	7	3	12.6	32
12AH7	1	7	8	3	12.6	34
12AH7 Test 2	5	7	8	3	12.6	34
12B7	6	1	8	3	12.6	36
12B8	9	2	7	3	12.6	29
12B8 Test 2	8	2	7	3	12.6	29
12C8	9	2	7	3	12.6	46
12C8 Test 2	4	2	7	1	12.6	38
12C8 Test 3	5	2	7	1	12.6	38

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
12E5	5	2	7	3	12.6	34
12F5	9	2	7	3	12.6	30
12H6	3	2	7	1	12.6	25
12H6 Test 2	5	2	7	1	12.6	25
12J5	5	2	7	3	12.6	32
12J7	9	2	7	3	12.6	37
12K7	9	2	7	3	12.6	38
12K8	5	2	7	3	12.6	22
12Q7	9	2	7	3	12.6	36
12Q7 Test 2	4	2	7	1	12.6	52
12Q7 Test 3	5	2	7	1	12.6	52
12SA7	5	2	7	3	12.6	27
12SC7	3	8	7	3	12.6	34
12SC7 Test 2	4	8	7	3	12.6	34
12SF5	3	8	7	3	12.6	27
12SF7	2	8	7	3	12.6	34
12SF7 Test 2	5	8	7	1	12.6	40
12SG7	4	2	7	3	12.6	20
	Shows Short on 3 and 5.					
12SH7	4	2	7	3	12.6	20
	Shows Short on 3 and 5.					
12SJ7	4	2	7	3	12.6	32
12SK7	4	2	7	3	12.6	32
12SL7	1	8	7	3	12.6	32
12SL7 Test 2	4	8	7	3	12.6	32
12SN7	1	8	7	3	12.6	33
12SN7 Test 2	4	8	7	3	12.6	33
12SQ7	2	8	7	3	12.6	32
12SQ7 Test 2	4	8	7	1	12.6	40
12SQ7 Test 3	5	8	7	1	12.6	40
12SR7	2	8	7	3	12.6	41
12SR7 Test 2	4	8	7	1	12.6	33
12SR7 Test 3	5	8	7	1	12.6	33
12Z3	2	1	4	3	12.6	25
12Z5	2	1 & 7	4	3	6.3	25
12Z5 Test 2	6	1 & 7	4	3	6.3	25
14A4	6	1	8	3	12.6	30
14A5	6	1	8	3	12.6	37
14A7	6	1	8	3	12.6	32

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
14B6	3	1	8	3	12.6	35
14B6 Test 2	5	1	8	1	12.6	58
14B6 Test 3	6	1	8	1	12.6	58
	Shows Short on 4 and 7.					
14B8	4	1	8	3	12.6	34
14C5	6	1	8	3	12.6	28
14C7	6	1	8	3	12.6	29
14E6	3	1	8	3	12.6	35
14E6 Test 2	5	1	8	1	12.6	65
14E6 Test 3	6	1	8	1	12.6	65
	Shows Short on 4 and 7.					
14F7	4	1	8	3	12.6	33
14F7 Test 2	5	1	8	3	12.6	33
14H7	6	1	8	3	12.6	27
14J7	4	1	8	3	12.6	37
14J7 Test 2	6	1	8	3	12.6	37
14N7	4	1	8	3	12.6	31
14N7 Test 2	5	1	8	3	12.6	31
14Q7	4	1	8	3	12.6	26
14R7	6	1	8	3	12.6	23
14R7 Test 2	3	1	8	1	12.6	50
14R7 Test 3	4	1	8	1	12.6	50
14S7	4	1	8	3	12.6	30
14W7	6	1	8	3	12.6	21
	Shows Short on 4 and 7.					
14Y4	3	1	8	3	12.6	28
14Y4 Test 2	6	1	8	3	12.6	28
14Z3	2	1	4	3	12.6	25
15	9	1	5	3	2	62
19	3	1	6	3	2	44
19 Test 2	4	1	6	3	2	44
20	3	1	4	2	3.3	54
22	9	1	4	2	3.3	63
24A	9	1	5	3	2.5	39
25A6	5	2	7	3	25 & 25	30
25A7	5	2	7	3	25 & 25	30
25A7 Test 2	6	2	7	3	25 & 25	23
25AC5	5	2	7	3	25 & 25	35
25B5	4	1	6	3	25 & 25	41

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
25B6	5	2	7	3	25 & 25	26
25B8	9	2	7	3	25 & 25	28
25B8 Test 2	8	2	7	3	25 & 25	28
25C6	5	2	7	3	25 & 25	28
25D8	5	2	7	3	25 & 25	34
25D8 Test 2	9	2	7	3	25 & 25	29
25D8 Test 3	8	2	7	1	25 & 25	40
25L6	5	2	7	3	25 & 25	25
25N6	5	2	7	3	25 & 25	62
25S	5	1	6	1	2	37
25S Test 2	4	1	6	1	2	40
25S Test 3	3	1	6	1	2	40
25X6	3	2	7	3	25 & 25	27
25X6 Test 2	5	2	7	3	25 & 25	27
25Y4	5	2	7	3	25 & 25	25
25Y5	2	1	6	3	25 & 25	30
25Y5 Test 2	5	1	6	3	25 & 25	30
25Z5	2	1	6	3	25 & 25	25
25Z5 Test 2	5	1	6	3	25 & 25	25
25Z6	3	2	7	3	25 & 25	24
25Z6 Test 2	5	2	7	3	25 & 25	24
26	3	1	4	3	1.4	51
27	3	1	5	3	2.5	49
28D7	2	1	8	3	25 & 25	24
28D7 Test 2	7	1	8	3	25 & 25	24
30	3	1	4	2	2	40
31	3	1	4	2	2	45
32	9	1	4	2	2	47
32L7	5	2	7	3	25 & 32	20
32L7 Test 2	6	2	7	3	25 & 32	21
33	3	1	5	3	2	44
34	9	1	4	2	2	45
35	9	1	5	3	2.5	39
35A5	6	1	8	3	25 & 32	25
35L6	5	2	7	3	25 & 32	22
35Y4	2	Nil	8	3	25 & 32	23
		Shows Short on 1 and 4.				
35Z3	2	1	8	3	25 & 32	22
35Z4	5	2	7	3	25 & 32	20
35Z5	5	2 & 3	7	3	25 & 25	21

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
35Z6	3	2	7	3	25 & 32	20
35Z6 Test 2	5	2	7	3	25 & 32	20
36	9	1	5	3	6.3	41
37	3	1	5	3	6.3	41
38	9	1	5	3	6.3	40
39	9	1	5	3	6.3	43
39/44	9	1	5	3	6.3	43
40	3	1	4	3	5	47
40Z5	5	2 & 7	3	3	25 & 25	20
41	4	1	6	3	6.3	36
42	4	1	6	3	6.3	33
43	4	1	6	3	25 & 25	35
45	3	1	4	3	2.5	36
45Z5	5	2 & 7	3	3	25 & 25	20
46	3	1	5	3	2.5	39
47	3	1	5	3	2.5	46
48	4	1	6	3	25 & 32	28
49	3	1	5	3	2	50
50	3	1	4	3	7.5	47
50A5	6	1	8	3	25 & 50	23
50C6	5	2	7	3	25 & 50	25
50L6	5	2	7	3	25 & 50	24
50Y6	3	2	7	3	25 & 50	23
50Y6 Test 2	5	2	7	3	25 & 50	23
50Z6	3	2	7	3	25 & 50	21
50Z6 Test 2	5	2	7	3	25 & 50	21
50Z7	3	6 & 7	2	3	25 & 50	25
50Z7 Test 2	5	6 & 7	2	3	25 & 50	25
53	3	1	7	3	2.5	36
53 Test 2	5	1	7	3	2.5	36
55	9	1	6	3	2.5	39
55 Test 2	3	1	6	1	2.5	40
55 Test 3	4	1	6	1	2.5	40
56	3	1	5	3	2.5	41
57	9	1	6	3	2.5	38
58	9	1	6	3	2.5	39
59	4	1	7	3	2.5	33
70L7	5	2	7	3	25 & 70	28
70L7 Test 2	8	2	7	3	25 & 70	20
71A	3	1	4	3	5	52
75	9	1	6	3	6.3	39

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
75 Test 2	3	1	6	1	6.3	45
75 Test 3	4	1	6	1	6.3	45
76	3	1	5	3	6.3	41
77	9	1	6	3	6.3	37
78	9	1	6	3	6.3	35
79	3	1	6	3	6.3	34
79 Test 2	9	1	6	3	6.3	34
80	2	1	4	3	5	55
80 Test 2	3	1	4	3	5	55
81	2	1	4	3	7.5	75
82	2	1	4	3	2.5	24
82 Test 2	3	1	4	3	2.5	24
83	2	1	4	3	5	26
83 Test 2	3	1	4	3	5	26
83V	2	1	4	3	5	24
83 V Test 2	3	1	4	3	5	24
84	2	1	5	3	6.3	26
84 Test 2	3	1	5	3	6.3	26
85	9	1	6	3	6.3	50
85 Test 2	3	1	6	1	6.3	47
85 Test 3	4	1	6	1	6.3	47
89	9	1	6	3	6.3	36
99	3	1	4	2	3.3	62
113HY	3	1	5	1	1.4	50
115HY	3	1	5	1	1.4	50
117L7	4	2	7	3	25 & 117	28
117L7 Test 2	6	2	7	3	25 & 117	20
117M7	4	2	7	3	25 & 117	26
117M7 Test 2	6	2	7	3	25 & 117	21
117Z4	5	2	7	3	25 & 117	19
117Z6	3	2	7	3	25 & 117	20
117Z6 Test 2	5	2	7	3	25 & 117	20
125HY	3	1	5	2	1.4	51
182-B	3	1	4	3	5	41
183	3	1	4	3	5	45
307-A	3	1	5	3	5	27
482-B	3	1	4	3	5	41
483	3	1	4	3	5	45
485	3	1	5	3	2.5	39
801	3	1	4	3	7.5	47
802	4	1	7	3	6.3	33

