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**Standard Horizon 29 Owner's Manual**  
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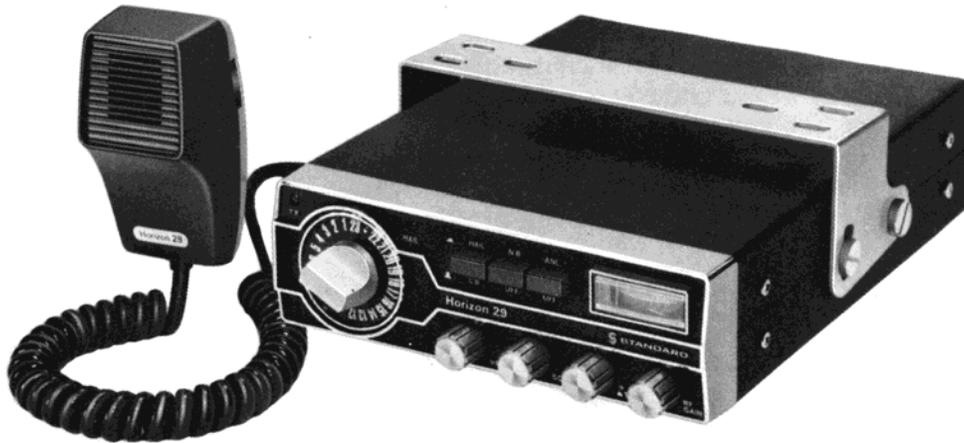
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# HORIZON 29

## INSTRUCTION MANUAL



**Horizon 29  
CITIZENS BAND SOLID STATE  
2-WAY RADIO**

**23 CHANNEL **CB** TRANSCEIVER**



**Standard Communications Corp.**

## LIMITED WARRANTY

STANDARD COMMUNICATIONS CORP. (SCC) warrants each new radio product manufactured and/or supplied by it to be free from defects in material or workmanship under conditions of normal use and service for a period of ninety (90) days, from date of purchase from an authorized SCC Dealer, or for a maximum of one (1) year from date of manufacture.

The SCC obligation under this warranty is limited to repairing or replacing, at its option, the radio product or part(s) therein; which upon examination by SCC shall appear to be defective or not up to factory specifications; providing the radio product is returned (transportation prepaid) to the authorized SCC Factory Service Center.

SCC shall not be liable for any damages, consequential or otherwise, resulting from the use and operation of this radio product and makes no other warranty (s) either expressed or implied on this product, including any warranty of merchantability.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extended to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced, or changed, nor to accessories used therewith not of our own manufacture. SCC reserves the right to make changes or improvements in its products, during subsequent production, without incurring the obligation to install such changes or improvements on previously manufactured equipment.

To place this warranty into effect, the enclosed WARRANTY REGISTRATION CARD must be completed and returned to the STANDARD COMMUNICATIONS CORP. (SCC) within twenty (20) days after date of radio purchase. In addition, the WARRANTY AND SERVICE IDENTIFICATION CARD must be returned with the failed unit when warranty service is required.

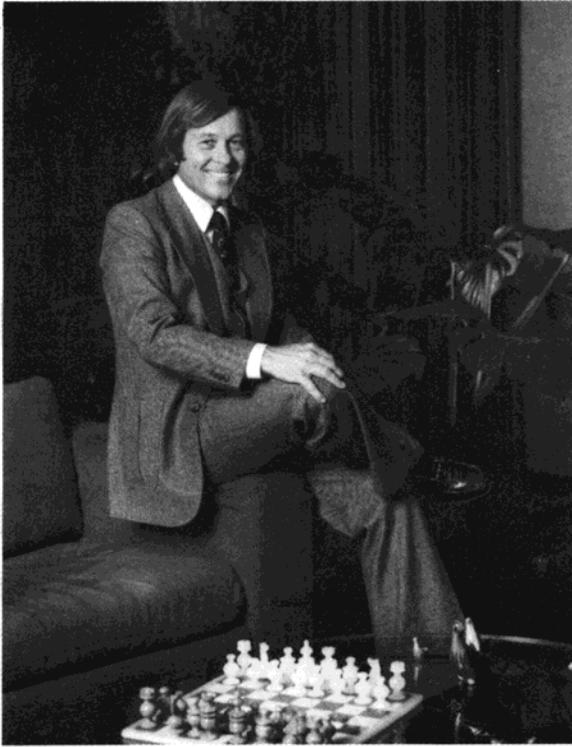
## WARRANTY SERVICE INSTRUCTION

1. At time of purchase or within twenty (20) days thereof, assure that the WARRANTY REGISTRATION CARD has been completed and returned to STANDARD COMMUNICATIONS CORP. (SCC).

NOTE: The SCC ninety (90) Day Limited Warranty begins on date of radio purchase, if the warranty card is completed and returned. Otherwise, your radio will be warranted from date of shipment from the SCC factory as indicated by the DATE CODE.

2. When returning your radio unit for repair or replacement:
  - a. Include your name and return address.
  - b. Indicate the radio problem or failure.
  - c. Include the original sales receipt or other evidence establishing the purchase date of your radio.
  - d. Pack the radio unit in its original shipping container and return (transportation prepaid) to:

STANDARD COMMUNICATIONS CORP.  
CB SERVICE FACILITY  
16691 HALE AVE.  
IRVINE, CALIF. 92714



CITIZENS BAND INTRODUCTION  
BY DONALD W. THOMAS, PRESIDENT  
OF STANDARD COMMUNICATIONS  
CORP.

On behalf of Standard Communications, I would like to welcome you to the exciting world of Citizens Band Radio. I have personally been associated with CB since its inception, and it is exciting to see CB beginning to reach its full potential.

We are pleased to have the opportunity to bring you one of the most outstanding, contemporary Citizens Band radios available today, Standard's new "HORIZON 29".

As a major manufacturer of Marine, Amateur and Commercial Two-Way Radio, we are confident that we have given you "professional quality performance" in a reasonably priced Citizens Band radio. In addition to being completely solid-state, the "HORIZON 29" has a new crystal saving "phase-lock-loop" system. Other outstanding features such as an extremely effective noise blanker, microphone gain control in the microphone, and 10 full watts of audio power are provided.

We welcome any thoughts you might have regarding your "HORIZON 29", for you are a most valued source of information on our products. Thank you for taking the time to select our Standard Communications Corp. "HORIZON 29".

Sincerely,

A handwritten signature in cursive script, appearing to read "Donald W. Thomas".

Donald W. Thomas  
President

## INTRODUCTION

Your HORIZON 29 is an all solid state, transistorized transceiver designed specifically for Citizen Band (CB) use. With minimum maintenance and service it will provide many years of trouble-free, high level performance. To obtain the maximum benefit and pleasure from your HORIZON 29, please carefully read the contents of this manual.

