Programmable FM Scanning Receiver

with Direct Keyboard Entry System

VHF: 30-50/144-148/148-174 MHz  UHF: 410-450/450-470/470-512 MHz

PRO-2009

OWNER'S MANUAL

PLEASE READ BEFORE USING THIS EQUIPMENT

REALISTIC

CAT. NO.
20-109

CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION
Welcome to the exciting and action-packed world of Public Service Radio! Your Realistic computerized PRO-2009 Scanning Receiver combines deluxe scanner features with an advanced keyboard-controlled microprocessor – giving you the ultimate in monitoring convenience and versatility. Your PRO-2009 will allow you to listen to all the action going on in your community – police, fire, ambulances, ham-radio operators, emergency and transportation services.

With the PRO-2009, you have direct access to 18,163 frequencies spanning six action bands: VHF-Lo, 30 - 50 MHz; Ham, 144 - 148 MHz; VHF-Hi, 148 - 174 MHz; Ham/Gov't., 410 - 450 MHz; UHF-Lo, 450 - 470 MHz; and UHF-Hi ("T"), 470 - 512 MHz. You'll never buy crystals again! You simply enter the desired frequencies through a calculator-type keyboard. The large display lets you know exactly which frequencies you're listening to. The exclusive Search feature lets your PRO-2009 automatically search the bands for stations and frequencies you may not be aware of — you'll really hear all the action in your area!

The PRO-2009's dual-conversion superheterodyne receiver achieves its superior performance through the use of state-of-the-art solid state technology. The ultimate in reliability is achieved with a LSI microprocessor chip, a PLL (Phase-locked Loop), 2 CMOS ICs, plus 7 integrated circuits, 26 transistors, 46 diodes and a fluorescent display.

FEATURES INCLUDE:
* Program and Scan functions controlled by a custom-designed, dedicated microprocessor — a computer on a chip!
* Direct key entry with advanced keyboard functions
* Eight channel automatic scanning for VHF to UHF
* Large multi-purpose fluorescent display shows which channels and frequencies are being scanned, monitored or programmed, as well as the status of the channels.
* Track-Tuning front end
* Channel lockout function, with built-in skipper circuit
* Two second scan delay function eliminates missed replies.
* Crystal filter for 1st IF (10.7 MHz) plus ceramic filter for 2nd IF (455 Khz).
* AC operation.
* 9-volt battery backup holds memorized frequencies in the event of a power failure.

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![CAUTION]

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

“Lightning flash with arrowhead within the triangle is intended to alert the user to dangerous voltage inside this unit that can cause shock. Do not open enclosure.

The exclamation point within the triangle is intended to alert the user to important operating and maintenance instructions in this owner's manual.”

For Your own protection, we urge you to record the Serial Number of this unit in the space provided. You’ll find the Serial Number on the back panel of this unit.

**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS RECEIVER TO RAIN OR MOISTURE.
A QUICK LOOK AT YOUR PRO-2009

**Multi-purpose Display** - Shows which channel and frequency are being scanned, monitored or programmed, as well as the status of the channels.

**SQUELCH Control** - Eliminates background noise between transmissions. With no signal, turn clockwise until noise disappears.

**OFF/VOLUME Control** - Turn clockwise for power "on". Further rotation will increase volume.

**Headphone Jack** - For private listening. The internal speaker is disconnected when 8 ohm headphones are plugged into the jack.

**Telescopic Antenna Jack** - When not using an external antenna, insert the Telescopic Antenna (included) into the hole and screw it into place.

**ANTenna Jack** - For superior reception, an outdoor antenna is connected to this jack.

**RESET Switch** - To clear all memories (use when your Receiver is "stuck" when power is applied.)

**SCAN Key** - Sets the PRO-2009 to automatically scan each available channel.

**PROGRAM Key** - Sets the internal microprocessor for entry of a frequency.

**Number Keys** - Enter the desired channel number and its frequency.

**ENTER Key** - Enters a displayed frequency into any one of the 8 channels you may select.

**SEARCH Key** - Sets the PRO-2009 in search for unknown stations in the VHF/UHF bands.

**Decimal Key** - Places the decimal point.

**CLEAR Key** - Clears the display when an error is made in programming.

**MANUAL Key** - Sets the PRO-2009 to manually scan the channels. Each time the button is pressed, the Receiver will advance one channel.

**Battery Compartment** - Load a 9-volt battery here to prevent loss of programmed frequencies when the Receiver is unplugged.

