

SERVICE MANUAL

The Fisher®

132



WORLD LEADER IN HIGH QUALITY STEREO

TEST EQUIPMENT

MODEL NO. 132

CAUTION:

This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistorized equipment and printed circuitry.

REQUIRED EQUIPMENT

The following test equipment is required to align and to service the Receiver:

- Line Voltage Autotransformer or Voltage Regulator
- AC DC Multimeter
- Accurately Calibrated AC Voltmeter
- Oscilloscope (Flat to 100kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors, 8-ohms, 50 Watts (Minimum Rating)
- Low-Distortion AM-FM Signal Generator
- 10.7 MHz Sweep Generator
- Multiplex Generator
- 455kHz Sweep Generator

FM-TUNER ALIGNMENT

SELECTOR to FM, MODE SWITCH to STEREO, VOLUME MINIMUM

Maintain generator output as low as possible for suitable indication.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
Note: The FM IF circuit utilizes a non-tunable ceramic filter which establishes the IF bandpass. To insure symmetrical tuning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7 MHz as in conventional LC circuits.				
1. IF ALIGNMENT	Connect 10.7 MHz sweep generator in series with a 33K ohm resistor to TP1. Connect ground lead to TP7. Markers are not required.	Position of non-interference.	Scope vertical input TP2 through DIODE IN 4148, 100K resistor and 100pF capacitor as shown. Connect ground lead to chassis.	Adjust first T201, then T200 for maximum gain and symmetry. See FIGURE 1.
2. PRELIMINARY DETECTOR ALIGNMENT	As above.	As above.	Scope vertical input to TP3 through a 100K resistor and 100pF capacitor as shown.	Adjust T202 top and Bottom for maximum gain and symmetry. See FIGURE 2.
Note: 120-ohm composition resistors in series with each lead from the RF generator match the 50-ohm output to the 300-ohm input impedance. Generator output voltage is reduced to one-half at antenna terminals. Signal voltages specified in this table are generator output levels, not antenna voltages.				
3. FRONT END ALIGNMENT		Tuning knob fully CCW.		Center dial pointer on 0 and cement it in place.
4.	Connect FM RF generator through two 120-ohm resistors to FM ANT screw terminals. Set generator to 90 MHz, modulate with 400 Hz to provide ± 75 deviation. Set generator output attenuator as low as possible.	Center of 90 MHz calibration mark on dial.	Scope vertical input and AC-VTVM to Recorder Output.	Adjust L213 then L212 for maximum gain. Repeat above step as required.
5.	Change generator setting to 106 MHz.	Center of 106 MHz calibration mark on dial.	As above.	Adjust TC213 for maximum. Adjust TC212 then TC211 for maximum gain. Repeat the two steps above as required.
6. FINAL DETECTOR ALIGNMENT	As above, except set to position of non-interference near 100 MHz. Set generator output attenuator to 2mV.	Position of non-interference near 100 MHz.	Scope vertical input, distortion meter and AC-VTVM to Record-Output.	Adjust T202 bottom slug for minimum distortion, and then set VR 201 for 1.1V on AC-VTVM.
7. STEREO SEPARATION	As above, (Step 6) except modulation. Modulate LEFT Channel $\pm 67.5\text{kHz}$ -400Hz audio and $\pm 7.5\text{kHz}$ -19kHz pilot carrier.	As above Step 6.	Scope and AC-VTVM to Right Recorder output. Observe STEREO-BEACON LIGHT.	Adjust first VR-302 and then VR-301 for minimum output. Repeat the 2 steps as required.