# SPECIFICATIONS

## GENERAL

Channels	:	23-Channels
Frequency Range	:	26.965 MHz. to 27.255 MHz.
Frequency Control	:	P.L.L. Controlled Synthesizer
Semiconductors	:	35-Transistors, 25-Diodes, 4-IC
Microphone	:	500 (ohm) Dynamic
Speaker (Internal)	:	8 (ohm), 3W
Antenna Impedance	:	50 (ohm),
Meter	:	Indicate received signal strength and relative transmit power output
Size	:	8-1/2"L. x 6-1/8"W. x 2-1/4"H.
Weight	:	5-1/2 (Pounds)
Jacks	:	HAILER SPKR, EXT SPKR (4 to 8ohm) MIC JACK (4p)
Controls	:	Channel Selector Volume (w/Power ON-OFF) Squelch Control Delta tune Control RF Gain Control HAILER SWITCH N.B SWITCH ANL SWITCH
Power Supply	:	12V DC to 16V DC
Temperature	:	+25°C

## TRANSMITTER

Final Input Power	:	5W
RF Output Power	:	3.8W
Modulation Capability	:	90% to 100%
Frequency Stability (-20°C to +50°C)	:	±0.003%
Microphone Input Pre-amp. Sensitivity: (1 kHz 50% Modulation)	:	2mV
Current Drain at no Modulation	:	(DC) 1,000mA
Current Drain at Maximum Modulation	:	(DC) 2,000mA
Spurious Ratio	:	55dB



## CHANNEL INFORMATION

Channel	Channel Frequency in MHz	Channel	Channel Frequency in MHz
1	26.965	12	27.105
2	26.975	13	27.115
3	26.985	14	27.125
4	27.005	15	27.135
5	27.015	16	27.155
6	27.025	17	27.165
7	27.035	18	27.175
8	27.055	19	27.185
9	27.065	20	27.205
10	27.075	21	27.215
11	27.085	22	27.225
		23	27.255

To insure that you obtain the maximum performance from this radio, please read carefully the following descriptions and operating instructions.

**NOTE:** The radio has been designed for use in Class "D" operation in the 11 meter Citizens Radio Service. It uses a frequency synthesizing circuit with Phase Locked Loop (PLL) techniques to provide crystal controlled transmit and receive operation on all 23 channels. The PLL circuitry assures ultraprecise frequency control. This is designed to meet the Federal Communications Commission requirements applicable to equipment operating in Class "D" Service, and is not to be used for any other purpose. Part 95 of the FCC regulation, defines operation in this service, and you are required to read and understand these regulations prior to operating this equipment. An FCC license application form 505 is provided for the convenience of the owner. **YOU WILL BE IN VIOLATION OF PART 95 OF THE REGULATIONS IF YOU OPERATE THIS RADIO ON THE AIR PRIOR TO RECEIVING YOUR LICENSE AND CALL SIGN.**

# INSTALLATION

## Location

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passenger in the vehicle. In automobiles, the transceiver is usually mounted to the dash panel with the microphone bracket beside it.

## Mounting and Connection

This radio is supplied with a universal mounting bracket. The transceiver is held in the bracket by two bolts supplied, permitting adjustment to the most convenient angle.

The bracket must be mounted with the machine screw and nuts supplied. The mounting surface must be mechanically strong and also provide a good electrical connection to the chassis of the vehicle. Proceed as follows to mount the transceiver:

1. After you determine the most convenient location in your vehicle, hold the radio with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the mounting bracket bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.
2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most CB antennas are terminated with a type PL-259 plug and mate with the receptacle.
3. Connect the DC power input wire with the fuse (red) to +12V DC. This wire extends from the rear panel. In automobile installation, +12V DC is usually obtained from the accessory contact on the ignition switch. This prevents the set being left on accidentally when the driver leaves the car and also permits operating the radio without the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.
4. Connect the black wire to -12V DC. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used.
5. Mount the microphone bracket on the right side of the unit or near the unit, using two screws supplied. When mounting in an automobile, place the bracket under the dash. So, the microphone is readily accessible.

# GENERAL INFORMATION

## GROUND CONNECTION

This radio may be installed and used in any 12V DC negative or positive ground system vehicle. Most newer U.S. and foreign made cars or small trucks use a negative ground system while some older cars and some newer large trucks may use a positive ground system.

1. Negative ground system: In negative system, connect the Red power cord from the radio to the positive or + battery terminal or other convenient point, and connect the black power cord to the chassis or vehicle frame or – battery terminal.
2. Positive ground system: In the case of a positive ground system, connect the Black power cord from the radio to the negative or – battery terminal or other convenient point, and connect the Red power cord to the chassis or vehicle frame or + battery terminal.

## Antenna

Since the maximum allowable RF output power of the transmitter is limited by the F.C.C. the antenna is one of the important factors affecting transmission distance. Only a properly matched antenna system will allow maximum power transfer from the 50 ohm transmission line to the radiating element. In mobile installations, an antenna system that is non-directional should be used.

A vertically polarized quarter-wavelength whip antenna provides the most reliable operation and greater range. The shorter loaded-type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. Also, the loaded whip antennas do not present the problems of height imposed by the full quarter-wavelength whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted on a corner of the vehicle, they are slightly directional, in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is non-directional. The slight directional characteristic will be observed only at extreme distances. A standard antenna connector (Type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to a good metal electrical ground in the vehicle. When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plate unless the vessel has a steel hull.

Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

### **Base Station Operation**

To operate the transceiver from your home or office, using the regular house current as the power source, you will require a separate power supply capable of supplying two (2) amps at a 13.8 volt DC output with a nominal input voltage of 120 volts AC, 50/60 Hz. Simply connect the red (+) and black (–) leads of the transceiver to the corresponding DC terminals of the power supply.

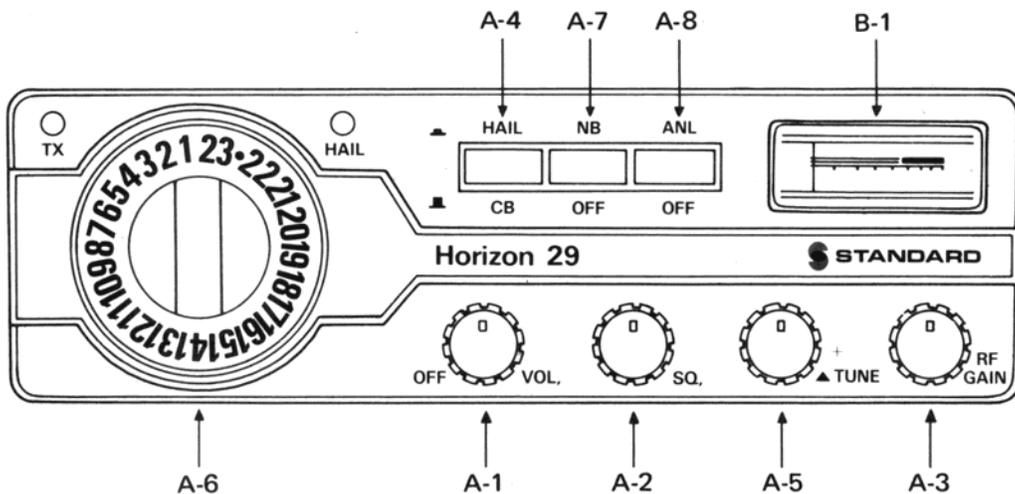
**NOTE:** Do not attempt to operate this transceiver by connecting directly to 117V AC. When AC power supply is used with the transceiver for base station operation, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane vertical antenna will provide the most uniform horizontal coverage.

