NextWave

Common Sense In Video Technology

NAVIGATOR SERIES

NCC500 & NCC600
Satellite Receiver

Navigator
N C C 6 0 0

Power

F4 20

NextWave

VIDEOCIPHER®RS

VCRS

Power
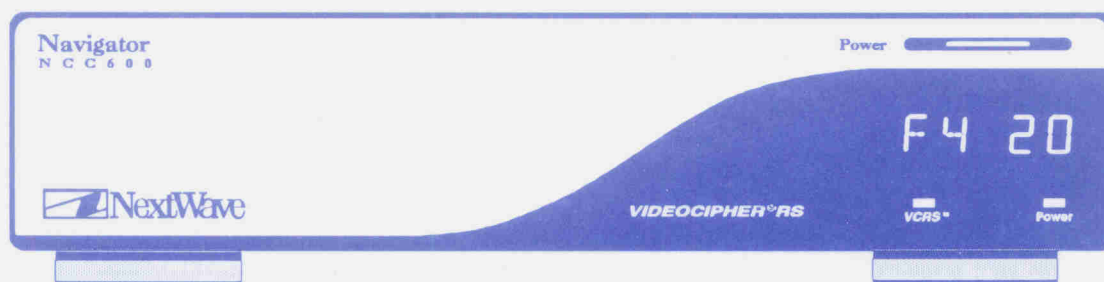
Operation and Installation Manual

WELCOME TO THE NEXTWAVE IN VIDEO TECHNOLOGY

NextWave Communications compliments you on your selection of the **NAVIGATOR SERIES RECEIVER.** You have selected one of the most sophisticated, yet user friendly satellite television receivers available. The **NAVIGATOR SERIES RECEIVER** allows you to view over two-hundred C-band and KU-band programs transmitted by satellites orbiting 22,300 miles over the earth's equator. The **NAVIGATOR SERIES RECEIVER** uses the most advanced computer technology to transform satellite signals into crystal clear audio and video programs for your viewing enjoyment. The **NAVIGATOR SERIES RECEIVER** will accept a VideoCipher ®RS descrambler, (optional), which makes it easy to subscribe to pay-TV services.

NextWave Communications takes a common sense approach to video and audio processing by utilizing a high performance microprocessor to bring you the finest satellite TV has to offer. Below is a list of standard features on the **NAVIGATOR SERIES RECEIVER.**

NAVIGATOR SERIES RECEIVER STANDARD FEATURES

- Four digit front panel display, (NCC600 only).
- Ultra High Frequency (UHF) remote control, (NCC600) or Infrared (IR) remote control, (NCC500).
- Digital stereo audio on encrypted channels
- Formatted stereo audio on most non-encrypted channels
- Preprogrammed audio and video channels
- 13 preprogrammed polarity formats for C/KU satellites
- Supports an external C/Ku or V/H switch
- 90 satellite location memory
- Master fine tune adjustment
- Parental lockout on individual satellite channels
- 40 favorite channel memory
- User customized satellite names and polarity formats
- VideoCipher ®RS compatible
- Internal LNBF switching (13 vdc - 18 vdc)

TUNING THE NAVIGATOR SERIES RECEIVER

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Chapter 1

Controls, Connections
& Indicators

FRONT PANEL CONTROLS & INDICATORS

1. **POWER** - Press once to turn the receiver on. Press again to turn the power off. When the receiver is turned off, power is still supplied to the VCRS PLUS module, and the LNB. This ensures that the unit will continue to receive the authorization messages for encrypted channels.

2. **POWER LED** - Indicates that AC power is available to the **NAVIGATOR SERIES RECEIVER** and the unit is powered up for operation. When the light (LED) is off, AC power may still be applied to unit.

3. **VCRS LED** - Indicates reception of a VideoCipher II plus encrypted channel.

4. **FOUR DIGIT DISPLAY** - Displays two digit satellite designator and channel number, (NCC600 only).
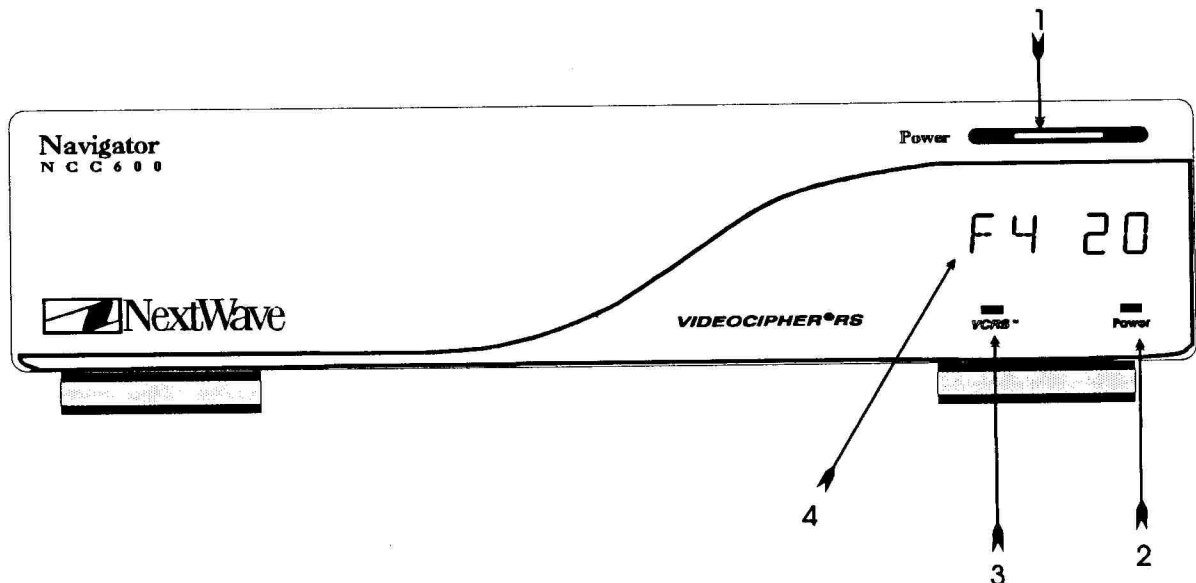
**NextWave NAVIGATOR SERIES RECEIVER Front Panel**

REAR PANEL CONNECTIONS AND CONTROLS

1. **IF INPUT**- This input accepts the 950-1450 Mhz input from the C-BAND or KU-BAND LNB. This input also supplies +18 / 13 volts to the LNB provided the power cord is connected to the AC wall outlet.

2. **UHF ANT** - This is the input for the UHF remote antenna, (NCC600 only).

3. **B.B. OUT (BASEBAND)** - Baseband video output used to connect to an external descrambler or other related equipment that requires an unfiltered or filtered composite baseband signal, such as a SuperGuide SG1000 stand alone electronic satellite programming guide.

4. **VIDEO OUT** - This jack is for video output to monitor or VCR.

5. **AUDIO OUT** - These jacks are provided for connection to your stereo monitor or stereo amplifier. To receive stereo reception you must use both R and L AUDIO OUTPUTS.

6. **TV OUT** - 75 Ohm R.F. output to the television set.

7. **CH. 3/4 SWITCH** - This switch is used to select the channel for the modulated VHF output signal (TV OUT). Set the switch to match the television's channel on either channel 3 or 4.

8. **ANT IN** - Connect this input to your local TV antenna or cable system. When the receiver is turned off, the antenna will be automatically switched through to the TV OUTPUT

9. **UHF EXT.** This is the connection for the optional external UHF remote receiver.

10. **DATA PORT**- Serial communication port for connecting accessories such as a stand alone SuperGuide SG1000.

11. **IPPV** - INSTANT PAY PER VIEW is used to connect a Stand Alone Video Pal Order Recorder.

12. **UTILITY DATA** -Not used at present.

13. **ANTENNA MOTOR** - These are 36 volt output terminals used for connection with a linear actuator, or motorized horizon to horizon mount.

14. **ANT** - Is an input for the actuator sensor. This terminal supplies +5 volts for the reed switch.

15. **GND** - Is the terminal which will provide a ground for the reed switch.

16. POLARIZER TERMINALS- The following terminals provide power and control signals for a servo controlled polarization device.

16a) **+5 VDC-** This terminal provides +5 volts for the servo motor.
This +5 volts is only present when the receiver is actively changing polarity and is turned off a few seconds after the polarity is changed.

16b) **Pulse ⎍** - This terminal provides the control signals for the servo motor.
This pulse is only present when the receiver is actively changing polarity and is turned off a few seconds after the polarity is changed.

16c) **GND-** This terminal provides ground for the servo motor.

16d) **C/KU V/H-** This terminal provides +12/0 vdc or +5/0 vdc to an external switch for a dual C-band LNB or C/Ku selection.

17. 120 VAC This is the power cord for the **NAVIGATOR SERIES RECEIVER,** (120 vac, 60 Hz.).
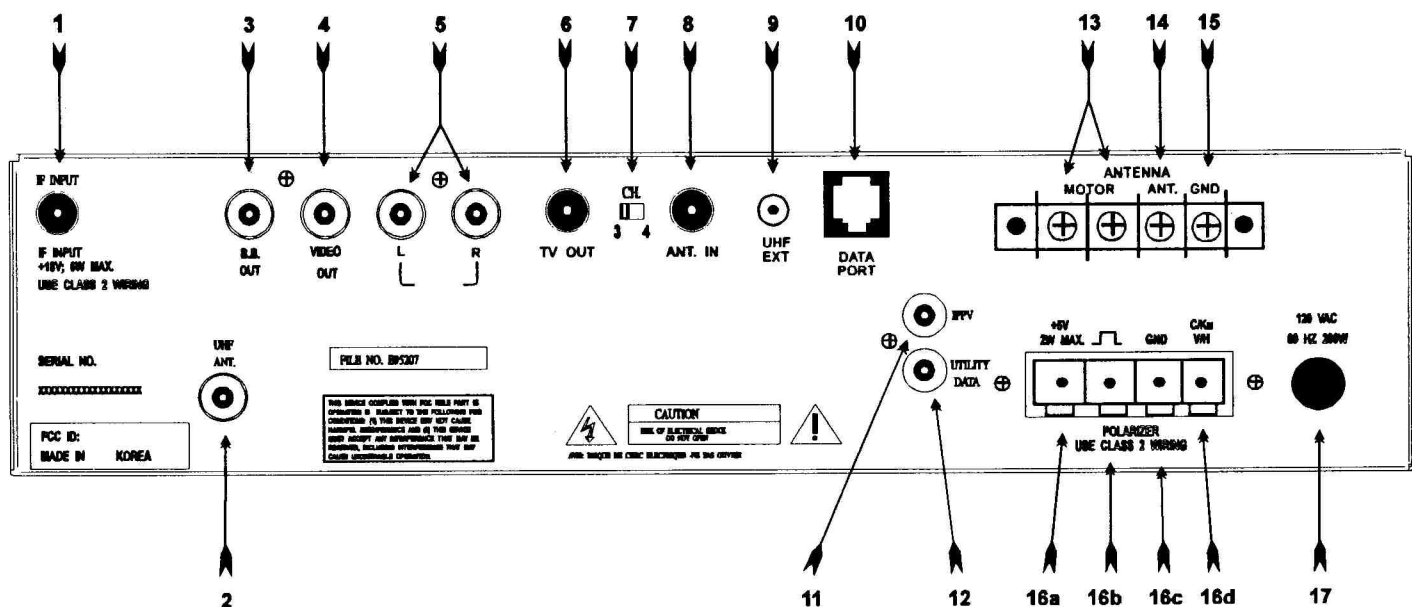
NAVIGATOR SERIES RECEIVER REAR PANEL

REMOTE CONTROL

1. **BAND** - Press this key to select between C-Band and Ku-Band satellite formats.