**AC Line Cord Plug** - Into a source of 120 volts, 60 Hz, AC power.
PREPARATION FOR USE

Loosen the screw and remove the battery compartment cover; then snap in a 9-volt battery. (We recommend a Radio Shack long-life alkaline battery, 23-553 or equivalent.) Your PRO-2009 contains an electronic memory to preserve the 8 programmed scanner channels. The battery protects this memory during AC power failure, or when you have the set unplugged.

NOTE: To avoid loss of programmed memory, do not unplug AC power cable when replacing battery. Replace battery at least every six months.

CAUTION: Never leave a weak or dead battery in your PRO-2009; even “leakproof” types can leak damaging chemicals. Battery life is about two months when AC power cable is off for a prolonged period.

Now you only need to do three things to be able to tune in on those exciting “monitor” frequencies:
1. Connect to a source of power — 120 volts 60 Hz AC.
2. Connect the telescopic antenna provided (or an outdoor antenna to the antenna jack in the rear of the unit).
3. Program one or more frequencies into the Scanner channel(s). See Getting Started, Page 5.

INSTALLATION

In any communications receiver installation, the antenna is one of the most important parts of the set-up. Although the telescopic antenna we’ve included will be adequate for strong local signals, the best reception will result from a multi-band outdoor antenna. It should be mounted as high as possible since the VHF and UHF signals your Receiver picks up travel in a straight line. The higher your antenna, the better your reception. Your local Radio Shack can help you in the selection of antennas, cables and accessories. (They can also advise you on the most popular frequencies in your area.)

ACCESSORIES

A pair of headphones can be a very useful accessory. In areas where a high noise is present (in a factory, at the scene of a fire or accident, etc.), or when you want to listen privately, use headphones. Your Radio Shack store has a selection for your PRO-2009. Just plug them into the front panel headphone Jack.
OPERATION

After you've installed the 9-volt battery and connected an antenna, you're ready to start using your PRO 2009. We've divided these instructions into four parts: GETTING STARTED, SCANNING PROGRAMMING NOTES and SEARCH MODE.

Important Note: If your Scanner does not function properly when it is first plugged in, the microprocessor must be initialized by pressing the RESET button on the back of the unit. Also, initialization may be necessary if the unit operates erratically—random figures on display for example. Remember, initialization erases all programmed frequencies.

GETTING STARTED

Before operating the PRO 2009, let's take a look at the Multi-purpose Display.

* Channel Indicator digit shows the number of the channel that is being scanned, monitored or programmed.
* The status of the PRO 2009 is indicated by the Status Descriptor Digit.

- shows the channel is locked out (disabled).
- shows the channel is under scan delay.
- shows the Receiver is in the PROGRAM mode.

* Frequency Display shows the exact frequency being scanned, monitored or programmed.

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Turn on your PRO-2009 by rotating VOLUME clockwise about 1/4 turn. (When first turned on, the Receiver automatically enters the Scanning mode.)

Rotate SQUELCH fully counter-clockwise. You should hear a rushing noise from the speaker. Slowly rotate SQUELCH clockwise until the noise just stops.

Entering a Frequency

To find which frequencies are active in your area, visit your local Radio Shack. They can fill you in on the most active (and interesting) channels in your area. Radio Shack also sells the POLICE CALL RADIO DIRECTORY for your section of the country which lists frequencies in use in your region.

In most sections of the country, the National Weather Service provides 24-hour-a-day weather forecasts (on 162.55, 162.40 or 162.475).

Let's use one of these as an example of programming:

1. Select the channel you wish to program. Press [MANUAL] to stop scanning and press desired numeral key (1 through 8) for the channel you wish to program.
2. Press [PROGRAM]. The memory for the channel you've selected is now ready to store a frequency.
3. Using the keyboard, enter the desired frequency (e.g. 162.55).

```
1  6  2  ∙  5  5
```

4. Press [ENTER]. The frequency is now stored in the memory. (You should be able to hear the weather broadcast. If you don't, try one of the other frequencies and repeat steps 2, 3, and 4.)
5. If you intend to program more channels, press [PROGRAM] again to advance the channel and repeat steps 3 and 4.
6. After you've done entering all the frequencies, press [SCAN] to return the Receiver to the normal scanning mode.
SCANNING

Automatic Scanning: If you want your Receiver to continuously scan the frequencies programmed, adjust SQUELCH, then press [SCAN]. The PRO-2009 will continuously scan each channel in sequence, and will lock onto a channel when a signal is received. The channel and frequency being received will be shown on the Display. (G will appear if the channel is under delay.)

