9-BAND PORTABLE RADIO

DX-360



OWNER'S MANUAL

PLEASE READ BEFORE USING THIS EQUIPMENT

REALISTIC®

Cat.No. 20-208

CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

Your REALISTIC® DX-360 is a highly sensitive 9-band superheterodyne Receiver, that's ideal for travel use worldwide. It includes six short wave bands : SW1 (4.5 — 5.5 MHz), SW2 (5.8 — 7.5 MHz), SW3 (8.2 — 10.0 MHz), SW4 (11.4 — 14.0 MHz), SW5 (14.6 — 18.2 MHz), SW6 (21.0 — 26.1 MHz), and the international LW band (150 — 265 kHz) plus the standard AM (520 — 1620 kHz) and FM (88 — 108 MHz) broadcast bands.

This Receiver will operate either from batteries (6 volts, four AA batteries) or from an external source of 6V DC.

The circuitry is all solid-state, built on rugged printed circuit boards. This ensures maximum reliability. The combination of hi-fi circuit design and a top-quality 3" (7.6 cm) permanent magnet dynamic speaker provides superior sound reproduction. Linear sliding volume and tone controls, plus a telescoping antenna, assure you of greatest enjoyment of your new Radio.

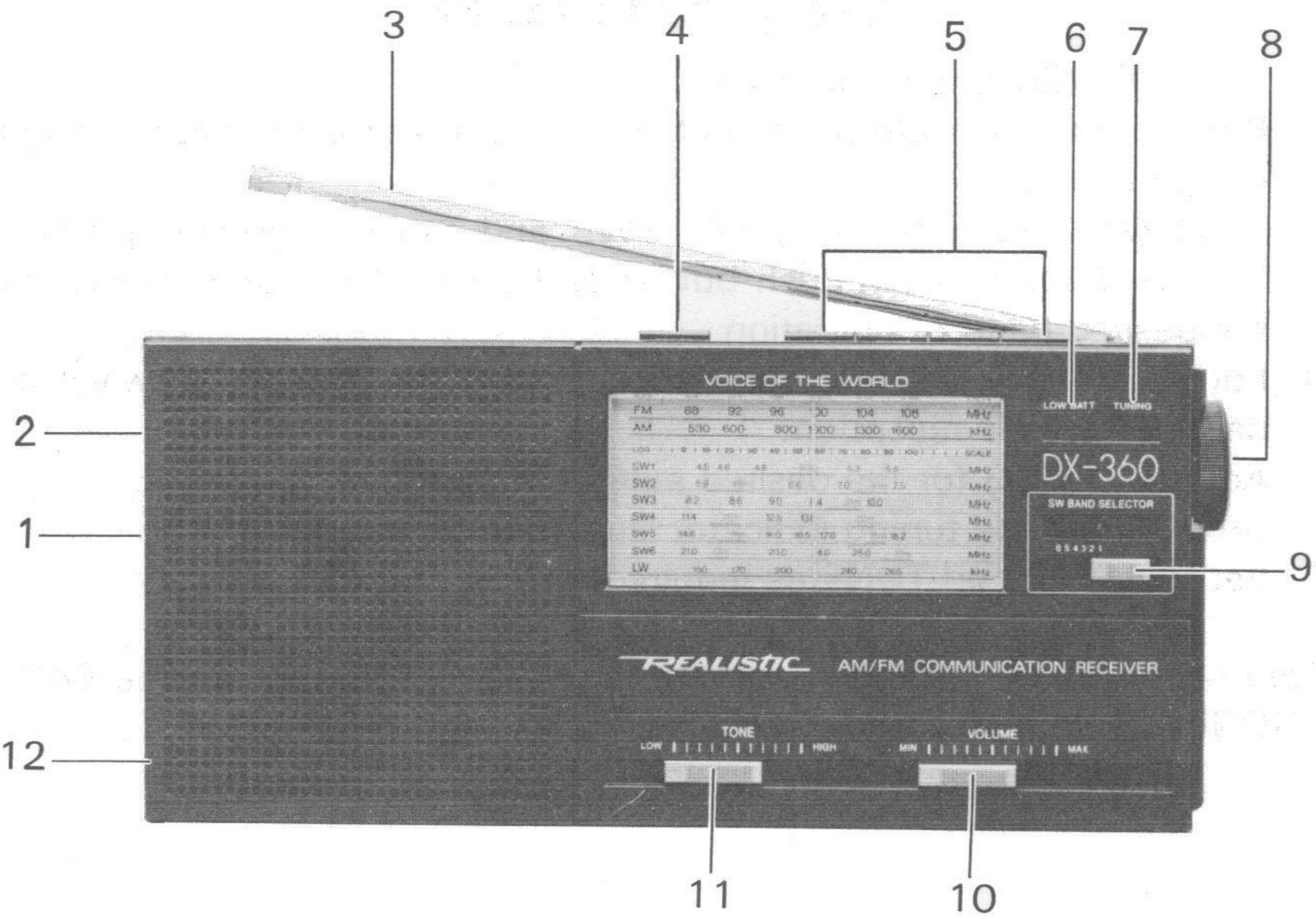
FEATURES

- Push-button band switches for convenient band selection
- Built-in Automatic Frequency Control (AFC) for drift-free FM reception
- Earphone jack takes an earphone or pillow speaker for private listening
- Sensitive powerful circuitry due to 3 integrated circuits, 14 transistors, 15 diodes
- 27 - 3/4" (70.5 cm) telescoping swivel-mount antenna for FM and short wave reception
- Built-in ferrite loopstick antenna for AM and LW reception
- Efficient 3" (7.6 cm) PM dynamic speaker for superior sound reproduction

Copyright, Tandy Corporation 1983

CONTROLS AND FUNCTIONS

1. EARPHONE Jack — For private listening, plug the earphone into the EARPHONE jack on the left side of the cabinet. This automatically cuts off the built-in speaker.
2. DC 6V Jack — Use for operating from an external source of 6 volts DC.
3. Telescoping Antenna — Extend to its full length for FM and SW1, SW2, SW3, SW4, SW5, and SW6 reception. Swivel as required for best reception.
4. POWER Switch — Push to turn power on. Push again to turn off.
5. Band Selector Buttons — Push a band selector button for the desired band of operation.
6. Battery Low Indicator — Check illumination that indicates batteries too weak for use.
7. TUNING Indicator — Turn tuning control until indicator illuminates to indicate proper tuning.
8. TUNING — Adjust to the desired frequency as shown on the slide rule dial.
9. SW Band Selector — Set to appropriate band you want to tune to.
10. VOLUME Control — Turn to control the level of sound from speaker or phones.
11. TONE Control — Adjust for desired sound quality.
12. Battery Holder



POWER SOURCES

Batteries

