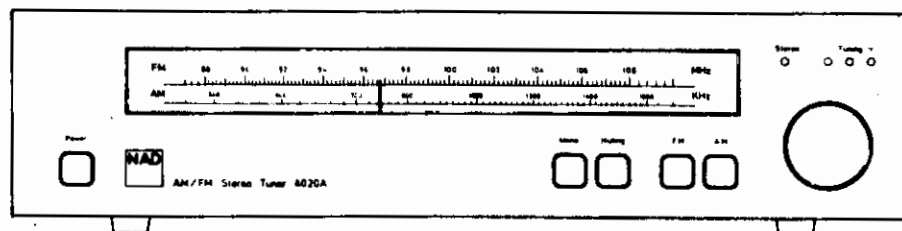


SERVICE MANUAL

NAD 4020A AM/FM STEREO TUNER



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SPECIFICATION

4020A

FM TUNER SECTION

Input Sensitivity IHF, 30dB quieting	1.8 μ V
IHF, 50dB S/N Mono/Stereo	3.5 μ V/45 μ V
Signal to Noise Ratio (A weighted, at 65dBf) Mono/Stereo	75dB/70dB
Frequency Response, 30-15KHz	± 0.5 dB
De-emphasis Accuracy 75 μ /sec	± 0.3 dB
Channel Separation 1KHz	42dB
30—15KHz	32dB
Selectivity, Alternate Channel (400KHz)	62dB
Capture Ratio at 45 dBf and 65dBf	1.5dB
AM Suppression at 45 dBf and 65dBf	60dB
Image Rejection	50dB
IF Rejection	75dB
SCA Rejection	70dB
Pilot Signal Suppression	55dB
THD at 100% Modulation 1KHz Mono/Stereo	0.2%/0.3%
100Hz Mono/Stereo	0.2%/0.3%
6KHz Mono/Stereo	0.3%/0.4%
THD Stereo 1KHz 50%/150%	0.3%/0.4%

AM TUNER SECTION

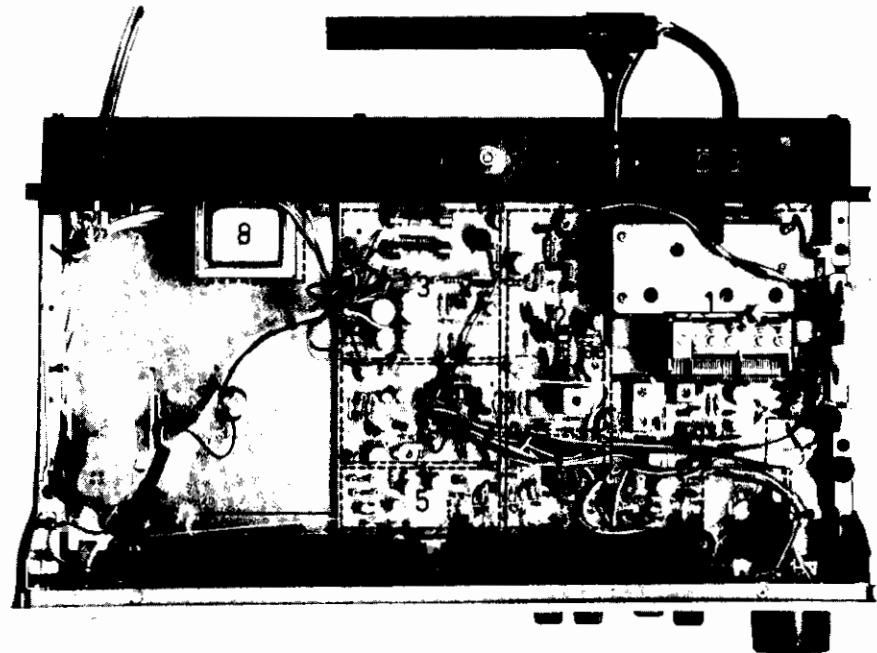
Usable Sensitivity	300 μ V
Selectivity	30dB
Image Rejection	45dB
IF Rejection	35dB