2. **B.W. KEY** - allows for selection between wide and narrow audio bandwidths or stereo formatting for the selected channel.

3. **AUDIO KEY** - Selects between pre-programmed audio modes for MONO, DISCRETE, and DIGITAL stereo modes.

4. **EXT** - Accesses the menu to invert video and polarity formats.

5. **SETUP** - Displays the AVAILABLE SERVICES MENU when the VCRS indicator is lit. Each of one of the entries on the menu has a number. To select one of the entries, press the corresponding number.

6. **HELP** - This key provides assistance when using the descrambler features.

7. **TEXT** - Displays text information from program suppliers, (when being transmitted), such as programming promotions and news bulletins.

8. **VIEW** - Displays information concerning the currently scheduled program. Such as the program name, program rating and how much time is remaining. The on-screen display will disappear in a few seconds if the key is not pressed. This button will also clear any VCRS text and return you to normal viewing mode.

9. **ENTER** - Press this button to confirm password selection and entries.

10. **CANCEL** - Press this button to clear any incorrect entries.

11. **MESS** - (MESSAGE) Displays the most recently received personal message sent by your program supplier.

12. **NEXT** - Displays information concerning the next available program.

13. **VC ARROWS** - Press these buttons to scroll through text if a personal message has been received.

14. **STORE** - Press this button to store changes that you want to save.

15. **CLEAR** - Press this button to clear error condition messages or any incorrect commands from the remote.

16. **FINE TUNE UP/DOWN** - Press and hold this button to fine tune the video channel frequency. NOTE; C-band channel frequencies are preset, KU-band channel frequencies may need fine tuned to optimize picture clarity.

17. **ANTENNA** - Press these buttons to adjust antenna position east or west.

      17a) The **RIGHT** antenna arrow will move the antenna to the **WEST.**

      17b) The **LEFT** antenna arrow will move antenna toward the **EAST**.

18. **AUDIO TUNE UP/DOWN** - Press and hold this button to tune audio sub-carrier to desired audio frequency.

19. **SKEW ARROWS** - Press and hold these buttons to fine tune polarizer position clockwise or counter clockwise, (CW or CCW).

20. **NUMERIC KEYS (0 to 9)** - Press these keys to enter channel and menu selections for receiver and Video Cipher® entries.

    LETTER KEYS (F,G,M,A,T,S,O,O) - Press the SAT key then the Letter Key, for the desired satellite name.

21. **CHANNEL UP/DOWN** - Selects channel higher or lower than the one currently being viewed.

22. **VOLUME UP/DOWN** - Adjusts volume on satellite receiver. Blocks will appear on-screen to show volume setting when the keys are pressed or held.

23. **PGM** - This key performs two different functions.

    POWER TURNED OFF - Holding this key down for three seconds will access the RECEIVER SETUP OPTIONS screen.

    POWER TURNED ON - Holding this key down is used to store and recall favorite channels. (See " Special Features" in this guide.)
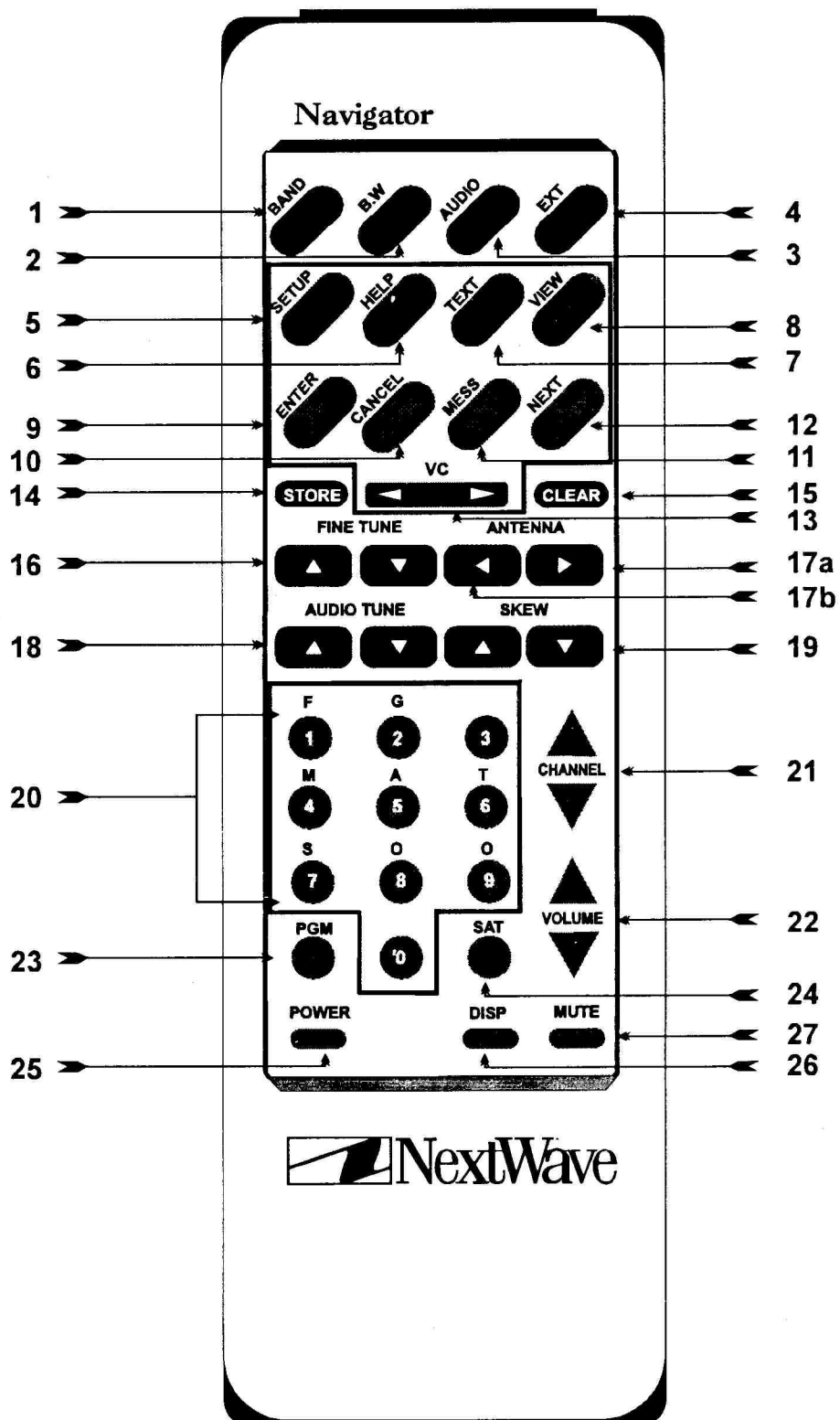
24. **SAT** - Used for directly entering satellite names.

25. **POWER** - Turns the satellite receiver on and off.

26. **DISP** - Displays current information on satellite, and channel that you are viewing.

27. **MUTE** - Turns audio on and off.

NextWave Remote Control

Navigator

1
2
5
6
9
10
14
16
18
20
23
25

4
3
8
7
12
11
15
13
17a
17b
19
21
22
24
27
26

BAND B.W AUDIO EXT

SETUP HELP TEXT VIEW

ENTER CANCEL MESS NEXT

VC

STORE ◄ ► CLEAR

FINE TUNE ANTENNA

▲ ▼ ◄ ►

AUDIO TUNE SKEW

▲ ▼ ▲ ▼

F G
1 2 3
M A T
4 5 6
S O O
7 8 9

CHANNEL
▲
▼

VOLUME
▲
▼

PGM SAT

'0

POWER DISP MUTE

NextWave

Chapter 2

Installation Instructions

RECEIVER INSTALLATION

RECEIVER PROGRAMMING

SINGLE FEED CONNECTIONS USING A POLARIZER

IF INPUT CONNECTION

1. Connect the 75 ohm C-band or KU-band coaxial cable to the I.F. input on the **NAVIGATOR SERIES RECEIVER** rear panel.

TV/MONITOR OUTPUT CONNECTION

2. Connect the TV OUT on the **NAVIGATOR SERIES RECEIVER** rear panel to the TV ANTENNA OR VHF IN on the TV rear panel. If using a monitor type television you may connect the VIDEO OUT on the **NAVIGATOR SERIES RECEIVER** rear panel to the video input on the TV/monitor rear panel. The AUDIO (L,R) outputs can either be connected to the TV audio input (L,R) or a stereo amplifier.

SERVO MOTOR CONNECTIONS

The servo motor requires three control wires to rotate the motor to the proper orientation. The standard color code for servo wiring is RED +5 volts , BLACK ground, WHITE pulse.

3. Connect the following wires to polarizer terminal on the **NAVIGATOR SERIES RECEIVER** rear panel.

   - Red to +5 VOLTS

   - Black to GND

   - White to PULSE ⎍

ACTUATOR MOTOR WIRES CONNECTIONS

4. Connect the two heavy motor wires (usually RED/BLACK) to ANTENNA MOTOR OUTPUTS on the **NAVIGATOR SERIES RECEIVER** rear panel. The RED wire connects to the first terminal. The black wire connects to the second terminal.

   Note: If the actuator motor moves opposite of the direction indicated on screen you may need to reverse the motor connections for correct operation.

5. Connect the two smaller wires that are grouped together with the motor wires to the ANT and GND connections. Either wire may be connected to antenna or ground.

DUAL FEED CONNECTIONS USING AN EXTERNAL SWITCH

If you are connecting two LNBs, an external switch is required. The **NAVIGATOR SERIES RECEIVER** requires a V/H switch that can operates off of +12 / 0 vdc or +5 / 0 vdc. This voltage is selected internally in the **NAVIGATOR SERIES RECEIVER** and may be changed by an authorized NextWave installer or technician only. The factory setting is +5 / 0 vdc.

IF INPUT CONNECTIONS

1. Connect the horizontal and vertical C-band or KU-band LNB coaxial cable to the corresponding input on the external switch.

2. Connect the external switch's output to the IF INPUT on the **NAVIGATOR SERIES RECEIVER** rear panel.

3. Connect the +12/0 or +5/0 switch wire to the POLARIZER C/KU, V/H terminal on the **NAVIGATOR SERIES RECEIVER** rear panel.