To prepare your radio for operation, open the battery compartment by pressing the cover in the direction shown next to the tab. Install four AA batteries, observing the battery polarity as shown inside the battery compartment. Replace the back cover and press the tab upward.

WARNING! Weak batteries, including "leakproof" types, can swell and leak. To avoid damage, remove batteries when these are weak or you are going to store the radio for a period of time.

Battery Check

If the battery low indicator illuminates, the batteries are too weak for use. Replace all four batteries with new ones immediately, because weak batteries may result in distorted sound.

Adapters

You can conserve battery power by using an optional adapter. For AC operation, use our 273-1454 (use 14-9854 for UK, 14-9521 for Australia). For operating on a 12 volt, negative ground car battery, use our 14-844D. Connect the plug to DC 6V jack on the side of unit. Plug the other end into a power source (AC outlet or vehicle's cigarette lighter socket).

OPERATION

1. Push POWER to turn on power.
2. Press the appropriate band switch push button for the desired band of operation.
3. For SW1, SW2, SW3, SW4, SW5 and SW6 reception, press a SW1 — 6 band switch push button and set the SW band selector to the desired band of operation.
4. For short-wave and FM reception, extend the antenna ; swivel as desired for best reception.
5. Adjust TUNING for the desired station of operation.
   (Adjust until the tuning indicator illuminates.)
6. Set VOLUME and TONE as required.

For private listening, plug an earphone or pillow speaker into the EAR-PHONE jack (requires miniature, 1/8" [3.5 mm] plug).

NOTES ON OPERATION ON EACH BAND

To help you understand and appreciate what to expect from each band, here are some helpful notes.

Reception of signals other than AM and FM broadcasts varies with many things.

AM Broadcast Band — You are most familiar with this band. Reception may be improved by rotating or moving the radio.

FM Broadcast Band — The maximum range of reception is about 100 miles (160 km) under ideal conditions. Best reception and most activity will be near large cities.

Short Wave Bands — Extend the telescoping antenna to its full length. Use the TUNING knob to tune to the desired station. The best time to listen is during the hours of darkness.

International Band — Signals received include aircraft and marine signals, weather, and other popular overseas broadcasts.

BAND ALLOCATION

To avoid interference and confusion, certain portions of the radio spectrum have been set aside for specific purposes. Perhaps the most familiar example is 540 — 1600 kHz, which is the "standard" AM broadcast band.

Ham radio operators use the following bands :

160 meters = 1.8 — 2.0 MHz
80 meters = 3.5 — 4.0 MHz
40 meters = 7.0 — 7.30 MHz
20 meters = 14 — 14.35 MHz
15 meters = 21 — 21.45 MHz
10 meters = 28 — 29.7 MHz

International broadcasting stations have several bands set aside for them.