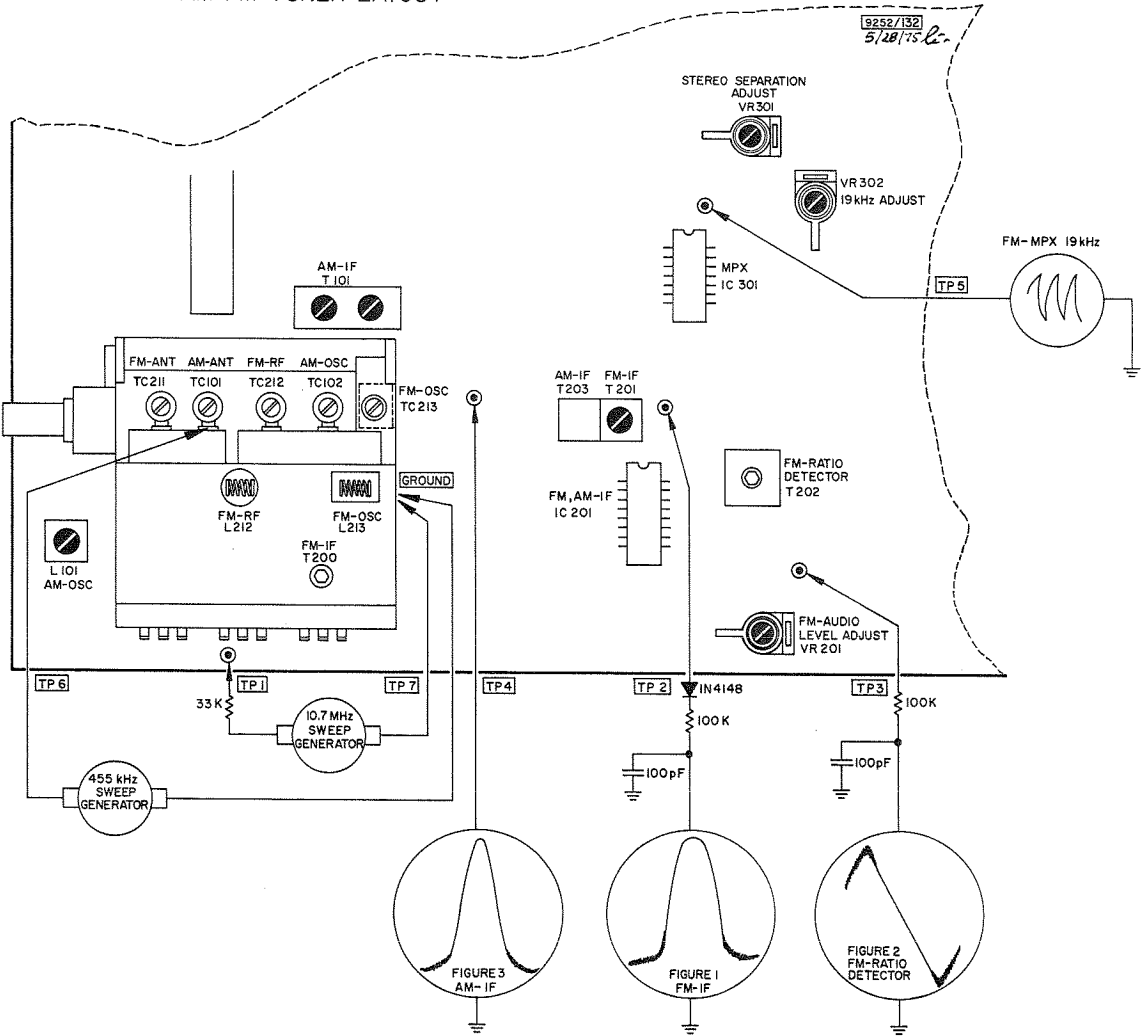
AM-TUNER ALIGNMENT

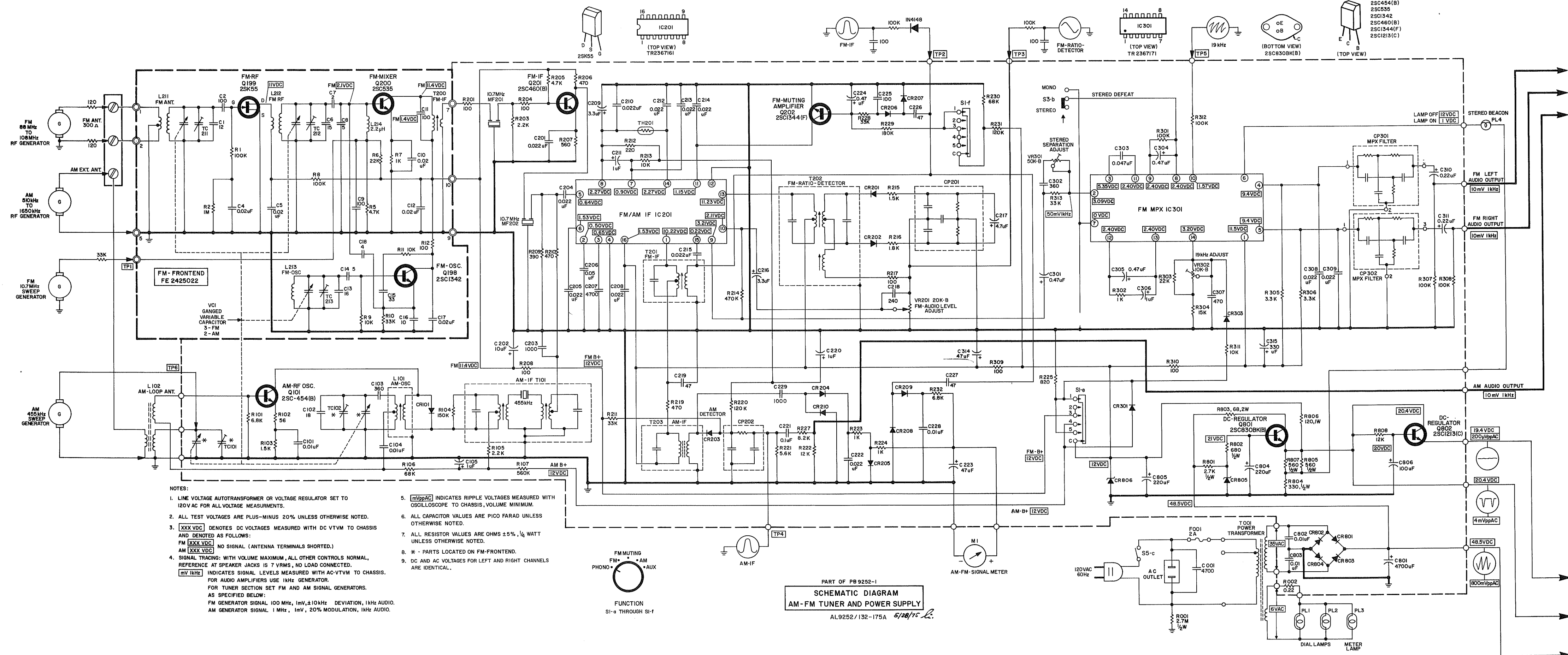
SELECTOR to AM, VOLUME MINIMUM.

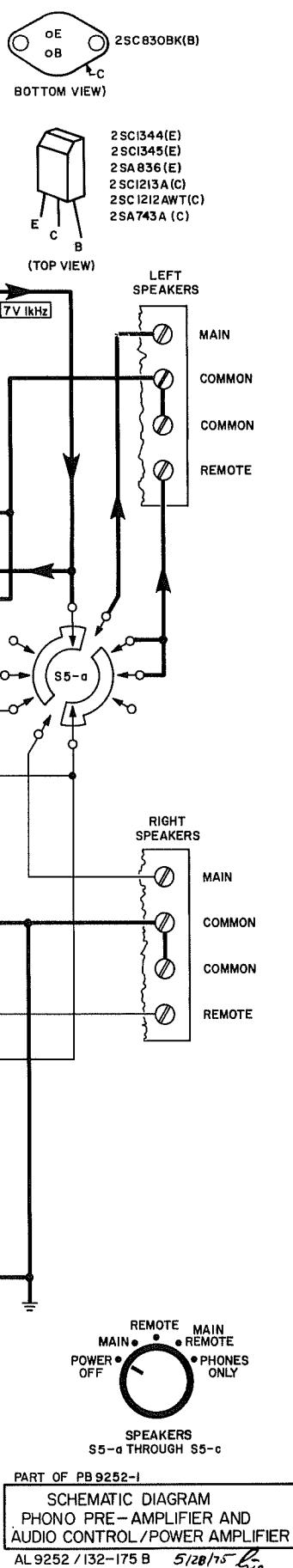
Maintain generator output as low as possible for suitable indication.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM IF	Connect 455kHz sweep generator to AM-EXT-ANT. and GND. terminals. Note: After each adjustment reduce generator output as required.	Position of non-interference.	Scope vertical input to TP4. See FIGURE 3.	Adjust T101 primary and secondary for maximum gain. Repeat above two steps as required. See FIGURE 3.
2. AM FRONT END ALIGNMENT	AM generator to AM-EXT-ANT and GND terminals. Set to 600kHz. Modulate with 30%, 1kHz.	Center of 600kHz calibration mark on dial.	Scope and VTVM to RCDR OUT jack.	Adjust L101 (OSC) and L102 (Loop ANT) for maximum.
3. AM FRONT END ALIGNMENT	Change frequency to 1400 kHz.	Center of 1400kHz calibration mark on dial.	As above.	Adjust TC102 (OSC) and TC101 (ANT.) for maximum. Repeat steps 2 and 3 until optimum alignment is reached.

