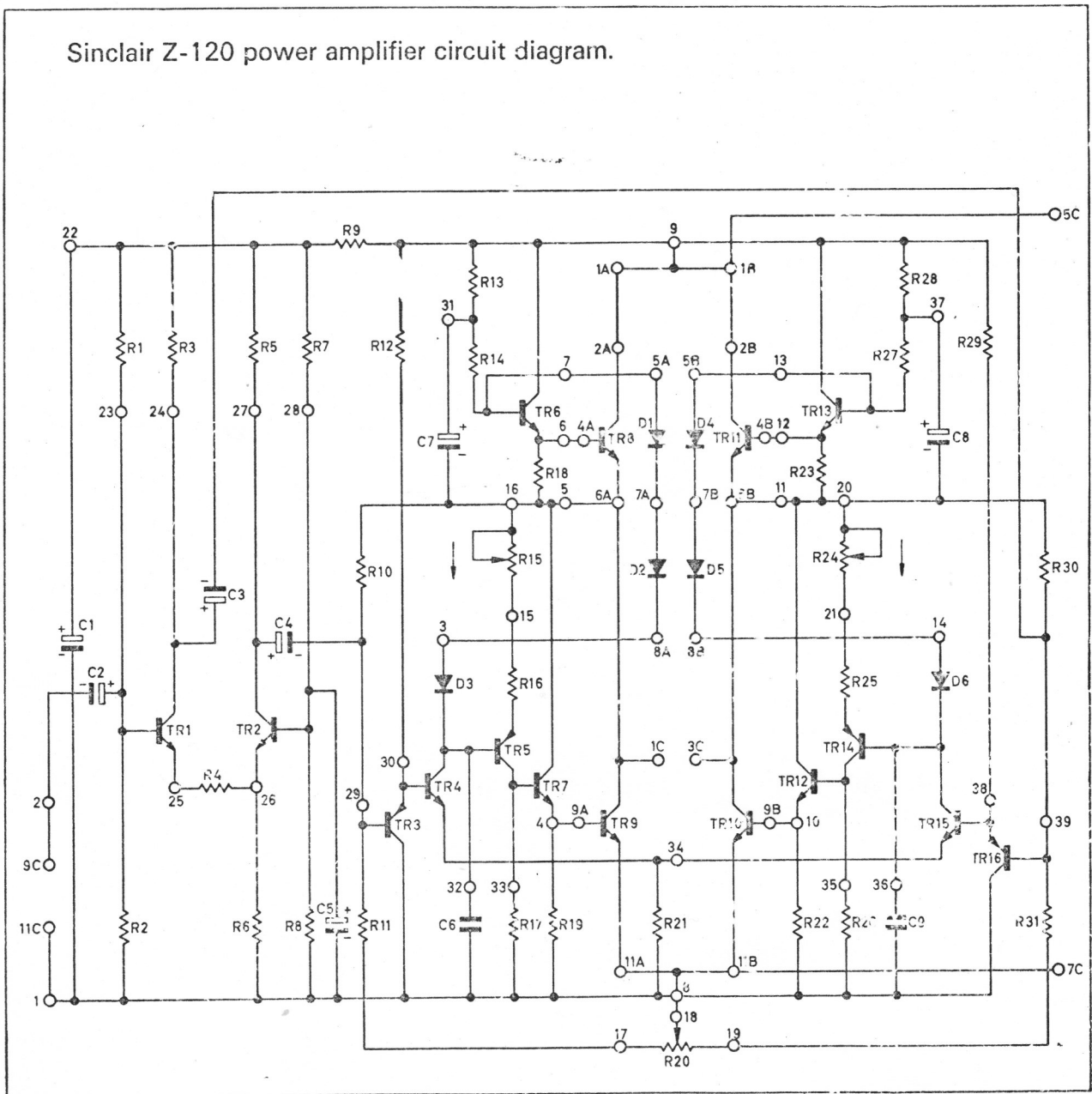


Sinclair Z-120 power amplifier circuit diagram.



