KENWOOD

INSTRUCTION MANUAL

ALL MODE MULTI-BANDER
TS-570S
HF TRANSCEIVER
TS-570D

KENWOOD CORPORATION

© B62-1542-00 (K,E,M)(MC)
09 08 07 06 05 04 03 02 01 00

Manual abstract:

*C. @@We recommend that you identify the items listed in the table below. In addition, it is safe to keep the box and the packing material. @@@@The user could lose the authority to operate this equipment if an unauthorized change or modification is made. INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC Accessory Microphone DC power cable 7-pin DIN plug 13-pin DIN plug Fuse (25 A) Fuse (4 A) Instruction manual Schematic/block diagrams1 (U.S.A. and Canada only) Warranty card (U.S.A.
, Canada, and Europe only) 1 For Part Number T91-0352-XX E30-3157-XX E07-0751-XX E07-1351-XX F05-2531-XX F06-4027-XX B62-1542-XX -- Quantity 1 1 1 1 1 1 1 1 This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. @@@@· Increase the separation between the equipment and receiver. @@@@Pull the bail forward to the limit as shown: THANK YOU Thank you for choosing the KENWOOD TS-570 series.*

This Intelligent Digital Enhanced Communications System was developed by a team of engineers determined to continue the tradition of excellence and innovation in KENWOOD HF transceivers. This transceiver includes a 16-bit Digital Signal Processing (DSP) unit to process audio frequencies. By taking maximum advantage of DSP technology the transceiver gives you enhanced interference reduction capabilities and improves the quality of audio that you transmit. You will find the differences when you fight QRM and QRN in the new solar cycle. As you learn how to use this transceiver, you also will find KENWOOD is pursuing "user friendliness".

For example, each time you change the Menu No. in Menu mode, you will see, on the display, scrolling messages that tell what you are selecting. Though user friendly, this transceiver is technically sophisticated and some features may be new to you. Consider this manual to be a personal tutorial from the designers. Allow the manual to guide you through the learning process now, then act as a reference in the coming years. WRITING CONVENTIONS FOLLOWED The writing conventions described below have been followed to simplify instructions and avoid unnecessary repetition. This format is less confusing for the reader. Reviewing the following information now will reduce your learning period. That means less time will be spent reading this manual; more time will be available for operating. Furthermore, a system of advisories is used as follows: WARNING! Possibility of personal injury CAUTION: Possibility of equipment damage Note: Important information or operating tip Instruction Press [KEY].

Press [KEY1]+[KEY2]. What to Do Press and release KEY. Press and hold KEY1 down, then press KEY2. If there are more than two keys, press and hold down each key in turn until the final key has been pressed. Press KEY1 momentarily, release KEY1, then press KEY2. With the transceiver power OFF, press and hold KEY, then switch ON the transceiver power by pressing the [ ] (POWER) switch. FEATURES Taking full advantage of DSP technology, this transceiver · · · Provides high performance receive filters. Enhances the Beat Cancel and Noise Reduction tools. Allows total customization of transmitted audio through the use of functions such as the Transmit Equalizer. Enables Automatic Zero-beating for CW operation.

When in Menu mode, scrolls messages to tell you what you are selecting. Allows you to quickly and easily save the current transceiver settings in Quick memory. Is equipped with a large, easy to read LCD display. Press [KEY1], [KEY2]. Press [KEY]+[ ].

· · · · Note: Basic procedures are numbered sequentially to guide you step-by-step. Additional information pertaining to a step, but not essential to complete the procedure, is provided in bulleted form following many steps. To pursue user friendliness, this transceiver i CONTENTS PRECAUTIONS IV AM TRANSMISSION ...

.....

.....
.....
.....
.....

.. 22 CHAPTER 7 SPECIALIZED COMMUNICATING 23 SPLIT-FREQUENCY OPERATION .....
.....
.....
..... 23 TF-SET (TRANSMIT FREQUENCY SET) ....

..... 23 FM REPEATER OPERATION ....
.....
.....
.....

..... 24 SELECTING SUBTONE FREQUENCY ..
.....
.....
. 25 CONTINUOUS OR BURST SUBTONES? .....

25 FM CTCSS OPERATION .....
.....
.....
.....

..... 25 DIGITAL OPERATION .
.....
.....
.....

.....
.....
.....
.. 26 RTTY (FREQUENCY SHIFT KEYING) .....

..... 26 AMTOR/ PACKET/ PACTOR/ G-TORTM/ CLOVER . 27 SLOW SCAN TV/ FACSIMILE ...
.....
.....
.....

..... 28 SATELLITE OPERATION ..
.....
.....
.....

.....
.....
. 28 CHAPTER 8 COMMUNICATING AIDS 29 RECEIVING ....
.....

.....
.....
.....
.....

.....
.....
29 SELECTING YOUR FREQUENCY .....
.....

..... 29 Direct Frequency Entry .....
.....
.....
.....

..... 29 Using 1 MHz Steps ..
.....
.....
.....

.....
.....
.. 29 Quick Changes ...
.....

.....
.....
.....
.....

.. 29 Fine Tuning .....
.....
.....
.....

.....
.....
.....
... 29 Equalizing VFO Frequencies (A=B) .....

..... 30 RIT (RECEIVE INCREMENTAL TUNING) ...
.....
. 30 AGC (AUTOMATIC GAIN CONTROL) ....
.....

. 30 RX EQUALIZER .....
.....

.....
.....

.....
.....
.... 30 TRANSMITTING .
.....

.....
.....
.....
.....

.....
. 31 VOX (VOICE-OPERATED TRANSMIT) ....
.....
.... 31 Microphone Input Level .....

.....
.....
.....
..... 31 Delay Time ...

.....
.....
.....
.....

.....
.....
... 31 SPEECH PROCESSOR ..
.....

.....
.....
.....
.... 32 XIT (TRANSMIT INCREMENTAL TUNING) .....

. 32 CUSTOMIZING TRANSMIT SIGNAL CHARACTERISTICS .....
.....
.....
.....

.....
.. 33 Changing Transmit Bandwidth (SSB/AM) ...
.....
.....

.....
.....
... 33 Equalizing Transmit Audio (SSB/FM/AM) ..
.... 33 MONITORING TRANSMITTED SIGNALS .....

... 33 TRANSMIT INHIBIT .....
.....
.....
.....

.....
.....
. 33 CHANGING FREQUENCY WHILE TRANSMITTING ....
.....

.....
.....
.....
.....

.... 33 CW BREAK-IN .....
.....
.....
.....

.....
.....
.....
..... 34 USING SEMI BREAK-IN OR FULL BREAK-IN .

.....
.....
.....
.....

.....
.....
.. 34 ELECTRONIC KEYER ...
.....

.....
.....
.....
..... 34 CHANGING KEYING SPEED .

.....
.....
.....
..... 34 AUTO WEIGHTING ...

.....
.....
.....
.....

.....
34 Reversible Auto Weighting .....
.....
.....

..... 34 CHANGING LOCKED-WEIGHT ..
.....
.....
.....

.. 35 BUG KEY FUNCTION .....
.....
.....
.....

.....
. 35 CW MESSAGE MEMORY ....
.....
.....

.....
.... 35 Storing CW Messages .
.....
.....

.....
.....
... 35 Checking CW Messages without Transmitting35 Transmitting CW Messages ..
.....

.....

.... 35 CHAPTER 9 REJECTING INTERFERENCE 36 IF FILTER .
.....
.....

.....
.....
.....
.....

.....
.....
. 36 CHANGING IF FILTER BANDWIDTH ....
.....

.. 36 IF SHIFT .....
.....
.....
.....

.....
.....
.....
.....

.. 36 NOISE BLANKER .....
.....
.....
.....

.....
.....
.....
.. 36 CHAPTER 1 INSTALLATION 1 ANTENNA CONNECTION .....

.....
.....
.....
.....

. 1 GROUND CONNECTION .....
.....
.....
.....

.....
. 2 LIGHTNING PROTECTION ....
.....
.....

.....
.....
... 2 DC POWER SUPPLY CONNECTION ..
.....

.....
2 REPLACING FUSES .....
.....
.....

.....
.....
.....
... 2 ACCESSORY CONNECTIONS .....

.....
.....
.....

.... 3 FRONT PANEL .....

.....
.....
.....
.....

.....
.....
. 3 Headphones (PHONES) ....
.....

.....
.....
.... 3 Microphone (MIC) .
.....

.....
.....
.....
.....

.. 3 REAR PANEL .....
.....
.....
.....

.....
.....
.....
..... 3 External Speaker (EXT SP) ....