49 meters = 5.95 — 6.2 MHz
41 meters = 7.1 — 7.3 MHz
31 meters = 9.5 — 9.775 MHz
25 meters = 11.7 — 11.975 MHz
19 meters = 15.1 — 15.45 MHz
16 meters = 17.7 — 17.9 MHz
13 meters = 21.45 — 21.75 MHz
11 meters = 25.6 — 26.1 MHz

Note that broadcasters and hams share 7.1 — 7.3 MHz, and interference is heavy in that range.

Broadcasters in tropical regions have special bands set aside for them. In such areas short wave is the only way to reach isolated locations :

120 meters = 2.3 — 2.498 MHz
90 meters = 3.2 — 3.4 MHz
60 meters = 4.75 — 5.06 MHz

The rest of the short wave range is filled with marine, aeronautical, and military stations. Such stations usually use either SSB or CW, and can be found outside the amateur and broadcast bands.

LISTENING NOTES

If you have never tuned a short wave Receiver before, you may be a bit confused by the wide variety of signals that can be heard. To help you find your way around the bands, here is a summary of what to expect.

International Broadcast stations can be found in the bands indicated in our section on band allocations. Many such stations operate in English, and can often be heard during the evening hours (between 6:00 PM and midnight, your local time). Programming usually consists of news, commentaries, local music, and features on life in their respective countries. Among the stations that are listener favorites worldwide are Radio Japan, the British Broadcasting Company, Israel Radio, Radio Nederland in Holland, and Radio Australia. You'll soon discover which stations will be your personal favorites.

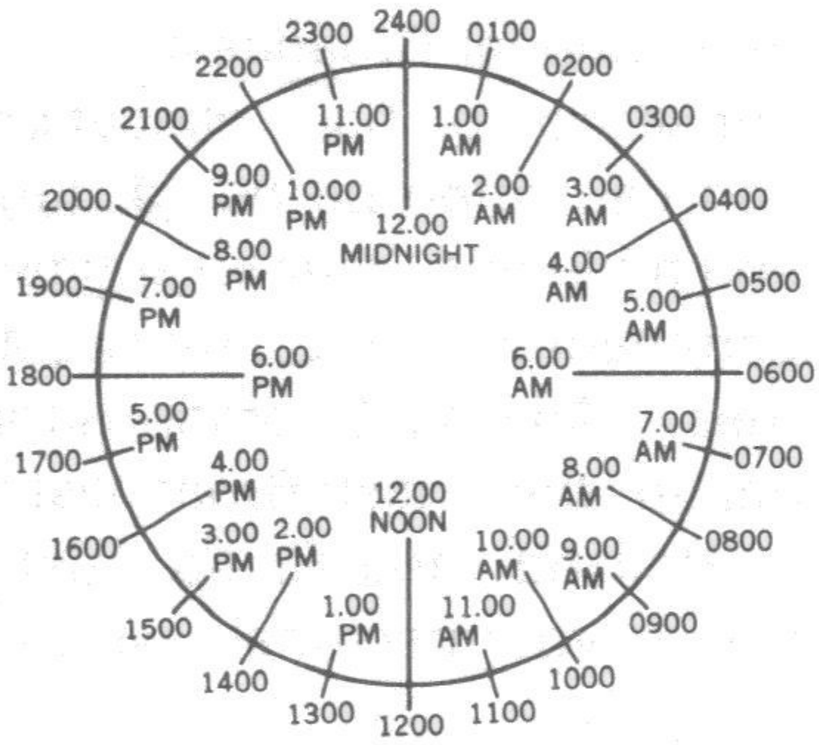
In tropical areas of the world, static makes reception on the standard AM broadcasting band difficult. This has resulted in special tropical bands being set aside for nations located in the tropics. Programming here is intended only for local audiences in the nation where the station is located. Much of what can be heard here is a treat — exotic languages, beautiful and unusual music, etc. Some English can be heard, however, from stations in Africa or the Pacific.

Time standard stations are ones you'll find quite useful. These stations give out the exact time of day at specified intervals. The National Bureau of Standards operates station WWV in Fort Collins, Colorado on 2.5, 5, 10, 15 and 20 MHz. A man's voice gives the time each minute along with periodic reports on short wave reception conditions. The National Bureau of Standards also operates another station, WWVH, on the same frequencies as WWV, in Hawaii. WWVH uses a woman's voice to give the time. Sometimes you can hear these two stations simultaneously. Other time standard stations are Canada's CHU on 3.33, 7.335 and 14.67 MHz and VNG in Australia on 4.5 and 12 MHz. Several other nations have similar stations.