COMPONENTS LIST

Resistors

Code	Value	Tolerance	Wattage Rating	Make	Type	Description
R1	15k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R2	10k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R3	5.6k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R4	1.5k Ω	1%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R5	5.6k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R6	1.5k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R7	18k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R8	6.8k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R9	3.9k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R10	18k Ω	1%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R11	1.5k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R12	6.8k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R13	32 Ω	5%	4W	CGS	VPF4	Vitreous Enamelled Wirewound
R14	82 Ω	5%	4W	CGS	VPF4	Vitreous Enamelled Wirewound
R15	47 Ω	10%	$\frac{1}{2}$ W	Plessey	MH2	Moulded Track Carbon Potentiometer with standard screw-driver slot spindle and collet lock bush
R16	12 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R17	82 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R18	47 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R19	47 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R20	470 Ω	10%	$\frac{1}{2}$ W	Plessey	MH2	Moulded Track Carbon Potentiometer with standard screw-driver slot spindle and collet lock bush
R21	10 Ω	5%	$\frac{1}{2}$ W	Electrosil	TR6	Glass-Tin Oxide
R22	47 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R23	47 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R24	47 Ω	10%	$\frac{1}{2}$ W	Plessey	MH2	Moulded Track Carbon Potentiometer with standard screw-driver slot spindle and collet lock bush
R25	12 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R26	82 Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R27	82 Ω	5%	4W	CGS	VPF4	Vitreous Enamelled Wirewound
R28	82 Ω	5%	4W	CGS	VPF4	Vitreous Enamelled Wirewound
R29	6.8k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R30	18k Ω	1%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide
R31	1.5k Ω	5%	$\frac{1}{4}$ W	Electrosil	TR5	Glass-Tin Oxide

Capacitors

Code	Value	Tolerance	Wattage Rating	Make	Type	Description
C1	1000 μ F		6/25v	Dubilier	BR3584	Electrolytic
C2	250 μ F		6/25v	Dubilier	BR3573	Electrolytic
C3	250 μ F		6/25v	Dubilier	BR3573	Electrolytic

Capacitors continued

Code	Value	Tolerance	Voltage Rating	Make	Type	Description
C4	250 μ F		6/25v	Dubilier	BR3573	Electrolytic
C5	250 μ F		6/25v	Dubilier	BR3573	Electrolytic
C6	4700pF	10%	160v	Wima	Tropyfol F	Araldite encapsulated Polyester/Foil
C7	1000 μ F		6/25v	Dubilier	BR3584	Electrolytic
C8	1000 μ F		6/25v	Dubilier	BR3584	Electrolytic
C9	4700pF	10%	160v	Wima	Tropyfol F	Araldite encapsulated Polyester/Foil

Transistors

Code	Manufacturer	Type
TR1	SGS-Fairchild	C426
TR2	SGS-Fairchild	C426
TR3	RCA	40319
TR4	SGS-Fairchild	C426
TR5	RCA	40319
TR6	RCA	40312/2N3054
TR7	RCA	40312/2N3054
TR8	RCA	40363/2N3055
TR9	RCA	40363/2N3055
TR10	RCA	40363/2N3055
TR11	RCA	40363/2N3055
TR12	RCA	40312/2N3054
TR13	RCA	40312/2N3054
TR14	RCA	40319
TR15	SGS-Fairchild	C426
TR16	RCA	40319
D1	SGS-Fairchild	C426
D2	SGS-Fairchild	C426
D3	SGS-Fairchild	C426
D4	SGS-Fairchild	C426
D5	SGS-Fairchild	C426
D6	SGS-Fairchild	C426

