Resisto

R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13

R14 R15 R16 R101

"TRADER" SERVICE SHEET

GENERAL DESCRIPTION

THESE two stereophonic radiograms Ekco SRG395 and Ferranti SRG1073 employ an identical chassis and both incorporate the Garrard "Auto Slim" record changer unit.

Mono-Stereo gram switching and waveband selection switching is arranged together with the receiver on/off switches in a single press-key unit. Designed to operate from 200-250V 50c/s a.c. mains supplies, the chassis employs five valves with a bridge rectifier supply-

Waveband ranges are 182-545m (m.w.), 1,200-2,000m (l.w.) and 86-100Mc/s (f.m.). Socket facilities are provided for an external f.m. aerial and a.m. aerial and earth. Audio output is approximately 2W per channel on stereo and 4W total on mono.

Release date and original price (both models): August 1961, £54 17s. Purchase tax extra.

EKCO SRG395 & FERRANTI SRG1073

A.M./F.M. Stereophonic Radiograms

CIRCUIT DESCRIPTION

Operation on F.M.—Input from the f.m. aerial is via the wide band coupling L1, L2 to the cathode of V101a which is connected as an earthed grid r.f. amplifier. The anode of **V101a** is tuned by L3, C104 and is coupled to the grid of

L3, C104 and is coupled to the grid of the mixer V101b via a bridge circuit comprising C105, C108, C109 and the valve cathode/grid capacitance, to prevent oscillator radiation through the aerial circuit. V101b is tuned at oscillator frequency by L4 and C106.

The 10.7Mc/s i.f. signal is passed by the first i.f. transformer L6, L7 to the control grid of V102b pentode section which operates on f.m. as first i.f. amplifier. Amplified output from V102b is then fed to the second i.f. amplifier V103 via L10, L12 and switch S11 which, in conjunction with S10, selects the approconjunction with S10, selects the appropriate secondary winding.

MR101 and MR102 are wired in a

balanced ratio detector circuit, and after

de-emphasis by R117 and C144, the rectified audio output from the detector is fed via C147 and the appropriate switches to the volume controls RV1 a and b. The negative d.c. potential developed across R122 is a function of signal strength and is applied to the sup-pressor grid of **V103** as a.g.c. On radio (Continued overleaf col. 1)



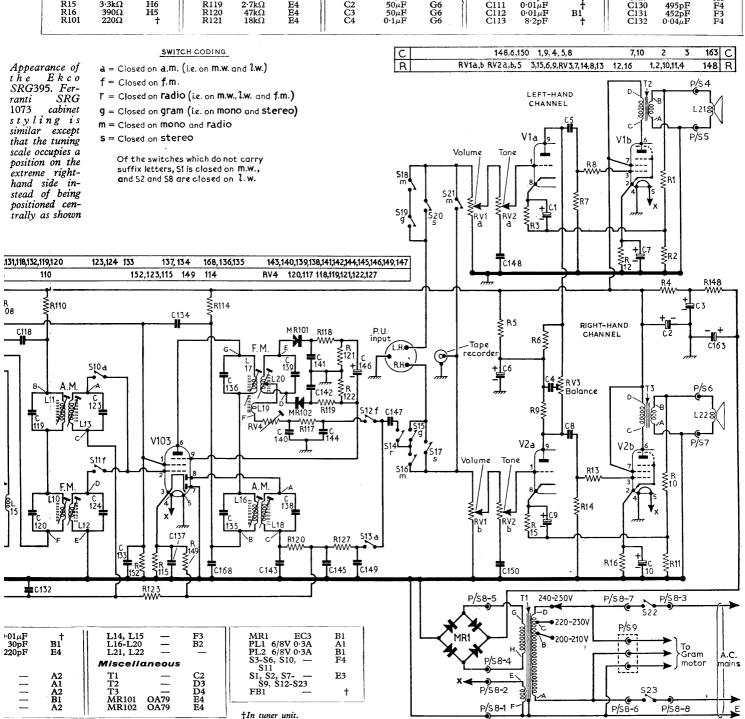
Appearance of EkcoSRG395. Ferranti SRG 1073 cabinet styling is similar except that the tuning scale occupies a position on the extreme righthand side in-stead of being positioned centrally as shown

C 101,102 103 R 101 102	108,105,104,111,109,107, 106,110 164,165 103 104	113 112 114,115 122,121, 117 105 106 109	116 127, 128,126,129,125,150,16 111 107 112,113 10	
PL 1	C109	A.M. external aerial A.M. internal aerial S5 a S1 C112 C114 R	B107 \$ b V102 a C125	F E
سل م ٠		∳ E	· .	‡ C132

