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With no signal present, rotate the SQUELCH CONTROL clockwise to a position in which no noise is heard. Advance this control only for enough to prevent noise from being heard. Advancing it too far may result in a weak station being unable to open the squelch. Since the squelch has been adjusted, with no signal present, then when a station transmits on the channel to which your LYNX 23 is tuned, the squelch circuit will open and the station will be heard. When the station stops transmitting and no signal is received, the squelch gate will be closed and all sound will be "Turned Off". Sometimes noise will build up as a result of a passing truck, etc. If this happens, the SQUELCH CONTROL should be advanced just for enough to keep the circuit closed during these noise peaks.

Rotate the CHANNEL SELECTOR to the desired channel.

Adjust the volume as desired for the station you are listening to.

To transmit, hold the microphone 2 to 3 inches from your mouth. Normally, it is best to hold it so that you talk across it rather than directly into it. This will prevent the sound of your breathing being transmitted. Hold the Push-to-Talk button on the microphone in, and speak in a normal conversational level.

When your transmission is completed, release the button on the microphone and listen for your reply.

When listening to a weak signal, adjust your delta tune switch for strongest signal. The automatic noise limiter will ordinarily be kept on. When under conditions of low noise you may wish to turn it off for extra sensitivity.

SECTION 4
MAINTENANCE & SERVICING

CIRCUIT DESCRIPTION

Your LYNX 23 consists of the following circuit: the PEARCE-SIMPSON HetroSync™ circuit, which provides the receiver injection frequencies and the transmitter carrier frequency; a dual conversion superheterodyne receiver; and an AM-modulated transmitter. It is powered from 13.8V DC and 117V AC source. (see Block Diagram and Schematic)

HETROSYNC™ CIRCUIT

PEARCE-SIMPSON's method of frequency synthesis makes use of 14 crystals to provide crystal-controlled, 23 channel coverage on both transmit and receive functions. The circuit is composed of 37.600 to 37.850 mc master oscillator (TR3), 10.140 to 10.180 mc receive oscillators (TR5), 10.595 to 10.635 mc transmit oscillator (TR14) and a transmit mixer (TR15). The two fundamental frequencies are combined in the mixer, whose output will contain the two frequencies fed in, plus the sum of the two and the difference of the two, as well as combinations of the harmonics of the input. We use only the difference frequency. Let us take Channel 9 as an example. The two input frequencies are 37.700 mc and 10.635 mc. The mixer outputs are 37.700 mc, 10.635 mc, 48.335 mc and 27.065 mc. The other frequencies present at much lower levels are the harmonics of the two input frequencies such as 21.270 mc, 31.905 mc, 42.540 mc, etc. In addition to these, will be the sum and difference frequencies from the mixing of the various harmonic and fundamental frequencies. Of all these frequencies, only one falls within the passband of the transmitter. This is 27.065 mc which is the carrier frequency for Channel 9. The nearest unwanted frequency to the carrier frequency is at least 0.955 mc away and outside of the transmitter pass band is adequately suppressed.

TRANSMITTER CIRCUIT

The transmitter circuit makes use of the carrier frequency signal output of the transmit mixer (TR15), which is part of the HetroSync™ circuit. The signal is amplified by the buffer (TR16), which is a voltage amplifier, whose output is fed to the driver (TR17). Bandpass transformers L8 through L10 provide the selectivity to select the disired carrier frequency from the mixer (TR15) output. The driver is a low level Class C power amplifier which supplies the necessary RF power at the carrier frequency to drive the final power amplifier (TR18). The final supplies RF power to the antenna through a double pi-matching network. The primary purpose of a

transmitter is to transmit intelligence from one place to another. The function of the modulator is to put the intelligence on the carrier. To do this, the microphone changes sound (mechanical energy) to electrical energy which is an audio frequency signal. Mic amplifier (TR13 & TR23) and audio driver (TR10) amplify this signal and drive the audio power amplifier (TR11 & TR12). This audio power amplifier varies the supply voltage fed to the driver and signal at an audio rate. This variation of the supply voltage varies the amplitude of the carrier output thus producing amplitude modulation.

RECEIVER CIRCUIT

The receiver in the LYNX 23 is a dual conversion superheterodyne circuit. Channel 9 (27.065 mc) will be used as an example to show how the receiver circuit works. A signal at 27.065 mc is received at the antenna and amplified by RF amplifier (TR1) and fed into 1st receiver mixer (TR2). The 27.065 mc signal is mixed with 37.700 mc injection from the HetroSync™ circuit. The 10.635 mc 1st IF output from the 1st receiver mixer is fed into the 2nd receiver mixer (TR4) along with the 10.180 mc injection from the HetroSync™ circuit. The 455 kc 2nd IF output from the 2nd receiver mixer is amplified by the IF amplifiers TR6 and TR7. Then, the signal is detected by detector diode D3 to remove the audio from the IF carrier. The audio is coupled from the detector through the automatic noise limiter network to the 1st receiver audio amplifier (TR9). This amplifier also acts as a squelch gate. If the squelch control has been properly adjusted, this amplifier is biased off and will not allow any noise to be passed. When a signal is received, the amplifier is biased on and audio is allowed to be passed on to the 2nd audio driver (TR10). TR10 in turn, feeds the audio to the audio power amplifier (TR11 & TR12) which drives the speaker.

