maxcom 7E

ALERT MOBILE TRANSCEIVER



SOLID STATE 40 CHANNEL
FM 2 WAY RADIO

Instruction Manual

SPECIFICATIONS

TRANSMITTER SECTION

POWER OUTPUT	4 Watt Max (10dB Hi-Lo Power Switch Provided)
EMISSION	Frequency modulation
SPURIOUS RESPONSE LIMIT	0.25 uW MAX
MODULATION	FM; Deviation 2KHz MAX

RECEIVER SECTION

CIRCUIT TYPE	Crystal controlled PLL
FREQUENCY	40 channels—27.60125MHz Thru 27.99125MHz; 10KHz spacing
SENSITIVITY	Less than 1uV for 20dB (S+N)/N.
SQUELCH RANGE	0—1mV
SELECTIVITY	More than 40dB at ± 10KHz
IF FREQUENCY	1st IF: 10.695MHz 2nd IF: 455KHz
IMAGE REJECTION	60dB typical
AUDIO OUTPUT	1.5W maximum at 8 ohm load
CURRENT DRAIN	150mA on stand by (no signal)
CURRENT DRAIN (MAXIMUM)	Less than 900mA
ANTENNA	Telescopic type 80cm long
POWER SOURCE	Operates from nominal 13.2 volts DC, negative ground system
DIMENSIONS [OVERALL]	2-3/4″(H) × 3-5/16″(W) × 8-3/16″(D)
WEIGHT	2.05 kg

Leather case with battery pack and recharge socket.

Description

This model is an all solid state 2-way radio transceiver for mobile or portable operation. A frequency synthesizer circuit provides 40 crystal controlled PLL transmit and receive channels in the 27MHz Band, engineered for trouble-free performance. Your transceiver uses heat resistant transistors in all critical areas. Current drain on 12 volts DC is exceptionally low. Operation over long periods is feasible even with your engine turned off. The transceiver may also be operated by using an optional AC to DC Regulated 12-Volt Power Supply or 10 of 50.5 mm × 14.5 mm Rechargeable batteries (not included).

RECEIVER

The receiver is a sensitive and highly selective dual-conversion superheterodyne type providing crystal-controlled PLL operation on all 40 channels. The circuit incorporates a number of features designed to provide optimum reception. The receiver incorporates an effective audio stage. A ceramic filter provides sharp selectivity and high adjacent channel rejection. As a result transmissions on adjacent channels cause minimum interference. A variable squelch control is incorporated to "silence" the receiver when no signals are being received. The squelch circuit is adjustable providing varying degrees of sensitivity to incoming signals.

TRANSMITTER

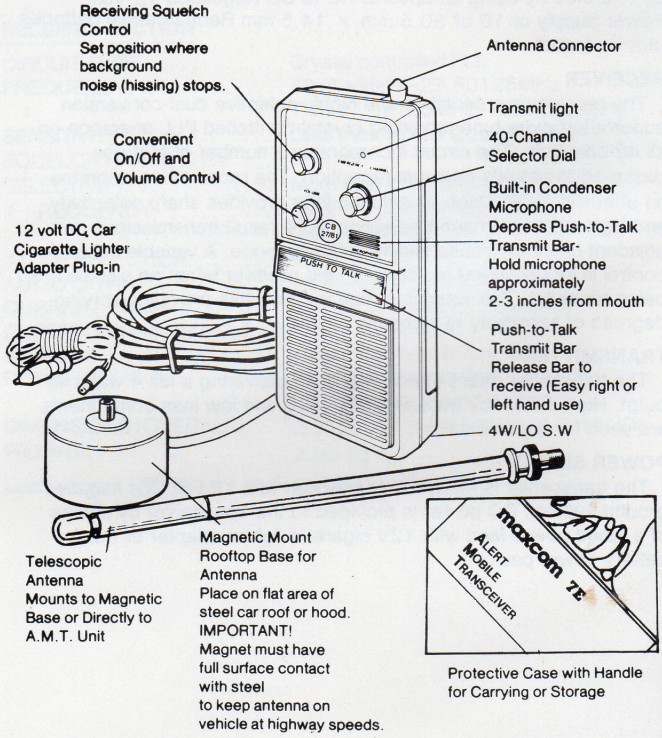
The transmitter offers stable operation delivering a full 4 watts RF outpt. High efficiency transistors IC chips and low loss components are used for high reliability.