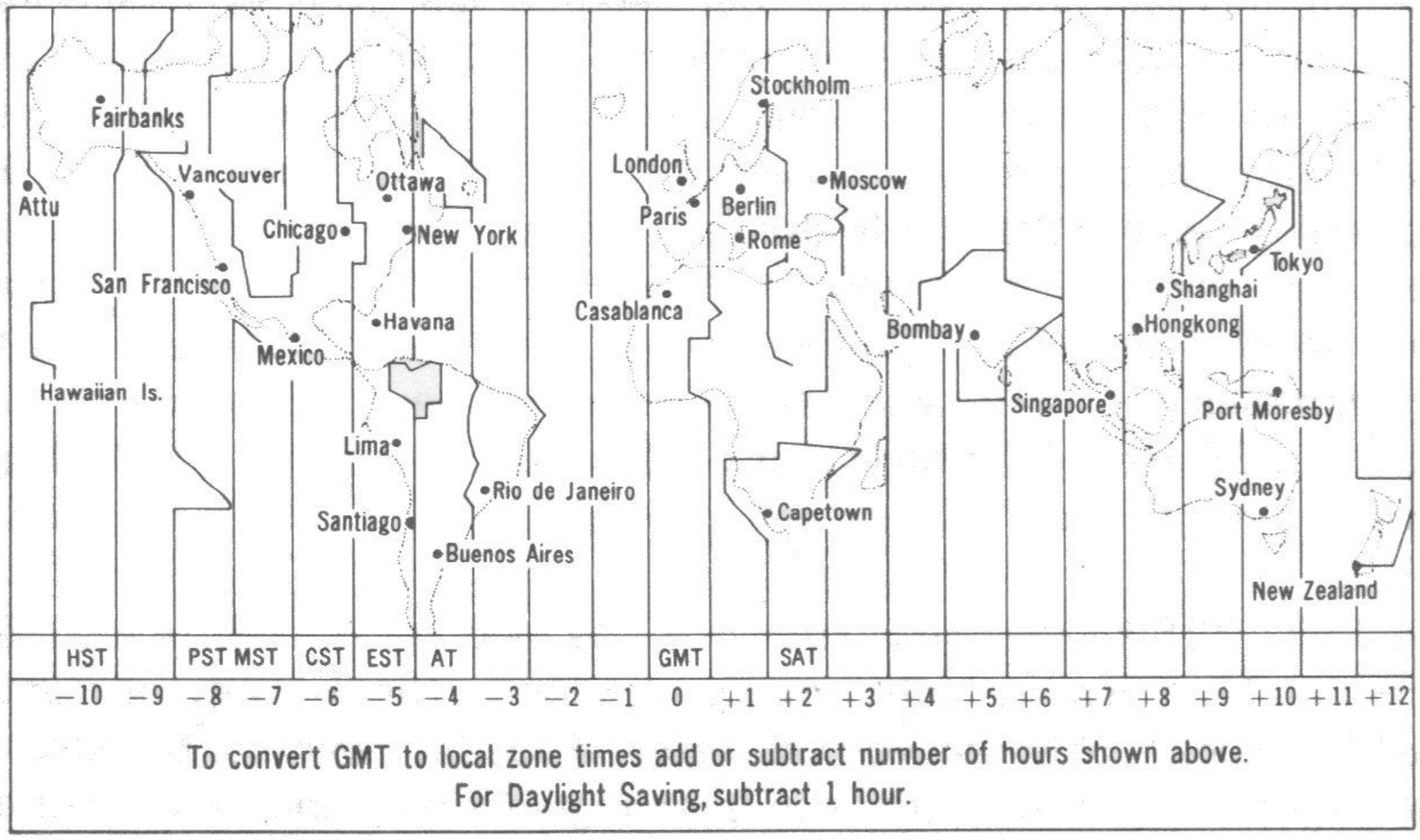
The 150 - 265 kHz range is known as the long wave band. You'll find reception here best at night in your location. The majority of stations use Morse code, although you will hear AM used for weather broadcasts . The largest number of stations in this range are beacons for aircraft and marine navigation. Beacons transmit their call letters continuously in Morse code at a slow speed.

A manual on air or marine navigation, available from your public library or a marine supply store, will contain lists of these beacons and their locations. Weather broadcasts on AM often identify themselves by their location instead of by call letters (such as "New Orleans Radio"). Many ship stations also use this range. It's also an international band for popular overseas broadcasts.

A 24-hour clock is used to tell communications time. One AM is 0100 ; four AM is 0400 ; Noon is 1200 ; 3:30 PM is 1530; 8:45 PM is 2045. This simple method precludes any confusion between AM and PM. (See Chart.)