PHYSICAL SPECIFICATION

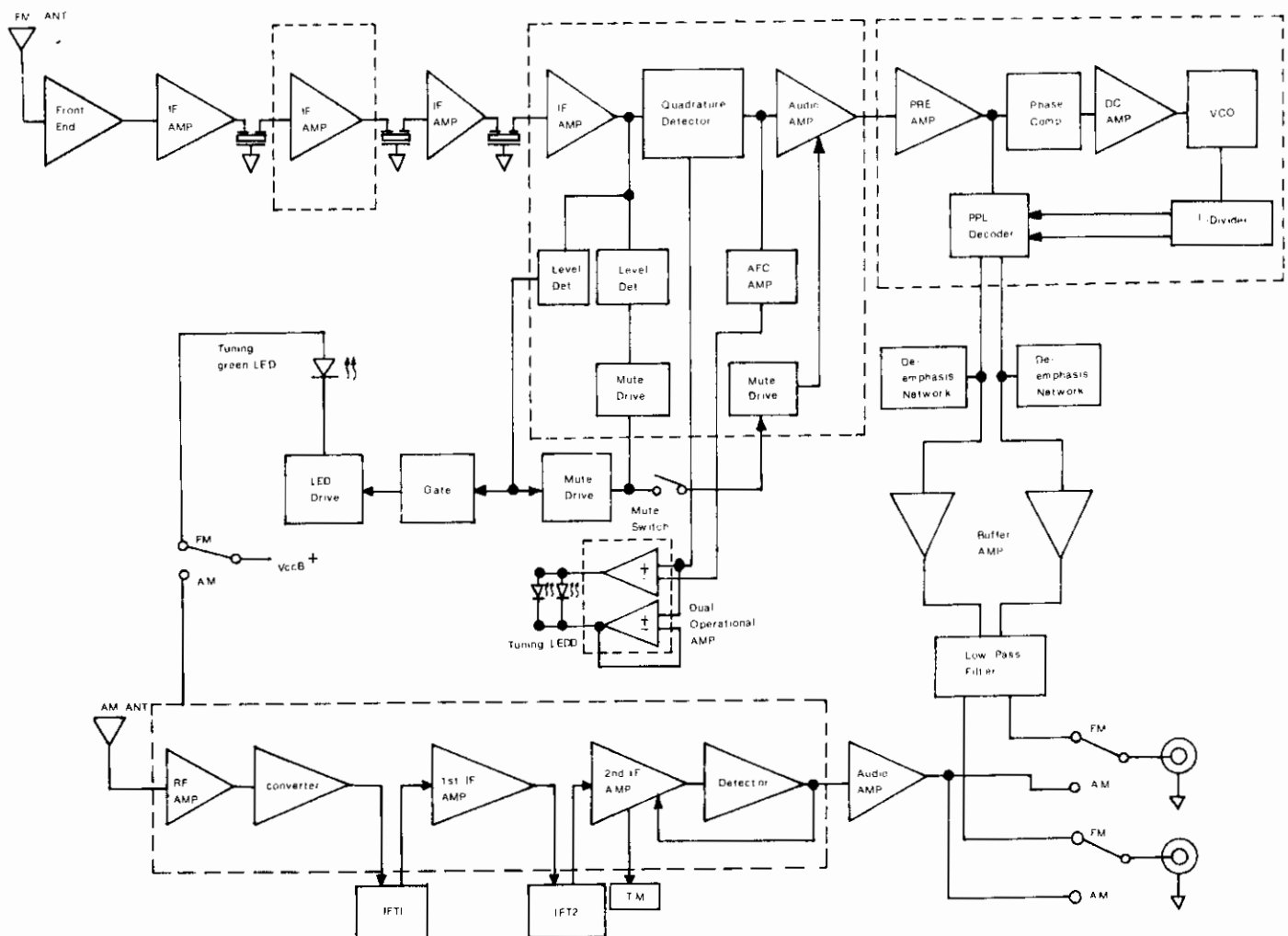
Power Consumption	8W
Weight	4.2Kg
Dimension Height \times Width \times Depth	96 \times 420 \times 240

INSIDE VIEW OF UNIT

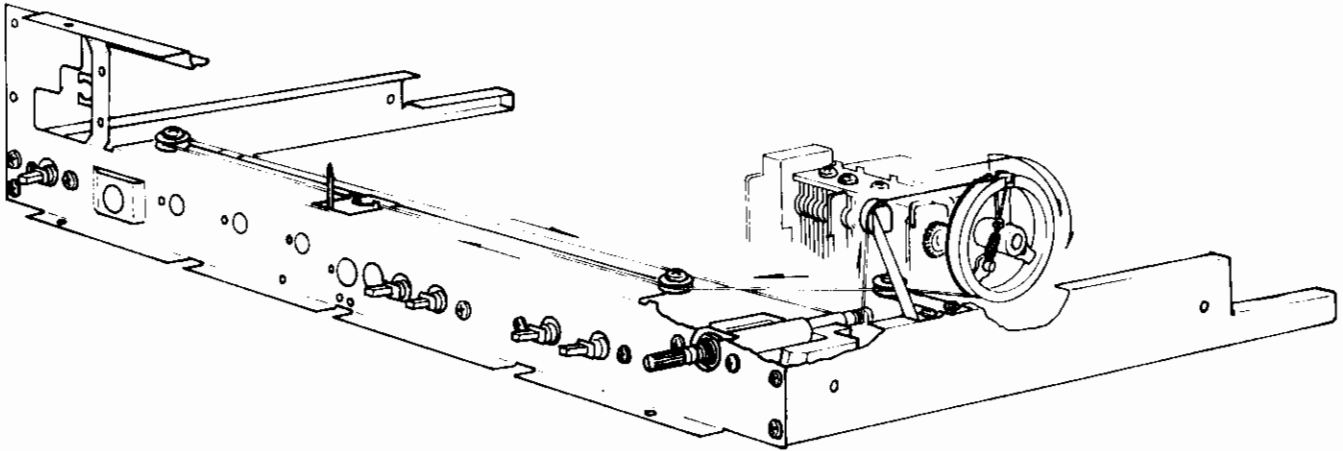
1. RF Amp.
2. IF Amp.
3. Regulator
4. MPX & Buffer
5. Low Pass Filter
6. LED Driver
7. AM System
8. Transformer