Heat Sinks

Code	Mounting	Make	Type	Fixing Screws
HS1	TR1, TR2	Redpoint	5DC-7/HA	1 6BA \times $\frac{7}{8}$ "
HS2	TR3, TR4	Redpoint	5DC-7/HA	1 6BA \times $\frac{7}{8}$ "
HS3	TR5, D3	Redpoint	5DC-7/HA	1 6BA \times $\frac{7}{8}$ "
HS4	TR14, D6	Redpoint	5DC-7/HA	1 6BA \times $\frac{7}{8}$ "
HS5	TR15, TR16	Redpoint	5DC-7/HA	2 6BA \times $\frac{7}{8}$ "
HS6	D1, D2	Redpoint	5DC-7/HA	2 6BA \times $\frac{7}{8}$ "
HS7	D4, D5	Redpoint	5DC-7/HA	2 6BA \times $\frac{7}{8}$ "
HS8	TR8, TR9	Marston Excelsior	10D600A2/1007	6 2BA \times $\frac{3}{8}$ "
HS9	TR10, TR11	Marston Excelsior	10D600A2/1007	6 2BA \times $\frac{3}{8}$ "

Sundries

Item	Quantity	Type	Manufacturer
Terminal Strip	2	A3008	Harwin
Terminals	125	H2051	Harwin
Terminal Block	1	81/0251/00	Painton Camblock
Chassis	1	Z-120	
Printed Circuit Board	1	Z-120	

Power Supply Voltage	40V \pm 1V.
Load Impedance	4 Ω in series with 70 μ H.*
Power Output	120W continuous sine wave in the frequency range 5 c/s to 5 kc/s in the specified ambient temperature range. 240W square wave in the frequency range 5 c/s to 5 kc/s, intermittent or continuous provided that the output transistor heat sinks are maintained below 100°C.
Distortion	Total harmonic distortion less than 0.5% at any level up to 120W in the frequency range 5 c/s to 5 kc/s. Typically 0.3% at 1 kc/s.
Frequency Response	Level 5 c/s to 100 kc/s \pm 0.5 dB relative to 1 kc/s.
Rise Time	Typically 1 μ S, maximum 2 μ S, at full output.
Sensitivity	1.0V rms. \pm 0.5dB for 120W at 1 kc/s
Input Impedance	5.6K Ω \pm 5%
Output Impedance	0.1 Ω \pm 10%.
Damping Factor	Typically 40.
Noise	Typically -90dB relative to 120W, input open-circuit
Quiescent Current	Typically 290mA.
Operating Current	5.2A average at 120W sine wave output, 8.2A peak. 8.2A average at 240W square wave output.
Operating Ambient	Temperature range -25°C to +55°C.
Dimensions	Length 15" (38.2 cm.) Height 6" (15.3 cm.) Depth to mounting face 3.6" (9.1 cm.) Overall depth 3.9" (9.9 cm.)
Weight	3.5lb. (1.6 kg.)
Mounting Position	The amplifier is designed for mounting on a vertical panel by means of six mounting pillars fixed to the chassis (2BA nuts and shake-proof washers are supplied). The amplifier will fit a standard 19" rack cabinet.
Connections	Input, output and power connections are made to a Camblock connector fitted to the chassis.

***A 4 Ω resistive load may be used, but the following specifications will apply:**

Distortion	Will increase to typically 0.5% at 5 kc/s.
Rise Time	Will increase to typically 7 μ S (maximum 10 μ S).
Frequency Response	Will be typically -3dB at 100 kc/s.

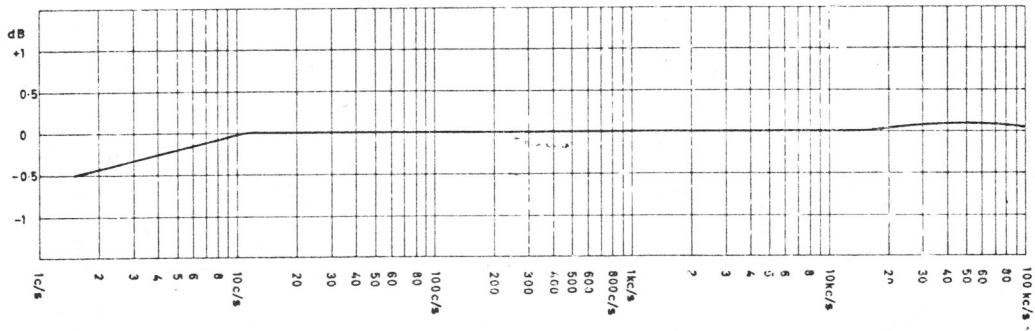
Alternative specifications for lower power levels.