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
807	3	1	5	3	6.3	32
809	3	1	4	3	6.3	30
812	3	1	4	3	6.3	33
837	4	1	7	3	12.6	28
840	3	1	5	2	2	37
841	3	1	4	3	7.5	50
864	3	1	4	1	1.4	69
865	3	1	4	3	7.5	93
866 (A)	9	1	4	3	2.5	25
950	3	1	5	3	2	51
951	9	1	4	2	2	45
954	6	1	4	2	6.3	36
			Use Adaptor.			
955	3	1	4	2	6.3	34
			Use Adaptor.			
956	6	1	4	2	6.3	34
			Use Adaptor.			
957	3	4 & 5	1	1	1.4	36
			Use Adaptor.			
958	3	4 & 5	1	1	1.4	36
			Use Adaptor.			
959	6	4 & 5	1	1	1.4	41
			Use Adaptor.			
1203	4	1	8	1	6.3	33
1204	5	2	7	3	6.3	29
			Shows Short on 4, 6 and 8.			
1221	9	1	6	3	6.3	37
1223	9	2	7	3	6.3	34
1231	6	1	8	3	6.3	21
1232	6	1	8	3	6.3	21
1284	6	1	8	3	12.6	28
1291	3	1 & 8	4	1	1.4	41
1291 Test 2	6	1 & 8	4	1	1.4	41
1293	6	1	8	2	1.4	36
1294	4	1	8	1	1.4	57
1299	6	1 & 8	7	2	1.4	28

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
1603	9	1	6	3	6.3	35
1608	3	1	4	3	2.5	27
1610	3	1	5	3	2.5	31
1612	9	2	7	3	6.3	28
1613	5	2	7	3	6.3	34
1614	5	2	7	3	6.3	27
1616	9	1	4	3	2.5	57
1619	5	2	7	3	2.5	33
1620	9	2	7	3	6.3	35
1621	5	2	7	3	6.3	45
1622	5	2	7	3	6.3	30
1625	3	1	5	3	12.6	28
1626	5	2	7	3	12.6	36
1629	5	2	7	2	12.6	40
1631	5	2	7	3	12.6	30
1632	5	2	7	3	12.6	25
1633	1	8	7	3	25 & 25	29
1633 Test 2	4	8	7	3	25 & 25	29
1634	3	8	7	3	12.6	34
1634 Test 2	4	8	7	3	12.6	34
1851	9	2	7	3	6.3	22
1852	4	2	7	3	6.3	24
1853	4	2	7	3	6.3	26
2050	5	2	7	3	6.3	17
	No Short Test.					
2051	5	2	7	3	6.3	21
	No Short Test.					

AMERICAN AND AUSTRALIAN VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
7700	9	1	6	3	6.3	30
9001	1	3	4	3	6.3	30
	Shows Short on 2 and 7.					
9002	6	3	4	3	6.3	30
	Shows Short on 1, 2, 5 and 7.					
9003	1	3	4	3	6.3	30
	Shows Short on 2 and 7.					
9005	3	4 & 5	1	1	3.3	34
	Use Adaptor.					
HY114B	9	2	7	3	1.4	55
HY615	9	2	7	3	6.3	33
PZ	3	1	5	3	2.5	46
RK33	4	1	7	3	6.3	30
RK33 Test 2	9	1	7	3	6.3	30
RK34	9	1	7	3	6.3	30
	Left Hand Top Cap.					
RK34 Test 2	9	1	7	3	6.3	30
	Right Hand Top Cap.					
XXB	4	1 & 8	7	2	1.4	45
XXB Test 2	5	1 & 8	7	2	1.4	45
XXD	4	1	8	1	6.3	32
XXD Test 2	5	1	8	1	6.3	32
XXFM	3	1	8	3	6.3	39
XXFM Test 2	5	1	8	1	6.3	27
XXFM Test 3	6	1	8	1	6.3	27
XXL	6	1	8	3	6.3	29

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
A209	3	1	4	3	2	55
A409	3	1	4	3	4	47
A415	3	1	4	3	4	32
A425	3	1	4	3	4	40
A442	3	1	4	3	4	60
A609	3	1	4	3	6.3	43
A615	3	1	4	3	6.3	32
A630	3	1	4	3	6.3	38
A635	3	1	4	3	6.3	68
A642	3	1	4	3	6.3	42
AB2	5	2	3	3	4	27
AB2 Test 2	1	2	3	3	4	27
ABC1	9	2	3	3	4	24
ABC1 Test 2	5	2	3	3	4	24
ABC1 Test 3	6	2	3	3	4	24
AC2	9	2	3	3	4	17
AC3	3	1	4	3	1.4	52
AC4	3	1	4	3	5	54
ACO44	3	1	4	3	4	40
ACO64	3	1	4	3	4	46
AF2	5	1	7	3	4	15
AF3	9	2	3	3	4	22
AF7	9	2	3	3	4	22
AK1	5	1	7	3	4	17
AK2	6	2	3	3	4	22
AL2	9	2	3	3	4	24
AL3	6	2	3	3	4	14
AZ3	5	2	3	3	4	17
AZ3 Test 2	8	2	3	3	4	17
B21	1	4	5	3	2	53
B21 Test 2	2	4	5	3	2	53
	Use English 7 Pin Adaptor.					
B217	3	1	4	3	2	55
B240	3	1	6	3	2	24
B240 Test 2	4	1	6	3	2	24
B255	3	1	4	3	2	38
B262	3	1	4	3	2	26
B403	3	1	4	3	4	62
B405	3	1	4	3	4	43
B406	3	1	4	3	4	59

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
B409	3	1	4	3	4	41
B443	3	1	4	3	4	31
B605	3	1	4	3	6.3	55
C243N	3	1	5	3	2	28
C443	3	1	5	3	4	46
C603	3	1	4	3	6.3	48
C643	3	1	5	3	6.3	48
CB1	5	2	3	3	12.6	34
CB1 Test 2	9	2	3	3	12.6	34
CBC1	9	2	3	3	12.6	41
CBC1 Test 2	5	2	3	3	12.6	84
CBC1 Test 3	6	2	3	3	12.6	84
CC1	9	2	3	3	12.6	19
CF1	9	2	3	3	12.6	21
CF2	9	2	3	3	12.6	20
CK1	6	2	3	3	12.6	22
CL2	9	2	3	3	25 & 25	17
CL4	9	2	3	3	25 & 32	17
CY1	8	2	3	3	25 & 25	14
CY2	5	2	3	3	25 & 32	14
CY2 Test 2	8	2	3	3	25 & 32	14
CY31	5	2	7	3	25 & 25	14
D243	3	1	5	3	2.5	36
DL35	5	2	7	2	1.4	26
DL63	9	2	7	3	6.3	36
DL63 Test 2	4	2	7	1	6.3	40
DL63 Test 3	5	2	7	1	6.3	40
DO26	3	1	4	3	4	34
DPT	2	4	5	3	12.6	26
	Use English 7 Pin Adaptor.					
DS	2	3	4	3	12.6	25
	Use English 5 Pin Adaptor.					
DSB	2	3	4	3	12.6	19
	Use English 5 Pin Adaptor.					
DU2	2	1	4	3	4	31
DU2 Test 2	3	1	4	3	4	31
DU10	2	1	4	3	4	20
DW2	1	3	4	3	4	34
DW2 Test 2	2	3	4	3	4	34
	Use English 4 Pin Adaptor.					

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
E406N	3	1	4	3	4	41
E409	3	1	5	3	4	18
E415	3	1	5	3	4	27
E424	3	1	5	3	4	17
E442	3	1	5	3	4	29
E442S	3	1	5	3	4	36
E443H	3	1	5	3	4	31
E443N	3	1	5	3	4	43
E444N	4	1	6	3	4	31
E444N Test 2	3	1	6	3	4	84
E445	3	1	5	3	4	29
E446	5	1	7	3	4	15
E447	5	1	7	3	4	15
E452T	3	1	5	3	4	12
E454	9	1	7	3	4	25
E454 Test 2	4	1	7	3	4	84
E454 Test 3	6	1	7	3	4	84
E455	3	1	5	3	4	13
E463	5	1	7	3	4	21
EB4	5	2	3	3	6.3	25
EB4 Test 2	7	2	3	3	6.3	25
EB34	3	2	7	3	6.3	25
EB34 Test 2	5	2	7	3	6.3	25
EBC3	9	2	3	3	6.3	26
EBC3 Test 2	5	2	3	3	6.3	62
EBC3 Test 3	6	2	3	3	6.3	62
EBC33	9	2	7	3	6.3	26
EBC33 Test 2	4	2	7	3	6.3	62
EBC33 Test 3	5	2	7	3	6.3	62
EBF2G	9	1	8	3	6.3	30
EBF2G Test 2	5	1	8	1	6.3	20
EBF2G Test 3	6	1	8	1	6.3	20
EBF2-P	9	2	3	3	6.3	24
EBF2-P Test 2	5	2	3	1	6.3	20
EBF2-P Test 3	6	2	3	1	6.3	20
EBF32	9	2	7	3	6.3	24
EBF32 Test 2	4	2	7	1	6.3	20
EBF32 Test 3	5	2	7	1	6.3	20
EBF35	9	1	8	3	6.3	30
EBF35 Test 2	5	1	8	1	6.3	20