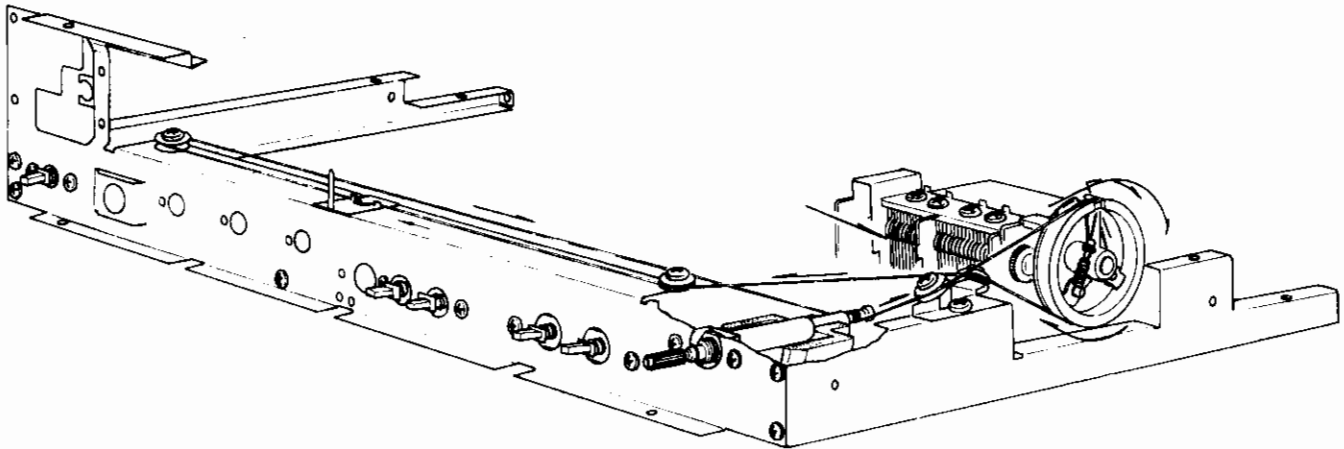
BLOCK DIAGRAM



DIAL STRING ASSEMBLY DIAGRAM

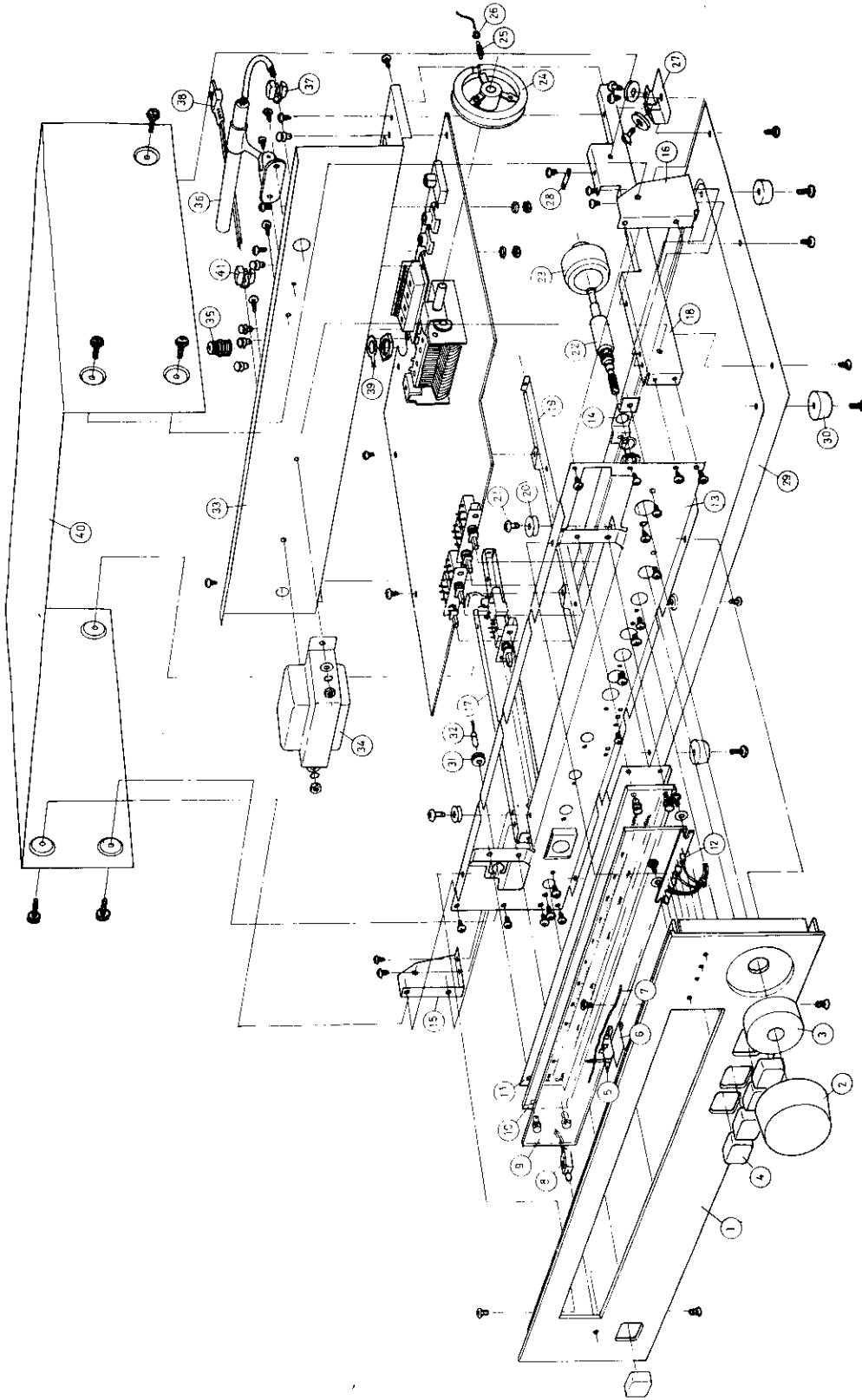


(OLD VERSION)