TV/MONITOR OUTPUT CONNECTION

4. Connect the TV OUT on the **NAVIGATOR SERIES RECEIVER** rear panel to the TV ANTENNA OR VHF IN on the TV rear panel. If using a monitor type television you may connect the VIDEO OUT on the **NAVIGATOR SERIES RECEIVER** rear panel to the video input on the TV/monitor rear panel. The AUDIO (L,R) outputs can either be connected to the TV audio input (L,R) or a stereo amplifier.

ACTUATOR MOTOR WIRES CONNECTIONS

5. Connect the two heavy motor wires (usually RED/BLACK) TO ANTENNA MOTOR
   Note: If the actuator motor moves in the reverse indicated on screen you may need to reverse the motor connections for correct operation.

6. Connect the two smaller wires that are grouped together with the motor wires to the ANT and GND connections. Either wire may be connected to antenna or ground.
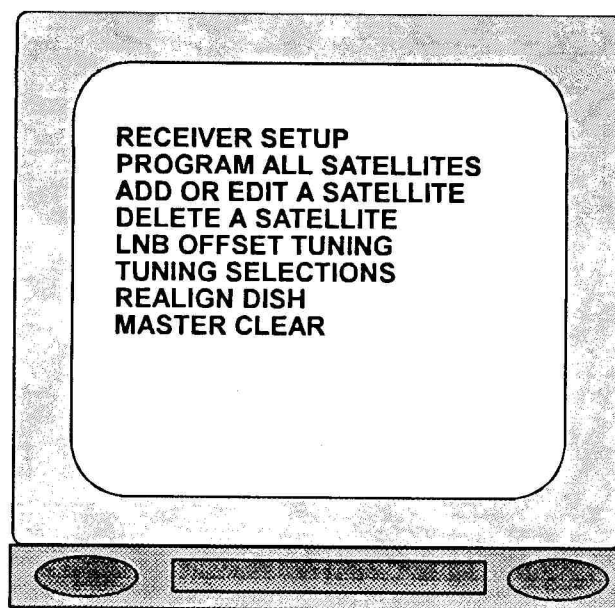
PROGRAMMING MENUS

ACCESSING THE MAIN MENU SCREEN

Step 1. Turn the receiver's power **OFF**

Step 2. Press and hold the **PGM** button on the remote control until your MAIN MENU screen is displayed on your monitor.

The MAIN MENU screen has a blue background and displays the following choices.

Step 3. Use the remote control's channel up & down buttons to scroll to desired menu selection.

Step 4. Use the remote control's **DISP** button to go to the desired function.
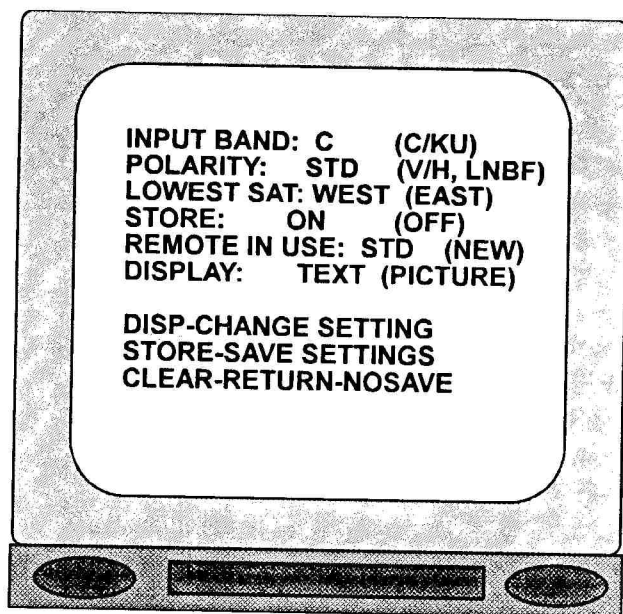
NOTE: During initial setup, unit should be master cleared prior to programming settings or satellites.

RECEIVER SETUP
PROGRAM ALL SATELLITES
ADD OR EDIT A SATELLITE
DELETE A SATELLITE
LNB OFFSET TUNING
TUNING SELECTIONS
REALIGN DISH
MASTER CLEAR

RECEIVER SET UP

After selecting **RECEIVER SET UP** from the main menu the following screen will appear.

NOTE: The selected option is outside of the brackets. Non selected options are inside the brackets.

```
INPUT BAND:  C      (C/KU)
POLARITY:    STD    (V/H, LNBF)
LOWEST SAT: WEST (EAST)
STORE:       ON     (OFF)
REMOTE IN USE: STD   (NEW)
DISPLAY:     TEXT (PICTURE)

DISP-CHANGE SETTING
STORE-SAVE SETTINGS
CLEAR-RETURN-NOSAVE
```

Use the channel up & down buttons to move the cursor ☞ to the function you wish to change.

Use the **DISP** button to change the setting of the selected function.

The **STORE** button will save all options selected and return you to the Main Menu.

The **CLEAR** button returns you to the Main Menu without saving your selected settings.

RECEIVER SET UP FUNCTIONS

INPUT BAND:

C (C/KU) This function allows the option to select C band satellites only or both C and KU band satellites.

POLARITY:

STD (VH, LNBF) This function selects the type of polarizer that is being used.
- STD - Choose this option for standard mechanical type servo motors..
- VH - Use this option if a dual feed for horizontal and vertical polarity is used (2 LNBs).
- LNBF - Use this option if you are using a LNBF type feed.

LOWEST SAT:

WEST (EAST) This function determines the polarity of the motor voltage output. If your lowest satellite position is Satcom C1 select WEST, (actuator mounted on west side of dish). If your lowest satellite position is Spacenet S2 select EAST, (actuator mounted on east side of dish).

NOTE: Consult your satellite dealer if you do not know what type of mount your system is using.

STORE:

ON (OFF) This function allows the option of turning store defeat on or off. If store is off it will prevent the user from storing or changing favorite channels, fine tuning, skew positions or audio selections.

REMOTE IN USE:

STD(NEW) This function is to be used by a authorized dealer only. The **STD** option should always be selected.

DISPLAY:

TEXT(PICTURE) - These options allow you to turn the sync generator on or off. If you select **TEXT** the on-screen graphics will always be readable. If the video quality is very poor the **NAVIGATOR SERIES RECEIVER** will replace the video with a blank or black screen. If you select **PICTURE** the video will be shown no matter what the quality may be. The graphics may not be readable if the video quality is very poor. PICTURE is usually used when the installer is tracking the satellite antenna on the arc.

PROGRAMMING SATELLITES

1. Select PROGRAM ALL SATELLITES function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter confirmation screen.
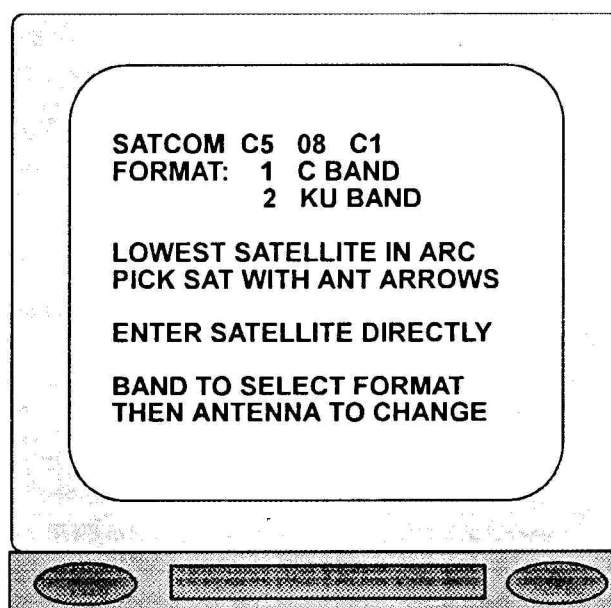
3. The following screen appears:

```
ENTER CODE TO RESET ARC

XXXX
```
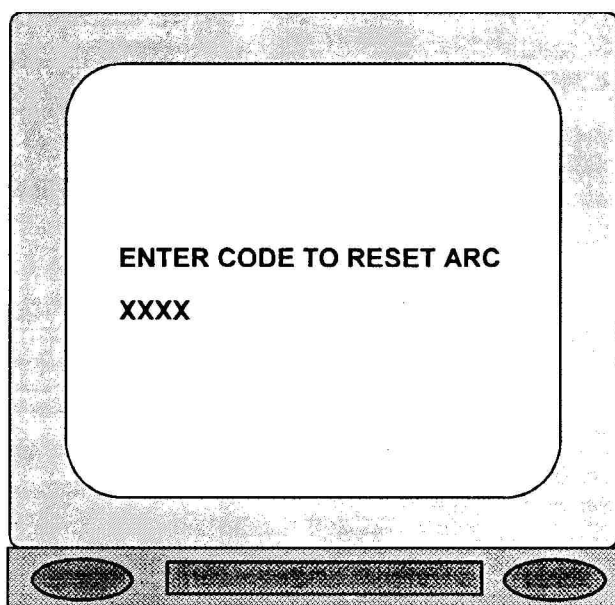
4. Use the number keys on the remote to enter the RESET ARC CODE: <u>0</u> <u>5</u> <u>0</u> <u>0</u>

5. Unit will automatically enter the PROGRAM ALL SATELLITES mode.

The following type of screen lay out will be displayed with a suggested satellite name:

Note: If this is the first time the NAVIGATOR SERIES RECEIVER is being programmed the first satellite stored will be the lower limit. The satellite that is farthest away (highest position count number) from the first satellite stored will be the upper limit. Name of lowest satellite will depend upon whether EAST or WEST mount was selected.

3. If the satellite name suggested is the one you want then continue to step 5. If not, select another satellite name by pressing the antenna EAST or West buttons on the remote control until the name you want is displayed on screen. The satellite name may also be selected by direct access, for example, **G5** for Galaxy 5..

```
SATCOM C5  08  C1
FORMAT:   1   C BAND
          2   KU BAND

LOWEST SATELLITE IN ARC
PICK SAT WITH ANT ARROWS

ENTER SATELLITE DIRECTLY

BAND TO SELECT FORMAT
THEN ANTENNA TO CHANGE
```

4. If necessary the format for the satellite may be changed by pressing the **BAND** button on the remote, when the format number starts flashing use the antenna EAST or WEST buttons to change to the desired format. When correct, press the **BAND** button until the format number stops flashing.