Circuit diagram of the Ekco SRG395 and Ferranti SRG1073 chassis which are identical. On f.m. operation the a.g.c. voltage is derived from the balanced ratio detector and applied to the suppressor grid of the second i.f. amplifier V103

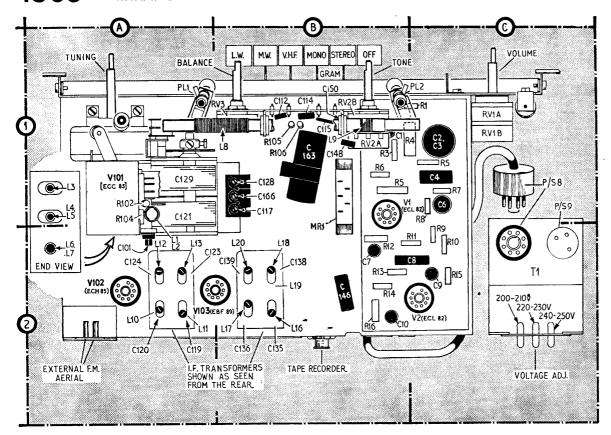
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Resisto	rs		R102 R103	1·5kΩ 1MΩ	A1	R122 R123	18kΩ 2·2MΩ	E4 E4	C5 C6	$0.01 \mu F$ $16 \mu F$	G5 G6	C114 C115	0·01μF 4,700pF	B1 B1
R1	2·7kΩ	G5	R104	4·7kΩ	A1	R127	47kΩ	F4	C7	25μF	H5	Ciii	3,000pF	F4
R2	100Ω	Ğ5	R105	$1.5M\Omega$	Βī	R148	300Ω	Ê3	II Čš	0.01µF	H6	Ci i7	30pF	Βī
R3	3·3kΩ	G5 I	R106	15kΩ	Bi	R149	220kΩ	F4	II Č9	50µF	H6	Ci is	5,000pF	F4
R4	300Ω	G5	R107	56kΩ	F4	R152	$1M\Omega$	F4	C10	25µF	H5	C119	100pF	Â2
R5	$18k\Omega$	G6	R108	$18k\Omega$	F4	RV1a	$1M\Omega$	ČĬ	Cion	30pF	A2	C120	15p F	A2
R6	220kΩ	G5	R109	470kΩ	E4	RV1b	$1M\Omega$	ČĪ	C102	1,000pF	+	C121		Aĩ
R7	$1M\Omega$	G6	R110	1.5kΩ	F4	RV2a	$1M\Omega$	Βī	C103	1,000pF	.	C122	120pF	F3
R8	$47k\Omega$	G6	R111	180Ω	F4	RV2b	$1M\Omega$	B1	C104	3pF	+ 1	C123	100pF	A2
R9	220kΩ	H6	R112	$47k\Omega$	F4	RV3	100 k Ω	B1	C105	6pF	+ 1	C124	15pF	A2
R10	2·7kΩ	H6	R113	$47k\Omega$	F4	RV4	$500k\Omega$	E4	C106	17pF	+ 1	C125	200pF	F4
R11	100Ω	H6	R114	2·2kΩ	F4	11			C107	10pF	+ 1	C126	82pF	F4
R12	390Ω	H5	R115	150Ω	F4	Capac	itoro		C108	8.2pF	+ 1	C127	$0.04 \mu F$	F4
R13	$47k\Omega$	H5	R117	100 k Ω	E4	11			[C109	12pF	† I	C128	30pF	B1
R14	$1M\Omega$	H5	R118	2·7kΩ	E4	C1	$50\mu F$	G5	[C110	44pF	†	C129	<u> </u>	A1
R15	3·3kΩ	H6	R119	2·7kΩ	E4	C2	$50\mu F$	G6	} C111	$0.01 \mu F$	+	C130	495pF	F4
R16	390Ω	H5	R120	$47 \mathrm{k}\Omega$	E4	C3	$50 \mu F$	G6	C112	$0.01 \mu F$	B1	C131	452pF	F3
R101	220Ω	†	R121	18 k Ω	E4	C4	$0.1 \mu F$	G6	C113	8.2pF	+	C132	$0.04\mu F$	F4



1583 EKCO SRG395 FERRANTI SRG1073

Supplement to Wireless & Electrical Trader, 12 January 1963



Right: Underside view of the chassis. The f.m. slide switch assembly can be seen in location ref. F4

Left: Plan view (except i.f. transformers) of the chassis and mains unit. I.f. transformers are shown as seen from the rear