### **Remote Speaker**

The external speaker jack (EXT. SPKR) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 7 watts. When the external speaker is plugged in, the internal speaker is disconnected.

### **HAILER**

An external 8 ohm, 7 watt or larger speaker must be connected to the HAILER jack located on the rear panel when the transceiver is used as a HAILER system. The speaker should be directed away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the HAILER at high output levels.



## OPERATING INSTRUCTION

### A. CONTROLS FUNCTION

1. **OFF/ON/VOLUME:** Turn clockwise to apply power to the unit and to set the desired listening level.
2. **SQUELCH:** This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity it is desirable that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Turn fully counterclockwise then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold which a signal must overcome in order to be heard. Only strong signal will be heard at the maximum clockwise setting.
3. **RF GAIN:** Adjust as required to optimize signal. This control is used primarily to optimize reception in strong signal areas. Gain is reduced by counterclockwise rotation of the control.
4. **Hailer—CB Switch:** The purpose of this switch is to provide the user with the means of listening to a particular channel from outside his mobile unit and for external audience address from within his mobile unit.  
 The switch is used to select a mode, either Hailing (from CB channel) or Hailing personnel outside of the vehicle.  
**Operation:** With a loud speaker or horn connected to the Hailer jack on rear panel and switch in Hailer position, select channel and increase volume control to the desired level for outside listening. Should a call come in on the selected channel it will be heard from

the outside speaker only.

The unit may, during this time, be engaged as a Public Address from within the vehicle by depressing the mike button, and adjusting the outside volume by means of the red thumb wheel located on the microphone. The microphone button, in this mode, disables the CB receiver.

- 5. DELTA TUNE:** For normal operation, set the control to the center position. This feature has several uses and can greatly enhance receiver operation. First, if a received signal is slightly off frequency, the Delta-Tune control can be operated as required to optimize the receiver signal level.

The effectiveness of the Delta-Tune feature under these conditions can be observed either by listening for a more readable signal at the speaker or by noting the S-meter reading when the Delta-Tune control is operated. Another effective application of this control is in eliminating adjacent channel interference from strong signals. Operate the control, as required, to obtain minimum adjacent channel interference.

- 6. CHANNEL SELECTOR:** This switch selects any one of the twenty-three Citizen Band channels desired. The selected channel is illuminated in the circle portion of the channel selector dial directly above the channel selector knob. Channel 9 has been reserved by the F.C.C. for emergency communications involving the immediate safety of life of individuals or immediate protection of property. Channel 9 may also be used to render assistance to a motorist. Channel 11 is the "calling" channel and is used to establish contact with another station before switching to a working channel.

- 7. NOISE BLANKER SWITCH:** This switch reduces excessive noise, such as; electrical interference, ignition noise, etc. When you feel a necessity, Simply, set the switch to N.B. position.
- 8. ANL SWITCH:** In ANL Position, the automatic noise limiter in the audio circuit is activated. The ANL will be effective on some types of noise.

## **B. INDICATOR FUNCTION**

- 1. S/RF PWR METER:** Shows relative transmitter RF output power and input signal strength when receiving. The meter is illuminated when power is on.
- 2. TX INDICATOR:** TX light (red) comes on when microphone button is pressed and transmitter is on the air.
- 3. HAIL INDICATOR:** The HAIL light(green) comes on when HAIL button is pushed.

## **C. PRESS TO TALK MICROPHONE**

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press the switch and the transmitter is activated. Release the switch to receive. When transmitting hold the microphone about three inches from your mouth and speak clearly in a normal voice. The radio comes complete with the low impedance dynamic microphone.

The microphone is provide with a volume control for the purpose of varying the HAILER output level and to set desired modulation level. Upper forward rotation increases output level of HAILER and increases modulation percentage.

**NOTE:** This is not an amplifying microphone, level control must be set to maximum output to produce 100% modulation.

## **D. OPERATING PROCEDURE TO RECEIVE**

1. Place HAILER-CB switch to CB position and advance RF GAIN control fully clockwise.
2. Turn the SET ON by turning the VOLUME control clockwise, until a click is heard.

**NOTE:** Microphone must be plugged in for receiver to operate.

3. Set the VOLUME control for a comfortable listening level.
4. Listening to the background noise from the speaker. Turn the SQUELCH control slowly counterclockwise until the noise just disappears. The SQUELCH is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of the weaker signals will not be heard.
5. Set the channel selector switch to the desired channel.

## **E. OPERATING PROCEDURE TO TRANSMIT**

1. Select the desired channel of transmission.
2. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.

### **CHANNEL USAGE**

FCC regulations have established that Channel 9 be reserved for emergency situations and should be used only for this purpose.

Channel 11 should only be used as a call channel to make contact with other stations, prior to switching to another channel for continuation of the message.

Common courtesy on the airways dictates that a channel be monitored to assure that it is clear of other radio communication, prior to transmitting. All radio messages should be limited to five (5) minutes or less in duration.

## **WARNING**

Operation of this equipment requires a valid station license issued by the Federal Communications Commission. Do not transmit with your equipment until you have received your license. Illegal operation can result in severe penalties. Be certain that you have read Part 95 of the F.C.C. Rules and Regulations before operating your station.

License applications are to be made on F.C.C. Form 505 available from your nearest F.C.C. field office. (A copy of this form is included with your new transceiver.)

You are required to maintain a current copy of Part 95 of the F.C.C. Rules as a part of your station records. Copies of Part 95 are available from Superintendent of Documents, GPO, Washington, D.C., 20402.

Your Station License is to be posted in accordance with paragraph 95. 101 of the Rules and an executed Transmitter Identification Card (F.C.C. Form 452-C) is to be attached to each transmitter. (A copy of this form is included with your new transceiver.)

F.C.C. Rules require that ALL transmitter adjustments, other than those supplied by the manufacturer as front panel operating controls, be made by or under the supervision of the holder of an F.C.C. First or Second Class Radiotelephone Operator's License.

Replacement or substitution of crystals, transistors, regulator diodes or any other part of a unique nature, with parts other than those recommended by us, may cause violation of the technical regulations of Part 95 of the F.C.C. Rules or violation of the Type Acceptance requirements of Part 2 of the Rules.

# MAINTENANCE AND ADJUSTMENT

This transceiver is specially designed for the environment encountered in mobile installations. The use of all solid state circuitry and its light weight result in high reliability. Should a failure occur, however, replace parts only with identical parts. Do not substitute.

**WARNING:** Federal law requires that adjustment of the radio frequency section of this transceiver may not be made by a citizen band operator. Only an F.C.C. First or Second Class Radiotelephone Operator's License holder may tune the transmitter section of this transceiver.

## MAINTENANCE

All repairs on this radio should be performed by a qualified radio technician, holding an F.C.C. First or Second Class Radiotelephone Operator's License. Repairs or adjustments by unauthorized persons can result in damage to the radio or illegal operation.