POWER SUPPLY

The transceiver is ready for connection to a 12 volt DC, negative ground system. DC power is provided to the transceiver by means of a fused power lead with 12V cigarette lighter adapter or from battery power pack.

Important Features and Controls of Alert Mobile Transceiver 2-Way FM CB Radio

A precision transceiver designed for maximum efficiency, power, channel capability, and ease of operation.



1. ON-OFF/VOLUME.. Corttrols audio output for the built-in speaker. Incorporates "ON-OFF" power switch at the extreme counter-clockwise position.

2. SQUELCH..... CONTROL Used to quiet the receiver during absence of receive signals. Sensitivity to incoming signals is fully adjustable.

3. NORM/–10dB..... POWER SWITCH Reduced power by 10dB. For use when antenna exceeds height of 7 meters. Refer MPT 1320 regulations.

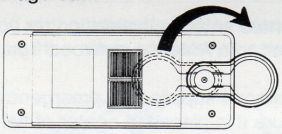
4. **CHANNEL SWITCH.** This rotary switch selects one of 40 channels for transmit and receive operation.
5. **TX INDICATOR LIGHT.....** Lights up when you are transmitting.
6. **PUSH TO TALK BAR:**
   - Press to talk, release to listen.
   - Do not press without talking. This would still send a signal out and result in interference to other users.

Facts About Channel 9

Many persons have CB base station radios in their homes. If you need assistance, try to reach a base station or any channel. If someone responds, you can request that person to call (via telephone) a relative, freind or service organization to pass on information or come to your aid.

2-Way Mount System

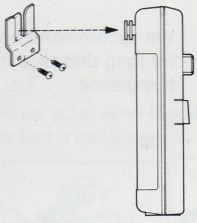
1 With the BIG RING, (located on back) unit can also be hung from any convenient knob in your car for easy use. i.e., cigarette lighter, radio knob. etc. Of course, the unit can also be used in the storage case.



BIG RING

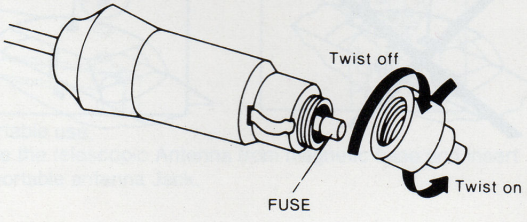
2 If you prefer, use traditional mounting system (located on back) as shown in sketch.

To do this, you need to install optional common CB MIC HOLDER into any convenient location on the dash.



Fuse Replacement

Twist to open 2 Amp fuse holder.



Power Conection Note:

This unit is designed for 12-volt DC operation with negative ground electrical systems. Most UK, and foreign-made cars use a negative ground system.

POWER: 1) Electrical power is supplied for your radio by means of the cigarette lighter adaptor plug supplied with the unit. Simply insert the adaptor into the cigarette lighter and plug the other end into the power jack on the bottom of the radio.

2) The Alert Mobile Transceiver also features a carrying case with a battery holder. 10 rechargeable 1.25V "AA" nikel cadmium batteries will fit into this portable power source.

For portable use, simply plug in the small plug from the battery case into the Jack marked 12 volts DC located on the bottom of the radio.

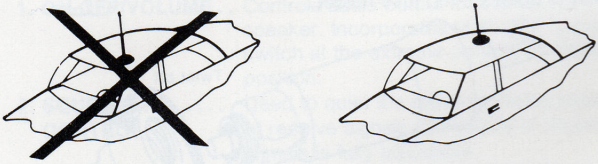
NOTE: Battery life can be significantly increased if Hi-Lo power control is switched to "LO"

Optional Antennas for Permanent Installation

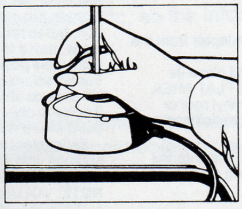
If you desire portable lorries antenna installation for your CB Transceiver, use the Telescopic Antenna remvoed from Magnetic Base.

If using the Magnetic Antenna supplied for emergency or short driving situations, make sure it is placed in center of flat area of car's steel roof (towards back window) for reduced wind force and full magnetic holding strength. When car has vinyl roof or convertible top, place magnetic base on car's steel hood.

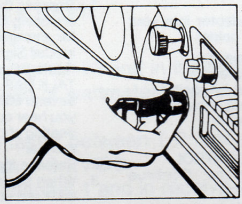
NOTE: We recommend not using the magnetic antenna supplied for long distance trips or during high winds or heavy turbulance.



