

OPERATING HANDBOOK

Amplifiers

TYPE 2 (SER. 173/32)

TYPE 3 (SER. 173/33)

SCHED. C9114 CONT. 28058

Manufactured by—

Centre Industries

ALLAMBIE ROAD
NORTH MANLY, N.S.W.

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Page 1.

A M P L I F I E R T Y P E 2

SERIAL 173/32

SCHEDULE C9114

CONTRACT 28058

SPECIFICATION:

General: The Type 2 amplifier is designed for use as an isolating and bridging amplifier.

A stepped attenuator provides a maximum gain of 6.5 db., to allow for compensation of switching losses.

Mounting Requirements: The amplifier is a plug-in unit intended for use in either a four-unit or eight-unit type mounting shelf, in accordance with Departmental Drawings No. CF549 and CF550 respectively.

ELECTRICAL PERFORMANCE:

Frequency Response: ± 0.5 db., from 30 C.P.S. to 15 Kc's.

Gain: 0 db to 6.5 db ± 0.25 db., variable in 12 steps.

Stability: The amplifier is free from oscillation when the output termination is varied from 600 ohms non-inductive resistance, to 600 ohms resistance in parallel with 0.1 mfd. capacitance.

Input Impedance: Not less than 25,000 ohms, from 30 C.P.S. to 10 Kc's.
Not less than 20,000 ohms, between 10 Kc's and 15 Kc's.

Load Impedance: 600 ohms.

Output Impedance: 600 ohms $\pm 15\%$

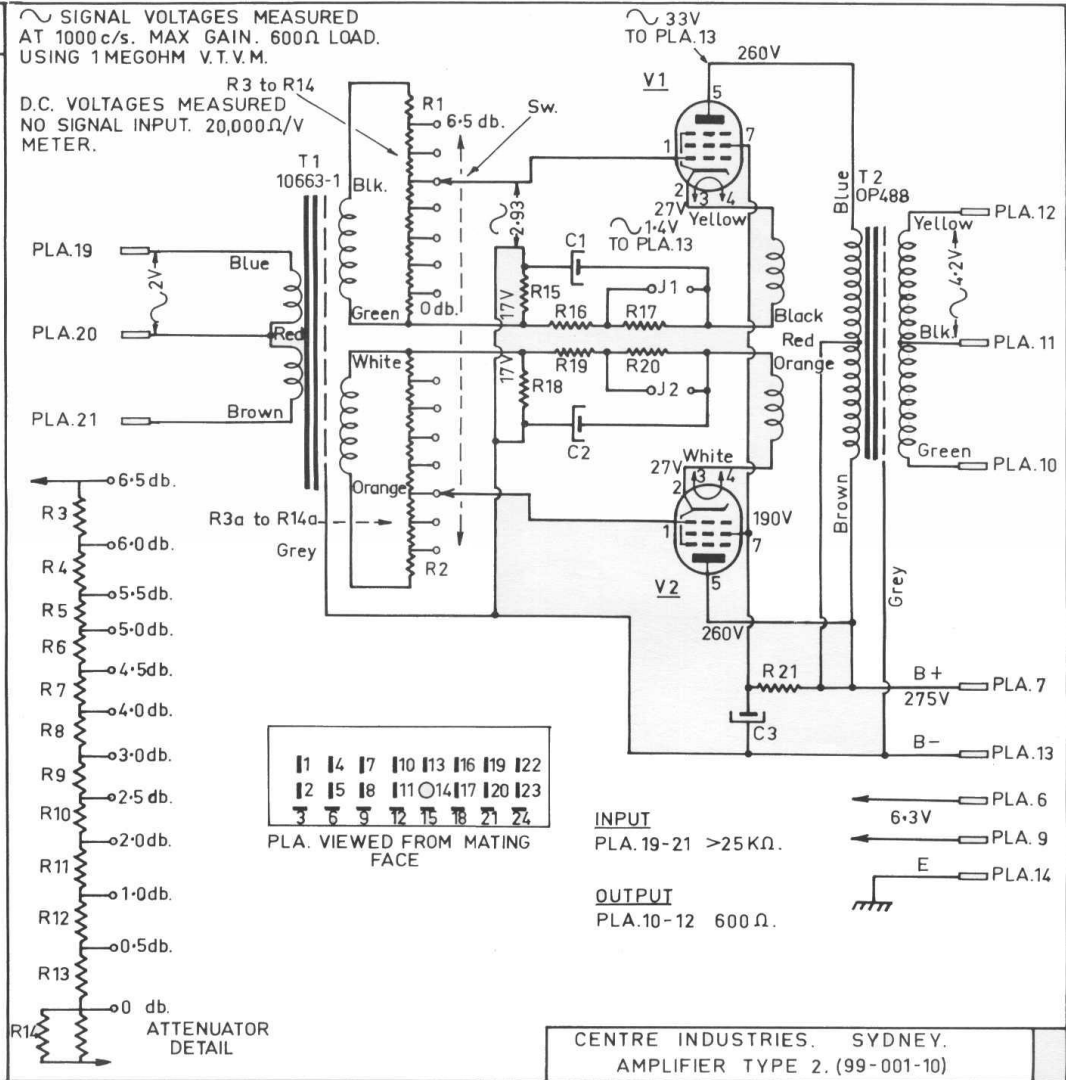
Noise: The equivalent noise input does not exceed - 80 dbm. with input terminated in 300 ohm non-reactive resistance.

