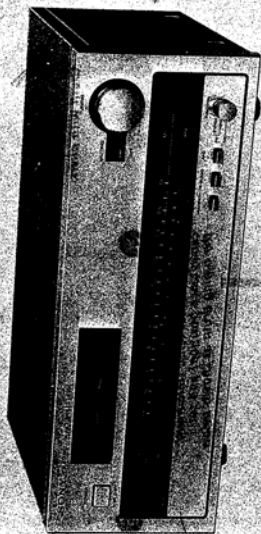


MEMO

# ST-4950

USA Model  
UK Model  
AEP Model  
PX Model



## FM STEREO / FM-AM TUNER

### SPECIFICATIONS

#### FM SECTION

Tuning range: 87.5 - 108 MHz  
Intermediate frequency: 10.7 MHz  
Antenna terminals: 300 Ω, balanced  
Sensitivity: 1.9 μV (5.5 dB), IHF  
1.5 μV (3.5 dB), S/N = 26 dB  
(1 kHz, 40 kHz deviation)  
Image rejection: 70 dB  
IF rejection: 100 dB  
Spurious rejection: 100 dB  
AMI suppression: 56 dB  
Capture ratio: 1.0 dB  
Selectivity: 80 dB, IHF  
S/N ratio: 70 dB  
Frequency response: 20 - 15,000 Hz ±1 dB  
Harmonic distortion: Mono: 0.15%, Stereo: 0.3%  
at 400 Hz, 100% (75 kHz deviation) modulation  
1 kHz

Stereo separation: Greater than 40 dB at 400 Hz and 1 kHz

19 kHz, 38 kHz suppression: 60 dB (USA Model)

SCA suppression: Less than 5 μV

Muting level: 60 dB (USA Model)

Antenna: Built-in antenna and external antenna terminal

Sensitivity: 250 μV/m (48 dB/m), built-in antenna  
100 μV/m (40 dB/m), external antenna

Image rejection: 45 dB at 1,000 kHz

#### GENERAL

S/N ratio: 50 dB  
Harmonic distortion: 0.5%

Outputs: FIXED: 750 mV, 10 kΩ  
VARIABLE: 0-2 V, 3 kΩ  
FM DISCRI: 150 mV, 2.2 kΩ

Circuits: Fm stereo, fm/fm superheterodyne tuner

Power requirements: 120 V ac, 60 Hz (USA Model)  
110, 127, 220 or 240 V ac, 50/60 Hz (UK, AEP Model)

Power consumption: 100, 120, 220 or 240 V ac, 50/60 Hz (PX Model)  
25 W (USA Model)  
25 W (UK, AEP, PX Model)

Dimensions: USA Model:  
Approx. 430(w) x 168(h) x 331(d) mm  
16 7/8(w) x 6 5/8(h) x 13(d) inches

UK, AEP, PX Model:  
Approx. 450(w) x 168(h) x 331(d) mm  
18 1/8(w) x 6 5/8(h) x 13(d) inches

including projecting parts and controls

Weight: USA Model: 7.7 kg, 17 lb (net)  
Approx. 10 kg, 22 lb 1 oz (with shipping carton)

UK, AEP, PX Model:  
Approx. 8.6 kg, 18 lb 15 oz (net)  
Approx. 10.9 kg, 24 lb (with shipping carton)

A-M SECTION

Tuning range: 530 - 1,605 kHz

Intermediate frequency: 455 kHz (USA, PX Model)  
488 kHz (UK, AEP Model)

Antenna: Built-in antenna and external antenna terminal

Sensitivity: 250 μV/m (48 dB/m), built-in antenna  
100 μV/m (40 dB/m), external antenna