Manual Scanning: If you want to listen to one channel only, press [MANUAL] and then the number key for the channel. Pressing [MANUAL] will also advance the Receiver one channel.

Squelch: To eliminate the background noise between transmissions, wait until the station stops transmitting and rotate the SQUELCH control until the noise stops. When set properly, the Receiver will appear “dead” until a signal is received.

IMPORTANT: In order for the PRO-2009 to scan the channels automatically, SQUELCH must be set as described above. Otherwise, the Receiver will “lock on” to the noise and not scan.

PROGRAMMING NOTES

Pressing [PROGRAM] puts the Receiver in the programming mode with the Status Descriptor shown in the figure on page 5.

When [PROGRAM] is pressed, the Display will show whatever frequency (if any) is stored in the channel the Receiver is set to. You can ignore these numbers, since they’ll disappear as soon as you start to enter a frequency.

If you make a mistake while entering a new frequency, press [CLEAR]. Use [PROGRAM] to advance to the next channel when entering new frequencies: pressing [MANUAL] takes the PRO-2009 out of the programming mode.

If you don’t have a back-up battery installed (or it is dead) and plug in the AC power cord, sometimes the internal computer circuits will become confused (technically, we say it “fails to initialize”). In such a case, you won’t be able to program frequencies and/or the display won’t light up with just a 0. If this happens, turn on Power and press [RESET] (on the back); this will initialize the circuits (and also will clear all information stored in memory).

Valid frequency

You can enter any frequency into the memory of your PRO-2009 that is within the six bands specified under Frequency Coverage (See Specifications page 11).

IMPORTANT: In the 30 – 50 and 144 – 174 MHz range the programmable frequencies are in 5 kHz steps.

In the 410 – 512 MHz range, programmable frequencies are in 12.5 kHz steps.

If you try to enter an “in-between” frequency the next lower valid frequency will automatically be entered.

If you attempt to enter a frequency which is outside of the six-band tuning range, Error will be displayed. To clear “Error”, press [CLEAR] and enter the correct frequency.

NOTE: When an error condition is displayed, the frequency previously stored in the channel is not erased.

In some areas, certain frequencies will cause the Receiver to “lock up”. (See BIRDIES page 8.)

Channel lock out

Your PRO-2009 has a built-in skipper circuit which works in the scanning mode to skip over channels that have been locked out.

(You’ll use this for stations that are “on” all the time, such as the National Weather Service.)

Any number of channels can be locked out. Press [MANUAL] to step the Receiver to the channel you want to lock out. Then press [LOCK OUT]. To release the lock out, press [LOCK OUT] again.

Scan delay

The Receiver has a two-second Delay feature which virtually eliminates the chance of you missing replies. Delay holds the channel for two seconds after the end of a transmission. To use delay, press [MANUAL] to step to the channel for which you want the Delay mode. Press [DELAY]. To remove Delay, press [DELAY] again.

Any or all channels can use Delay.

SEARCH MODE

Your PRO-2009 can “hunt” for stations and frequencies used in your area that you’re not aware of. Your PRO-2009 will search from a displayed frequency upward to the upper limit of a band. It will then return to the lowest frequency of the band and resume an upward search until a station is found! To use the SEARCH mode, just follow these steps:
1. Place your PRO 2009 in either Manual or Program mode. Program the frequency at which you wish the PRO-2009 to begin searching (if it is not already entered).
2. Press [SEARCH]. Your PRO 2009 will now begin searching upward in frequency.
3. When your PRO-2009 finds a signal, it will stop searching. It will remain on that frequency as long as there is a signal present.
4. If you wish to keep monitoring on a frequency even if there is no signal, press [PROGRAM].
5. You can enter any new frequencies your PRO-2009 discovers merely by pressing [PROGRAM] and [ENTER]. However, it will replace any frequency you may have previously entered on that channel.
6. If you want your PRO-2009 to resume searching while a signal is on a frequency, push [SEARCH] again.
7. The PRO-2009 will continue searching until it reaches the upper limit of the band. It will then return to the lowest frequency of the band and resume scanning upward.
8. To stop the Search Mode, press [MANUAL] or [PROGRAM]. Your PRO-2009 will now resume normal operation in either of those two modes.