Power Output: 500 MW (+27 dbm), at distortion not greater than 0.5% over the range of 60 C.P.S. to 7.5 Kc's., and not greater than 1.0% over the range of 30 C.P.S. to 15 Kc's.

Power Input: 6.3V. $\pm 10\%$. 0.4 Amp., Heater. 250-300V D.C., 20 Ma., H.T.

Cathode Metering: Sockets are provided to allow metering of the cathode current of each valve. A reading of approximately half scale will be obtained on a 1000 ohms per volt meter having an internal resistance of 1000 ohms.

REF.	DESCRIPTION	Qty.
R1, 2	6.8KΩ .5W 5% PHILIPS	2
R3, 3a	2.7KΩ " " " "	2
R4, 4a	2.7KΩ " " " "	2
R5, 5a	2.7KΩ " " " "	2
R6, 6a	2.2KΩ " " " "	2
R7, 7a	2.2KΩ " " " "	2
R8, 8a	3.9KΩ " " " "	2
R9, 9a	1.8KΩ " " " "	2
R10, 10a	1.8KΩ " " " "	2
R11, 11a	3.3KΩ " " " "	2
R12, 12a	1.5KΩ " " " "	2
R13, 13a	1.5KΩ " " " "	2
R14, 14a	27 KΩ // 180KΩ	2
R15, 18	1.8KΩ " " " "	2
R16, 19	1.0KΩ " " " "	2
R17, 20	68 Ω " " " "	2
R21	39KΩ 1W 5% BTA I.R.C.	1
C1, 2	100μF 25V.W. ET1X DUCON	2
C3	8μF 450V.W. ET2D " "	1
V1, V2	EL91 / 6AM5	2
PLA.	24 PIN MALE PLUG PAINTON Cat. No. 311186.	1
J1, J2	2 PIN SOCKET. CINCH 733-16-1.	2
T1.	TRANSFORMER. 10663-1. NATIONAL.	1
T2.	TRANSFORMER. OP488. FERGUSON	1
S.W.	2- POLE 12- POSITION. OAK.	1



A M P L I F I E R T Y P E 3

SERIAL 173/33

SCHEDULE C9114

CONTRACT 28058

SPECIFICATION:

General: The type 3 amplifier is designed for bridging a terminated 600 ohm line and provide high quality audio output to a wide-range monitor loudspeaker, or to act as a distribution amplifier to a large number of lines.

Mounting Requirements: The amplifier is designed for standard rack mounting and requires a rack space of $5\frac{1}{4}$ inches.