Image rejection: 45 dB at 1,000 kHz

# SONY

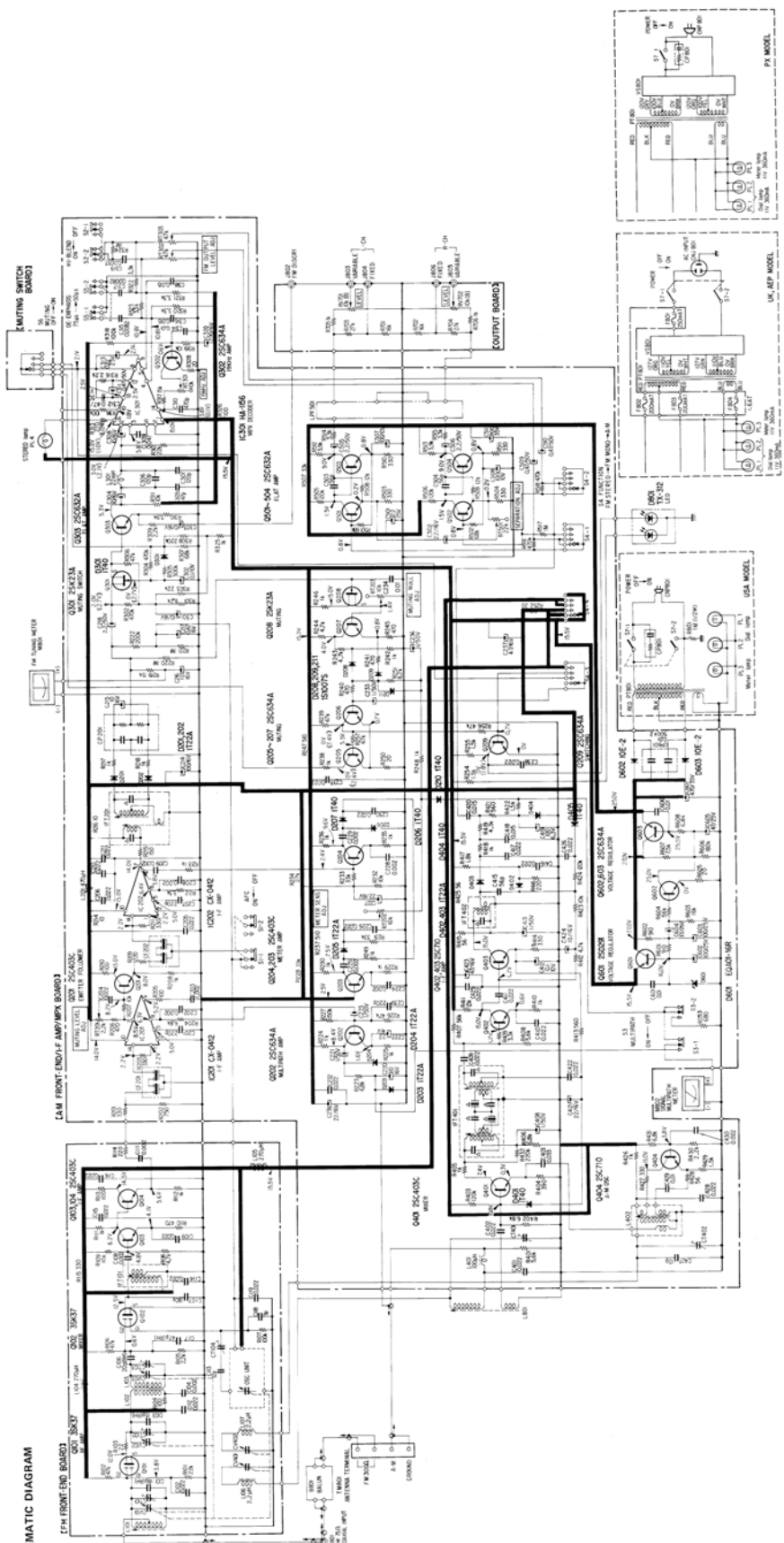
## SERVICE MANUAL





SECTION 4  
DIAGRAMS

4.1. SCHEMATIC DIAGRAM



Ref. No.	Description	Position
S1	AFC SW	OFF
S2	MULTIPLY SW	OFF
S3	FUNCTION SW	FM STEREO
S4	FUNCTION SW (FM STEREO-FM MONO-AM)	75 μs
S5	DE-EMPHASIS SW (50 μs - 75 μs)	OFF
S6	MUTING SW	OFF
S7	POWER SW	OFF

