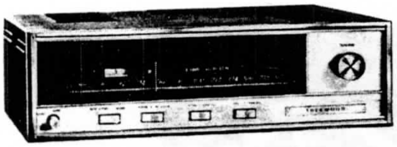
TUNER SERVICE INFORMATION



Sherwood

MODEL S-3300
FM STEREO TUNER w/MICRO-CIRCUITS AND FET

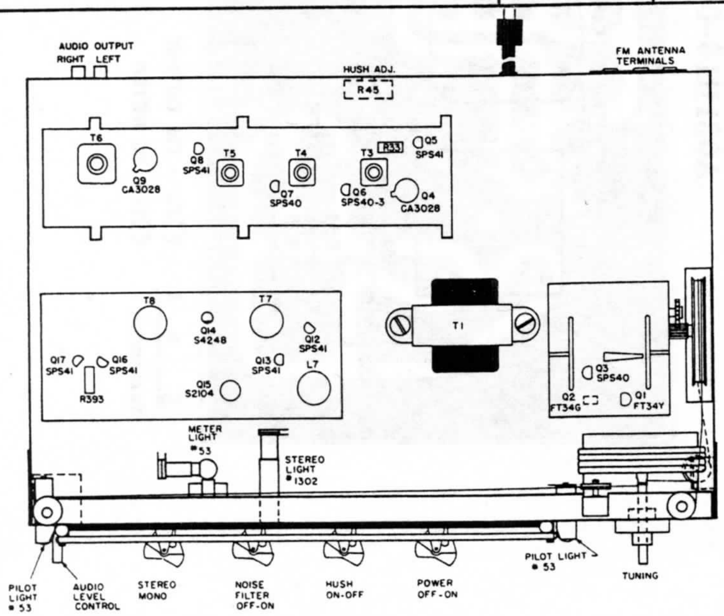
SER. NO. S705505 thru S706392

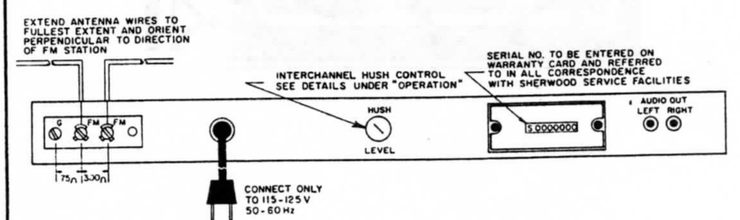
SPECIFICATIONS

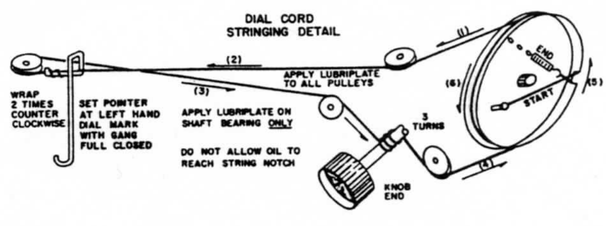
IHFM SENSITIVITY:	1.8 μv for -30db. noise and distortion below 100% mod
TYPICAL SENSITIVITY:	0.95 μv for 20 db quieting, 5.0 μv for 50 db. S/N
TYPICAL SELECTIVITY:	250KHz at -6 db., 820 KHz at -60 db.
FM RATIO DETECTOR:	800 KHz peak/peak
CAPTURE RATIO:	2.2 db.
TUNING RANGE:	87.5 - 108.5MHz
FREQUENCY RESPONSE:	FM: 20-20,000 Hz $\pm$1/2 db; MX: 20-15,000 Hz $\pm$1/2 db
DISTORTION:	Less than 0.25%IM at 100% mod. (60Hz/7KHz: 4/1 W/std. pre-emphasis) Less than 0.25% harmonic at 100% mod., 400Hz.
HUM AND NOISE LEVEL:	70 db below 100% mod.
STABILITY:	$\pm$10KHz ($\pm$.01%)
NOISE MUTING RANGE:	0 db. to 40 db. audio reduction
OUTPUT:	1.0 volts at 100% FM
OSCILLATOR RADIATION:	3 db. below FCC requirements
ANTENNA:	300-ohm balanced
CONTROLS:	Audio Level, Automatic Stereo-Mono, Noise Filter, Hush Switch, Power Switch, Tuning
SEPARATION:	35 db.
COMPLEMENT:	12 Silicon Transistors, 12 Silicon Diodes, 1 Silicon Zener Diode, 2 FET's, 2 micro-circuits
POWER CONSUMPTION:	15W, 115-125V, 50-60 Hz.
DIMENSIONS:	14 x 4 x 10-1/4 in. deep.
SHIPPING WEIGHT:	10-1/2 lbs.