.....
.....
.....
.... 3 Keys and Keyboards for CW Operation (PADDLE and KEY) .....

.....
. 3 CHAPTER 2 YOUR FIRST QSO 4 RECEIVING ....
.....
.....

.....
.....
.....
.....

.....
.. 4 TRANSMITTING ...
.....
.....

.....
.....
.....
.....

..... 5 CHAPTER 3 GETTING ACQUAINTED 6 FRONT PANEL ....
.....
.....
.....

.....
.....
.....
.....

.. 6 MICROPHONE .....
.....
.....
.....

.....
.....
.....
..... 9 REAR PANEL ..

.....
.....
.....
.....

.....
.....
.....
.... 10 DISPLAY .....

.....
.....
.....
.....

.....
.....
.....
..... 11 CHAPTER 4 OPERATING BASICS 13 SWITCHING POWER ON/OFF ...

.....
.....
.....
..... 13 ADJUSTING VOLUME ....

.....
.....
.....
.....

..... 13 AUDIO FREQUENCY (AF) GAIN..
.....
.....
.....

. 13 RADIO FREQUENCY (RF) GAIN .....
.....
.....
... 13 SELECTING VFO A OR VFO B .....

.....
.....
.....
.. 13 SELECTING A BAND .....

.....
.....
.....
.....

..... 13 SELECTING A MODE ....
.....
.....
.....

.....
.....

.... 14 ADJUSTING SQUELCH .
.....
.....
.....
..... 14 SELECTING A FREQUENCY .
.....
.....
.....
.....
. 14 FRONT PANEL METER .....
.....
.....
.....
.....
. 14 TRANSMITTING ....
.....
.....
.....
.....
.....
... 15 SELECTING TRANSMIT POWER .....
.....
.....
.... 15 MICROPHONE GAIN .....
.....
.....
.....
.....
.... 15 CHAPTER 5 MENU SETUP 16 WHAT IS A MENU? .....
.....
.....
.....
.....
.....
.....
. 16 MENU A/ MENU B .....
.....
.....
.....
.....
.....
16 MENU ACCESS .....
.....
.....
.....
.....
.....
.. 16 MENU CONFIGURATION .....
.....
.....
.....

..... 17 CROSS REFERENCE FOR MENU FUNCTIONS .
.....
.....
.....

.....
.....
.....
..... 19 CHAPTER 6 BASIC COMMUNICATING 20 SSB TRANSMISSION .....

.....
.....
.....
.....

..... 20 CW TRANSMISSION ..
.....
.....
.....

.....
.....
.....
.. 21 AUTO ZERO-BEAT .....

.....
.....
.....
.....

..... 21 TX SIDETONE/ RX PITCH FREQUENCY .....
.... 21 FM TRANSMISSION .
.....
.....

.....
.....
.....
..... 22 TX DEVIATION SELECTION .

.....
.....
.....
..... 22 ii ATTENUATOR ..

.....
.....
.....
.....

.....
.....
.....
... 37 PREAMPLIFIER .....

.....
.....
.....
.....

.....
.....
37 DSP TOOLS .....
.....

.....

.....
.....
.....

.....
... 37 CHANGING RECEIVE BANDWIDTH ..
.....
..... 37 SSB/ FM/ AM Modes .

.....
.....
.....
.....

..... 37 CW/ FSK Modes .....
.....
.....
.....

.....
.....
... 38 BEAT CANCEL .

.
.....

.....
.....
.....
.....

..... 38 NOISE REDUCTION ..
.....
.....
.....

.....
.....
.... 38 Changing NR1 Performance .
.....

.....
.... 38 Setting NR2 Time Constant .
.....
.....

.....
. 38 CHAPTER 10 MEMORY FEATURES 39 MICROPROCESSOR MEMORY BACKUP ....
.....
... 39 CONVENTIONAL MEMORY .....

.....
CTING PERIPHERAL EQUIPMENT 60 COMPUTER .....
.....
.....

.....
.....
.....
.....

..... 60 COMPATIBLE TRANSCEIVER ..
.....
.....
.....

..... 60 RTTY EQUIPMENT ..
.....
.....
.....

.....
.....
.....
..... 61 LINEAR AMPLIFIER .....

.....
.....
.....
.....

.....
. 61 ANTENNA TUNER ....
.....
.....

.....
.....
.....
..... 61 MCP AND TNC .

.....
.....
.....
.....

.....
.....
.....
... 62 CHAPTER 16 MAINTENANCE 63 GENERAL INFORMATION .....

.....
.....
.....
..... 63 SERVICE .

.....
.....
.....
.....

.....
.....
.....
..... 63 SERVICE NOTE ..

.....
.....
.....
.....

.....
.....
. 63 CLEANING ....
.....

.....
.....
.....
.....

.....
.. 63 INTERNAL ADJUSTMENTS ...
.....
.....

.....
.....
. 64 REFERENCE FREQUENCY CALIBRATION ....
. 64 ACCESSING THE INTERNAL FUSE .....

..... 64 TROUBLESHOOTING ..
.....
.....
.....

.....
.....
.....
. 65 SPECIFICATIONS APPENDIX: COM CONNECTOR PROTOCOL INDEX 68 70 82 iii PRECAUTIONS Please read all safety and operating instructions before using this transceiver. For best results, be aware of all warnings on the transceiver and follow these operating instructions. Retain these safety and operating instructions for future reference. 1 Power Source Connect this transceiver only to the power sourcto protect the antenna system, your personal safety, and your property {page 2}. ANTENNA CONNECTION The type of the antenna system, consisting of the antenna, ground, and feed line, will greatly affect the successful performance of the transceiver. Use a properly adjusted 50 antenna of good quality to let your transceiver perform at its best. Use a good-quality 50 coaxial cable and a first-quality connector for the connection. Match the impedance of the coaxial cable and antenna so that the SWR is 1.5:1 or less.

All connections must be clean and tight. While the transceiver's protection circuit will activate if the SWR is greater than 2.5:1, do not rely on protection to compensate for a poorly functioning antenna system. High SWR will cause the transmit output to drop, and may lead to radio frequency interference to consumer products such as stereo receivers and televisions. You may even interfere with your own transceiver. Reports that your signal is garbled or distorted, especially at peak modulation, may indicate that your antenna system is not efficiently radiating the transceiver's power. If you feel a tingle from the transceiver's cabinet or the microphone's metal fittings when you modulate, you can be certain that, at the least, your coax connector is loose at the rear of the radio and, at the worst, your antenna system is not efficiently radiating power. Connect your antenna feed line to ANT 1 If you are . using two antennas, connect the second antenna to ANT 2 . CAUTION: APPROX.

LOSS (dB) PER 30 METERS (100 FEET) OF CORRECTLY MATCHED 50 LINE · Use only as a general guide. Specifications may vary between cable manufacturers. Transmission Line RG-174, -174A RG-58A, -58C 3D-2V RG-58, -58B RG-58 Foam RG-8X 5D-2V RG-8, -8A, -9, -9A, -9B, -213, -214, -215 5D-FB RG-8 Foam 8D-2V 10D-2V 9913 8D-FB 10D-FB 12D-FB RG-17, -17A 1/2" Hardline 20D-2V 3/4" Hardline 7/8" Hardline N/A: Not available 3.5 MHz 2.3 0.

75 0.80 0.65 0.70 0.50 0.

45 0.38 N/A 0.29 0.29 0.24 0.24 N/A N/A N/A 0.13 0.12 < 0.10 < 0.10 < 0.

10 14 MHz 4.3 1.6 1.5 1.5 1.4 1.0 0.93 0.80 0.80 0.

60 0.60 0.50 0.48 0.48 0.

37 0.33 0.29 0.26 0.25 0.

21 0.16 30 MHz 6.4 2.6 2.3 2.3 2.1 2.0 1.4 1.2 1.

0 0.90 0.90 0.72 0.70 0.68 0.54 0.45 0.48 0.40 0.

39 0.32 0.26 TRANSMITTING WITHOUT FIRST CONNECTING AN ANTENNA OR OTHER MATCHED LOAD MAY DAMAGE THE TRANSCEIVER. ALWAYS CONNECT THE ANTENNA TO THE TRANSCEIVER BEFORE TRANSMITTING. USE A LIGHTNING ARRESTOR TO PREVENT FIRE, ELECTRIC SHOCK, OR DAMAGE TO THE TRANSCEIVER.