GMT (Greenwich Mean Time — the time at Greenwich Observatory, England) is the basis for telling time in international broadcasting. To convert from GMT to local time or any other time zone, add or subtract the hours shown on the INTERNATIONAL TIME MAP (below). GMT is also termed "Z" or Zulu time. Or UTC (Coordinated Universal Time); UTC will become the standard term for this time within a few years so you should become familiar with it.



Example : 2300 GMT is 1800 EST (Eastern Standard Time). This is equivalent to 11 : 00 PM in London, Eng., 6 : 00 PM in New York or 8 : 00 AM in Tokyo (the next day).

MORSE CODE

It is possible to eavesdrop on Morse code messages even if you don't understand the code. Simply connect a tape recorder to the Earphone jack of your DX-360 and record Morse messages off the air. You can then use this code table to decode the messages you have received. You may find it helpful to play back messages more slowly than they were recorded.

Letter	Phonetic Sound	Dot-Dash Sequence
A	di—dah	·—
B	dah—di—di—dit	—· · ·
C	dah—di—dah—dit	—·—·
D	dah—di—dit	—· ·
E	dit	·
F	di—di—dah—dit	· ·—·
G	dah—dah—dit	——·
H	di—di—di—dit	· · · ·
I	di—dit	· ·
J	di—dah—dah—dah	·———
K	dah—di—dah	—·—
L	di—dah—di—dit	·—· ·
M	dah—dah	——
N	dah—dit	—·
O	dah—dah—dah	———
P	di—dah—dah—dit	·——·
Q	dah—dah—di—dah	——·—
R	di—dah—dit	·—·
S	di—di—dit	· · ·
T	dah	—
U	di—di—dah	· ·—
V	di—di—di—dah	· · ·—
W	di—dah—dah	·——
X	dah—di—di—dah	—· ·—
Y	dah—di—dah—dah	—·——
Z	dah—dah—di—dit	——· ·

Numbers

1	di—dah—dah—dah—dah	·————
2	di—di—dah—dah—dah	· ·———
3	di—di—di—dah—dah	· · ·——
4	di—di—di—di—dah	· · · ·—
5	di—di—di—di—dit	· · · · ·
6	dah—di—di—di—dit	—· · · ·
7	dah—dah—di—di—dit	——· · ·
8	dah—dah—dah—di—dit	———· ·
9	dah—dah—dah—dah—dit	————·
0	dah—dah—dah—dah—dah	—————

Short wave listening (SWL) is a hobby with thousands of participants worldwide. While no special knowledge is required for SWL, you will find your enjoyment increases with experience and special techniques for listening.

Random tuning on your DX-360 is a good idea if you've never owned a communications receiver before. In this way you can get acquainted with the various bands and the stations that can be heard. But after you've been listening for a while you'll discover that you can get more enjoyment by organizing your listening efforts.

You will also find it valuable to keep a log book of what you hear. This will allow you to discover patterns of station activity (hours and days of operation, etc.) and enable you to keep track of what you've heard. Many listeners enjoy trying to hear as many different stations and countries as possible. A log book will also be an interesting diary of your listening experiences.

Doing a little bit of library research can increase your skill as a SWL. Read up on radio propagation and theory ; try to understand the conditions that make long distance reception possible. In your local library you can find valuable references such as the *World Radio Television Handbook* and the *Radio Amateur's Handbook*. Current information can be found by consulting periodicals dealing with communications and electronics.

Keep up-to-date on news events around the world. There's much interesting listening when you turn to the international service of a nation where an important event is taking place.

REPORTING AND QSLS

You'll soon notice that many of the international broadcasting stations will ask for "reception reports" from listeners and offer to send "QSL cards" in return. Since "QSLing" is a major goal of many SWLs, let's discuss what's involved.

International broadcasters like to get letters from listeners telling how well their signals are being received. To encourage listeners to write more often, stations reply to listener reception reports with cards or letters confirming that the SWL indeed heard the station. Numerous SWLs eagerly collect these confirming cards or letters, known as QSLs, and some have managed to get QSLs from stations in over 200 different countries. Major international broadcasters frequently change the designs of their QSL cards, and many SWLs like to collect entire sets of QSLs from a single station.

What goes into a good reception report ? Tell the station the frequency you heard them on, the time (use GMT from our Time Conversion chart), and the date on which you received them. Include some details about the program you heard (announcer names, program titles, musical selections, etc.) so that the station will know you really heard them. Describe the strength and readability of their signals, making careful note of any interfering stations. Tell them that you use a Realistic DX-360 and also describe your antenna system. You might also want to include comments on the type of programs you want to hear in the future, as well as some remarks on the broadcast you are reporting on. Finally, request that, if your report is correct, the station send you a QSL card or letter.