SECTION 5
REPLACEMENT PARTS

CAPACITORS

SYMBOL	DESCRIPTION
C-1	25 pF 50V Mica
C-2,3,5,7,9,10,15,19,20,26, 30,31,38,50,55,71,77,85, 97,100,105,110,114,118, 122,123,124	0.01 µF 25V Disc
C-4,24,27,79,82	3 pF 50V Mica
C-8,41	4.7 µF 16V Electrolytic
C-11,28,32,36,45,80,83,91,96	0.04 µF 25V Disc
C-12,88,101,109	50 pF 50V Mica
C-16,35,47,48,59,64	10 µF 16V Electrolytic
C-17,103,111	5 pF 50V Mica
C-18,104	2 pF 50V Mica
C-22	500 pF 50V Mica
C-23,76,81,106	100 pF 50V Mica
C-25,72	500 pF 50V Disc
C-29,56,57,69,87,90,95	0.04 µF 50V Mylar
C-33,40,99	200 pF 50V Mica
C-34,121	33 µF 16V Electrolytic
C-37	0.1 µF 12V Disc
C-43,46,49	1 µF 16V Electrolytic
C-44,52,58,63	0.1 µF 16V Mylar
C-51,53	100 µF 10V Electrolytic
C-54,60	100 µF 16V Electrolytic
C-61,117	0.005 µF 50V Disc
C-67,68	0.22 µF 50V Mylar
C-70	470 µF 16V Electrolytic
C-73	180 pF 50V Mica
C74 -74	40 pF 50V Mica
C-75	15 pF 50V Mica
C-78,89,93	150 pF 50V Mica
C-92,120	0.001 µF 50V Mylar
C-94	250 pF 50V Mica
C-84	30 pF 50V Mica
C-112	91 pF 50V Mica
C-113,115	1 µF 25V Electrolytic
C-116,119	0.02 µF 50V Mylar
C-125	2,200 µF 25V Electrolytic
C-126	220 µF 16V Electrolytic

REPLACEMENT PARTS

RESISTORS

SYMBOL	DESCRIPTION
R-1	2.2K Ohms, 1/4W Carbon
R-2,11,38,57	220 Ohms, 1/4W Carbon
R-3,6,25,48	150 Ohms, 1/4W Carbon
R-4,7,16,23,30,33,34,41,45, 54,62,76	5.6K Ohms, 1/4W Carbon
R-5,24,70	680 Ohms, 1/4W Carbon
R-8,26,32	33K Ohms, 1/4W Carbon
R-9,18,61	330 Ohms 1/4W Carbon
R-10,13,20,43,49,77,78,82	1K Ohm, 1/4W Carbon
R-12,27,35	6.8K Ohms, 1/4W Carbon
R-14,21	100K Ohms, 1/4W Carbon
R-15,83	470 Ohms, 1/4W Carbon
R-17,63	15K Ohms, 1/4W Carbon
R-19,44,55,85	4.7K Ohms, 1/4W Carbon
R-22,67	47K Ohms, 1/4W Carbon
R-28,68,84	10K Ohms, 1/4W Carbon
R-29,31,86	56K Ohms, 1/4W Carbon
R-36	3.3K Ohms, 1/4W Carbon
R-37,53,89	1K Ohm, 1/4W Carbon
R-39	4.7K Ohms, 1/4W Carbon
R-40	8.2K Ohms, 1/4W Carbon
R-42,46,56,81	22K Ohms, 1/4W Carbon
R-47,66,69	100 Ohms, 1/4W Carbon
R-50	68 Ohms, 1/4W Carbon
R-51	0.5 Ohms, 1/2W Wired
R-52	1.5K Ohms, 1/4W Carbon
R-59	270 Ohms, 1W Metal Covered
R-60	270 Ohms, 1/2W Solid
R-64,91	220 Ohms, 1/4W Carbon
R-65	470K Ohms, 1/4W Carbon
R-71,72	56 Ohms, 1/4W Carbon
R-74	1K Ohm, 1/2W Solid
R-75,88,90	330 Ohms, 1/4W Carbon
R-87	470 Ohms, 1/4W Carbon
R-92	100 Ohms, 1/2W Solid
R-93	220 Ohms, 1/2W Solid
R-94	10 Ohms, 3W Metal Covered