1 1 INSTALLATION GROUND CONNECTION At the minimum, a good DC ground is required to prevent such dangers as electric shock. For superior communications results, a good RF ground is required, against which the antenna system can operate. Both of these conditions can be met by providing a good earth ground for your station. Bury one or more ground rods, or a large copper plate under the ground, and connect this to the transceiver GND terminal. Use heavy gauge wire or a copper strap, cut as short as possible, for this connection.

Just as for antenna work, all connections must be clean and tight. First connect the DC power cable to the regulated DC power supply and check that polarities are correct (Red: positive, Black: negative). Then connect the connectorized end of the DC power cable to the DC 13.8 V power connector on the transceiver rear panel. Press the DC power cable connector firmly into the connector on the transceiver until the locking tab clicks. Fuse holders Black Red LIGHTNING PROTECTION Consider carefully how to protect your equipment and your home from lightning. Even in areas where lightning storms are less common, there are usually a limited number of storms each year. Take the time to study the best way to protect your installation from the effects of lightning by consulting reference material on the subject. The installation of a lightning arrestor is a start, but there is more that you can do. For example, terminate your antenna system transmission lines at an entry panel that you install outside your home.

Ground this entry panel to a good outside ground, and then connect appropriate feed lines between the entry panel and your transceiver. When a lightning storm occurs, you can ensure added protection by disconnecting the feed lines from your transceiver. CAUTION: DO NOT ATTEMPT TO USE A GAS PIPE (WHICH IS CLEARLY DANGEROUS), AN ELECTRICAL CONDUIT (WHICH HAS THE WHOLE HOUSE WIRING ATTACHED AND MAY ACT LIKE AN ANTENNA), OR A PLASTIC WATER PIPE FOR A GROUND. TS-570 DC power supply DC 13.8 V REPLACING FUSES If the fuse blows, determine the cause then correct the problem. After the problem is resolved, only then replace the fuse. If newly installed fuses continue to blow, disconnect the power plug and contact your dealer or nearest Service Center for assistance. Fuse Location TS-570 Supplied Accessory Cable Fuse Current Rating 4A (For an external antenna tuner) DC POWER SUPPLY CONNECTION In order to use this transceiver, you will need a separate 13.8 V DC power supply that must be purchased separately. DO NOT directly connect the transceiver to an AC outlet! Use the supplied DC power cable to connect the transceiver to a regulated power supply.

Do not substitute a cable with smaller gauge wires. The current capacity of your power supply must be 20.5 A peak or more. CAUTION: 25 A CAUTION: REPLACE BLOWN FUSES ONLY AFTER INVESTIGATING AND CORRECTING THE CAUSE OF THE FAILED FUSE. ALWAYS REPLACE A BLOWN FUSE BY A NEW FUSE WITH THE SPECIFIED RATINGS.

BEFORE CONNECTING THE DC POWER SUPPLY TO THE TRANSCEIVER, BE SURE TO SWITCH THE TRANSCEIVER AND THE DC POWER SUPPLY OFF. DO NOT PLUG THE DC POWER SUPPLY INTO AN AC OUTLET UNTIL YOU MAKE ALL CONNECTIONS. 2 1 INSTALLATION ACCESSORY CONNECTIONS FRONT PANEL Headphones (PHONES) Use headphones having 4 to 32 impedance. You can also use stereo headphones. When headphones are used, no sound is heard from the internal (or optional external) speaker.

Use a 6.0 mm (1/4") diameter, 2-conductor (mono) or 3-conductor (stereo) plug. Headphones Microphone (MIC) To communicate in the voice modes, connect to the MIC connector a microphone having an impedance between 250 and 600 .

Insert the connector from your microphone fully, then screw the retaining ring clockwise until snug. Compatible microphones include the MC-43S, MC-47, MC-60A, MC-80, MC-85, and MC-90. Do not use the MC-44, MC-44DM, MC-45, MC-45E, MC-45DM, MC-45DME, MC-52DM, or MC-53DM microphone. TS-570 iGND(STBY) MICq PTTw DOWNe UPr Microphone uGND(MIC) yNC t8 V(10 mA max) REAR PANEL External Speaker (EXT SP) Ensure any external speaker used has an impedance of 8 . Use a 3.5 mm (1/8") diameter, 2-conductor (mono) plug. When an external speaker is used, no sound is heard from the internal speaker.

WARNING! DO NOT CONNECT HEADPHONES TO THIS JACK. THE HIGH AUDIO OUTPUT AT THIS JACK COULD DAMAGE YOUR HEARING. MIC connector (Front view) External speaker Keys and Keyboards for CW Operation (PADDLE and KEY) For CW operation using the internal electronic keyer, connect a keyer paddle to the PADDLE jack. For CW operation without using the internal electronic keyer, connect a straight key, semi-automatic key (bug), electronic keyer, or the CW keyed output from a Multimode Communications Processor (MCP) to the KEY jack. The jacks mate with a 6.0 mm (1/4") 3-conductor plug and a 3.5 mm (1/8") 2-conductor plug respectively. External electronic keyers or MCPs must use positive keying to be compatible with this transceiver. Use a shielded cable between the key and the transceiver. Note: Due to the full-featured functionality of the internal electronic keyer, you may decide it's unnecessary to connect both a paddle and another type of key unless you specifically want to use a keyboard for CW.
It's recommended that you become familiar with the internal keyer by reading "ELECTRONIC KEYER" {page 34} before making your decision. TS-570 Ground + Ground Dash Dot · · · · Straight key Bug Electronic keyer MCP CW output · Paddle 3 2 YOUR FIRST QSO Since you've now installed the TS-570, why not try it? The instructions below are abbreviated. They are intended only to act as a quick introduction. If you encounter problems or there's something you don't understand, you can read about the subject in more detail later. RECEIVING w PF t HF TRANSCEIVER TS-570D N.
R. B.C. CW TUNE FILTER UP CH1 CH2 CH3 RIT/XIT MR M.IN PWR CW FSK DSP SLOPE HIGH LOW VOX SEND PROC AT TUNE LOW CUT ATT PRE-AMP q q AF 4 RF 6 PHONES MIC 1 ANT 2 REC 3 FINE LSB USB DOWN + 2 8 4 MIC 5 8 F.
LOCK 6 KEY 0 10 SPLIT FM AM TF-SET A/B RIT qr q q q NB AGC/TONE REV CH IF SHIFT 4 SQL 6 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.IN 0 10 y u e e VFO A should already be selected for receiving and transmitting, and you should see "tA" on the display. If not, press the [A/B] button. r Increase the AF control slowly clockwise until you hear a suitable level of background noise. t Select an Amateur band by pressing the [UP] or [DOWN] button. y Select an operating mode by pressing the [LSB/USB] or [CW/FSK] button. · Press the same button again to toggle to the second function on the button. For example, repeatedly pressing the [LSB/USB] button switches between LSB and USB modes. If no stations are heard but you have an antenna connected, possibly the wrong antenna connector is selected. Pressing the [ANT] button toggles between the Antenna 1 and the Antenna 2 connectors.

Note: Only those buttons and controls required to briefly try the transceiver are explained in this section. q Set the following as specified: · · · · · AF control: RF control: Fully counterclockwise Fully clockwise Fully clockwise DSP SLOPE (LOW) control: Fully counterclockwise IF SHIFT control: Center SQL control: Fully counterclockwise DSP SLOPE (HIGH) control: w Switch ON the DC power supply, then press and hold the [ ] (POWER) switch briefly. · The transceiver switches ON. Indicators and frequency digits should appear on the display. u Turn the Tuning control to tune in a station. · YOUR FIRST QSO · Note that pressing [ ] (POWER) for more than approximately 2 seconds switches the transceiver power OFF. 4 2 YOUR FIRST QSO YOUR FIRST QSO TRANSMITTING ro PF HF TRANSCEIVER TS-570D ATT VOX PRE-AMP PROC AT TUNE UP CH1 CH2 CH3 N.R. B.C.
CW TUNE FILTER RIT/XIT MR M.IN + 2 DSP SLOPE HIGH LOW LOW CUT ti we SEND AF 4 RF 6 PHONES MIC 1 ANT 2 REC 3 FINE PWR LSB USB DOWN 8 4 MIC 5 8 F.LOCK 6 KEY CW FSK 0 10 SPLIT FM AM TF-SET A/B RIT NB AGC/TONE REV CH IF SHIFT 4 SQL 6 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.IN 0 10 q After tuning in a few stations as explained in the previous section "RECEIVING", try making a contact. q Assuming you are already on the correct band with the correct mode selected (steps 1~7 in "RECEIVING"), use the Tuning control to tune in a station or to select an unused frequency.
w Momentarily press the [AT TUNE] button. · "AT" appears. u r SSB: Press the [MIC] button to activate the Microphone Gain Setting function. · "MIC-50" appears. CW: Skip this step.
t Press the [SEND] button. · e Press and hold the [AT TUNE] button to allow the built-in antenna tuner to function. · "AT" blinks and "TX" appears. "TX" appears. y Begin speaking into the microphone or sending CW with your key. u SSB: While speaking into the microphone, adjust the MULTI/CH control so that the ALC meter reflects according to your voice level. · Tuning should be completed in less than approximately 20 seconds. "AT" stops blinking and "TX" disappears. If tuning is not completed in approximately 20 seconds, error beeps sound. Press [AT TUNE]to stop the error beeps and to quit tuning.

