

University

INSTRUCTION MANUAL

for

VALVE TESTER Model TVT

and

VALVE & CIRCUIT TESTER Model TST/2

MANUFACTURED BY

UNIVERSITY GRAHAM INSTRUMENTS PTY. LTD.

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University

Model T.V.T. Valve Tester



T.V.T Price : \$ 88-00

(+ Sales tax if applicable)

This instrument has been developed to fulfil the requirements of a completely flexible method of testing modern radio and television valves. It incorporates lever switches for element selection, which enables it to test any future types of valves, regardless of their base connections.

A masking plate covers three spare socket holes in the front panel to enable additional sockets to be fitted should new types come into use.

The unit is 240V A.C. operated and incorporates a University Model W4 polystyrene meter and comes complete with instruction book and all necessary data.

Size: 14" x 11" x 6".

Picture Tube Adaptor.

These flexible adaptors allow T.V. tubes to be tested without removing them from the T.V. Receivers.

For 90° tubes Model TV2. Price : \$ 4-00 ea.
for 110° " Model TV10. Price : \$

(+ Sales tax if applicable)

OPERATING INSTRUCTIONS FOR THE "UNIVERSITY"
MODEL TVT VALVE TESTER AND THE TST/2 VALVE
AND CIRCUIT TESTER.

GENERAL

This instrument has been developed to fulfil the requirement of a completely flexible method of testing modern radio and television valves. It incorporates lever switches for element selection, which enables it to test any future types of valves regardless of their base connections.

A masking plate covers three spare socket holes in the front panel to enable additional sockets to be fitted should new types come into use.

The principle of testing conforms to standard RMA practice.

CONTROLS

"LINE" This control is situated in the bottom left hand corner of the front panel and its purpose is to compensate for varying line voltages.

FILAMENT VOLTS "A" Filament volts are selected for the valve under test by two switches, which are situated next to the "LINE" switch on the bottom of the front panel. The filament voltages available are from 0.6 to 117, the first switch selecting up to 12.6 volts and the second switch the higher voltages.

To obtain filament voltages above 12.6 it is necessary to turn the first filament switch to "HIGH VOLTS", then the second switch is set to the voltage required. Until the first is in the "HIGH VOLTS" position the second switch is inoperative.

ELEMENT SELECTOR "B-C-D" The element selector takes the form of ten lever switches, numbered from 1 to 10. Each of the switches from 1 to 9 represents the pins of a valve, the number above each switch from 1 to 9, corresponding to the pin numbers of the valve, according to standard valve numbering practice, and switch 10 represents the "TOP CAP".

This form of switching enables the tester to switch any valve connection to any test position, or in the case of a valve having an internal connection or tapped heater to completely isolate a valve pin.

The letters "B", "C" & "D" refer to the test positions to which valve elements may be switched. These test positions are given in the valve testing tables.

When the lever switches are in the "NORMAL" position they are connected together to one side of the heater voltage. Normally all elements are left in this position with the exception of the element nearest the cathode and one heater connection.

Position "B" is the heater connection and one heater pin is switched to this position.

Position "C" is an open circuit position and any valve pin which has an internal connection which may tend to interfere with testing is switched into this position.

Position "D" This is the "TEST" position. The element which is nearest to the cathode inside the valve is switched into this position and the tester applies a voltage to it for emission testing. Results are indicated directly on a three coloured scale marked good, questionable and bad.

TEST SELECTOR "E" This switch is situated fourth from the left on the bottom of the front panel, and its purpose is to select the test function required.

When switched to "LINE", the meter indicates line voltage, and the "LINE" switch should be set to a position to make the meter pointer reach the arrow at full scale deflection.

This test should be carried out with the valve under test in position.

In the "SHORTS" position the instrument will indicate shorts between any elements in the valve under test. To enable selection of shorts which may only occur when the cathode is heated, after applying filament voltage to the appropriate pin, the heater will warm up and each remaining lever switch in turn may be moved to the "TEST" position. The neon lamp will then indicate any continuous path between elements in a tube. When the levers corresponding to the second or other filament connections are operated, the lamp should light, indicating filament continuity. So this will not be mistaken for a short circuit, the levers corresponding to other filament connections are indicated at the left hand side of the column marked "SHORTS INDICATION" in the data sheets. Some modern tubes have one or more internal connections linking certain base pins. In order that these may be distinguished from actual short circuits, the number of any levers which should produce a glow in the neon lamp are also listed in the "shorts indication" column. Should the lamp glow when levers other than those listed in this column are moved to the "TEST POSITION" a short circuit exists in the valve and no attempt should be made to apply an emission test.

The positions "1", "2" and "3" of switch "E" are the test positions for emission, and in general position "1" tests diode plates and small battery valves with limited emission and TV picture tubes. Position "2" tests all general purpose R.F. pentodes, tetrodes, triodes etc., and position "3" all power valves and power rectifiers.

RANGE "F" The range potentiometer is situated in the bottom right hand corner of the front panel and its function is to correctly adjust the meter sensitivity. So that average new valves cause the pointer to register near the right hand end of the "GREEN" portion of the meter scale, valves which are better than average may cause the needle to read full scale deflection or move slightly beyond the green segment.

TOP CAP The top cap lead supplied with the instrument is plugged into the socket marked "TOP CAP" and is connected to those valves fitted with caps, prior to testing.

T E S T I N G P R O C E D U R E

3.

1. See that all lever switches are in the "NORMAL" positions.
2. FILAMENT VOLTS Switch "A" to correct voltage as shown in column "A" of valve tables.
NOTE: For voltages exceeding 12.6, the left hand "A" switch must be turned to "HIGH VOLTS".
3. Determine from "B" column in valve tables the pin number for one filament connection and move correspondingly numbered lever switch to "B" filament position.
4. Plug valve to be tested into appropriate socket.
5. Set "E" switch to "LINE" and adjust "LINE" switch to set meter pointer to arrow at full scale deflection.
6. Set "E" switch to "SHORTS and test for shorts by setting each lever switch in turn to "D" "TEST" position, returning each switch to "NORMAL" after observing whether or not the lamp lights. It is not necessary to move the lever already in the "B" FILAMENT" position.

The lamp will normally glow when a lever corresponding to the second end of the filament or a filament tap is brought to the "TEST" position. To distinguish the normal glow indicating the filament continuity from a short circuit, base pins corresponding to filament connections which should produce a glow are listed on the left hand side of the shorts indication of the chart.

7. Refer to column "D" of valve tables and throw corresponding lever to "D TEST" position.
8. Set control "E" to position "1", "2" or "3" as indicated in "E" column in valve table.
9. Advance control "F" to number indicated in "F" column and observe condition of valve on meter scale.
10. Remove valve and return controls to "NORMAL" or off.

NOTE: To avoid any chance of danger to meter it is important that valve is removed before the lever switched to "B FILAMENT" is returned to "NORMAL".

In the case of centre tapped heaters the lever corresponding to the centre tap should be used and voltage should be that applicable to parallel operation of the heater halves.

TESTING NEW TYPE VALVES (not shown on chart)

1. Set FILAMENT VOLTS to correct position for valve as determined from published data books.
2. Select one heater pin and switch lever switch corresponding to this pin to "B FIL" position.

In the case of centre tapped heaters the lever corresponding to the centre tap should be used and the voltage should be that applicable to parallel operation of the heater halves.

3. Plug in valve and adjust "LINE" switch.
4. Set "E" switch to shorts and carry out shorts test in the normal manner by setting each lever switch in turn to "D TEST" position.

Base connections in a valve data book will reveal any internal connections which should produce an indication.

5. The emission can be tested by determining from a valve data book the lever switch with the number corresponding to the element closest to the tubes filament or cathode.

In all ordinary types of tubes this will be the control grid. In frequency changers it will be the oscillator grid and in diodes and rectifiers, it will be the diode plates.

6. Switch "E" should be set to position 1 for diodes, to position 2 for all battery tubes and for ordinary A.C. operated amplifying tubes, and to position 3 for A.C. operated power output tubes and rectifiers.
7. Slowly advance "F RANGE" control to a position to give a "GOOD" valve reading on the meter scale. This setting should be obtained with a valve known to be good and recorded for future use.
8. Remove valve, then return all switches to "NORMAL".

TST/2 MULTIMETER SECTION

The Multimeter facilities of this instrument have a wide range of applications. It will measure voltage, current and resistance values accurately, and the design incorporates an efficient output meter. Following is a description of how the various sections are used. There are further and wider applications for this instrument which will manifest themselves as the operator becomes more familiar with the Multimeter.

Unless the operator understands the voltage and current readings of various circuits, it is advisable to always use the highest range available to obtain an approximate reading, and then choose a lower range which will be more suitable for an accurate reading. This will prevent damage to the meter from excessive overload.

D.C. VOLTAGES

Turn the central selector switch to the desired voltage range and make sure that the right-hand switch is turned to that position marked "D.C." The negative, or black, test lead is inserted in the negative jack on the instrument, and the red test lead is inserted in the positive jack. The two test prods are then touched to the necessary parts of the apparatus under test, and the meter will read the difference in potential between the two points touched, which is actually the voltage. It is necessary to remember that voltage is the difference in potential between any two points.

If it is desired to measure the voltage on the elements of a valve, the metal chassis of a radio receiver or amplifier is usually regarded as forming the negative side of the circuit. For instance, if it is desired to measure the plate voltage of a valve, the appropriate range would be selected, the positive test lead placed on the plate contact of the valve, and the negative test lead placed on the chassis. The meter would then read the valve's plate voltage. This method does not apply to the measurement of negative grid bias.

To measure the negative grid bias, the negative test prod is placed on the grid and the positive test prod is placed on the negative filament or cathode contact. The negative bias will then be indicated on the meter. This method will be inaccurate if a high value of resistance is included in the grid circuit, such as a resistance capacity coupled stage. In this case, the negative test prod should be placed on the end of the grid leak resistor, which does not connect to the grid.

When making voltage measurements, it is not necessary to remove or disconnect any wires.

A.C. VOLTAGES

To measure alternating voltage, the only rearrangement of the controls on the instrument is to turn the right-hand switch to that position marked "A.C." The appropriate voltage range is then selected in the ordinary way on the range

selector switch, and the test prods, when plugged into the instrument, can then be connected to the two points between which it is desired to measure the voltage difference. Since alternating voltage has no fixed negative or positive potential, the negative or positive test lead from the instrument can be placed on either of the two points which are under test. However, to form a safety habit, it is always wise to place the negative lead on the low potential side of the circuit or that side of the A.C. voltage which is connected to earth. If this is inconvenient, the operator need not worry any further.

When measuring alternating voltages on the 10-volt range, the lowest meter scale, marked "10 V. A.C. only" should be used. When using the 50, 250 and 1,000 V. ranges, measurements should be made on the upper set of voltage graduations.

D.C. CURRENTS

In making current measurements, it is necessary to break the circuit and insert the test leads so that the meter is placed in series with the circuit. For instance, to measure the plate current of a tube, the wire on the plate contact would be removed and connected to the positive side of the meter. The negative meter lead would be connected to the plate contact and the selector switch would be turned to the desired range, and then the set switched on. The plate current of the valve would be registered on the meter. This procedure also applies to any other circuit in which it is desired to measure current in milliamperes. The circuit is simply broken and the meter inserted in the break to complete the circuit again.

Where the current value is unknown, it is always wise to commence on the highest range, and then turn the selector switch down to that range which give the most convenient deflection of the needle on the meter.

A.C. CURRENTS

The TST/2 by itself is only intended to measure alternating (A.C.) current on the 1 mA range, in which case the upper voltage graduations are used. This range can be extended by using the MRCT "University" current transformer which is available as an extra. The MRCT needs no soldered connections it simply connects by terminals to the TST/2 and a switch on the MRCT selects the desired A.C. current range. It extends the TST/2 to read the following A.C. current:-

2.5, 5, 10, 25, 50, 100, 250 and 500 mA A.C. and 1, 2.5, 5 and 10 amperes A.C.

RESISTANCE

This instrument will measure values of resistance in four convenient ranges - 0-1,000 ohms, 0-10,000 ohms, 0-100,000 ohms and 0-10 megohms.

To measure values of resistance below 1,000 ohms, the selector switch is turned to the position marked "R X 1." The test leads are inserted in the instrument and then the test prods are touched together so that the meter needle will swing right over to the position marked "0" on the upper meter scale. If it does not

exactly reach the "O" mark the ohms compensator at the left hand side of the instrument is turned until the needle indicates zero resistance. The meter is then ready for use.

To measure resistance one side or both of the resistance or other part should be disconnected from the rest of the circuit and the test prods placed on its terminals. The value of resistance will be shown on the ohms range.

For values up to 10,000 ohms the switch is turned to the position marked "R x 10" and the scale figures must be multiplied by 10 to give the correct resistance. For example if you are measuring a resistance of 4,000 ohms and the switches are turned to the correct position then the meter needle will indicate 400. Multiplying this by 10 gives 4,000 which is the correct reading assuming that the resistor is in good order.

When measuring in the range of 10,000 ohms, it is necessary that the prods are touched together again and the needle adjusted for zero resistance by use of the ohms compensator.

For values up to 100,000 ohms the range switch is turned to the position marked "R x 100" and the procedure is carried out as explained previously. For measurements up to 10 megohms turn switch to "R x 10,000" and proceed as before. When using the "R x 10,000" range the instrument must be connected to power mains.

In measuring resistance it is necessary that the right hand switch be turned to the position marked "D C". Always before measuring resistance make certain that the test prods are touched together and the ohms compensator adjusted so that the meter reads zero before operation. The purpose of this ohms compensator is to compensate for any variation in battery-voltage which will enable you to obtain a maximum life from the built in battery.

CAUTION - Before attempting to measure the resistance of any part of radio or electrical apparatus, be sure to switch off the power or to disconnect one wire from each battery in the case of battery-operated equipment.

OUTPUT METER

In addition to measuring ordinary A. C. voltages over a wide range the Multi-meter can also be used as an output meter the right hand knob on the instrument is turned to the position marked "OP" and the range selector is turned to an appropriate voltage and db range. The test leads are inserted in the instrument, and one lead is attached to the chassis while the other lead is touched to the plate of the output or power valve in the receiver or amplifier under test.

Small push-on clips are provided with the instrument. These easily and conveniently fit on the test leads, so that it will not be necessary for the operator to hold these on to the point under check in the chassis. They can be clipped on to any convenient wire or terminal leaving the operator's hands free for alignment of the set.

If the range selector is turned to 10 volts when using this as an output meter, it will give a very sensitive reading. However, it will be found necessary for the volume control of the receiver to be kept low, so as not to damage the meter. This 10-volt range is recommended for aligning sets. If the output meter is required for a purpose other than alignment, the 50-volt or 250-volt will be found quite suitable.

Used in this manner, the instrument will facilitate the alignment of a receiver, especially when a modulated oscillator or signal generator is used as the source of signal.

The meter scale is also calibrated in db. When using db ranges, the figure indicated by the Selector Switch must be added to that indicated by the meter pointer.

BATTERY REPLACEMENT

The resistance measurement section of this instrument utilises a standard 1.5-volt 950 dry battery cell, for the ranges R, R X 10 and R X 100. This usually lasts up to twelve months without replacement. It will be known when the battery is due for replacement by the fact that the ohms compensator on the panel will not enable the pointer of the meter to be brought right to the zero mark. The R X 10,000 range is powered by rectified A.C. furnished from the valve testing section.

GENERAL

The primary purpose of this instrument is to measure D.C. voltage, currents and resistances, as well as A.C. voltages and output voltages. The instrument is accurate and is easily portable.

It will cover nearly all of the routine checking required in a radio receiver, and in general radio equipment. It must be remembered that voltage measurements in a receiver will not only indicate that there is voltage available, but if they are measured through any of the components in the receiver, they will indicate whether that component is open circuit or otherwise by the indication of voltage on the meter. Faulty and intermittent transformers can be tested by using the ohms section of the instrument, and continuity tests of all components can be made with this section. The instrument will also indicate short circuits and open circuits, leaky condensers, faulty resistance, broken connections and incorrect values. The output meter section can be used to indicate a standard of output from apparatus under test, and constant use of the instrument will bring many new suggestions to mind.

The meter needle should normally coincide exactly with the zero end of the voltage and milliamp scales when the meter is not in use. Should it not do so, it can be adjusted to zero by means of the large bakelite screw on the face of the meter, just below the glass.

