

# Chapter 5

## Installation Instructions

### WARNING AND ATTENTION SYMBOLS

You must keep safety in mind when you install and use a satellite TV system. In these *Instructions*, we tell you how to do many things. If you do some of these things carelessly, you could hurt or even kill yourself, or damage equipment or property. Also, you need to pay special attention to some things.

Important instructions for maintaining the system.

WARNING!



The WARNING symbol means that if you're not careful, you could injure or *kill* yourself, or damage equipment or property.

ATTENTION!



The ATTENTION symbol means you should pay special attention to *Important Instructions* for using the system or for maintaining the system.

### IMPORTANT INSTRUCTIONS FOR MAINTAINING THE SYSTEM

#### FOR YOUR SAFETY

WARNING!



*Don't* try to open the case of the receiver. You would risk electrical shock, which might damage the receiver and could hurt or *kill* you. There are *no* user-serviceable parts inside the receiver. If you open the receiver case or make unauthorized changes you'll void the warranty.

WARNING!



To reduce the risk of fire or electric shock, *don't* expose this appliance to rain or moisture.

#### IMPORTANT SAFETY INSTRUCTIONS

Be sure to review the Safety Instructions on page v before beginning this installation. Then, read and follow the instructions that begin below.

**WARNING!** *Always* follow these instructions to help protect against injury to yourself and damage to the system.



#### SAFETY TIPS

**ATTENTION!** You can get safety guidelines from the Occupational Safety and Health Administration (OSHA). To contact OSHA, please see the blue pages of your phone book, under *United States Government, Occupational Safety and Health Administration*.



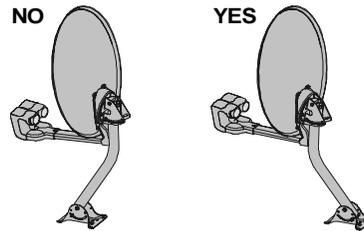
- *Assemble* the satellite dish in a safe place *before* you climb up to where you install the dish.
- Be careful when *you climb* up to the satellite dish, and when you install it.
- If you use a *ladder*, follow the safety instructions that come with the ladder. Use only a fiberglass ladder to keep from getting shocked if the ladder touches any overhead power lines, lights, or power circuits.
- Use the right *tools*. Follow the safety instructions that come with the tools.
- While you work, don't wear loose-fitting *clothes* and do wear safe shoes.
- If you put the satellite dish on a *roof*, you should be in good enough shape to climb up to, and work on the roof. Also, keep these safety tips in mind:
  - Beware of small holes in the roof or loose shingles, which could cause you to fall;
  - Keep tools within easy reach for convenience and safety;
  - Use a safety harness;
  - Wear sturdy shoes with good tread for sure footing and traction;
  - *Don't* work on a roof that's wet or icy;
  - If the roof is sloped or made of tile or metal, use slide guards.
- Install the satellite dish only on a *solid* surface or solid foundation material. If you install it on the side of a building, make sure you attach the center bolts directly to a building stud or other solid material. Use the right drill and fasteners for the surface.
- Make sure you find the best place for the satellite dish *before* you drill holes in your building or set up the pole. Make sure that you can run the cable from the dish into your building. If you install a pole, make sure you can run the cable overhead, or underground to your building.