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
EBF35 Test 3	6	1	8	1	6.3	20
EBL1	9	2	3	3	6.3	15
EBL1 Test 2	5	2	3	3	6.3	66
EBL1 Test 3	6	2	3	3	6.3	66
ECH35	9	2	7	3	6.3	26
ECH35 Test 2	5	2	7	3	6.3	24
EF5	9	2	3	3	6.3	21
EF6	9	2	3	3	6.3	21
EF9	9	2	3	3	6.3	20
EF36	9	2	7	3	6.3	21
EF39	9	2	7	3	6.3	20
EK1	6	2	3	3	6.3	20
EK2	6	2	3	3	6.3	27
EK2G	5	2	7	3	6.3	27
EK32	5	2	7	3	6.3	27
EL2	9	2	3	3	6.3	19
EL3N	6	2	3	3	6.3	26
EL3NG	5	2	7	3	6.3	14
EL5	6	2	3	3	6.3	15
EL32	9	2	7	3	6.3	19
EL33A	5	2	7	3	6.3	22
EM1	6	2	3	3	6.3	100
EM4	6	2	3	3	6.3	23
EZ2	5	2	3	3	6.3	24
EZ2 Test 2	8	2	3	3	6.3	24
EZ3	5	2	3	3	6.3	17
EZ3 Test 2	8	2	3	3	6.3	17
EZ4	5	2	3	3	6.3	13
EZ4 Test 2	8	2	3	3	6.3	13
F443	3	1	5	3	4	40
F443N	3	1	5	3	4	36
FC2A	2	4	5	3	2	48
		Use English 7 Pin Adaptor.				
FC4	2	4	5	3	4	18
		Use English 7 Pin Adaptor.				
FC13	6	2	3	3	12.6	22
FC13C	2	4	5	3	12.6	22
		Use English 7 Pin Adaptor.				
H2	2	3	4	3	2	24
		Use English 4 Pin Adaptor.				

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
H210	2	3	4	3	2	70
		Use English 4 Pin Adaptor.				
HL2	2	3	4	3	2	25
		Use English 4 Pin Adaptor.				
HL210	2	3	4	3	2	34
		Use English 4 Pin Adaptor.				
IW3	2	1	4	3	4	27
IW3 Test 2	3	1	4	3	4	27
IW4/350	1	3	4	3	4	31
IW4/350 Test 2	2	3	4	3	4	31
		Use English 5 Pin Adaptor.				
KBC1	9	1	6	3	2	40
KBC1 Test 2	3	1	6	3	2	84
KBC1 Test 3	4	1	6	3	2	84
KBC1-P	9	2	3	3	2	40
KBC1-P Test 2	5	2	3	3	2	84
KBC1-P Test 3	6	2	3	3	2	84
KC3	6	2	3	3	2	19
KDD1	6	2	3	3	2	31
KDD1 Test 2	7	2	3	3	2	31
KF1	4	1	6	3	2	19
KF2	4	1	6	3	2	21
KF3	9	2	3	3	2	45
KF3G	9	2	7	3	2	45
KF4	9	2	3	3	2	40
KK2G (Octal)	5	2	7	3	2	48
KK2G (7 Pin)	5	1	7	3	2	48
KK2P	6	2	3	3	2	48
KL4	6	2	3	3	2	31
KL4G	5	2	7	3	2	31
KTW61	9	2	7	3	6.3	23
KTW61M	9	2	7	3	6.3	23
KT33	5	2 & 7	1	3	12.6	24
KT33C	5	2 & 7	1	3	12.6	24
KT61	5	2	7	2	6.3	15
KT66	5	2	7	3	6.3	28
L21	2	3	4	3	2	29
		Use English 4 Pin Adaptor.				

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
MH4	2	3	4	3	4	15
		Use English 5 Pin Adaptor.				
MH41	2	3	4	3	4	10
		Use English 5 Pin Adaptor.				
MHD4	9	4	5	3	4	18
MHD4 Test 2	1	4	5	3	4	84
MHD4 Test 3	3	4	5	3	4	84
		Use English 7 Pin Adaptor.				
MKT4	2	3	4	3	4	22
		Use English 5 Pin Adaptor.				
MKT4	2	4	5	3	4	22
		Use English 7 Pin Adaptor.				
ML4	2	3	4	3	4	16
		Use English 5 Pin Adaptor.				
MM4V	2	3	4	3	4	18
		Use English 5 Pin Adaptor.				
MPT4	2	3	4	3	4	22
		Use English 5 Pin Adaptor.				
MPT4	2	4	5	3	4	22
		Use English 7 Pin Adaptor.				
MS4	2	3	4	3	4	15
		Use English 5 Pin Adaptor.				
MS4B	2	3	4	3	4	15
		Use English 5 Pin Adaptor.				
MU12	1	3	4	3	4	18
MU12 Test 2	2	3	4	3	4	18
		Use English 4 Pin Adaptor.				
MU14	1	3	4	3	4	18
MU14 Test 2	2	3	4	3	4	18
		Use English 4 Pin Adaptor.				
P2	2	3	4	3	2	28
		Use English 4 Pin Adaptor.				
PEN4VA	5	1	7	3	4	18
PEN 26	9	2	3	3	25 & 25	17
PM1A	3	1	4	3	2	60

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
PM1HF	3	1	4	3	2	59
PM1HL	3	1	4	3	2	57
PM1LF	3	1	4	3	2	57
PM2A	3	1	4	3	2	25
PM2B	3	1	6	2	2	25
PM2B Test 2	4	1	6	2	2	25
PM2BA	3	1	6	2	2	28
PM2BA Test 2	4	1	6	2	2	28
PM2DX	3	1	4	3	2	41
PM3	3	1	4	3	4	37
PM4	3	1	4	3	4	46
PM4DX	3	1	4	3	4	29
PM5X	3	1	4	3	6.3	48
PM6	3	1	4	3	6.3	39
PM12	3	1	4	3	2	25
PM12A	3	1	4	3	2	25
PM12M	3	1	4	3	2	26
PM14	3	1	4	3	4	60
PM16	3	1	4	3	6.3	66
PM22	3	1	5	3	2	66
PM22A	3	1	5	3	2	24
PM24	3	1	5	3	4	39
PM24B	3	1	5	3	4	25
PM24M	3	1	5	3	4	32
PM26	3	1	5	3	6.3	36
PM202	3	1	4	3	2	32
PM243	3	1	5	3	2.5	36
PX4	2	3	4	3	4	26
	Use English 4 Pin Adaptor.					
PX25	2	3	4	3	4	17
	Use English 4 Pin Adaptor.					
S4V	3	1	5	3	4	39
S4VA	3	1	5	3	4	11
S4VB	3	1	5	3	4	12
SP2	4	1	6	3	2	20
SP4	5	1	7	3	4	15
SP13	9	2	3	3	12.6	21
TDD2	9	1	6	3	2	39
TDD2 Test 2	3	1	6	3	2	84

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
TDD2 Test 3	4	1	6	3	2	84
TDD4	9	1	7	3	4	27
TDD4 Test 2	4	1	7	3	4	34
TDD4 Test 3	6	1	7	3	4	34
TDD13C	9	4	5	3	12.6	41
TDD13C Test 2	1	4	5	3	12.6	84
TDD13C Test 3	3	4	5	3	12.6	84
	Use English 7 Pin Adaptor.					
UR1	8	2	3	3	25 & 25	14
UR3C	2	4	5	3	25 & 32	14
UR3C Test 2	7	4	5	3	25 & 32	14
	Use English 7 Pin Adaptor.					
U10	1	3	4	3	4	34
U10 Test 2	2	3	4	3	4	34
	Use English 4 Pin Adaptor.					
U14	1	3	4	3	4	34
U14 Test 2	2	3	4	3	4	34
	Use English 4 Pin Adaptor.					
U31	5	2	7	3	25	26
U50	4	2	8	3	5	57
U50 Test 2	6	2	8	3	5	57
U52	4	2	8	3	5	35
U52 Test 2	6	2	8	3	5	35
VDS	2	3	4	3	12.6	40
	Use English 5 Pin Adaptor.					
VMS4	2	3	4	3	4	21
	Use English 5 Pin Adaptor.					
VMS4B	2	3	4	3	4	21
	Use English 5 Pin Adaptor.					
VP2	2	4	5	3	2	17
	Use English 7 Pin Adaptor.					
VP4	2	4	5	3	4	15
	Use English 7 Pin Adaptor.					
VP13A	9	2	3	3	12.6	20
X61M	9	2	7	2	6.3	17
X61M Test 2	5	2	7	3	6.3	17

CONTINENTAL VALVES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
X65	9	2	7	3	6.3	54
X65 Test 2	5	2	7	3	6.3	36
Y63	5	2	7	2	6.3	52
2D4A	1	3	4	3	4	27
2D4A Test 2	2	3	4	3	4	27
	Use English 5 Pin Adaptor.					
2D13	5	2	3	3	12.6	34
2D13 Test 2	9	2	3	3	12.6	34
2D13A	5	2	3	3	12.6	34
2D13A Test 2	1	2	3	3	12.6	34
2D13C	1	3	4	3	12.6	34
2D13C Test 2	2	3	4	3	12.6	34
	Use English 5 Pin Adaptor.					
102T	3	1	5	3	2.5	39
104V	3	1	5	3	4	18
164V	3	1	5	3	4	28
244V	3	1	5	3	4	16
354V	3	1	5	3	4	17
506	1	3	4	3	4	34
506 Test 2	2	3	4	3	4	34
	Use English 4 Pin Adaptor.					
904V	3	1	5	3	4	15
1561	5	2	3	3	4	31
1561 Test 2	8	2	3	3	4	31
1561-P	2	1	4	3	4	31
1561-P Test 2	3	1	4	3	4	31
1867	2	1	4	3	4	27
1867 Test 2	3	1	4	3	4	27