5. When satellite name and formats are correct press **STORE** on the remote. The on-screen display will show satellite and actuator position information with the message **POSITION DISH THEN STORE**

```
          GALAXY  G5  08  C 2
          MOVING EAST    0000




          POSITION DISH THEN STORE
```
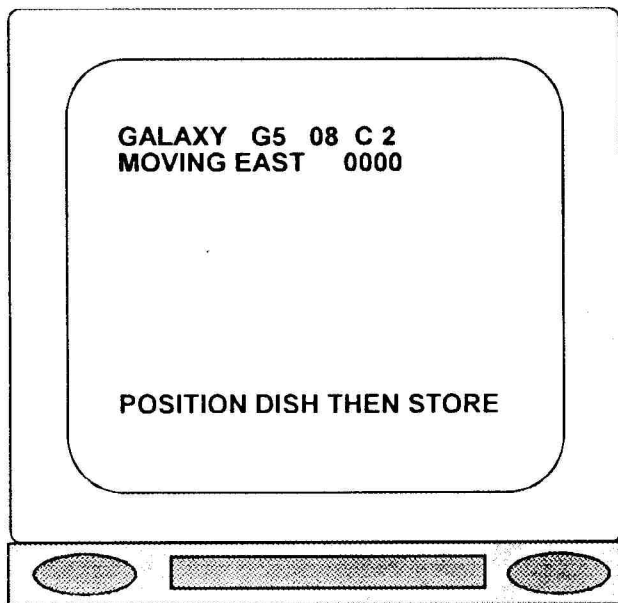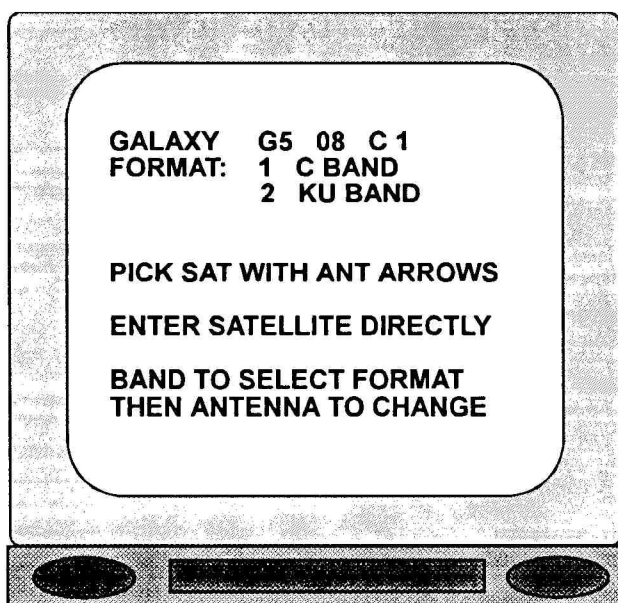
6. Use the ANTENNA LEFT / RIGHT arrow buttons on the remote to position the satellite antenna for desired satellite. Use skew buttons to set polarity on BOTH an even and odd channel to establish baseline setting. When settings are correct press **STORE** button.

7. Repeat steps three through six to program all other satellites. Polarity adjustments can be set for individual satellites and transponders without affecting the baseline settings.

8. When programming of all other satellites is complete, press the **POWER** button on the remote to begin sorting process.

9. After sorting, (clearing non programmed satellites from call list), the unit will return to normal viewing mode.

ADD OR EDIT A SATELLITE

This function is used to alter or add satellites after other satellites have already been programmed in the arc using the PROGRAM ALL SATELLITES function.

1. Select ADD OR EDIT A SATELLITE function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

The following type of screen lay out will be displayed:

```
GALAXY    G5  08  C 1
FORMAT:   1  C BAND
          2  KU BAND


PICK SAT WITH ANT ARROWS

ENTER SATELLITE DIRECTLY

BAND TO SELECT FORMAT
THEN ANTENNA TO CHANGE
```

3. If the satellite name suggested is the one you want to edit or add then continue to step 4. If not, select another satellite name by pressing the antenna LEFT or RIGHT buttons on the remote control until the name you want is displayed on screen. The satellite name may also be selected by direct access i.e. **G5** for Galaxy 5. This is most useful when making changes to an already programmed receiver.

4. To customize a satellite name, press the **PGM** button. The first character will begin bl⁺

5. Enter the custom satellite name using the following keys.

> "2" button moves forward through the character list
> "8" button moves backwards through the character list.
> "4" button moves one character to the left.
> "6" button moves one character to the right.
>
> Character list: ABCDEFGHIJKLMNOPQRSTUVWXYZ "blank" 0123456789

6. After entering the custom name, push the **PGM** button to exit customizing mode. Push **STORE** to save custom name.

7. When adding a satellite the NAVIGATOR SERIES RECEIVER will give it a default format of 1 for C-band and 3 for Ku. Please consult the table on page 51 for correct formats

8. The satellite format may be changed by pressing the **BAND** button on the remote, when the format number starts flashing use the antenna EAST or WEST buttons to change to the desired format. When correct, press the **BAND** button until the format number stops flashing.

```
GALAXY  G5  08  C 2
MOVING EAST    0000




POSITION DISH THEN STORE
```
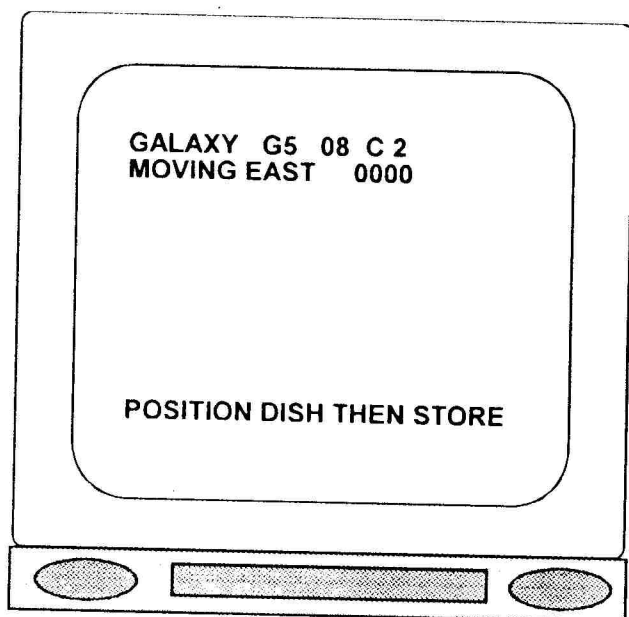
9. When satellite name and formats are correct press **STORE** on the remote. The on-screen display will show satellite and actuator position information with the message

    POSITION DISH THEN STORE

10. Use the ANTENNA LEFT / RIGHT arrow buttons on the remote to position the satellite antenna for desired satellite, then press **STORE** button.

11. Repeat steps three through six to add or edit other satellites.

12. When programming or editing of all other satellites is complete, press the **POWER** button

13. After sorting, (clearing non programmed satellites from call list), the unit will return to normal viewing mode

DELETING A SATELLITE

This function is used to delete a satellite from the **NAVIGATOR SERIES RECEIVER** memory that has already been programmed.
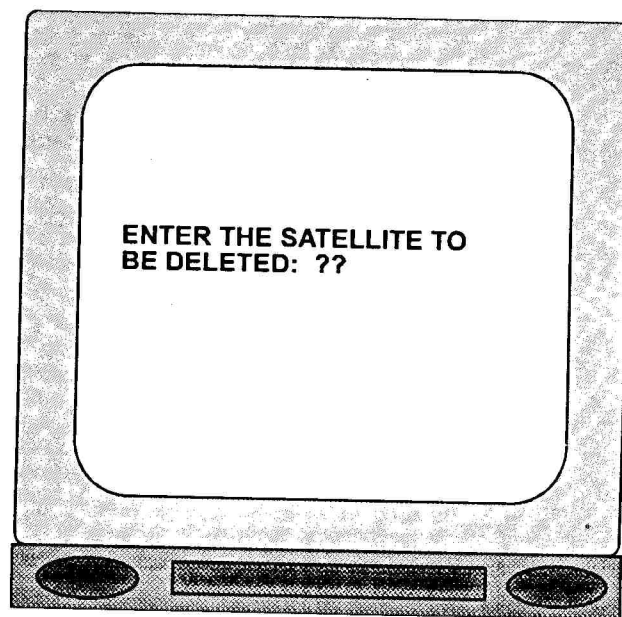
1. Select DELETE A SATELLITE function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

   The following type of screen lay out will be displayed:

3. Enter the name of the unwanted satellite using the remote i.e. **G5** for Galaxy 5.

   PRESS STORE TO DELETE will then be displayed.

4. Press **STORE** button on the remote to delete.

ENTER THE SATELLITE TO
BE DELETED: ??

# LNB OFFSET TUNING

      This function is used to fine tune all satellites and transponders simultaneously in the event the LNB frequency should drift.

1. Select LNB OFFSET TUNING function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

   The following type of screen lay out will be displayed:

3. Use the remote's FINE TUNE UP and DOWN buttons to change the frequency for a better quality picture.

4. Press the **STORE** button on the remote to store the new offset LNB frequency.

5. Unit will return to Main Menu.

6. Press the remote's **POWER** button to return to normal viewing mode.

CLEAR RESETS OFFSET

FINE TUNE   0000 MHZ
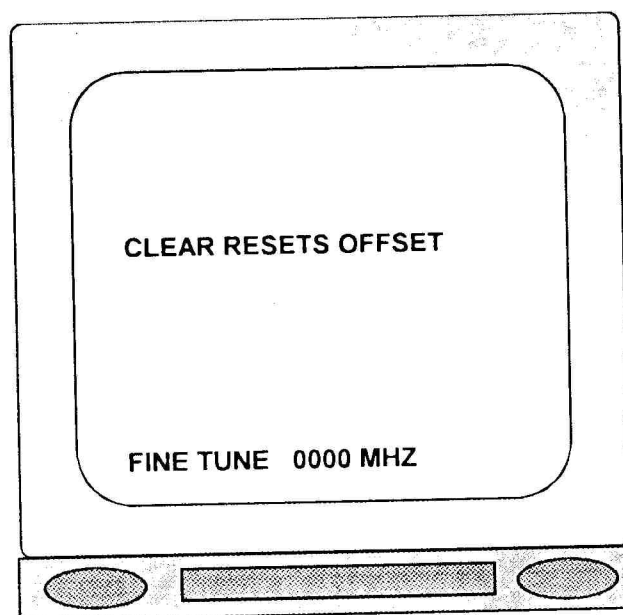
TUNING SELECTION

This function selects how the channel scan will operate. If NORM is selected channels will scan normal 1-2-3-4 etc..

If EVEN/ODD is selected then channels will scan odds first then even. (For example: channels 1-3-5...., or channels 2-4-6......).