Check your antenna system before continuing. CW: Skip this step. i Press the [SEND] button again when you want to return to receive mode. o Press the [MIC] button again to quit the Microphone Gain Setting function. This completes your introduction to the TS-570, but there is a great deal more to know. "OPERATING BASICS" {page 13} and following chapters explain all functions of the transceiver starting with the most basic, commonly-used functions. · Note: Tuning will automatically turn off after approximately 60 seconds. In addition, "AT" will disappear and the error beeps will stop. 5 GETTING ACQUAINTED FRONT PANEL wq PF e rt y i u o !0 HF TRANSCEIVER TS-570D ATT VOX SEND PRE-AMP PROC AT TUNE UP CH1 CH2 CH3 N.R. B.C. CW TUNE FILTER RIT/XIT MR M.IN + 2 DSP SLOPE HIGH LOW LOW CUT AF 4 RF 6 PHONES MIC 1 ANT 2 REC 3 FINE PWR LSB USB DOWN 8 4 MIC 5 8 F.

LOCK 6 KEY CW FSK 0 10 SPLIT FM AM TF-SET A/B RIT NB AGC/TONE REV CH IF SHIFT 4 SQL 6 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.

IN 0 10 !1 q o PHONES jack Connect headphones to this jack. Inserting a plug into the jack automatically mutes the audio from the speaker {page 3}. !0 MIC connector Connect a compatible microphone, then snugly screw down the connector locking ring {page 3}. !1 Multi-purpose keypad e PRE-AMP button Press to switch ON or OFF the receive preamplifier {page 37}. r ATT button Press to switch ON or OFF the receive attenuator {page 37}.

t PROC button Press to switch ON or OFF the Speech Processor for transmitting {page 32}. y VOX button In voice modes, press to switch ON or OFF the VoiceOperated Transmit function {page 31} or, in CW mode, to switch ON or OFF the Break-in function {page 34}. u AT TUNE button Use for activating the internal antenna tuner {page 52} or an external antenna tuner. i SEND button Press to switch the transceiver between receive mode and transmit mode {page 15}. · · · · Consists of 10 buttons that are used for inputting numeric data. Also used for the following functions. · CH 1, CH 2, CH 3 buttons Press to select functions associated with the internal electronic keyer {page 34} and the DRU-3A Digital Recording Unit {page 53} . ANT button Press to select either Antenna 1 or Antenna 2 that are connected to their respective antenna connectors on the rear panel {pages 1, 48}. REC button Press to select the record mode for CW Message Memory {page 35} or for the optional DRU-3A Digital Recording Unit {page 53}. FINE button Press to reduce by one-tenth the Tuning control step size to allow more precise tuning {page 29}.

NB button Press to switch ON or OFF the analog Noise Blanker {page 36}. · AGC/TONE button Press to switch the Automatic Gain Control function between Slow and Fast {page 30}. Also switches ON or OFF the Subtone {page 24} or CTCSS function {page 25}. (POWER) switch Press and hold down briefly to switch ON the transceiver power. Press again to switch OFF the power {page 13}. w PF button A function can be assigned by the user to this Programmable Function button {page 49}. The default function is Voice 1 {page 55}. 6 3 GETTING ACQUAINTED PF HF TRANSCEIVER TS-570D ATT VOX SEND PRE-AMP PROC AT TUNE UP CH1 CH2 CH3 N.R. B.

C. CW TUNE FILTER RIT/XIT MR M.IN + 2 DSP SLOPE HIGH LOW LOW CUT AF 4 RF 6 PHONES MIC 1 ANT 2 REC 3 FINE PWR LSB USB DOWN 8 4 MIC 5 8 F.LOCK 6 KEY CW FSK 0 10 SPLIT FM AM TF-SET A/B RIT NB AGC/TONE REV CH IF SHIFT 4 SQL 6 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.IN 0 10 !2 !4 !5 !3 · REV button !6 !3 Mode buttons Press these buttons to select your operating mode {page 14}.

· LSB/USB button Press to select lower sideband or upper sideband mode for voice or digital operation {pages 20, 27}. · CW/FSK button Press to select CW or frequency shift keying mode {pages 21, 26}. · FM/AM button Press to select FM or AM mode {page 22}. !4 MENU button Press to select or cancel the Menu mode that is used for activating and configuring functions {page 16}. !5 1MHz button Press to switch between the 1 MHz step mode and the Amateur band mode {page 29}.

!6 Tuning control Turn to select the desired frequency {page 14}. Use the convenient finger-tip cavity for continuous tuning. The lever behind the control adjusts the control torque level; turn fully clockwise for light torque or fully counterclockwise for slightly heavy torque. In CW or FSK mode, press to select either the upper or lower sideband while receiving {pages 21, 26}. · CLR button Press to exit from, abort, or reset various functions. Also used for erasing memory channels {page 43} or for locking out memory channels from the scan list {page 44}. · F.LOCK button Press to switch ON or OFF the Frequency Lock function {page 48}. · ENT button Press to enter the desired frequency via the keypad {page 29}. !2 Transmit function buttons Used in conjunction with the MULTI/CH control to set various transmit functions.

· MIC button Used for setting the microphone gain level {page 15}. · PWR button Used for setting the transmit output power {page 15}. · KEY button Used for setting the internal electronic keyer speed {page 34}. · DELAY button When using the VOX or Break-in function, used for setting the time delay from transmit mode to receive mode {pages 31, 34}. 7 3 GETTING ACQUAINTED @1 @2 @3 @4 @5 PF HF TRANSCEIVER TS-570D ATT VOX SEND PRE-AMP PROC AT TUNE UP CH1 CH2 CH3 N.R. B.C. CW TUNE FILTER RIT/XIT MR M.IN + 2 DSP SLOPE HIGH LOW LOW CUT AF 4 RF 6 PHONES MIC 1 ANT 2 REC 3 FINE PWR LSB USB DOWN 8 4 MIC 5 8 F.

LOCK 6 KEY CW FSK 0 10 SPLIT FM AM TF-SET A/B RIT NB AGC/TONE REV CH IF SHIFT 4 SQL 6 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.IN 0 10 !7 !8 !9 !7 Frequency control buttons These buttons control functions related to selecting a frequency, a VFO, or a memory channel. · UP/DOWN buttons Press to step through all Amateur bands consecutively {page 13} or to step the transceiver frequency in 1 MHz increments {page 29}. Also used for making selections from the Menu {page 16}, and to check Start and End frequencies for the Scan function {page 43}. · SPLIT button Press to use split-frequency operation which allows a different transmit frequency and receive frequency {page 23}.

· M/V button Press to select either Memory or VFO mode {page 40}. · TF-SET button While operating split-frequency, press to monitor or change your transmit frequency {page 23}. · A=B button Press to copy the data in the currently selected VFO over to the other VFO {page 30}. · A/B button Press to select either VFO A or VFO B {page 13}. Also, in menu mode, press to select either Menu A or Menu B {page 16}.

· CLEAR button Press to reset the RIT/XIT frequency offset to zero {pages 30, 32}. · RIT button Press to switch ON or OFF the Receive Incremental Tuning function {page 30}. · XIT button Press to switch ON or OFF the Transmit Incremental Tuning function {page 32}. 8 · @0 !8 SCAN button Press to start and stop Scan functions {pages 46, 47}. !9 M>VFO button Press to transfer data from a memory channel to a VFO {page 42}. @0 M.IN button Writes data into a memory channel {page 39} or selects Memory Scroll mode {page 41}. @1 Quick Memory buttons Controls the Quick Memory function {page 44}. · M.IN button Press to write data into Quick Memory {page 44}.

MR button Press to recall data from Quick Memory {page 45}. @2 FILTER button Press to select the receive filter bandwidth in SSB, CW, FSK, or AM mode {pages 36, 38}, or press to select either narrow-band or wide-band transmit deviation in FM mode {page 22}.