ADDITIONAL RELEASES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
3V4	6	1 & 5	7	1	1.4	30
6AK5	1	3	4	1	6.3	15
	Shows Short between 2 and Seven.					
6AL7	7	3	4	2	6.3	15
6AL7 Test 2	2	3	4	2	6.3	15
	Special Adaptor TM5 required					
6AR7	9	1	8	3	6.3	22
6AU6	1	3	4	3	6.3	24
6AV6	1	3	4	3	6.3	20
6BA6	1	3	4	3	6.3	25
6BE6	1	3	4	3	6.3	22
6X4	6	3	4	3	6.3	24
6X4 Test 2	1	3	4	3	6.3	24
12BA6	1	3	4	3	12.6	25
12BE6	1	3	4	3	12.6	22
35W4	5	3	4	3	35	25
	Shows Short on 3, 4 and 5.					
117Z3	5	3	4	3	117	25
ECH33	9	2	7	3	6.3	28
X76M	9	2	7	2	12.6	18
Y61	5	2	7	1	6.3	15

ADDITIONAL RELEASES

VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
6AD8	2	4	5	3	6.3	48
6AD8	7	4	5	3	6.3	48
6AD8	8	4	5	3	6.3	100
6AE8	2	4	5	3	6.3	25
6AE8	7	4	5	3	6.3	32
	Shows Short on 9.					
6AG6G	5	2	7	3	6.3	15
6AM5	1	3	4	3	6.3	40
6AM6	1	3	4	3	6.3	35
6AN7	2	4	5	3	6.3	24
	Shows Short on 3 and 6.					
6AQ5	1	3	4	3	6.3	29
6BD7	2	4	5	3	6.3	28
	Shows Short on 7 and 9.					
	6	4	5	1	6.3	45
	8	4	5	1	6.3	45
6BJ5	1	3	4	3	6.3	25
	Shows Short on 2 and 6.					
6BW6	2	4	5	3	6.3	30
	Shows Short on 1.					
6M5	2	4	5	3	6.3	20
	Shows Short on 3 and 8.					
6N8	2	4	5	3	6.3	23
6N8	7	4	5	1	6.3	80
6N8	8	4	5	1	6.3	80
6V4	1	4	5	3	6.3	28
EZ82	7	4	5	3	6.3	28

ADDITIONAL RELEASES

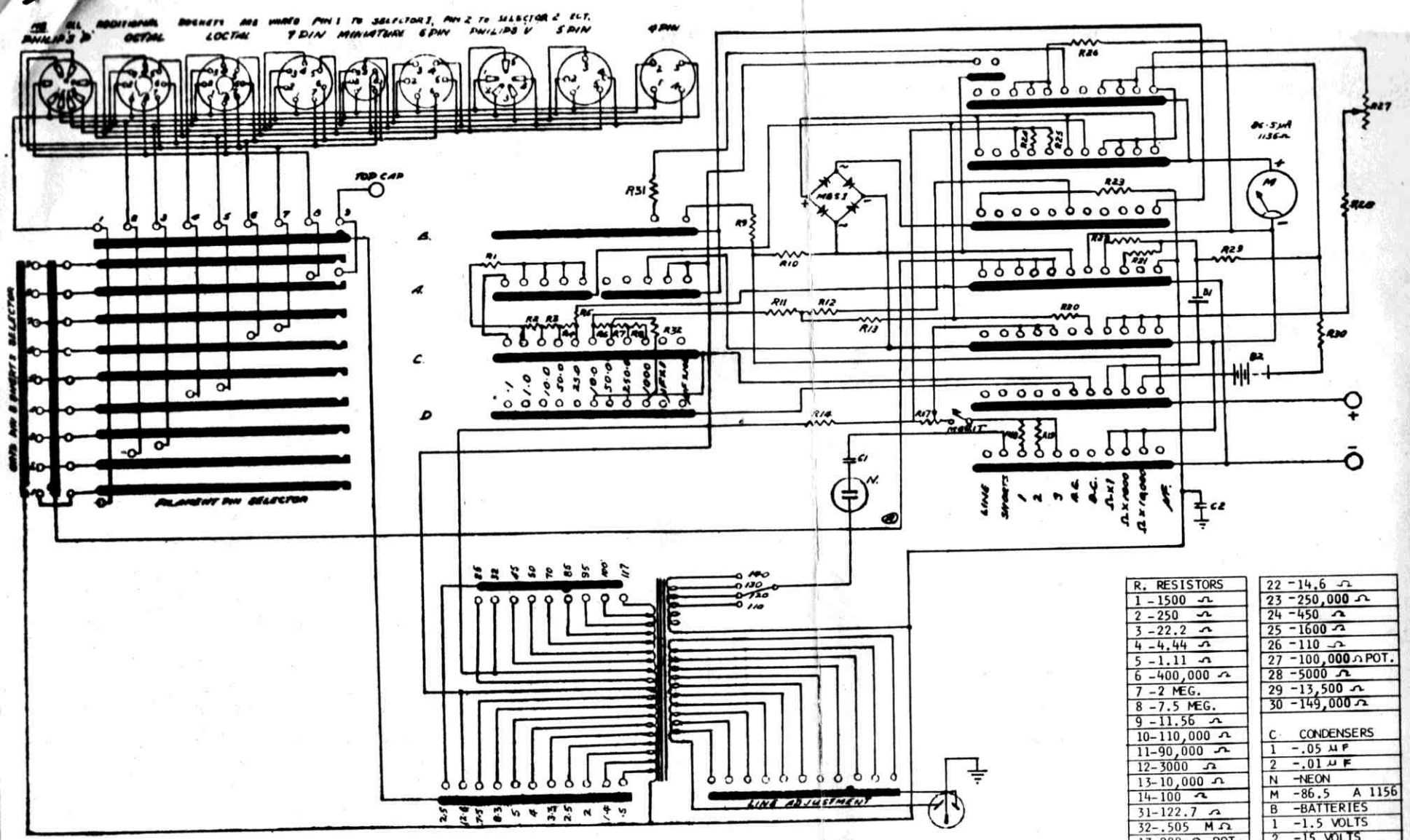
VALVE TYPE	ELEMENT SELECTOR A Merit	ELEMENT SELECTOR A Heater Continuity	ELEMENT SELECTOR B	CIRCUIT C	FILAMENT D	RANGE E
12AT7	2	4 & 5	9	3	6.3	25
	7	4 & 5	9	3	6.3	25
12AV7	2	4 & 5	9	3	6.3	30
	7	4 & 5	9	3	6.3	30
12AX7	2	4 & 5	9	3	6.3	37
	7	4 & 5	9	3	6.3	37
12B8GT	9	2	7	3	12.6	24
	8	2	7	3	12.6	24
AZ31	4	2	8	3	4	17
	6	2	8	3	4	17
DH81	3	1	8	3	6.3	40
	5	1	8	1	6.3	55
	6	1	8	1	6.3	55
DH101	3	1	8	1	12.6	32
	5	1	8	1	12.6	50
	6	1	8	1	12.6	50
DL82	3	1	8	2	6.3	25
	5	1	8	2	6.3	100
	6	1	8	2	6.3	100
EF37	9	2	7	3	6.3	35
KT81	6	1	8	3	6.3	21
U78	1	3	4	3	6.3	35
	6	3	4	3	6.3	35
U81	6	7	8	3	6.3	29
	3	7	8	3	6.3	29
W81M	6	1	8	3	6.3	25
W101	6	1	8	2	12.6	28
X81	6	1	8	3	6.3	24
	4	1	8	3	6.3	28
X101	6	1	8	2	12.6	32
	4	1	8	2	12.6	32

THE FOLLOWING VALVES MAY BE TESTED BY REFERENCE TO TYPES ALREADY LISTED:

VALVE TYPE	EQUIVALENT TYPE	VALVE TYPE	EQUIVALENT TYPE	VALVE TYPE	EQUIVALENT TYPE
EZ82	6V4	N18	3Q4	DAC32	1H5
8D3	6AM6	ZD17	1S5	DL35	1C5
EF91	6AM6	W17	1T4	ECH33	ECH35
EL91	6AM5	X17	1R5	EL33	EL33A
N78	6BJ5	DF33	1N5		
		DK32	1A7		

ADDITIONAL RELEASES - MODEL VCT/2.