PARTS LIST

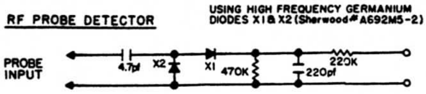
DESCRIPTION	PART NO.	PRICE	DESCRIPTION	PART NO.	PRICE
Micro-circuit (IC), (Q4, 9)	CA3028	$4.01	Diode, Silicon (X2, 4, 6, 7, 8, 9, 10, 17)	B692X13	1.22
Transistor, NPN (Q3, 7)	SPS40-1, 2, 3	0.90	Rectifier, power supply (X14)	A692T5	0.48
Transistor, NPN (Q6)	SPS40-3	0.90	Diode, Zener 13V. +5% (Z1)	A694X1	1.21
Transistor, NPN (Q5, 8, 12, 13, 16, 17)	SPS41	0.81	Tuning Meter	A550G3	6.30
Transistor, PNP (Q14)	S4248	0.50	Transformer, Power (T1)	A922S1-4A	3.60
Transistor, NPN (Q15)	S2104	0.92	Transformer, Power, Export (T1)	2A922S1-4AX	7.07
Transistor, NPN (Q18)	37649	1.80	Transformer, FM IF (T5)	67-284	2.61
Transistor, FET (Yellow dot) (Q1)	FT34Y	2.70	Transformer, FM IF (T3, 4)	65-252D	2.75
Transistor, FET (Green dot) (Q2)	FT34G	2.70	Transformer, FM Detector (T6)	65-387F	4.92
Lytic, 1μf, 25V. (C360, 385, 387)	B120X7	0.59	Transformer, FM Mixer (L3)	68-131	1.13
Lytic, 0.5μf, 50V. (C20, 31, 34)	B120B3	0.72	Transformer, 19KHz (T7)	67-158	2.43
Lytic, 8μf, 40V. (C374)	B120B8	0.45	Transformer, 38KHz (T8)	65-290A	1.52
Lytic, 250μf, 35V. (C343, 344, 347)	B120B33	0.86	Transformer, FM Converter (T2)	67-101	2.06
Lytic, 250μf, 15V. (C345)	B120B74	0.59	Coil, Balun (L1)	67-288	0.86
Knob, Large (unmarked)	B467X2	2.16	Coil, 67KHz (L7)	65-274B	0.96
Knob, small	460AB5	0.15	Coil, RF Choke (L5, 6)	64-103	0.52
Light bulb, pilot, #53	630B53	0.16	Switch, Rocker, SPDT (Black slide) (S1, 3, 4)	A864T24	0.77
Light bulb, stereo, #1302	630B1302	0.64	Switch, Rocker, SPDT (Red or Grey Slide) (S2)	A864T25	0.81
Dial Glass	B322R7-0	1.13			
Control, level, 15K ohm, dual (R398A, B)	A670S2-1	2.61			
Control, hush, 15K ohm (R45)	A670R15-0	0.81			
Pot., P.C., 25K ohm (R393)	A675T8	0.45			
Pot., P.C., 250K ohm (R33)	A675T9	0.72			