SHORTS INDI- CATION		TYPE		A B C			D E F			A B C			D E F			SHORTS INDI- CATION												
TYPE	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	E	F										
1A4P	2	1	10 2	32	4	10 2	40	7	1A6	2	1	4	2	44	6	1A6	2	1										
1A7G	2	1	5 2	35	7	5 2	38	4	1B5	d2	2	1	3	1	100	6	1B5	2	1									
1B5	t	2	1	9 2	31	4	4 1	100	6	1C6	2	1	4	2	40	6	1C6	2	1									
1C4	2	1	5 2	40	7	5 2	30	7	1D5P	2	2	1	10	2	36	7	1D5P	2	2									
1C7G	2	2	5 2	44	7	3 2	25	5	1B7GT	t	10 2	44	7	8	1	100	7	1B7GT	2	2								
1D8GT	P	2	2	5 2	35	7	4 2	32	7	1E7G	p2	1.4	2	5	1	32	7	1E7G	2	2								
1E5P	P	2	1	10 2	36	7	1E7G	p1	2	1F5G	2	2	1F6	d2	2	1	100	6	1F6	2	2							
1F4	P	2	1	3 2	30	5	5 2	30	7	1F6	d1	2	1F7GW	d2	2	2	4	1	100	7	1F7GW	2	2					
1F6	P	2	1	10 2	42	6	5 1	100	6	1F7GW	d1	2	1F8G	d2	2	2	5	2	100	7	1F8G	2	2					
1F7GW	P	2	2	10 2	43	7	5 1	100	7	1F8G	t2	1.4	2	1H4G	2	2	2	5	2	40	7	1H4G	2	2				
1G4G	2	2	5 2	40	7	1G5G	2	2	1H5G	d	1.4	2	1H5G	d2	2	2	4	1	100	7	1H5G	2	2					
1H6G	t1	2	2	4 2	40	7	1H5G	d1	2	1H6G	t1	2	1H6G	t2	2	2	5	2	35	7	1H6G	2	2					
1H5G	t	2	2	10 2	35	7	5 1	70	7	1H6G	d1	2	1H7G	d2	2	2	5	1	90	7	1H7G	2	2					
1H6G	t	2	2	6 2	35	7	5 1	70	7	1H7G	d1	2	1H8G	d2	2	2	10	2	32	7	1H8G	2	2					
1J5G	2	2	5 2	35	7	1J6G	t1	2	1J6G	t1	2	1J6G	t2	2	2	4	1	85	6	1J6G	2	2						
1K4	P	2	1	10 2	31	4	10 2	32	7	1K6	d1	2	1K7G	d1	2	2	4	1	85	6	1K6	2	2					
1K6	P	2	2	10 2	35	6	10 2	35	7	1K7G	d1	2	1K8G	d1	2	2	5	1	90	7	1K8G	2	2					
1K7G	P	2	2	6 2	35	7	6 2	31	15	1K8G	d1	2	1L6G	d2	2	2	10	2	32	7	1L6G	2	2					
1L4	P	2	1	10 2	31	4	10 2	33	7	1L6G	p	1.4	2	1L6G	d2	2	2	6	1	100	7	1L6G	2	2				
1N5G	2	2	10 2	33	7	1O2	33	7	1O2	33	7	1O2	33	7	1O2	33	7	6	1	100	7	1O2	2	2				
1P5G	2	2	10 2	30	7	3 2	30	1526	1P5G	1.4	2	1P5G	1.4	1	1P5G	d1	1.4	7	4	2	29	15	1P5G	2	2			
1S4	2	2	6 2	32	15	6 2	32	15	1S5	P	1.4	1	1S5	P	1.4	1	1S5	d	1.4	1	3	1	100	7	1S5	2	2	
1T4	1.4	7	6 2	31	15	6 2	32	15	1T5	P	1.4	7	1T5	P	1.4	7	1T5	d	1.4	7	4	1	100	1	1T5	2	2	
IV	6.3	1	2	3	10	4	2	3	12	4	2A5	1.4	7	2A5	1.4	1	4	1	70	6	2A5	2	2					
2A3	2.5	1	3	9	2	34	6	3	2A5	1.4	5	2A5	1.4	1	2B7	d1	2.5	1	5	1	54	7	2B7	2	2			
2A6	t	2.5	1	5 2	9	2	34	7	2B7	d1	2.5	1	2B7	d1	2.5	1	2B7	d2	2.5	1	4	1	54	7	2B7	2	2	
2A7	t	2.5	1	9 2	40	7	3 2	46	6	3A8GT	t	1.4	1	3A8GT	t	1.4	8	3A8GT	P	1.4	1	10	2	30	27	3A8GT	2	2
2E5	P	2.5	1	3 2	46	6	4 2	30	1726	3Q5GT	1.4	1	3Q5GT	1.4	8	3Q5GT	1.4	5	2	30	27	3Q5GT	2	2				
3A4	5	1	14	5	2	30	1726	6 2	30	1726	5T4	a2	5	2	5T4	a2	5	2	6 3	10	5T4	2	2					
3Q4	5	1	14	5	2	30	1726	6 2	30	1726	5V4G	a2	5	2	5V4G	a2	5	2	6 3	9	5V4G	2	2					
5T4	a1	5	2	4 3	10	8	4 3	10	8	5V4G	a2	5	2	5V4G	a2	5	2	6 3	10	5V4G	2	2						
5V4G	a1	5	2	4 3	9	8	4 3	9	8	5W4G	a2	5	2	5W4G	a2	5	2	6 3	10	5W4G	2	2						
5W4G	a1	5	2	4 3	10	8	4 3	10	8	5X4G	a2	5	2	5X4G	a2	5	2	6 3	10	5X4G	2	2						
5Y4G	a1	5	2	4 3	14	8	4 3	14	8	5Y3G	a2	5	2	5Y3G	a2	5	2	6 3	14	5Y3G	2	2						
5Z4G	a1	5	2	4 3	14	8	4 3	14	8	5Z4G	a2	5	2	5Z4G	a2	5	2	6 3	14	5Z4G	2	2						
5Z5	a1	5	2	4 3	10	4	4 3	10	4	5Z5	a2	5	2	5Z5	a2	5	2	3	3	5Z5	2	2						

TYPE	A	B	C	D	E	F	SHORTS INDI- CATION.			TYPE	A	B	C	D	E	F	SHORTS INDI- CATION														
							5ASL	5RUGY	5ZAG																						
a1	5	2	2	4	3	11	8	11	8	6	3	11	8	6	3	11	8	6	3	11	8	6	3	11	8						
a1	5	2	2	4	3	10	8	12	4	3	3	14	5	3	3	13	7	6	3	14	5	3	2	12	7						
a1	5	2	2	3	3	13	7	32	7	5	2	28	4	5	3	23	7	6	3	28	4	5	3	2	45						
t1	6.3	1	6.3	1	3	3	13	7	5	2	33	5	6AB8	P	6.3	4	9	3	26	5	6AD7	P	6.3	2	5	3					
6A6	6.3	1	6.3	2	2	2	4	20	7	4	2	30	7	6AD7	t	6.3	2	1	2	28	7	6AD8	d2	6.3	4	8	1				
6A8G	6.3	2	6.3	2	2	2	4	2	36	5	6AD8	d1	6.3	4	7	1	100	5	6AD8	d2	6.3	4	8	1	100	5					
6AB6G	6.3	2	6.3	2	5	3	7	5	2	33	5	6AB8	P	6.3	2	4	2	4	2	6AC5G	P	6.3	2	5	3	10	7				
6AB8	t	6.3	4	2	2	2	4	2	36	5	6AD8	d1	6.3	4	7	1	100	5	6AD8	d2	6.3	4	8	1	100	5					
6AC7	6.3	2	6.3	2	4	2	2	30	7	6AB7	t	6.3	2	4	2	2	7	6AD7	P	6.3	2	5	3	15	7						
6AD8	P	6.3	4	2	2	2	4	2	36	5	6AD8	d1	6.3	4	7	1	100	5	6AD8	d2	6.3	4	8	1	100	5					
6AE5GT	6.3	2	6.3	2	5	2	7	5	2	29	7	6AB7G	t2	6.3	2	6	2	29	7	6AC5	P	6.3	3	1	2	25	4.27				
6AN7G	t1	6.3	2	9	2	2	29	7	5	3	7	6AB8	t	6.3	4	9	3	6	7	6AH6	P	6.3	3	1	2	27	4.27				
6AE8	h	6.3	4	9	2	2	29	7	6	2	5	6AC7	t	6.3	2	9	2	3	7	6AK5	d2	6.3	3	1	2	3	9				
6AG6G	h	6.3	2	9	2	2	29	7	6	2	5	6AJ8	t	6.3	4	9	2	3	7	6AL5	d2	6.3	3	1	2	3	9				
6AJ8	h	6.3	4	9	2	2	29	7	6	2	5	6AK8	d1	6.3	4	6	1	3	9	6AK8	d2	6.3	4	1	2	23	5				
6AK6	6.3	3	6.3	3	1	3	4	1	3	5	6AM5	t	6.3	3	1	3	9	4	6AM6	d2	6.3	3	1	2	23	4					
6AK8	t	6.3	4	8	2	2	5	1	1	5	6AM8	t	6.3	4	8	1	26	5	6AQ5	P	6.3	3	1	2	26	5					
6AK8	d3	6.3	4	8	2	2	5	1	1	5	6AM8	t	6.3	4	9	2	26	5	6AQ5	d2	6.3	3	1	2	26	5					
6AM8	P	6.3	4	2	2	2	24	5	6AM8	t	6.3	4	9	2	26	5	6AQ5	d2	6.3	3	1	2	26	5							
6AN7	h	6.3	4	2	2	2	24	5	6AN7	t	6.3	4	9	2	26	5	6AQ7GT	d2	6.3	7	1	2	26	5							
6AQ6	t	6.3	3	1	2	2	4	8	6AQ6	d1	6.3	3	3	1	2	4	8	6AQ6	d2	6.3	3	1	2	4	8						
6AQ7GT	t	6.3	7	4	2	2	4	8	6AQ7GT	d1	6.3	7	3	1	2	4	8	6AQ7GT	d2	6.3	7	1	2	4	8						
6AR5	6.3	3	6.3	3	1	3	4	4	2	4	10	2	30	8	425	5	1	2	100	8	6AR7GT	d2	6.3	1	6	1	2	100	8		
6ARTGT	P	6.3	1	6.3	1	2	2	2	2	2	4	6AS6	t1	6.3	3	1	2	4	8	6AS6	P	6.3	4	6	1	2	5	5			
6AS5	6.3	3	6.3	3	7	6.3	3	4	3	8	6ASTG	t2	6.3	7	1	3	8	8	6AS6	d	6.3	4	6	1	2	5	5				
6ASTG	t1	6.3	3	7	6.3	3	4	3	8	6AT6	d1	6.3	3	5	1	3	5	4	6AT6	d2	6.3	3	6	1	3	5	4				
6AT6	t	6.3	3	7	6.3	3	4	3	8	6AU5GT	t1	6.3	3	5	1	2	25	4	6AV6	d2	6.3	3	5	1	2	26	8				
6AU5GT	P	6.3	2	6.3	2	1	2	2	2	2	4	6AU5GT	t2	6.3	2	3	1	2	25	4	6AZXGT	d2	6.3	7	1	2	26	8			
6AV6	t	6.3	3	2	1	2	2	2	2	2	4	6AU6	d1	6.3	3	6	1	2	25	4	6AV6	d2	6.3	3	5	1	2	26	8		
6AX5GT	a1	6.3	2	6.3	2	5	3	12	7	6AV5GT	a2	6.3	2	3	3	12	7	6AH4GT	d2	6.3	2	5	1	2	26	7					
6AW8	P	6.3	4	7	2	2	30	5	6AW8	t	6.3	4	2	2	28	5	6AH4GT	d2	6.3	2	5	1	2	26	7						
6BA6	6.3	3	6.3	3	1	2	26	4	6BA7	6.3	4	2	2	28	5	6AH4GT	d2	6.3	2	5	1	2	26	7							
6BC8	t1	6.3	4	2	2	2	26	5	6BC8	t2	6.3	4	2	2	26	5	6BD6	d2	6.3	3	1	2	26	4							
6BD7	t	6.3	4	2	2	2	26	5	6BD7	d1	6.3	4	2	2	26	5	6BD7	d2	6.3	4	8	1	3	10	579						
6BE6	t	6.3	3	1	2	2	26	4	6BE6	d1	6.3	4	2	2	29	5	6BF5	d2	6.3	3	7	1	3	10	471						
6BF6	t	6.3	3	1	2	2	26	4	6BF6	d1	6.3	3	2	2	24	5	6BF6	d2	6.3	3	5	1	2	24	5						
6BG6G	t1	6.3	4	2	2	26	5	6BG6G	t1	6.3	4	2	2	26	5	6BH5	t2	6.3	4	2	2	26	5	6BH6	t2	6.3	4	2	2	26	5
6BH7	t1	6.3	4	2	2	26	5	6BH7	t1	6.3	4	2	2	26	5	6BH7	t2	6.3	4	2	2	26	5	6BH8	t	6.3	4	2	2	25	5
6BH8	P	6.3	4	2	2	26	5	6BH8	t	6.3	4	2	2	26	5	6BH8	t	6.3	4	2	2	25	5	6BH8	t	6.3	4	2	2	25	5

TYPE	A	B	C	D	E	F	SHORTS INDI- CATION	TYPE	A	B	C	D	E	F	SHORTS INDI- CATION	TYPE	A	B	C	D	E	F	SHORTS INDI- CATION						
6BJ6	6.3	3	1	2	4	2	3	7	5	2	3	7	5	2	3	7	5	2	3	7	5	2	3	7	5				
6BQ8 P	6.3	4	3	3	7	5	1	2	30	5	6BMB	P	6.3	4	2	1	2	2	1	2	26	5	1	2	26	5			
6BN6	6.3	3	2	2	4	7	2	26	5	6BQ7A	t1	6.3	4	2	2	2	2	2	2	26	5	6BN5	t	6.3	4	2			
6BQ6GTD	6.3	2	5	2	7	5	1	2	30	5	6BV7	P	6.3	4	8	3	10	5	6BV7	d1	6.3	4	6	1	45	579			
6BR7	6.3	4	1	1	45	579	6BQ6	P	6.3	4	6B6	d1	6.3	4	6	1	45	579	6BQ6	d1	6.3	4	2	2	24	513			
6BV7 d2	6.3	4	2	2	25	513	6BZ6	6.3	3	1	2	25	4	6B4G	6.3	2	5	3	12	7	6B4G	d2	6.3	4	4	1	1	100	
6BT7	6.3	4	2	2	6	4	3	10	5	6B6	d1	6.3	2	5	1	50	7	6B6G	d2	6.3	2	4	1	50	7				
6B5	6.3	1	1	1	45	579	6B7	d1	6.3	1	6B7	d1	6.3	1	5	1	85	7	6B7	d2	6.3	1	4	1	85	7			
6B6G t	6.3	2	2	2	30	5	10	7	6B7S	d1	6.3	1	5	1	100	7	6B7S	d2	6.3	1	4	1	100	7					
6B7 P	6.3	1	10	2	35	7	6B8	d1	6.3	2	6B8	d1	6.3	2	5	1	75	7	6B8G	d2	6.3	2	4	1	75	7			
6B7S P	6.3	1	10	2	40	7	6B9	d1	6.3	2	6B9	d1	6.3	2	5	2	33	7	6B9	d2	6.3	2	4	1	35	6			
6B8Q P	6.3	2	10	2	40	7	6C1	6.2	28	451	6C5G	6.3	2	5	1	50	7	6C1	7	6C1	7	4	1	7	7				
6C4 t	6.3	1	10	2	33	7	6C7	d1	6.3	1	6C7	d1	6.3	1	5	1	75	7	6C4T	d2	6.3	1	5	3	7	7			
6C7	6.3	1	10	2	40	7	6C8	t2	6.3	2	6C8	t2	6.3	2	10	2	7	7	6C16	6.3	2	5	3	7	7	51798			
6C8 t1	6.3	2	5	2	25	4	6C9	6.3	2	5	6CD6G	6.3	2	5	3	7	7	6C9	6.3	3	2	2	26	4	6C9				
6CB6	6.3	3	2	3	7	5	6C9	t1	6.3	4	6C9	t1	6.3	4	6	2	26	7	6C9	t2	6.3	4	2	2	26	678			
6CK6	6.3	3	2	3	7	5	6C9	t1	6.3	4	6D7	6.3	1	10	2	7	7	6D8G	6.3	2	5	2	31	7	6D8G				
6CS6	6.3	3	1	2	25	4	6D6	6.3	1	2	6D6	t1	6.3	1	5	2	26	7	6D6	t2	6.3	1	3	2	26	7			
6D6A	6.3	2	5	3	7	7	6D5	6.2	46	6	6D6	t1	6.3	1	5	2	26	7	6D5	6.3	2	5	3	16	7	6D5			
6E5	6.3	1	3	2	40	7	6E7	6.3	1	10	2	33	7	6E7	6.3	2	10	2	26	7	6E7	6.3	2	5	3	16	7	6E7	
6F7	6.3	1	5	2	50	7	6F8G	t1	6.3	2	6F7	P	6.3	1	10	2	33	7	6F8G	t2	6.3	1	3	2	42	6	6F8G		
6F8G	6.3	2	10	2	30	7	6G3G	6.3	13	7	6G3G	10	2	4156	6G3G	6.3	2	5	1	75	7	6G3G	d2	6.3	2	4	1	75	7
6G3J	6.3	2	3	3	9	7	6G3J	P	6.3	2	6G3G	d1	6.3	2	5	1	75	7	6G3G	d2	6.3	2	3	2	33	7	6G3G		
6H6G	6.3	2	1	2	20	4	6H6G	t1	6.3	2	6H6G	a2	6.3	2	5	3	9	7	6H6G	t2	6.3	2	5	2	27	7	6H6G		
6J4	6.3	3	1	2	20	4	6J4	t1	6.3	2	6J5G	t2	6.3	3	6	2	32	7	6J5G	t2	6.3	2	5	2	25	7	6J5G		
6J6	6.3	3	1	2	20	4	6J6	t1	6.3	2	6J6	t2	6.3	3	6	2	32	7	6J6	t2	6.3	2	5	2	30	7	6J6		
6J8G	6.3	2	10	2	23	7	6K6G	P	6.3	2	6K7G	t2	6.3	2	10	2	35	7	6K8G	d2	6.3	4	10	2	30	7	6K8G		
6K6G	6.3	2	3	3	10	7	6L5G	6.3	2	5	6L5G	t2	6.3	2	5	3	10	7	6L7G	6.3	2	5	3	10	7	6L7G			
6M5	6.3	4	2	3	6	538	6M5	6.3	1	2	6M5	t2	6.3	2	3	2	45	6	6M6G	6.3	4	12678	5	3	7	100			
6N7G	t1	6.3	2	4	3	13	6N7G	t2	6.3	2	6N8	d1	6.3	4	7	1	100	5	6N8	d2	6.3	4	7	2	50	3	6N8		
6N8	P	6.3	4	2	2	24	6P7Q	P	6.3	2	6P7Q	t	6.3	2	10	2	33	3	6P7Q	t	6.3	2	4	1	30	7	6P7Q		
6P5	6.3	2	5	2	7	51278	6Q7G	d1	6.3	2	6Q7G	d2	6.3	2	5	1	80	7	6R4	d1	6.3	4	4	1	30	7	6R4		
6Q4	6.3	4	1	2	20	7	6Q7G	d2	6.3	2	6R4	d1	6.3	4	1	2	5	5	6R4	d1	6.3	4	5	1	7	7	6R4		
6Q7G	t	6.3	2	123678	9	3	7	5123678	6R4	d1	6.3	4	2	2	5	1	5	5	6R4	d1	6.3	4	4	1	7	7	6R4		
6R3	6.3	4	10	2	7	51378	6R7G	t	6.3	2	6R7G	t	6.3	2	5	1	7	5	6R7G	d2	6.3	2	4	1	7	7	6R7G		
6R7G	t	6.3	2	10	2	32	6S4	6.3	4	1378	6	3	78	6S4	6.3	2	10	2	32	7	3	1	8	4	1	8	6S4		
6S4	6.3	4	10	2	32	6S4	6.3	7	1	1	6S4	d1	6.3	7	1	1	8	3	6S4	d2	6.3	7	4	1	8	6S4			
6S8GT	d3	6.3	7	1	1	8	6S8GT	d3	6.3	7	6S8GT	d3	6.3	7	1	1	8	3	6S8GT	d3	6.3	7	4	1	8	6S8GT			

