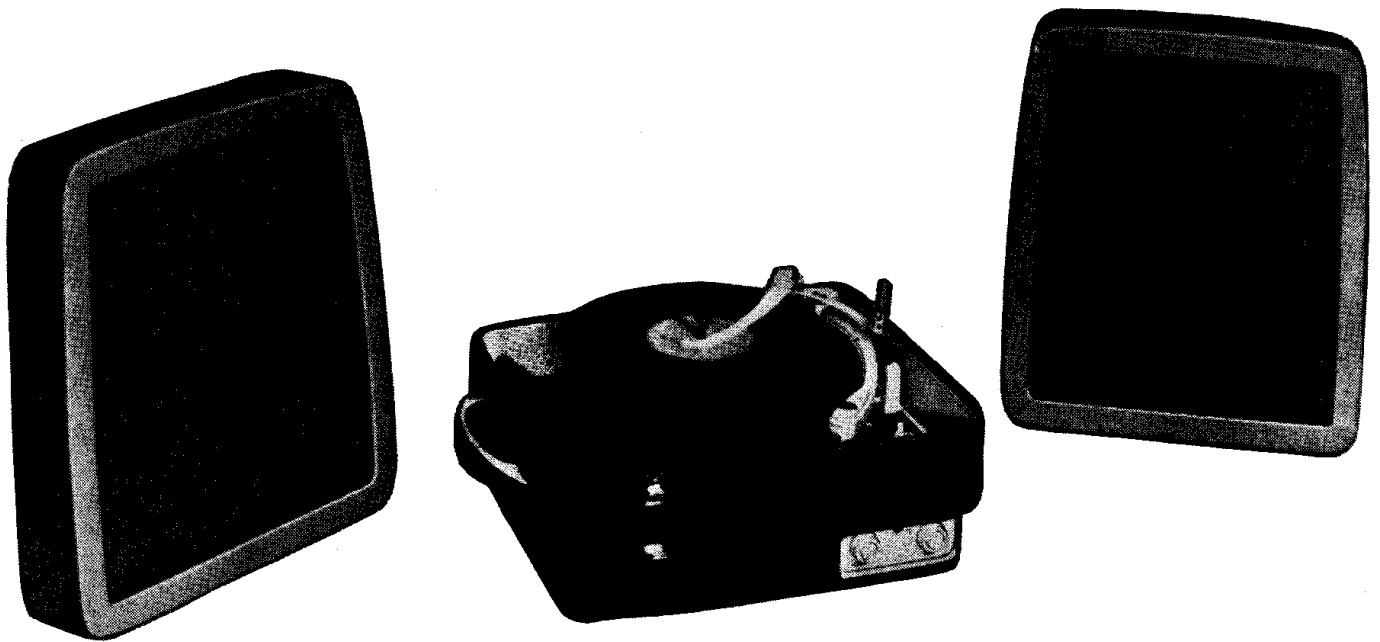


FERGUSON

STEREOPHONIC RECORD PLAYER 396 SG

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SERVICE MANUAL



SPECIFICATION

Mains Supply

200—250 Volts, 50 cps, AC.

Valves

ECC83 Voltage amplifier (half each channel).
EL84 Power output (two).

Power Output

3½ Watts per channel.

Loudspeakers

Two 6½ inch diameter dual cone loudspeakers.

Record Changer

Garrard RC.121 Mk. II, fitted with turnover stylus stereo cartridge.

Cabinet

14 inches wide x 17¼ inches high x 9¾ inches deep.