## ADJUSTMENT

This transceiver is factory aligned and should not require any adjustments when used with a 50 ohm antenna. If an antenna other than 50 ohm impedance is used, adjustment of the transmitter output circuit may be made to obtain optimum power transfer to the antenna. This adjustment should be made only by a licensed person using a high quality in-line RF wattmeter which will not produce standing waves when inserted in the antenna cable.

## SERVICE

SCC maintains a factory service center for the repair and service of your radio unit. If you desire this service, please pack your radio unit in its original shipping container and return (transportation prepaid) to:

STANDARD COMMUNICATIONS CORP.  
CB SERVICE FACILITY  
16691 HALE AVENUE  
IRVINE, CALIF. 92714

# PARTS LIST

## CAPACITORS

SYMBOL	DESCRIPTION	PART NO.
C51,52	Feed-thru condenser 3pF CZ-023	CCZY006001
C53,54	Feed-thru condenser CZ-006 1000pF	CCZY023001
C12	Tantrum condenser ECS=z35EFR47Q 35Q 35V	CSEA664780
C48	Electrolytic condenser 47 $\mu$ F 16V	CELF314700
C37	Electrolytic condenser 100 $\mu$ F 10V	CELF111010
C50	Electrolytic condenser 470 $\mu$ F 6.3V	CELF904710
C303,349	Mylar condenser 0.001 $\mu$ F 50V	CQME811025
C304,222,240	Mylar condenser 0.01 $\mu$ F 50V	CQME811035
C247,250,228	Mylar condenser 0.022 $\mu$ F 50V	CQME812235
C224,216,219	Mylar condenser 0.047 $\mu$ F 50V	CQME814735
C296	Aluminum condenser 0.1 $\mu$ F 16V	CAAH311046
C231,232,237,242 293,302,305	Electrolytic condenser 1 $\mu$ F 50V	CELF811090
C236,301,239	Electrolytic condenser 10 $\mu$ F 16V	CELF311000
C244,252	Electrolytic condenser 22 $\mu$ F 16V	CELF312200
C243	Electrolytic condenser 47 $\mu$ F 16V	CELF314700
C246	Electrolytic condenser 100 $\mu$ F 16V	CELF311010
C229	Electrolytic condenser 33 $\mu$ F 10V	CELF113300
C241,307	Electrolytic condenser 100 $\mu$ F 10V	CELF111010
C245	Electrolytic condenser 220 $\mu$ F 6.3V	CELF902210
C312	Electrolytic condenser 470 $\mu$ F 16V	CELF314710
C226	Electrolytic condenser 33 $\mu$ F 16V	CELF313300
C294,298	Electrolytic condenser 4.7 $\mu$ F 16V	CELF314790
C10,20	Ceramic condenser 2pF 50V C, CH	CCCB812091
C9	Ceramic condenser 5pF 50V C, CH	CCCB815091
C3,22	Ceramic condenser 10pF 50V, J, CH	CCCB811004
C15,17	Ceramic condenser 56pF 50V, J, CH	CCCB815604
C6,29	Ceramic condenser 47pF 50V, J, CH	CCCB814704
C24	Ceramic condenser 100pF 50V, J, CH	CCCB811014
C5	Ceramic condenser 47pF 50V, J, TH	CCTB814704
C23	Ceramic condenser 50V 0.001 $\mu$ F M-YA	CKAE811026
C7,8,14,19	Ceramic condenser 50V 0.01 $\mu$ F M-YA	CKAE811036
C2,13,18,35	Ceramic condenser 50V 0.022 $\mu$ F M-YA	CKAE812236
C38,39,40,41,42,43 44,45	Ceramic condenser 25V 0.01 $\mu$ F ZYG	CKFB511030
C1,4,11,21,26,30,34 36,46,47,49	Ceramic condenser 25V 0.039 $\mu$ F ZYG	CKFB513930
C220,256	Ceramic condenser 1pF 50V, CH	CCCB811091
C212,259	Ceramic condenser 2pF 50V, CH	CCCB812091
C204,263,261	Ceramic condenser 3pF 50V, CH	CCCB813091
C209,291	Ceramic condenser 10pF 50V, SL	CCGB811005
C25	Ceramic condenser 18pF 50V, K, SL	CCGB811805
C201,289	Ceramic condenser 22pF 50V, SL	CCCB812205
C266,278,313	Ceramic condenser 33pF 50V, SL	CCGB813305
C283	Ceramic condenser 47pF 50V, SL	CCGB815605
C274	Ceramic condenser 68pF 50V, SL	CCGB816805
C227,285,341	Ceramic condenser 100pF 50V, SL	CCGB811015
C284	Ceramic condenser 120pF 50V, SL	CCGB811215
C340	Ceramic condenser 150pF 50V, SL	CCGB811515
C271,272	Ceramic condenser 180pF 50V, SL	CCGB811815
C255,275	Ceramic condenser 220pF 50V, SL	CCGB812215
C282	Ceramic condenser 250pF 50V, SL	CCGB812515
C342	Ceramic condenser 330pF 50V, SL	CCGB813315
C254	Ceramic condenser 470pF 50V, SL	CCGB814715
C285,297,319,267	Ceramic condenser 0.001 $\mu$ F 25V, YG	CKFB511020
C230	Ceramic condenser 0.0022 $\mu$ F 25V, YG	CKFB511020
C306,344	Ceramic condenser 0.0047 $\mu$ F 25V, YG	CKFB514720
C202,203,205 206,207,208,210	Ceramic condenser 0.01 $\mu$ F 25V, YG	CKFB511030

# PARTS LIST

SYMBOL	DESCRIPTION	PART NO.
C211,213,214,217 218,238,223,234 235,248,249 253,251,257,260 262,315,316,264 265,268,269,317 318,270,273,276 279,280,286,292 290,295,299,300 309,314,351	Ceramic condenser 0.01 $\mu$ F 25V, YG	CKF511030
C221,225,281,308 310,311,287,348 350	Ceramic condenser 0.039 $\mu$ F 25V, YG	CKFB513930