AM-FM TUNER LAYOUT







CHASSIS PARTS AND MISCELLANEOUS ITEMS

<u>SYMBOL NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
M1	AS3243732	Dress Panel Assembly
	EK3282803	Knob Assembly, Pushbutton, Loudness Contour/Mode/ Tape Monitor
	EK3282951	Knob, Tuning
	EK3282952	Knob, Speakers/Selector/Volume/Balance/Bass/Treble
	EA3916411	Leg with Pad
	N3199293	Dial Scale
	AP3386831	Dial Pointer
	AN438891	Tuning Shaft
	MC2577183	Signal Meter
	ED3920111	Pulley, Tuning Gang
	ET2681353	Terminal — 3 Pin Screw, Antenna
	ET2687662	Terminal 8 Pin Screw, Speakers
	JK2687642	Jacks rear accessory panel
	JK2677231	Jack Headphone
	JK2657281	AC Outlet
	EA51408	Fuse Holder
F001	FL51313-41	Fuse 2A 250V (Standard)
F002, F003	FL51313-43	Fuse 2.5A 250V (Standard)
PL-4	LM2767232	Lamp, Stereo Beacon 8V 30ma (with Leads)
PL-1, PL-2, PL3	LM2767201	Lamp, Dial 6.3V 250ma (Fuse type)
	KK9403041	Cabinet Assembly
	PB2505381	Tuner/Audio/Control Printed Circuit Board
	FE2425022	FM-Front End (Tuner complete)

INTEGRATED CIRCUITS, TRANSISTORS, DIODES

<u>SYMBOL NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
IC201	TR2367161	IC MPC 27C AM-FM-IF
IC301	TR2367171	IC HA1156 FM-MPX
Q706 L, R	TR2327852	Transistor, 2SC830BK(B)
Q707 L, R, Q801		Power NPN
Q702 L, R	TR2327743	Transistor 2SA836(E)
Q704 L, R	TR2327607	Transistor 2SC1212 AWT(C)
Q703 L, R	TR2327293	Transistor 2SC1213A(C)
Q705 L, R	TR2327393	Transistor 2SA743A(C)
Q401, Q402 L, R	TR2327443	Transistor 2SC1344(E)
Q701 L, R	TR2327363	Transistor 2SC1345(E)
Q202	TR2327444	Transistor 2SC1344(F)
Q201	TR0573486	Transistor 2SC460(B) NPN
Q101	TR0573491	Transistor 2SC454(B) NPN
Q802	TR2327333	Transistor 2SC1213(C) NPN
CR201, 202, 208, 209	TR0575005	Diode 1N60P
CR101, 205, 206, 207, 303	TR2337011	Diode 1S2076
CR203, 204, 210	TR0575002	Diode 1N34A
CR801, 802, 803, 804	TR2327031	Diode V03C
CR805	TR2337063	Zener Diode AW01-22
CR806	TR2337101	Zener Diode HZ 12 (A)
CR703 L, R	TR2327041	Diode V06C
CR702	RV2347042	Varistor MV5W
CR701 L, R	RV2347043	Varistor MV5T
TH201	RV2347091	Thermistor 21D27