6AB8	2	3	4	1	6.3	35
	9	3	4	2	6.3	40
6AR5	1	3	4	3	6.3	37
6AT6	1	3	4	3	6.3	30
	5	5	4	1	6.3	50
	6	5	4	1	6.3	50
6BH5	2	4	5	2	6.3	45
			(shows short on 7 & 8).			
6J6	5	3	4	3	6.3	27
	6	3	4	3	6.3	27
6BF6	1	3	4	3	6.3	40
	5	3	4	1	6.3	33
	6	3	4	1	6.3	33
6BV7	8	4	5	3	6.3	22
	1	4	5	1	6.3	100
	6	4	5	1	6.3	100
			(shows short on 7 & 9)			
12AU7	2	4 and 5	9	3	6.3	
		4 and 5	9	3	6.3	
ECC32	1	7	8	3	6.3	35
	4	7	8	3	6.3	35
ECC33	1	7	8	3	6.3	33
ECC33	4	7	8	3	6.3	33
EF92	1	3	4	3	6.3	30



R. RESISTORS
1 -1500 Ω
2 -250 Ω
3 -22.2 Ω
4 -4.44 Ω
5 -1.11 Ω
6 -400,000 Ω
7 -2 MEG.
8 -7.5 MEG.
9 -11.56 Ω
10-110,000 Ω
11-90,000 Ω
12-3000 Ω
13-10,000 Ω
14-100 Ω
31-122.7 Ω
32-.505 MΩ
17-200 Ω POT.
18-5000 Ω
19-1000 Ω
20-8000 Ω
21-1670 Ω

22	-14,6 Ω
23	-250,000 Ω
24	-450 Ω
25	-1600 Ω
26	-110 Ω
27	-100,000 Ω POT.
28	-5000 Ω
29	-13,500 Ω
30	-149,000 Ω
C	CONDENSERS
1	-.05 μF
2	-.01 μF
N	-NEON
M	-86.5 A 1156
B	-BATTERIES
1	-1.5 VOLTS
2	-15 VOLTS

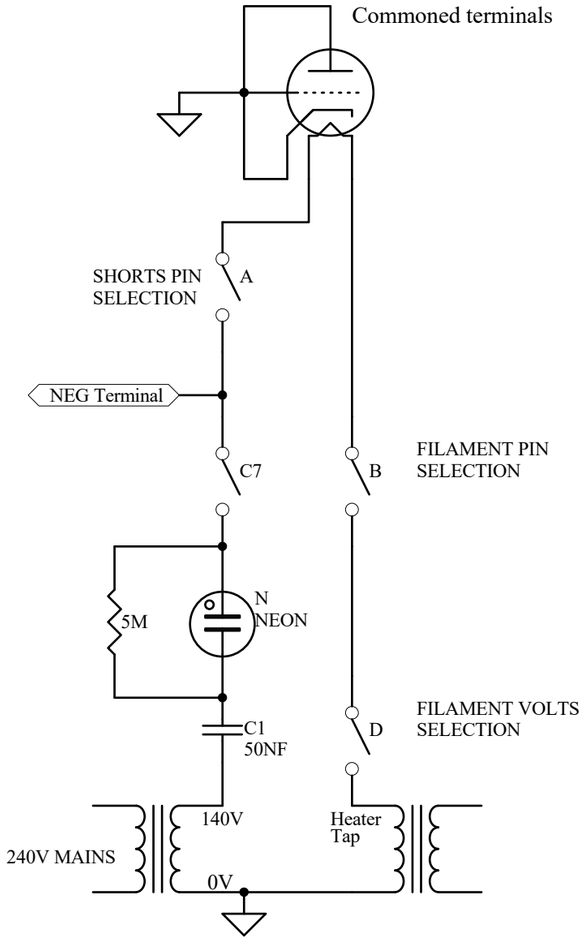
V.C.T. 2 CIRCUIT

PATON ELECTRICAL VCT-2 VALVE TESTER

Shorts Measurement: Cx/2

C. CIRCUIT - SHORTS

HEATER CONTINUITY

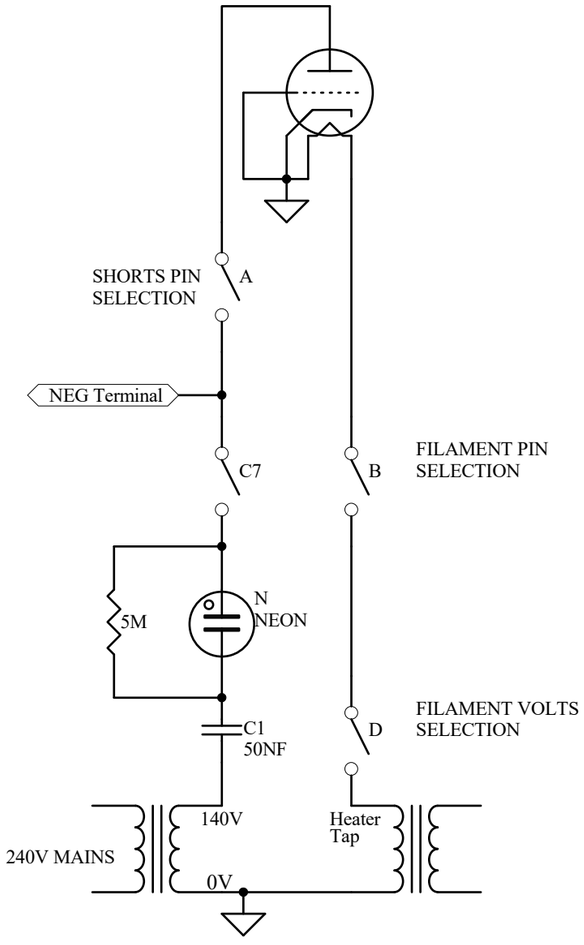


Heater not powered

Shorts Measurement: Cx/2

C. CIRCUIT - SHORTS

INTERNAL SHORT



Heater powered

Title		
Size A4	Number	Revision
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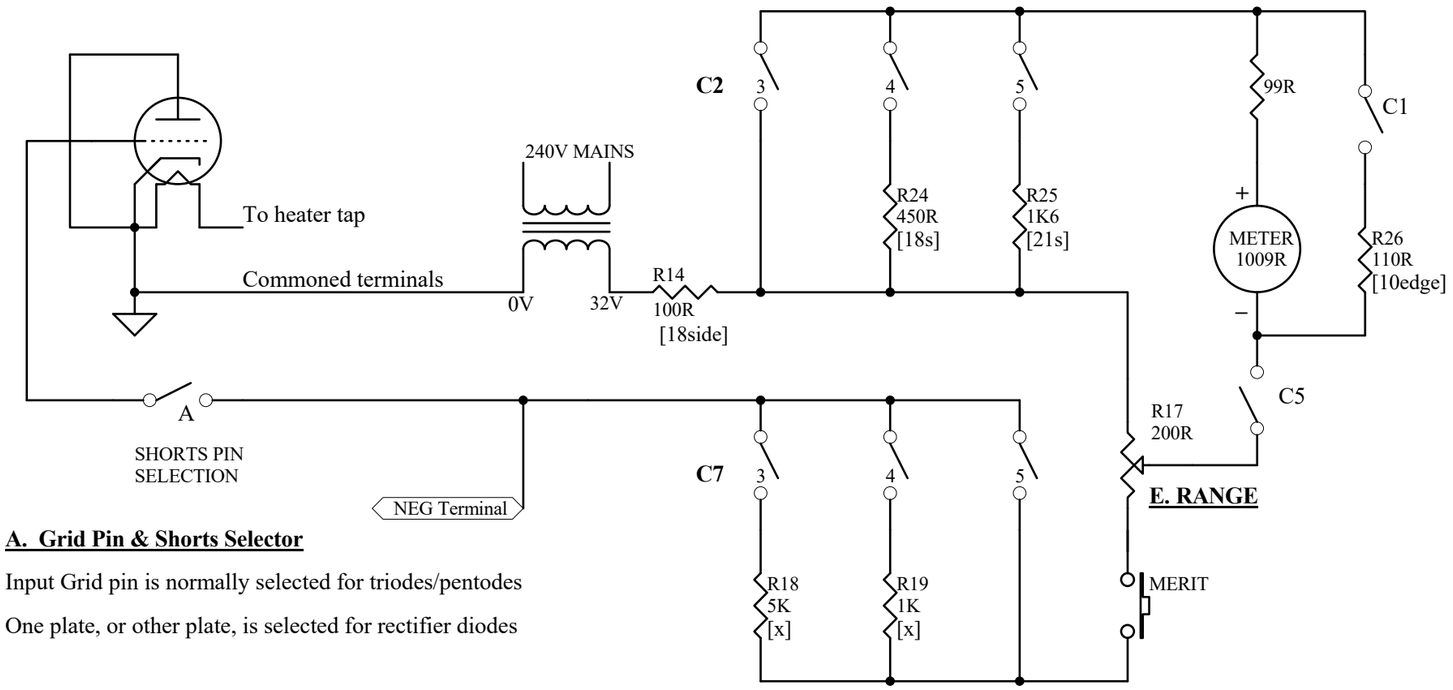
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb		Drawn By:

PATON ELECTRICAL VCT-2 VALVE TESTER

Valve Emission Measurement: Cx/3,4,5

C. CIRCUIT - VALVES 1 2 3



A. Grid Pin & Shorts Selector

Input Grid pin is normally selected for triodes/pentodes

One plate, or other plate, is selected for rectifier diodes

	1	2	3	
Merit	**5K17**	**1K17**	**175R**	**POT at max**
Prospective peak current (mA rms)	**6.2**	**27**	**183**	**R14 dissipates up to 3.3W**

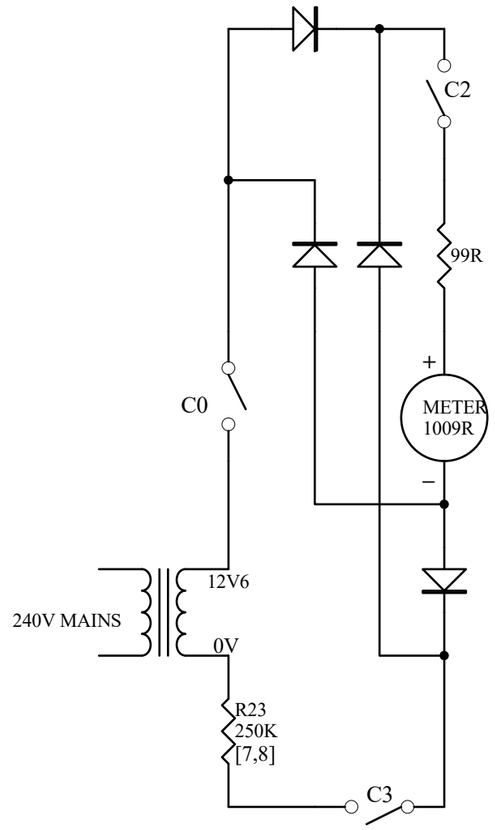
Emission test between selected pin and "all other pins" (ie. cathode).