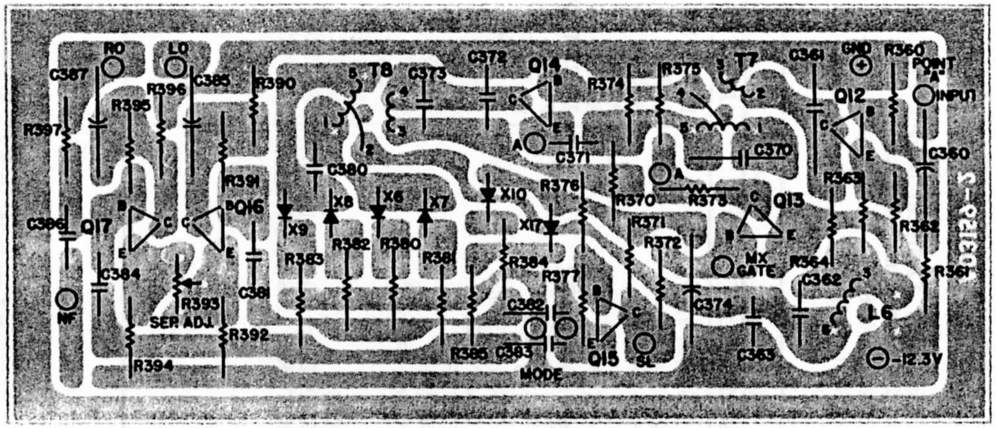


ALIGNMENT CHART

		switch position	signal generator input: coupling	signal generator input: freq.	signal generator input: modulation	dial setting	indicating instrument	adjust	indication
FM ALIGNMENT	1	Selector FM Mode: Mono	none	none	none	pt. of no interf.	DC-VTVM across R36 1KΩ	R33 bias adj	2.0 V-DC
	2	"	"	"	"	"	Probe at Q6 base, CRO: HORIZ. EXT. MODULATION (Audio in all steps).	Short T5 Pin 4 to Gnd. (Short jumper wire).	
									
	3	"	300 Ant. Input	90MHz	400 or 60Hz ±300KHz FM	90MHz	"	L4, L2, L3, T2 & T3 top & bottom	IF response for max. deflection & symmetry about 10.7MHz marker.
		Inject 10.7MHz marker into feethru C9 on tuner chassis (see pictorial on Tuner schematic).							
	4	"	"	106MHz	"	106MHz	"	C19, C2, C6	"
	5	Repeat steps 3 & 4 until no further improvement.							
	6	"	"	96MHz	"	96MHz	Probe at Q7 base.	T4 Top & Bottom	" (±120KHz BW at -3db).
	7	"	"	"	"	"	Probe at Q9 Pin 1	(Remove jumper short) T5 top & bottom	"
	8	Repeat step 1							
	9	"	"	"	400 or 60Hz ±75KHz FM. centered on IF	"	DC-VTVM across C54, 100pf.	T6 Top	0 V-DC
	10	"	"	"	400 or 60Hz ±300KHz FM	"	"	T6 bottom	FM detector response curve for maximum deflection & symmetry
	11	"	"	" 100uv input	400 or 60Hz ±75KHz FM. centered on IF	"	CRO at Audio Left (across R398A)	T6 bottom	Fine adjust for linear lissajous*. (recheck for the 0 VDC of step 9).
MX ALIGNMENT	1	Disconnect FM detector from Point A							
	2	Selector FM Mode: Auto Stereo	10K source impedance	60MV RMS 19KHz into point A	none	point of no interf. & short Q14 emitter base junction.	CRO &/or AC voltmeter base of Q15	T7 top & bottom	maximum deflection
	3	"	"	"	"	"	CRO &/or AC voltmeter T8 pin 1 to ground	T8 top & bottom	"
	4	"	"	1.0V RMS 67KHz into point A	"	"	"	L7	null
	5	"	"	feed composite MX sig. left CH modulation 1.7V p-p or 0.3V RMS 400Hz into point A		"	CRO &/or AC voltmeter across R398A	none	Note: approx. 0.4V Audio at Left channel output
	6	"	"	"		"	CRO &/or AC voltmeter across R398B	T7 top	null at unmodulated channel output (approx. -10db from left)
	7	"	"	switch off stereo gen. audio mod.		"	CRO &/or AC voltmeter across R398A	none	residual 19KHz and 38KHz to be approx. -45db below 100% audio
	8	Reconnect FM detector to point A							
	9	"	300 balanced input to FM ant. input	96MHz 100uv	±75KHz composite stereo sig. left CH modulation only	96MHz	CRO &/or AC voltmeter across R398B	fine adjust T7 top	null at unmodulated channel output.
	10	"	"	"	"				Adjust for null separation (to be more than -30db)