TRANSFORMERS, COILS, FILTERS, PACKAGED CIRCUITS

<u>SYMBOL NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
T001	TD2217884	Transformer, Power
L101	LC2134431	Coil, AM Oscillator
T101	ZZ2154181	Transformer, AM IF
T203	ZZ2154122	Transformer, AM IF
T201	ZZ2154292	Transformer, FM IF
T202	ZZ2154202	Transformer, FM-Ratio Detector
MF201, 202	ZK2134671	Ceramic Filter 10.7 MHz
L102	LA2757242	AM Ferrite Antenna
CP201	EP0186121	Packaged Circuit RC Network Part of Ratio Detector
CP202	EP0186131	Packaged Circuit RC Network Part of AM-Detector
CP301, 302	EP0186051	Packaged Circuit MPX-Filter

CAPACITORS

<u>SYMBOL NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
C214, 215, 222, 316, 201, 204, 205, 210, 212, 213	CK1245018	Capacitor, Ceramic 0.022uF
C206	CK22348-1	Capacitor, Ceramic 0.05uF 50V
C219, 226, 227	CK0248676	Capacitor, Ceramic 47pF 50V
C402 L, R, 704 L, R, 716 L, R	CK0248720	Capacitor, Ceramic 68pF
C403 L, R	CK0248728	Capacitor, Ceramic 150pF
C225	CK0248684	Capacitor, Ceramic 100pF
C707, L, R	CK0246417	Capacitor, Ceramic 7pF 50V
C802, 803	CK0245408	Capacitor, Ceramic 0.01uF
C228	CK1245017	Capacitor, Ceramic 0.01uF 25V
C717, L, R 718 L, R	CK0248724	Capacitor, Ceramic 100pF 50V
C101, 104	CY22335-1	Capacitor, Mylar 0.01uF
C203, 229	CY22335-3	Capacitor, Mylar 1000pF 50V
C207	CY22335-8	Capacitor, Mylar 4700pF
C208, 308, 309	CY22335-18	Capacitor, Mylar 0.022uF
C303, 221	CY22335-22	Capacitor, Mylar 0.047uF
C406 L, R	CY22335-21	Capacitor, Mylar 2200pF
C407 L, R 714 L, R	CY22335-25	Capacitor, Mylar 8200pF
C713 L, R	CY22335-16	Capacitor, Mylar 0.068uF
C002 L, R C602 L, R	CY22335-14	Capacitor, Mylar 0.033uF
C708 L, R	CY1276011	Capacitor, Mylar 0.1uF
C310, 311, 711 L, R	CL22305-8	Capacitor, Tantalum .22uF 35V
C712 L, R, 105, 211, 220, 306, 701 L, R	CE1252811	Capacitor, Electrolytic 1uF 50V
C218	CE1252811	Capacitor, Electrolytic 1uF 50V
C50332-21	C50332-21	Capacitor, Styrol 240pF
C601 L, R C307	CP0221327	Capacitor, Styrol 470pF 50V
C103, C302	CP0228324	Capacitor, Styrol 360pF 50V
C209, 216, 401 L, R	CE1252813	Capacitor, Electrolytic 3.3uF 50V
C217	CE1252815	Capacitor, Electrolytic 4.7uF 50V
C223, C404 L, R	CE0252225	Capacitor, Electrolytic 47uF 6.3V
C315	CECDV330/16	Capacitor, Electrolytic 330uF 16V
C409	CE0252625	Capacitor, Electrolytic 47uF 25V
C305	CE22342-15	Capacitor, Electrolytic 220uF 16V
C703 L, R	CE1252732	Capacitor, Electrolytic 220uF 63V
C804	CE22342-14	Capacitor, Electrolytic 220uF 25V
C715 L, R, 710 L, R	CE22342-28	Capacitor, Electrolytic 10uF 35V
C408 L, R, C202		
C705 L, R	CE1252832	Capacitor, Electrolytic 220uF 35V
C702 L, R	CE22342-9	Capacitor, Electrolytic 100uF 50V
C706	CE0252231	Capacitor, Electrolytic 100uF 6.3V
C709 L, R	CECDV2200/35	Capacitor, Electrolytic 2200uF 35V
C806	CE22342-11	Capacitor, Electrolytic 100uF 25V
C224, 301, 304, 305	CE22342-1	Capacitor, Electrolytic 0.47uF 50V
C314	CE1252525	Capacitor, Electrolytic 47uF 16V
C405	CE22342-2	Capacitor, Electrolytic 1uF 50V
C102	CK0248496	Capacitor, Ceramic 18pF
C801	CE0250335	Capacitor, Electrolytic 4700uF 63V
C001	CK0243873	Capacitor Ceramic 4700pF 150 VAC