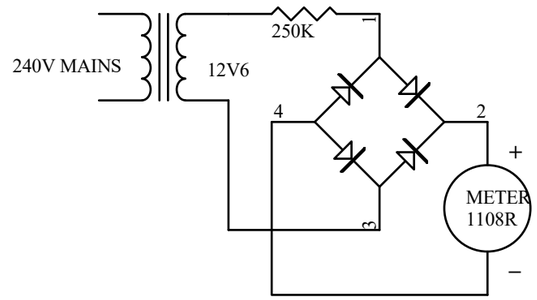
Filament (heater) supply connected between Filament Select pin and "all other pins" (ie. other end of heater).

[Resistor location on tagboard from diode end]

AC Line Volts Measurement: Cx/1

C. CIRCUIT - LINE

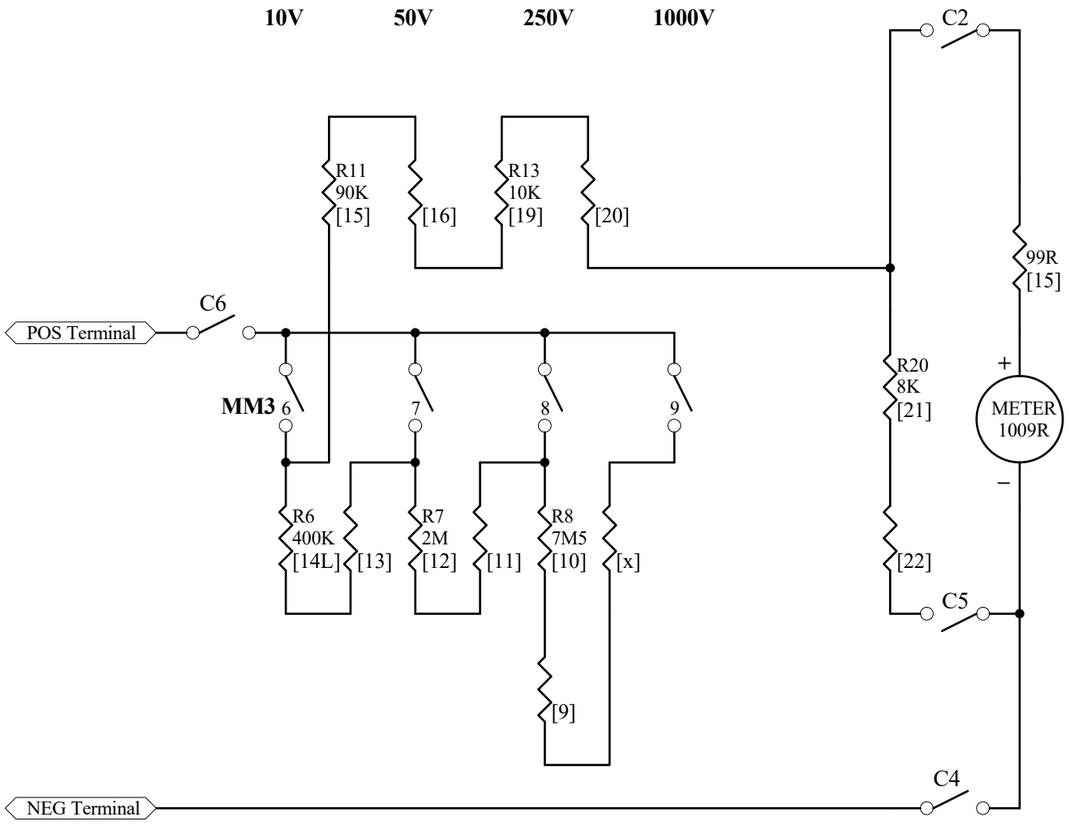


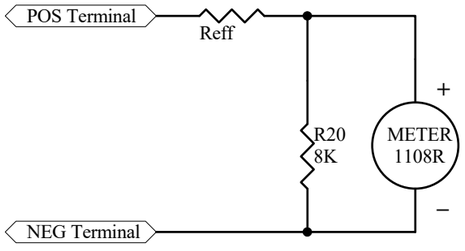


Title		
Size A4	Number	Revision
Date: 30-Aug-2021		Sheet of
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb		Drawn By:

PATON ELECTRICAL VCT-2 VALVE TESTER

DC Volts Measurement: Cx/7, MMx/6-9



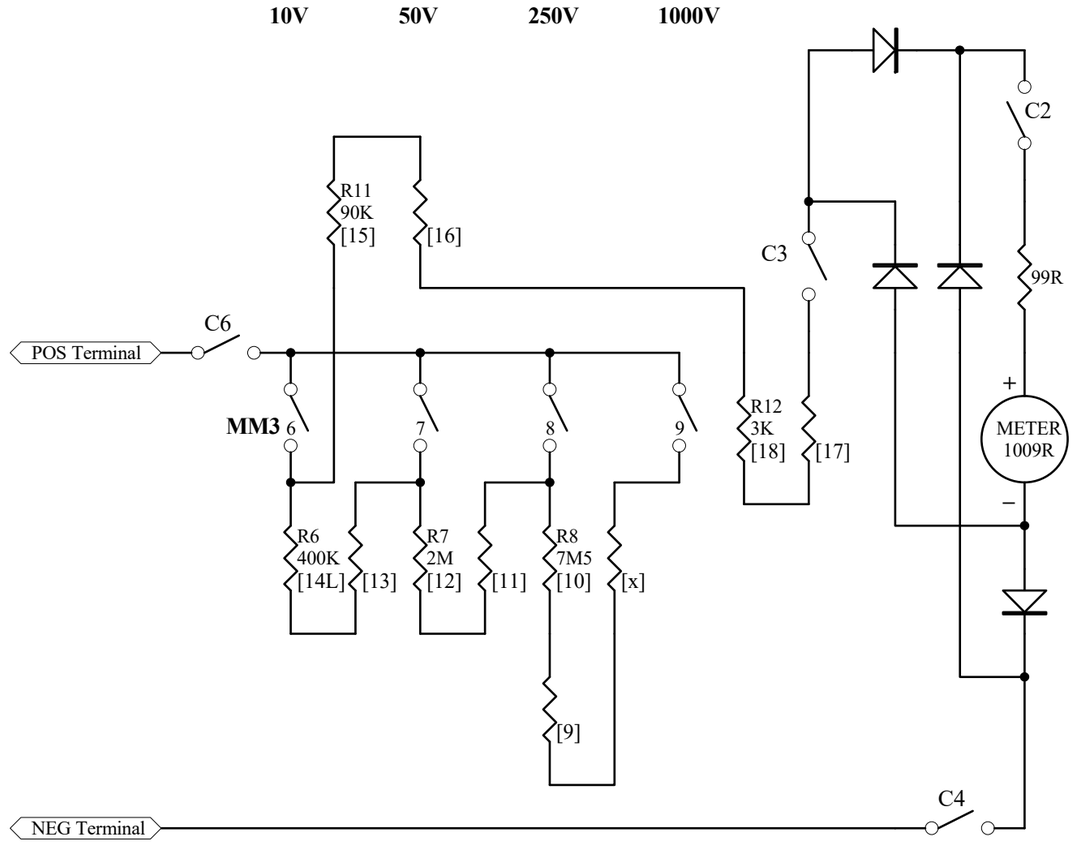


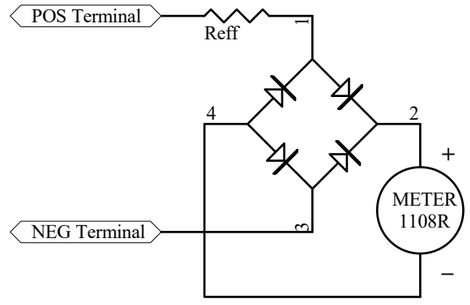
	10V	50V	250V	1000V
Reff	**100K**	**500K**	**2M5**	**10M**

10kohm/volt sensitivity

[Resistor location on tagboard from diode end]