- *Before* you drill any holes in your building, make sure there are no wires or pipes near the holes. *Before* you dig any holes in the ground, ask the local gas, electric, and phone companies to help you find underground gas, electric, water, and phone lines.
- Do the install per the local building and electrical *codes*. If you aren't sure, call a licensed building inspector or electrician for help. Be aware that community covenants, if any, may have more requirements. Also, check your homeowner's insurance policy for any restrictions or exceptions that may apply.
- Choose a place for the dish you can *get to easily* in most weather. You may need to clean snow, dirt, or leaves off the satellite dish. Such things can interfere with the satellite signal.
- Put the satellite dish as *close* to the receiver as you can. Legacy systems can only use up to 100 feet of RG-6 cable between the receiver and the satellite dish. DishPro systems can use up to 200 feet of RG-6 cable between the receiver and the satellite dish. Otherwise, the system is more likely to lose the signal, especially during rain, snow, or heavy cloud cover. If the system requires over 200 feet of cable, you should think about having a pro install it.
- Think about *seasonal* changes. The place where you install the dish may have a clear line of sight in the winter, but spring and summer leaves could block the signal.
- As you work, be aware of *what's around you*. Be careful to avoid hurting yourself or damaging buildings, structures, or equipment.
- *Never* install the satellite dish near *power lines*.
- *Don't* install the satellite dish where it can be bumped or blocked by people, animals, or vehicles.
- *Don't* install the satellite dish where it's exposed to high winds. *Don't* try to install the satellite dish in windy or stormy weather, especially if there's a chance of lightning.
- *Don't* try to fasten the satellite dish to the *mortar* between bricks or cinder blocks.
- *Don't* install the satellite dish on vinyl or aluminum *siding*. Vinyl and aluminum are too weak to securely hold the dish, even with a building stud underneath.
- *Don't* install the satellite dish *downwind* of a chimney or furnace vent. Ashes and dirt could collect on the dish, which might cause damage and poor reception. If you can, place the dish so that it faces away from the vent.
- *Don't* install the satellite dish on *stucco* or imitation masonry unless the base material is solid.
- *Don't* install the satellite dish on *composite* materials such as strand, chip, fiber, or particle board unless the fastener attaches securely to a wall stud, rafter, or other foundation material beneath the surface.

**Tip:** Notice that the figure marked “YES” has the dish pointed away from the foot.

- *Don't* install the satellite dish on a *railing*, on a tile roof, or in a tree. *Don't* install the satellite dish on a chimney that isn't structurally *sound*. Wind causes the dish to shake, and this can damage an unsound chimney. Install the dish on a chimney only if there's no other place to install the dish.
- Place the foot so you can aim the satellite dish *away* from the foot, as shown below.

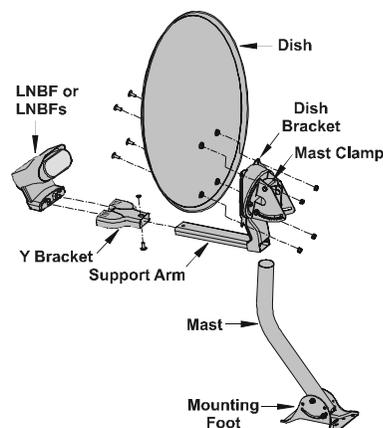
This gives the dish the most room to move when you aim it.



## BEFORE YOU START

### UNPACK AND CHECK THE PARTS

Unpack the parts carefully. You could damage these devices if you bump or handle them roughly. Check all the parts for damage during shipment. If you find any damage, call the place where you bought the system or the Customer Service Center at 1-800-333-DISH (3474) *before* you install the system. Keep the box and packing, in case you ever need to return the parts.



## HOW TO USE THESE INSTALLATION INSTRUCTIONS

These instructions guide you through the installation of a Satellite System which includes your DishPro receiver (included with this manual), and one of two kinds of dish antenna systems. The two antenna systems are:

- **DishPro** Antenna Systems which can be identified by the DishPro logo shown below.



- **Legacy** DISH antenna systems which *do not* have the DishPro logo.

**Important:** You cannot use DishPro LNBFs and switches (those marked with the DishPro logo) with Legacy switches and LNBFs (those that do not have the DishPro logo).

You must install your DISH antenna system with either all DishPro LNBFs and switches or all Legacy LNBFs and switches. If you mix the two, the system will not work.

**Note:** If you have a Dish antenna system already installed and the dish has been pointed for the strongest possible signal strength, you can skip this chapter and follow the instructions for installing the DishPVR receiver on page 3.