If the broadcast you heard was in English, you can send your report in that language as well. Usually the station will give its address during the program, but for most larger stations you can simply send your report to the station's studio location (such as Israel Radio Jerusalem, Israel). One pleasant benefit of reporting is that many stations will put you on their mailing list to receive program schedules and special mailings of interest to listeners. Some stations even send out special gifts and souvenirs to regular reporters.

COUNTRY LOG

The following listing contains some of the more frequently heard stations on short wave. The stations listed can be heard throughout the North American Continent. All stations operate in English unless otherwise specified. Most of these stations do not broadcast continuously.

Obviously, reception will vary on the different frequencies according to the time of day and season of the year. Remember that reception from different parts of the world varies with the time of day and the frequency to which your DX-360 is tuned.

Remember also that the 7.1 — 7.3 MHz range is shared by hams and international broadcasters ; consequently, interference is severe in that range.

Stations can and do change frequencies. These listings can change at any time and are here for your reference only. No attempt has been made to provide an accurate up-to-date listing.
Check periodicals on communications and electronics for more current information on station frequencies and schedules.

This list contains only broadcasting stations that operate on fixed frequencies with regular schedules. Ham, military, marine, and aeronautical stations operate on varied frequencies with irregular schedules.

We suggest you refer to the World Radio/TV Handbook or Popular Communications, and Computers & Electronics for more up-to-date listings. These magazines can be purchased at your local book store or magazine stand.

MHz	STATION	LOCATION	REMARKS
3.223	Radio SR	Swaziland	
3.265	Radio Mozambique	Maputo, Mozambique	Programs in Portuguese
3.300	Radio Cultural	Guatemala City, Guatemala	Religious Programs
3.380	Radio Iris	Esmeraldas, Ecuador	Programs in Spanish
3.385	FR3	Cayenne, French Guiana	Programs in French
4.750	Radio Bertoua	Bertoua, Cameroon	
4.777	Radio-TV Gabon	Libreville, Gabon	Programs in French
4.797	Radio Nueva America	La Paz, Bolivia	Programs in Spanish
4.820	Radio Paz y Bien	Ambato, Ecuador	Programs in Spanish
4.832	Radio Reloj	San Jose, Costa Rica	Programs in Spanish
4.855	Radio Clube do Para	Belem, Brazil	Programs in Portuguese
4.890	National Broadcasting Commission	Port Moresby, Papua New Guinea	
4.915	Voice of Kenya	Nairobi, Kenya	
4.920	Australian Broadcasting Commission	Brisbane, Australia	
4.945	Radio Colosal	Neiva, Colombia	Programs in Spanish
4.965	Radio Santa Fe	Bogota, Colombia	Programs in Spanish
4.980	Ecos del Torbes	San Cristobal, Venezuela	Programs in Spanish
4.990	Radio Barquisimeto	Barquisimeto, Venezuela	Programs in Spanish
5.020	Solomon Islands Broadcasting Service	Honiara, Solomon Islands	
5.057	Radio Gjirokaster	Gjirokaster, Albania	Programs in Albanian
5.950	Guyana Broadcasting Service	Georgetown, Guyana	
5.954	Radio Casino	Puerto Limon, Costa Rica	
5.960	Radio Canada International	Montreal, Canada	
5.980	Radio RSA	Johannesburg, South Africa	
6.005	CFCX	Montreal, Canada	
6.025	Radio Malaysia	Kuala Lumpur, Malaysia	Programs in Chinese
6.045	Radio Australia	Lyndhurst, Australia	
6.055	Nihon Shortwave Broadcasting Company	Tokyo, Japan	Programs in Japanese
6.060	Radio Nacional	Buenos Aires, Argentina	Programs in Spanish
6.075	Radio Sutatenza	Bogota, Colombia	Programs in Spanish
6.090	Radio Luxembourg	Villa Louvigny, Luxembourg	
6.095	Polskie Radio	Warsaw, Poland	