VOLTAGE READINGS TAKEN ON MODEL 8 AVOMETER

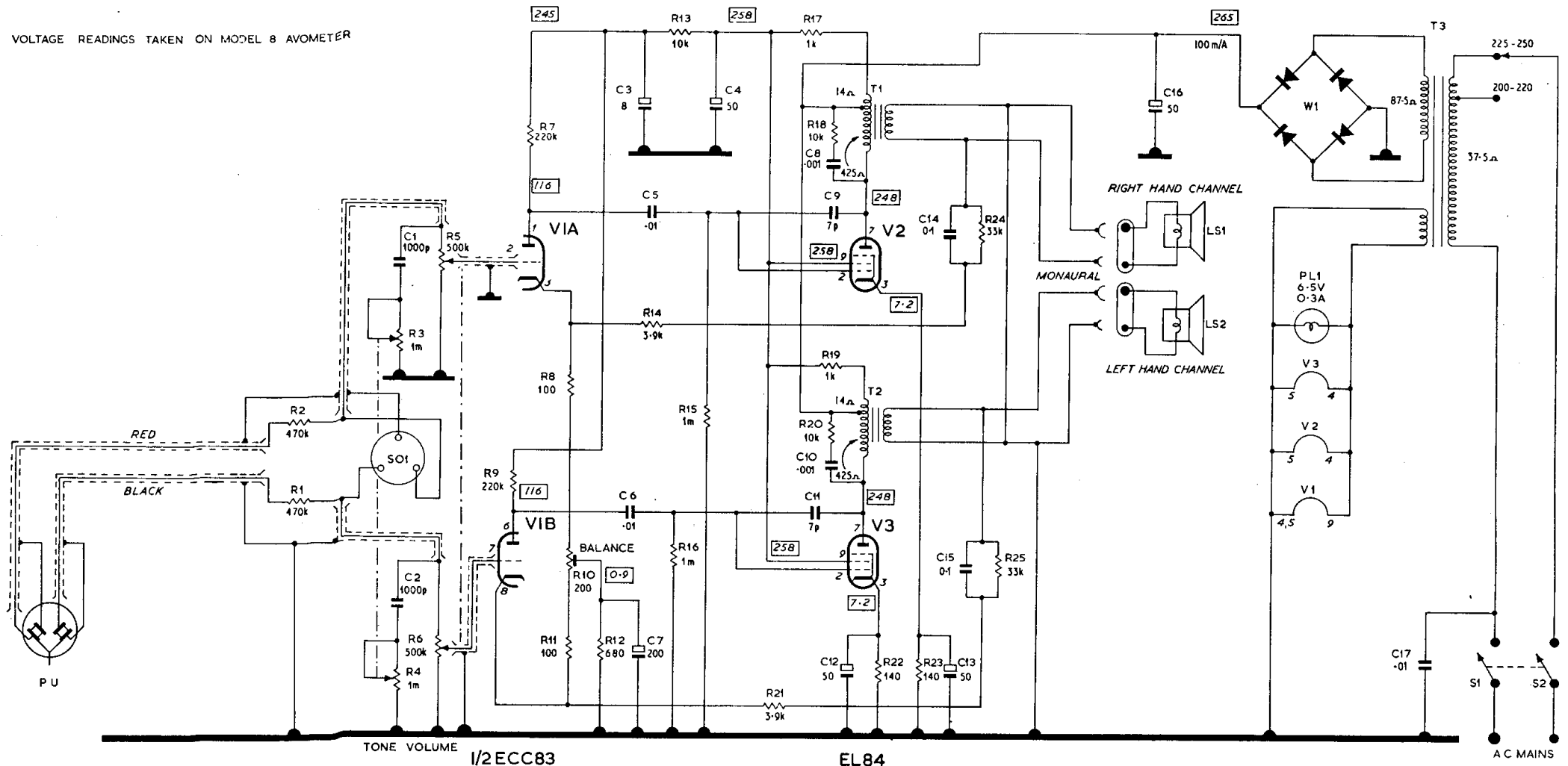


Fig. 1. Figures adjacent to valve electrodes denote pin connections. Figures in rectangles indicate voltages measured with a 20,000 ohm/Voltmeter. DC resistance readings are shown against inductances when these are 1 ohm or greater.

THE CIRCUIT

The separate output voltages from the stereo pick-up cartridge are fed to identical audio amplifiers comprising a double triode, type ECC83, one half being used in each channel to drive output pentodes type EL84.

The ganged volume controls **R5** and **R6** are included in the grid circuits of **VIA** and **VIB**. The tone controls **R3** and **R4** are also ganged

and connected with their associated capacitors **C1** and **C2** across the volume controls.

The common cathode circuits of **VIA** and **VIB** incorporate a differential gain balance control **R10** which operates in conjunction with the negative feedback loops provided from the output transformer secondaries, through series resistors **R14** and **R21**, and

injected across **R8**, **R10** and **R11**, **R10**. **VIA** and **VIB** are resistance capacitance coupled to **V2** and **V3** respectively.

The loudspeaker plug and socket connectors are arranged so that both outputs can be fed to one loudspeaker for monaural reproduction with both output transformer secondaries connected in series.