1. Select TUNING SELECTION function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

   The following type of screen lay out will be displayed:

```
TUNING:   NORM  (EVEN/ODD)




STORE-SAVE SETTINGS
CLEAR-RETURN-NO SAVE
```
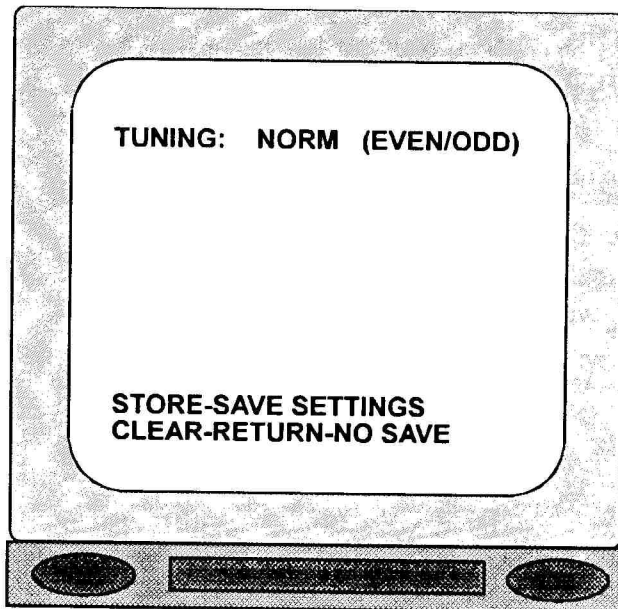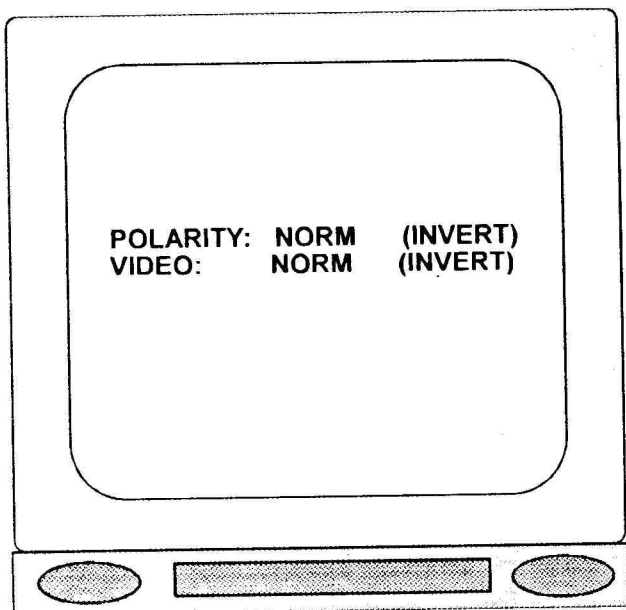
NOTE: The selected option is outside of the brackets. Non selected options are inside the brackets.

3. Use the **DISP** button to change the setting of the selected function.

4. The **STORE** button will save option selected and return you to the Main Menu.

5. Press the remote's **POWER** button to return to normal viewing mode.

CHANGING POLARITY FORMAT

To change polarity format:

1. Press the **EXT** button on the remote.

2. The following menu will be displayed.

```
POLARITY:   NORM    (INVERT)
VIDEO:      NORM    (INVERT)
```

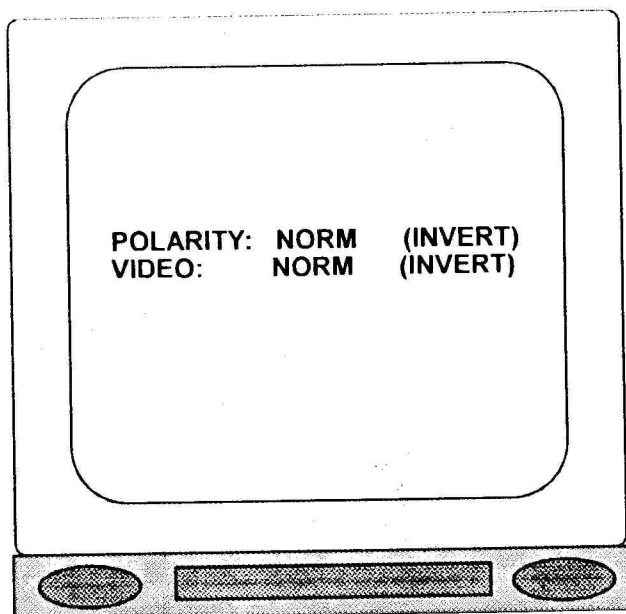*NOTE: The selected option is outside of the brackets. Non selected options are inside the brackets.*

Use the **CHANNEL UP & DOWN** buttons to move the cursor ☞ next to POLARITY.

Use the **DISP** button to change the polarity format.

CHANGING VIDEO FORMAT

To change video format:

1. Press the **EXT** button on the remote.

2. The following menu will be displayed.

```
POLARITY:   NORM    (INVERT)
VIDEO:      NORM    (INVERT)
```

NOTE: The selected option is outside of the brackets. Non selected options are inside the brackets.

Use the **CHANNEL UP & DOWN** buttons to move.the cursor ☞ next to VIDEO.

Use the **DISP** button to change the video format.

REALIGN DISH

This function allows for realignment of the dish on the satellite arc while maintaining current satellite orientation on the arc.

1. Select REALIGN DISH function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

   The following type of screen lay out will be displayed:

3. Use the ANTENNA LEFT and RIGHT arrow keys to position the dish for a better quality picture.

4. Press the **STORE** button on the remote to store the new position. Receiver will return to Main Menu.

5. Press the remote's **POWER** button to return to normal viewing mode.

```
GALAXY  G5  02 C 2
STOPPED AT   0054


POSITION DISH THEN STORE
```
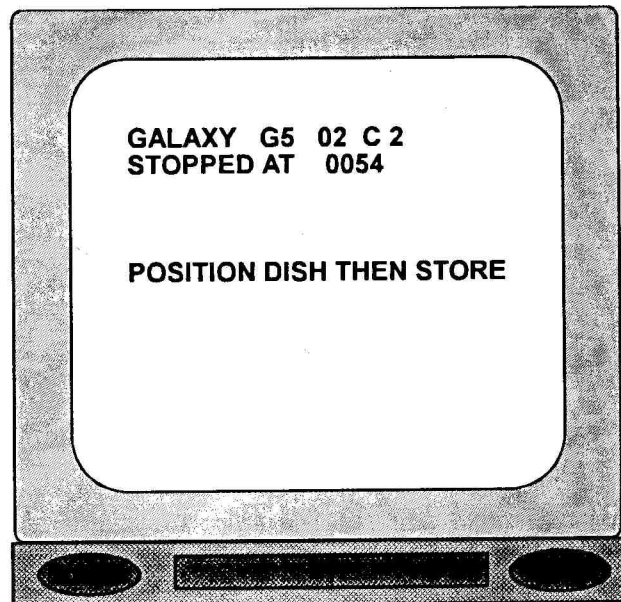
MASTER CLEAR

This function will master clear all user stored functions, satellite positions, and return Receiver Set Up options to their default selection.

WARNING: AFTER USING MASTER CLEAR ALL SATELLITE POSITIONS AND RECEIVER FUNCTIONS MUST BE REPROGRAMMED INTO UNIT.

1. Select MASTER CLEAR function with the cursor ☞ from the Main Menu.

2. Press the **DISP** button to enter mode.

   The following screen will be displayed:

3. Use the number keys on the remote to enter the correct code.

   MASTER CLEAR CODE: 0 5 0 0

4. Unit will display CLEARING MEMORY

5. After a few seconds unit will display UNIT IS MASTER CLEARED

6. Unit will then return to Main Menu.

ENTER CODE TO CLEAR
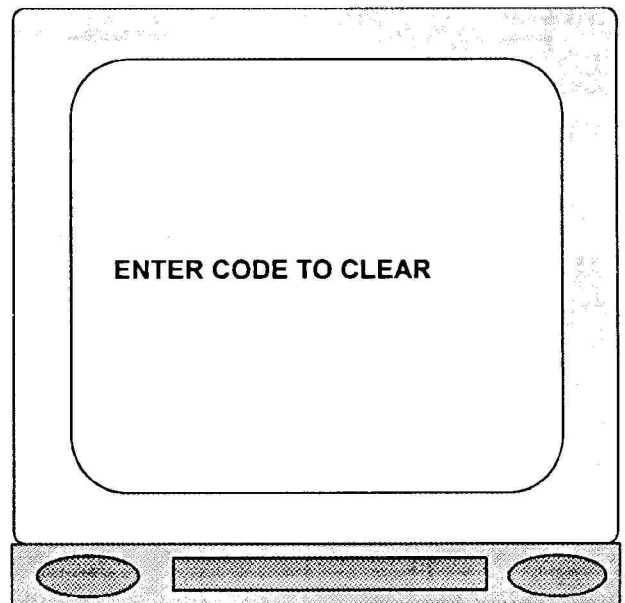
Note: Remember satellite limits will be stored on current satellite location after MASTER CLEARING. To change limits return to PROGRAMMING ALL SATELLITES in main menu.

Chapter 3

BASIC OPERATION

BASIC OPERATION

TUNING THE NAVIGATOR SERIES RECEIVER

SELECTING A SATELLITE

1. Press the **SAT** button on the remote until a series of question marks appear on the television screen.

2. Then enter the name and number of the satellite using the number keys on the remote.

Note: At this time the satellite antenna should begin moving to the satellite you have selected.

CHANNEL SELECTION

You may select the channel in two ways, either pressing the channel up or down buttons on the remote or directly entering the channel number using the number keys on the remote control.

AUDIO FUNCTIONS

VOLUME

Use the **VOLUME UP or DOWN** keys to adjust the audio level to desired listening level. A white bar on screen will display the present audio level setting.

MUTE

Audio may be muted by pressing the **MUTE** key on the remote. The word "MUTE" will be displayed on screen when audio is muted. Volume up and down will not operate while audio is muted.
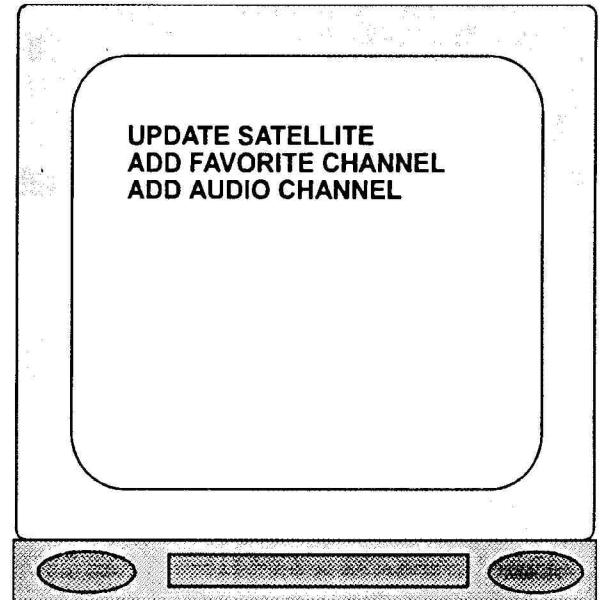
AUDIO MODE

Use the remote's **B.W.** key to select MONO WIDE, MONO NARROW, STEREO or DIGITAL AUDIO MODE.

AUDIO TUNING

Use the remote's **AUDIO TUNE UP or DOWN** keys to tune to the desired audio carrier frequency. The frequency will be displayed on the screen. Consult your programming guide for correct audio mode and frequency for the program you wish to receive.