## RESISTORS

SYMBOL	DESCRIPTION	PART NO.
R279	Solid Resistor 56 ohm $\pm$ 10% 1/8W	RCEL185605
R304	Cement Resistor 22 ohm 3W	RXJZ302205
R259	Metal Coated Resistor 0.5 ohm 1W	RSJZ101095
R261	Metal Coated Resistor 12 ohm 2W	RSJZ201205
R283	Metal Coated Resistor 150 ohm 2W	RSJZ201515
R1,2,18,36,37,38 39,40,42,43,41	Carbon resistor 100 ohm $\frac{1}{4}$ w J	RUBK141014
R6	Carbon resistor 150 ohm $\frac{1}{4}$ w J	RUBK141514
R11	Carbon resistor 220 ohm $\frac{1}{4}$ w J	RUBK142214
R8	Carbon resistor 470 ohm $\frac{1}{4}$ w J	RUBK144714
R29	Carbon resistor 680 ohm $\frac{1}{4}$ w J	RUBK146814
R12,15,16,24	Carbon resistor 1K ohm $\frac{1}{4}$ w J	RUBK141024
R5,19	Carbon resistor 2.2K ohm $\frac{1}{4}$ w J	RUBK142224
R4,34,35	Carbon resistor 2.7K ohm $\frac{1}{4}$ w J	RUBK142724
R9	Carbon resistor 3.3K ohm $\frac{1}{4}$ w J	RUBK143324
R14,20,44,45,46 47,48,49,50,51	Carbon resistor 4.7K ohm $\frac{1}{4}$ w J	RUBK144724
R13	Carbon resistor 5.6K ohm $\frac{1}{4}$ w J	RUBK145624
R3	Carbon resistor 8.2K ohm $\frac{1}{4}$ w J	RUBK148224
R7,17,22,23	Carbon resistor 10K ohm $\frac{1}{4}$ w J	RUBK141034
R10	Carbon resistor 100K ohm $\frac{1}{4}$ w J	RUBK141044
R273	Carbon resistor $\frac{1}{4}$ w 27K ohm	RUBZ142734
R204,228	Carbon resistor $\frac{1}{4}$ w 33K ohm	RUBZ143334
R227	Carbon resistor $\frac{1}{4}$ w 47K ohm	RUBZ144734
R220,229,230	Carbon resistor $\frac{1}{4}$ w 100K ohm	RUBZ141044
R242	Carbon resistor $\frac{1}{4}$ w 150K ohm	RUBZ141544
R232,269	Carbon resistor $\frac{1}{4}$ w 180K ohm	RUBZ141844
R231	Carbon resistor $\frac{1}{4}$ w 470K ohm	RUBZ144744
R297	Carbon resistor $\frac{1}{4}$ w 2.2M ohm	RUBZ142254
R287,291,306,202 209,213,221,249 250,252,262,272	Carbon resistor $\frac{1}{4}$ w 3.3K ohm	RUBZ143324
R216,244,236	Carbon resistor $\frac{1}{4}$ w 4.7K ohm	RUBZ144724
R247,290	Carbon resistor $\frac{1}{4}$ w 5.6K ohm	RUBZ145624
R225,246	Carbon resistor $\frac{1}{4}$ w 6.8K ohm	RUBZ146824
R299,206,267,241	Carbon resistor $\frac{1}{4}$ w 10K ohm	RUBZ141034
R268,237	Carbon resistor $\frac{1}{4}$ w 12K ohm	RUBZ141234
R222,245,263	Carbon resistor $\frac{1}{4}$ w 15K ohm	RUBZ141534
R217,285	Carbon resistor $\frac{1}{4}$ w 18K ohm	RUBZ141834
R253,289,226	Carbon resistor $\frac{1}{4}$ w 22K ohm	RUBZ142234
R274	Carbon resistor $\frac{1}{4}$ w 82 ohm	RPBZ148204
R264	Carbon resistor $\frac{1}{4}$ w 180 ohm	RPBZ141814
R208	Carbon resistor $\frac{1}{4}$ w 390 ohm	RPBZ142214

## PARTS LIST

SYMBOL	DESCRIPTION	PARTS NO.
R239,238	Carbon resistor ¼w 2.7K ohm	RPBZ142724
R243	Carbon resistor ¼w 5.6K ohm	RPBZ143324
R307	Carbon resistor ¼w 6.8K ohm	PRBZ146824
R302	Carbon resistor ¼w 10K ohm	RPBZ141034
R288	Carbon resistor ¼w 15K ohm	RPBZ141534
R308	Carbon resistor ½w 22K ohm	RPBZ182234
R300	Carbon resistor ¼w 100K ohm	RPBZ141044
R295	Carbon resistor ½w 18 ohm	RPBZ121805
R260	Carbon resistor ½w 47 ohm	RPBZ124705
R235	Carbon resistor ½w 56 ohm	RPBZ125605
R296	Carbon resistor ½w 68 ohm	RPBZ126805
R280	Carbon resistor ½w 1K ohm	RPBZ121025
R278	Carbon resistor ¼w 1 ohm	RUBZ141094
R218	Carbon resistor ¼w 22 ohm	RUBZ142204
R292	Carbon resistor ¼w 47 ohm	RUBZ144704
R205	Carbon resistor ¼w 56 ohm	RUBZ145604
R277	Carbon resistor ¼w 68 ohm	RUBZ146804
R224,254,258,266 270,271,298	Carbon resistor ¼w 100 ohm	RUBZ141014
R207,211,212,215 256	Carbon resistor ¼w 220 ohm	RUBZ142214
R276	Carbon resistor ¼w 330 ohm	RUBZ143314
R223	Carbon resistor ¼w 470 ohm	RUBZ144714
R281,282	Carbon resistor ¼w 560 ohm	RUBZ145614
R219,265,248	Carbon resistor ¼w 680 ohm	RUBZ146814
R201,210,214,251 203,255,257,284	Carbon resistor ¼w 1K ohm	RUBZ141024
R286	Carbon resistor ¼w 1.5K ohm	RUBZ141524
R293,294	Carbon resistor ¼w 1.8K ohm	RUBZ141824
R240,303	Carbon resistor ¼w 2.2K ohm	RUBZ142224

### CRYSTALS

SYMBOL	DESCRIPTION	PARTS NO.
X1	Crystal 10.24 MHz	
X201	Crystal QX-069 5.575 MHz	QQXY069001

### SEMICONDUCTORS

SYMBOL	DESCRIPTION	PART NO.
IC1	IC µPC1008 C	DDEY032001
IC2	IC µPD857 C	DDEY037001
IC3	IC 78L05 AV	
IC201	IC TA7061 AP	DDEY004001
TR2	FET 2SK19-GR	DDCY001001
TR4	FET 3SK45-B	DDCY104001
TR3,11,12	Transistor 2SC945-AQ	DDBY224003
TR1,5,6,7,9	Transistor 2SC1675-L	DDBY259001
TR201,202,203,204 205,213	Transistor 2SC1675 (M)	DDBY259002
TR220,221,223,206 207,209,219	Transistor 2SC945 (AQ)	DDBY224003
TR208,222	Transistor 2SA733 (R)	DDBY003003
TR210,218	Transistor 2SC1364 (6)	DDBY233001
TR211,212	Transistor 2SD313 (F)	
TR215	Transistor 2SC710 (D)	DDBY209003
TR216	Transistor 2SC2028 A/20	DDBY256001
TR217	Transistor 2SC2029 B/10	DDBY257001
TR214	FET 3SK45 (B)	DDCY104001

# PARTS LIST

## DIODES

SYMBOL	DESCRIPTION	PART NO.
D201,202,203,223 224	Diode DA-047, IS1588	DDAY047001
D204,208,209,210	Diode DA-004, WG713	DDAY004001
D205,206,207,211 214,218,219	Diode DA-001 IN60	DDAY001004
205,206,207,211 214,218,219	Diode DA-001 IN60	DDAY001004
D213,221	Diode DA-002, SP1K-1	DDAY002001
D212	Varistor DF-007 MV-1	DDF007001
D220,222	Zenor Diode DA-010, CZ092	DDAY010002
D216	L.E.D. DA-007, TLR104	DDAY007001
D217	L.E.D. DA-032 TLG103	DDAY032001
D1,2	Diode 1S2688-B	DDAY006002
D3	Diode 1S 1588	DDAY047005