Your Alert Mobile Transceiver Ready In These Easy Steps:



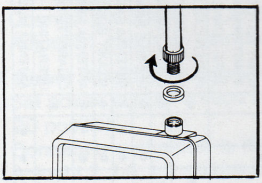
1 Either connect the telescopic antenna to the magnetic rooftop base—or directly to the CB unit if you wish to use inside or outside your car.



2 Plug one end of the cigarette lighter adapter into the receptacle on the unit and the other end into your car's 12-volt lighter insert.



3 Now you are ready to transmit or receive on your Alert Mobile Transceiver — and help or information is just a call away.





4 For portable use,
Remove the telescopic Antenna from magnetic base and insert it into portable antenna Jack.

Operating Instructions

SET-UP INSTRUCTIONS

1. Remove antenna and car adapter from the travel case.
2. Full extend the antenna and place its magnetic base in center of FLAT AREA on vehicle's steel roof—if vinyl roof or convertible top, place magnetic base on steel bonnet of vehicle.

NOTE: Recommend not using this antenna while driving your vehicle during periods of high or gusty winds.

CAUTION: Never slide Magnetic Antenna across a car's painted surface, becase dust and dirt particles will scratch its finish. To remove magnetic type antenna, grasp the base section, then firmly peel it up and off the car surface.

3. Insert the 12V DC car adapter into your vehicle's cigarette lighter holder.

NOTE: On some vehicles, it may be necessary to pull the car adapter out, (slightly rotate it) then reinsert for positive contact. Make sure power plug is inserted into 12V DC jack on radio bottom.

Receive (listen):

1. Turn ON-OFF/VOLUME CONTROL clockwise until it clicks on. Continue turning to increase loudness.
2. Rotate CHANNEL SWITCH to emergency channel 9, or other desired channel.
3. SQUELCH CONTROL over to Minimum. You should hear a distinct hissing noise from the speaker.

Using the Squelch Control:

This adjustment is to eliminate static noise (hissing) and weak back-ground signals. With control in maximum (fully clockwise) position, the Transmit signal of other units must be strong (close by) in order to activate your Receiver. To receive only strong, clear signals, set control towards minimum position, but to receive (monitor) all transmissions, turn it to these Squelch control fully unti-clockwise position. (When weak or no transmissions are being received, continuous atmospheric noise will be heard. If noise is objectionable, turn control again to point where noise just stops)

Experiment with the SQUELCH CONTROL settings until you find a position where hissing noise just stops.

NOTE: VOLUME and SQUELCH CONTROL settings only effect your receiving (listening) capabilities. They do not effect your transmitting capabilities (strength or range of your voice).

Transmit (talk):

1. Depress the PUSH TO TALK BAR. If you are using Ch. 9 say "Break channel 9 for emergency or information." Or "This is (Call Sign), I'm calling for directions to Route 80, can you help me". Release TALK BAR. If no one responds after several attempts, try any channel where you hear conversation and break in repeating above with correct channel number.
2. Release the PUSH TO TALK BAR.
3. When someone responds, depress TALK BAR and state your problem. Use plain English language (you don't have to use "CB Lingo")

   Do not give your location until you establish contact with a person or organization who can provide assistance.

IMPORTANT SERVICE CHECK LIST

In case of difficulty, use the following list before seeking service.



	ANTENNA MUST BE PLACED IN CENTER OF CLEAN FLAT AREA ON **STEEL** CAR ROOF OR OTHER METAL SURFACE (DO NOT PUT OVER VINYL OR PLASTIC SURFACES)	IF ANTENNA IS MOUNTED ON UNIT MAKE SURE CONNECTION IS SECURE.	POWER CABLE CONNECTED TO RADIO AND CIGARETTE HOLDER	CHECK TWO AMP FUSE IN CAR ADAPTER	RECEIVE RANGE SET TO LOCAL	ANTENNA CABLE SECURED TO ANTENNA JACK	ADJUST SQUELCH CONTROL	ANTENNA MISSING OR BROKEN	CIGARETTE LIGHTER HOLDER IN CAR NOT OPERATING — CHECK FUSE IN CAR.	ANTENNA MUST BE FULLY EXTENDED
NO SOUND			•	•	•	•	•	•	•	
RECEIVING POORLY — WEAK SIGNALS						•		•		•
DISTORTED OR UNCLEAR SOUND	•				•	•	•	•		•
WEAK OR NO TRANSMITTER OUTPUT			•	•					•	•
MAGNETIC ANTENNA SLIDES WHILE DRIVING	•									

Instructions for Alignment

The following alignment instructions are for use by a qualified technician should your transceiver ever need repair or realignment. After a long period of time and frequent use, it may be necessary to have worn out parts replaced, etc, so the information provided is most useful.