STORING AUDIO CHANNELS

1. Select the correct audio mode using the **B/W** key.

2. Tune to the correct audio sub carrier frequency using the **AUDIO TUNE UP** or **DOWN** keys.

3. Press the **STORE** key on the remote.

4. The following menu will be displayed.

5. Use the **CHANNEL UP** or **DOWN** keys to select "ADD AUDIO CHANNEL" with the cursor ☞.

6. Press the **STORE** key on the remote.

7. AUDIO SAVED will be displayed on screen.

```
UPDATE SATELLITE
ADD FAVORITE CHANNEL
ADD AUDIO CHANNEL
```

SELECTING FAVORITE AUDIO CHANNELS

Preprogrammed and user stored audio modes and frequencies are stepped through and selected by using the remote's **AUDIO** key.

DELETING FAVORITE AUDIO CHANNELS

To remove a audio channel from memory:
(Receiver must be on video and audio channel to be deleted).

1. Press the **CLEAR** button on the remote.

2. The following menu will be displayed.

3. Use the **CHANNEL UP** or **DOWN** keys to select "DELETE AUDIO CHANNEL" with the cursor ☞.

4. Press the **CLEAR** key on the remote.

```
EXIT THIS MENU
DELETE FAVORITE CHANNEL
DELETE AUDIO CHANNEL
CHANNEL LOCK OUT
```

5. The following screen will be displayed
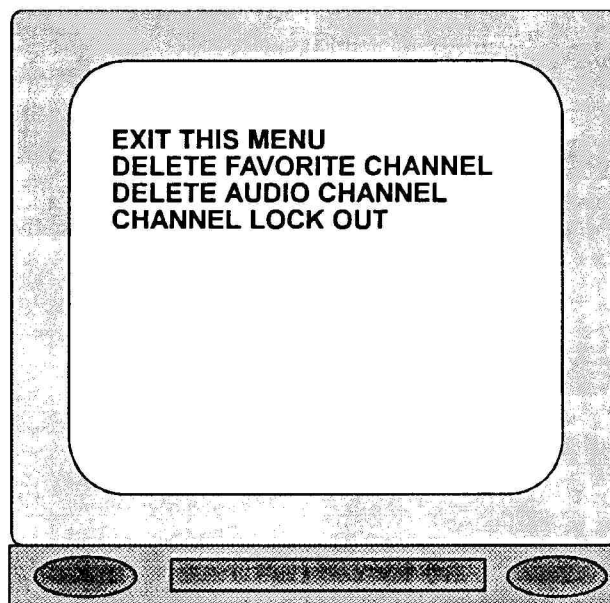
```
AUDIO CHANNEL DELETED
```

FAVORITE PROGRAMMING

The **NAVIGATOR SERIES RECEIVER** is capable of storing forty favorite channels by the user These channels may then be easily recalled at any time for viewing.

STORING FAVORITE CHANNELS

1. Select the desired satellite and channel you wish to store.

2. Press the **STORE** key on the remote.

3. The following menu will be displayed.

4. Use the **CHANNEL UP** or **DOWN** keys to select "ADD FAVORITE CHANNEL" with the cursor ☞

5. Press the **STORE** key on the remote.

```
UPDATE SATELLITE
ADD FAVORITE CHANNEL
ADD AUDIO CHANNEL
```

6. The following screen will be displayed.

```
SATCOM  F1  02  C2



FAVORITE CHAN ID:   AAAA
```
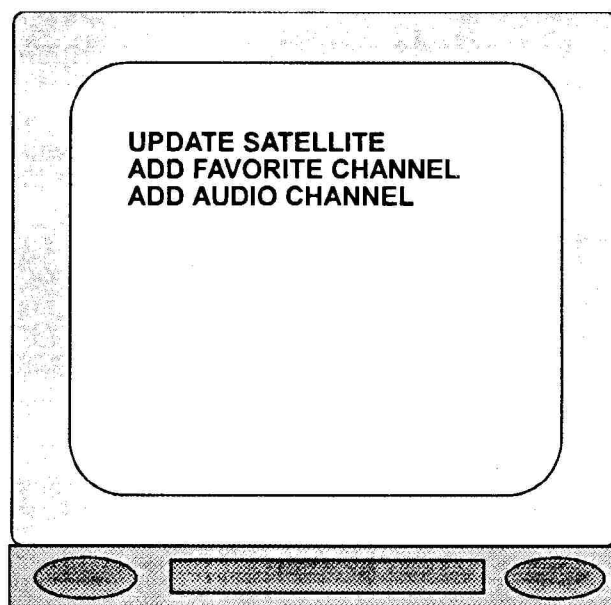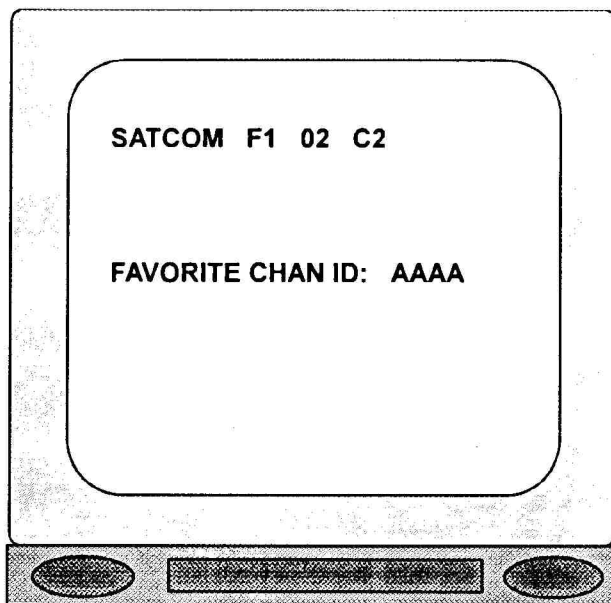
7. Enter up to a four character ID using the following keys.

   "2" button moves forward through the character list
   "8" button moves backwards through the character list.
   "4" button moves one character to the left.
   "6" button moves one character to the right.

   Character list: ABCDEFGHIJKLMNOPQRSTUVWXYZ "blank" 0123456789

8. After entering in a ID for your favorite channel push the **STORE** button.

Your favorite channel ID will be added to the "favorite program list" in the lowest open position.

RECALLING FAVORITE PROGRAMS

To recall a stored favorite channel do the following steps.

1. Press the **PGM** button on the remote.

2. The following screen will be displayed

ENTER FAVORITE CHANNEL
OR PGM FOR CHANNEL LIST
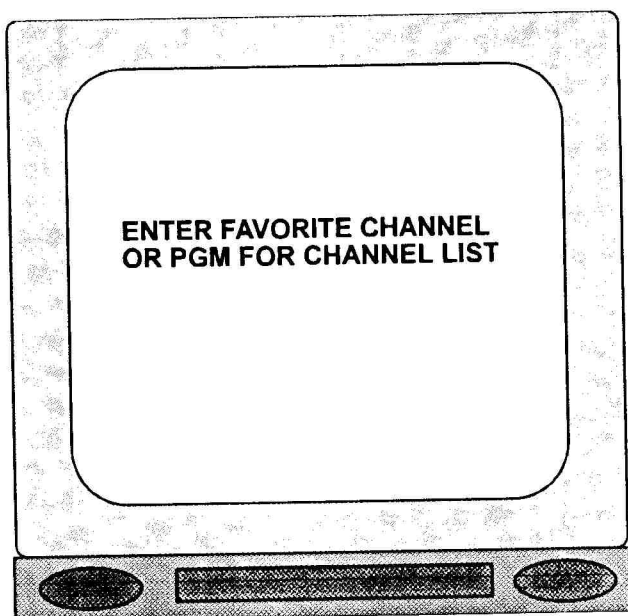
3. Enter your favorite program number directly using the remote's number keys or use the **PGM** button to display the favorite program list 01 - 20. Press the **PGM** button again to display 21-40. Use the number keys to enter the desired favorite channel.

DELETING A FAVORITE CHANNEL

To remove a channel from your favorite program list:

1. Press the **CLEAR** button on the remote.

2. The following menu will be displayed.
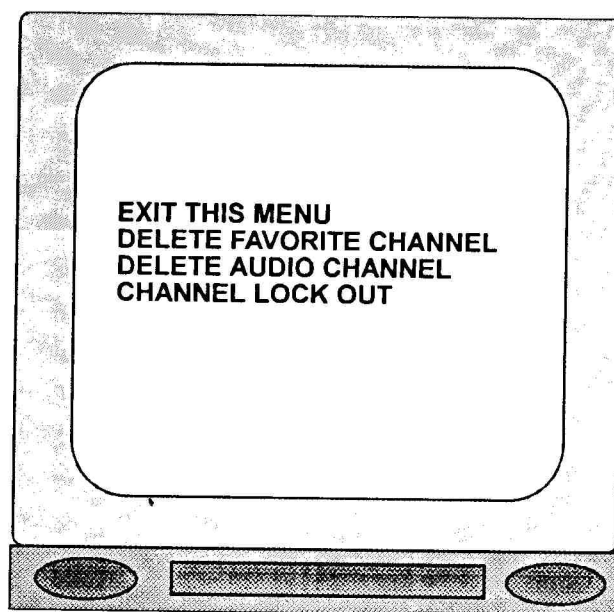
3. Use the **CHANNEL UP** or **DOWN** keys to select "DELETE FAVORITE CHANNEL" with the cursor ☞.

4. Press the **CLEAR** key on the remote.

```
EXIT THIS MENU
DELETE FAVORITE CHANNEL
DELETE AUDIO CHANNEL
CHANNEL LOCK OUT
```

5. The following screen will be displayed.
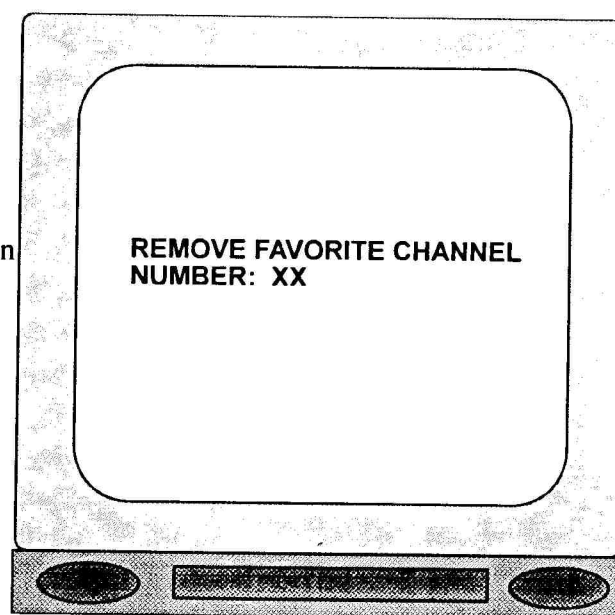
6. Enter the favorite channel number you wish to delete using the number keys on the remote.

```
REMOVE FAVORITE CHANNEL
NUMBER:  XX
```

7. . The following screen will be displayed.

```
PRESS STORE TO CONFIRM
NUMBER:  XX




PRESS CLEAR IF ERROR
```
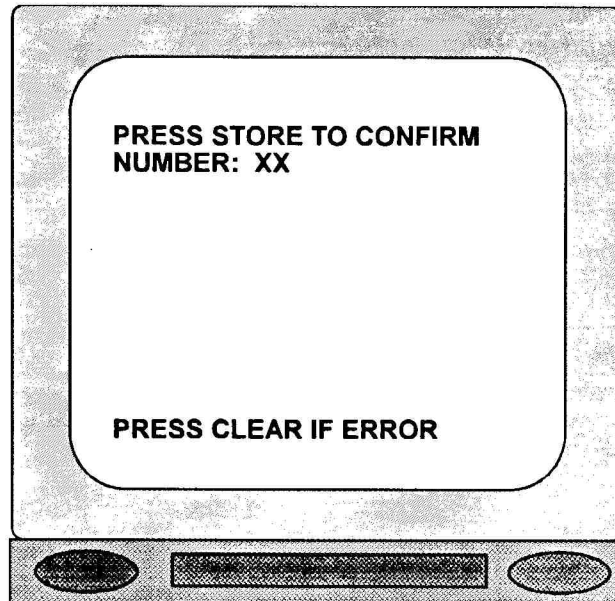
8. Press **STORE** to delete from favorite program list.