## VARIABLE RESISTORS

SYMBOL	DESCRIPTION	PART NO.
VR213	Semi-fixed resistor RV-145 1K ohm B	RRVY145004
VR210	Semi-fixed resistor RV-133 10K ohm B	RRVY133006
VR202,212	Semi-fixed resistor RV-145 20K ohm B	RRVY145008
VR206	Semi-fixed resistor RV-145 5K ohm B	RRVY145006
VR208	Semi-fixed resistor RV-145 100K ohm B	RRVY145010
VR205	Semi-fixed resistor RV-145 10K ohm B	RRVY145007
VR201	Variable resistor RV-048 100K ohm B	RRVY048001
VR203	Variable resistor RV-027 10K ohm A	RRVY027001
VR207	Variable resistor RV-064 20K B	RRVY064001
VR209	Variable resistor RV-077 10K B	RRVY077001
VR214	Semi-fixed resistor RV-145 3K B	RRVY145015

## TRANSFORMERS

SYMBOL	DESCRIPTION	PART NO.
T201	Input Transformer TF011	TTFY011001
T202	Output Transformer TF097	TTFY097001
T203	Choke Transformer TF017	TTFY017001

## INDUCTORS

SYMBOL	DESCRIPTION	PART NO.
L3	Micro Inductor LZ-002 LF-4 6.8 $\mu$ H	LLZY002011
L4	Micro Inductor LZ-001 LF-1 100 $\mu$ H	LLZY001013
L215	Micro Inductor LZ-002, 2.2 $\mu$ H	LLZY002005
L7,11	Micro Inductor LZ-001 LF-1 470 $\mu$ H	LLZY001021
L1	Coil LA-091	LLAY091001
L2	Coil LA-149	LLAY149001
L5	Coil LA-150	LLAY150001
L201,221	Coil LA-029	LLAY029001
L202	Coil LA-041	LLAY041001
L203,204,208	Coil LA-147	LLAY147001
L205	Coil LA-116	LLAY116001
L206	Coil LA-106	LLAY106001
L207	Coil LA-107	LLAY107001
L209	Coil LA-046	LLAY046001
L210,211	Coil LA-148	LLAY148001
L212	Coil LA-146	LLAY146001
L222	Coil LA-077	LLAY077001
L213,217	Coil LC-019	LLCY019001
L214	Coil LC-017	LLCY017001

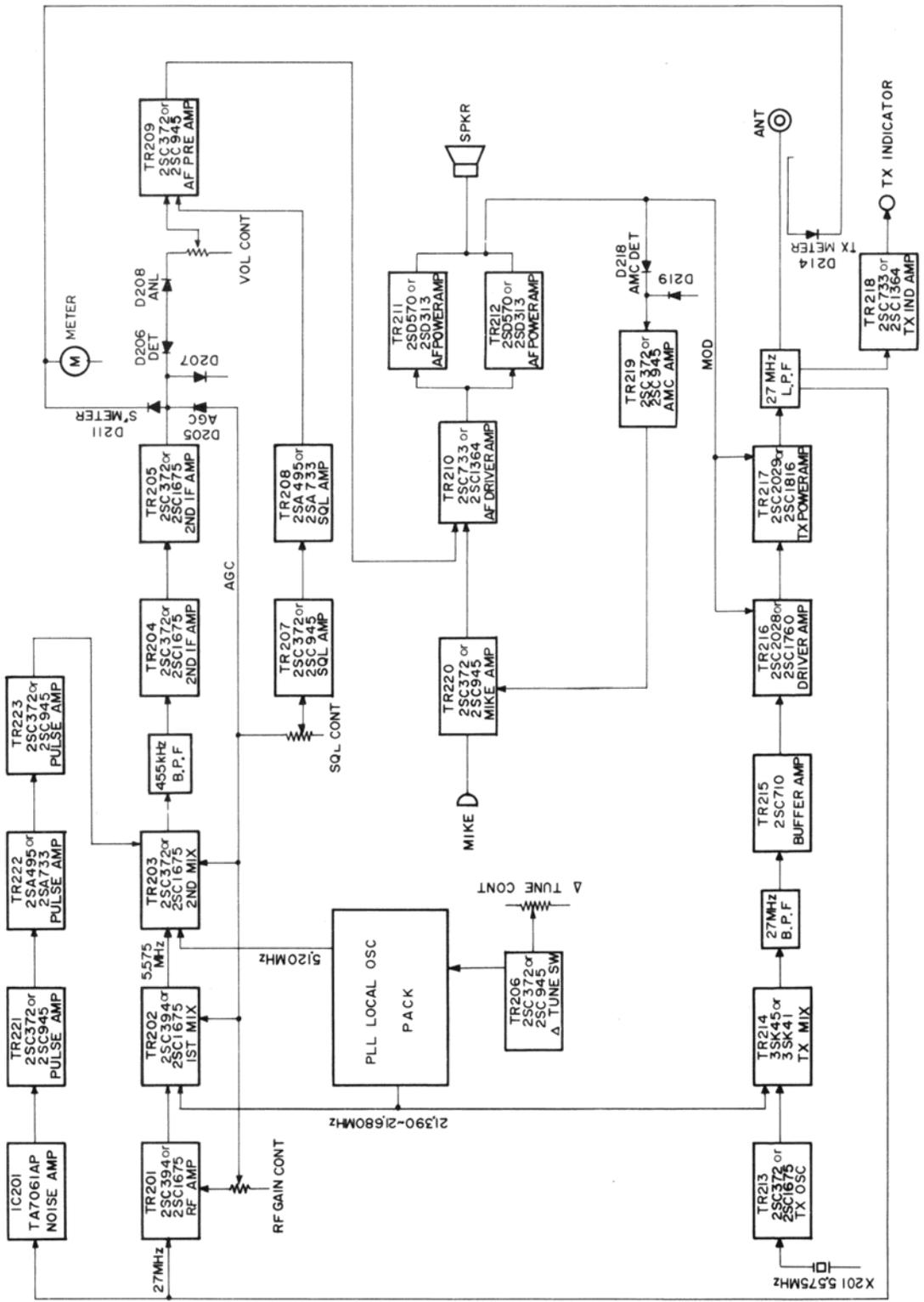
# PARTS LIST

SYMBOL	DESCRIPTION	PART NO.
L219	Coil LC-110	LLCY110001
L216	Coil LD-012	LLDY012001
L220	Coil LD-017	LLDY017001
L218	Coil LE-006	LLEY006001