Note: Selecting the narrow filter bandwidth in SSB mode requires the optional YK-88SN-1 filter {page 36}. @3 CW TUNE button Press to activate the automatic zero-beat function for CW mode {page 21}. @4 B.C. button Press to switch ON or OFF the DSP Beat Cancel function {page 38}. @5 N.R. button Press to toggle between Noise Reduction 1, Noise Reduction 2, and OFF {page 38}.

3 GETTING ACQUAINTED @8 PF HF TRANSCEIVER TS-570D ATT VOX SEND PRE-AMP PROC AT TUNE UP CH1 CH2 CH3 N.R. B.C. CW TUNE FILTER RIT/XIT MR M.

IN + 2 DSP SLOPE HIGH LOW LOW CUT AF 4 RF 6 @6 @7 8 PHONES MIC 1 ANT 2 REC 3 FINE PWR LSB USB DOWN 4 MIC 5 8 F.LOCK 6 KEY CW FSK 0 10 SPLIT FM AM TF-SET A/B RIT NB AGC/TONE REV CH IF SHIFT 4 SQL 6 @9 #0 #1 #2 7 CLR 9 DELAY M/V 1MHz SCAN A=B CLEAR XIT 2 8 MENU 0 ENT M>VFO M.IN 0 10 #3 @6 DSP SLOPE (HIGH) control In SSB or AM mode, turn to change the high cut-off frequency of the receive pass band. Use the control to improve readability of the desired signal when higher frequency interference is present {page 37}. @7 DSP SLOPE (LOW) control In SSB or AM mode, turn to change the low cut-off frequency of the receive pass band.

Use the control to improve readability of the desired signal when lower frequency interference is present {page 37}. @8 RIT/XIT control After switching ON the RIT or XIT function, turn to select the desired frequency offset {pages 30, 32}. @9 AF control Turn to adjust the audio frequency gain {page 13}. #0 RF control Turn to adjust the radio frequency gain {page 13}. #1 IF SHIFT control Turn to slide the receive pass band either lower or higher in frequency when interference is present {page 36}. #2 SQL control Used for muting ("squelching") the speaker output when no receive signal is present {page 14}. #3 MULTI/CH control In VFO mode, turn to step the operating frequency up or down {page 29}. In memory channel mode, turn to select a memory channel {page 40}. Also used for selecting Menu numbers when accessing the Menu mode {page 16}, and as a selector to choose settings for various functions activated by front panel buttons. 9 PTT MICROPHONE q UP/DWN buttons Use these buttons to step up or down the VFO frequency, memory channels, or Menu selections.

Press and hold down to continuously change the settings. w PTT (Push-to-Talk) switch The transceiver is placed in transmit mode when this non-locking switch is held down. Releasing the switch returns the transceiver to receive mode. q DWN UP w 3 GETTING ACQUAINTED REAR PANEL q w e DC 13.8V ANT 2 ANT 1 AT GND r COM KEY PADDLE ACC 2 EXT.SP 8 REMOTE t y u i o q ANT 1 and ANT 2 connectors Connect the feed lines from your antennas to these connectors. Refer to pages 1 and 48 for details. w AT connector Mates with the connector on the cable supplied with the external antenna tuner. Refer to the instruction manual supplied with this tuner for more information. e DC 13.

8 V power input connector Connect a 13.8 V DC power source {page 2}. Use the supplied cable with a regulated DC power supply. r GND post Connect a heavy gauge wire or copper strap between the ground post and the nearest earth ground {page 2}. t COM connector Mates with a 9-pin female RS-232C connector for connecting a computer via one of its serial communication ports {page 60}.

Also used with the Quick Data Transfer function {page 60}. y KEY and PADDLE jacks The PADDLE jack mates with a 6.0 mm (1/4") 3-conductor plug for connecting a keyer paddle to the internal electronic keyer. The KEY jack mates with a 3.5 mm (1/8") 2-conductor plug for connecting an external key for CW operation.

Read "Keys and Keyboards for CW Operation" {page 3} before connecting to these jacks. u ACC 2 connector Mates with a 13-pin male DIN connector for connecting various accessory equipment {pages 61, 62}. i EXT SP jack Mates with a 3.5 mm (1/8"), 2-conductor (mono) plug for connecting an external speaker {page 3}. Connecting an external speaker cuts off the audio automatically to the internal speaker. o REMOTE connector Mates with a 7-pin male DIN connector for connecting a linear amplifier {page 61}. European versions only: Before connecting to the ACC 2 and COM connectors, remove the protective covers. 10 3 GETTING ACQUAINTED DISPLAY q wer t y u i o !0 !2 !4 !5 !1 !3 !6 !7 @0 !9 !8 q METER While receiving, serves as an S-meter to measure and display the received signal strength. While transmitting, serves as a calibrated power meter plus an ALC meter, an SWR meter, or a Speech Processor compression meter. The Peak Hold function holds each reading for about 2.

5 seconds. w Appears while the transceiver is in the transmit mode. e Appears while the squelch is open in the receive mode. r Appears while the internal antenna tuner {page 52} or an external antenna tuner is in-line. t Either "ANT 1" or "ANT 2" appears depending on whether the Antenna 1 connector or the Antenna 2 connector is selected {page 48}. y ATT Appears when the receive attenuator is ON {page 37}. u PRE -AMP Appears when the receive preamplifier is ON {page 37}. i VOX Appears when the Voice-Operated Transmit function is ON {page 31}. For CW operation, appears when the Break-in function is ON {page 34}. o PROC Appears when Speech Processor is ON {page 32}.

!0 NB Appears when Noise Blanker is ON {page 36}. !1 SPLIT Appears when the transmit frequency differs from the receive frequency {page 23}. !2 FAST Appears when a fast time constant is selected for the Automatic Gain Control function {page 30}. !3 RIT Appears when Receive Incremental Tuning is ON {page 30}. !4 XIT Appears when Transmit Incremental Tuning is ON {page 32}.

!5 TX EQ. Appears when the TX Equalizer function is ON {page 33}. !6 Either "N.R. 1" or "N.

R. 2" appears depending on whether Noise Reduction 1 or Noise Reduction 2 is selected {page 38}. !7 Appears when Beat Cancel is ON {page 38}. !8 MENU Appears while Menu mode is being accessed {page 16}. !9 M.CH Appears while Memory Recall or Memory Scroll is being used {page 40}. @0 Shows 2-digit information such as a menu number or a memory channel number. 11 3 GETTING ACQUAINTED @1 @3 @2 @4 @5 @6 @7 @8 @9 #0 #1 #2 #3 #4 #5 #6 #7 #8 #9 @1 Shows the current operating frequency. Also shows Menu selections while in Menu mode. @2 "tA" or "As" appears while VFO A is being selected {page 13}.

"A" appears while Menu is being A accessed {page 16}. @3 "tB" or "Bs" appears while VFO B is being selected {page 13}. "B" appears while Menu B is being accessed {page 16}. @4 "tM" or "Ms" appears while a simplex memory channel is being selected {page 40}. "tMs" appears while a split-frequency memory channel is being selected {page 40}. @5 Shows menu information while Menu A or B is being accessed.

Also shows the transmit frequency during split-frequency operation, and the RIT/XIT offset frequency when these functions are ON. @6 M.SCR Appears while Memory Scroll is being used {page 41}. @7 LSB Appears when in Lower Sideband mode {page 14}. @8 USB Appears when in Upper Sideband mode {page 14}. @9 CW Appears when in CW mode {page 14}. #0 R Appears while the sideband is being reversed for CW {page 21}. Also appears while the mark and space frequency relationship is being reversed for FSK {page 26}. #1 FSK Appears when in Frequency Shift Keying mode {page 26} or when you select one of the digital operation filters via Menu No. 32 in SSB mode {page 27}. #2 FM Appears when in FM mode {page 14}. #3 AM Appears when in AM mode {page 14}. #4 F.LOCK Appears when the Frequency Lock function is ON {page 48}. #5 FINE Appears when the Fine function is ON {page 29}. #6 1MHz Appears when the 1 MHz Step function is ON {page 29}. #7 T Appears when the Subtone function is ON {page 24}. #8 CTCSS Appears when CTCSS is ON {page 25}. #9 CTRL Appears while Quick Data Transfer {page 50} or Computer Control {page 51} is being used. 12 OPERATING BASICS SWITCHING POWER ON/OFF Switch ON the DC power supply, then press and hold down [ ] (POWER) until "HELLO" appears on the display. Release [ ] (POWER) when you see "HELLO". RADIO FREQUENCY (RF) GAIN Usually, set the RF control fully clockwise. If you are having trouble hearing the desired signal due to excessive atmospheric noise or interference from other stations, it may help to reduce the RF gain. To do this, take note of the peak S-meter reading of the desired signal.