RESISTORS

SYMBOL NO.	PART NO.	DESCRIPTION
R718 L, R	RC20BF100J	Resistor 10 ohm ½W
R201, 208, 217, 204, 309, 310	RF25DC101J	Resistor 100 ohm: ¼W
R712 L, R	RP0119521	Resistor 100 ohm .2W
R223, 224, 302, 722, 501 L, R, 412 L, R	RF25DC102J	Resistor 1k ohm ¼W
R729 L, R	EC20BF102J	Resistor 1k ohm ½W
R213, 311, 414 L, R	RF25DC103J	Resistor 10k ohm ¼W
602 L, R		
R312, 301, 307, 308, 413 L, R, R502 L, R	RF25DC104J	Resistor 100k ohm ¼W
R703 L, R	RF25DC114J	Resistor 110k ohm ¼W
R713 L, R	RW200W120J	Resistor 12 ohm 2W
R806	RW200W121J	Resistor 120 ohm 2W
R725 L, R	RF25DC122J	Resistor 1.2k ohm ¼W
R222, R808	RF25DC123J	Resistor 12k ohm ¼W
R220, R231	RF25DC124J	Resistor 120k ohm ¼W
R714 L, R, R716 L, R	RF25DC151J	Resistor 150 ohm ¼W
R215, 103	RF25DC152J	Resistor 1.5k ohm ¼W
R304	RF25DC153J	Resistor 15k ohm ¼W
R104, 401 L, R	RF25DC154J	Resistor150k ohm ¼W
R216, 706 L, R	RF25DC182J	Resistor 1.8k ohm ¼W
R727 L, R	RF25DC183J	Resistor 18k ohm ¼W
R229	RF25DC184J	Resistor 180k ohm ¼W
R002	RP1119013	Resistor .22 ohm 1W
R203, 105, 604 L, R	RF25DC222J	Resistor 2.2k ohm ¼W
R303, R601 L, R	RF25DC223J	Resistor 22k ohm ¼W
R604 L, R		
R212	RF25DC224J	Resistor 220k ohm ¼W
R408 L, R	RF25DC271J	Resistor 270 ohm ¼W
R726 L, R	RP0119426	Resistor 270 ohm 1W
R708 L, R, 721 L, R	RF25DC272J	Resistor 2.7k ohm ¼W
R801	RC20BF272J	Resistor 2.7k ohm ½W
R001	RC20BF275J	Resistor 2.7M ohm ½W
R715 L, R	RF25DC330J	Resistor 33 ohm ¼W
R724 L, R	RF25DC331J	Resistor 330 ohm ¼W
R804	RC20BF331J	Resistor 330 ohm ½W
R305, R402 L, R	RF25DC332J	Resistor 3.3k ohm ¼W
R306, R603 L, R		
R313, R228, R211, R403L, R, 409 L, R	RF25DC333J	Resistor 33k ohm ¼W
R209, 723 L, R	RF25DC391J	Resistor 390 ohm ¼W
R406 L, R, R704	RF25DC392J	Resistor 3.9k ohm ¼W