AC Volts Measurement: Cx/6, MMx/6-9





	10V	50V	250V	1000V
Reff	**93K**	**493K**	**2M49**	**9M99**

Title			
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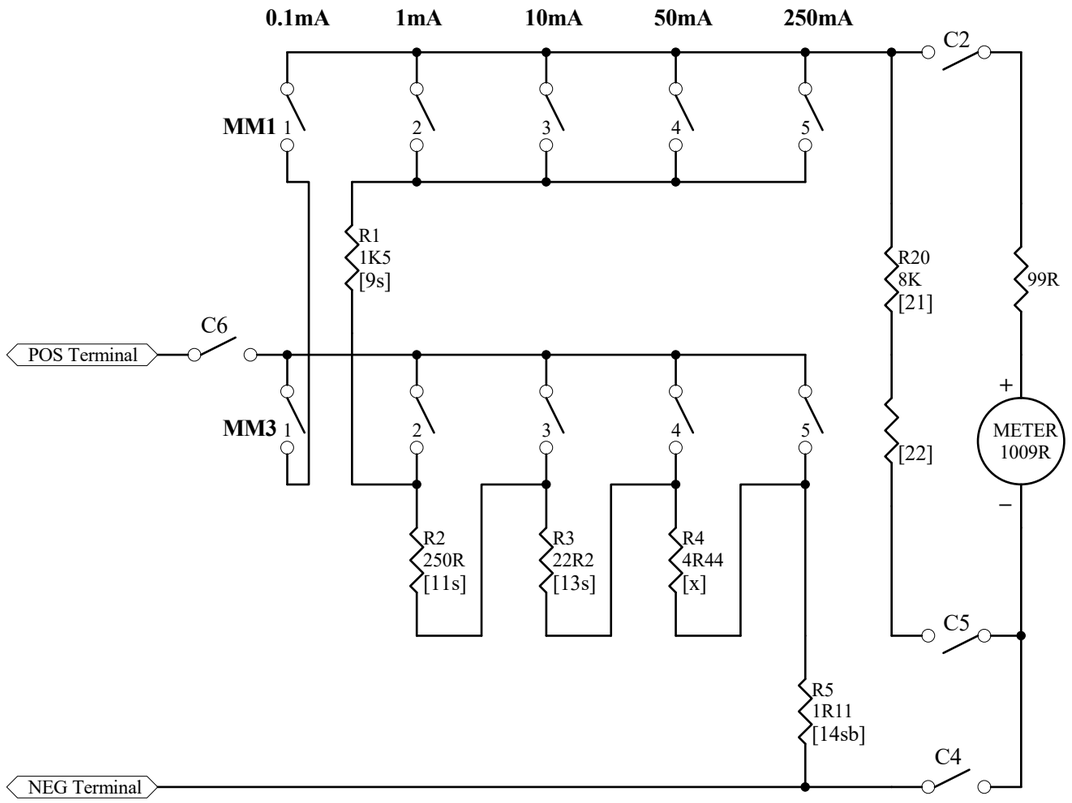
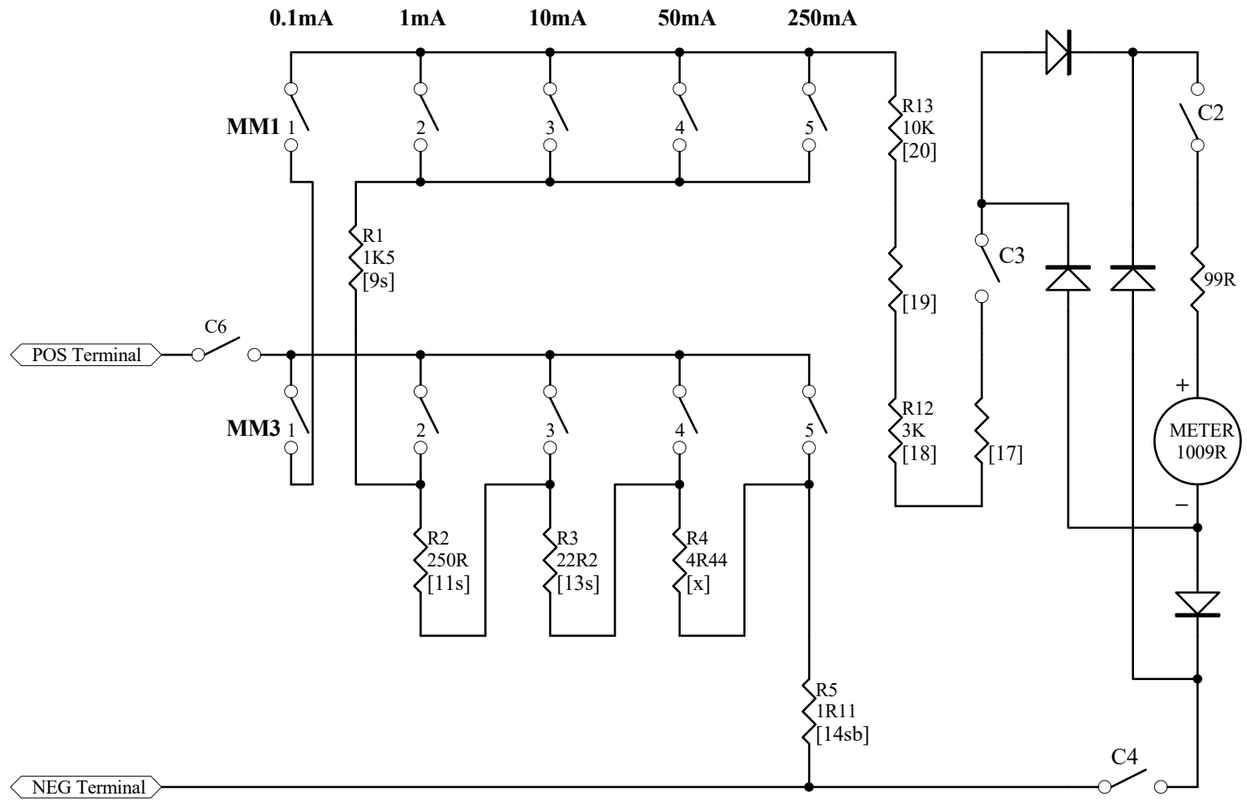
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb			

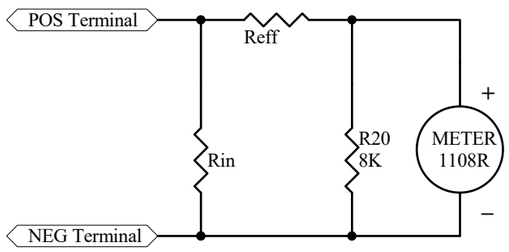
PATON ELECTRICAL VCT-2 VALVE TESTER

DC mA Measurement: Cx/7, MMx/1-5

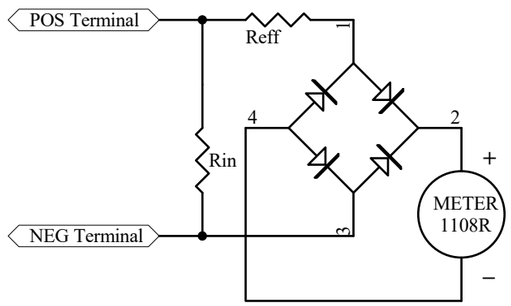


AC mA Measurement: Cx/6, MMx/1-5





	0.1mA	1mA	10mA	50mA	250mA
Rm	**973R**	**2K47**	**2K47**	**2K47**	**2K47**
Rin		**278R**	**27R75**	**5R55**	**1R11**
Burden	**0.1V**	**0.25V**	**0.274V**	**0.277V**	**0.277V**



	0.1mA	1mA	10mA	50mA	250mA
Rm	**14K1**	**15K6**	**15K85**	**19K**	**19K**
Rin		**278R**	**27R75**	**5R55**	**1R11**

[Resistor location on tagboard from diode end]