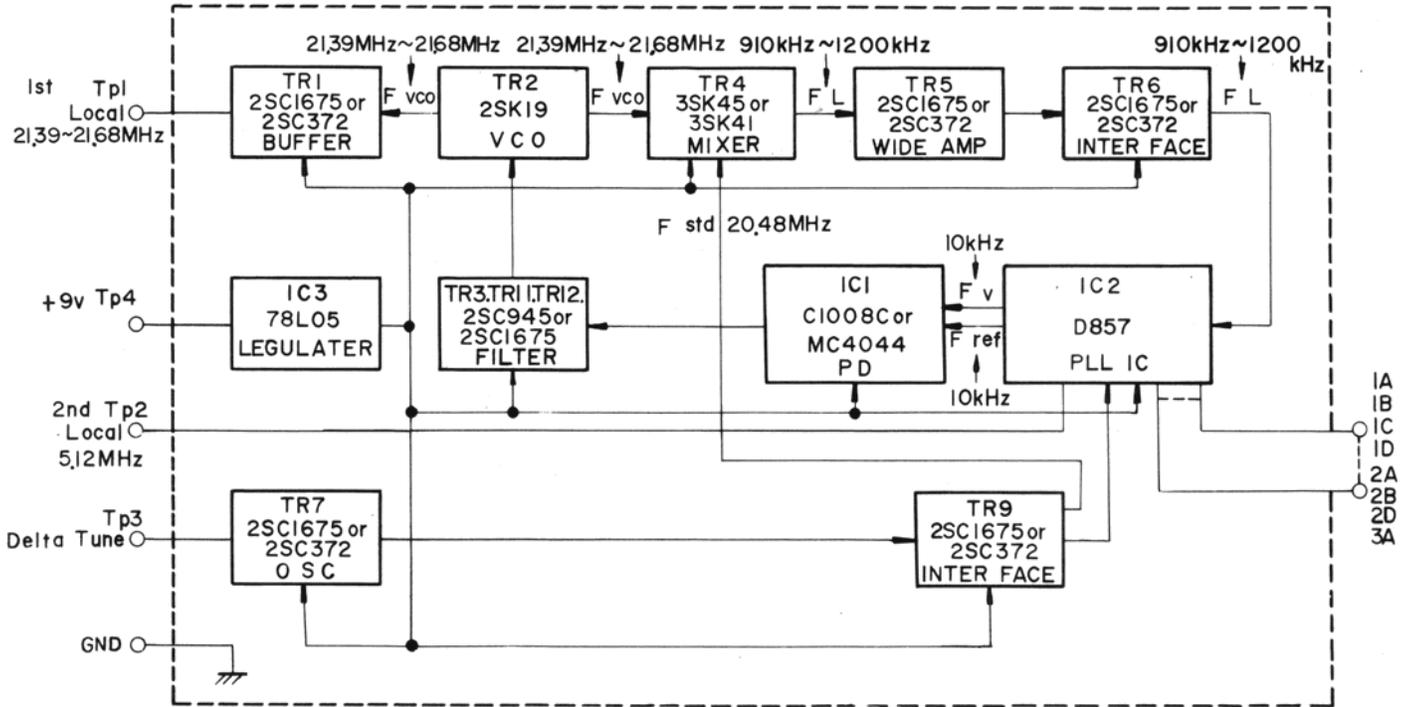
## MISCELLANEOUS PARTS

SYMBOL	DESCRIPTION	PART NO.
	PC Board PC-129AA (VCO)	PPCY129011
	PC Board PC-130AA (PLL)	PPCY130011
	PC Board PC-131AA	PPCY131001
TP5	Test terminal TP-020	JTPY020001
TP205,206	Test terminal TP-001	JTPY001001
TP201,202,203,204	Test terminal TP-011	JTPY011001
	Fuse FS-001 2A	ZFSY001001
	Wire Crammer YY-035	ZYYY035001
	DC code	WZDZ070002
	Chassis	MDBP202286
	Case (top)	MDBP202287
	Case (bottom)	MDBP202288
	Mounting bracket	MDBP302289
	Heat sink for audio	MDBP402914
	Heat sink for TX	MDBP403363
	Shield case	MDBP303364
	Shield case cap	MDBP403364
	VCO Shield case cap	MCBP400050
	VCO Shield case cap	MCBP400051
	Front panel	MDMP203361
	Channel knob	MDMP402182
	Knob	MDMP403362
	Channel disk	MDMP403366
	FCC plate	MDNP403368
	Serial No. label	MDLP402730
	Hailer label	MDLP403451
	Screw for mounting bracket	MDHP400238
S201,202,204	Push switch SW-070	SSWY070001
SP	Speaker SP-038	SSWY038001
M201	Meter M-066	ZMTY066001
J201,202	Jack JK-010	JJKY010001
J203	MR Connector JK-035	JJKY035001
J204	Jack JK-004	JJKY004001
	Mic. Hanger YY-018	JYYY018001
	Microphone MK-049	AMKY049001
PL201	Pilot lamp PL-005	
	Rotary switch SR-117	SSRY117001
	Ceramic filter FL009, CFU-455H2	FFLY009001