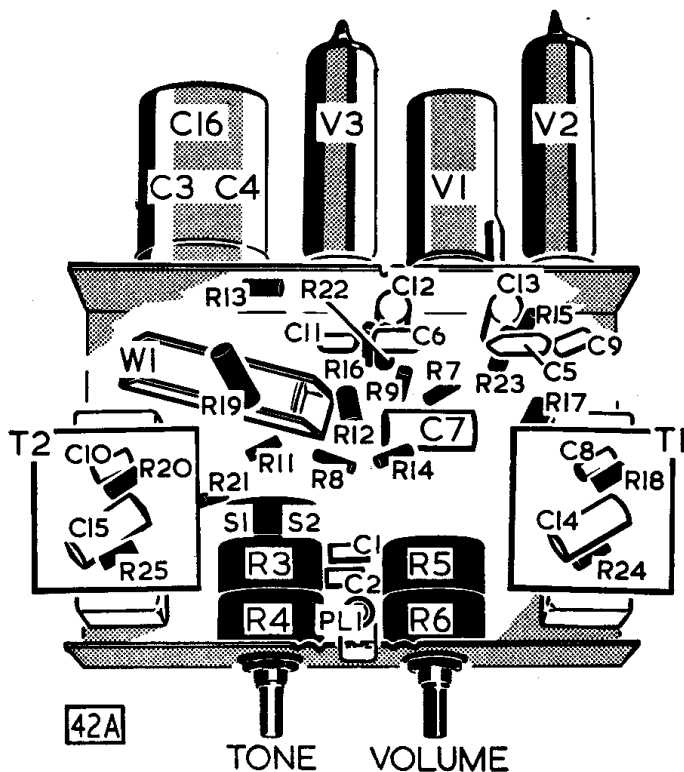


Fig. 2. View of chassis showing component location. T3 is separately mounted in the cabinet with C17. R1 and R2 are associated with SO1.

MISCELLANEOUS

Ref.	Description	Part No.
LS1	6½" diameter loudspeaker, 3 ohm speech coil	Y16002/15
LS2	6½" diameter loudspeaker, 3 ohm speech coil	Y16002/15
PL1	Pilot lamp, 6.5V 0.3A	33755
PU	Pick-up cartridge	Acostereo
T1	Output transformer—RH channel	73/18
T2	Output transformer—LH channel	Y18258/1
T3	Mains transformer	Y18258/1
SO1	External input socket	Y18142
WI	HT rectifier	Z16512
		Z17599

RESISTORS

All carbon types unless otherwise stated. Where no tolerance or power rating is given for fixed resistors, these should be taken as $\pm 20\%$ and $\frac{1}{4}$ Watt respectively.

Ref.	Value	Rating	Function
R 1	470K Ω		Pick-up series
R 2	470K Ω		
R 3	1M Ω	Carbon pot. lin.*	Ganged tone controls
R 4	1M Ω		
R 5	500K Ω	Carbon pot. log.†	Ganged volume controls
R 6	500K Ω		
R 7	220K Ω	10%	V1A anode load
R 8	100 Ω		
R 9	220K Ω	Carbon pre-set lin.**	V1A NFB injection
R 10	200 Ω		
R 11	100 Ω	10%	V1B anode load
R 12	680 Ω		
R 13	10K Ω	10%	V1A/V1B bias
R 14	3.9K Ω		
R 15	1M Ω	10%	HT smoothing
R 16	1M Ω		
R 17	1K Ω	$\frac{1}{4}$ W	HT smoothing
R 18	10K Ω		
R 19	1K Ω	$\frac{1}{4}$ W	Phase correction
R 20	10K Ω		
R 21	3.9K Ω	10%	NFB series (RH channel)
R 22	140 Ω		
R 23	140 Ω	10%	V2 grid leak
R 24	33K Ω		
R 25	33K Ω	$\frac{1}{4}$ W	V3 grid leak
			HT smoothing
			Phase correction
			HT smoothing
			Phase correction
			NFB series (LH channel)
			V3 cathode bias
			V2 cathode bias
			Part bass boost

* Part No. Y13105 † Part No. Y13104 ** Part No. Z13106

CAPACITORS

Electrolytics excepted, tolerance $\pm 20\%$ unless otherwise stated.