Turn the RF control counterclockwise until the S-meter reads the peak value that you noted. Signals that are weaker than this level will be attenuated. Reception of the station will be easier. AF 4 1 2 3 4 5 PF ATT PRE-AMP RF 6 · After the "HELLO" message, the frequency and other indicators appear. After the transceiver has been switched ON, it can then be switched OFF or ON by using only the power switch on the DC power supply. 2 8 QUICK MEMO 0 10 To switch OFF the transceiver, press [ ] (POWER). · ADJUSTING VOLUME AUDIO FREQUENCY (AF) GAIN Turn the AF control clockwise to increase the audio level and counterclockwise to decrease the level. Depending on the type and gain of your antenna, and the condition of the band, you may prefer leaving the RF control turned counterclockwise by some amount instead of turning it fully clockwise. When in FM mode, always set the RF gain control fully clockwise. 6 7 8 9 10 11 12 13 SELECTING VFO A OR VFO B VFO A and VFO B are modes that allow any desired frequency to be selected within the frequency range of the transceiver. VFO A and VFO B function independently so that different or the same frequencies can be selected for each VFO. Press [A/B] to toggle between VFO A and VFO B. · "tA" or "tB" appears and shows which VFO is selected. AF 4 RF 6 QUICK MEMO 2 8 0 10 Note: The position of the AF control does not affect the volume of "beeps" caused by pressing buttons nor the CW transmit sidetone. Also, the audio level for Packet operation is independent of the AF control setting. SPLIT TF-SET A/B RIT QUICK MEMO M/V A=B CLEAR XIT SELECTING A BAND UP LSB USB DOWN CW FSK QUICK MEMO SPLIT FM AM TF-SET M/V 1MHz A=B MENU 14 15 16 1 If "1MHz" is visible on the display, first press [1MHz] to exit from the 1MHz Step mode. · · "1MHz" should disappear. Holding down either button consecutively steps the transceiver to each band. 13 2 Press [UP] or [DOWN]. 4 OPERATING BASICS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 SELECTING A MODE Depending on which operating mode you want to select, press the [LSB/USB], [CW/FSK], or [FM/AM] button. The second function on each button is accessed by again pressing the same button. For example, repeatedly pressing [LSB/USB] toggles between LSB and USB modes. LSB USB SELECTING A FREQUENCY There are two simple methods to select a frequency. A Manual Tuning Turn the Tuning control or press Mic [UP]/[DWN] to select the exact frequency. QUICK MEMO CW FSK FM AM B Direct Frequency Entry (Keypad) In SSB mode, the transceiver automatically selects LSB for frequencies lower than 9.5 MHz, and selects USB for 9.5 MHz or higher frequencies if the Tuning control, the MULTI/CH control, or Mic [UP]/[DWN] is used to cross the frequency of 9.5 MHz. This is also true if using the front panel [UP] or [DOWN] button when the 1 MHz Step mode is used. Press [ENT], then directly enter the desired frequency using the numeric keypad.

For details, refer to "Direct Frequency Entry" {page 29}. CH1 CH2 CH3 1 ANT 2 REC 3 FINE 4 5 8 F.LOCK 6 9 ENT NB AGC/TONE REV ADJUSTING SQUELCH The purpose of squelch is to silence audio output from the speaker when no signal is present. When squelch is set correctly, you will hear sound only while a station is actually being received. The point at which ambient noise on a frequency just disappears, called the squelch threshold, depends on the frequency. Turn the SQL control clockwise to just eliminate the background noise when no signal is present. Many operators prefer leaving the squelch control fully counterclockwise unless operating full-carrier modes such as FM or AM. 7 CLR 0 FRONT PANEL METER The multifunction meter measures the parameters in the table below. The appropriate meters automatically become functional according to which state the transceiver is in. Peak readings for the S-meter, ALC, SWR, COMP, and PWR functions are held for a brief moment. IF SHIFT 4 SQL 6 QUICK MEMO Scale Display Functional State Receive Transmit Transmit Transmit Transmit plus SSB/AM/FM mode plus [PROC] ON 2 8 0 10 S Received signal strength PWR Transmit output power ALC Automatic level control status SWR Antenna system standing wave ratio COMP Speech compression level when using the Speech Processor {page 32} Note: The COMP meter functions only when the Speech Processor is ON while using SSB, FM, or AM mode. When the COMP meter appears, the SWR meter disappears. Peak Hold readings cannot be deactivated on this transceiver. 14 4 OPERATING BASICS TRANSMITTING Methods for transmitting include the following: · · · Press [SEND]. Press and hold down Mic [PTT]. Connect a key or keyer paddle, select the CW mode, press [VOX] to switch ON the Break-in function, and close the key or keyer paddle. 3 Press [PWR] again to complete the setting. Note: The transmit power can be separately selected for the AM mode independent of the other modes. 1 2 3 4 5 6 MICROPHONE GAIN The microphone gain is finely adjustable in the SSB or AM mode. A different level can be selected between when the Speech Processor {page 32} is ON and when the Speech Processor is OFF.

1 Press [MIC]. · The current microphone gain level appears. The default is 50. MIC PF ATT VOX SEND PRE-AMP PROC AT TUNE PWR For a detailed explanation on transmitting, refer to sections in "BASIC COMMUNICATING" beginning on page 20. Note: When CW, FSK, or AM is selected, the transmit carrier level is KEY DELAY automatically adjusted according to the selected mode. SELECTING TRANSMIT POWER It's wise, and required by law, to select the lowest transmit power that allows reliable communication. Reducing power lowers the risk of interfering with others on the band. On this transceiver, it is possible to change output power while transmitting. 1 Press [PWR]. · The current transmit power appears.

MIC 2 Press [SEND] or press and hold Mic [PTT]. · "TX" appears. 3 SSB: While speaking into the microphone, adjust the MULTI/CH control so that the ALC meter reflects according to your voice level. AM: While speaking into the microphone, adjust the MULTI/CH control so that the calibrated power meter slightly reflects according to your voice level. 7 8 9 10 11 CH PWR QUICK MEMO KEY DELAY 2 Turn the MULTI/CH control counterclockwise to reduce power and clockwise to increase power. · The displayed transmit power changes. 4 Press [SEND] again or release Mic [PTT]. · "TX" disappears. 5 Press [MIC] again. For the FM mode, set the microphone gain by accessing Menu No.
17 {page 17} and selecting either "L" (low) or "H" (high). 12 13 14 15 16 15 CH QUICK MEMO Note: When using the optional MC-90 microphone in FM mode, select high microphone gain. The microphone sensitivity is low in FM mode and this may cause insufficient modulation. When using a microphone that has an amplifier, be careful that the output of the amplifier is not too large. · · SSB/CW/FSK/FM: Transmit power can be changed from 5 W to 100 W in steps of 5 W.
AM: Transmit power can be changed from 5 W to 25 W in steps of 5 W. MENU SETUP WHAT IS A MENU? Many functions on this transceiver are selected or configured via a software-controlled Menu instead of physical controls on the transceiver. Once familiar with the Menu system, you will appreciate the versatility it offers. No longer is the number and complexity of features restricted by the physical controls and switches on the front panel. MENU ACCESS The following procedure explains how to check or change any of the Menu items.
1 Press [MENU]. · "MENU" appears. MENU A/ MENU B The transceiver has two menus. These menus are called Menu A and Menu B. The menus contain identical functions; however, each menu can be configured independently. For example, you may enjoy two different kinds of operating activities but you like to configure the transceiver differently for each activity. Menu A could be configured with one set of transmit signal characteristics, DSP settings, programmable buttons, frequency steps, etc. Menu B could be configured completely differently. By switching from Menu A to Menu B, you could instantly change Menu configuration and button assignment to suit your current operating style. Or, two operators may share a single transceiver.