MHz	STATION	LOCATION	REMARKS
7.170	Radio Noumea	Noumea, New Caledonia	Programs in French
7.195	Trans World Radio	Monte Carlo, Monaco	Programs in German
7.300	Radio Tirana	Tirana, Albania	
9.475	Radio Cairo	Abis, Egypt	
9.515	Voice of Greece	Avlis, Greece	
9.530	Spanish Foreign Radio	Madrid, Spain	
9.535	Swiss Radio International	Berne, Switzerland	
9.540	Radio Prague	Prague, Czechoslovakia	
9.540	Radio New Zealand	Wellington, New Zealand	
9.570	Radio Bucharest	Bucharest, Romania	
9.575	Italian Radio and Television Service	Rome, Italy	
9.610	Radio Norway	Oslo, Norway	
9.620	Radio Berlin International	Berlin, East Germany	
9.720	Radio Iran	Tehran, Iran	Programs in Farsi
9.720	Radio Korea	Seoul, South Korea	
9.745	HCJB	Quito, Ecuador	
9.770	Austrian Radio	Vienna, Austria	
9.800	Radio Kiev	Kiev, USSR	
9.835	Radio Budapest	Budapest, Hungary	
10.040	Voice of Vietnam	Hanoi,Vietnam	
11.650	Radio Kuwait	Kuwait, Kuwait	
11.655	Israel Radio	Jerusalem, Israel	
11.705	Radio Sweden	Stockholm, Sweden	
11.720	Radio Moscow	Moscow, USSR	
11.735	Radio Sofia	Sofia, Bulgaria	
11.745	Voice of Free China	Taipei, China	
11.815	Radio Japan	Tokyo, Japan	
11.825	Radio Tahiti	Papeete, Tahiti	Programs in Tahitian
11.835	4VEH	Cap Haitien, Haiti	
11.845	Radio Canada International	Montreal, Canada	
11.865	Deutsche Welle	Cologne, West Germany	
11.900	Radio RSA	Johannesburg, South Africa	
11.910	BBC	London, England	
11.925	Radio Purtugal	Lisbon, Portugal	
11.930	Radio Havana Cuba	Havana, Cuba	
11.955	Voice of Turkey	Ankara, Turkey	
11.980	Radio Moscow	Moscow, USSR	
15.060	Saudi Arabian Broadcasting Service	Riyadh, Saudi Arabia	Programs in Arabic

MHz	STATION	LOCATION	REMARKS
15.084	Voice of Iran	Tehran, Iran	Programs in Farsi
15.115	HCJB	Quito, Ecuador	
15.135	Radio Moscow	Moscow, USSR	
15.190	ORU	Brussels, Belgium	
15.205	All India Radio	New Delhi, India	
15.260	BBC	London, England	
15.265	Radio Finland	Helsinki, Finland	
15.305	Swiss Radio International	Berne, Switzerland	
15.310	Radio Japan	Tokyo, Japan	
15.320	Radio Australia	Melbourne, Australia	
15.400	BBC	London, England	
15.430	Radio Mexico	Mexico City, Mexico	Programs in Spanish
17.720	Radio France International	Paris, France	
17.825	Vatican Radio	Vatican City	
21.495	Israel Radio	Jerusalem, Israel	
21.525	Radio Australia	Melbourne, Australia	
21.625	Israel Radio	Jerusalem, Israel	
21.645	Radio France International	Paris, France	
25.650	BBC	London, England	
25.790	Radio RSA	Johannesburg, South Africa	

SERVICE AND MAINTENANCE

Only the highest quality parts are used in your Radio, therefore it will require little or no service. However, there are a few things you can do to ensure maximum life and performance.

Never leave the radio in high temperature areas such as inside your car when it's sitting in the hot sun. Excessive temperatures can damage internal parts. Never clean the case with a strong thinner (nail polish remover, benzine, or similar agents) ; a slightly damp cloth will normally be adequate.

Never leave dead or weak batteries in the radio. If you do not intend to use the Radio for a few weeks, remove the batteries. Old, weak batteries (even so-called "leak-proof" types) can leak chemicals that can cause severe damage.