9. Press **CLEAR** to return to normal viewing and not delete from favorite channel list.

CHANNEL LOCK OUT

Individual channels on each satellites may be locked out to prevent viewing. If a locked out channel is selected "CHANNEL LOCKED OUT" will be displayed and receiver will return to last viewed channel

LOCKING OUT A CHANNEL

To lock out a particular channel do the following:

1. Go to the desired channel you wish to lock out

2. Press the **CLEAR** button on the remote

3. The following menu will be displayed.

```
┌────────────────────────────────┐
│   ι                            │
│                                │
│ EXIT THIS MENU                 │
│ DELETE FAVORITE CHANNEL        │
│ DELETE AUDIO CHANNEL           │
│ CHANNEL LOCK OUT               │
│                                │
└────────────────────────────────┘
```
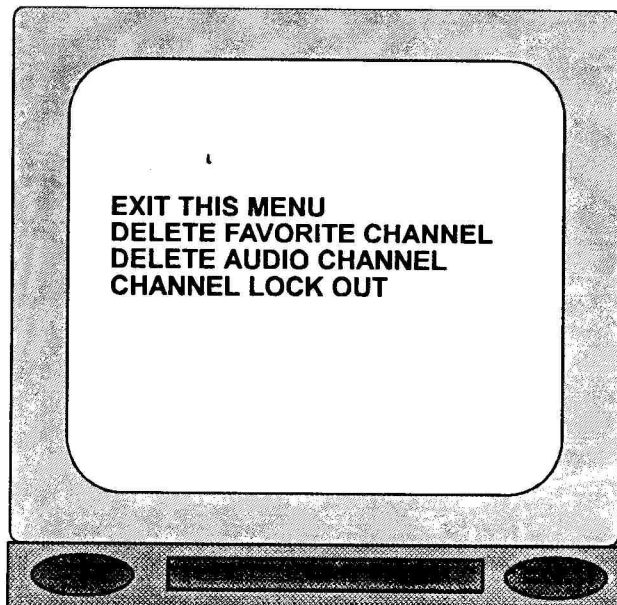
4. Use the **CHANNEL UP** or **DOWN** keys to select "CHANNEL LOCK-OUT" with the cursor ☞.

5. Press the **CLEAR** button on the remote.

6. The following screen will be displayed.

```
┌────────────────────────────────┐
│                                │
│                                │
│  PRESS STORE TO LOCK CHAN      │
│                                │
│                                │
└────────────────────────────────┘
```
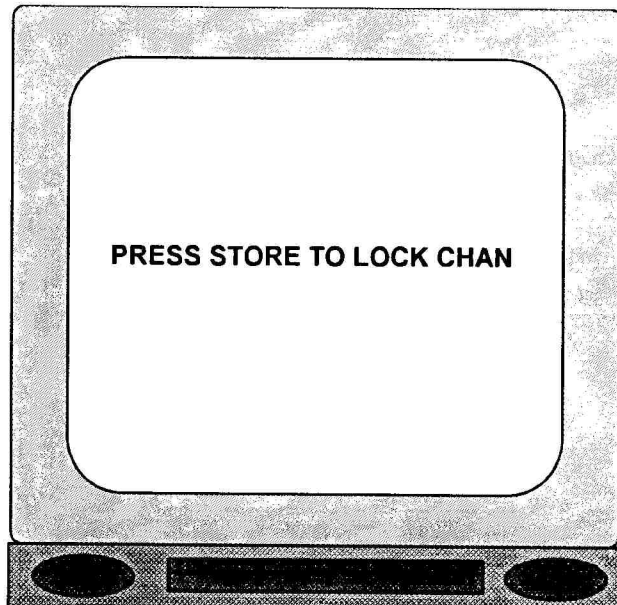
7. Press the **STORE** button on the remote to lock out channel or the **DISP** button to leave screen without saving changes.

9. The following screen will be displayed.

```
CHANNEL LOCKED OUT
```
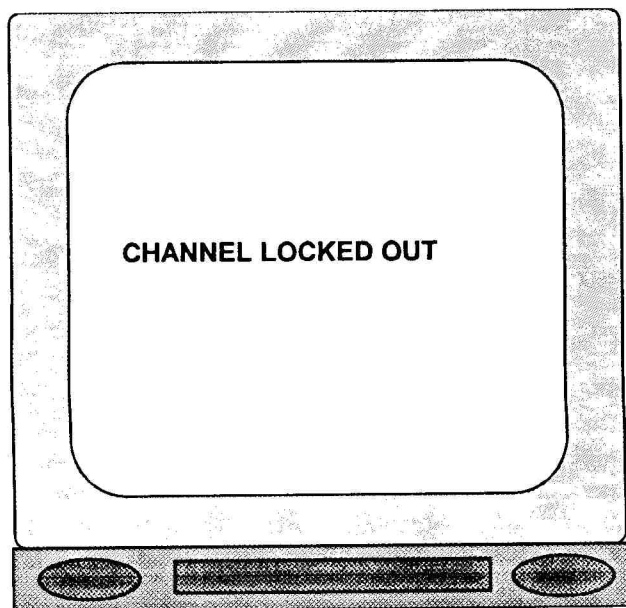
NOTE: If a locked out channel is selected "CHANNEL LOCKED OUT" will be displayed and receiver will return to last viewed channel. If using the channel up/down buttons, the receiver will skip over any locked out channels.

UNLOCKING A CHANNEL

To unlock a previously locked out channel:

1. Press the **CLEAR** button on the remote

2. The following menu will be displayed.

```
EXIT THIS MENU
DELETE FAVORITE CHANNEL
DELETE AUDIO CHANNEL
CHANNEL LOCK OUT
```
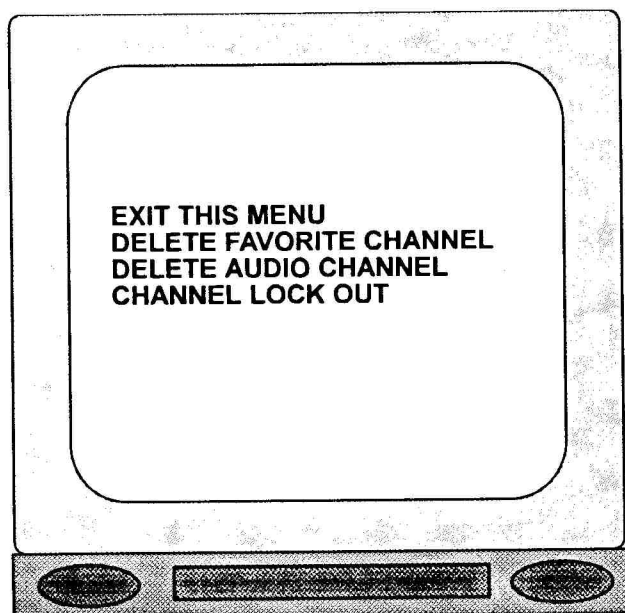
3. Use the **CHANNEL UP** or **DOWN** keys to select "CHANNEL LOCK-OUT" with the cursor ☞.

4. Press the **CLEAR** button on the remote.

5. The following screen will be displayed.

PRESS STORE TO LOCK CHAN
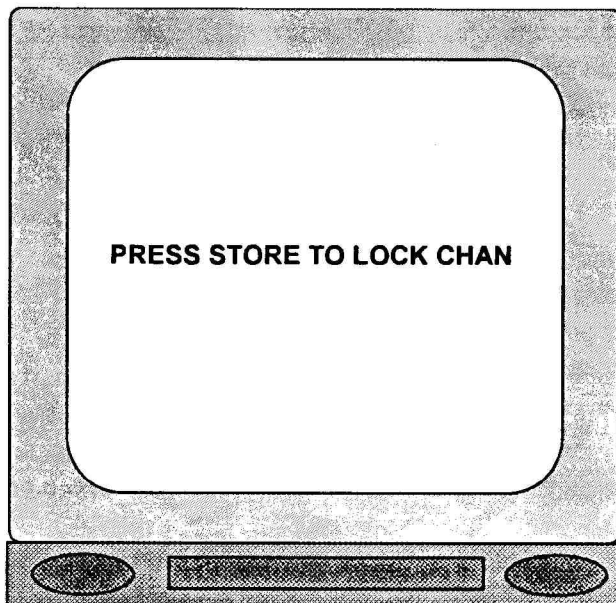
6. Press the **PGM** button on the remote to unlock channel.

7. The following screen will be displayed.
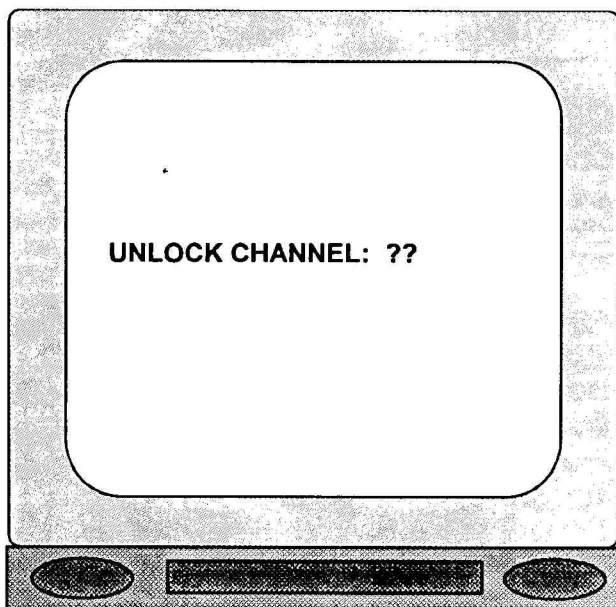
UNLOCK CHANNEL: ??

8. Enter the number of the channel you wish to unlock using the number keys on the remote.

TUNING THE NAVIGATOR SERIES RECEIVER

There may be times when you need to adjust the tuning for best picture quality because of variations in the satellite signals. There are three basic modes for tuning VIDEO FINE TUNE, ANTENNA FINE TUNE, and POLARITY FINE TUNE.