Title		
Size A4	Number	Revision
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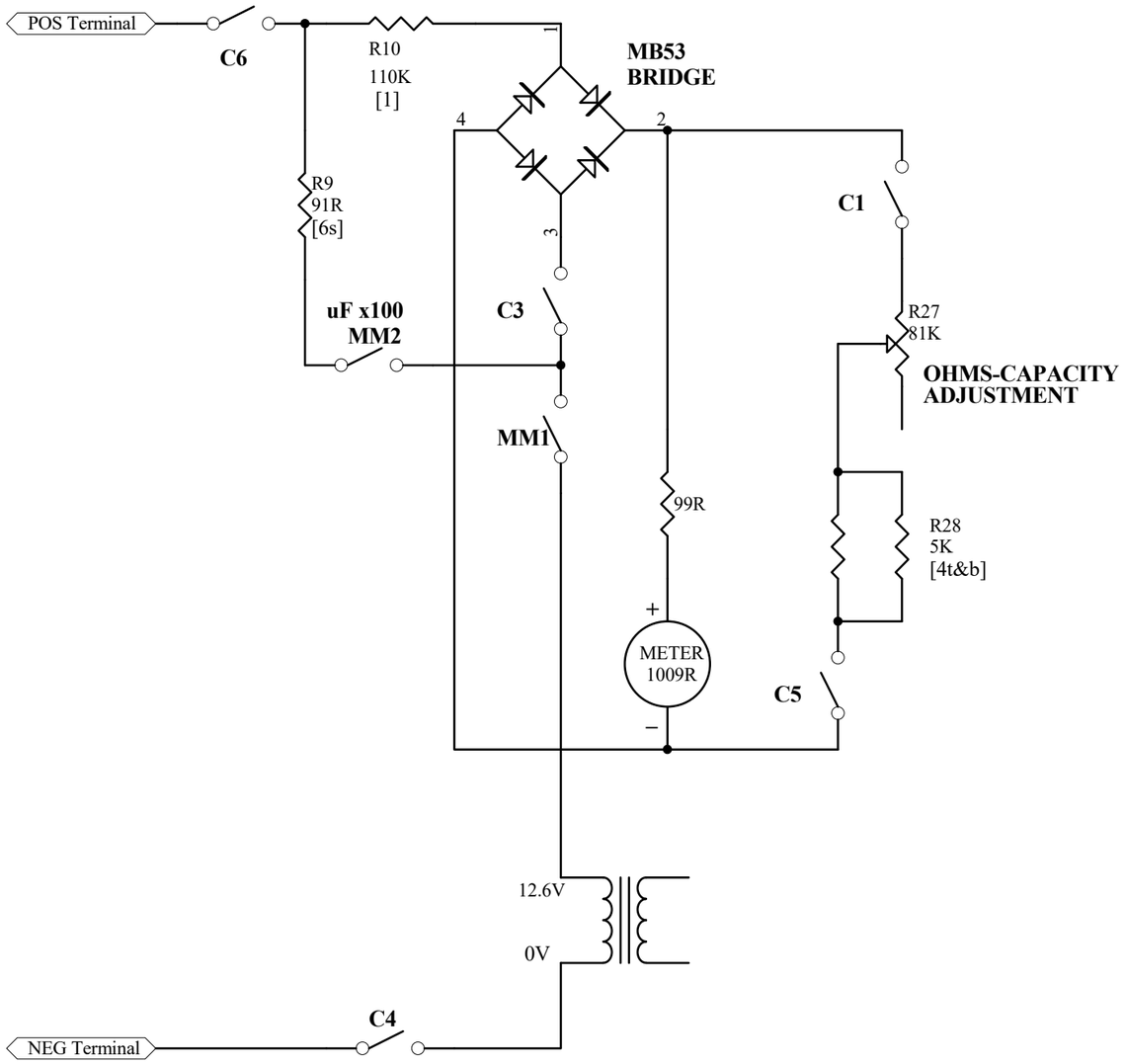
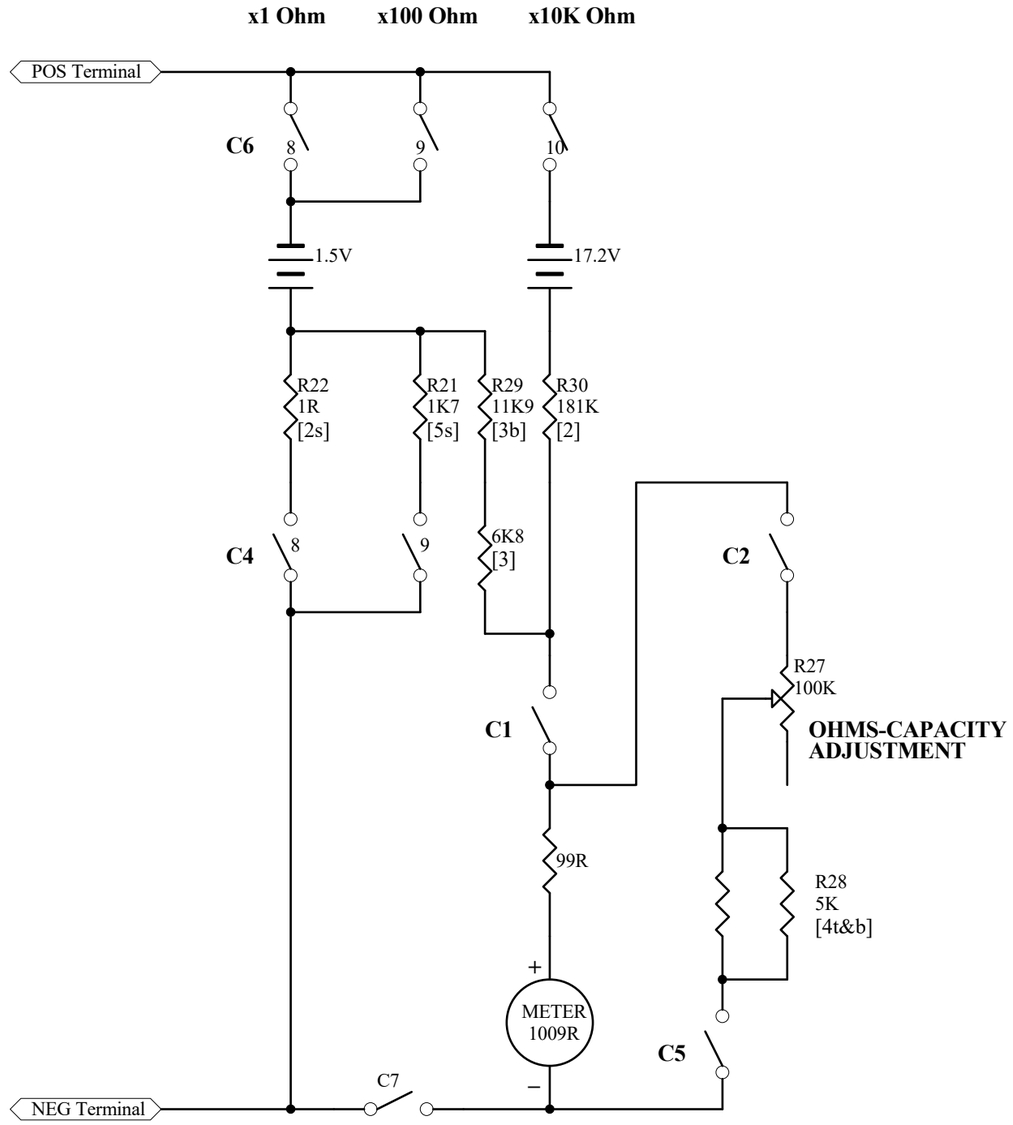
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb		Drawn By:

PATON ELECTRICAL VCT-2 VALVE TESTER

Capacitance Measurement: Cx/11, MMx/10-11



Ohms Measurement: Cx/8-10



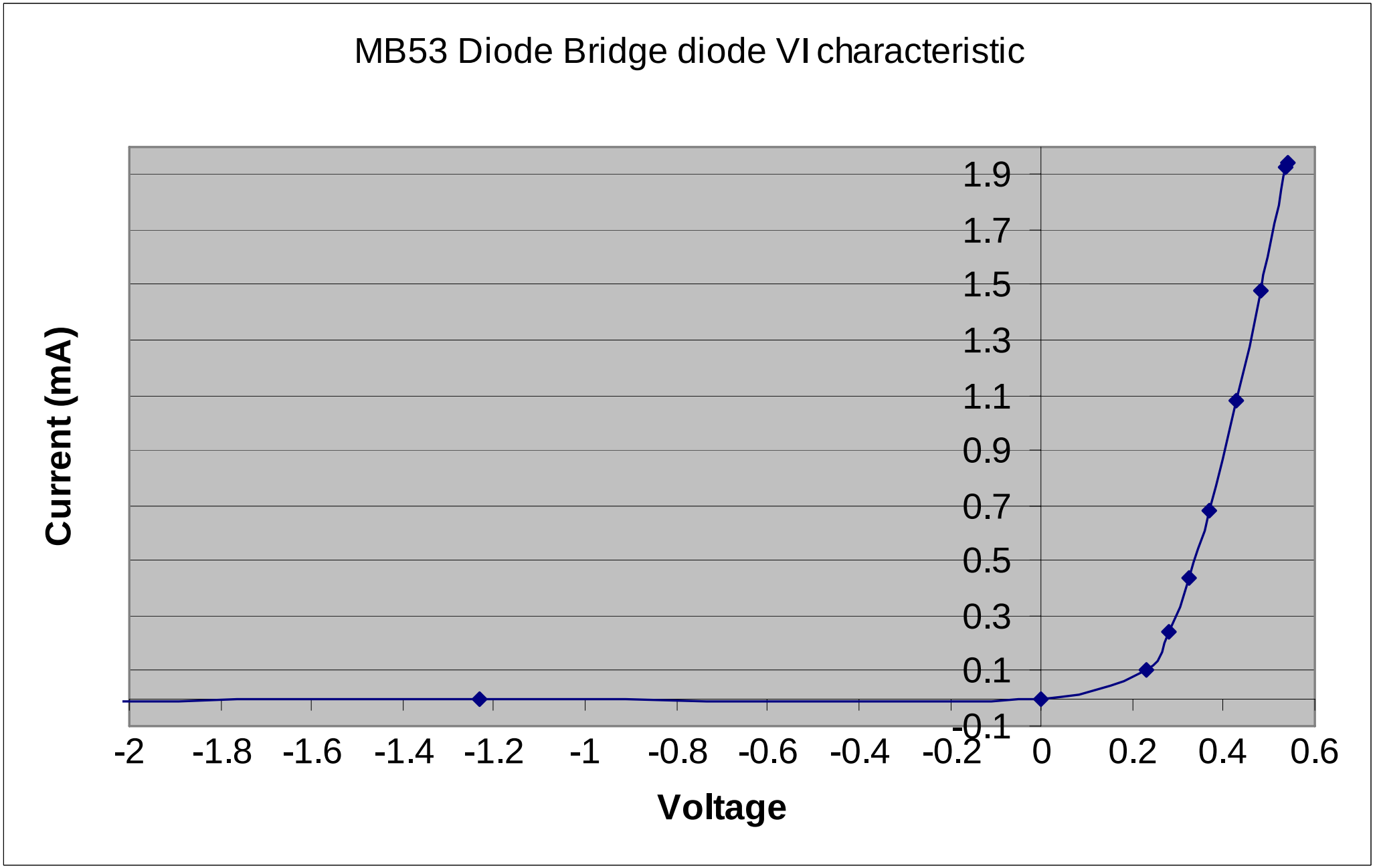
Isolated 1.5V from AC plugpack and 317 regulator.

17.2Vdc from 12.5V to 32V tappings, rectified to 7815 reg & 3V zener, with series output protection diode

[Resistor location on tagboard from diode end]

Title		
Size A4	Number	Revision
Date: 30-Aug-2021		Sheet of
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb		Drawn By:

Copper oxide diode bridge in Paton Electrical VCT2 Valve Tester


MB53 Diode Bridge diode VI characteristic
Current (mA)
1.9
1.7
1.5
1.3
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
-2
-1.8
-1.6
-1.4
-1.2
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
Voltage