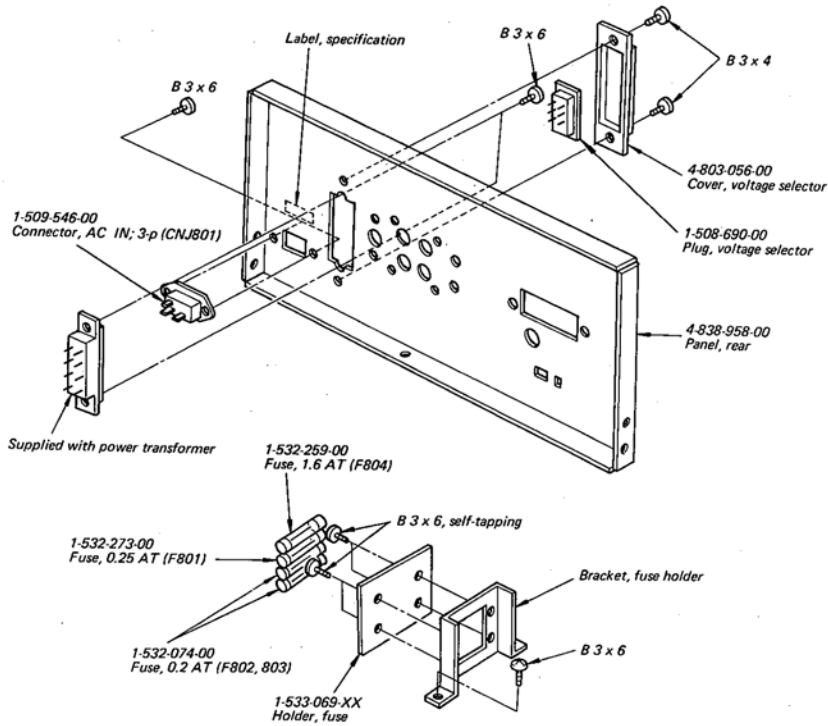
Note: All resistance values are in ohms. k = 1,000 Ω = 1,000 k. All capacitance values are in μF except as indicated with p. All voltages are dc, measured with a VOM which has an input impedance of 20k ohms/volt. No signal in. Voltage variations may be noted because of normal production tolerances.

< : Stereo operation  
> : Muting switch "ON"  
Capacitors marked \* are built in transformers.