TYPE		SHORTS INDI- CATION						TYPE						A B C D E F						INDI- CATION																				
		A	B	C	D	E	F	7S7	b	6.3	1	6	2	8	7W7	d2	6.3	1	6	2	8	7W7	d2	6.3	1	6	1	8												
7S7	t	6.3	1	4	2	6	2	8	7X7	d1	6.3	1	5	1	8	7X7	d2	6.3	1	6	1	8	7X7	d2	6.3	1	6	1	8											
7W7	t	6.3	1	6	2	3	3	8	7L4	a2	6.3	1	6	3	14	8	8D3		6.3	3	1	2	4	8D3		6.3	3	1	2	4										
7X7	t1	6.3	1	3	3	14	8	7Z4	a2	6.3	1	3	3	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8												
7L4	a1	6.3	1	6	3	8	7.5	2	3	51	12A6	12.6	2	6	3	7	12A6	12.6	2	5	2	32	7	12A6	12.6	2	5	2	32	7										
7Z4	a1	6.3	1	6	3	8	7.5	4	3	17	12A7	a	12.6	1	5	3	10	7	12A6	12.6	2	5	2	32	7	12A6	12.6	2	5	2	32	7								
9B6		6.3	6	4	3	24	7	10	3	24	12A7	t2	12.6	7	1	2	8	12A6	d2	12.6	3	1	2	25	4	12A6	d2	12.6	3	1	2	25	4							
12A5		6.3	6	12.6	1	5	2	50	45	12A8	h	6.3	9	2	2	27	45	12A7	t2	12.6	3	6	1	100	4	12A7	t2	12.6	3	6	1	100	4							
12A7	t1	12.6	7	7	2	50	45	7	3	9	4	12A5	a2	12.6	3	2	3	9	4	12A7	t2	12.6	3	6	2	25	45	12A7	t2	12.6	3	6	2	25	45					
12A8	t1	6.3	9	7	3	9	4	7	2	28	4	12A6	d1	12.6	3	5	1	80	4	12A7	t2	12.6	3	6	2	25	45	12A7	t2	12.6	3	6	2	25	45					
12A5	a1	12.6	3	12.6	3	7	2	25	45	12A7	t2	6.3	9	2	2	25	45	12A7	t2	6.3	9	2	2	29	45	12A7	t2	6.3	9	2	2	29	45							
12A6	t1	12.6	3	12.6	3	7	2	29	45	12A7	t2	6.3	9	2	2	29	45	12A6	p	12.6	2	10	2	7	12A7	t2	6.3	9	2	2	29	45								
12A7	t1	6.3	9	7	2	29	45	12A6	d1	12.6	3	12A6	t1	6.3	9	7	2	25	45	12B6	t	12.6	2	8	2	7	12B6	t	12.6	2	8	2	7	12B6	t	12.6	2	8	2	7
12A7	t1	6.3	9	7	2	30	4	1	2	30	4	12A6	t1	6.3	9	7	2	26	45	12B7	t2	6.3	9	2	2	26	45	12B7	t2	6.3	9	2	2	26	45					
12A6	t	12.6	3	12.6	3	1	2	4	6	2	8	12B6	GR	12.6	2	2	2	5	12B7	t2	6.3	9	2	2	26	45	12B7	t2	6.3	9	2	2	26	45						
12B7		12.6	1	12.6	1	1	2	26	4	12B6	t1	12.6	4	2	2	5	12B7	t2	6.3	9	2	2	26	45	12B7	t2	6.3	9	2	2	26	45								
12B6		12.6	3	12.6	3	1	2	26	4	12B7	t1	6.3	9	7	2	26	45	12B7	t2	6.3	9	2	2	26	45	12B7	t2	6.3	9	2	2	26	45							
12B6		12.6	3	12.6	3	2	2	27	4539	12B7	t1	6.3	9	7	2	26	45	12B7	t2	6.3	9	2	2	26	45	12B7	t2	6.3	9	2	2	26	45							
12B7		6.3	6	2	2	27	4539	10	2	7	12B8	d1	12.6	2	5	1	7	12B8	d2	12.6	2	4	1	7	12B8	d2	12.6	2	4	1	7	12B8	d2	12.6	2	4	1	7		
12B8	P	12.6	2	3	3	9	7	12B6	a2	12.6	2	5	3	9	7	12B7	t2	12.6	2	10	2	33	7	12B7	t2	12.6	2	10	2	33	7	12B7	t2	12.6	2	10	2	33	7	
12B6	a1	12.6	2	12.6	2	5	2	32	7	12B7	GR	12.6	2	1	3	7	12B7	t2	12.6	2	3	3	7	12B7	t2	12.6	2	3	3	7	12B7	t2	12.6	2	3	3	7			
12J5		12.6	2	12.6	2	5	2	32	7	12B8	GR	12.6	2	1	3	7	12B7	t2	12.6	2	4	1	80	7	12B7	t2	12.6	2	4	1	80	7	12B7	t2	12.6	2	4	1	80	7
12B8		12.6	2	12.6	2	5	2	25	7	12B7	GR	12.6	2	5	1	80	7	12B8	GR	12.6	2	7	4	1	80	7	12B8	GR	12.6	2	7	4	1	80	7					
12Q7	t	12.6	2	10	2	28	7	12B8	GR	12.6	2	12B7	GR	12.6	2	5	1	80	7	12B8	GR	12.6	2	7	4	1	80	7	12B8	GR	12.6	2	7	4	1	80	7			
12B8	t	12.6	7	10	2	8	12B8	GR	12.6	2	12B7	GR	12.6	2	3	1	8	12B8	GR	12.6	2	7	4	1	80	7	12B8	GR	12.6	2	7	4	1	80	7					
12B8	t	12.6	7	1	1	8	12B8	GR	12.6	2	12B7	GR	12.6	2	5	2	32	7	12B8	GR	12.6	2	7	4	1	80	7	12B8	GR	12.6	2	7	4	1	80	7				
12B7	t1	12.6	7	3	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7						
12B7	t1	12.6	7	2	2	8	12B7	t2	12.6	7	12B7	t2	12.6	7	4	2	32	7	12B7	t2	12.6	7	4	2	32	7	12B7	t												

SHORTS INDI- CATION		TYPE		A		B		C		D		E		F	
SHORTS INDI- CATION		TYPE		A		B		C		D		E		F	
14F7	t1	12.6	1	4	2	8		5	2	8		6	2	8	
14J7	t	12.6	1	4	2	8		6	2	8		4	2	8	
14N7	t1	12.6	1	4	2	8		5	2	8		4	1	8	
14R7	p	12.6	1	6	2	8		3	1	8		2	3	38	5
14S7		12.6	1	6	2	8		6	2	8		6	3	10	7
15	t1	2	1	10	2	40	5	15	16	12.6	4	25	2	5	5168
19	t1	2	1	3	2	34	6	19	t2	2	27	5	2.5	1	
25A6	t	25	2	5	3	14	7	25A7G	P	25	2	4	2	25	
25A65		25	2	5	3	7		25B5	t	25	1	4	3	25	
25B8	P	25	2	10	2	7		25B8	t	25	2	5	3	25	
25L6G	P1	25	2	5	3	10	7	25M6		25	1	5	3	25	
25N5	a1	25	1	2	3	10	6	25N5	a2	25	1	5	3	25	
25Z5	a1	25	1	2	3	10	6	25Z5	a2	25	1	5	3	25	
25Z6	a1	25	2	3	3	10	7	25Z6	a2	25	2	5	3	25	
26		1.5		3	2	4		27		2	1	3	2	4	
31		2		3	2	4		32		2	1	10	2	4	
34		2		10	2	4		35		2	1	10	2	4	
3217GT	t	32	2	5	3	14	7	3217GT	a	32	2	6	3	10	
35B5		32	3	1	3	8	7	35C5		32	3	2	3	45	
3524GT		32	2	5	3	20	6	3523LT		32	1	2	3	8	
41		6.3		4	3	20	6	42		6.3	1	4	3	14	6
45		2.5		3	3	17	4	4523		45	1	2	3	8	73
46		2.5		3	3	16	5	47		2.5	1	3	3	16	5
49		2		3	3	19	5	50B5		50	3	7	1	3	10
5006		50		5	3	7		5016GT		50	2	6	1	3	10
5016G	a1	50	2	3	3	10	76	5016G	a2	50	2	6	1	3	10
50T7	a1	50	2	5	3	13	7	50T7	a2	50	2	6	1	3	10
53	t1	2.5	1	10	2	42	6	53	t2	2.5	1	10	2	33	6
56		2.5	1	3	2	35	5	57		2.5	1	10	2	33	6
59		2.5	1	4	3	20	7	75	d1	6.3	1	4	1	70	6
75	t	6.3	1	10	2	32	6	77	t2	6.3	1	10	2	32	6
76		6.3	1	3	2	34	5	79		6.3	1	3	3	13	6
79	t1	6.3	1	10	3	13	6	80	a2	5	1	3	3	16	4
80	a1	5	1	2	3	16	4	82	a2	5	1	3	3	9	4
82	a1	2.5	1	2	3	9	4	83V	a2	5	1	3	3	9	4
83	a1	5	1	2	3	10	4	84/624	a2	6.3	1	3	3	11	5
84/624	a1	6.3	1	2	3	11	5	85	d1	6.3	1	4	1	90	6
85	t	6.3	1	2	3	12	5	87		6.3	1	2	3	32	7
89	V	6.3	1	2	3	19	5	8920	t1	6.3	1	3	2	30	4
1852		6.3	2	3	2	30	7	85	d2.	6.3	1	3	1	90	6
								14H7		12.6	1	6	2	8	
								14Q7	d2	12.6	1	4	2	8	
								14R7		12.6	1	4	1	8	
								16A5		12.6	4	2	3	38	5
								16A6		2.5	1	6	3	10	7
								24A		2.5	2	5	3	7	
								25A7G	a	25	2	5	3	7	
								25B6G		25	2	5	3	7	
								25C6		25	2	5	3	7	
								25D4		25	2	5	3	73	
								30		2	1	3	2	5	
								33		2	1	3	2	5	
								3516GT		32	2	5	3	7	
								35A5		32	1	6	3	3	
								35W4		32	2	3	5	3	
								3525GT		32	2	3	5	3	
								43		25	1	4	3	37	
								4525GT		45	2	5	3	46	
								48		32	1	4	3	6	
								5005		50	3	5	4	30	
								55	d2	2.5	1	3	1	90	6
								58		2.5	1	10	2	33	6
								75	d2	6.3	1	3	1	70	6
								78		6.3	1	10	2	33	6
								81		7.5	1	2	3	21	4