ELECTRICAL PERFORMANCE:

Frequency Response: + 0.5 db. from 30 C.P.S. to 15 Kcs.
+ 1 db. from 15 C.P.S. to 30 Kcs.

Gain: 42 db., continuously variable by means of potentiometer.

Stability: The amplifier is free from oscillation when the output termination is varied from open circuit to 25 ohms non-reactive resistance, to 25 ohms in parallel with 0.2 mfd. capacitance. The frequency response is within 1 db of the above response under these conditions.

Source Impedance: 300 ohms.

Input Impedance: Greater than 25,000 ohms.

Load Impedance: 3 or 12 ohms, adjustable by output plug wiring.

Output Impedance: Less than 0.4 ohms and 1.5 ohms, respectively.

Noise: Equivalent noise input at maximum gain, and with input terminated in 300 ohms non-reactive resistance - 83 dbm.

Power Output: At 12 watts output, the distortion does not exceed 0.25% over the range of 60 C.P.S. to 7.5 Kcs., and does not exceed 0.6% over the range of 30 C.P.S. to 15 Kcs.

At 18 watts output, the distortion does not exceed 1% over the range of 60 C.P.S. to 7.5 Kcs., and does not exceed 2% over the range of 30 C.P.S. to 15 Kcs.

Power Input: 200--250 V AC., adjustable by selecting fuse positions. Primary current, approximately 0.5 amp.

Cathode Metering: Sockets are provided to allow metering of the cathode current of each valve. Using a 1,000 ohms per volt 1 ma. meter, a deflection of approximately one half scale will be obtained with valve in normal operation condition.

Cathode Current of Output Tubes: A potentiometer, R.21, is provided to balance the DC current of the output valves.

REF.	DESCRIPTION	QTY.
R.1	Pot. 20K Log. Type C.S. I.R.C.	1
R.2	6.8 K 10% B.T.A.	1
R.3	68 K 5% B.T.A.	1
R.4, 5	500 Ω 5% P.W.5.	2
R.6	150 Ω 5% B.T.A.	1
R.7	150 K 10% B.T.A.	1
R.8	1 M 10% B.T.A.	1
R.9, 10	100 K 2% D.C.F.	2
R.11	39 K 10% B.T.A.	1
R.12	390 Ω 5% B.T.A.	1
R.13	10 K 10% B.T.A.	2
R.15, 16	330 K 10% B.T.A.	2
R.17, 19	2.2 K 10% B.T.S.	2
R.18	180 Ω 5% P.W.5.	1
R.20, 22	22 Ω 10% B.T.A.	2
"	12 Ω 10% B.T.A.	2
R.21	Pot. 100 Ω W.W. 2W Naunton	1
R.23	4.7 K 5% B.T.A. I.R.C.	1
R.25	27 K 10% B.T.A.	1
C.1	100 pf. 10% M.S. Simplex	1
C.2, 3	8 uf Elect. 450 v DCW Ducon	2
C.4, 5	.33 uf 400 v Polyester D.F.K. 430 Ducon	2
C.6	.47 uf 400 v Polyester D.F.K. 432 Ducon	1
C.7, 8	100 uf 25 v. w. Elect. E.T.I.B. Ducon	2
C.9	220 pf. 10% M.S. Simplex	1
C.10, 11	4 uf 400 v DC Paper Ducon	2
C.12	.01 uf 1000 v Styro. DFB 1024 Ducon	1
V.1	6AU6	1
V.2	12AT7	1
V.3, 4	EL34/6CA7	2
TR.1	MT 442 Ferguson	1
TR.2	OP 487	1
TR.3	PF 2135	1
L.1	CF 540	1
MR.1-4	BY100 Diodes Philips	4
FS1-FS2	Fuse Cartridge 1A	2
S.W.A.	Switch Toggle D.P.S.T. Type D Alpha	1
S.K.A, B	Connectors M244 Trimax	4 Pn
S.K.C.	Plug Mains 99/M606 H.P.M.	1
LP1	Lamp Pilot 6 v "Liliput" in holder Type 188 E.S.Rubin	1