LIMITS OF OPERATIONAL FREQUENCIES
The six-band tuning range of your PRO-2009 is permanently stored in the Receiver's integrated-circuit microprocessor. As such, it cannot be extended or altered in any way, even by a skilled electronics technician. So if you try to monitor or enter an out-of-band frequency—you'll get the Error message every time! To listen in on CB, SW, lower Ham bands, etc., you'll just have to get another receiver designed for that purpose (like our famous DX-302 Shortwave Receiver).

GUIDE TO THE ACTION BANDS
Your community is alive with action—action which is constantly being reported on the air waves. Your PRO-2009 will automatically scan the air waves to bring you that action—your police force at work, a fire truck on a mission, Sheriff's department, State police, the National Weather Service, Ham Radio operators, highway and other emergency-type services, some industrial services, some transportation services (taxi, trucks, railroad), plus some Government services.

Lots of things are going on that most of us just are never aware of. But, with the right frequencies programmed into your PRO-2009, you can monitor such exciting signals. You’ll have to do a little investigating for services to find out the most popular frequencies used.

What to listen for and where? That is a little difficult for a specific answer. Each area of the country use different channels. All we can do is give you some general pointers and then let you take it from there.

Find out if there is a local club which monitors these frequencies. Often a local electronics repair shop that does work on the radio equipment can give you the channel frequencies used by local radio services. A volunteer police or fire employee can also be a good source of this information. And you’ll discover many frequencies by using the [SEARCH] Key.

An interesting service is the Mobile Telephone. FCC has assigned this service channels in the range of 152.51 to 152.81 MHz at every 0.030 MHz (channels are 30 kHz apart). Also, 454.376 to 454.95 MHz with channels 25 kHz apart from 454.375 to 454.625 and then every 50 kHz up to 454.95.

As a general rule on VHF, most activity will be concentrated between 153.785 and 155.98 and then again from 158.73 to 159.46 MHz. Here you’ll find local government, police, fire and most such emergency services. If you are near a railroad yard or major railroad tracks, look around 160.0 to 161.9 for them.

In some of the larger cities, there has been a move to the UHF bands for these emergency services. Here, most of the activity is in a spread of 453.025 — 453.95 and again at 456.025 — 459.95 MHz.

In the UHF band, the overall spread of 466.025 — 468.95 and again at 468.025 — 469.975 MHz is used by mobile units and control stations associated with base and repeater units which operate 5 MHz lower (that is, 451.025 — 454.95 and 460.025 — 464.975 MHz). This means that if you find an active channel inside one of these spreads, you can look 5 MHz lower (or higher as the case may be) to find the major base station/repeater for that radio service.
A handy book to have is the POLICE CALL RADIO DIRECTORY for your region. Stop by your local Radio Shack store and ask about it. It has complete listings, by frequency, of the various radio services in the bands covered by your PRO-2009. These Directories are updated every year, so get a current one.

**BIRDIES**

Some frequencies may be difficult or impossible to receive. If you program in one of these, the Scanner may lock up and you hear only noise. These “birdies” are the products of internally generated signals mixing with external signals like TV and FM broadcasts. Telescopic antennas are much more likely to pick up these undesirable signals—that is another good reason for getting an outdoor, base-station type antenna for home installations.

If the interference is not severe, you may be able to use SQUELCH to cut out such annoying birdies.

A few of the most common birdies to watch out for are listed below.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Frequency</th>
<th>Frequency</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.730 MHz</td>
<td>46.335 MHz</td>
<td>438.300 MHz</td>
<td></td>
</tr>
<tr>
<td>30.735 MHz</td>
<td>46.340 MHz</td>
<td>438.300 MHz</td>
<td></td>
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<tr>
<td>30.740 MHz</td>
<td>46.345 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.000 MHz</td>
<td>147.200 MHz</td>
<td>438.300 MHz</td>
<td></td>
</tr>
<tr>
<td>32.025 MHz</td>
<td>153.295 MHz</td>
<td>439.000 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>153.340 MHz</td>
<td>464.900 MHz</td>
<td></td>
</tr>
<tr>
<td>32.145 MHz</td>
<td>153.490 MHz</td>
<td></td>
<td>465.087 MHz</td>
</tr>
<tr>
<td>38.395 MHz</td>
<td>160.000 MHz</td>
<td>468.900 MHz</td>
<td></td>
</tr>
<tr>
<td>38.400 MHz</td>
<td>162.095 MHz</td>
<td></td>
<td>469.300 MHz</td>
</tr>
<tr>
<td>40.975 MHz</td>
<td></td>
<td>478.500 MHz</td>
<td></td>
</tr>
<tr>
<td>40.980 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.985 MHz</td>
<td>162.105 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.705 MHz</td>
<td>163.530 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.890 MHz</td>
<td></td>
<td>478.600 MHz</td>
<td></td>
</tr>
<tr>
<td>44.790 MHz</td>
<td>163.600 MHz</td>
<td>493.337 MHz</td>
<td></td>
</tr>
<tr>
<td>44.810 MHz</td>
<td></td>
<td>493.350 MHz</td>
<td>493.362 MHz</td>
</tr>
</tbody>
</table>