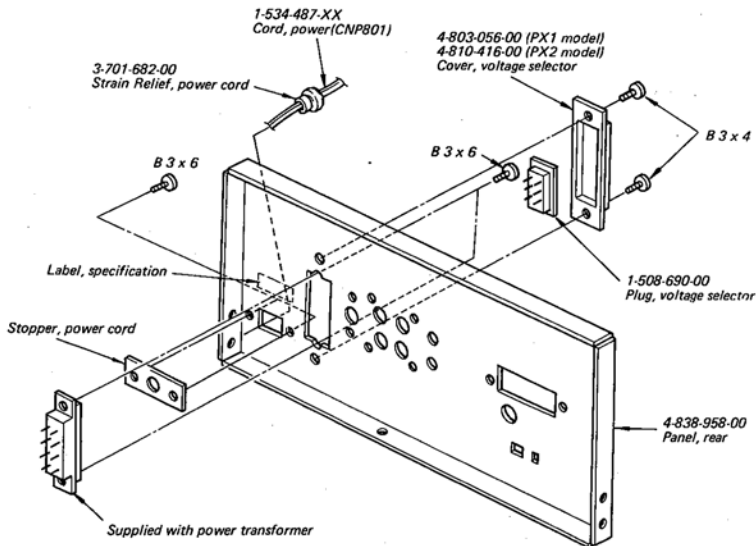




**5-2.**  
**(AEP, UK Model)**



**(PX Model)**



**Note:**

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head





**SECTION 6  
ELECTRICAL PARTS LIST**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
<b>CIRCUIT BOARDS</b>		
A-4344-015-A		Fm Front-end, complete
A-4351-030-A		Am Front-end/I-f Amp/MPX, complete (USA, PX model)
A-4351-044-A		Am Front-end/I-f Amp/MPX, complete (AEP, UK model)
1-583-898-00		Muting Switch
1-583-901-00		Output

**SEMICONDUCTORS**

**Transistors**

Q101,102	3SK37 (FET)
Q103,104	2SC403C
Q201	2SC403C
Q202	2SC634A
Q203,204	2SC403C
Q205~207	2SC634A
Q208	2SK23A (FET)
Q209	2SC634A
Q301	2SK23A (FET)
Q302	2SC634A
Q303	2SC632A
Q401	2SC403C
Q402~404	2SC710
Q501~504	2SC632A
Q601	2SD291
Q602,603	2SC634A

**ICs**

IC201,202	CX-0412
IC301	HA-1156

**Diodes**

D201~205	1T22A
D206,207	1T40
D208,209	1S1007S
D210	1T40

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
D211		1S1007S
D301		1T40
D401		1T40
D402,403		1T22A
D404,405		1T40
D601		EQA01-16R
D602,603		10E-2
D801		TX-312

**TRANSFORMERS, COILS AND INDUCTORS**

B801	1-417-014-XX	Balun
IFT101	1-403-295-00	IFT, 10.7 MHz
IFT201	1-403-964-00	Transformer, discriminator
IFT401	1-403-963-00	IFT, a-m
IFT402	1-403-149-00	IFT, a-m
L101	1-401-601-00	Coil, fm antenna
L104,105	1-407-174-XX	Microinductor, 270 $\mu$ H
L106,107	1-407-182-XX	Microinductor, 2.2 $\mu$ H
L201	1-407-661-XX	Microinductor, 470 $\mu$ H
L301	1-407-418-00	Shielded Inductor, 22mH
L401	1-407-169-XX	Microinductor, 100 $\mu$ H
L402	1-405-656-00	Coil, a-m osc
L801	1-401-621-00	Ferrite-rod Ant, a-m
PT801	1-442-405-00	Transformer, power (USA model)
	1-442-500-00	Transformer, power (AEP, UK model)
	1-442-520-00	Transformer, power (PX model)

**CAPACITORS**

All capacitors are in  $\mu$ F and of ceramic unless otherwise noted. (p =  $\mu$  $\mu$ , elect = electrolytic)  
50 or less working volts are omitted except for electrolytic type.

C101	1-102-670-11	18 p
C102	1-101-924-11	0.022
C103	1-102-668-11	15 p
C104	1-102-257-11	0.0022