SHORIS INDI- CATION										SHORIS INDI- CATION										
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F
6085 t1	6.3	9	2	3	33	45	6085 t2	6.3	9	7	3	45		6227	6.3	4	2	3	5	
9001	6.3	3	1	2	27	578	9002	6.3	3	6	2	10	427	9003	6.3	3	1	2	30	427
18013 t	6.3	4	2	3	29	3	CBG1 d1	12.6	2	6	1	18	3	CBG1 d2	12.6	2	5	1	18	3
CBG1	12.6	2	10	2	35	3	GFI	12.6	2	10	2	27	3	GFI	12.6	2	10	2	33	3
CC1	12.6	2	10	2	28	3	CBH1	t	45	2	10	3	9	CBH1 d1	45	2	6	1	46	3
CF3	12.6	2	5	1	46	3	GK1	12.6	2	6	2	28	3	CL2	25	2	10	3	10	3
CBH1	45	2	32	2	9	3	CY1G	18	2	8	3	7	3	CY31	18	2	5	3	7	
GI4	32	2	5	3	8	3	CY2	32	2	8	3	8	3	DH76	d2	12.6	2	5	1	100
CY2	31	2	10	2	28	7	DH76	d1	12.6	2	4	1	100	7	2	30	45	2	32	
DH76	p	12.6	2	2	30	45	E800C	t2	6.3	9	7	2	30	E80F	6.3	4	2	3	578	
E800C	t1	6.3	9	2	3	516	E81L	6.3	4	5	2	29	516	E83F	6.3	4	2	3	8	
E81L	6.3	4	6	2	4		E900C	t2	6.3	3	5	2	26							
E900C	t1	6.3	3	2	3	8	E920C	t2	6.3	3	5	2	4							
E920C	t1	6.3	3	6	2	4	E920C	t2	6.3	3	6	1	4							
EABC80 t	6.3	4	6	2	5		EABC80 d1	6.3	4	6	1	5		EABC80 d2	6.3	4	2	1	5	
EABC80	t3	6.3	4	1	1	5	EAC91 t	6.3	3	6	2	4		EAC91 d	6.3	3	1	1	4	
EB4	d1	6.3	2	5	3		EB4	d2	6.3	2	7	3	9	EB4 t1	6.3	1	6	3	8	
EB91	t1	6.3	3	7	3	9	EB91 s2	6.3	3	2	3	9	4	EB4 t2	6.3	1	4	3	8	
EB91	t2	6.3	2	10	2	30	EB93 d1	6.3	2	6	1	50	3	EBC3 d2	6.3	2	5	1	50	3
EB93	t3	6.3	4	2	2	26	EB93 d2	6.3	4	6	1	50	3	EBC3 d3	6.3	4	8	1	5779	
EB93	t4	6.3	4	2	2	26	EB93 d4	6.3	4	6	1	100	579	EBC3 d5	6.3	4	8	1	5779	
EB93	t5	6.3	3	7	3	9	EB93 d6	6.3	3	6	1	100	579	EBC3 d7	6.3	3	5	1	5779	
EB93	t6	6.3	3	7	3	9	EB93 d8	6.3	3	6	1	100	579	EBC3 d9	6.3	3	5	1	5779	
EB93	t7	6.3	3	7	3	9	EB93 d10	6.3	3	6	1	100	579	EBC3 d11	6.3	3	5	1	5779	
EB93	t8	6.3	3	7	3	9	EB93 d12	6.3	3	6	1	100	579	EBC3 d13	6.3	3	5	1	5779	
EB93	t9	6.3	3	7	3	9	EB93 d14	6.3	3	6	1	100	579	EBC3 d15	6.3	3	5	1	5779	
EB93	t10	6.3	3	7	3	9	EB93 d16	6.3	3	6	1	100	579	EBC3 d17	6.3	3	5	1	5779	
EB93	t11	6.3	3	7	3	9	EB93 d18	6.3	3	6	1	100	579	EBC3 d19	6.3	3	5	1	5779	
EB93	t12	6.3	3	7	3	9	EB93 d20	6.3	3	6	1	100	579	EBC3 d21	6.3	3	5	1	5779	
EB93	t13	6.3	3	7	3	9	EB93 d22	6.3	3	6	1	100	579	EBC3 d23	6.3	3	5	1	5779	
EB93	t14	6.3	3	7	3	9	EB93 d24	6.3	3	6	1	100	579	EBC3 d25	6.3	3	5	1	5779	
EB93	t15	6.3	3	7	3	9	EB93 d26	6.3	3	6	1	100	579	EBC3 d27	6.3	3	5	1	5779	
EB93	t16	6.3	3	7	3	9	EB93 d28	6.3	3	6	1	100	579	EBC3 d29	6.3	3	5	1	5779	
EB93	t17	6.3	3	7	3	9	EB93 d30	6.3	3	6	1	100	579	EBC3 d31	6.3	3	5	1	5779	
EB93	t18	6.3	3	7	3	9	EB93 d32	6.3	3	6	1	100	579	EBC3 d33	6.3	3	5	1	5779	
EB93	t19	6.3	3	7	3	9	EB93 d34	6.3	3	6	1	100	579	EBC3 d35	6.3	3	5	1	5779	
EB93	t20	6.3	3	7	3	9	EB93 d36	6.3	3	6	1	100	579	EBC3 d37	6.3	3	5	1	5779	
EB93	t21	6.3	3	7	3	9	EB93 d38	6.3	3	6	1	100	579	EBC3 d39	6.3	3	5	1	5779	
EB93	t22	6.3	3	7	3	9	EB93 d40	6.3	3	6	1	100	579	EBC3 d41	6.3	3	5	1	5779	
EB93	t23	6.3	3	7	3	9	EB93 d42	6.3	3	6	1	100	579	EBC3 d43	6.3	3	5	1	5779	
EB93	t24	6.3	3	7	3	9	EB93 d44	6.3	3	6	1	100	579	EBC3 d45	6.3	3	5	1	5779	
EB93	t25	6.3	3	7	3	9	EB93 d46	6.3	3	6	1	100	579	EBC3 d47	6.3	3	5	1	5779	
EB93	t26	6.3	3	7	3	9	EB93 d48	6.3	3	6	1	100	579	EBC3 d49	6.3	3	5	1	5779	
EB93	t27	6.3	3	7	3	9	EB93 d50	6.3	3	6	1	100	579	EBC3 d51	6.3	3	5	1	5779	
EB93	t28	6.3	3	7	3	9	EB93 d52	6.3	3	6	1	100	579	EBC3 d53	6.3	3	5	1	5779	
EB93	t29	6.3	3	7	3	9	EB93 d54	6.3	3	6	1	100	579	EBC3 d55	6.3	3	5	1	5779	
EB93	t30	6.3	3	7	3	9	EB93 d56	6.3	3	6	1	100	579	EBC3 d57	6.3	3	5	1	5779	
EB93	t31	6.3	3	7	3	9	EB93 d58	6.3	3	6	1	100	579	EBC3 d59	6.3	3	5	1	5779	
EB93	t32	6.3	3	7	3	9	EB93 d60	6.3	3	6	1	100	579	EBC3 d61	6.3	3	5	1	5779	
EB93	t33	6.3	3	7	3	9	EB93 d62	6.3	3	6	1	100	579	EBC3 d63	6.3	3	5	1	5779	
EB93	t34	6.3	3	7	3	9	EB93 d64	6.3	3	6	1	100	579	EBC3 d65	6.3	3	5	1	5779	
EB93	t35	6.3	3	7	3	9	EB93 d66	6.3	3	6	1	100	579	EBC3 d67	6.3	3	5	1	5779	
EB93	t36	6.3	3	7	3	9	EB93 d68	6.3	3	6	1	100	579	EBC3 d69	6.3	3	5	1	5779	
EB93	t37	6.3	3	7	3	9	EB93 d70	6.3	3	6	1	100	579	EBC3 d71	6.3	3	5	1	5779	
EB93	t38	6.3	3	7	3	9	EB93 d72	6.3	3	6	1	100	579	EBC3 d73	6.3	3	5	1	5779	
EB93	t39	6.3	3	7	3	9	EB93 d74	6.3	3	6	1	100	579	EBC3 d75	6.3	3	5	1	5779	
EB93	t40	6.3	3	7	3	9	EB93 d76	6.3	3	6	1	100	579	EBC3 d77	6.3	3	5	1	5779	
EB93	t41	6.3	3	7	3	9	EB93 d78	6.3	3	6	1	100	579	EBC3 d79	6.3	3	5	1	5779	
EB93	t42	6.3	3	7	3	9	EB93 d80	6.3	3	6	1	100	579	EBC3 d81	6.3	3	5	1	5779	
EB93	t43	6.3	3	7	3	9	EB93 d82	6.3	3	6	1	100	579	EBC3 d83	6.3	3	5	1	5779	
EB93	t44	6.3	3	7	3	9	EB93 d84	6.3	3	6	1	100	579	EBC3 d85	6.3	3	5	1	5779	
EB93	t45	6.3	3	7	3	9	EB93 d86	6.3	3	6	1	100	579	EBC3 d87	6.3	3	5	1	5779	
EB93	t46	6.3	3	7	3	9	EB93 d88	6.3	3	6	1	100	579	EBC3 d89	6.3	3	5	1	5779	
EB93	t47	6.3	3	7	3	9	EB93 d90	6.3	3	6	1	100	579	EBC3 d91	6.3	3	5	1	5779	
EB93	t48	6.3	3	7	3	9	EB93 d92	6.3	3	6	1	100	579	EBC3 d93	6.3	3	5	1	5779	
EB93	t49	6.3	3	7	3	9	EB93 d94	6.3	3	6	1	100	579	EBC3 d95	6.3	3	5	1	5779	
EB93	t50	6.3	3	7	3	9	EB93 d96	6.3	3	6	1	100	579	EBC3 d97	6.3	3	5	1	5779	
EB93	t51	6.3	3	7	3	9	EB93 d98	6.3	3	6	1	100	579	EBC3 d99	6.3	3	5	1	5779	
EB93	t52	6.3	3	7	3	9	EB93 d100	6.3	3	6	1	100	579	EBC3 d101	6.3	3	5	1	5779	
EB93	t53	6.3	3	7	3	9	EB93 d102	6.3	3	6	1	100	579	EBC3 d103	6.3	3	5	1	5779	
EB93	t54	6.3	3	7	3	9	EB93 d104	6.3	3	6	1	100	579	EBC3 d105	6.3	3	5	1	5779	
EB93	t55	6.3	3	7	3	9	EB93 d106	6.3	3	6	1	100	579	EBC3 d107	6.3	3	5	1	5779	
EB93	t56	6.3</td																		

TYPE		A	B	C	D	E	F	SHORTS INDI- CATION	TYPE	A	B	C	D	E	F	SHORTS INDI- CATION	TYPE	A	B	C	D	E	F	
ECH33	b	6.3	2	10	2	28	7	5	2	32	7	5	2	32	7	5	2	29	513	2	2	29	527	
ECH35	p	6.3	2	10	2	28	7	5	2	32	7	5	2	24	5	2	2	28	4	2	2	27	427	
ECH30	t	6.3	4	9	2	26	5	5	2	2	5	5	2	2	5	5	2	2	27	4	2	2	27	4
ECH81	t	6.3	4	9	2	5	5	5	2	2	5	5	2	2	5	5	2	2	27	4	2	2	27	4
ECL80	t	6.3	4	2	2	18	3	5	2	10	2	3	2	10	2	3	2	1	2	5	2	2	21	7
EP5	6.3	2	10	2	18	3	6	2	EF39	6.3	2	10	2	20	7	EF80	6.3	2	15	2	2	3	6	568
EP22	6.3	1	6	2	2	2	2	578	EF85	6.3	4	2	2	23	4	EF86	6.3	4	1	2	3	7	512	
EP81	6.3	4	2	2	2	2	516	EP91	6.3	3	1	2	25	4	EP92	6.3	3	1	2	2	2	2		
EP89	6.3	4	2	2	2	2	516	EP94	6.3	3	1	2	25	4	EP95	6.3	3	1	2	2	2	2		
EP93	6.3	3	1	2	2	2	516	EL3NG	6.3	2	5	3	10	7	EL34	6.3	2	5	3	10	7	7		
EL2G	6.3	2	5	2	30	7	5	3	9	7	5	3	9	7	EL80	6.3	4	2	3	6	3	6		
EL3G	6.3	2	5	3	9	7	5	3	9	7	5	3	9	7	EL84	6.3	4	1	2	3	7	512		
EL81	6.3	4	2	3	59617	EL83	6.3	4	7	5	2	3	5	5	EL91	6.3	4	1	2	3	7	4		
EL85	6.3	4	2	1	2	1	51268	EL90	6.3	3	5	2	3	47	EL91	6.3	3	5	2	3	45	4		
EB30	a1	6.3	4	1	3	10	5	512878	EF91	6.3	3	5	1	3	45	EF91	6.3	3	5	1	3	45	4	
EB30	a1	6.3	4	1	3	10	5	EB30	a2	6.3	4	7	3	10	5	EB30	a2	6.3	4	7	3	10	5	
EB32	a1	6.3	4	1	3	10	5	EB32	a2	6.3	4	7	3	10	5	EB32	a2	6.3	4	7	3	10	5	
EB90	a1	6.3	3	1	3	10	4	EB90	a2	6.3	3	6	3	10	8	KBC1	d1	2	1	4	2	27	6	
GZ34	a1	5	2	4	3	10	8	GZ34	a2	5	2	6	3	10	8	KP2	d1	2	1	4	2	27	6	
KBC1	t	2	1	10	2	32	6	KBC1	d1	2	1	4	2	27	6	KT61	d1	2	1	4	2	27	6	
KP1	t	2	1	4	2	27	6	KP2	d1	2	1	4	2	27	6	KT71	d1	2	1	4	2	27	6	
KL4G	t	2	2	5	2	29	7	KK2G	d1	2	2	5	2	40	7	PAB80	d2	7.5	4	2	2	2	5	
KT66	6.3	2	5	3	7	7	M78	6.3	3	6	1	3	9	4	PAB80	d2	7.5	4	2	2	2	5		
PABC80	t	7.5	4	8	2	5	569	PAB80	d1	7.5	4	6	1	3	9	PAB84	t2	7.5	4	2	2	2	5	
PABC80	d3	7.5	4	1	1	5	569	PAB84	t1	7.5	4	6	2	2	5	PAB84	t2	7.5	4	2	2	2	5	
PC85	t1	7.5	4	7	2	5	569	PC85	t2	7.5	4	6	2	2	5	TDD4	d2	4	1	4	2	2	5	
PC880	t	7.5	4	1	1	5	569	PC880	P	7.5	4	2	2	5	569	UAB80	d2	25	4	2	2	2	5	
PL81	18	4	17	2	2	569	PL82	18	4	168	2	2	5	569	PL83	12.6	4	1	2	3	5	516		
PB81	18	4	17	2	2	569	TDD2	d1	2	1	4	1	76	6	TDD2	d2	2	1	4	2	35	6		
TDD2	t	2	1	10	2	32	6	TDD4	d1	4	1	4	1	100	7	TDD4	d2	4	1	4	2	35	6	
TDD4	t	4	1	4	3	32	6	U52	d2	5	2	6	3	11	8	U76	d2	25	2	5	3	10	22	
U52	d1	5	2	4	3	32	6	UAB80	d1	25	4	6	1	5	5	UAB80	d2	25	4	2	1	5	10	
UABC80	t	25	4	8	2	5	569	U881	d1	12.6	4	6	1	5	5	U881	d2	12.6	4	8	1	2	516	
UABC81	t	25	4	1	1	5	569	UC885	t2	25	4	6	2	2	5	UC885	t1	25	4	6	2	2	516	
U76	32	2	5	3	10	2	7	U76	32	2	5	3	7	7	U76	32	2	5	3	7	7	7		
W76	12.6	2	5	3	10	2	7	W76	12.6	2	5	3	7	7	W76	12.6	2	5	3	7	7	7		
X76M	t	12.6	2	5	3	10	2	X76M	t	12.6	2	5	3	2	2	X76M	t	12.6	2	5	3	2	2	
X79	t	6.3	4	7	2	26	5	X79	t	6.3	4	7	2	2	2	X79	t	6.3	4	7	2	2	2	

NOTE.

Television picture tubes and EHT rectifiers may be tested in the model TVT or TSF/2 for filament continuity, internal short circuits and electron emission from the cathode, like any other tube. This will show up the majority of faults which develop in these types of tubes.

The presence of any appreciable amount of air or gas within the envelope will be indicated by a low emission reading.

It is possible with these tube types however, that slight traces of gas may not reduce the emission reading but yet may ionise under the stress of the high voltages or the order of 14,000 to 18,000 volts present in a television receiver. If an EHT rectifier or picture tube shows a defect when tested then the tube is definitely faulty. If it gives a "good" indication, it is wise to check in a television receiver in case of gas content.

E. H. T. Rectifier.

E.H.T. Rectifiers are designed to pass very low plate current usually about 0.5 m a so that even a good tube will only cause the needle to move between 25% and 40% of the way across the scale with the range control "F" set to 100. It is important to set switches AB and C before inserting tube in socket.

PICTURE TUBES:

The TV2 Picture tube adaptor is intended for use with the Model TST/2 and the model TVI valve testers and is to be used in accordance with the operating instructions for these instruments.

This adaptor, when used with the TSI/2 and the I.V.I. will test all duo-decal based picture tubes for better continuity, emission, and short circuited elements.

The F3H-2 and the F4F do not illuminate the screen of a picture tube under test.

TYPE	A	B	C	D	E	F	SHOTS INDI- CA-TION	TYPE	A	B	C	D	E	F	SHOTS INDI- CA-TION	TYPE	A	B	C	D	E	F	SHOTS INDI- CA-TION		
W 43-20	6.3	1	2	1	48	7	21 ALP ₄	6.3	1	48	7	17	HP 4B	6.3	1	2	1	48	7						

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION									
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F				
IA4P	2	1		10	2	32	4	IA5G	1.4	2		5	2	40	7	IA6	2	1		4	2	44		
IA7G	1.4	2		5	2	35	7	IA6	1.4	1		4	2	40	7	IA6	1.4	7		4	2	36		
IAH5 p	1.4	7		2	6	2	60	12	IAH5 d	1.4	7		3	1		12	IAJ4	1.4	7		45	6	2	35
IANS	1.4	7		6	2		1	1B3GT	1.4	2	134568	10	1	100	7	1B4P	2	1		10	2		18	
									good tube reads 40%															
IB5 t	2	1		5	2	48	6	IB5 dl	2	1		4	1	100	6	IB5 d2	2	1		3	1	100	1	
IC4	2	1		10	2	31	4	IC5G	1.4	2		5	2	30	7	IC6	2	1		4	2	40	6	
IC7G	2	2		5	2	40	7	ID4	2	1		3	2	25	5	ID5GP	2	2		10	2		36	
ID7GT	2	2		5	2	44	7									IF4	2	1		3	2		30	
ID8GT p	1.4	2		5	2	35	7	1D8GTt	1.4	2		10	2	41	7	1D8GTd	1.4	2		8	1	100	7	
IDN5 p	1.4	7		6	2		1	1DNs d	1.4	7		4	1		1	IE5GP	2	2		10	2		36	
IE7G pl	2	2		4	2	32	7	1E7G p2	2	2		5	2	32	7	IF4	2	1		3	2		30	
IF5G	2	2		5	2	30	7									IF6 P	2	1		100	6		3	
IF6 P	2	1		10	2	42	6	IF6 dl	2	1		5	1	100	6	IF6 d2	2	1		4	1	100	6	
IF7GV p	2	2		10	2	43	7	IF7GVd2	2			5	1	100	7	IF7GVd2	2	2		4	1	100	7	
IG4G	1.4	2		5	2	40	7	IG5G	2	2		5	2	29	7									
IG6G tl	1.4	2		4	2	40	7	IG6G t2	1.4	2		5	2	40	7	IH4G	2	2		5	2		40	
IHSG t	1.4	2		10	2	35	7	IH5Gd	1.4	2		5	1	70	7									
IH6G t	2	2		6	2	35	7	IH6G dl	2	2		5	1	100	7	1H6G d2	2	2		4	1	100	7	
IJ5G	2	2		5	2	35	7	IJ6G tl	2	2		4	2	35	7	IJ6G t2	2	2		5	2		35	
IK4	2	1		10	2	31	4	IK5G	2	2		10	2	32	7									
IK6 P	2	1		10	2	35	6	IK6 dl	2	1		4	1	85	6	IK6 d2	2	1		3	1		85	
IK7G P	2	2		10	2	35	7	IK7G dl	2	2		4	1	90	7	IK7G d2	2	2		5	1		90	
IL4	1.4	7		6	2	31	15	IL5G	2	2		5	2	28		IL4A	1.4	1		6	2		8	
IL6A	1.4	1		7	4		87	IL84	1.4	1		56	6	1		ILC5	1.4	1		1	1		58	
ILC6	1.4	1		7	4		87	ILD5 p	1.4	1		57	6	2		ILD5 d	1.4	1		57	4	1	8	
ILM3	1.4	1		347	6	2		ILG5	1.4	1		7	6	1										
ILH4 t	1.4	1		357	6	2		ILH4 d	1.4	1		36	1		85	ILN5	1.4	1		6	2		8	
IM3	1.4	4		2	1	2		IM5G	2	2		10	2	37	7	IN5G	1.4	2		10	2		33	
IN6G p	1.4	2		5	2	33	7	IN6G d	1.4	2		6	1	100	7	IP5Q	1.4	2		10	2		33	
IOSGT	1.4	2		5	2	30	7	IR5	1.4	7		4	2	29	15	IS4	1.4	7		56	3	2	30	
IS5 p	1.	1		6	2	35	7	IS5 d	1.4	1		3	1	100	7	IT4	1.4	7		6	2		32	
IS2	1.4	1		3456789	10	1	100	2	good tube reads 30															
SGT	1.4	2		5	2		7	IU4	1.4	7		45	6	2	38	1								
US p	1.4	7		6	2	34	1	IU5 d	1.4	7		4	1	100	1	IV	6.3	1		2	3		10	
IV2	6.3	4		9	3		5	IW4	1.4	7		6	2	33	15	IX2B	1.4	1		134569	10	1	100	
									good tube reads 40															