REPLACEMENT PARTS

SEMICONDUCTORS

SYMBOL	DESCRIPTION	
TR-1	2SC710	RF Amplifier
TR-2	2SC710	1st Receiver Mixer
TR-3	2SC710	38 MHz. 1st Local
TR-4	2SC710	2nd Receiver Mixer
TR-5	2SC710	11 MHz. 2nd Local
TR-6	2SC710	1st I.F. Amplifier
TR-7	2SC710	2nd I.F. Amplifier
TR-8	2SC711	Squelch Amplifier
TR-9	2SC711	1st A.F. Amplifier
TR-10	2SC619	2nd A.F. Amplifier
TR-11,12	2SC1173	A.F. Power Amplifier
TR-13,23	2SC711	Mike Amplifier
TR-14	2SC710	Transmit Oscillator
TR-15	2SC710	Transmit Mixer
TR-16	2SC620	Transmit Buffer
TR-17	2SC1018	Transmit Driver
TR-18	2SC756	Transmit Final
TR-19	2SC711	Modulation Lamp
TR-20	2SC372	Voltage Stabilizer
TR-21	2SC1173	Voltage Stabilizer
TR-22	2SD235	Voltage Stabilizer

DIODES

SYMBOL	DESCRIPTION	
D-1	WG1012	Receiver RF Amplifier Protector
D-2,9,11	WG1012	Mode Switching
D-3	1N60	AGC Detector
D-4	1N60	S Meter
D-5	1N60	Power Meter
D-6	1S2473	A.N.L.
D-7,8	1N60	Squelch
D-10	WZ090	Receiver
D-12	SR1K-1	Modulation Stabilizer
D-13	KB-162	Varistor

REPLACEMENT PARTS

INDUCTANCE

SYMBOL	DESCRIPTION
L-1	TC-71024
L-2	TC-71031
L-4	TC-71025
L-5	TKXN-22160BU
L-6	TKXN-22534
L-7	KXN-22535
L-8,9	KXN-13638HM
L-10	KXN-13636BM
L-11	TC-71026
L-12	TC-71023
L-13,18	2R2 Micro Inductor
L-14	TC-71029
L-16	TC-71030
L-17	NS-1373

TRANSFORMERS

SYMBOL	DESCRIPTION
T-1	TKAC-22536IE 1st I.F.
T-2	TKAC-21165A 1st I.F.
T-3	YLN-20844BM 2nd I.F.
T-4	YMC-20845AC 2nd I.F.
T-5	YMC-20846AC 2nd I.F.
T-6	69M A.F. Input
T-7	N28-751BM A.F. Output
T-8	N60-7979PT Power Transformer
CH	115C Line Filter Choke

VARIABLE RESISTORS

SYMBOL	DESCRIPTION
VR-1,2	Semi-fixed, 10K Ohms, 2P 6BM
VR-3,9	Semi-fixed, 30K Ohms, 2P 6BM
VR-4	Variable, 50K Ohms B, EVC-BOAK20B54
VR-5	Semi-fixed, 50K Ohms, 2P 6BM
VR-6, S-2-a,b	Variable, 10K Ohms A, EVC-BOLK20A14
VR-7	Variable, 10K Ohms A, EVC-BOAK20A14
VR-8	Semi-fixed, 300 Ohms, 3P 5BM

REPLACEMENT PARTS

CRYSTALS

SYMBOL	DESCRIPTION
X-1	HC-25U 37.600 MHz.
X-2	HC-25U 37.650 MHz.
X-3	HC-25U 37.700 MHz.
X-4	HC-25U 37.750 MHz.
X-5	HC-25U 37.800 MHz.
X-6	HC-25U 37.850 MHz.
X-7	HC-25U 10.635 MHz.
X-8	HC-25U 10.625 MHz.
X-9	HC-25U 10.615 MHz.
X-10	HC-25U 10.595 MHz.
X-11	HC-25U 10.180 MHz.
X-12	HC-25U 10.170 MHz.
X-13	HC-25U 10.160 MHz.
X-14	HC-25U 10.140 MHz.