## INSTALLING A DISH 500 ANTENNA

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Whether you are installing a DishPro or Legacy system, you will need to first assemble the satellite dish, mount it, and point it in the general direction of a satellite. To do this, follow these instructions:

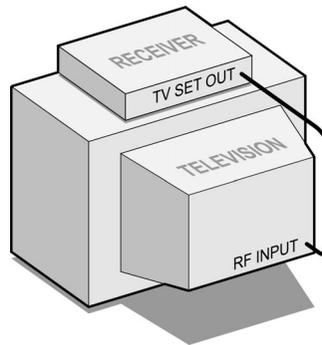
### FINDING THE SATELLITES

You need to find the satellites in the sky. To do this, you need to know the azimuth angle (the south, southeast, or southwest direction to the satellites) and the elevation angle (the angle up to the satellites) from your location, and the skew angle. Do the following to get these angles:

1. Connect the **TV Set Out** port on the receiver's back panel to the television's **RF Tuner Input** using a coaxial cable. Make sure that the TV is tuned to the same channel as the **Channel 3/4 Switch** on the receiver's back panel (for example, if this switch is at "3," the TV must be tuned to Channel 3).

## Chapter 5

### Installation



2. Make sure that the remote control batteries are fresh, and are installed properly. Press the **SAT** mode button on the remote to make sure the remote is in **SAT** mode to control the satellite receiver.
3. Turn **ON** the television and receiver.
4. Display the **Point Dish** menu, by pressing **MENU** on the Remote and then selecting **System Setup** and then **Point Dish**, or by pressing **MENU-6-2** on the remote (unless the receiver already displays this menu).



5. Enter your ZIP code in the **ZIP Code** field.
6. Select the **DISH 500** option.
7. The receiver displays the **DISH 500 Setup** menu. The menu displays the azimuth, elevation, and skew angles as shown below. Write down these numbers in the space at left.

Azimuth: \_\_\_\_\_

Elevation: \_\_\_\_\_

Skew: \_\_\_\_\_

## MOUNTING THE DISH

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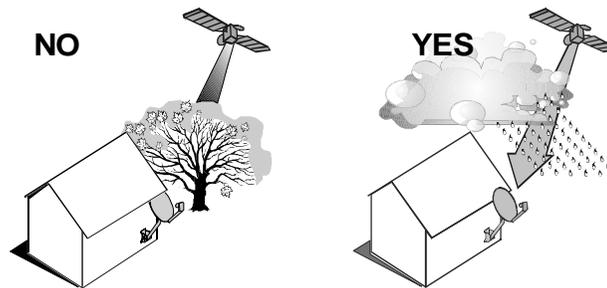
1. Using these azimuth, and elevation angles, find a location for the satellite dish which can be pointed towards the satellites located at these angles. With a compass, find the required azimuth angle. Then, use the elevation angle to find out how high the satellites are in the sky from your location.



*Make sure nothing blocks the line of sight to the satellites.*

2. Make sure nothing blocks the line of sight to the satellites. Mount the mast to a solid surface so that the dish antenna cannot move or be bumped out of adjustment. Keep in mind that physical and environmental conditions can block your satellite dish's ability to receive a clear satellite signal. Make sure you mount the dish so there are no obstacles between the dish and the satellite. This will help keep the signal strength strong even in bad weather.

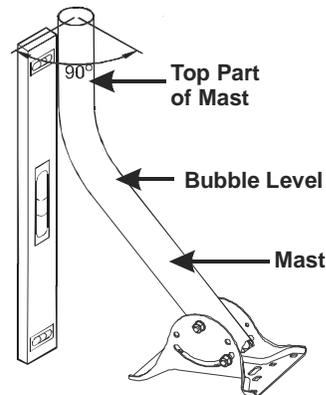
Obstacles that can block the signal include eaves and overhangs on your building or house, wind, plant growth, and deterioration of the mounting surface. Never mount to a tree.