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 1

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION									
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F				
2A3	2.5	1		3	3	12	4	2A5	2.5	1		4	3	16	6	2A6 d2	2.5	1		3	1	70	6	
2A6 t	2.5	1		10	2	34	6	2A6 dl	2.5	1		4	1	70	6	41267								
2A7	2.5	1		5	2	34	7	2AF4A	2	3		2	2			2B7 d2	2.5	1		4	1	54	7	
2B7 p	2.5	1		10	2	40	7	2B7 dl	2.5	1		5	1	54	7	2E5	2.5	1		3	2	46	6	
2BN4	2			3	2	2	47	2CY5	2.5	3		1	2			41258	3A3	3.3	7	10	3		2	
2x2A	1			10	3		4	3A2	3.3	9		10	3			3A5 t2	1.4	4		2	2		17	
3A4	1.4	5		6	4	2	30	17	3A5 tl	1.4	4		6	2			3AF4A	3.3	3		2	2		46172
3A8GT t	1.4	1		5	2	30	27	3A8GT p	1.4	1		10	2	30	27		3AU6	3.3	3		1	2		4
3AL5 al	3.3	3		7	1		4	3AL5a2	3.3	3		2	1				3BC5	3.3	3		1	2		427
3AV6 t	3.3	3		1	2		4	3AV dl	3.3	3		6	1				3BU8 p2	3.3	4		3	2		5
3AV6 d2	3.3	3		5	1		4	3BZ	3.3	7		10	3				3CB6	3.3	3		1	2		4
3BN6	3.3	3		2	2		4	3BU8 pl	3.3	4		8	2				3DT6	3.3	3		1	2		4
3BY6	3.3	3		1	2		4	3BZ6	3.3	3		1	2				3Q4	1.4	5		6	3		30
3CF6	3.3	3		1	2		4	3CS6	3.3	3		1	2				3V4	1.4	5		6	2		30
3C4	1.4	5		6	2		17	3LF4	1.4	7		6	2				4BC8 t1	4	4		2	2		5
3Q5GT	1.4	8		5	2	30	27	3S4	1.4	5		6	3	2	30	17	4BC8 t2	4	4		2	2		5
4AU6	4	3		1	2		4	4BC8 t1	4	4		7	2				4BQ7A t2	4	4		2	2		5
4BN6	4	3		2	2		4	4BQ7A t1	4	4		7	2				4BZ6	4	3		1	2		4
4BS8 tl	4	4		7	2		5	4BS8 t2	4	4		2	2				4DT6	4	3		1	2		6
4BU8 pl	4	4		8	2		5	4BU8 p2	4	4		3	2				5AM8d	4	4		8	1		5
4BZ7 tl	4	4		7	2		5	4BZ7 t2	4	4		2	2				5AQ5	5	3		7	2		417
4CB6	4	3		1	2		4	5AM8 p	5	4		2	2				5AR4	6.3	2		13576	3	8	8
5AN8p	5	4		8	2		5	5AN8 t	5	4		2	2											
5AL7GT	6.3	2		1	1		100	7	5AR4	6.3	2		13574	3	8	8								
5AS8 p	5	4		2	2		5	5AS8 d	5	4		6	1											
5AT8 p	5	4		9	2		5	5AT8 t	5	4		1	2											
5AV8 t	5	4		2	2		5	5AV8 p	5	4		6	2											
5AZ4 al	5	2		4	3		8	5AZ4 a2	5	2		6	3											
5B8 t	5	4		2	2		5	5B8 p	5	4		6	2											
5BK7A	5	4		7	2		5	5BK7A t2	5	4		7	2											
5BQ7A tl	5	4		2	2		5	5BQ7A t2	5	4		7	2											
5BR8 t	5	4		1	2		538	5BR8 p	5	4		9	2			538								
5BT8 p	5	4		8	2		5	5BT8 d1	5	4		1	2			538	5BT8 d2	5	4		2	1		5
5CG8 p	5	4		9	2		538	5CG8 t	5	4		1	2			538								
5CL8t	5	4		1	2		5	5CL8TR	5	4		9	2			5								

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 2.

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION							
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F		
5CQ8 t	5	4	9	2		5	5CQ8TR	5	4	2	2			536	5CZ5	5	4	3	2		536	
5J6 tl	5	3	5	2		4	5J6 t2	5	3	6	2			4	5T8 t	5	4	8	2		5	
5T4 al	5	2	4	3	10	8	5T4 a2	5	2	6	3	10		5	5T8 d3	5	4	1	1		5	
5T8 dl	5	4	6	1		5	5T8 d2	5	4	2	1			5								
5U8 t	5	4	9	2		5	5U8 p	4		2	2			5								
5U4G al	5	2	4	3	10	8	5U4G a2	5	2	6	3	10		8	5V6-GT	5	2	5	2		7	
5V4G al	5	2	4	3	9	8	5V4G a2	5	2	6	3	9	8									
5W4 al	5	2	4	3	10	8	5W4 a2	5	2	6	3	10		8								
5X4G al	5	7	3	3	10	8	5X4G a2	5	7	5	3	10		8								
5Y3G al	5	2	4	3	14	8	5Y3G a2	5	2	6	3	14		8								
5Y4G al	5	2	4	3	14	8	5Y4G a2	5	2	6	3	14		8								
5Z3 al	5	1	2	3	10	4	5Z3 a2	5	1	3	3	10		4								
5Z4 al	5	2	6	3		8	5Z4 a2	5	2	4	3			8								
5x4Gal	5	7	5	3		8	5x4Ga2	5	7	3	3			8								
5x8 t	5	4	2	2		5	5x8 p	5	4	7	2			5								
5AS4 al	5	2	4	3	11	8	5AS4 a2	5	2	6	3	11		8								
5RGY al	5	2	4	3	11	8	5R4GY a2	5	2	6	3	11		8								
5Z4G al	5	2	4	3	10	8	5Z4G a2	5	2	6	3	10		8								
6A3	6.3	1	3	3	12	4	6A4	6.3	1	3	3	14		5								
6A6 tl	6.3	1	3	3	13	7	6A6 t2	6.3	1	5	3	13	7		6A7	6.3	1	5	2	32		
6A8G	6.3	2	5	2	32	7	6AB4	7	3	6	2	28	4		6AB5	6.3	1	3	2	45	5	
6AB6G	6.3	2	5	3		7	6AB7	6.3	2	4	2	35	7									
6AB8 t	6.3	4	2	2	33	5	6AB8 p	6.3	4	9	3	26	5		6AC5G	6.3	2	5	3	10	7	
6AC7	6.3	2	4	2	30	7	6AD7 t	6.3	2	1	2	28	7		6AD7 p	6.3	2	5	3	15	7	
6AD8 p	6.3	4	2	2	36	5	6AD8 d1	6.3	4	7	1	100	5		6AD8 d2	6.3	4	8	1	100		
6AE5GT	6.3	2	5	2		7	6AE6G	6.3	2	5	2		7									
6AE7G tl	6.3	2	4	2		7	6AE7G t2	6.3	2	6	2		7		6AE8	6.3	4	9	2	25	5	
6AE8 h	6.3	4	9	2	2	29	5	6AE8 t	6.3	4	9	7	2	29	5	6AF4A	6.3	3	2	2	41267	
6AF6G	6.3	2	4	2		7	6AF6G	6.3	2	5	2		7		6AC5	6.3	3	7	1	2	25	
6AG6G	6.3	2	5	3	7	6	6AC7	6.3	2	4	3	6	7		6AH4GT	6.3	2	1	2	26	7	
6AH6	6.3	3	1	2		4	6AJ5	6.3	3	1	2		427		6AH4GT	6.3	2	1	2	26	7	
6AJ8 h	6.3	4	2	2	28	5	6AJ8 t	6.3	4	9	2	30	5		6AK5	6.3	3	7	1	2	27	
6AK6	6.3	3	1	3	15	4	6AL3	6.3	4	123678	9	2	25	5	6AK8 d2	6.3	4	2	1		5	
6AK8 t	6.3	4	8	2		5	6AK8 d1	6.3	4	6	1		5		6AL a2	6.3	3	2	3	9	4	
6AK8 d3	6.3	4	1	1		5	6AL5 al	6.3	3	7	3	9	4									

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 3.

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION							
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F		
6AM4	6.3	7	3469	1	2		6AM5	6.3	3		1	3	9	4	6AM6	6.3	3		1	2	23	
6AM8 p	6.3	4	2	2	24	5	6AM8 t	6.3	4	8	1	26	5		6AN4	6.3	3		2	2	4617	
6AN7 h	6.3	4	6	2	2	24	5	6AN7 t	6.3	4	6	9	2	26	5	6AN8 t	6.3	4		2	2	25
6AN8 p	6.3	4	8	2	25	5	6AO4	6.3	3	56	1	2	25	4	6AQ5	6.3	3	1	7	3	10	
6AQ6 t	6.3	3	1	2		4	6AQ6 d1	6.3	3	5	1		4		6AQ6 d2	6.3	3		6	1	4	
6AQ7GT	6.3	7	4	2		8	6AQ7GT d1	6.3	7	3	1		8		6AQ7GT d2	6.3	7		1	1	8	
6AQ8 t1	6.3	4	9	7	2	25	5	6AQ8 t2	6.3	4	9	2	2	25	5							
6AR5	6.3	3	1	3		4									6AR7GT d2	6.3	1		6	1	100	
6AR7GT p	6.3	1	10	2	30	8	6ARGT d1	6.3	1	5	1	100	8		6AS5	6.3	3		1	3	8	
6AS5	6.3	3	5	2	2	4	6AS6	6.3	3	1	2		4		6AS7G t1	6.3	7		1	3	8	
6AS8 p	6.3	4	2	2		5	6AS7G t2	6.3	7	4	3		8			6AT6 d1	6.3	3		6	1	35
6AS8 d	6.3	4	6	1		5	6AT6 t2	6.3	3	1	2		5		6AU4GT	6.3	7	12	5	3	8	
6AT6 t	6.3	3	1	2	24	4	6AT6 d1	6.3	3	5	1	35	4		6AT6 d2	6.3	3		6	1	35	
6AT8 t	6.3	4	1	2		5	6AT8 p	6.3	4	9	2		5			6AV5GT	6.3	2		1	2	7
6AU5GT	6.3	2	1	3		7	6AU6	6.3	3	1	2		5		6AV6 d1	6.3	3		5	1	100	
6AU7 t1	6.3	9	7	2		45	6AU7 t2	6.3	9	2	2		45		6AU7GT	6.3	2		1	2	7	
6AU8 t	6.3	4	2	2		5	6AU8 p	6.3	4	7	2		5		6BAV6 d1	6.3	3		5	1	100	
6AV6 t	6.3	3	1	2	30	4	6AV6 d1	6.3	3	6	1	100	4		6AV6 d2	6.3	3		5	1	100	
6AW8 p	6.3	4	7	2	30	5	6AW8 t	6.3	4	2	2	28	5		6AX5GT a2	6.3	2		3	3	12	
6AX4 GT	6.3	7	5	2	26	8	6AX8 p	6.3	4	2	2		5		6B4G	6.3	2		5	2	12	
6AX8 t	6.3	4	9	2		5	6AZ8 p	6.3	4	6	2		5		6B6G d2	6.3	2		10	2	33	
6AZ8 t	6.3	4	9	2		5	6BD6	6.3	3	4	1	50	7		6B7 p	6.3	1		10	2	85	
6B6G d	6.3	2	10	2	33	7	6B7 d1	6.3	1	5	1	40	7		6B8 d1	6.3	2		5	1	40	
6B6G d1	6.3	2	5	1	50	7	6B8 p	6.3	2	10	2	75	7		6BA7	6.3	4	8	2	2	26	
6B7 d2	6.3	1	4	1	85	7	6B8 t	6.3	2	1	2	26	4		6BC4	6.3	4	3789	3	2	5	
6B8 d2	6.3	2	4	1	75	7	6BA6	6.3	3	1	2		5		6BC7 d3	6.3	4		2	3	25	
6BA8 ap	6.3	4	7	2		5	6BA8 at	6.3	4	2	2		5		6BD4	6.3	2		5	2	7	
6BC5	6.3	3	1	2		427									6BD7 d2	6.3	4	79	2	2	26	
6BC7 d1	6.3	4	8	2	25	5	6BC7 d2	6.3	4	6	3	25	5		6BE6	6.3	3		1	2	26	
6BC8 t1	6.3	4	2	2	26	5	6BC8 t2	6.3	4	7	2	26	5		6BE8 p	6.3	4		9	2	5	
6BD5GT	6.3	2	1	2	28	7	6BD6	6.3	3	1	2	30	4		6BD7 t	6.3	4	79	2	2	26	
6BD7 d1	6.3	4	79	6	1	100	5	6BD7 d2	6.3	4	79	8	1	100	5	6BE6	6.3	3		1	2	26
6BE7	6.3	4	8	7	2	29	5	6BE8 t	6.3	4	1	2		5		6BE8 p	6.3	4		9	2	5
6BF5	6.3	3	7	1	3	10	4								6BF6 d1	6.3	3		6	1	100	
6BF6 t	6.3	3	1	2	26	4	6BF6 d1	6.3	3	6	1	100	4		6BF6 d2	6.3	3		5	1	100	
6BF7 tl	6.3	3	2	2		6	6BF7 t2	6.3	3	7	2		6		6BG6G	6.3	2		5	3	10	

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 4.