Even with the SQUELCH control set to maximum, scanning may stop on or around some of the frequencies listed above. If the spurious signal is strong enough (above 10uV in technical terms) you can listen to it, but the Receiver will not auto scan.

**ABBREVIATIONS**

An abbreviation list is provided for your reference to TYPICAL BAND USAGE on the following pages.

Affiliate Radio System ........ MARS
Amateur .................. Ham
Automobile Emergency . Auto Emer.
Broadcast Remote ........... BC, R.
Bureau of Reclamation .... Bur. Recl.
Civil Air Patrol ............ CAP
Department of Agriculture ..
Agr. and For. .............. Agr. and For. Radio Paging ........ Page
Fire Department ............ F.D.
Forest Products ............. For. Prod.
Forestry Conservation ........ For. Cons.
Government ................ Govt.
Highway Maintenance ........ Hwy.
Indian Affairs ............. Indian Affairs
Land Transportation .......... Land Tr.
Local government .......... L. Govt.
Manufacturers .............. Mfg.
Marine .................... Marine
Military .................... MIL

Mobile Telephone .......... Mob. Tel.
Motion Picture .......... Motion Picture
Motor Carrier ............ Motor Carrier
Motor Car and Buses ........ Buses, Trucks
National Parks ............ Nat. Pk.
Petroleum ................ Petroleum
Police ...................... Police
Power Utilities .......... Power Utilities
Railroad ................... Railroad
Red Cross .................. Red Cross
Relay Press ................. Relay Press
State Police ............... State Police
Special Emergency .......... Sp. Ind.
Taxicab Radio ............ Taxi
telephone Maintenance ....... Tel. Maint.
U.S. Coastal ............... U.S. Coastal
U.S. Coast Guard ........ U.S.C.G.S.
U.S. Navy .................. U.S.N.
U.S. Weather Bureau ....... U.S.W.B.
### TYPICAL BAND USAGE

The following is an abbreviated listing of what’s going on in the frequency ranges your PRO-2009 can receive—it’ll help you decide which ranges you’d like to choose. For explanation of abbreviations used, see page 8.