Circuit Description—continued.

and mono the two audio amplifier and output stages operate in parallel driving their respective loudspeakers L21 and L22. A measure of output developed across R1 and R2 is coupled to V1a cathode as negative feedback and simi-

Valve Table

Valve			Anode (V)	Screen (V)	Cathode (V)
V101a V101b V102a V102b V103 V1a V1b	ECC85 ECC85 ECH81 ECH81 EBF89 ECL82	* † † † † † † † † †	190 180 60 190 205 184 180 90 93 185 198	115 80 80 70 — 202 210	
V2a V2b	ECL82 ECL82	}* {* {*	90 93 185 198	202 210	1·4 1·4 15·0 15·5

^{*}Receiver switched to f.m. †Receiver switched to a.m.

larly a portion of the output from the right-hand channel is fed to V2a cathode.

Operation on A.M.—H.t. supply is removed from the f.m. tuner by S3 and is restored to the a.m. oscillator section V102a by S6. V102 operates as the frequency changer on a.m. with r.f. signals applied to its pentode section control grid from the internal aerial coil L8 (m.w.) or L8 and L9 (l.w.) via S5, or from the bottom coupled external aerial. L14 and L15 are the local oscillator tuning and coupling coils. The intermediate frequency present in V2b anode circuit is selected by the tuned primary L11, C119 of the first a.m. i.f. transformer which is resonant at 470kc/s.

Output from the pentode amplifier section of V103 is coupled via L16 and L18 to the audio detector and a.g.c. diode anode. Audio signals developed across the anode load R149 are filtered by R127 and C149 and fed via S3 and C147 to the volume controls. A.g.c. voltage is fed via R123 to V103 control grid and via R109 to the control grid of V102b. Operation of the audio channels is the same as for f.m.

Operation on Stereo.—The two separate p.u. signals are fed to the l.h. volume control RV1a via S20 and to the r.h. volume control RV1b via S17. (The radio detector outputs are isolated by the opening of S14 and h.t. voltage is removed from V103 screen grid.) The two channels comprising triode amplifier and pentode output stages V1 and V2 operate as identical but separate ampli-

fiers providing left-hand and right-hand outputs. Equalization of the two channels is provided by the balance control RV3.

CIRCUIT ALIGNMENT

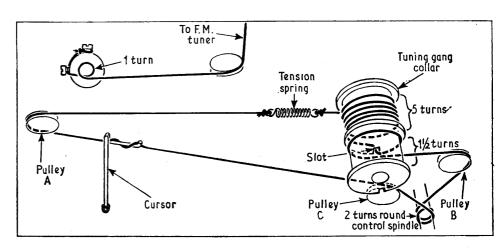
Equipment Required.—An a.m./f.m. signal generator; an audio output meter; a 20,000 Ω /V meter; a 0·1 μ F capacitor; a 3 ohms 3 watt resistor and a bladed type trimming tool.

Connect the 3 ohms resistor across the

Connect the 3 ohms resistor across the output sockets of the channel not used for alignment, and connect the audio output meter across the output sockets of the channel which is used.

F.M. Circuits

1.—Connect the $20,000\Omega/V$ meter switched to its 10v d.c. range across C146 (observe polarity). Connect the



Diagrams of the main tuning drive and f.m. tuning drive assemblies

EKCO SRG395 FERRANTI SRG1073

GENERAL NOTES

Dismantling.—To remove the chassis from the cabinet, first take off the back covers by undoing the securing screws. Disconnect the chassis supply lead from

Disconnect the chassis supply lead from the mains transformer.

Disconnect the pick-up lead and the four loudspeaker leads from the chassis.

Remove the tone and balance control knobs

by slackening their grub screws.

Remove four retaining screws on the chassis mounting straps (access is obtained via the

lower compartment). Withdraw chassis.

Withdraw chassis.

To remove the record changer unit, after disconnecting the mains supply to the motor, release the two spring loaded retaining clips in the baseboard and lift the unit clear.

Loudspeaker Phasing.—To ensure correct phasing of the loudspeakers, each loudspeaker has one terminal coded red which is connected by a red plug to the chassis outlet socket. The red plugs should be inserted into the outer socket of each pair, i.e. into sockets 4 and 6.

Drive Cord Replacement.—To fit a new main drive cord first attach one end of the cord to the tension spring. With the tuning gang fully closed, secure the spring near the lower run of the two section collar on the tuning gang.

tuning gang.