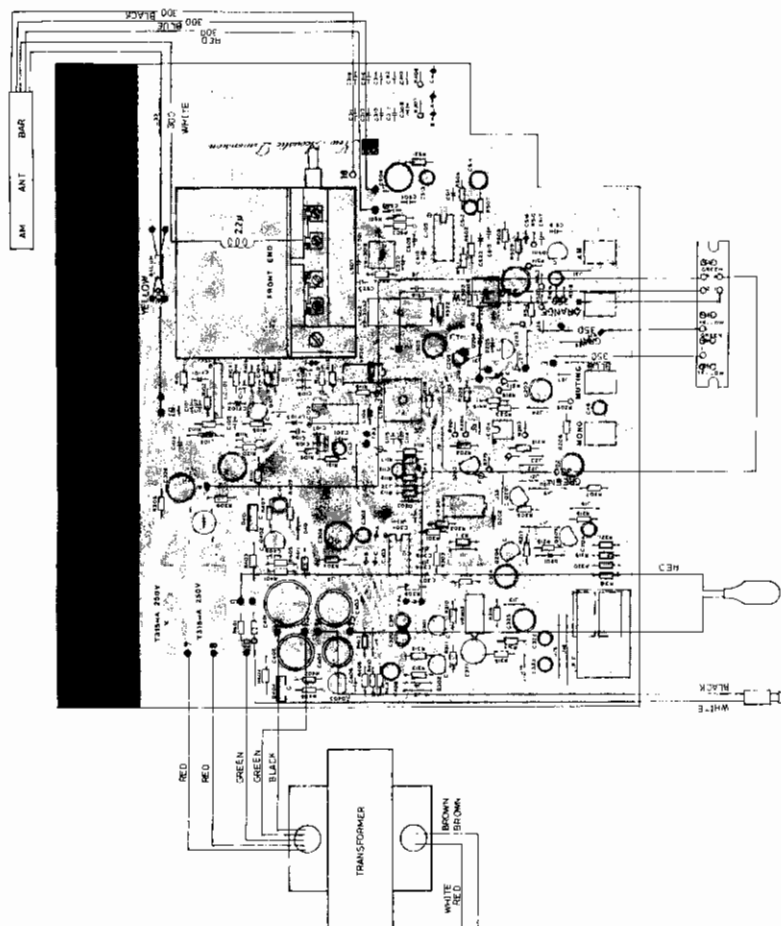
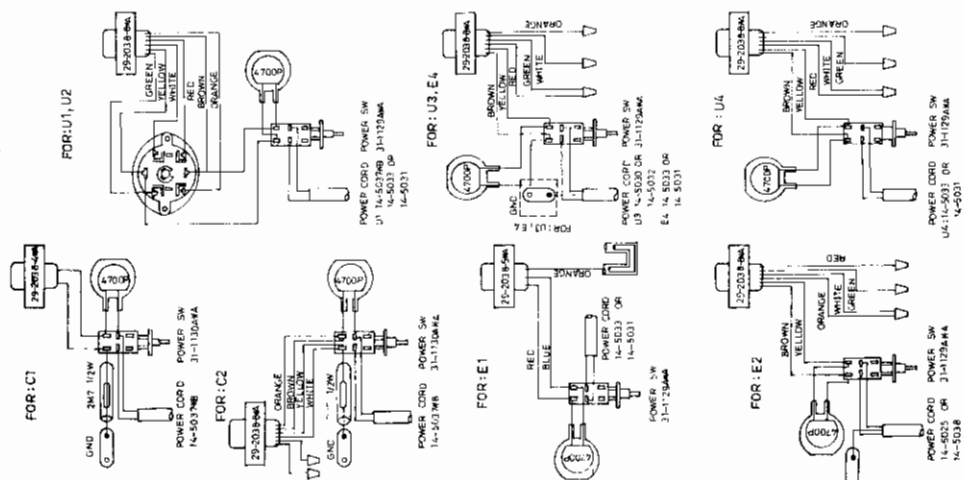
(NEW VERSION START FROM SERIAL NO B4205001)

ASSEMBLY DIAGRAM



Item	Part No.	Description	Qty
1	11-8135	Panel Front Brown	1
2	11-8143	Panel Front Silver	1
3	12-3037	Tuning Knob	1
4	12-3039	Push Knob	1
5	12-4012	Pointer	1
6	28-2015	Mylar	1
7	14-3001	Tuning Thread	1
8	14-4003A	LED Holder	1
9	11-8085	Perseus Cover Black	1
10	11-8142	Perseus Cover Silver	1
11	11-8137	Dial Scale Plate	1
12	11-8114	Dial Plate	1
13	30-1026	LED	5
14	11-6060	Chassis Front	1
15	11-2086	Bracket for Tuning Shaft	1
16	11-2113	Bracket Left	1
17	11-2112	Bracket Right	1
18	11-6040	Chassis Left	1
19	11-6063	Chassis Right	1
20	11-6044	Chassis Center	1
21	11-5004	Pulley	4
22	11-7014	Tuning Shaft	1
23	13-5016	Fly Wheel	1
24	13-5029	Tuning Wheel	1
25	12-5007	Spring	1
26	15-1008A	Eyelet	1
27	11-2713	Bracket for Pulley	1
28	11-3026	Lug	1
29	11-6090	Chassis Bottom	1
30	28-1029	Rubber Foot	4
31	28-1016	Rubber Bush	1
32	31-2008A	Lamp	1
33	11-8136	Panel Back	1
34	29-2038	Transformer	1
35	12-1032	Connector	1
36	29-5008	Ant. Bar	1
37	14-5003	Cord Bush 4N4	1
38	14-5037	Power Cord	1
39	11-3033	Lug for Connector	1
40	50-1017	Cabinet	1
41	14-5005	Cord Bush 5N4	1

PRIMARY SECTION

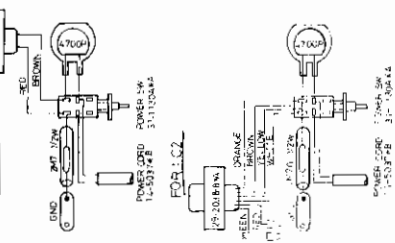


[illegible]