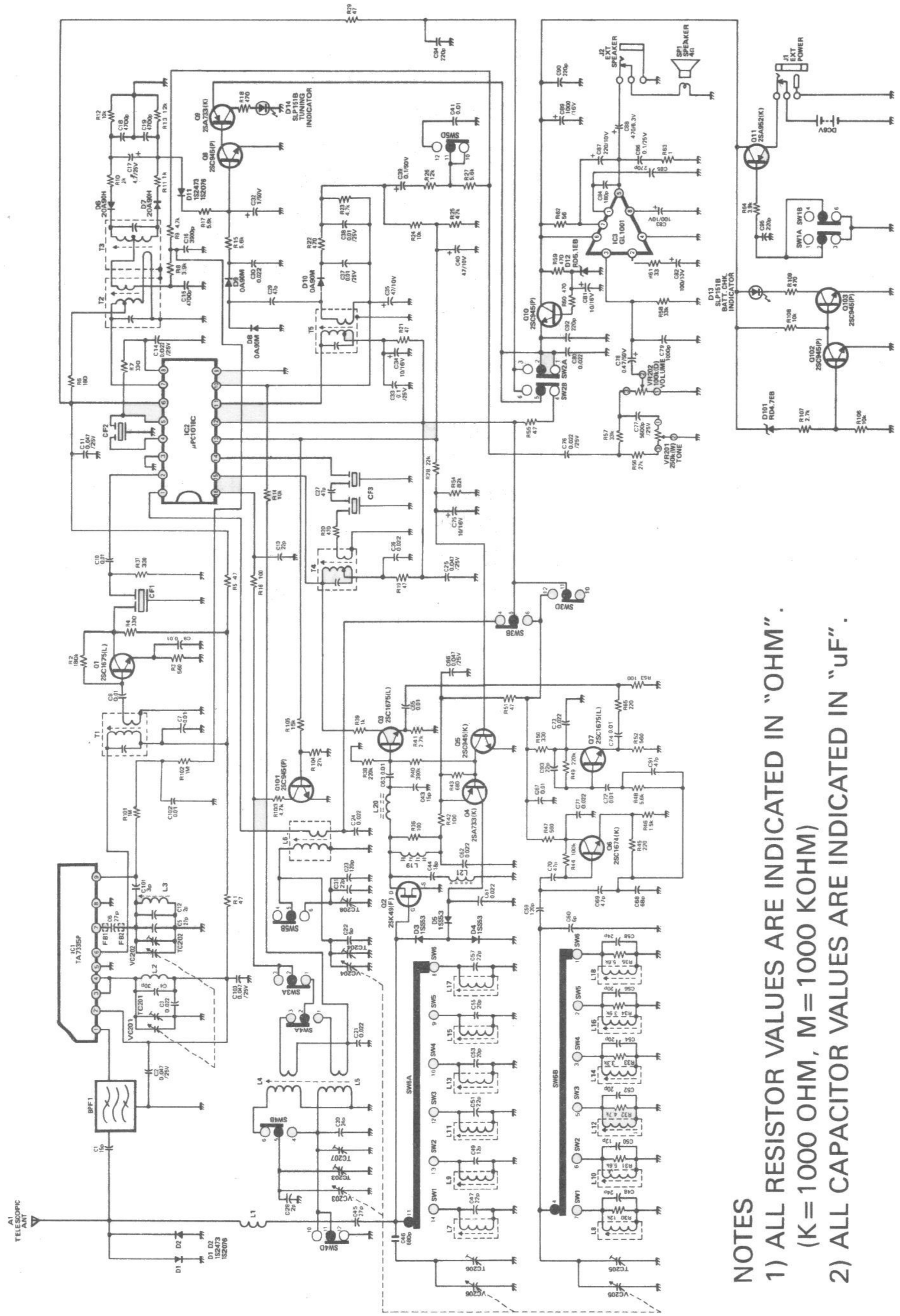
When batteries are weak, replace them with Radio Shack Catalog Number 23-582 or 23-552 AA batteries (four required).

If your radio should ever require service, take it to your local Radio Shack store.

SPECIFICATIONS

Frequency Coverage :	FM : 88 – 108 MHz LW : 150 – 265 kHz AM : 520 – 1620 kHz SW1 : 4.5 – 5.5 MHz SW2 : 5.8 – 7.5 MHz SW3 : 8.2 – 10.0 MHz SW4 : 11.4 – 14.0 MHz SW5 : 14.6 – 18.2 MHz SW6 : 21.0 – 26.1 MHz
Intermediate Frequency :	AM, SW1, SW2, SW3, SW4, SW5, SW6 & LW ; 455 kHz FM ; 10.7 MHz
Power Output :	600 mW, 10% THD.
Batteries :	Requires four AA cells
Speaker :	3" (7.6 cm) Permanent Magnet Dynamic Speaker
Antenna :	Ferrite rod for AM/LW Telescoping Antenna for SW1/SW2/SW3/ SW4/SW5/SW6/FM
Power Requirements :	6 volts DC (batteries or external source)
Dimensions :	4-1/2" (11.4 cm) High, 10" (25.4 cm) Wide, 1-3/4" (4.4 cm) Deep

SCHEMATIC DIAGRAM



NOTES

1) ALL RESISTOR VALUES ARE INDICATED IN "OHM". (K=1000 OHM, M=1000 KOHM)

2) ALL CAPACITOR VALUES ARE INDICATED IN "uF".

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.

We Service What We Sell

CUSTOM MANUFACTURED FOR RADIO SHACK
A Division of Tandy Corporation

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

TANDY CORPORATION

AUSTRALIA	BELGIUM	FRANCE	U. K.
91 Kurrajong Avenue Mount Druitt, N.S.W. 2770	Rue des Pieds d'Alouette, 39 5140 Naninne (Namur)	Centre Commercial des 3 Fontaines B.P. 147 95022 Cergy Pontoise Cedex	Bilston Road Wednesbury West Midlands WS10 7JN

8A9

Printed in Taiwan