REPLACEMENT PARTS

MISCELLANEOUS PARTS

Ceramic Filter LF-B6
Crystal Socket S-DO105
P.A. & Ext. Sp. Jack SJ-296
Headphone Jack LJ079-1-2
Meter Type "M"
Microphone Plug SM-144 (4-P)
Microphone Jack SM-144 (4-P)
Ext. Antenna Connector M-R Type
Ext. Power Connector CN-3795
Speaker 9P10S
Rotary Switch R71N1008 RL-2-4-24
Rotary Switch B69S1024 BS-1-2-3
Microphone 22-115-32
Fuse Holder NRF00301-2
Fuse Holder RF-104
Fuse 0.7 Amp.
Fuse 2 Amp.
Pilot Lamp 4.5V 35mA, Clear, Yellow & Red
AC Power Cord w/Plug SPT-1
Front Panel ABS
Metal Cabinet Complete
Metal Chassis Complete
Mounting Bracket
Volume Knob
Channel Selector Knob
Channel Indicator Acryl
Delta Tune Knob
Power Switch Knob
Pedestals
Brand Plate
Front Plate
Microphone Plate
FCC Plate
Mounting Bracket Bolt
Screw for Cabinet
Display Box
Instruction Booklet
Styrofoam Box
Warranty Card
FCC Application Form

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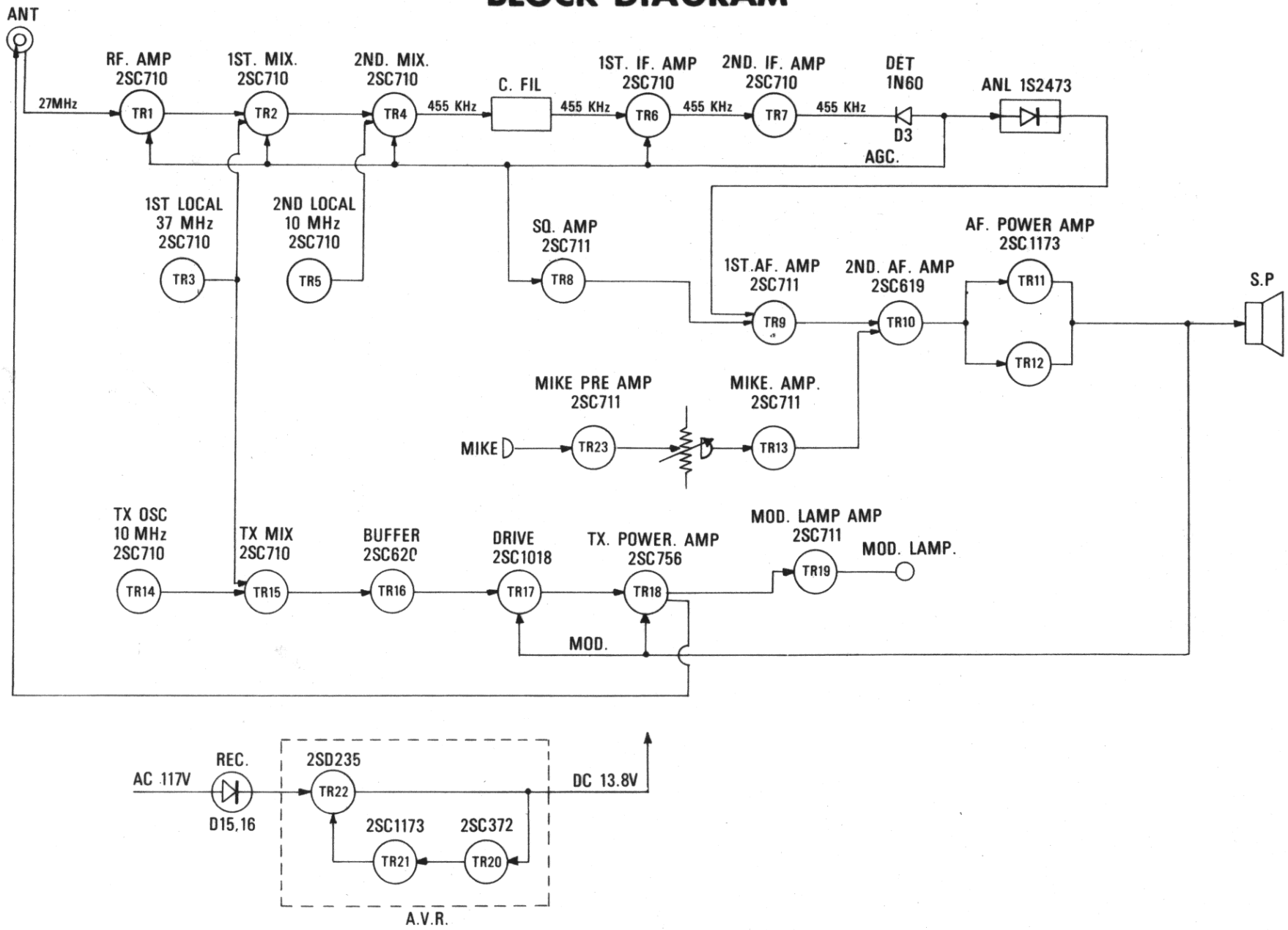

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