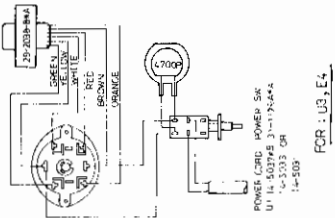
*:TUNED
ST:STEPFO

PRIMARY SECTION

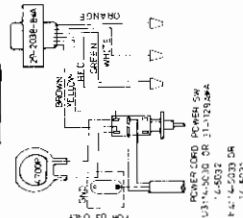
FOR : C1



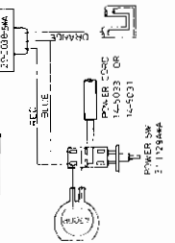
FOR : U1, U2



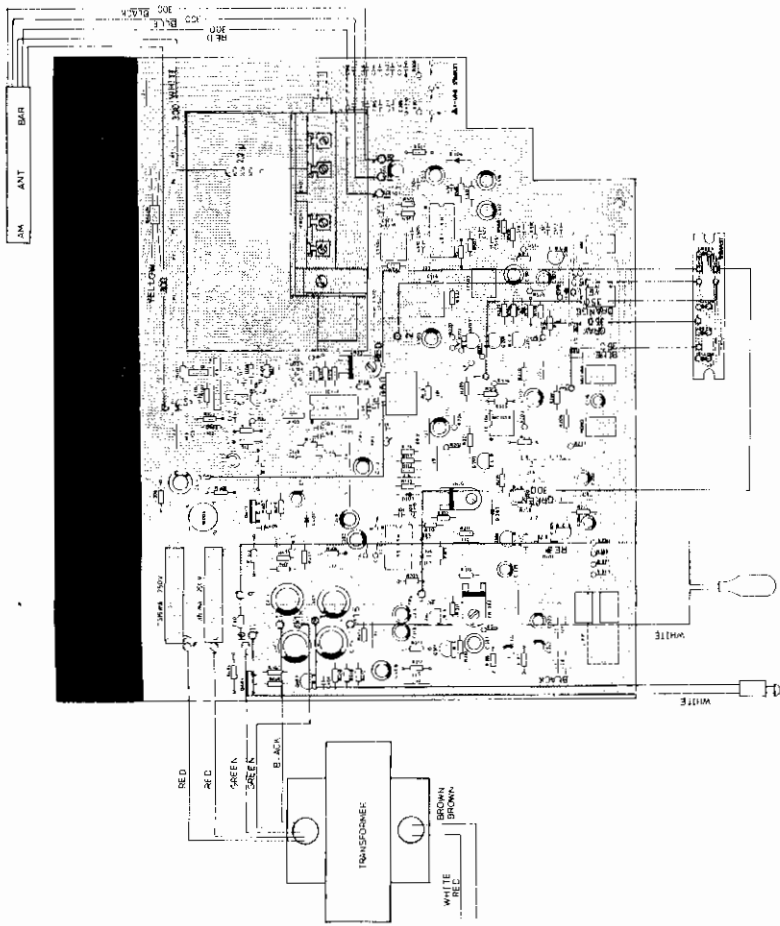
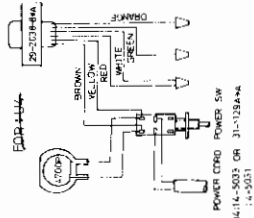
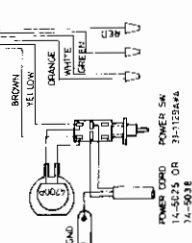
FOR : U3, E4



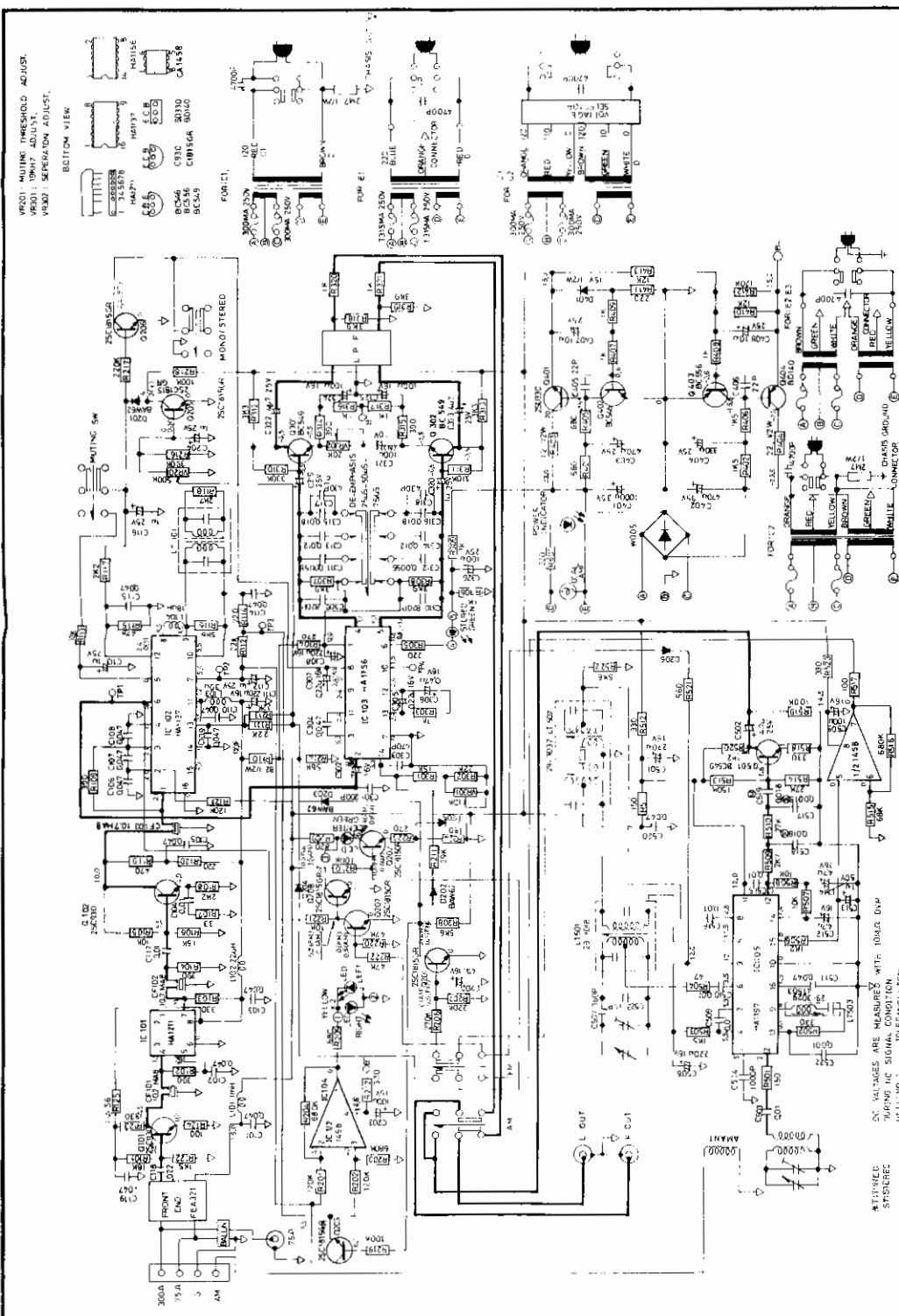
FOR : E1



FOR : E2



CIRCUIT DIAGRAM (NEW VERSION)