<table>
<thead>
<tr>
<th>30 ~ 50 MHz Band</th>
<th>144 ~ 148 MHz 2 Meter Amateur (Ham) Band</th>
<th>148 ~ 174 MHz Band Mixed Spacing (15, 20, 25 kHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0,020 MHz or 20 kHz spacing)</td>
<td>148.010 -</td>
<td>MARS</td>
</tr>
<tr>
<td>30.01 - 30.56</td>
<td>148.15</td>
<td>CAP</td>
</tr>
<tr>
<td>30.56 - 30.62</td>
<td>148.155 - 148.250</td>
<td>MIL</td>
</tr>
<tr>
<td>30.66 - 31.24</td>
<td>148.250 - 150.750</td>
<td>USN</td>
</tr>
<tr>
<td>32.00 - 33.00</td>
<td>151.010 - 151.130</td>
<td>Hwy.</td>
</tr>
<tr>
<td>33.02 - 33.16</td>
<td>151.145 - 151.475</td>
<td>For. Cons.</td>
</tr>
<tr>
<td>33.18 - 33.38</td>
<td>151.505 - 151.595</td>
<td>Sp. Ind.</td>
</tr>
<tr>
<td>33.42 - 33.98</td>
<td>151.625 - 151.955</td>
<td>Bus.</td>
</tr>
<tr>
<td>34.00 - 35.00</td>
<td>151.965 - 152.240</td>
<td>Mob. Tel. (RCC)</td>
</tr>
<tr>
<td>35.02 - 35.18</td>
<td>152.270 - 152.450</td>
<td>Taxi</td>
</tr>
<tr>
<td>35.22 - 35.66</td>
<td>152.480 - 152.840</td>
<td>Mob. Tel. Page</td>
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<td>35.70 - 35.72</td>
<td>152.870 - 153.020</td>
<td>Sp. Ind., Mot. P.</td>
</tr>
<tr>
<td>36.00 - 37.00</td>
<td>153.470 - 153.710</td>
<td>Power</td>
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<tr>
<td>37.02 - 37.44</td>
<td>153.740 - 154.115</td>
<td>L. Govt.</td>
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<tr>
<td>37.46 - 37.89</td>
<td>154.130 - 154.445</td>
<td>F.D.</td>
</tr>
<tr>
<td>38.00 - 39.00</td>
<td>154.655 - 155.145</td>
<td>P.D., L. Govt., St. P.D.</td>
</tr>
<tr>
<td>40.00 - 42.00</td>
<td>155.415 - 156.030</td>
<td>P.D., L. Govt.</td>
</tr>
<tr>
<td>40.02 - 42.94</td>
<td>156.045 - 156.240</td>
<td>Hwy., P.D.</td>
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<tr>
<td>42.16 - 43.18</td>
<td>156.275 - 157.425</td>
<td>Marine</td>
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<tr>
<td>43.22 - 43.69</td>
<td>157.455 - 157.595</td>
<td>Auto Emer.</td>
</tr>
<tr>
<td>43.70 - 44.60</td>
<td>157.550 - 157.710</td>
<td>Taxi</td>
</tr>
<tr>
<td>44.62 - 45.08</td>
<td>157.740 - 158.100</td>
<td>Mob. Tel. Page</td>
</tr>
<tr>
<td>45.68 - 46.04</td>
<td>158.480 - 158.700</td>
<td>Mob. Tel. (RCC)</td>
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<tr>
<td>46.06 - 46.50</td>
<td>158.730 - 158.870</td>
<td>P.D., L. Govt.</td>
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<tr>
<td>46.52 - 46.94</td>
<td>158.975 - 159.210</td>
<td>P.D. Hwy.</td>
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<tr>
<td>46.60 - 47.00</td>
<td>159.225 - 159.465</td>
<td>For. Cons.</td>
</tr>
<tr>
<td>47.02 - 47.40</td>
<td>159.510 - 160.200</td>
<td>Trucks</td>
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<tr>
<td>47.42 - 47.48</td>
<td>160.215 - 161.565</td>
<td>R.R.</td>
</tr>
<tr>
<td>47.44 - 47.88</td>
<td>161.600 - 162.000</td>
<td>Marine</td>
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<tr>
<td>47.70 - 48.54</td>
<td>162.026 - 162.175</td>
<td>Bur. Recl.</td>
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<tr>
<td>48.56 - 49.58</td>
<td>162.400</td>
<td>U.S.W.B.</td>
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<tr>
<td>49.60 - 50.00</td>