Rated Power Output			
Continuous Sine Wave	120W	60W	30W
Continuous Square Wave	240W††	120W	60W
Power Supply Voltage	40V	40V	40V
Load Impedance	4 Ω	8 Ω	16 Ω
Distortion (Maximum)	0.5%	0.4%	0.3%
Frequency Range for rated power output and distortion	5 c/s-5 kc/s ± 0.5 dB	5 c/s-10 kc/s ± 0.5 dB	5 c/s-20 kc/s ± 0.5 dB
Frequency Response	5 c/s-100 kc/s ± 0.5 dB	5 c/s-100 kc/s ± 0.5 dB	5 c/s-100 kc/s ± 0.5 dB
Rise Time (Typical)	1 μ S	1 μ S	1 μ S
Sensitivity for full output	1.0V	1.0V	1.0V
Input Impedance	5.6K Ω	5.6K Ω	5.6K Ω
Output Impedance	0.1 Ω	0.1 Ω	0.1 Ω
Damping Factor	40	80	160
Noise relative to full output	-90dB	-90dB	-90dB
Operating Current average	5.2A	2.8A	1.6A
Operating Current peak	8.2A	4.5A	2.5A

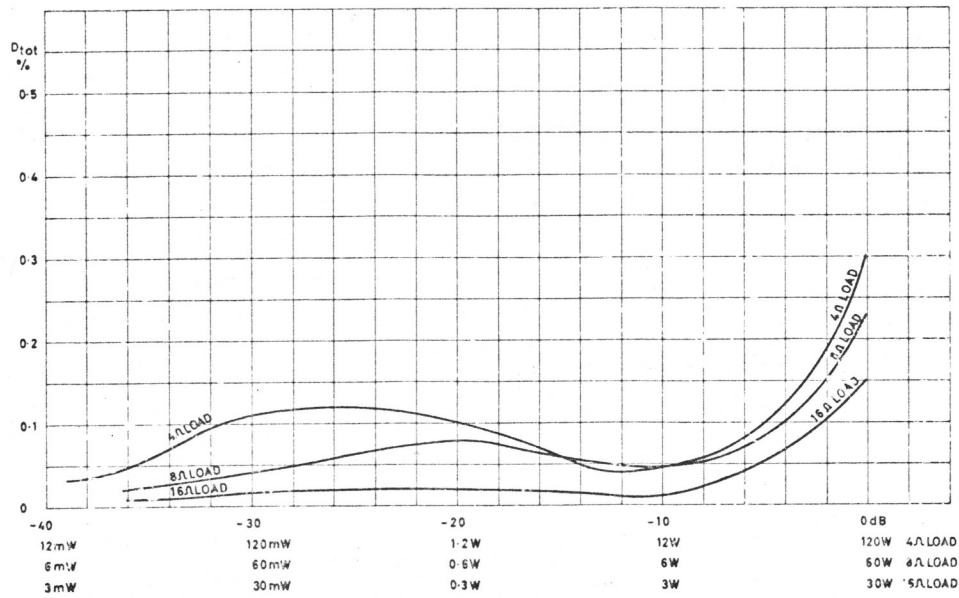
†† Intermittent rating

SPECIFICATIONS

Dia. 1 Sinclair Z-120 Power Amplifier frequency response at 120W.



Dia. 2 Sinclair Z-120 Power Amplifier distortion vs. power output.



Dia. 3 Sinclair Z-120 Power Amplifier distortion at 120W.