4020A PARTS LIST (NEW VERSION)

SYMBOL NO.	PART NO.	DESCRIPTION				REF
R101 ★	16-1/4C183	Carbon	res	18K ohm	±5% 1/4W	1.70
R102	16-1/4C391J	Carbon	res	390 ohm	±5% 1/4W	1.70
R103	16-1/4C331J	Carbon	res	330 ohm	±5% 1/4W	1.70
R104	16-1/4C391J	Carbon	res	390 ohm	±5% 1/4W	1.70
R105	16-1/4C103J	Carbon	res	10K ohm	±5% 1/4W	1.70
R106	16-1/4C153J	Carbon	res	15K ohm	±5% 1/4W	1.70
R107	16-1/4C330J	Carbon	res	33 ohm	±5% 1/4W	1.70
R108	16-1/4C222J	Carbon	res	2K2 ohm	±5% 1/4W	1.70
R109	16-1/4C391J	Carbon	res	390 ohm	±5% 1/4W	1.70
R110	16-1/4C820J	Carbon	res	82 ohm	±5% 1/4W	1.70
R111,R112	16-1/4C223J	Carbon	res	22K ohm	±5% 1/4W	1.70
R113	16-1/4C123J	Carbon	res	12K ohm	±5% 1/4W	1.70
R114	16-1/4C221J	Carbon	res	220 ohm	±5% 1/4W	1.70
R115	16-1/4C473J	Carbon	res	47K ohm	±5% 1/4W	1.70
R116	16-1/4C562J	Carbon	res	5K6 ohm	±5% 1/4W	1.70
R117	16-1/4C222J	Carbon	res	2K2 ohm	±5% 1/4W	1.70
R118	16-1/4C272J	Carbon	res	2K7 ohm	±5% 1/4W	1.70
R119	16-1/4C471J	Carbon	res	470 ohm	±5% 1/4W	1.70
R120	16-1/4C221J	Carbon	res	220 ohm	±5% 1/4W	1.70
R121	16-1/4C124J	Carbon	res	120K ohm	±5% 1/4W	1.70
R122 ★	16-1/4C152J	Carbon	res	1K5 ohm	±5% 1/4W	1.70
R123 ★	16-1/4C331J	Carbon	res	330 ohm	±5% 1/4W	1.70
R124 ★	16-1/4C101J	Carbon	res	100 ohm	±5% 1/4W	1.70
R125 ★	16-1/4C560J	Carbon	res	56 ohm	±5% 1/4W	1.70
R201,R202	16-1/4C124J	Carbon	res	120K ohm	±5% 1/4W	1.70
R203,R204	16-1/4C684J	Carbon	res	680K ohm	±5% 1/4W	1.70
R205	16-1/4C681J	Carbon	res	680 ohm	±5% 1/4W	1.70
R206	16-1/4C274J	Carbon	res	270K ohm	±5% 1/4W	1.70
R207	16-1/4C224J	Carbon	res	220K ohm	±5% 1/4W	1.70
R208	16-1/4C562J	Carbon	res	5K6 ohm	±5% 1/4W	1.70
R209 ★	16-1/4C821J	Carbon	res	820 ohm	±5% 1/4W	1.70
R210	16-1/4C104J	Carbon	res	100K ohm	±5% 1/4W	1.70
R211	16-1/4C393J	Carbon	res	39K ohm	±5% 1/4W	1.70
R212	16-1/4C331J	Carbon	res	330 ohm	±5% 1/4W	1.70
R213 ★	16-1/4C223J	Carbon	res	22K ohm	±5% 1/4W	1.70
R214 ★	16-1/4C563J	Carbon	res	56K ohm	±5% 1/4W	1.70
R216	16-1/4C394J	Carbon	res	390K ohm	±5% 1/4W	1.70
R217	16-1/4C224J	Carbon	res	220K ohm	±5% 1/4W	1.70
R218,R219	16-1/4C104J	Carbon	res	100K ohm	±5% 1/4W	1.70
R220 ★	16-1/4C473J	Carbon	res	47K ohm	±5% 1/4W	1.70
R221 ★	16-1/4C103J	Carbon	res	10K ohm	±5% 1/4W	1.70
R222 ★	16-1/4C473J	Carbon	res	47K ohm	±5% 1/4W	1.70
R223 ★	16-1/4C271J	Carbon	res	270 ohm	±5% 1/4W	1.70
R224 ★	16-1/4C181J	Carbon	res	180 ohm	±5% 1/4W	1.70
R301	16-1/4C153J	Carbon	res	15K ohm	±5% 1/4W	1.70
R302	16-1/4C223J	Carbon	res	22K ohm	±5% 1/4W	1.70
R303	16-1/4C102J	Carbon	res	1K ohm	±5% 1/4W	1.70
R304	16-1/4C271J	Carbon	res	270 ohm	±5% 1/4W	1.70
R305	16-1/4C221J	Carbon	res	220 ohm	±5% 1/4W	1.70