<td>162.550</td>
<td>U.S.W.B.</td>
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<td>50.02 - 50.00</td>
<td>163.125</td>
<td>Indian Affairs</td>
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<td>163.175</td>
<td>163.275</td>
<td>U.S.W.B.</td>
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<td>163.388</td>
<td>163.538</td>
<td>MIL</td>
</tr>
<tr>
<td>163.825</td>
<td>163.975</td>
<td>Govt.</td>
</tr>
<tr>
<td>164.025</td>
<td>164.075</td>
<td>U.S.C.G.S.</td>
</tr>
<tr>
<td>169.300</td>
<td>169.450</td>
<td>F.A.A.</td>
</tr>
<tr>
<td>170.150</td>
<td>170.200</td>
<td>Ind., Data</td>
</tr>
<tr>
<td>170.225</td>
<td>170.325</td>
<td>U.S.C.G.S.</td>
</tr>
<tr>
<td>170.425</td>
<td>170.575</td>
<td>Ind., Land Tr.</td>
</tr>
<tr>
<td>170.975</td>
<td>171.250</td>
<td>For. Cons.</td>
</tr>
<tr>
<td>172.775</td>
<td>173.025</td>
<td>Nat. Pk.</td>
</tr>
<tr>
<td>173.075</td>
<td>173.075</td>
<td>U.S.W.B.</td>
</tr>
<tr>
<td>173.204</td>
<td>173.204</td>
<td>U.S.C.G.S.</td>
</tr>
<tr>
<td>430 ~ 450 MHz Amateur (Ham) Band</td>
<td>450 ~ 512 MHz Band (25 kHz Spacing)</td>
<td></td>
</tr>
<tr>
<td>450.050 - 450.950</td>
<td>451.000 - 451.150</td>
<td>BC. R.</td>
</tr>
<tr>
<td>452.000 - 452.500</td>
<td>452.525 - 452.600</td>
<td>Taxi, Mot. Carrier, R.R.</td>
</tr>
<tr>
<td>452.525 - 452.600</td>
<td>452.625 - 452.975</td>
<td>Auto Club</td>
</tr>
<tr>
<td>453.000 - 453.975</td>
<td>453.900 - 454.975</td>
<td>L. Govt., P.D., F.D.</td>
</tr>
<tr>
<td>454.000 - 454.975</td>
<td>455.000 - 455.975</td>
<td>Mob. Tel.</td>
</tr>
<tr>
<td>455.000 - 455.975</td>
<td>456.000 - 456.975</td>
<td>Remote Br.</td>
</tr>
<tr>
<td>456.000 - 456.975</td>
<td>456.975 - 457.975</td>
<td>P.D., F.D., Ind., Can., Tr.</td>
</tr>
<tr>
<td>457.975 - 458.975</td>
<td>459.000 - 459.975</td>
<td>Domestic Public</td>
</tr>
<tr>
<td>460.000 - 460.205</td>
<td>460.200 - 462.175</td>
<td>P.D., F.D.</td>
</tr>
<tr>
<td>460.650 - 462.175</td>
<td>462.200 - 462.450</td>
<td>Bus.</td>
</tr>
<tr>
<td>462.650 - 462.975</td>
<td>462.750 - 462.750</td>
<td>Taxi</td>
</tr>
<tr>
<td>462.750 - 462.750</td>
<td>463.000 - 463.175</td>
<td>Mobile</td>
</tr>
<tr>
<td>463.000 - 463.175</td>
<td>463.200 - 464.975</td>
<td>Bus.</td>
</tr>
<tr>
<td>463.200 - 464.975</td>
<td>465.000 - 465.975</td>
<td>P.D., F.D., Ind., Land Tr.</td>
</tr>
<tr>
<td>465.000 - 465.975</td>
<td>467.500 - 467.925</td>
<td>Bus.</td>
</tr>
<tr>
<td>467.7375 - 469.975</td>
<td>467.7375 - 469.975</td>
<td>Press Relay.</td>
</tr>
<tr>
<td>467.7375 - 469.975</td>
<td>469.975 - 469.975</td>
<td>Pub. Safety, Ind., Land Tr.</td>
</tr>
</tbody>
</table>
In some large metropolitan areas, 1 or 2 channels of the "TV Band" (470 MHz to 512 MHz) are used for special communications. Each station (channels 14 through 20) uses 6 MHz:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>470 - 476</td>
<td>T.V. Channel 14</td>
</tr>
<tr>
<td>476 - 482</td>
<td>T.V. Channel 15</td>
</tr>
<tr>
<td>482 - 488</td>
<td>T.V. Channel 16</td>
</tr>
<tr>
<td>488 - 494</td>
<td>T.V. Channel 17</td>
</tr>
<tr>
<td>494 - 500</td>
<td>T.V. Channel 18</td>
</tr>
<tr>
<td>500 - 506</td>
<td>T.V. Channel 19</td>
</tr>
<tr>
<td>506 - 512</td>
<td>T.V. Channel 20</td>
</tr>
</tbody>
</table>