Protective Cover

Turn Transceiver over and remove the facing cabinet (4 screws bottom side). The speaker is connected by two leads to the cabinet so remove cover with care.

P.L.L. Circuit Alignment

10.24MHz

Connect a frequency counter to the pin 12 of IC-1 and check to see 10.240460MHz ± 100Hz.

VCO Alignment

1. Set the Radio to channel 40 and in transmit mode. (make certain 50 ohm dummy load or wattmeter is connected to antenna terminal).
2. Connect a circuit tester between T.P. and ground.
3. Adjust T1 to obtain +3.2V DC.
4. Set the Radio to channel 1 and in receive mode.
5. Check to see the T.P.DC voltage dropping to a level between 1.0 to 2.0 volt DC.

As long as the DC level stays between 3.2V DC for Transmit at channel 40 and 1.0 to 2.0V DC for receive at channel 1, the VCO is set properly.

The magnitude of the T.P. voltage swing is determined by C92 at factory. The optimum value of C92 was found to be around 47 pfd.

Alignment of Transmitter Circuitry

RF Driver Stage Alignment

1. Select channel 20.
2. Connect an oscilloscope to the base of Q7.
3. Adjust T4, T2 and T3 for maximum amplitude of scope display (27.79125MHz).
4. Connect the scope of Q8 Base.
5. Adjust L1 maximum amplitude on scope display.

RF Power Amplifier Alignment

1. Set power supply voltage ot 13.2V and set the Radio to channel 20 position.
2. Connect a watt meter to the antenna connector.
3. Adjust L2, L5, for maximum power indication. Also again touch up L1, T2 and T3 to peak power.
4. When all coils are peaked, the power meter should indicate above 4.0 watt.

5. Turn L5 counterclockwise until the power reading of 3.8 watt is obtained.

Transmit Frequency Check

1. Set the Radio to transmit mode with no modulation.
2. Connect the frequency counter to the antenna load or to the tab provided at the wattmeter.

The frequency should be within ±800Hz from each channel center frequency as tabulated in the frequency table attached.

Modulation Sensitivity Alignment

1. Set the unit into transmit mode and apply 20mV, 1KHz signal to the Mic input circuit.
2. RV-2 2.2KHz deviation at this condition.
3. Next, decrease signal input to 6mV and observe that the deviation ratio is keeping the value higher than 60%.

Alignment of Receiver Circuitry

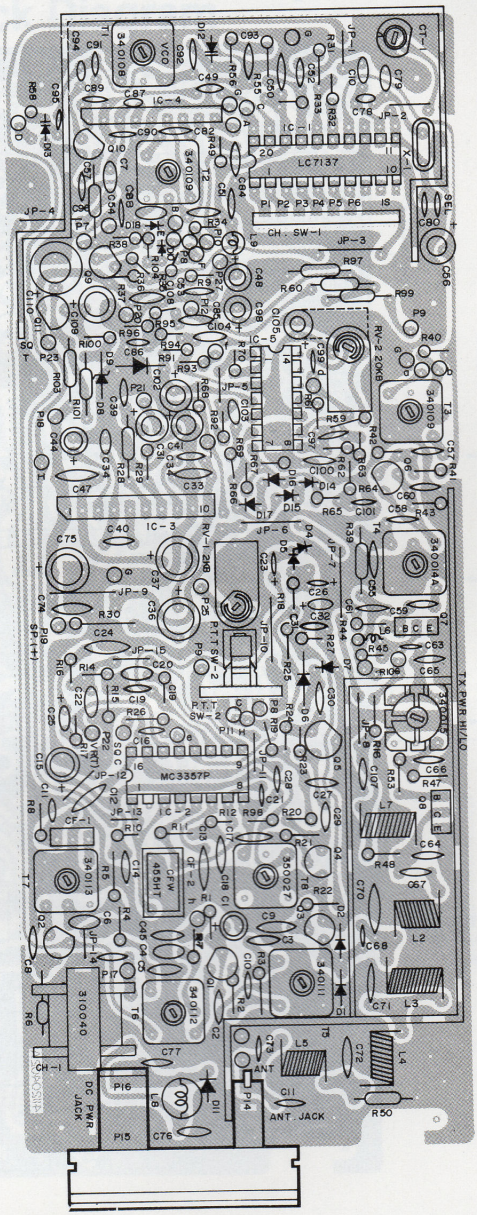
Receiver Sensitivity Alignment

1. Set the signal generator at 27.79125MHz, 1KHz and 1.5KHz deviation. Also set the radio at channel 20 position.
2. Adjust T5, T6, T7 and T8, for maximum audio output across the 8 ohm dummy load resistor.