SYMBOL NO.	PART NO.	DESCRIPTION				REF
R306	16-1/4C102J	Carbon	res	1K ohm	+ 5 % 1/4W	1.70
R307,R308	16-1/4C392J	Carbon	res	3K9 ohm	+ 5 % 1/4W	1.70
R309 ★	16-1/4C102J	Carbon	res	1K ohm	+ 5 % 1/4W	1.70
R310,R311	16-1/4C334J	Carbon	res	330K ohm	+ 5 % 1/4W	1.70
R312,R313	16-1/4C332J	Carbon	res	3K3 ohm	+ 5 % 1/4W	1.70
R314,R315	16-1/4C391J	Carbon	res	390 ohm	+ 5 % 1/4W	1.70
R316,R317	16-1/4C102J	Carbon	res	1K ohm	+ 5 % 1/4W	1.70
R318,R319	16-1/4C392J	Carbon	res	3K9 ohm	+ 5 % 1/4W	1.70
R320,R321	16-1/4C102J	Carbon	res	1K ohm	+ 5 % 1/4W	1.70
R401	16-1/4C681J	Carbon	res	680 ohm	+ 5 % 1/2W	1.70
R402	16-1/4C152J	Carbon	res	1K5 ohm	+ 5 % 1/2W	1.70
R403	16-1/4C120J	Carbon	res	12 ohm	+ 5 % 1/4W	2.40
R404	16-1/4C220J	Carbon	res	22 ohm	+ 5 % 1/4W	2.40
R405	16-1/4C681J	Carbon	res	680 ohm	+ 5 % 1/4W	1.70
R406	16-1/4C152J	Carbon	res	1K5 ohm	+ 5 % 1/4	1.70
R407,R408,R409	16-1/4C102J	Carbon	res	1K ohm	+ 5 % 1/4W	1.70
R410	16-1/4C123J	Carbon	res	12K ohm	+ 5 % 1/4W	1.70
R411	16-1/4C221J	Carbon	res	220 ohm	+ 5 % 1/4W	1.70
R412	16-1/4C124J	Carbon	res	120Kohm	+ 5 % 1/4W	1.70
R413	16-1/4C123J	Carbon	res	12K ohm	+ 5 % 1/4W	1.70
R501	16-1/4C151J	Carbon	res	150 ohm	+ 5 % 1/4W	1.70
R502	16-1/4C331J	Carbon	res	330 ohm	+ 5 % 1/4W	1.70
R503	16-1/4C152J	Carbon	res	1K5 ohm	+ 5 % 1/4W	1.70
R504	16-1/4C470J	Carbon	res	47 ohm	+ 5 % 1/4W	1.70
R506	16-1/4C122J	Carbon	res	1K2 ohm	+ 5 % 1/4W	1.70
R507,R508	16-1/4C103J	Carbon	res	10K ohm	+ 5 % 1/4W	1.70
R509	16-1/4C272J	Carbon	res	2K7 ohm	+ 5 % 1/4W	1.70
R510	16-1/4C273J	Carbon	res	27K ohm	+ 5 % 1/4W	1.70
R511	16-1/4C151J	Carbon	res	150 ohm	+ 5 % 1/4W	1.70
R512	16-1/4C331J	Carbon	res	330 ohm	+ 5 % 1/4W	1.70
R513	16-1/4C154J	Carbon	res	150Kohm	+ 5 % 1/4W	1.70
R514	16-1/4C273J	Carbon	res	27K ohm	+ 5 % 1/4W	1.70
R515	16-1/4C683J	Carbon	res	68K ohm	+ 5 % 1/4W	1.70
R516	16-1/4C684J	Carbon	res	680Kohm	+ 5 % 1/4W	1.70
R517	16-1/4C101J	Carbon	res	100 ohm	+ 5 % 1/4W	1.70
R518	16-1/4C331J	Carbon	res	330 ohm	+ 5 % 1/4W	1.70
R519	16-1/4C104J	Carbon	res	100Kohm	+ 5 % 1/4W	1.70
R520	16-1/4C122J	Carbon	res	1K2 ohm	+ 5 % 1/4W	1.70
R521	16-1/4C561J	Carbon	res	560 ohm	+ 5 % 1/4W	1.70
R522	16-1/4C562J	Carbon	res	5K6 ohm	+ 5 % 1/4W	1.70
R523	16-1/4C331J	Carbon	res	330 ohm	+ 5 % 1/4W	1.70
R601	16-1/4C221J	Carbon	res	220 ohm	+ 5 % 1/4W	1.70
C101~C103	17-5D473M	Ceramic	Capa.	0.047μF	±20% 50V	5.00
C104	17-5D103M	Ceramic	Capa.	0.01μF	±20% 50V	3.40
C105~C110	17- D473M	Ceramic	Capa.	0.047μF	±20% 50V	5.00

