RADIOTRONICS

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

BOX No. 2516 BB G.P.O., SYDNEY

TECHNICAL BULLETIN No. 93 **12th DECEMBER, 1938**

In this issue:—

THE Management and Staff of Amalgamated Wireless Valve Company Pty. Ltd. wish to thank each of its many subscribers to "Radiotronics" for the encouraging expressions of appreciation regarding our endeavours to make "Radiotronics" a live and useful service, and extend to readers every sincere wish for a prosperous future.

We trust that our efforts have, in some measure, contributed towards a wider knowledge of technical problems connected with valve application and its associated problems, and, with this hope, we close our 1938 services with a thought on human philosophy by Sydney J. Burgoyne —

To make the most of each moment
Do what you can to-day,
To-morrow may be too late
And your chances may pass away.

Fill every single minute
With sixty seconds well spent,
And make it return in profit
A full one hundred percent.

The chance this moment gives you
May be the only one,
So take it and make it bring you
The joy of work well done.

To-morrow may never happen,
So do it the finest way
Whatever lies the nearest
To your heart and hand TO-DAY.

RADIOTRON 1.4 VOLT BATTERY SERIES

Data on the five new Radiotron releases designed for operation from a single dry cell A Battery are given below. These valves are suitable for operation in a vertical position only.

RADIOTRON 1N5-G
R-F Pentode

Filament Voltage (D.C.)*	1.4 Volts
Filament Current	0.05 Ampere
Overall Length	4-1/16in. to 4-5/16in.
Maximum Diameter	1-3/16in.
Bulb	T-9
Cap	Skirted Miniature
Base	Small Shell Octal 7-Pin

Amplifier—Class A,

OPERATING CONDITIONS AND CHARACTERISTICS:

Plate Voltage	90 max. Volts
Screen Voltage	90 max. Volts
Grid Voltage	0 Volts
Amplification Factor	1160 approx.
Plate Resistance	1.5 approx. Megohms
Transconductance	750 Micromhos
Transconductance at −4 volts on grid	5 approx. Micromhos
Plate Current	1.2 Milliamperes
Screen Current	0.3 Milliampere

Pin Connections.

Pin 1—No Connection	Pin 5—No Connection
Pin 2—Filament +	Pin 7—Filament —
Pin 3—Plate	Pin 8—No Connection
Pin 4—Screen	Cap—Grid

(Pin numbers are according to RMA System)

RADIOTRON 1A7-G
Pentagrid Converter

Filament Voltage (D.C.)*	**1.4 Volts**
Filament Current	0.05 Ampere
Overall Length	4-1/16in. to 4-5/16 in.
Maximum Diameter	1-3/16in.
Bulb	T-9
Cap	Skirted Miniature
Base	Small Shell Octal 8-Pin

Converter Service.

Plate Voltage	90 max. Volts
Screen (Grids No. 3 & No. 5) Voltage Supply	90 max. Volts
Anode-Grid (Grid No. 2) Voltage	90 max. Volts
Typical Operation:	
Plate Voltage	90 Volts
Screen Voltage	45*** Volts
Anode-Grid Voltage	90 Volts
Control-Grid (Grid No. 4) Voltage	0 Volts
Oscillator-Grid (Grid No. 1) Resistor	200000 Ohms
Plate Resistance	0.6 Megohm
Conversion Conductance	250 Micromhos
Conversion Conductance at −3 volts on Grid No. 4	5 approx. Micromhos
Plate Current	0.55 Milliampere
Screen Current	0.6 Milliampere
Anode-Grid Current	1.2 Milliamperes
Oscillator-Grid Current	0.035 Milliampere
Total Cathode Current	2.4 Milliampere

Pin Connections.

Pin 1—No Connection	Pin 5—Grid No. 1
Pin 2—Filament +	Pin 6—Grid No. 2
Pin 3—Plate	Pin 7—Filament —
Pin 4—Grids No. 3 & No. 5	Pin 8—No Connection
	Cap—Grid No. 4

(Pin numbers are according to RMA System)

* The filament is designed so that it may be operated satisfactorily when connected directly across a 1.5-volt dry battery.

RADIOTRON 1H5-G
Diode High-Mu Triode

Filament Voltage (D.C.)*	1.4 Volts
Filament Current	0.05 Ampere
Overall Length	4-1/16in. to 4-5/16in.
Maximum Diameter	1-3/16in.
Bulb	T-9
Cap	Skirted Miniature
Base	Small Shell Octal 7-Pin

Triode Unit: Class A, Amplifier.