Ref.	Value	Rating	Function
C 1	1000pF	400V	Part tone control
C 2	1000pF		
C 3	8uF	Electrolytic	HT smoothing
C 4	50uF		
C 5	.01uF	400V	V2 CG coupling
C 6	.01uF	400V	V3 CG coupling
C 7	200uF	Electrolytic	6V**
C 8	.001uF	400V	V1A/V1B bias bypass
C 9	7pF	$\pm \frac{1}{2}$ pF	750V
C 10	.001uF	400V	Phase correction
C 11	7pF	$\pm \frac{1}{2}$ pF	750V
C 12	50uF	Electrolytic	12V†
C 13	50uF	Electrolytic	12V†
C 14	0.1uF	150V	NFB bass boost
C 15	0.1uF		
C 16	50uF	Electrolytic	275V*
C 17	.01uF	300V AC	Mains RF bypass

* Part No. Y13238/7 ** Part No. Y13229/4X † Part No. Z13210/2

MECHANICAL DETAILS

1. Record Changer Removal

- Check that pickup and record changer are secured by their transit clips and replace lid.
- Turn record player upside down, remove lower lid and cabinet bottom.
- Unsolder motor leads and green and white screened leads to record changer.
- Turn record player over and remove lid.
- Unscrew three retaining screws, free transit clips and remove record changer.

2. Chassis Removal

- Turn record player upside down, remove lower lid and cabinet bottom.
- Remove control panel, volume and tone control knobs.
- Unsolder motor leads to transformer and free transformer.
- Unsolder green and white screened leads connecting chassis to radio input sockets.
- Remove all cleats securing wiring and free mains input panel.
- Unscrew three nuts holding chassis and withdraw chassis together with mains transformer and mains input panel.

3. Stylus Replacement

Use only replacement stylus assembly SS73

- Slide retaining clip holding stylus to rear of cartridge.
- Remove old stylus by means of stylus lever.
- Holding retaining clip vertically, insert new stylus so that the lever fits into mounting and cantilever beds correctly into damping block and stylus coupler.
- Lower retaining clip and slide it fully forward.

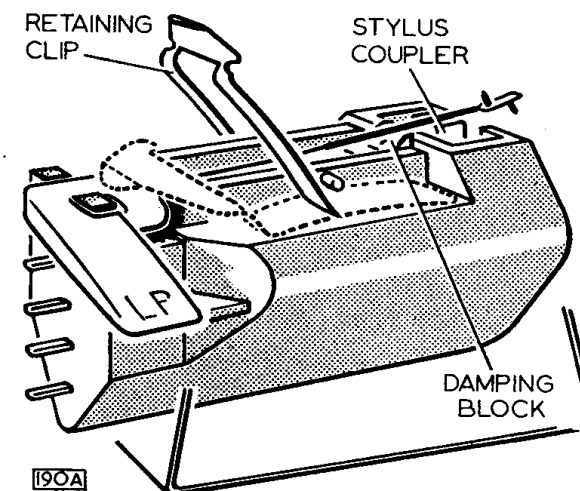


Fig. 3. Stylus replacement

VOLTAGE AND CURRENT MEASUREMENTS

The following readings were taken with a Model 8 Avometer. The mains adjustment was set for 225—250 Volts with a 237 Volt, 50 cps supply.

GENERAL MEASUREMENTS

Total HT Current	.....	.....	.....	.....	.....	100mA
HT Voltage (unsmoothed)	.....	.....	.....	.....	.....	265V
HT Voltage (1st section smoothing)	.....	.....	.....	.....	.....	258V
HT Voltage (2nd section smoothing)	.....	.....	.....	.....	.....	245V

SPARE PARTS (Mechanical)

Cabinet	.....	V17728
Cabinet base assembly	.....	N18133
Control knob	.....	Y22014/1
Control knob clip	.....	Z6419
Control panel	.....	Z18136/1
Lid stay (bottom lid)	.....	Y18146
Lid stay (top lid)	.....	Y18146/1
Lid stay support cup	.....	Z18145
Loudspeaker lead (5 ft.)	.....	Y18138
Loudspeaker lead (8 ft.)	.....	Y18138/1
Loudspeaker lead retaining clip	.....	47407
Mains lead assembly	.....	Y15923/1
Mains lead storage ring	.....	Z17647
Pilot lampholder	.....	Y13301/1
Socket panel assembly including balance control	.....	Z16517

VALVE MEASUREMENTS

Ref.	Valve		Anode		Screen		Cathode Volts
	Type	Volts	mA	Volts	mA		
V1A	ECC83	116	0.65	—	—	0.9	
V1B	ECC83	116	0.65	—	—	0.9	
V2	EL84	248	43.5	258	5.8	7.2	
V3	EL84	248	43.5	258	5.8	7.2	

The manufacturers reserve the right to vary specifications or alternative materials as may be deemed necessary or desirable at any time.



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GREAT CAMBRIDGE ROAD, ENFIELD, MIDDLESEX

A Subsidiary of . . .

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