*If distortion analyzer is available, null T6 bottom for minimum distortion with 75KHz modulation.

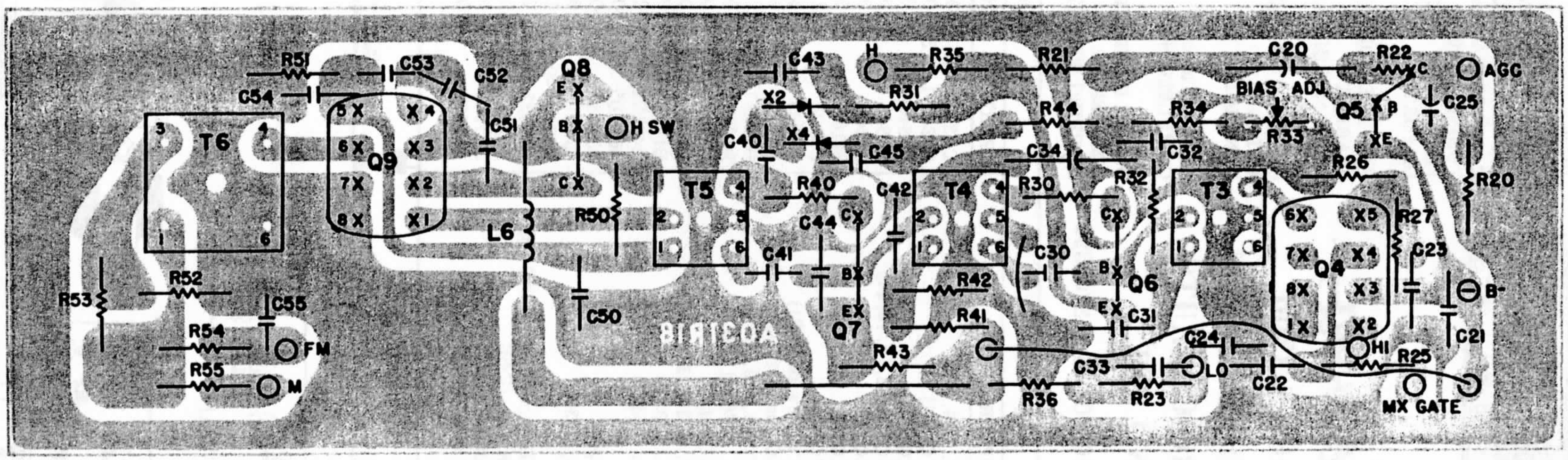
A031S9-2
MULTIPLEX BOARD



C
B E
TRANSISTOR

- ⊙ RO – RIGHT OUTPUT
- ⊙ LO – LEFT OUTPUT
- ⊙ MODE – TO AM–FM SWITCH
- ⊙ NF – NOISE FILTER
- ⊙ MX GATE – MX THRESHOLD FROM IF
- ⊙ A – TO AUTOMATIC STEREO–MONO SW.
- ⊙ SL – TO STEREO LIGHT