By dedicating one Menu per operator, each would always enjoy the best configuration. Note: The COM communication parameter setting in Menu No. 35 is shared by Menu A and Menu B. 2 Press [A/B] to toggle Menu A or Menu B. · "A" or "B" appears to show which Menu is selected. 3 Turn the MULTI/CH control to select the desired Menu No. · Each time you change the Menu No. , you will see a scrolling message that briefly describes the current Menu No. 4 Press [UP], [DOWN], Mic [UP], or Mic [DWN] to change the current selection for this Menu item. 5 Press [MENU] or [CLR] to exit Menu mode.
16 5 MENU SETUP MENU CONFIGURATION Group Operator Interface Menu No. 00 01 Encoder 02 03 04 05 06 Memory Channel 07 08 09 10 Antenna Tuner DSP TX 11 12 13 14 Function Display brightness d1: maximum, d4: minimum Beep output level 1: minimum, 9: maximum Frequency step size for the [UP]/[DOWN] buttons in the 1 MHz step mode Frequency step size for the MULTI/CH control for SSB, CW, FSK, or AM mode Frequency step size for the MULTI/CH control for FM mode Rounds off VFO frequencies changed by using the MULTI/CH control Frequency step size for the MULTI/CH control for AM mode in the AM broadcast band Memory-VFO split operation Tunable (ON) or fixed (OFF) memory channel frequencies Program scan hold Scan resume method Antenna tuner operation while receiving signals Time constant for the noise reduction 2 function TX filter bandwidth for SSB or AM mode TX equalizer OFF: flat, Hb: high boost, FP: formant pass, bb: bass boost, c: conventional Speech processor compression level VOX gain 0: minimum, 9: maximum Microphone gain for FM mode L: low, H: high Subaudible tone frequency for FM mode Type of subaudible tone for FM mode B: burst, C: continuous CW RX pitch/ TX sidetone frequency TX sidetone volume Semi-automatic key ("Bug") function Playback repeat Interval between repeated playbacks Playback volume 1: minimum, 9: maximum Selections OFF/ d4/ d3/ d2/ d1 OFF, 1 to 9 100/ 500/ 1000 kHz 1/ 5/ 10 kHz 1/ 5/ 10/ 12.5/ 20/ 25 kHz ON/ OFF 9 kHz/ 10 kHz ON/ OFF ON/ OFF ON/ OFF Time-operated/ Carrier-operated ON/ OFF 7.5/ 20 ms 2.4/ 2.
0 kHz OFF/ Hb/ FP/ bb/ c (U: not currently available) 0 to 25 dB in steps of 5 dB 0 to 9 L/ H See page reference B/ C 400 to 1000 Hz in steps of 50 Hz OFF, 1 to 9 ON/ OFF ON/ OFF 0 to 60 sec OFF, 1 to 9 Default d2 4 1000 kHz 10 kHz 10 kHz ON See page reference OFF OFF OFF Timeoperated OFF 20 ms 2.4 kHz OFF Page Ref. 49 49 29 29 29 29 29 41 41 46 47 52 38 33 33 Scan 15 16 17 18 19 CW 20 21 22 DRU 23 24 25 10 dB 4 L 88.5 Hz See page reference 800 Hz 5 OFF OFF 10 sec 4 32 31 22 25 25 21 21 35 35, 53 54 54 17 5 MENU SETUP Group CW Menu No. 26 27 28 Digital Operation 29 30 31 32 33 CW Auto weighting CW Auto weighting reversed Keying priority over playback FSK shift Key-down polarity for FSK mode Tone frequencies for FSK mode 2125: 2125 Hz mark, 1275: 1275 Hz mark Filter bandwidth for digital operation (SSB and FM modes only) AF input level for digital operation (excluding CW and FSK modes) 0: minimum, 2: maximum AF output level for digital operation 0: minimum, 9: maximum Communication parameters for COM connector Setting Transfer Rate (bps) Stop Bits 1 12-1 1200 1 24-1 2400 1 48-1 4800 2 48-2 4800 1 96-1 9600 1 192-1 19200 1 384-1 38400 1 576-1 57600 Data transfer enable Method of receiving transferred data ON: Transfer to VFO OFF: Transfer to quick memory TX inhibit Linear amplifier control relay Enables/disables the 50, 144, or 430 MHz transverter function.
Programs the [PF] button on the front panel. Programs the Mic [PF1] button. Programs the Mic [PF2] button. Programs the Mic [PF3] button. Programs the Mic [PF4] button.

IF filter bandwidth Function Selections ON/ OFF ON/ OFF ON/ OFF 170/ 200/ 425/ 850 Hz ON (space)/ OFF (mark) 2125/ 1275 Hz OFF/ 1200 bps/ 300 bps/ PSK 0/ 1/ 2 Default ON OFF OFF 170 Hz OFF 2125 Hz OFF 2 Page Ref. 34 34 35 26 26 26 27 27 34 Computer Interface 35 0 to 9 12-1/ 24-1/ 48-1/ 48-2/ 96-1/ 192-1/ 384-1/ 576-1 Note: To reliably use the 38400 or 57600 bps transfer rates, the serial port of your computer must support these high-speed communications parameters. 4 96-1 27 51 Data Transfer 36 37 ON/ OFF ON/ OFF OFF OFF 50 50 TX 38 39 ON/ OFF ON/ OFF OFF/ 50/ 144/ 430 MHz See page reference See page reference See page reference See page reference See page reference OFF/ 1800/ 500/ 270 Hz OFF OFF OFF 33 61 51 Transverter PF 40 41 42 43 44 45 49 51 (Voice 1) 64 ([A/B]) 49 62 49 ([SPLIT]) 65 ([M/V]) 49 50 49 (Monitor) OFF 36 RX 46 18 5 MENU SETUP Group Menu No. 47 48 Enhanced 49 50 51 Function Transmitted-signal monitor volume 1: minimum, 9: maximum Auto zero-beat with RIT Keyer locked-weight change RX equalizer OFF: flat, Hb: high boost, FP: formant pass, bb: bass boost, c: conventional Noise reduction 1 level change Selections OFF, 1 to 9 ON/ OFF 2.5:1 to 4.

0:1 OFF/ Hb/ FP/ bb/ c (U: not currently available) Auto, 1 to 9 Default OFF OFF 3.0:1 OFF Auto Page Ref. 33 21 35 30 38 CROSS REFERENCE FOR MENU FUNCTIONS Use this table arranged by subject to help you locate the function that you are interested in checking or changing. Consult "MENU CONFIGURATION" {page 17} for more detail on each function. Function Menu No. Function FREQUENCY STEPS MULTI/CH control (SSB, CW, FSK, AM) MULTI/CH control (FM) MULTI/CH control (AM and AM broadcast only) MULTI/CH control (rounds off frequencies) [UP]/[DOWN] buttons FSK Polarity (space/mark) Shift Tone MEMORY CHANNELS Memory-VFO split operation Tunable/fixed frequency PROGRAMMABLE BUTTONS [PF] button Mic [PF1] button Mic [PF2] button Mic [PF3] button Mic [PF4] button RECEIVE IF filter bandwidth REAR PANEL COM communication parameters SCAN Hold (Program Scan) Resume (Time or Carrier) SPEECH PROCESSOR Compression level TRANSMIT Bandwidth (SSB or AM) Equalizer Inhibit TRANSVERTER Enable/disable VOICE-OPERATED TRANSMIT (VOX) Gain Menu No. 03 04 06 05 02 30 29 31 07 08 41 42 43 44 45 46 35 09 10 15 13 14 38 40 16 19 AMPLIFIER Linear amplifier relay 39 ANTENNA TUNER (AT) RX enable/ disable 11 BEEP FUNCTIONS Beep level 01 CW Auto weighting 26 Auto weighting reversed 27 Keying priority over playback 28 RX pitch 20 Semi-automatic key ("Bug") function 22 TX sidetone frequency 20 TX sidetone volume 21 DATA TRANSFER Transfer enable 36 Transfer method 37 DIGITAL OPERATION AF input (MCP/TNC TX) 33 AF output (MCP/TNC RX) 34 Filter bandwidth 32 DISPLAY Brightness 00 DRU-3A DIGITAL RECORDING SYSTEM (DRS) Playback repeat 23 Playback repeat interval 24 Playback volume 25 DIGITAL SIGNAL PROCESSING NR2 time constant 12 FM Microphone gain 17 Subtone frequency 18 Subtone type 19 BASIC COMMUNICATING SSB TRANSMISSION SSB is now the most commonly-used mode on the HF Amateur bands. Compared with other voice modes, SSB requires a narrow bandwidth for communications. SSB also allows long distance communication with minimum transmit power. These reasons, combined with the fact that modern Amateur transceivers deliver reasonably good audio quality, make SSB the mode that most prefer on HF.

Refer, if necessary, to "OPERATING BASICS" beginning on page 13 for receiving details. 1 Select the operating frequency. 2 Press [LSB/USB] to select either upper or lower sideband mode. · "LSB" or "USB" appears to show which sideband is selected. 6 Release Mic [PTT], or press [SEND] again, to return to the receive mode.