OPERATING CONDITIONS AND CHARACTERISTICS:

Plate Voltage	90 max. Volts
Grid Voltage	0 Volts
Amplification Factor	65
Plate Resistance	240000 Ohms
Transconductance	275 Micromhos
Plate Current	0.14 Milliampere

Diode Unit

The diode is located at the negative end of the filament, and is independent of the triode unit except for the common filament.

Pin Connections.

Pin 1—No Connection	Pin 5—Diode Plate
Pin 2—Filament +	Pin 7—Filament —
Pin 3—Triode Plate	Pin 8—No Connection
Pin 4—No Connection	Cap—Triode Grid

(Pin numbers are according to RMA System)

RADIOTRON 1A5-G
Small Power Pentode

Filament Voltage (D.C.)*	**1.4** Volts
Filament Current	0.05 Ampere
Maximum Overall Length	4in.
Maximum Diameter	1-3/16in.
Bulb	T-9
Base	Small Shell Octal 7-Pin

Power Amplifier—Class A,

OPERATING CONDITIONS AND CHARACTERISTICS:

Plate Voltage	85	90 max. Volts
Screen Voltage	85	90 max. Volts
Grid Voltage**	−4.5	−4.5 Volts
Amplification Factor (approx.)	240	255
Plate Resistance (approx.)	0.3	0.3 Megohm
Transconductance	800	850 Microhmos
Plate Current	3.5	4.0 Milliamperes
Screen Current	0.7	0.8 Milliampere
Load Resistance	25000	25000 Ohms
Total Harmonic Distortion	10	7 Per cent.
Power Output	100	115 Milliwatts

Pin Connections.

Pin 1—No Connection	Pin 5—Grid
Pin 2—Filament +	Pin 7—Filament —
Pin 3—Plate	Pin 8—No Connection
Pin 4—Screen	

(Pin numbers are according to RMA System)

RADIOTRON 1C5-G
Power Pentode

Filament Voltage (D.C.)*	1.4 Volts
Filament Current	0.10 Ampere
Maximum Overall Length	4in.
Maximum Diameter	1-3/16in.
Bulb	T-9
Base	Small Shell Octal 7-Pin

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** Self-bias is recommended so that the grid bias will be proportionately less as the B-Supply voltage falls off during battery life.

*** Obtained preferably by using 70000-ohm voltage-dropping resistor in series with a 90-volt supply.

RADIOTRON 802
NOW AUSTRALIAN MADE

Radiotron 802 is a completely screened R.F. power pentode for use in experimental transmitters as oscillator, frequency doubler, buffer or modulated amplifier. It is particularly suited for use as a buffer since no neutralising is required when suitable layout and screening are employed. It may also be used very satisfactorily for suppressor modulation. The maximum plate dissipation is 10 watts.

In the past the price of the imported 802 was sufficiently high to cause some experimenters to attempt to use receiving types, when much more satisfactory operation could have been obtained by the use of a suitable transmitting type. Radiotron 6P6 was brought out to cater for this demand, and achieved instant popularity. In characteristics the 6P6 and the 802 are somewhat similar except that slightly higher voltage ratings are given for the 802, and that the screening on the 802 is complete. They may therefore in most circuits be interchanged with only minor alterations. It should be noted that the 802 is fitted with a **Medium 7** pin base while the 6P6 is fitted with a 6 pin base.

As a result of the local manufacture of Radiotron 802 it has been possible to make a considerable price reduction, the new Australian price being 22/6 nett.

RADIOTRON 6K8, 6K8-G
Revised Ratings

The maximum Triode Plate Voltage on the 6K8 and 6K8-G has been decreased from 200 to 125 volts, and a further maximum rating has been added which reads:—

Triode Plate Dissipation 0.75 max. watt

Would you please make the necessary modifications to your Data Sheet?

RADIOTRON 1C5-G

(Continued from page 178)

Power Amplifier—Class A$_1$

OPERATING CONDITIONS AND CHARACTERISTICS:

Plate Voltage ..	83	90	Max. Volts
Screen Voltage ..	83	90	Max. Volts
Grid Voltage** ..	−7.0	−7.5	Volts
Amplification Factor (approx.) ..	165	180	
Plate Resistance (approx.)	110000	115000	Ohms
Transconductance .	1500	1550	Micromhos
Plate Current ..	7.0	7.5	Milliamperes
Screen Current ..	1.6	1.6	Milliamperes
Load Resistance .	9000	8000	Ohms
Total Harmonic Distortion	10	10	Per cent.
Power Output ..	200	240	Milliwatts

Pin Connections.

Pin 1—No Connection	Pin 5—Grid
Pin 2—Filament +	Pin 7—Filament —
Pin 3—Plate	Pin 8—No Connection
Pin 4—Screen	

(Pin numbers are according to RMA System)

CORRECTION
Radiotron Coil Data

In the article dealing with the application of Radiotron 6K8-G an error occurred in the Coil Data on Page 172 of Radiotronics 92. Under the heading "Shield Can Dimensions" the coils for 16-51 metres should be bracketed with those having a shield can with internal diameter 2⅛". Only the coils for the 13-39 metre band should have no can.