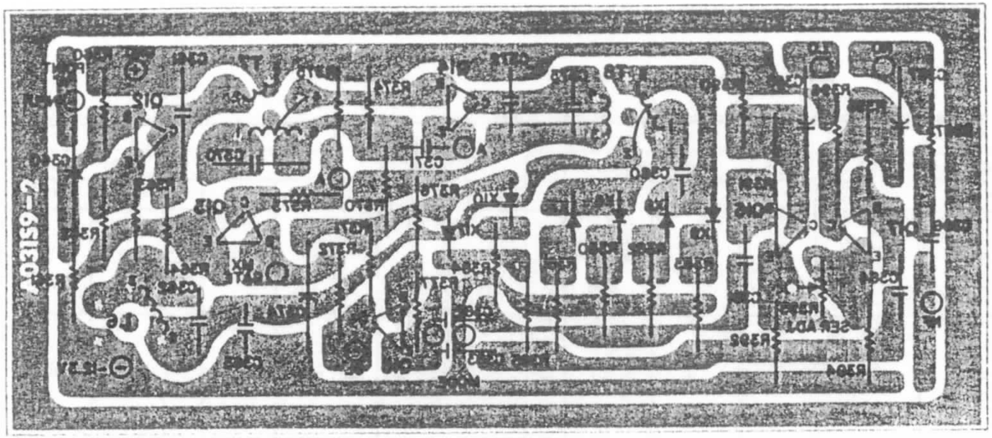
A031R18-0 FM IF BOARD

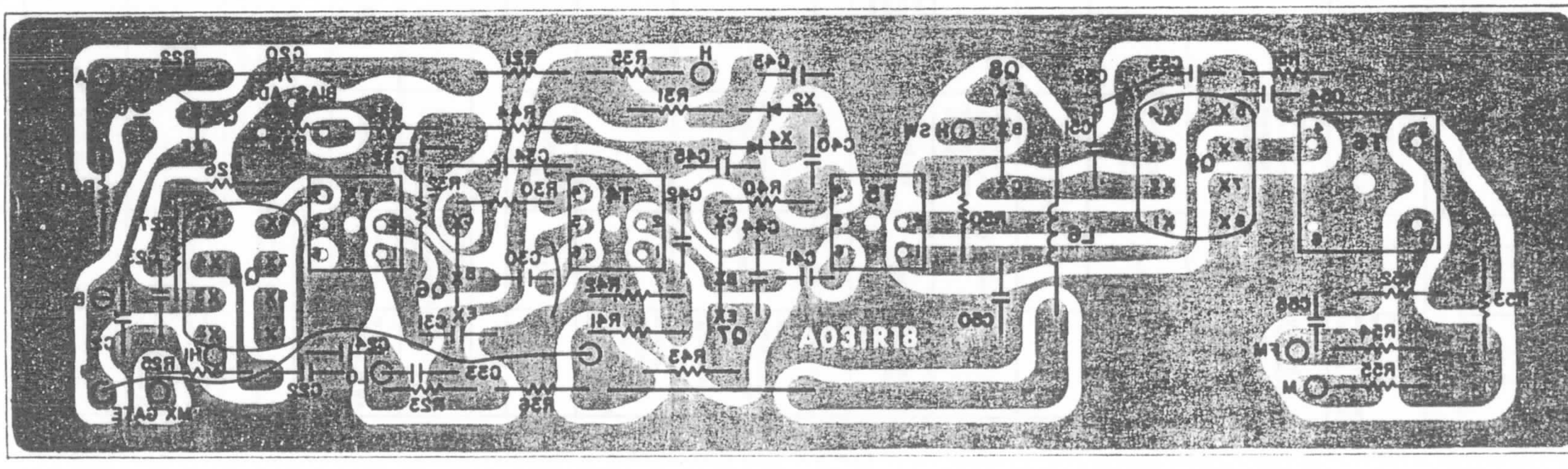


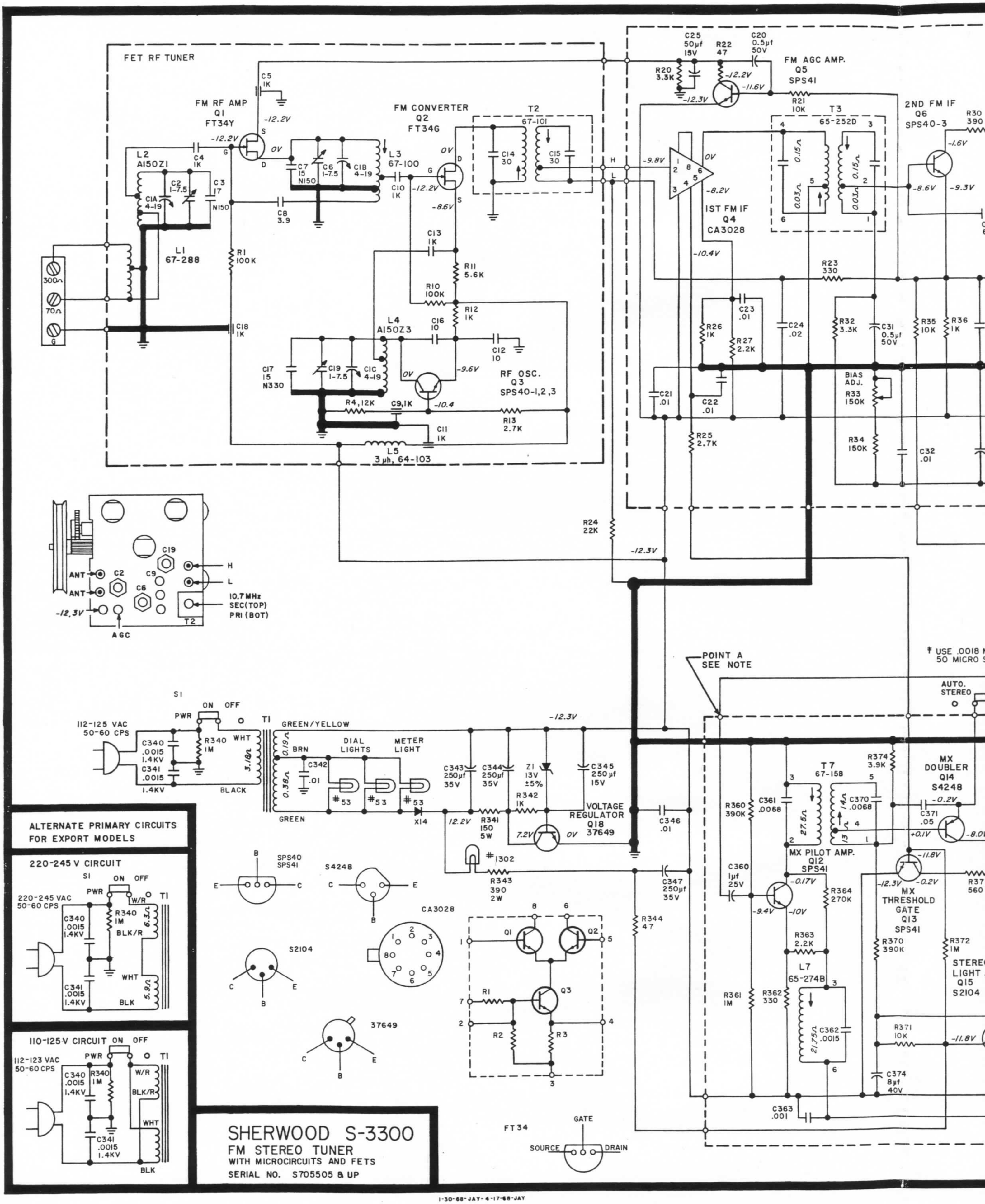
C B E
TRANSISTOR

- ⊙ FM – FM OUTPUT
- ⊙ M – TO METER
- ⊙ HI – HI OUTPUT
- ⊙ LO – LO INPUT
- ⊙ MX GATE – TO MX BOARD
- ⊙ AGC – TO TUNER
- ⊙ H – TO HUSH POT
- ⊙ H SW – TO HUSH SWITCH