SHORTS INDICA-TION						SHORTS INDICA-TION						SHORTS INDICA-TION									
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	
6BH5	6.3	4	789	2	2	24	5	6BH6	6.3	3	1	2		4							
6BH t1	6.3	4		7	2	26	5	6BH7 t2	6.3	4	2	2	26	5							
6BH8 p	6.3	4		7	2	24	5	6BH8 t	6.3	4	2	2	25	5	6B15	6.3	3	6	1	3	9
6BJ6	6.3	3		1	2	4		6BJ8 t	6.3	4	8	2		5	6B18 d1	6.3	4	6	1		5
6BK4	6.3	2		5	2	7		6BK5	6.3	4	3	2		537							
6BK7 t1	6.3	4		7	2	26	5	6BK7 t2	6.3	4	2	2	26	5	6BK8	6.3	4		9	2	527
6BL4	6.3	7		5	3	8		6BL7GTt1	6.3	7	4	2		8	6BL7GTt2	6.3	7	1	2		8
6BL8 p	6.3	4		2	3	7	5	6BL8 t	6.3	4	9	2	26	5							
6BM8 p	6.3	4		3	3	8	5	6BM8 t	6.3	4	1	2	30	5	6BN4	6.3	3	67	2	3	9
6BN5	6.3	4	28	1	2			6BN6	6.3	3	2	2		4	6BQ5	6.3	4	168	2	3	9
6BQ6GT	6.3	2		5	3	10	7	6BQ6GTD	6.3	2	5	3	10	7							
6BQ7At1	6.3	4		7	2	26	5	6BQ7A t2	6.3	4	2	2	26	5	6BR5	6.3	4	368	1	1	60
6BR7	6.3	4		2	2	30	5	6BQ8 t	6.3	4	1	2		5	6BR8 p	6.3	4	9	2		5
6BS4	6.3	3	67	6	2	4		6BS7	6.3	4	10	2		5	6BT4ai	6.3	1		2	3	
6BS8 1	6.3	4		7	2		5	6BS8 t2	6.3	4	2	2		5	6BT4a2	6.3	1	6	3		8
6BU8 pl	6.3	4		7	2	25	5	6BV p	6.3	4	9	8	3	10	6BV7 dl	6.3	4	9	6	1	45
6BV7 d2	6.3	4	9	1	1	45	5	6BW6	6.3	4	1	2	3	13	6BW7	6.3	4	3	2	2	25
6BX6	6.3	4	26	2	2	24	5	6BX7GT	6.3	7	4	2		8	6BX7GT t2						
6BY5GA								6BY5GA							6BY6	6.3	3	1	2		8
a1	6.3	2		5	3	7		a2	6.3	2	4	3		7	6BY8	6.3	3	1	2		4
6BY7	6.3	4		2	2	25	513	6BY8 p	6.3	4	1	2		5	6BZ7 t2	6.3	4	2	2		5
6BZ6	6.3	3		1	2	25	4	6BZ7 tl	6.3	4	7	2		5							
6B4G	6.3	2		5	3	12	7	6B5	6.3	1	4	3		6							
6B6 Gt	6.3	2		10	2	33	7	6B6G dl	6.3	2	5	1	50	7	6B6G d2	6.3	2	4	1	50	7
6B7 p	6.3	1		10	2	40	7	6B7 dl	6.3	1	5	1	85	7	6B7 d2	6.3	1	4	1	85	7
6B78 p	6.3	1		10	2	35	7	6B78 dl	6.3	1	5	1	100	7	6B78 d2	6.3	1	4	1	100	7
6B8G p	6.3	2		10	2	40	7	6B8G dl	6.3	2	5	1	75	7	6B8G d2	6.3	2	4	1	75	7
6C4	6.3	3	25	6	2	28	4	6C5G	6.3	2	5	2	33	7	6C6	6.3	1	10	2	35	6
6C7 t	6.3	1		10	2		7	6C7 dl	6.3	1	5	1		7	6C7 d2	6.3	1	4	1		7
6C8 tl	6.3	2		5	2		7	6C8 t2	6.3	2	10	2		7	6CA4al	6.3	4	1	3	10	5
6CA4az	6.3	4		7	3	10	5	6CA7	6.3	2	5	2	25	7	6CB5A	6.3	2	468	5	3	7
6CB6	6.3	3	1	2	25	4		6CD6G	6.3	2	5	3	10	7	6CF6	6.3	3	1	2		4
6CG7 tl	6.3	4		7	2	30	5	6CG7 t2	6.3	4	2	2	30	5							
6CG8 t	6.3	4		1	2	25	538	6CG8 p	6.3	4	9	2	25	538	6CH6	6.3	4	16	2	3	10
6CH8 p	6.3	4		7	2		5	6CH8 t	6.3	4	8	2		5	6CJ6	6.3	4	167	2	3	9
6CK6	6.3	4		2	3	7	5	6CL6	6.3	4	89	2	3	5	6CL8 t	6.3	4	1	2		5
6CM5	6.3	2	13	5	3	7	7	6CM6	6.3	4	3	3		536	6CL8TR	6.3	4	9	2		5

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 5.

SHORTS INDICA-TION						SHORTS INDICA-TION						SHORTS INDICA-TION										
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F		
6CM7 tl	6.3	4		7	2	26	5	6CM7 t2	6.3	4	8	2	26	5	6CN6	6.3	2	5	3		7	
6CN7 dl	6.3	4		2	1		59	6CN7 d2	6.3	4	1	1		59	6CN7 t	6.3	4	7	2		59	
6CO6	6.3	3		1	2	26	4	6CO8 t	6.3	4	9	2	25	5	6CO8(tet)	6.3	4	2	2	25	5	
6CR6 p	6.3	3		7	2		4	6CR6 d	6.3	3	2	1		4	6CS6	6.3	3	1	2	25	4	
6CS7 t1	6.3	4		7	2		5	6CS7 t2	6.3	4	3	2		5	6CU5	6.3	3	2	2		4	
6CU6	6.3	2		5	3	9	7	6CU8 t	6.3	4	8	2		5	6CU8 p	6.3	4	7	2		5	
6CW5	6.3	4	168	2	2	25	5	6CW7 tl	6.3	4	6	2	26	578	6CW7 t2	6.3	4	2	2	26	578	
6CZ5	6.3	4	268	3	2	10	5	6D4	6.3	3	1	2		4	6DAS t	6.3	4	1	2		5	
6DA 5l	6.3	4	6	2	2		5	6D7	6.3	1	10	2	35	6	6D7	6.3	1	10	2		7	
6DA6	6.3	4	16	2	2	26	5	6D8G	6.3	2	5	2	31	7	6D6GA	6.3	2	5	3	7	7	
6DB5	6.3	4	678	3	2	28	5	6DC6	6.3	3	1	2		4	6DC8 d2	6.3	4	2	2	26	5	
6DC8 dl	6.3	4		7	1	65	5	6DC8 d2	6.3	4	65	8	1	5	6DC8 p	6.3	4	2	2	26	5	
6DE6	6.3	3		1	2		4	6DG6GT	6.3	2	5	3		6	6DL5	6.3	3	7	2		4	
6DN6	6.3	2		5	3		7	6DQ5	6.3	2	568	5	3	7	6DQ6A	6.3	4	5	3	9	7	
6DR8 p	6.3	4	20	1	30		5	6DR8 dl	6.3	4	7	1	75	5	6DR8 d2	6.3	4	8	1	70	5	
6DS5	6.3	3	7	1	2		4	6DS t	6.3	4	9	2	30	5	6DS8 p	6.3	4	2	2	30	5	
6DT6	6.3	3		1	2	26	4	6DT8 tl	6.3	4	7	2		5	6DT8 t2	6.3	4	2	2		5	
6DX8	6.3	4		1	2	28	5	6DX8	6.3	4	8	2	28	5	6E5	6.3	1	3	2	46	6	
6E6 tl	6.3	1		5	2	26	7	6E6 t2	6.3	1	3	2	26	7	6E7	6.3	1	10	2	33	7	
6EA8	6.3	4		2	2	25	5	6EH5	6.3	3	2	2		425	6EH7	6.3	4	36	2	24	5	
6EJ7	6.3	4	36	2	2	24	5	6EM5	6.3	4	268	3	3	10	5	6ES6	6.3	3	1	2	28	4
6ES8	6.3	4		2	2	25	5	6E88	6.3	4	7	2	25	5	6ET6	6.3	3	1	2	25	4	
6EU8	6.3	4		2	2	25	5	6F5G	6.3	2	10	2	26	7	6FG6	6.3	2	5	3	16	7	
6F7P	6.3	1		5	2	50	7	6F7 p	6.3	1	10	2	33	7	6F8G tl	6.3	2	10	2	30	7	
6F8G t2	6.3	2		5	2	30	7	6FC7	6.3	4	7	6	2	25	5	6G5	6.3	1	3	2	42	6
6G6G	6.3	2		5	3	13	7	6G6	6.3	2	5	2		7	6G8 d2	6.3	2	4	1	75	7	
6G8 p	6.3	2		10	2	40	7	6G8 dl	6.3	2	5	1	75	7	6G8 d2	6.3	2	56	1	2	4	
6H16G	6.3	2		3	3	9	7	6H16G a2	6.3	2	5	3	9	7	6J4	6.3	3	3	6	2	26	
6J5G	6.3	2		5	2	32	7	6J6 tl	6.3	3	5	2	26	4	6J6 t2	6.3	3	3	6	2	28	
6H7G	6.3	2		10	2	33	7	6J8G p	6.3	2	10	2	23	7	6J8G t	6.3	2	5	2	28	7	
6K5G	6.3	2		10	2	27	7	6K6G	6.3	2	5	3	16	7	6K7G	6.3	2	10	2	35	7	
6K8G	6.3	2		5	2	25	7	6L5G	6.3	2	5	2	10	7	6L6G	6.3	2	5	3	10	7	
6L7G	6.3	2		10	2	30	7	6M5	6.3	4	689	2	3	10	5	6N5	6.3	1	3	2	45	6
6N6G	6.3	2		5	3	7	7	6N7G tl	6.3	2	4	3	13	7	6N7G t2	6.3	2	5	3	13	7	
6N3	6.3	4	12678	9	3	9	5	6N8 dl	6.3	4	7	1	100	5	6N8 d2	6.3	4	8	1	100	5	
6N8 p	6.3	4		2	2	24	5	6N8 d2	6.3	2	10	2	33	3	6P7Q t	6.3	2	7	2	50	3	

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 6.

SHORTS INDICA- TION.						SHORTS INDICA- TION.						SHORTS INDICA- TION										
TYPE	A	B	C	D	E	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F			
6Q4	6.3	4	278	1	2	5	6Q7G d1	6.3	2	5	1	80	7	6Q7G d2	6.3	2	4	1	80	7		
6Q7G t	6.3	2		10	2	28	7	6R4	6.3	4	1	2	5	6R7G d2	6.3	2	4	1		7		
6R3	6.3	4	1236789	3	7	5	6R7G d1	6.3	2	5	1	7	6R7G d2	6.3	2	4	1		7			
6R7G t	6.3	2		10	2	7																
6S2	6.3	2	3456710	1	100	1																
			good tube 40%.				6S4	6.3	4	1378	6	3	10	5	6S7G	6.3	2	10	2	32	7	
6S8GT t	6.3	7		10	2	8	6S8GT d1	6.3	7	3	1	8	6S8GT d2	6.3	7	4	1		8			
6S8GT d3	6.3	7		1	1	8	6S4T	6.3	2	5	2	27	7	6S8T	6.3	2	5	2		7		
6S8T t1	6.3	7		4	2	26	8	6S8T t2	6.3	7	3	2	26	8	6S8T GT	6.3	2	4	2		7	
6S8T5	6.3	7		3	2	8	6SF6GT	6.3	2	2	2	32	8	6SF7GT	p6.3	7	2	2	32	8		
6S8T7GTd	6.3	7		5	1	100	8															
6S8GT	6.3	2		4	2	7	6SH7	6.3	2	4	2	28	7	6SJ7GT	6.3	2	4	2	25	7		
6S8KT	6.3	2		4	2	27	7	6SL7 GT	t16.3	7	1	2	26	8	6SL7GT	t26.3	7	4	2	26	8	
6S8N7GT t1	6.3	7		1	2	32	8	6S8N7GTt2	6.3	7	4	2	32	8	6S8N7GTd2	6.3	7	4	1	80	8	
6S8Q7GTt	6.3	7		2	2	30	8	6S8Q7GTd1	6.3	7	5	1	80	8	6S8Q7GTd2	6.3	7	4	1	80	8	
6S8R7 t	6.3	7		2	2	30	8	6S8R7 d1	6.3	7	5	1	80	8	6S8R7 d2	6.3	7	4	1	80	8	
6S8S7	6.3	2		4	2	32	7	6ST7 t	6.3	8	2	2	32	7	6ST7 t1	6.3	8	5	1		7	
6S8T7 d2	6.3	8		4		7																
6S8Z7 t	6.3	7		2	2	30	8	6S8Z7 d1	6.3	7	5	1	80	8	6S8Z7 d2	6.3	7	4	1	80	8	
6T4	6.3	3	67	2	2	4																
6T7G t	6.3	2		10	2	33	7	6T7G d1	6.3	2	5	1	50	7	6T7G d2	6.3	2	4	1	50	7	
6T8 t	6.3	4		8	2	5		6T8 d1	6.3	4	6	1	5	6T8 d2	6.3	4	2	1		5		
6T8 d3	6.3	4		1	1	5		6U3	6.3	4	12678	9	3	5	6U4G	6.3	7	1246	5	3	10	8
6U5	6.3	1		3	2	43	6	6U7G	6.3	2	10	2	33	7	6U8 p	6.3	4	2	2	26	5	
6U8 t	6.3	4		9	2	24	5	6V3	6.3	4	2	3	5279									
6V4 a1	6.3	4		1	3	12	5	6V4 a2	6.3	4	7	3	12	5	6V6G	6.3	2	5	3	12	7	
5V7Gt	6.3	2		10	2	43	7	6V7G d1	6.3	2	5	1	90	7	6V7G d2	6.3	2	4	1	90	7	
6W3	6.3	4	12678	2	2	25	5	6W4	6.3	7	5	3	8	6W6	6.3	2	5	3	8	7		
6W7G	6.3	2		10	2	30	7	6X4 a1	6.3	3	6	3	10	4	6X4 a2	6.3	3	1	3	10	4	
6X5GT a1	6.3	2		3	3	10	7	6X5GTa2	6.3	2	5	3	10	7								
6X8 t	6.3	4		2	2	5		6X8 p	6.3	4	7	2	5									
6Y5 a1	6.3	1		3	3	10	6	6Y5 a2	6.3	1	5	3	10	6	6Y6G	6.3	2	5	3	8	7	
6Y7G t1	6.3	2		5	2	7		6Y7G t2	6.3	2	4	2	7									
6Z4 a1	6.3	1		2	3	11	5	6Z4 a2	6.3	1	3	3	11	5								
6Z5 a1	6.3	1		3	3	10	26	6Z5 a2	6.3	1	5	3	10	26								
6Z7G t1	6.3	2		4	3	7		6Z7G t2	6.3	2	5	3	7									
6ZY4G a1	6.3	2		3	3	10	7	6ZY5G a2	6.3	2	5	3	10	7								

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 7.

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 8.

SHORTS INDICA-TION							SHORTS INDICA-TION							SHORTS INDICA-TION								
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F		
12A4	6.3	3	2	2	4527		12A5	6.3	6	4	3		17	12A6	12.6	2	6	3	7			
12A7 p	12.6	1	10	3	24	7	12A7 a	12.6	1	5	3	10	7	12A8GT	12.6	2	5	2	32	7		
12AB5	12.6	4	3	2	53618		12AC6	12.6	3	1	2	4		12AD7	12.6	3	1	2	25	4		
12AD7 tl	6.3	9	2	2	54		12AD7 t2	12.6	3	7	2	54		12AE6 t	12.6	3	1	2	4			
12AE6 dl	12.6	3	6	1	4		12AE6 d2	12.6	3	5	1	4		12AF6	12.6	3	1	2	4			
12AJ6 dl	12.6	3	6	1	4		12AJ6 d2	12.6	3	5	1	4		12AJ6 t	12.6	3	1	2	4			
12AH7 tl	12.6	7	5	2	8		12AH7 t2	12.6	7	1	2	8										
12AH8 t	6.3	9	7	2	30	45	12AH8 h	6.3	9	2	2	27	45									
12AJ7 t	12.6	4	9	2	5		12AJ7 p	12.6	4	2	2	5										
12AL5 al	12.6	3	7	3	9	4	12AL5 a2	12.6	3	2	3	9	4	12AQ5	12.6	3	7	1	2	30	4	
12AN7 t	12.6	4	6	9	2	34	5	12AN7 h	12.6	4	6	2	28	5	12AT6 d2	12.6	3	6	1	80	4	
12AT6 t	12.6	3	1	2	28	4	12AT6 dl	12.6	3	5	1	80	4	12AU6	12.6	3	1	2	28	4		
12AT7 tl	6.3	9	7	2	25	45	12AT7 t2	12.6	3	2	2	25	45	12AV5GA	12.6	2	1	2	7			
12AU7 tl	6.3	9	7	2	29	45	12AU7 t2	6.3	9	2	2	29	45	12AV6 d2	12.6	3	6	1	100	4		
12AV6 t	12.6	3	1	2	30	4	12AV7 t2	6.3	9	5	1	100	4	12AW6	12.6	3	1	2	4			
12AV7 tl	6.3	9	7	2	54		12AV7 t2	6.3	9	2	2	54		12AX7 t1	6.3	9	7	2	25	45		
12AX4GT	12.6	7	12	5	3	10	8	12AX7 t2	6.3	9	2	2	25	45	12B4A	6.3	3	678	2	2	26	45
12AY7 tl	6.3	9	2	2	54		12AY7 t2	6.3	9	7	2	54		12B8GTt	12.6	2	8	2	7			
12AZ7 t2	6.3	9	2	2	54		12AZ7 t1	6.3	9	7	2	45		12BD6	12.6	3	1	2	4			
12B7	12.6	1	6	2	8		12B8GTp	12.6	2	10	2	7		12BF6 t	12.6	3	6	1	4			
12BA6	12.6	3	1	2	26	4	12BA7	12.6	4	2	2	5		12BF6 d1	12.6	3	1	2	4			
12BF6	12.6	3	1	2	26	4	12BF6 t	12.6	3	1	2	4		12BH7 t2	6.3	9	2	2	26	45		
12BF6 d2	12.6	3	5	1	4		12BH7 tl	6.3	9	7	2	26	45	12BN6	12.6	3	2	2	4			
12BK5	12.6	4	3	3	5		12BL6	12.6	3	1	2	28	4									
12BQ6GTB																						
12BR7 t	6.3	9	2	2	45		12BR7 dl	6.3	9	7	1	45		12BR7 d2	6.3	9	6	1	45			
12BV7	6.3	6	9	2	2	45	12BY7	6.3	6	9	2	2	45									
12BZ7 tl	6.3	9	7	2	45		12BZ7 t2	6.3	9	2	2	45										
12C8 p	12.6	2	10	2	7		12C8 d1	12.6	2	5	1	7		12C8 d2	12.6	2	4	1	7			
12CR6 p	12.6	3	7	2	4		12CNS	12.6	3	2	2	4		12CR6 d	12.6	3	2	1	4			
12CR6	12.6	3	7	2	4		12CU5	12.6	3	5	2	2	4	12CX6	12.6	3	1	2	4			
12DL7 dl	12.6	4	9	1	5		12DL7 d2	12.6	4	1	1	5		12DL8TR	12.6	4	3	2	5			
12D67 t2	12.6	4	3	2	5		12D67 dl	12.6	4	9	1	5		12DS7 d2	12.6	4	1	1	5			
12DT8 tl	12.6	6	7	2	5		12DT8d2	12.6	4	2	2	5		12DQ6A	12.6	2	5	2	7			
12DZ6	12.6	3	1	2	4																	

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Supplementary Valve Data Card No. 9.