Make five turns anti-clockwise round the inner section, then locate the cord in the vertical pulley slot and wind a further $1\frac{1}{2}$ turns in the same direction on the outer section. from the tuning gang collar pass the cord clockwise round pulley B and twice anti-clockwise round the drive spindle, then back to the return spring via the top pulleys C and A. Tie the cord to the spring under slight tension and affix the cursor to coincide with the left-hand datum mark

sion and affix the cursor to concer-left-hand datum mark.

To fit a new f.m. unit drive, fully close the tuning gang and attach one end of the cord to the slider on the tuner unit. Then place it over the pulley and down to the lower side of the tuning spindle. Make one turn clockwise round the tuning spindle,

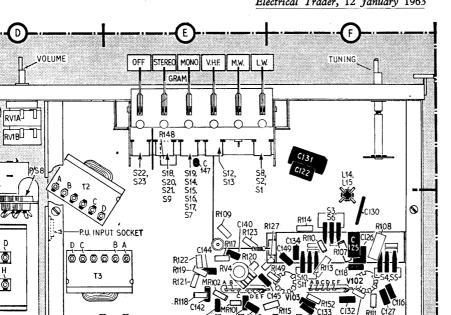
lower side of the tuning spindle. Make one turn clockwise round the tuning spindle, thread the cord inside the lower screw in the collar and attach it to the upper screw.

V.H.F. Slider Switch Drive.—To replace the v.h.f. switch drive cord the v.h.f. pianokey press-button should be in the released position. Attach the new cord to the tension spring and hook the spring to the slider switch.

Draw the cord round the released

switch.

Draw the cord round the pulley and on to the stirrup actuated by the press-button. When the button is depressed the slider should be in the fully drawn out position.



C141 ∏C143∏C168

P/S6 P/S7 L.H. CHANNEL

signal generator to V103, pin 2. Switch receiver to f.m.

EXTERNAL A.M. AERIAL

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- Feed in a 10.7 Mc/s unmodulated signal and adjust L17 (location reference B2) for maximum reading on the
- 3.—Disconnect the d.c. meter from C146 and connect it across C140 (E4). Adjust **L20** (B2) for zero reading on the meter. The meter should swing from one polarity to the other through zero.
- 4.—Reconnect the meter across C146 and transfer the signal generator to V102, pin 2.
- 5.—Feed in a 10.7 Mc/s signal and adjust L10 and L12 (A2) for maximum reading.
- —Disconnect the signal generator from V102 pin 2 and connect it via the 0.1μ F capacitor to the junction R102, C103 (A1). Adjust L6 and L7 (A2) for maximum reading in the meter. Disconnect the meter.
- -Check that with the tuning gang fully closed the f.m. tuner carriage is 1/16 inch from the fully open position. Correct if necessary by rotating the drive collar on the tuning gang shaft. Then check that with tuning gang fully closed the cursor coincides with the datum mark on the scale. Correct if necessary by sliding the cursor along the drive cord.
- 8.—Tune receiver to 92 Mc/s and feed in a 92 Mc/s modulated signal at the aerial sockets. Adjust L4 (A1) for correct calibration, adjust L3 (A1) and C101 (A2) for maximum audio output.

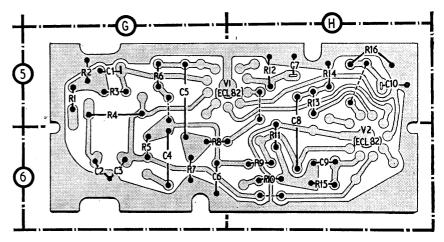
Note: RV4 is correctly set in production and should not be adjusted. If the setting has been accidentally disturbed it should be re-set for minimum noise on an accurately-tuned weak signal.

A.M. Circuits

PS5 PS4 RH.CHANNEL

- —Switch to m.w. and tune receiver to 545m. Connect the signal generator to V102, pin 2. Feed in a 470kc/s 30 per cent modulated signal and adjust L18, L16 (B2) and L13, L11 (A2) for maximum audio
- Disconnect the signal generator from V102 pin 2 and connect it to the a.m. aerial and earth sockets. Tune receiver to 500m. Feed in a 600kc/s signal and adjust L14 (F3) and L8 (B1) for maximum output.
- -Tune receiver to 200m. Feed in a 500kc/s signal and adjust C128 and C117 (B1) for maximum output.
- —Switch to l.w. and tune receiver to 1,400m. Feed in a 214kc/s signal and adjust C166 and L9 (B1) for maximum output.

L8 and L9 are adjusted by sliding the former along the ferrite rod.



Foil-side view of the audio section printed circuit panel giving component connections