MODEL S-3300 SERIAL NO's. S705505 TO S706392


A031S9-2

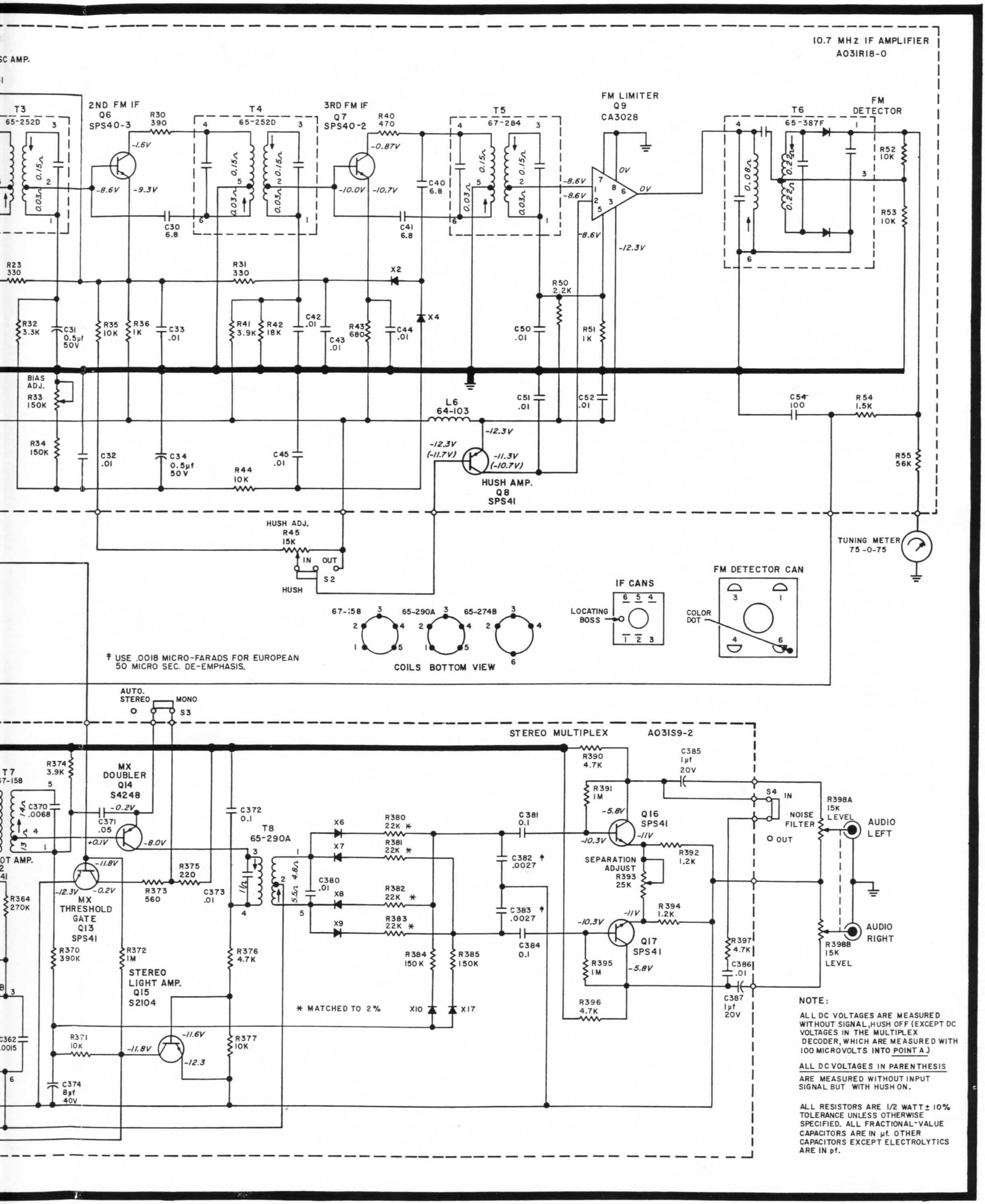

A031R18



SHERWOOD S-3300

FM STEREO TUNER
WITH MICROCIRCUITS AND FETS
SERIAL NO. S705505 & UP

1-30-68-JAY-4-17-68-JAY



10.7 MHz IF AMPLIFIER
A031R18-0
2ND FM IF
Q6
SPS40-3
3RD FM IF
Q7
SPS40-2
FM LIMITER
Q9
CA3028
FM DETECTOR
T3
65-252D
T4
65-252D
T5
67-284
T6
65-387F
R30
390
R40
470
C30
6.8
C40
6.8
C41
6.8
R23
330
R31
330
X2
X4
R32
3.3K
C31
0.5µf
50V
R35
10K
R36
1K
C33
.01
R41
3.9K
R42
18K
C42
.01
C43
.01
R43
680
C44
.01
C50
.01
R50
2.2K
R51
1K
R52
10K
R53
10K
BIAS
ADJ.
R33
150K
R34
150K
C32
.01
C34
0.5µf
50 V
R44
10K
C45
.01
L6
64-103
C51
.01
C52
.01
C54
100
R54
1.5K
R55
56K
HUSH AMP.
Q8
SPS41
HUSH ADJ.
R45
15K
IN
OUT
S2
HUSH
TUNING METER
75-0-75
FM DETECTOR CAN
IF CANS
LOCATING
BOSS
COLOR
DOT
67-158
65-290A
65-274B
COILS BOTTOM VIEW
† USE .0018 MICRO-FARADS FOR EUROPEAN
50 MICRO SEC. DE-EMPHASIS.
AUTO.
STEREO
MONO
S3
STEREO MULTIPLEX
A031S9-2
T7
67-158
R374
3.9K
C370
.0068