Squelch Circuit Alignment

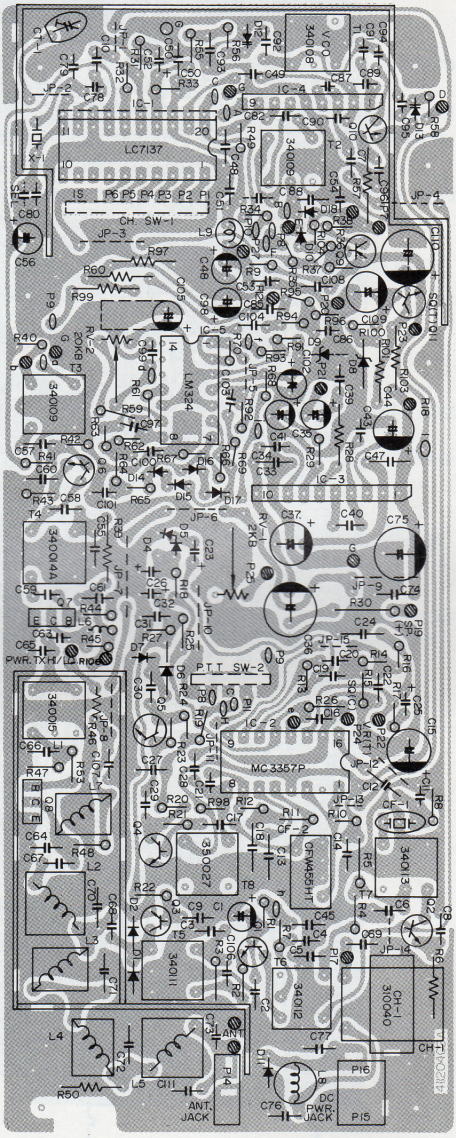
1. Set the signal generator to provide RF input signal of 60dB (1KHz, 1.5KHz deviation.)
2. Rotate the squelch control in full clockwise direction.
3. Temperarily adjust RV-1 for maximum audio output, and note the audio output level. Then, adjust RV-1 for optimum squelch action.