RESISTORS

SYMBOL NO.	PART NO.	DESCRIPTION
R717 L, R	RP0119127	Resistor .47 ohm 2W
R709 L, R	RF25DC470J	Resistor 47 ohm ¼W
R206, 210, 219, R405 L, R	RF25DC471J	Resistor 470 ohm ¼W
R720 L, R, R205	RF25DC472J	Resistor 4.7k ohm ¼W
R214, 230	RF25DC474J	Resistor 470k ohm ¼W
410 L, R		
R102	RF25DC560J	Resistor 56 ohm ¼W
R207, 707 L, R	RF25DC561J	Resistor 560 ohm ¼W
R805, 807	RC20BF561J	Resistor 560 ohm ½W
R221, 415 L, R	RF25DC562J	Resistor 5.6k ohm ¼W
411 L, R		
R107	RF25DC564J	Resistor 560k ohm ¼W
R803	RW200W680J	Resistor 68 ohm 2W
R802	RC20BF681J	Resistor 680 ohm ½W
R232, 101, 719 L, R	RF25DC682J	Resistor 6.8k ohm ¼W
R230, 106, 404 L, R	RF25DC683J	Resistor 68k ohm ¼W
R225, 407 L, R	RF25DC821J	Resistor 820 ohm ¼W
R227	RF25DC822J	Resistor 8.2k ohm ¼W
R701 L, R, 416	RF25DC823J	Resistor 82k ohm ¼W

CONTROLS, TRIMMERS, SWITCHES

SYMBOL NO.	PART NO.	DESCRIPTION
VR702 L, R, VR701 L, R	RV0151712	Resistor, Variable 20K Bass/Treble
VR602	RV0151716	Resistor, Variable 250K Balance
VR601 L, R	RV0151705	Resistor, Variable 100K Volume
VR301	RV0151225	Resistor, Variable 50K FM MPX Stereo Separation Adjustment
VR201	RV0151281	Resistor, Variable 20K FM Audio Level Adjustment
VR302	RV0151224	Resistor, Variable 10K FM MPX Adjustment
S5	SR2617503	Switch, Rotary Power/Speaker
S2, S3, S4	SP2637701	Switch Pushbutton, Loudness Contour/Mode/Tape Monitor
S1	SR3617362	Switch Rotary, Selector-Function

PARTS LIST FM FRONT END FE2425022

RESISTORS

SYMBOL NO.	PART NO.	DESCRIPTION
R1, 8	RF25DC104J	Resistor 100k ohm
R2	RF25DC105J	Resistor 1M ohm
R5	RF25DC472J	Resistor 4.7k ohm
R6	RF25DC223J	Resistor 22k ohm
R7	RF25DC102J	Resistor 1k ohm
R9, 11	RF25DC103J	Resistor 10k ohm
R10	RF25DC333J	Resistor 33k ohm
R12	RF25DC101J	Resistor 100 ohm

VARIABLE AND TRIMMER CAPACITORS

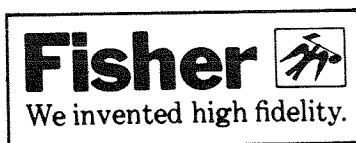
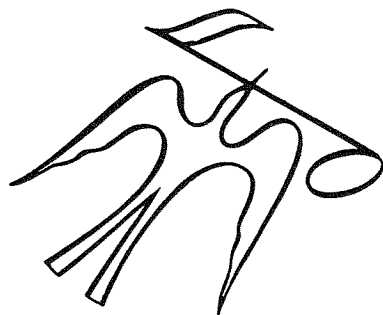
SYMBOL NO.	PART NO.	DESCRIPTION
VC1	RV9252-1	Variable Capacitor w/Trimmer

TRANSISTORS

SYMBOL NO.	PART NO.	DESCRIPTION
Q199	TR2SK55	Transistor 2SK55
Q200	TR2SC535	Transistor 2SC535
Q198	TR2SC1342	Transistor 2SC1342

CAPACITORS

SYMBOL NO.	PART NO.	DESCRIPTION
C1	CK22344-6	Capacitor, Ceramic 12pF 50V
C2, 9, 11	CK22351-1	Capacitor, Ceramic 100pF 50V
C4, 5, 10, 12, 17	CK22355-3	Capacitor, Ceramic .02uF 50V
C8	CK22344-1	Capacitor, Ceramic 5pF 50V
C7	CK22346-3	Capacitor, Ceramic 2pF 50V
C13	CKFB112u-13	Capacitor, Ceramic 16pF RH
C14	CKFB112u-14	Capacitor, Ceramic 5pF CH
C15	CKFB112u-15	Capacitor, Ceramic 33pF CH
C16	CKFB112u-16	Capacitor, Ceramic 10pF CH
C18	CK22346-5	Capacitor, Ceramic 4pF 50V
C6	CK22344-9	Capacitor, Ceramic 15pF 50V



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