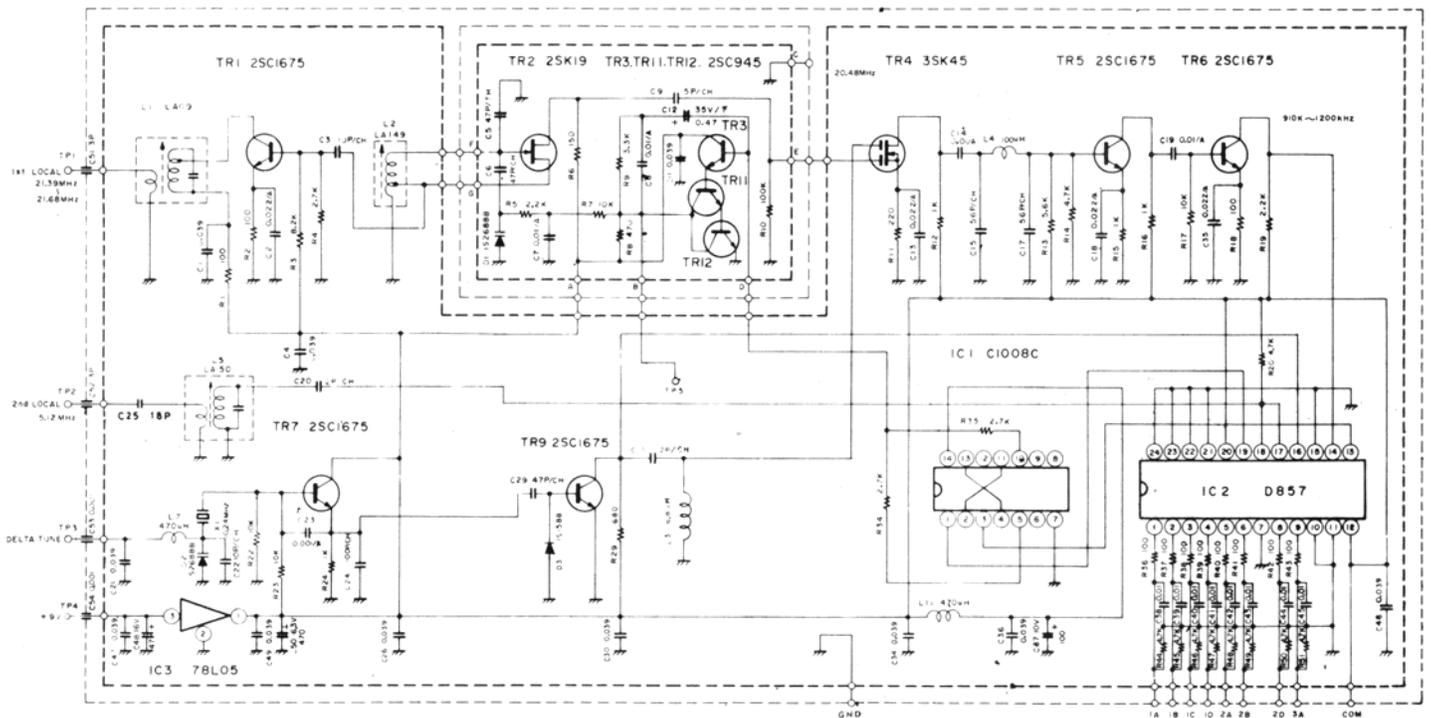
# HORIZON 29 BLOCK DIAGRAM



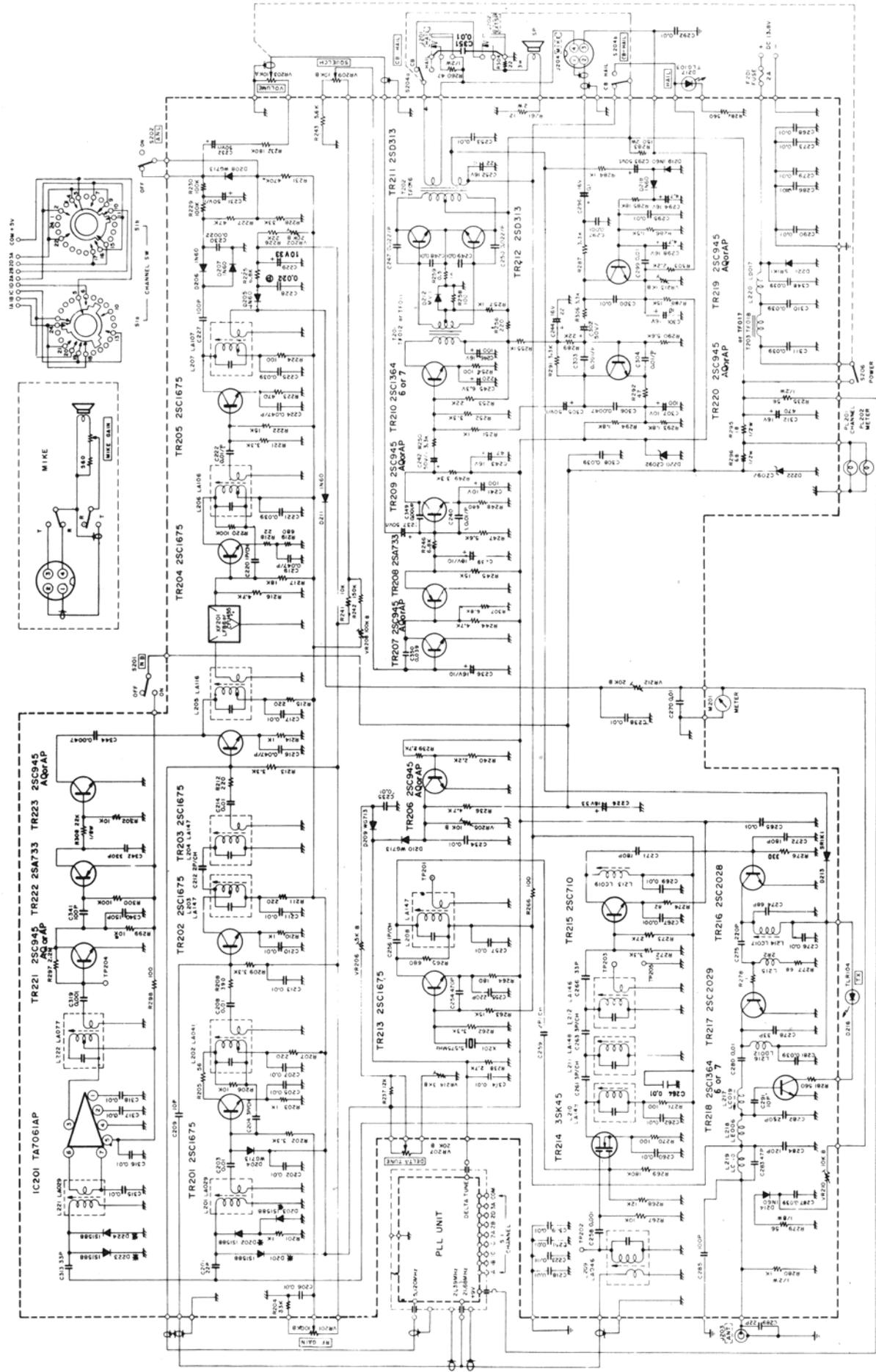
# PLL LOCAL OSCILLATOR BLOCK DIAGRAM



# PLL LOCAL OSCILLATOR SCHEMATIC DIAGRAM



# HORIZON 29 SCHEMATIC DIAGRAM



BIOGRAPHY OF DONALD W. THOMAS,  
PRESIDENT OF STANDARD COMMUNICATIONS CORP.

Mr. Donald W. Thomas is a well known Southern California business executive and electronics engineer, who has devoted his career specifically to the field of Radio Communications.

As Chief Engineer, and later as Vice President of Engineering for Osborne Electronics, in the late 1950's, he was responsible for the design and development of the first Class "D", solid state mobile Citizens Band radio, as well as the first high power hand held radio.

In 1963, he co-founded his own company, Pace Communications, where as President, he developed, manufactured and marketed many new and often innovative Citizens Band and related communications products. Pace became a very successful company, and in the late 1960's, it was merged with another corporation. In 1968 Mr. Thomas left that corporation which allowed him to devote his full time and energies to the development of a new consumer type Marine Communications Product.

In 1969, he founded his present Company, Standard Communications, with the intent of becoming a dominant factor, not only in the Marine Radio Industry, but also in the Commerical Business/Industrial Radio market. One of Mr. Thomas' career accomplishments has been his business relationship with Japanese manufacturers. This close working relationship, developed over many years, resulted in the formation of one of the first American/Japanese "joint ventures" with Standard Radio of Japan, thus establishing Standard Communications Corp. Since that time, his consistent leadership has helped his Company fulfill the Company motto: "Where Communications Gets Down to Business".

Today, as President of Standard Communications, Mr. Thomas is continuing his career as an innovative executive. He is an active member of the Young Presidents Organization, past President of the Radio Pioneers and one of Southern California's most active boating enthusiasts.

**CUSTOMER RECORD**

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Purchase date \_\_\_\_\_

HORIZON 29 Serial No. \_\_\_\_\_



**Standard Communications Corp.**