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C106	1-102-671-11	20 p	C303,304	1-121-916-11	10 16 V elect
C107	1-102-848-11	180 p	C305	1-101-880-11	47 p
C108	1-101-919-11	0.0022	C306,307	1-102-107-11	120 p
C109	1-101-924-11	0.022	C308	1-121-916-11	10 16 V elect
C111	1-101-919-11	0.0022	C309	1-105-681-12	0.047 mylar
C112	1-101-924-11	0.022	C310	1-103-717-11	470 p styrol
C113	1-102-510-11	12 p	C311,312	1-121-726-11	0.47 50 V elect
C114~116	1-101-924-11	0.022	C313	1-127-091-11	0.22 25 V solid aluminum
C117	1-102-887-11	47 p	C314	1-105-673-12	0.01 mylar
C118	1-102-876-11	3 p	C315	1-105-512-12	0.0082 mylar
C119	1-101-924-11	0.022	C316	1-105-515-12	0.015 mylar
C201	1-102-110-11	220 p	C317	1-105-512-12	0.0082 mylar
C202,203	1-101-919-11	0.0022	C318	1-105-515-12	0.015 mylar
C204~206	1-101-924-11	0.022	C319	1-105-667-12	0.0033 mylar
C207	1-102-110-11	220 p	C320	1-121-421-11	220 16 V elect
C208,209	1-101-919-11	0.0022	C401,402	1-101-924-11	0.022
C210,211	1-101-924-11	0.022	C403	1-105-679-12	0.033 mylar
C214	1-121-415-11	100 16 V elect	C408	1-121-391-11	1 50 V elect
C215,216	1-121-651-11	10 16 V elect	C409~411	1-101-924-11	0.022
C217	1-127-204-11	0.47 16 V solid aluminum	C412	1-127-019-11	0.1 10 V solid aluminum
C218	1-123-050-11	2.2 50 V elect	C413	1-121-391-11	1 50 V elect
C220	1-121-651-11	10 16 V elect	C415	1-101-884-11	56 p
C221	1-121-391-11	1 50 V elect	C416,417	1-101-924-11	0.022
C222	1-121-479-11	22 16 V elect	C418	1-105-675-12	0.015 mylar
C223	1-121-391-11	1 50 V elect	C419	1-121-413-11	100 6.3 V elect
C224,225	1-101-919-11	0.0022	C420	1-105-675-12	0.015 mylar
C226	1-101-924-11	0.022	C421	1-121-479-11	22 16 V elect
C227	1-121-479-11	22 16 V elect	C422	1-101-924-11	0.022
C228,229	1-101-919-11	0.0022	C423	1-121-409-11	47 16 V elect
C230	1-101-924-11	0.022	C424	1-121-651-11	10 16 V elect
C231	1-121-479-11	22 16 V elect	C425,426	1-101-924-11	0.022
C232	1-101-924-11	0.022	C427	1-102-947-11	10 p
C233	1-121-391-11	1 50 V elect	C428	1-101-924-11	0.022
C234	1-105-673-12	0.01 mylar	C429	1-105-673-12	0.01 mylar
C235	1-101-924-11	0.022	C430	1-101-924-11	0.022
C236	1-121-391-11	1 50 V elect	C501	1-121-480-11	22 25 V elect
C237	1-121-409-11	47 16 V elect	C502	1-127-205-11	2.2 16 V solid aluminum
C238	1-101-924-11	0.022	C503,504	1-101-884-11	56 p
C239	1-102-110-11	220 p	C505,506	1-123-050-11	2.2 50 V elect
C301	1-121-651-11	10 16 V elect	C507,508	1-121-414-11	100 10 V elect
C302	1-127-019-11	0.1 10 V solid aluminum	C509,510	1-121-911-11	0.47 50 V elect

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
C511	1-121-357-11	100	35 V elect
C601	1-105-673-12	0.01	mylar
C602,603	1-121-416-11	100	25 V elect
C604	1-121-404-11	33	25 V elect
C605	1-121-410-11	47	25 V elect
C606	1-105-673-12	0.01	mylar
C607	1-121-361-11	470	35 V elect
CT104	1-141-138-00	Trimmer	
CT401,402	1-141-147-00	Trimmer	

### RESISTORS

All resistors are in  $\Omega$ . Regular-type  $\frac{1}{4}$  W, carbon resistors are omitted. Check schematic diagram for the resistance values.  
(k = 1000, M = 1000 k)

R313	1-202-559-11	270	$\frac{1}{2}$ W	composition
R801	1-202-719-11	1 M	$\frac{1}{2}$ W	composition (USA model only)
RT201	1-222-762-00	2.2 k, adjustable		
RT202,203	1-222-752-00	10 k, adjustable		
RT301				
RT302,303	1-222-765-00	47 k, adjustable		
RT501	1-222-764-00	22 k, adjustable		
RV701,702	1-224-578-00	10 k (B), variable; LEVEL ADJUST		