SHORTS INDICA-TION							SHORTS INDICA-TION							SHORTS INDICA-TION						
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F
12EG6	12.6	3	1	2	4		12EH5	12.6	3	5	2	425		12EK6	12.6	3	1	2	4	
12F5GT	12.6	2	10	2	7		12F8 dl	12.6	4	6	1	75	5	12F8 d2	12.6	4	1	1	75	5
12FK6 t	12.6	3	1	2	30	4	12FK6 d2	12.6	3	5	1	80	4	12FK6 dl	12.6	3	6	1	80	4
12F8 p	12.6	4	8	2	32	5	12G4	12.6	3	25	6	2	4	12J5	12.6	2	5	2	32	7
12H6 al	12.6	2	3	3	9	7	12H6 a2	12.6	2	5	3	9	7	12J8	12.6	4	8	1	30	5
12J8 t	12.6	4	1	2	25	5	12J8 dl	12.6	4	9	1	30	5	12K7 GT	12.6	2	10	2	35	7
12J7 GT	12.6	2	10	2	33	7	12K5	12.6	3	6	5	3	10	4						
12K8	12.6	2	5	2	25	7	12L6GT	12.6	2	5	3	7								
12L8GT p12.6	6	1	3	7			12L8GT p2													
12Q7GT t	12.6	2	10	2	28	7	12Q7GTdl12.6	2	5	1	80	7		12Q7GTM12.6	2	4	1	1	80	7
12R5	12.6	3	2	2	4		12S8GT dl12.6	7	3	1	8			12S8GT d212.6	7	4	1	8		
12S8GT t	12.6	7	10	2	8		12S8GT d212.6	7	4	2	8			12SP5	12.6	7	3	2	8	
12S8GT7	12.6	7	1	1	8		12SC7 t2	12.6	7	5	2	32	7	12SG7	12.6	2	4	2	735	
12SF7 t	12.6	7	3	2	8		12SF7 d	12.6	7	5	1	8		12SK7	12.6	2	4	2	27	7
12SF7	12.6	2	2	2	8		12SF7 t	12.6	2	4	2	30	7							
12SF7 t2	12.6	2	5	2	735		12SL7 t2	12.6	7	1	2	26	8	12SQ7 d2	12.6	7	5	1	84	8
12SL7 tl	12.6	7	4	2	26	8	12SN7 t2	12.6	7	1	2	32	8	12SR7 d2	12.6	7	4	1	8	
12SR7 t2	12.6	7	2	2	30	8	12SR7 dl	12.6	7	4	1	84	8	12SR7 d2	12.6	7	4	1	8	
12V6GT	12.6	2	5	3	7		12W6GT	12.6	2	5	3	7		12SF6 d2	12.6	1	4	6	1	8
12X4 al	12.6	3	1	3	10	4	12X4 a2	12.6	3	6	3	10	4	12Z3	12.6	1	2	3	10	4
14AF d	12.6	1	4	2	8		14AF7 t2	12.6	1	5	2	8		14A7	12.6	1	6	2	8	
14AF6	12.6	1	4	2	8		14AF6 dl	12.6	1	4	5	1	8	14B6 d2	12.6	1	4	6	1	8
14E6 t	12.6	1	4	3	2	8	14C5	12.6	1	6	3	8		14C7	12.6	1	6	2	8	
14E7 t	12.6	1	6	2	8		14E6 dl	12.6	1	4	5	1	8	14E6 d2	12.6	1	4	6	1	8
14F7 t	12.6	1	4	2	8		14E7 t2	12.6	1	3	1	8		14E7 d2	12.6	1	4	1	8	
14F8 t2	12.6	2	8	2	7		14F7 t2	12.6	1	5	2	8		14H7	12.6	1	6	2	8	
14J7 t	12.6	1	4	2	8		14F8 t2	12.6	2	1	2	7								
14M7 t1	12.6	1	4	2	8		14J7 p	12.6	1	6	2	8		14M7 t2	12.6	1	5	2	8	
14M7 t	12.6	1	6	2	8		14M7 d2	12.6	1	5	2	8		14M7 d2	12.6	1	4	1	8	
14M7	12.6	1	6	2	8		14R7 t2	12.6	1	3	1	8		14R7 d2	12.6	1	4	1	8	
14V7	12.6	1	6	2	8		14V7	12.6	1	6	2	8								

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 10.

SHORTS INDICA- TION						SHORTS INDICA- TION						SHORTS INDICA- TION											
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F			
15	2	1	10	2	40	5	15A6	12.6	4	2	2	27	5	16A5	12.6	4	168	2	3	10	5		
15CW5	12.6	4	168	2	2	25	5	15DQ8	12.6	4	8	2	26	5									
16A8t	16.6	4	1	2	30	5	16A8p	12.6	4	3	2	25	5										
17AX4GT	18	7	5	3	8		17BQ6GTB																
1723	18	4	123678	9	3	10	5	18	2	5	2	7		17DQ6A	18	2	5	2			7		
19 tl	2	1	3	2	34	6	19 t2	2	1	4	2	34	6	19AU4	18	7	5	3			8		
19BG6GA	18	2	5	2	7		19J6 tl	18	3	5	2	4		19J6 t2	18	3	6	2			4		
19T8 t	18	4	8	2	5																		
19T8 dl	18	4	6	1	5		19T8 d2	18	4	2	1	5		19T8 d3	18	4	1	1			5		
19X8t	18	4	2	2	5		19X8 p	18	4	7	2	5		19Y3	18	4	12678	9	3	10	5		
21A6	18	4	167	2	2	24	5	24A	2.5	1	10	2	38	5									
25A6G	25	2	5	3	14	7	25A7Gp	25	2	5	3	16	7	25ATG a	25	2	6	3	10		7		
25AC5	25	2	5	3	7		25AX4GT25	7		5	3	8		25AV5GT	25	2	1	3			7		
25B5	25	1	4	3	6		25B6G	25	2	5	3	7											
25B8 p	25	2	10	2	7		25B8t	25	2	8	2	7		25BQ6GT	25	2	5	3			7		
25C5	25	3	5	2	425		25C6	25	2	5	3	7		25CD6	25	2	5	3			7		
25DN6	25	2	5	3	7		25E5	25	2	13	5	3	8	25EH5	25	3	2	2			425		
25L6G P	25	2	5	3	10	7	25N6	25	2	5	3	7		25W4G7	25	7	5	3			8		
25Y5a 1	25	1	2	3	10	6	25Y5 a2	25	1	5	3	10	6	25Z4	25	2	5	3			73		
25Z5 a1	25	1	2	3	10	6	25Z5 a2	25	1	5	3	10	6										
25Z6 a1	25	2	3	3	10	7	25Z6 a2	25	2	5	3	10	7										
26	1.5	1	3	2	4		27	2	1	3	2	5		30	2	1	3	2			4		
30AE3	32	4	123678	9	2	25	5	31	2	1	3	2	4		32	2	1	10	2			4	
32L7 GT	32	2	5	3	7		32L7G7	32	2	6	3	7		33	2	1	3	2			5		
34	2	1	10	2	4		35	2	1	10	2	5		35L6GT	32	2	5	3	10		7		
32L7GT t	32	2	5	3	14	7	32L7GT a	32	2	6	3	10	7	35A5	32	1	6	3			8		
35B5	32	3	7	1	3	4	35C5	32	3	2	3	45		35W4	32	3	6	5	3	7	4		
35Z4GT	32	2	5	3	8	7	35Z3LT	32	1	2	3	8		35Z5GT	32	2	3	5	3		37		
35Y4	32	1	3456	2	3	8	36	6.3	1	10	2	5		37	6.3	1	1	2			5		
38	6.3	1	10	2	5		38A3	32	4	9	3	5		39/44	6.3	1	10	2			5		
41	6.3	1	4	3	20	6	42	6.3	1	4	3	16	6	43	25	1	4	3	14		6		
45	2.5	1	3	3	17	4	45Z3	45	1	36	2	3	8	45B5	45	4	2	3			5		
45Z5GT	45	2	3	5	8	7	46	2.5	1	3	3	16	5	47	2.5	1	3	3	16		5		
48	32	1	4	3	40	6	49	2	1	3	3	19	5	50A5	50	1	6	3			8		
50B5	50	3	7	1	3	10	4	50C5	50	3	5	2	3	10	4	50C6	50	2	5	3			7
50EH5	50	3	2	2	425		50L6GT	50	2	5	3	10	7										

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Supplementary Valve Data Card No. 11.

SHORTS INDICA- TION						SHORTS INDICA- TION						SHORTS INDICA- TION									
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	
50X6 a1	50	1	6	3	8		50X6 a2	50	1	3	3	3	8								
50Y7 a1	50	2	6	5	3	10	7	50Y7 a2	50	2	6	3	3	10	7	51	2.5	1	10	3	5
50Y6G a1	50	2	3	3	10	7	50Y6G a2	50	2	5	3	10	7								
53 tl	2.5	1	3	3	13	7	53 t2	2.5	1	5	3	13	7								
55 t	2.5	1	10	2	42	6	55 dl	2.5	1	4	1	90	6	55 d2	2.5	1	3	1	90		6
56	2.5	1	3	2	35	5	57	2.5	1	10	2	33	6	58	2.5	1	10	2	33		6
59	2.5	1	4	3	20	7	70L7GT	70	2	8	3	7		70L7GT	70	2	5	3			7
75 t	6.3	1	10	2	32	6	75 dl	6.3	1	4	1	70	6	75 d2	6.3	1	3	1	70		6
76	6.3	1	3	2	34	5	76R	6.3	1	2	2	5		77	6.3	1	10	2	32		6
78	6.3	1	10	2	33	6	79 tl	6.3	1	10	3	13	6	79 t2	6.3	1	3	3	13		6
80 a1	5	1	2	3	16	4	80 a2	5	1	3	3	9	4	81	7.5	1	2	3	21		4
82 a1	2.5	1	2	3	9	4	82 a2	2.5	1	3	3	9	4								
83 a1	5	1	2	3	10	4	83 a2	5	1	3	3	10	4								
83 V a1	5	1	2	3	9	4	83 V a2	5	1	3	3	9	4								
84/624 a1	6.3	1	2	3	11	5	84/624 a2	6.3	3	3	3	11	5								
85 t	6.3	1	10	2	43	6	85 dl	6.3	1	4	1	90	6	85 d2	6.3	1	3	1	90		6
89	6.3	1	10	3	19	6	104V	4	1	3	2	28	5								
117L7 R	117	2	6	3	7		117L7 p	117	2	4	3	7									
117Z3	117	3	5	3	4		117Z4GT	117	2	5	3	7									
117Z6	117	2	3	3	7		117Z6	117	2	5	3	7		164V	4	1	3	2	30		5
354 V	4	1	3	2	5		807	6.3	1	3	3	10	5	866	2.5	1	10	3	7		4
1603	6.3	1	10	2	6		1620	6.3	2	10	2	33	7	1852	6.3	2	4	2	30		7
5654	6.3	3	1	2	4		5879	6.3	4	1	2	5		5881	6.3	2	5	2			7
5726 dl	6.3	3	7	1	4		5726 d2	6.3	3	2	1	4									
5920 tl	6.3	3	6	2	4		5920 t2	6.3	3	5	2	4									
6084	6.3	4	9	2	5		6085 tl	6.3	9	2	3	45		6085 t2	6.3	9	7	3			45
6201 t2	6.3	9	2	2	45		6201 tl	6.3	9	7	2	45		6086	18	4	2	2			5
6227	6.3	4	2	3	5		6267	6.3	4	9	2	5		6374	6.3	4	10	3			5
6686	18	4	16	2	2	5	6687	6.3	3	1	2	4		6688	6.3	4	2	2			5
6689	6.3	4	78	2	2	5	6922 tl	6.3	4	2	2	5		6922 t2	6.3	4	7	2			5
6973	6.3	4	3	3	56318		7025 tl	6.3	9	7	2	45		7025 t2	6.3	9	2	2			45
7027	6.3	2	5	2	76514		7199 tl	6.3	4	9	2	5		7199 p	6.3	4	7	2			5
9001	6.3	3	1	2	33	427	9002	6.3	3	6	2	10	427	9003	6.3	3	1	2	30	427	
9006al	6.3	3	7	1	1	4	9006 a2	6.3	3	5	1	427		18043	6.3	4	2	3			5
18042	18.0	4	2	2	5		18045	18.0	4	2	2	5		18046	18.0	4	2	2			5
CBC1 t	12.6	2	10	2	29	3	CBC1d1	12.6	2	6	1	18	3	CBC1 d2	12.6	2	5	1	18	3	
CC1	12.6	2	10	2	35	3	CF1	12.6	2	10	2	27	3	CF2	12.6	2	10	2	33	3	

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Supplementary Valve Data Card No. 12.

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION												
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F							
CF3	12.6	2		10	2	28	3	CBL1 t	45	2	10	3	9	3	CBL1 d1	45	2	6	1	46	3						
CBL1 d2	45	2		5	1	46	3	CK1	12.6	2	6	2	28	3	CL2	25	2	10	3	10	3						
CL4	32	2		10	3	9	3	CY1G	18	2	8	3	7	3													
CY2 al	32	2		5	3	8	3	CY2 az	32	2	8	3	8	3	CY31	18	2	5	3	7							
DA90	1.4	1	456	2	1	7		DAC21 t	1.4	8	10	2		1	DAC21 d1	1.4	8	6	1	1							
DAC31 t	1.4	2		10	2	7		DAC31 d	1.4	2	5	1		7													
DAC32 t	1.4	2		10	2	7		DAC32 d	1.4	2	5	1		7													
DAF91 p	1.4	7		6	2	1		DAF91 d	1.4	7	3	1		1	DAF92 p	1.4	7	6	2	1							
DAF92 p	1.4	7		6	2	1		DAF92 d1	1.4	7	4	1		1	DBC31 t	1.4	2	5	1	7							
DAF96 d	1.4	7		3	1	1		DBC31 t1	1.4	2	10	2		7	DC80	1.4	4	1	2	35	DC90	1.4	7	346	5	2	1
DBC31 d2	1.4	2		4	1	7		DCC90 t2	1.4	4	3	2		17													
DCC90 tl	1.4	4		5	2	17		DCH31 h	1.4	7	10	2		2	DF21	1.4	8	10	2	1							
DCH31 t	1.4	7		5	2	2		DF33	1.4	2	10	2		7	DF91	1.4	7	6	2	1							
DF31	1.4	2		10	2	7		DF96	1.4	7	6	2		1	DF97	1.4	7	6	2	1							
DF92	1.4	7		6	2	1		DH76 d1	12.6	2	4	1	100	7	DH76 d2	12.6	2	5	1	100	7						
DH76 p	12.6	2	10	2	28	7		DH77 d1	6.3	3	6	1		4	DH77 d2	6.3	3	5	1	4							
DH77 t	6.3	3	1	2	4			DH107 d1	18.0	3	6	1		4	DH107 d2	18.0	3	5	1	4							
DH107t	18.0	3	1	2	4			DK32	1.4	2	5	2		7	DK91	1.4	7	4	2	15							
DK31	1.4	2	5	2	7			DK96	1.4	7	4	2		1	DL21	1.4	8	5	2	1							
DK92	1.4	7	4	2	1			DL33	1.4	8	5	2		27	DL35	1.4	2	5	2	7							
DL31	1.4	2	5	2	7			DL41	1.4	1	3	6	2	78	DL91	1.4	7	3	2	15							
DL36	1.4	2	5	2	7			DL93	1.4	5	6	2		17	DL94	1.4	5	3	2	17							
DL92	1.4	5	3	2	17			DL96	1.4	5	6	2		17													
DLL21 pl	1.4	1	2	2	78			DLL21 p21.4	1	5	5	2		78													
DLL31 pl	1.4	1	4	2	27			DLL31 p21.4	1	5	5	2		27													
DY86	1.4	1	37	10	3	46925		DY87	1.4	1	6789	10	1	100	2												
														good tube = 30													

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 13.

TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION						TYPE	SHORTS INDICA-TION										
	A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	F					
EAA91d1	6.3	3		7	1	4	EAA91d2	6.3	3	2	1		4	EABC80d2	6.3	4	2	1	5						
EABC80 t	6.3	4		8	2	5	EABC80d16.3	6.3	4	6	1		5												
EABC80d3	6.3	4	1	1	5		EAC91 t	6.3	3	6	2		4												
EAC91 d	6.3	3	1	1	4		EB4 d1	6.3	2	5	3	9	3	EB4 d2	6.3	2	7	3	9	3					
EB41 t1	6.3	1	6	3	8		EB41 t2	6.3	1	4	3		8												
EB91 al	6.3	3	7	3	9	4	EB91 a2	6.3	3	2	3	9	4												
EB34 d1	6.3	2	3	1	7		EB34 d2	6.3	2	5	1		7												
EBC3 t	6.3	2	10	2	30	3	EBC3 d1	6.3	2	6	1	50	3	EBC3 d2	6.3	2	5	1	50	3					
EBC33 t	6.3	2	10	2	6	6	EBC33 d1	6.3	2	4	1		6	EBC33 d2	6.3	2	5	1	6						
EBC41 t	6.3	1	3	2	8		EBC41 d1	6.3	1	6	1		8	EBC41 d2	6.3	1	5	1	8						
EBC80 t	6.3	4	79	2	26	5	EBC80 d1	6.3	4	79	6	1	100	5	EBC80 d2	6.3	4	79	8	1	100	5			
EBC81 t	6.3	4	79	2	26	5	EBC81 d1	6.3	4	79	6	1	100	5	EBC81 d2	6.3	4	79	8	1	100	5			
EBC90 t	6.3	3	1	2	4		EBC90 d1	6.3	3	6	1		4	EBC90 d2	6.3	3	5	1	4						
EBC91 t	6.3	3	1	2	30	4	EBC91 d1	6.3	3	6	1	100	4	EBC91 d2	6.3	3	5	1	100	4					
EBF1 p	6.3	2	10	2	48	3	EBF1 d1	6.3	2	6	1	80	3	EBF1 d2	6.3	2	5	1	80	3					
EBF2G p	6.3	1	10	2	27	8	EBF2G d1	6.3	1	5	1	25	8	EBF2G d2	6.3	1	6	1	25	8					
EBF35 p	6.3	1	10	2	27	8	EBF35 d1	6.3	1	5	1	25	8	EBF35 d2	6.3	1	6	1	25	8					
EBF80 p	6.3	4	2	2	24	5	EBF80 d1	6.3	4	7	1	100	5	EBF80 d2	6.3	4	8	1	100	5					
EBF81 p	6.3	4	2	2	36	5	EBF81 d1	6.3	4	7	1	100	5	EBF81 d2	6.3	4	8	1	100	5					
EBF83 d1	6.3	4	7	1	5		EBF83 d26.3	4	8	1		5		EBF83 p	6.3	4	2	2	5						
EBF89 p	6.3	4	2	2	5		EBF89 d16.3	4	7	1		5		EBF89 d2	6.3	4	8	1	5						
EBL1 p	6.3	2	10	3	10	3	EBL1 d1	6.3	2	6	1	46	3	EBL1 d2	6.3	2	5	1	46	3					
EBL21 p	6.3	1	3	2	8		EBL21 d1	6.3	1	6	1		8	EBL21 d2	6.3	1	5	1	8						
EBL31 p	6.3	2	10	3	10	7	EBL31 d1	6.3	2	4	1	50	7	EBL31 d2	6.3	2	5	1	50	7					
EC31	6.3	2	5	2	7		EC40	6.3	1	356	2	2	8	EC80	6.3	4	1276	8	1	5					
EC81	6.3	4	1	2	5		EC91	6.3	3	56	2	1	25	EC90	6.3	3	6	2	415						
EC92	6.3	3	6	2	4		EC93	6.3	3	2	2		41726												
ECC32 t1	6.3	7	1	2	8		ECC32 t2	6.3	7	4	2		8												
ECC33 t1	6.3	7	1	2	28	8	ECC33 t2	6.3	7	4	2	28	8												
ECC35 t1	6.3	7	1	2	30	8	ECC35 t2	6.3	7	4	2	30	8												
ECC81 t1	6.3	9	7	2	25	45	ECC81 t2	6.3	9	2	2	25	45												
ECC82 t1	6.3	9	7	2	25	45	ECC82 t2	6.3	9	2	2	25	45												
ECC83 t1	6.3	9	7	2	25	45	ECC83 t2	6.3	9	2	2	25	45												
ECC84 t1	6.3	4	6	2	578		ECC84 t2	6.3	4	2	2		578												
ECC85 t1	6.3	4	7	2	24	5	ECC85 t2	6.3	4	2	2	24	5												
ECC91 t1	6.3	3	5	2	4		ECC91 t2	6.3	3	6	2		4												

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 14.

SHORTS INDICATION						SHORTS INDICATION						SHORTS INDICATION									
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	
ECF80t	6.3	4	9	2		5	ECF80 p	6.3	4		2	2		5							
ECF82	6.3	4	9	2	25	5	ECH3G	p6.3	2		10	2	30	7							
ECH4G p	6.3	2	10	2		7	ECH4G t	6.3	2		5	2	27	7							
ECH21t	6.3	1	4	2		8	ECH21 h	6.3	1		6	2		8							
ECH33h	6.3	2	10	2	28	7	ECH33 t	6.3	2		5	2	32	7							
ECH34t	6.3	2	5	2	25	7	ECH34 h	6.3	2		10	2	25	7							
ECH35p	6.3	2	10	2	28	7	ECH35 t	6.3	2		5	2	32	7							
ECH80t	6.3	4	9	2	26	5	ECH80 h	6.3	4		2	2	24	5							
ECH81t	6.3	4	9	2		5	ECH81 h	6.3	4		2	2		5							
ECH83t	6.3	3	9	2		4	ECH83 p	6.3	3		2	2		4							
ECL80t	6.3	4	2	2		5	ECL80 p	6.3	4		9	2		5							
ECL82t	6.3	4	1	2		5	ECL82 p	6.3	4		3	2		5							
EF5	6.3	2	10	2	18	3	EF6	6.3	2		10	2		3							
EF36	6.3	2	10	2	30	7	EF37	6.3	2		10	2	30	7							
EF39	6.3	2	10	2	20	7	EF51	6.3	1		6	2		837							
EF81	6.3	4	789	2	2	24	5	EF83	6.3	4		9	2		5						
EF86	6.3	4	27	9	2	29	5	EF89	6.3	4		2	2		516						
EF92	6.3	3	1	2	28	4	EF93	6.3	3		1	2	26	4							
EF95	6.3	3	1	2	27	427	EF97	6.3	3		1	2		4							
EF800	6.3	4	3	2	2	25	5	EH90	6.3	3		1	2		4						
EK2G	6.3	2	5	2	30	7	EK32	6.3	2		5	2		7							
EL3G	6.3	2	5	3	9	7	EL3NG	6.3	2		5	3	10	7							
EL22	6.3	1	6	2		8	EL31	6.3	2		5	2		7							
EL33A	6.3	2	5	3	9	7	EL34	6.3	2		5			7							
EL36	6.3	2	5	2		7	EL37	6.3	2		5	2		7							
EL80	6.3	1	68	2	3	6	EL81	6.3	4	167	2	3		5							
EL83	6.3	4	2	3		5	EL84	6.3	4	168	2	3	7	5							
EL86	6.3	2	4	2		5	EL90	6.3	3	7	1	2		4							
EL95	6.3	3	7	1	2	4	EM80t	6.3	4		1	2		5							
EM81t	6.3	4	2	2		5	EM81	6.3	4		1	2		5							
EM85t	6.3	4	1	2		5	EM85l	6.3	4		3	2		5							
EQ80	6.3	4	8	7	2	5	EY81	6.3	4		9	3		5							
EY80	6.3	4	12678	9	1	5	EY84	6.3	4		10	3		5							
EY87	6.3	1	578	10	1	100	2														
							3469 good valve = 40														
EZ35al	6.3	5	3	3		6	EY91	6.3	3	5	1	3		4							
EZ80al	6.3	4	1	3	10	5	EZ35a2	6.3	5		5	3		6							
							EZ80a2	6.3	4		7	3	10	5							

"UNIVERSITY" VALVE TESTER

Supplementary Valve Data Card No. 15.

SHORTS INDICATION						SHORTS INDICATION						SHORTS INDICATION									
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	
EZ81al	6.3	4	1	3		5	EZ81a2	6.3	7		3	3		5							
EZ82al	6.3	4	1	3	10	5	EZ82a2	6.3	4		7	3	10	5							
EZ90al	6.3	3	1	3	10	4	EZ90a2	6.3	3		6	3	10	4							
GZ30al	5.0	8	4	3		2	GZ30a2	5.0	8		6	3		2							
GZ32	5	2	6	3	10	8	GZ32a1	5	2		4	3		8							
HCH8P	12.6	4	2	2		5	HCH81t	12.6	4		9	2		5							
KBC1t	2	1	10	2	32	6	KBC1d1	2	1		4	1	76	6							
KBC32t	2.0	2	10	2		7	KBC32d12.0	2			4	1		7							
KCF30	2.0	2	5	2		7	KCF30P2.0	2			10	2		7							
KF1	2	1	4	2	27	6	KF2	2	1		4	2	27	6							
KF35	2.0	2	10	2		7	KK2G	2	2		5	2	40	7							
KL4G	2	2	5	2	29	7	KL35	2.0	2		5	2		7							
KLL32pl	2.0	2	5	2		7	KLL32p2.0	2			4	2		7							
KT61	6.3	2	5	3	9	7	KT66	6.3	2		5	3	10	7							
KT81	6.3	1	6	3		8	KT88	6.3	2		5	3		7							
N37	12.6	3	1	3		4	N78	6.3	3	6	1	3	9	4							
N709	6.3	4	2	3		5	PABC80dl														
PABC80d37.5	4	1	1			5	PCC84t17.5	4			6	2		5							
PCC85tl	7.5	4	7	2		26	PCC85t27.5	4			2	2	26	5							
PCC88tl	7.5	4	1	2		5	PCC88t27.5	4			7	2		5							
PCF82t	7.5	4	9	2		5	PCF82p7.5	4			2	2		5							
PCF80t	7.5	4	9	2		5	PCF80p7.5	4			2	2		5							
PCL81t	12.6	4	1	2		5	PCL81p12.6	4			9	3		5							
PCL82t	12.6	4	1	2		5	PCL82p12.6	4			3	3		5							
PL36	25	2	5	3		7	PL81	18	4	176	2	2		5							
PL83	12.6	4	2	2		5	PL84	12.6	4		2	2		5							
PY31	18	2	5	3		7	PY80	18	4		9	3		5							
PY82	18	4	9	3		5	PY83	18	4		9	3	8	5							
PZ30al	50	2	16	3	3	7	PZ30a250	2	16	5	3	3		7							
R17	6.3	4	10	3		5	R18	6.3	4		10	3		5							
S4VA	4	1	5	2	33	5	S4VB	4	1		3	2	25	5							
TDD2t	2	1	10	2	32	6	TDD2d12	2	1		4	1	76	6							
TDD4t	4	1	10	2	32	6	TDD4d14	1			6	1	100	7							
U30	70	1	10	3		2	U52d1	5	2		4	3	11	8							

"UNIVERSITY" VALVE TESTER

Supplementary Valve Data Card No. 16.

SHORTS INDICA- TION						SHORTS INDICA- TION						SHORTS INDICA- TION								
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F
U76	25	2		5	3	7	U107	32	1	456	2	3	7							
U709 al	6.3	4		7	3	5	U709	a26.3	4		1	3	5							
UABC80t	25	4		8	2	5	UABC80			d1	25	4	6	1	5	UABC80				
UABC80							UBC1d1	12.6	1		7	1	8	UBC1t	12.6	1		10	2	8
d3	25	4		1	1	5	UBC80d2	12.6	4		8	1	5	UBC80t	12.6	4		2	2	5
UBC80d1	12.6	4		6	1	5	UBC81d1	12.6	4		6	1	5	UBC81d2	12.6	4		8	1	5
UBC81t	12.6	4		2	2	5	UBF2d1	12.6	1		7	1	8	UBF2d2	12.6	1		5	1	8
UBF2t	12.6	1		10	2	8	UBF80d1	18.0	4		7	1	5	UBF80d2	18.0	4		8	1	5
UBF80t	18.0	4		2	2	5	UBF89d1	18.0	4		7	1	5	UBF89d2	18.0	4		8	1	5
UBF99p	18.0	4		2	2	5	UBL1d1	50	1		7	1	60	UBL1d2	50	1		5	1	60
UBL1p	50	1		10	3	10	UBL2d1	50	1		6	1	100	UBL2d2	50	1		5	1	75
UBL2p	50	1		3	3	8	UCC85	25	4		7	2	25	UCC85t	25	4		7	2	26
UCG2	9.5	3		6	2	4	UCH4t	18	1		5	2	8	UCH4h	18	1		10	2	8
UCC85	t2	25	4	2	2	26	UCH21h	18	1		6	2	8	UCH80t	12.6	4		9	2	5
UCH21t	18.0	1		4	2	8	UCH81t	18	4		9	2	30	UCH81	18	4		2	2	5
UCH80h	12.6	4		2	2	5	UCL82p	50	4		3	3	9	UF8	12.6	1		10	2	8
UCL82t	50	4		1	2	30	UF21	12.6	1		6	2	8	UF80	18	4	36	2	2	25
UF9	12.6	1		10	2	8	UF85	18	4	36	2	2	25	UF89	12.6	4	16	2	2	5
UF81t	12.6	4		2	2	5	UL80	45	4		2	2	5	UL84	45	4		2	2	5
UL1	50	1		5	2	8	UM41	12.6	1		7	1	8	UM80t	18	4		1	2	5
UM44	12.6	1		5	2	8	UM81	18	4		1	2	5	UM81t	18	4		2	1	5
UM80t	18	4		2	1	5	UY1N	50	1		3	3	58	UY21	50	1		2	3	8246
UQ80	12.6	4		7	2	538	UY82	50	4		9	3	5	UY85	32	4		9	3	5
UY31	50	2		5	3	7	UY82	50	4		9	3	5							
UY92	25	3		5	3	4	U81	6.3	1		6	2	8							
VP2	2	1		4	2	35	VP4	4	1		5	2	25	W76	12.6	2		10	2	7
W107	12.6	3		1	2	4	X61Mt	6.3	2		5	2	21	X61Mh	6.3	2		10	2	22
X76Mt	12.6	2		5	2	21	X76Mh	12.6	2		10	2	22							
X79t	6.3	4		7	2	26	X79 h	6.3	4		2	2	26	X81t	6.3	1		4	2	8
X99	3.3	1		3	2	4	Y61t	6.3	2		5	2	7	Y611	6.3	2				7
Z66	6.3	2		9	2	7	Z77	6.3	3		1	2	30							

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 17.

SHORTS INDICA- TION						SHORTS INDICA- TION						SHORTS INDICA- TION								
TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E	F
A43-64	6.3	1		2	1	12	AW36-80	6.3	1		2	1	12	AW43-20	6.3	1		2	1	48
AW43-80	6.3	1		2	1	12	AW53-80	6.3	1		2	1	12	MW43-43	6.3	1		2	1	12
CRM171	12.6	1		2	1	12	CRM211	12.6	1		2	1	8	MW53-20	6.3	1		2	1	12
MW43-64	6.3	1		2	1	12	MW43-69	6.3	1		2	1	12	5-3T	7.5	5		3	1	7
MW53-21	6.3	1		2	1	12	MW53-80	6.3	1		2	1	12	14RP4-A	6.3	1		2	1	12
SAXP4	6.3	1		2	1	12	14RP4	6.3	1		2	1	12	17HP4b	6.3	1		2	1	12
17AVR4	6.3	1		2	1	12	17BP4-B	6.3	1		2	1	12							
21ALP4-A	6.3	1		2	1	12	24DP4-A	6.3	1		2	1	12							

"UNIVERSITY" VALVE TESTER
Supplementary Valve Data Card No. 18.

TST 2

MULTIMETER CIRCUIT
VALVETESTER

UNIVERSITY GRAHAM INSTRUMENTS
PTY. LIMITED. SYDNEY. AUST.
PHONES BU3160.BU3169.