MX
DOUBLER
Q14
S4248
C371
.05
C372
0.1
T8
65-290A
MX
THRESHOLD
GATE
Q13
SPS41
R364
270K
R373
560
R375
220
C373
.01
R370
390K
R372
1M
STEREO
LIGHT AMP.
Q15
S2104
R376
4.7K
R377
10K
R371
10K
C374
8µf
40V
C362
.0015
X6
X7
X8
X9
X10
X17
R380
22K *
R381
22K *
R382
22K *
R383
22K *
C380
.01
R384
150K
R385
150K
* MATCHED TO 2%
C381
0.1
C382 †
.0027
C383 †
.0027
C384
0.1
R390
4.7K
R391
1M
Q16
SPS41
Q17
SPS41
SEPARATION
ADJUST
R393
25K
R392
1.2K
R394
1.2K
R395
1M
R396
4.7K
C385
1µf
20V
S4
IN
OUT
NOISE
FILTER
R397
4.7K
C386
.01
C387
1µf
20V
R398A
15K
LEVEL
R398B
15K
LEVEL
AUDIO
LEFT
AUDIO
RIGHT
NOTE:
ALL DC VOLTAGES ARE MEASURED WITHOUT SIGNAL, HUSH OFF (EXCEPT DC VOLTAGES IN THE MULTIPLEX DECODER, WHICH ARE MEASURED WITH 100 MICROVOLTS INTO POINT A)
ALL DC VOLTAGES IN PARENTHESIS ARE MEASURED WITHOUT INPUT SIGNAL BUT WITH HUSH ON.
ALL RESISTORS ARE 1/2 WATT ± 10% TOLERANCE UNLESS OTHERWISE SPECIFIED. ALL FRACTIONAL-VALUE CAPACITORS ARE IN µf. OTHER CAPACITORS EXCEPT ELECTROLYTICS ARE IN pf.