### SWITCHES

S1~3	1-516-700-00	Pushbutton, 3-key; AFC/HI-BLEND/MULTIPATH	
S4	1-516-701-00	Rotary-slide, FUNCTION	
S5	1-514-777-XX	Slide, de-emphasis	
S6	1-516-481-00	Lever-slide, MUTING	
S7	1-516-628-00	Pushbutton, POWER (AEP, UK model)	
	1-516-698-00	Pushbutton, POWER (USA, PX model)	

### FILTERS

CF201,202	1-527-248-11	Fm I-f, ceramic; 10.70 MHz (red)
	1-527-248-21	Fm I-f, ceramic; 10.67 MHz (yellow)
	1-527-248-31	Fm I-f, ceramic; 10.73 (orange)
	1-527-248-41	Fm I-f, ceramic; 10.64 MHz (black)
	1-527-248-51	Fm I-f, ceramic; 10.76 MHz (black)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
LPF501	1-231-219-00	Low-pass

### FUSES (AEP, UK Model)

F801	1-532-273-00	250 mA T
F802,803	1-532-074-00	200 mA T
F804	1-532-259-00	1.6 AT

### MISCELLANEOUS

CNJ801	1-509-546-00	Connector, AC IN; 3-p (AEP, UK model)
CNP801	1-534-487-XX	Cord, power (PX model)
	1-534-985-XX	Cord, power (USA model)
CP201	1-231-278-00	Encapsulated Component
CP601	1-102-355-11	Capacitor, ceramic; 0.01 $\mu$ F (500 V) (2 pieces)
CP801	1-231-057-00	Encapsulated Component (USA, PX model)
J801	1-508-170-00	Terminal, FM75 $\Omega$ COAXIAL INPUT
J802	1-507-467-00	Jack, phono; 1-p; FM DISCRI
J803~806	1-507-416-00	Jack, phono; 4-p; VARIABLE/FIXED
M801	1-520-228-00	Meter, FM TUNING
M802	1-520-229-00	Meter, SIGNAL/MULTIPATH
PL1~3	1-518-116-00	Lamp, dial/meter 11 V 360 mA
PL4	1-518-169-XX	Lamp, STEREO 4.5 V 40 mA
TM801	1-536-446-XX	Terminal Strip, 4-p; ANTENNA
VS801	1-508-690-00	Plug, voltage selector (AEP, UK, PX model)
	1-533-069-XX	Holder, fuse (AEP, UK model)
	1-533-090-00	Holder, dial lamp
	1-536-392-XX	Terminal Strip, 1L1 (B)

<u>Part No.</u>	<u>Description</u>
<b>ACCESSORIES</b>	
X-4490-002-0	Cloth Ass'y, polishing
1-501-083-21	Ribbon Antenna, fm
1-506-305-12	Plug, F (FP-33)
1-534-049-31	Cord, connection (RK-74)
1-534-819-11	Cord, power (UK model)
3-780-509-11	Manual, instruction (AEP, UK model)
3-780-509-21	Manual, instruction (USA, PX model)

<u>Part No.</u>	<u>Description</u>
<b>SCREWS</b>	
All screws are Phillips (cross recess) type unless otherwise noted.	
7-682-148-01	P 3 × 8
7-682-165-01	P 4 × 16
7-682-547-01	B 3 × 6
7-682-947-01	PSW 3 × 6
7-682-961-01	PSW 4 × 8 B 3 × 4
7-685-245-01	K 3 × 6, self-tapping
7-685-645-31	BV 3 × 6, self-tapping
7-685-646-31	BV 3 × 8, self-tapping
7-685-656-01	B 3.5 × 12, self-tapping

<b>MISCELLANEOUS</b>	
7-624-109-01	Retaining Ring
7-684-023-01	N 3