Parts Layout



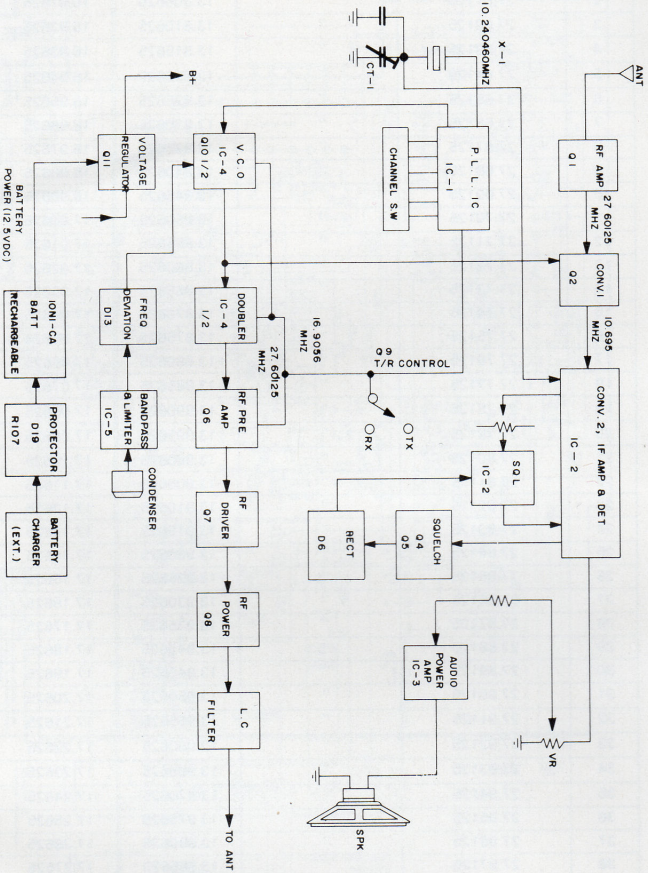
TOP VIEW

Parts Layout



BOTTOM VIEW

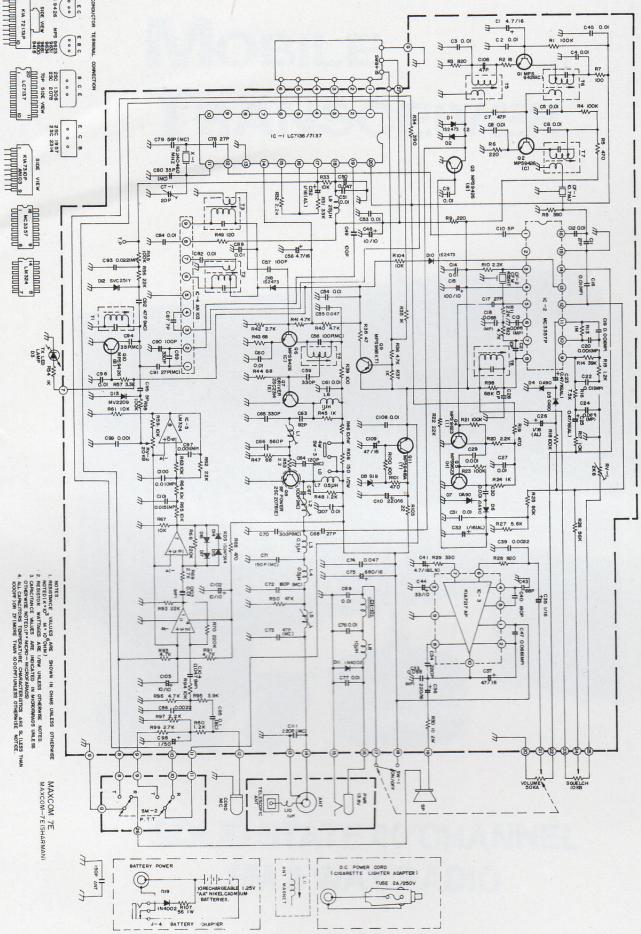
Block Diagram



UK Frequency Chart

CH	CHANNEL	CRYSTAL	V.C.O.	
No.	Frequency (MHz)	O.S.C	TX	RX
1	27.60125	10.240460 MHz	13.800625	16.90625
2	27.61125	"	13.805625	16.91625
3	27.62125	"	13.810625	16.92625
4	27.63125	"	13.815625	16.93625
5	27.64125	"	13.820625	16.94625
6	27.65125	"	13.825625	16.95625
7	27.66125	"	13.830625	16.96625
8	27.67125	"	13.835625	16.97625
9	27.68125	"	13.840625	16.98625
10	27.69125	"	13.845625	16.99625
11	27.70125	"	13.850625	17.00625
12	27.71125	"	13.855625	17.01625
13	27.72125	"	13.860625	17.02625
14	27.73125	"	13.865625	17.03625
15	27.74125	"	13.870625	17.04625
16	27.75125	"	13.875625	17.05625
17	27.76125	"	13.880625	17.06625
18	27.77125	"	13.885625	17.07625
19	27.78125	"	13.890625	17.08625
20	27.79125	"	13.895625	17.09625
21	27.80125	"	13.900625	17.10625
22	27.81125	"	13.905625	17.11625
23	27.82125	"	13.910625	17.12625
24	27.83125	"	13.915625	17.13625
25	27.84125	"	13.920625	17.14625
26	27.85125	"	13.925625	17.15625
27	27.86125	"	13.930625	17.16625
28	27.87125	"	13.935625	17.17625
29	27.88125	"	13.940625	17.18625
30	27.89125	"	13.945625	17.19625
31	27.90125	"	13.950625	17.20625
32	27.91125	"	13.955625	17.21625
33	27.92125	"	13.960625	17.22625
34	27.93125	"	13.965625	17.23625
35	27.94125	"	13.970625	17.24625
36	27.95125	"	13.975625	17.25625
37	27.96125	"	13.980625	17.26625
38	27.97125	"	13.985625	17.27625
39	27.98125	"	13.990625	17.28625
40	27.99125	"	13.995625	17.29625

Schematic Diagram



Part No. 931615

Printed in Korea