· "TX" disappears and "RX" appears. 7 Press [MIC] again to quit the Microphone Gain Setting function. Refer to "COMMUNICATING AIDS" beginning on page 29 for information about additional useful functions for operating. 3 Press [MIC] to activate the Microphone Gain Setting function. · The current gain level appears 4 Press and hold down Mic [PTT], or press [SEND].

· · "RX" disappears and "TX" appears. Refer to "VOX" {page 31} for information on automatic TX/RX switching. 5 Speak into the microphone and adjust the MULTI/CH control so that the ALC meter reflects according to your voice level. · Speak in a normal tone and level of voice. Speaking too close to the microphone, or too loudly, may increase distortion and reduce intelligibility. You may want to use the Speech Processor. Refer to "SPEECH PROCESSOR" {page 32} for details. · 20 6 BASIC COMMUNICATING CW TRANSMISSION CW operators know that this mode is a reliable method of communicating under the worst conditions. Although it's true that newer digital modes rival CW as being equally as useful in poor conditions, these modes do not have the long history of service yet nor the simplicity that CW can have. This transceiver has a built-in electronic keyer that supports a variety of functions.

For details on using these functions, refer to "ELECTRONIC KEYER" {page 34}. Refer, if necessary, to "OPERATING BASICS" beginning on page 13 for receiving details. 1 Select the operating frequency. 2 Press [CW/FSK] to select CW mode. · "CW" appears. AUTO ZERO-BEAT Use Auto Zero-beat before transmitting whenever you need to tune in a CW station. Auto Zero-beat automatically and exactly matches your transmit frequency with the station that you are receiving. Neglecting to do this will reduce your chances for being heard by the other station. 1 Press [CW TUNE] to start Auto Zero-beat. · "CW TUNE" appears.

· Your transmit frequency is automatically changed so that the pitch of the received signal exactly matches the TX sidetone/ RX pitch frequency that you have set in your transceiver Menu configuration. Refer to "TX SIDETONE/ RX PITCH FREQUENCY" below for further information on that frequency. When matching is completed, "CW TUNE" disappears. If matching is unsuccessful, the previous frequency is restored. · · To tune in another station so your transceiver is precisely on their frequency, use Auto Zero-beat.

Refer to "AUTO ZERO-BEAT". If you wish, you can press [REV] to switch receive from the default upper sideband to the lower sideband. "R" will appear. · · 2 To interrupt Auto Zero-beat, press [CW TUNE] or [CLR]. Note: 3 Press [SEND].

· · · "RX" disappears and "TX" appears. No transmit carrier level adjustment is necessary. Refer to "CW BREAK-IN" {page 34} for information on automatic TX/RX switching. As you transmit, you should be hearing a sidetone that lets you monitor your own sending. Refer to "TX SIDETONE/ RX PITCH FREQUENCY".

"TX" disappears and "RX" appears. If using RIT {page 30}, you may access Menu No. 48 and switch the function ON. Auto Zero-beat then will match the RIT-offset frequency with the station that you are receiving. When this function is OFF, Auto Zero-beat changes the transmit frequency.

You cannot start Auto Zero-beat if you have selected 1.0 kHz or 2.0 kHz for the DSP filter bandwidth. When using Auto Zero-beat, the matching error is within ±50 Hz in most cases. Auto Zero-beat may fail if the keying speed of the target station is too slow. TX SIDETONE/ RX PITCH FREQUENCY The transmit sidetone is the monitor tone you hear from your transceiver as you send CW. It is necessary so you can hear what you are transmitting. It is also useful for checking that your key contacts are closing, the keyer is functioning, or for sending practice without putting a signal on the air. Receive pitch refers to the frequency of the CW note that you hear after tuning your receiver for maximum receive signal strength. On this transceiver, the frequency of the sidetone and receive pitch are equal and selectable.
Use Menu No. 20 to select the frequency that is most comfortable for you. To change the volume of the TX sidetone, use Menu No. 21. The selections include OFF and 1 to 9.
The default is 4. Note: The position of the AF control does not affect the volume of 4 Begin sending. · 5 Press [SEND] again to return to the receive mode. · Note: Auto Zero-beating may fail if there are other interfering signals on frequency. Refer to "COMMUNICATING AIDS" beginning on page 29 for information about additional useful functions for operating.
the TX sidetone. 21 6 BASIC COMMUNICATING FM TRANSMISSION FM operation on HF frequencies solves the problem of how to have long distance voice communication with the finest audio quality. When combined with the fullquieting aspect of FM signals that suppress background noise on the frequency, FM can be the best method for maintaining regular schedules with friends. Refer, if necessary, to "OPERATING BASICS" beginning on page 13 for receiving details. 1 Select the operating frequency. 2 Press [FM/AM] to select FM mode. · "FM" appears. AM TRANSMISSION Each mode used on the HF Amateur bands has its own advantages. Although long distance DX contacts may be less common while using AM, the superior audio quality characteristic of AM operation is one reason why some prefer this mode. When looking for others using AM, check the following frequencies first: · 3885, 7290, 14286, 21390, and 29000~29200 kHz Refer, if necessary, to "OPERATING BASICS" beginning on page 13 for receiving details.

1 Select the operating frequency. 2 Press [FM/AM] to select AM mode. · "AM" appears. 3 Press and hold down Mic [PTT], or press [SEND]. · · "RX" disappears and "TX" appears. Refer to "VOX" {page 31} for information on automatic TX/RX switching. 3 Press [MIC] to activate the Microphone Gain Setting function. · · · · The current gain level appears. "RX" disappears and "TX" appears. No transmit carrier level adjustment is necessary.
Refer to "VOX" {page 31} for information on automatic TX/RX switching. 4 Press and hold down Mic [PTT], or press [SEND]. 4 Speak into the microphone in a normal tone and level of voice. · Speaking too close to the microphone, or too loudly, may increase distortion and reduce intelligibility. Microphone gain can be switched between low and high for FM using Menu No.
17. Low is usually appropriate; however, select high if reports from other stations indicate that your audio is weak. The MULTI/CH control has no effect in FM mode. · 5 Speak into the microphone and adjust the MULTI/CH control so that the calibrated power meter slightly reflects according to your voice level. · Speak in a normal tone and level of voice.
Speaking too close to the microphone, or too loudly, may increase distortion and reduce intelligibility. You may want to use the Speech Processor. Refer to "SPEECH PROCESSOR" {page 32} for details. TX DEVIATION SELECTION Select wide band or narrow band TX deviation depending on whether the other station is using wide band or narrow band RX deviation. This selection is crucial to avoid audio distortion or insufficient intelligibility that the other station will encounter. 1 Press [FM/AM] to select FM mode. 2 Press [FILTER]. · The current filter selection appears. · 6 Release Mic [PTT], or press [SEND] again, to return to the receive mode. · "TX" disappears and "RX" appears.

7 Press [MIC] to quit the Microphone Gain Setting function. Refer to "COMMUNICATING AIDS" beginning on page 29 for information about additional useful functions for operating. 3 Turn the MULTI/CH control to select Wide ("FM-WID") or Narrow ("FM-NAR"). 4 Press [FILTER] to complete the setting. Refer to "COMMUNICATING AIDS" beginning on page 29 for additional information about useful functions for operating. 22 SPECIALIZED COMMUNICATING SPLIT-FREQUENCY OPERATION Usually you can communicate with other stations using the same frequency for receiving and transmitting. In this case, you select only one frequency on either VFO A or VFO B. However, there are cases where you must select one frequency for receiving and another frequency for transmitting. To do this requires two VFOs. This is referred to as "split-frequency operation".
One typical case that requires this type of operation is described below. When a rare or desirable DX station is heard, he or she may immediately get many responses, all at the same time. Often such a station is lost under the noise and confusion of many calling stations. If you find that you are suddenly being called as that rare or desirable station, it is your responsibility to control the situation. You may announce that you will be "listening up 5 (kHz, from your present transmit frequency)", or "listening down between 5 and 10 (kHz)".
1 Press [A/B] to select VFO A or VFO B. · "tA" or "tB" appears to show which VFO is selected. The frequency selected here will be used for transmitting. TF-SET (TRANSMIT FREQUENCY SET) TF-SET allows you to temporarily switch your transmit frequency and receive frequency. Canceling this function immediately restores the original transmit and receive frequencies.
By activating TF-SET, you can listen on your transmit frequency, and change it while listening. This allows you to check if the newly selected transmit frequency is free of interference. 1 Activate split-frequency operation as explained in the previous section. 2 Press and hold [TF-SET]. While holding down [TF-SET], change the operating frequency by turning the Tuning control or pressing Mic [UP]/[DWN]. · The transceiver receives on the frequency that you select, but the frequency shown on the subdisplay stays unchanged.