VIDEO FINE TUNE

The video fine tune adjusts the frequencies of all channels at that satellite position. The frequencies are preset on all C-BAND satellites and rarely need to be changed. KU-BAND satellites channels may need to be fine tuned for best picture quality.

To change the video fine tune frequency:

1. Press the **FINE TUNE UP/DOWN** keys until desired frequency is displayed on screen or until picture quality improves.

   NOTE: All fine tune settings are returned to the receiver default after leaving satellite position or turning the receiver off.

POLARITY (SKEW) FINE TUNE

There are two different polarities for each satellite channel (either horizontal or vertical) this is determined on the orientation of the satellite. The skew up/down adjustment adjusts the angle of the feed horn probe to receive the proper signal. The skew may need to be adjusted when the picture has interference appearing as dots, blips, or snow.

To change the skew setting:

2. Press the **SKEW UP/DOWN** key until the picture you are watching becomes clear.

3. Press the **STORE** button to save the setting

4. The following menu will be displayed.

```
UPDATE SATELLITE
ADD FAVORITE CHANNEL
ADD AUDIO CHANNEL
```
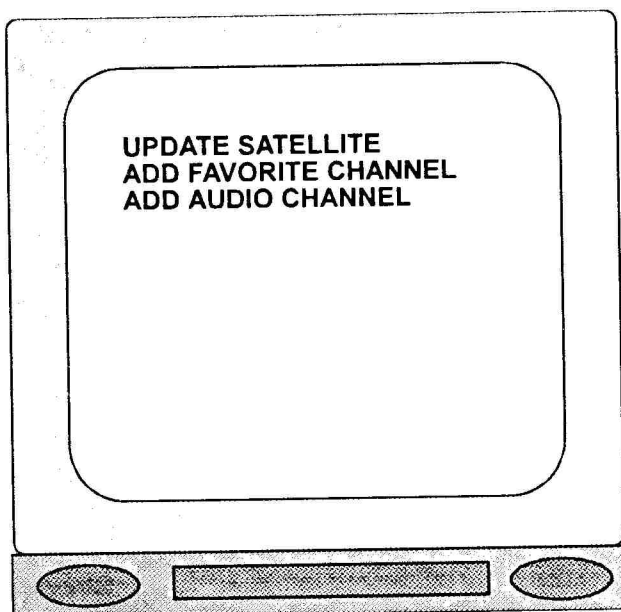
5. Use the **CHANNEL UP** or **DOWN** keys to select "UPDATE SATELLITE" with the cursor ☞.

6. Press the **STORE** key on the remote.

Glossary of Terms

Antenna (Dish)-- A parabolic microwave antenna that collects and concentrates electromagnetic waves (signals) for processing by the feed horn, LNB, and the satellite receiver.

Audio Sub Carrier-- Is a carrier frequency form that transmits audio information in frequency range between 5 and 8.5 MHz.

Azimuth-- Degrees of rotation clockwise from true north.

Bandwidth-- The frequency range that is allocated to any communication circuit. Most C-Band satellite channels are 36MHz wide.

Baseband-- This is a complete audio and video signal without the carrier wave. Satellite receivers use this output to connect to an external descrambler or other related equipment that requires a baseband signal.

C-Band-- The band of frequencies between 3.7 and 4.2MHz that some C-Band satellites use to down link satellite signals.

Coaxial cable-- A cable used to carry very high frequency signals with very minimal loss.

Down Link Antenna-- The antenna on-board a satellite that transmits satellite signals back to earth.

Feed Horn-- A device that collects microwave signals reflected from the surface of a dish.

Format -- type of polarizer orientation used on individual satellite channels. Differentiates satellite signals which are close together.

Frequency-- The number of cycles per second present in an electromagnetic signal.

Giga Hertz (GHz)-- Billions of cycles per second.

Infrared (IR) -- the light frequency used by the remote control to broadcast instructions to the receiver. Line of sight only.

Intermediate Frequency (IF)-- A middle range of frequencies generated after down conversion in a satellite receiver system.

Kilo Hertz (KHz)-- Thousands of cycles per second. KILOHERTZ

Low Noise Block Downconvertor (LNB)-- A device that receives and amplifies weak satellite signals. It also down converts the satellite signal to an intermediate frequency range.

Low Noise Block Downconverter Feed (LNBF) -- Combination LNB and Feed Horn.

Mega Hertz (MHz)-- Millions of cycles per second.

Microprocessor-- The term used for the central processing unit of the satellite receiver that controls all of the satellite receiver functions.

Noise Temperature-- A measure of the amount of thermal noise present in the LNB.

Radio Frequency (RF) -- radio wavelengths modulated to transmit audio and video signals from the satellite receiver to TV or VCR.

Reed Switch-- A mechanical switch that uses a reed to make and break an electrical contact. The make and break action will create a pulse that the satellite receiver counts to determine the position of each satellite stored in the satellite receiver's memory.

Satellite Receiver-- A indoors electronic appliance which down converts and processes satellite signals for viewing and listening.

Scrambling-- A process of altering the audio and video signals to prevent unauthorized reception of the satellite signal.

Skew-- A term used to describe the adjustment between horizontal and vertical transponders in order to receive a clear picture.

Sparklies- Small black or white interference dots in the television picture indicating poor reception.

TVRO (Television Receive Only)-- A satellite system designed only to receive satellite signals.

Transponder-- A microwave repeater that receives, amplifies, down converts and then re transmits satellite signals. Most C-Band satellites have 24 transponders (12 vertical and 12 horizontal).

Ultra High Frequency (UHF) -- radio frequency used by some remote controls to send instructions to the receiver. Signal is not line of sight dependent and can travel through obstacles.

Up Link-- The antenna used to transmit satellite signals to the communication satellite.

SATELLITE NAME	LOCATION	BAND	ABBR.	REMOTE KEY CODE	C-BAND FORMAT	KU-BAND FORMAT	DEFAULT TRANSPONDER
WEST SATCOM C5	139 W	C	F5	15	1	5	8
SATCOM C1	137 W	C	F1	11	2	5	19
SATCOM C4	135W	C	F4	14	1	5	8
GALAXY 1R	133 W	C	G1	21	2	8	8
SATCOM C3	131 W	C	F3	13	1	5	6
GALAXY 5	125 W	C	G5	25	2	8	7
GSTAR 2	125 W	Ku	O2	92	1	4	21
SBS5	123 W	Ku	O5	85	1	6	11
TELSTAR 303	123 W	C	T3	63	1	10	6
MORELOS 2	116.8 W	C / Ku	M2	42	2	11	17
* ANIK C3	114.9 W	Ku	A6	56	2	3	8
SOLIDARID 2	113 W	C / Ku	MO	40	1	12	6
ANIK E1	111.1 W	C / Ku	A2	52	2	3	6
SOLIDARID 1	109.2 W	C / Ku	M1	41	1	12	11
ANIK E2	107.3 W	C / Ku	A1	51	2	3	2
GSTAR 4	105 W	Ku	O4	94	2	4	22
GSTAR 1	103 W	Ku	O1	91	2	4	6
SPACENET 4	101 W	C / Ku	S4	74	1	7	6
GALAXY 4	99 W	C / Ku	G4	24	2	8	10
TELESTAR 401	97 W	C / Ku	T1	61	1	10	6
SBS 6	95 W	Ku	O6	86	1	9	8
GALAXY 3	93.5 W	C	G3	23	2	8	8
GSTAR 3	93 W	Ku	O3	93	1	4	6
GALAXY 7	91 W	C / Ku	G7	27	2	13	6
SPACENET 3	87 W	C / Ku	S3	73	2	7	4
TELSTAR 302	85 W	C	T2	62	1	10	24
SATCOM K1	85 W	Ku	F7	17	2	5	12
SATCOM K2	81 W	Ku	F8	18	1	5	6
SBS 4	77 W	Ku	O4	84	1	6	7
* COMSTAR 1	76 W	C	O1	81	2	6	6
SBS 3	74 W	Ku	O3	83	1	6	6
GALAXY 6	74 W	C	G6	26	2	8	6
SBS 2	71 W	Ku	O2	82	1	6	19
EAST SATCOM SN2	69 W	C / Ku	S2	72	2	5	9

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NAVIGATOR SERIES RECEIVER SPECIFICATIONS
NAVIGATOR SERIES RECEIVER

RF/IF:

RF Input Frequency	950-1450 Mhz
RF Noise Figure	Less than 15dB
RF Input Level	-30dBm to -60dBm
Second IF	479.5 Mhz
IF Bandwidth	27 Mhz (3dB down) typ.
Image Rejection	Min. 30dB
Input Impedance	75_Ohm
Static Threshold	6dB typical, 8dB Max.
Input VSWR	2 typical, 3 max.

VIDEO:

Output Level	1v p-p (+/- 0.1v)
(At 21.5 Mhz p-p Deviation)	
Output Impedance	75 Ohm
EDS Rejection	More than 40dB
Frequency Response	50 Hz - 3.58 Mhz; +0.5/-0.7dB
	3.58 Mhz - 4.2 Mhz; +1.0/-1.3dB
S/N @ 14dB C/N	More than 33dB
Phase	5 degrees p-p
Field Time Dis.	5 IRE p-p
Line Time Dis.	5 IRE p-p
C/L Gain Inequality	+/- 20%
C/L Intermodulation	+/- 2 IRE

R.F. MODULATOR:

Output Channel	USA 3 or 4 VHF
Output Impedance	75 Ohm unbalanced
Output Level	66.5 dBuV (Typical)

AUDIO:

Sub carrier Frequency	5.0 to 9.0 Mhz
Bandwidth	Wide 280 +/- 50 Khz
	Narrow 110 +/- 30 Khz
Frequency Response	+/- 3dB (50Hz-15KHz)
De-Emphasis	75usec
Output Level	1.0 V p-p +/- 3dB
(75Khz Deviation)	
Output Impedance (R/L)	600 Ohm
S/N	6.8Mhz; 35dB min.
Distortion	Less than 2%

CONNECTORS: (REAR PANEL)

IF Input	Type F
TV Output	Type F
Antenna Input	Type F
Video Output	Type RCA
Audio Output	Type RCA
Baseband Output	Type RCA
Polarizer Output/	
External Switch	Mechanical Lever Type 4 Pole
Actuator Output	Mechanical Type, 4 Pole
	Spade Terminal
External UHF Input	Type 1/8" Stereo Jack
Serial Interface	Type Modular Jack
IPPV	Type RCA
Utility Data	Type RCA

POLARIZATION:

LNBF Voltage	18v/14v +/-5%
Mechanical	50uA
Dual Feed Switch	20mA

GENERAL:

Power Requirements	103.5VAC - 126.5VAC, 60Hz
Dimension	14.125"(W) x 14.25"(D) x 3.5"(H)
Weight	14.08 lbs.