RADIOTRON 1603

Radiotron 1603 low microphonic pentode is now priced at £2/-/- nett Australian price as shown on the latest price list of miscellaneous valves for experimenters. This notice supersedes the earlier price given in Radiotronics 80 (11th October, 1937).

CATHODE RAY TUBES

NEW BLACK AND WHITE SCREEN

A new screen material known as Phosphor No. 4 has been developed so as to produce a black and white image in cathode ray tubes. This will be available on one 3in. (Radiotron 906-P4) and one 5in. (Radiotron 1802-P4) tube as an alternative to Phosphor No. 1 which provides a greenish image. For laboratory use in an oscillograph the green screen is generally to be preferred, the black and white screen being intended particularly for television.

The suffix "P1", etc., gives the Phosphor number (screen material):

P1 = Phosphor No. 1 — Greenish
P2 = Phosphor No. 2 — Bluish White
P3 = Phosphor No. 3 — Yellow
P4 = Phosphor No. 4 — White
P5 = Phosphor No. 5 — Bluish

For convenience in reference, the complete list of Radiotron Cathode Ray Tubes and Kinescopes is appended:

Screen dia.	Radiotron Type No.	Phosphor No.	Reference
1"	913	No. 1	E.S.D.
2"	902	No. 1	E.S.D.
3"	906	No. 1	E.S.D.
	906-P4	No. 4	E.S.D.
	908	No. 5	E.S.D.
	910	No. 2	E.S.D.
	911	No. 1	E.S.D.*
5"	904	No. 1	ES/M.
	905	No. 1	E.S.D.
	907	No. 5	E.S.D.
	909	No. 2	E.S.D.
	912	No. 1	E.S.D.
	1801	No. 3	E.M.D.
	1802-P1	No. 1	E.S.D.
	1802-P4	No. 4	E.S.D.
9"	903	No. 1	E.M.D.
	914	No. 1	E.S.D.
	1800	No. 3	E.M.D.

* With gun unusually free from magnetisation effects.

E.S.D. = Electrostatic deflection.
E.M.D. = Electromagnetic deflection.
ES/M = Electrostatic-magnetic deflection.

RADIOTRON NEWS

The following new types have been announced:—

RADIOTRON 810, a transmitting triode with amplification factor of 35 and plate dissipation of 125 watts. Stocks are expected during January, 1939.

RADIOTRON 1616, a half-wave high vacuum rectifier for special applications requiring high voltages, and which may be switched on with both filament and plate voltages applied simultaneously. Stocks are expected during January, 1939.

RADIOTRON 1623, a transmitting triode with plate dissipation of 25 watts which is similar to Radiotron 809 except that the amplification factor is lower (20 in place of 50). Stocks are expected during January, 1939.

RADIOTRON 906-P4, a 3" screen Kinescope* with medium persistence screen giving black and white reproduction, similar to type 906 except for the screen material.

RADIOTRON 1802-P1, a 5" screen Kinescope* with medium persistence green image.

RADIOTRON 1802-P4, a 5" screen Kinescope* with medium persistence screen giving black and white reproduction, similar to type 1802-P1 except for the screen material.

These three Kinescopes* have electrostatic deflection.

RADIOTRON 1899, a 5" Monoscope** for application to television.

* A Kinescope is a cathode ray tube suitable for television reception.

** A Monoscope is a special form of cathode ray tube used primarily for testing the performance of television equipment. The Monoscope enables television receivers to be tested independently of television broadcasts.

RADIOTRON VR105-30, a cold cathode glow discharge tube intended for use as a voltage regulator in applications where a constant D.C. output voltage of approximately 105 volts is required. It may also be used as an oscillator in relaxation circuits and for spark-over protection. The starting supply voltage is 137 (min.) volts and the operating current is from 5 to 30 mA. It is fitted with a small shell octal 6 pin base. Limited stocks are expected to be available early in January, 1939.

RADIOTRON VR150-30 is identical to type VR105-30 except that the starting supply voltage is 180 (min.) volts and the operating voltage is approximately 150 volts.

REDUCED PRICES

Transmitting and Miscellaneous Valves

Reduced prices for many types of transmitting and miscellaneous valves for experimenters have been announced as from 1st December, 1938. These prices are nett and hold only in Australia. A copy of the new price list is enclosed as a supplement to all Australian subscribers. Additional copies are available on application.

Published by The Wireless Press for Amalgamated Wireless Valve Co. Pty. Ltd.