SYMBOL NO.	PART NO.	DESCRIPTION				REF
C111	17-1.6E227Y	Elec. Capa.	220 μ F	+50% -10%	16V	33.50
C112,C113	17-5E105Y	Elec. Capa.	1 μ F	+75 -10%	50V	8.00
C114,C115	17-5D473M	Ceramic Capa.	0.047 μ F	\pm 20%	50V	5.00
C116	17-5E105Y	Elec. Capa.	1 μ F	+75 -10%	50V	8.00
C117	17-5D103M	Ceramic Capa.	0.01 μ F	\pm 20%	50V	3.40
C118★	17-5D 223M	Ceramic Capa.	0.022 μ F	\pm 20%	50V	5.00
C119★	17-5D 473M	Ceramic Capa.	0.047 μ F	\pm 20%	50V	5.00
C202	17-1.6E476Y	Elec. Capa.	47 μ F	+50 -10%	16V	12.00
C203	17-1.6E107Y	Elec. Capa.	100 μ F	+50 -10%	16V	14.00
C204	17-5E105Y	Elec. Capa.	1 μ F	+75 -10%	50V	8.00
C301	17-5D201K	Ceramic Capa.	200PF	+ -10%	50V	4.00
C302	17-2.5E475Y	Elec. Capa.	4.7 μ F	+75 -10%	25V	8.00
C303	17-5U471 J	Polystyroiene Capa.	470PF	\pm 5%	50V	9.60
C304	17-5F473J	Mylar Capa.	0.047 μ F	\pm 5%	50V	8.90
C305	17-1.60224M	Tantalum Capa.	0.22 μ F	\pm 20%	16V	16.40
C306	17-1.60474M	Tantalum Capa.	0.47 μ F	\pm 20%	16V	16.40
C307	17-1.60224M	Tantalum Capa.	0.22 μ F	\pm 20%	16V	16.40
C308	17-1.6E227Y	Elec. Capa.	220 μ F	\pm 20%	16V	33.50
C309,C310	17-5U821J	Polystyroiene Capa.	820PF	+50 -10%	50V	9.60
C311,C312	17-5F562J	Mylar Capa.	0.0056 μ F	\pm 5%	50V	6.50
C313,C314	17-5F123J	Mylar Capa.	0.012 μ F	\pm 5%	50V	8.90
C315,C316	17-5F183J	Mylar Capa.	0.018 μ F	\pm 5%	50V	8.90
C317,C318	17-5D431J	Ceramic Capa.	430PF	\pm 5%	50V	5.20
C319,C320	17-5E105Y	Elec. Capa.	1 μ F	+75 -10%	50V	8.00
C321	17-1.0S107Y	Non-polar Capa.	100 μ F	+50 -10%	10V	14.00
C322,C323	17-2.5E475Y	Elec. Capa.	4.7 μ F	+75 -10%	25V	8.00
C324,C325	17-1.6E107Y	Elec. Capa.	100 μ F	+50 -10%	16V	14.00
C326	17-2.5E107Y	Elec. Capa.	100 μ F	+50 -10%	25V	16.00
C401	17-3.5E108Y	Elec. Capa.	1000 μ F	+50 -10%	35V	93.00
C402	17-3.5E477Y	Elec. Capa.	470 μ F	+50 -10%	35V	47.90
C403	17-2.5E477Y	Elec. Capa.	470 μ F	+50 -10%	25V	46.80
C404	17-2.5E337Y	Elec. Capa.	330 μ F	+50 -10%	25V	38.40
C405,C406	17-5D220M	Ceramic Capa.	22PF	\pm 20%	50V	3.50
C407,C408	17-2.5E106Y	Elec. Capa.	10 μ F	+50 -10%	25V	12.00
C501	17-1.6E227Y	Elec. Capa.	220 μ F	+50 -10%	16V	33.50
C502	17-2.5E475Y	Elec. Capa.	4.7 μ F	+75 -10%	25V	8.00
C503	17-5D103M	Ceramic Capa.	0.01 μ F	\pm 20%	50V	3.40
C504	17-5D102M	Ceramic Capa.	1000PF	\pm 20%	50V	4.00
C505	17-1.6E107Y	Elec. Capa.	100 μ F	+50 -10%	16V	14.00
C506	17-1.6E227Y	Elec. Capa.	220 μ F	+50 -10%	16V	33.50
C507	17-5U361J	Polystyroiene Capa.	360PF	\pm 5%	50V	9.40
C509,C510	17-5D103M	Ceramic Capa.	0.01 μ F	\pm 20%	50V	3.40
C511	17-5D473M	Ceramic Capa.	0.047 μ F	\pm 20%	50V	5.00
C512	17-2.5E475Y	Elec. Capa.	4.7 μ F	+75 -10%	25V	8.00
C513	17-5E105Y	Elec. Capa.	1 μ F	+75 -10%	50V	8.00
C514	17-2.5E475Y	Elec. Capa.	4.7 μ F	+75 -10%	25V	8.00

SYMBOL NO.	PART NO.	DESCRIPTION	REF
C515,C516	17--5D103M	Ceramic Capa. 0.01 μ F \pm 20% 50V	3.40
C517	17--5F152J	Mylar Capa. 0.0015 μ F \pm 5% 50V	6.50
C518,C519	17--5F183J	Mylar Capa. 0.018 μ F \pm 5% 50V	8.90
C520	17--5D473M	Ceramic Capa. 0.047 μ F \pm 20% 50V	5.00
C522	17--5D102M	Ceramic Capa. 1000PF \pm 20% 50V	4.00
C523	17--5D150M	Ceramic Capa. 15PF \pm 20% 50V	3.50
IC101	30--3035	HA1211	115.00
IC102	30--3017	HA1137	240.00
IC103	30--3015	HA1156	180.00
IC104	30--3032	CA1458	108.00
IC105	30--3036	HA1197	236.00
Q101,Q102	30--2019	2SC930 Transistor	23.00
Q201~Q208★	30--2156	2SC1815GR Transistor	14.00
Q301,Q302	30--2084-3	BC549C Transistor	22.80
Q401	30--2078	2SD330 Transistor	76.00
Q402	30--2090-2	BC546B Transistor	24.00
Q403	30--2096	BC556A Transistor	24.70
Q404	30--2082	BD140 Transistor	58.90
Q501	30--2084-3	BC549C Transistor	22.80
CF101~CF103	29--3051	Ceramic Filter SFE 10.7MP	61.50
L101	29--1037	1mH Inductor	16.00
L102	29--1034	22 μ H Inductor	15.00
L103	29--1038	39 μ H Inductor	15.00
L104	29--1039	18 μ H Inductor	11.00
LT101	29--3008	FM DET 10.7MHz	96.00
LT501	29--3018	AM Local coil	25.00
LT502	29--3032	AM IF coil	134.00
LT503	29--3029	AM IF coil	25.00
LT001	18--1016-1	Balun	10.20
D201~D206★	30--1019	Diode BAW62	11.00
D401	30--1044	Zener Diode 15V	20.00
D402	30--1035	Bridge Diode W005	72.00
Front End	FEA321★A	FEA321★A	1870
Push SW	31--1074F	Push SW2U2 Key	95.00
Push SW	31--1140F	Push SW 2U2 Key	98.00
Slide SW	31--1088	Slide SW	57.00
L.P.F.	29--3049	L.P.F. 19,38KHz Filter	180.00
VR201	29--4079F	Semifix Res 500K	18.00
VR301	29--4077F	Semifix Res 10K	18.00
VR302	29--4023-1F	Semifix Res 20K	18.00
★ means that the parts list is difference between OLD VERSION and NEW VERSION, FOR OLD VERSION ★ parts must be canceled, and change these parts as follows:			
R209	16-- $\frac{1}{4}$ C122J	Carbon res. 1K2 ohm \pm 5% $\frac{1}{4}$ W	1.70
Q201~Q206	30--2156	2SC1815GR Transistor	14.00
D201~D205	30--1019	Diode BAW62	11.00
R309	16-- $\frac{1}{4}$ C681J	Carbon res 680 ohm \pm 5% $\frac{1}{4}$ W	1.70
R101	16-- $\frac{1}{4}$ C330J	Carbon res 33 ohm \pm 5% $\frac{1}{4}$ W	1.70