Where these frequencies are assigned for special communications, in lieu of a T.V. station, the 6 MHz segment is allocated as shown here for channel 14 (470 ~ 476 MHz).

470.0125 – 470.2875 Domestic Public, (Base, Mob.)
470.3125 – 471.1375 Public Safety
471.1625 – 471.2875 Reserve Pool A
471.3125 – 471.4125 Pwr., Tel., Maint.
471.4375 – 471.6375 Spec. Ind.
471.6625 – 471.7875 Reserve Pool B
471.8125 – 472.3375 Bus.
472.3625 – 472.4375 Taxi
473.0125 – 473.2875 Domestic Public
473.3125 – 474.1375 Public Safety
474.1625 – 474.2875 Reserve Pool A
474.3125 – 474.4125 Pwr., Tel., Maint.
474.4375 – 474.6375 Spec. Ind. (Mobile)
474.6625 – 474.7875 Reserve Pool B
474.8125 – 475.3375 Bus.
475.3625 – 475.4375 Taxi
475.4625 – 475.7875 R.R., Motor Carrier, Auto Emer.

The same allocation pattern is repeated for each of the TV channels 14 thru 20. For example, if channel 17 is assigned for communications in your area, "Taxi" would be 480.4375 to 490.3625 and 493.3625 to 493.4375 (corresponding to 472.3625 to 472.4375 and 475.3625 to 475.4375 above). Note that in the example, we added three TV channels (18 MHz) to the channel 14 frequencies.

BEFORE YOU CALL FOR HELP...

The PRO-2009 is a ruggedly built electronic unit, with all parts conservatively rated. However, you should treat it with care, don't subject it to excessively rough handling. You will find it will give you long life if kept free from dirt and excessive humidity.

The 9-volt Battery (used to maintain the program memory) should be replaced every 6 months. Use only an Alkaline type, such as Radio Shack's Catalog Number 23-553 (replace only while the AC line cord is connected).

If You Have Problems......
We hope you don't; but if you do, here are some suggestions.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoperative</td>
<td>No power check to see that unit is plugged into a working AC outlet.</td>
</tr>
<tr>
<td>Will not scan</td>
<td>Improper squelch setting — turn SQUELCH control clockwise to slightly past point where squelch sound ceases (while no signal is present).</td>
</tr>
<tr>
<td>Scan locks-in on frequencies where no clear signal is present</td>
<td>&quot;Birdies&quot; — see page 8.</td>
</tr>
</tbody>
</table>

If none of these suggested remedies solves the problem, return your set to your nearby Radio Shack. It will be repaired by a qualified technician and you'll have it back ASAP!
SPECIFICATIONS

SEMICONDUCTOR COMPONENT:
1 LSI Microprocessor system,
1 LSI PLL system, 2 C-MOS ICs,
7 ICs 26 transistors 46 diodes

RECEIVING SYSTEM:
Superheterodyne with digital synthesizer to receive any of 18,163 programmable frequencies.

FREQUENCY COVERAGE:

VHF-Lo
30 – 50 MHz (in 5 kHz steps)

Ham
144 – 148 MHz (in 5 kHz steps)

VHF-Hi
148 – 174 MHz (in 5 kHz steps)

Ham/Gov’t
410 – 450 MHz (in 12.5 kHz steps)

UHF-Lo
450 – 470 MHz (in 12.5 kHz steps)

UHF-Hi ("T")
470 – 512 MHz (in 12.5 kHz steps)

CHANNELS OF OPERATION:
Any eight channels in any band combinations.

SENSITIVITY (for 20 dB Signal-to-Noise ratio):
30 – 50 MHz 1.0 µV
144 – 174 MHz 1.0 µV
410 – 512 MHz 2.0 µV

SPURIOUS REJECTION:
30 – 50 MHz 50 dB at 40 MHz
144 – 174 MHz 50 dB at 160 MHz
410 – 512 MHz Not specified

SELECTIVITY:
9 kHz, -6 dB
17 kHz, -50 dB

SEARCH RATE:
10 steps/second

SCANNING RATE:
10 channels/second

DELAY TIME:
2 seconds

MODULATION ACCEPTANCE:
±7 kHz

I.F. FREQUENCIES:
10.7 MHz and 455 kHz

FILTER:
1 crystal filter, 1 ceramic filter

SQUELCH SENSITIVITY:
Threshold Less than 1.0 µV
Tight (S + N)/N - 30 dB

ANTENNA IMPEDANCE:
50 ohms

AUDIO POWER:
2 watts maximum

BUILT-IN SPEAKER:
3" (7.7 cm)

POWER REQUIREMENT:
120 volts, 60 Hz, AC 15 watt maximum
9-volt battery for Memory back-up

DIMENSIONS:
3-3/16" x 10-1/4" x 8-1/4" HWD
(8 x 26 x 21 cm)

WEIGHT:
4.4 lbs. (2 kg)
RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 1 year from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply bring your Radio Shack sales slip as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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4,123,715
4,245,348

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U.S.A.: FORT WORTH, TEXAS 76102
CANADA: BARRIE, ONTARIO L4M 4W5

TANDY CORPORATION

AUSTRALIA
91 KURRAJONG AVENUE
MOUNT DRUITT, N.S.W. 2770

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PARC INDUSTRIEL DE NANNINNE
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U.K.
BILSTON ROAD WEDNESBURY
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