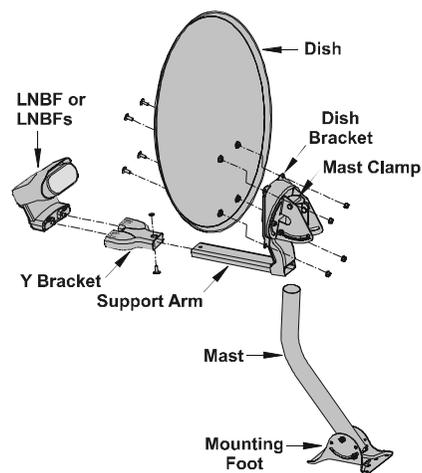
## Installation

3. Align the top part of the mast so that it is absolutely vertical, as shown below. If the top part of the mast is off vertical by only a few degrees, it will be difficult or maybe even impossible for you to find the satellites.

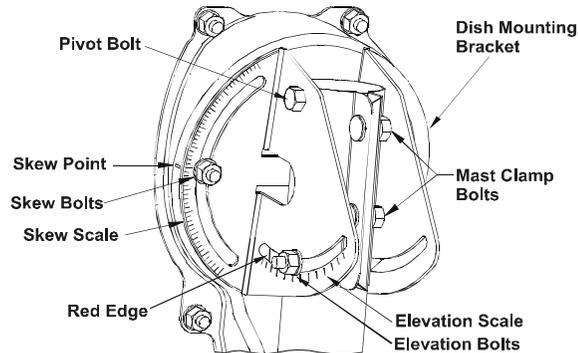
Take at least two readings with a bubble level, on the upper mast, that are 90 degrees apart from one another.



4. Assemble the satellite dish as shown below.



- Loosen both skew bolts and set the skew by rotating the dish mounting bracket to align the red mark with the required angle on the skew scale which you wrote down on page 102. Tighten the skew bolts securely to keep the dish from rotating. Once the skew is set, *do not* try to fine-tune this angle when aiming the dish.



- Set the elevation by tilting the dish mounting bracket to align the red edge with the required angle on the elevation scale. Tighten the elevation bolts, but *do not* tighten the pivot bolt at this time.

## INSTALLING A DISHPRO DISH 500 SYSTEM

The following instructions are for installing a two-tuner DishPro receiver in a system with a DishPro Twin LNBF. If you are installing a multi-dish system, you will need to follow these instructions and then the ones that begin on page 110. If you are installing a DISH 500 with Legacy LNBFs (with no DishPro logo), go to *Installing a DISH 500 Legacy System* beginning on page 118.

**WARNING!** Tighten all the coaxial cable connections *only* by hand. Using a wrench may over-tighten the connections, causing damage. Such damage is *not* covered by the Limited warranty.



**Note:** DishPro systems have LNBFs and switches with the DishPro logo shown below.



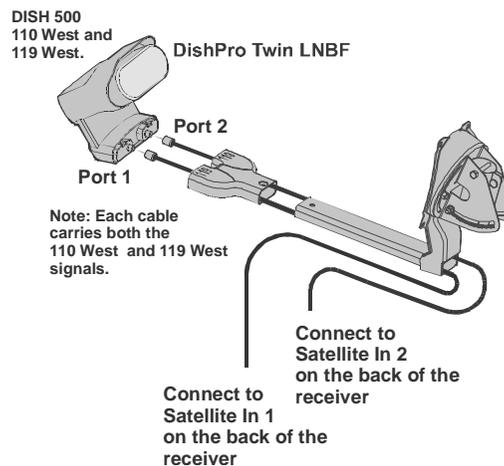
**Important:** You cannot use DishPro LNBFs and switches (those marked with the DishPro logo) with Legacy switches and LNBFs (those without the DishPro logo). You must install your DISH antenna system with either all DishPro LNBFs and switches or all Legacy LNBFs and switches. If you mix the two, the system will not work.

**Note:** Since you are installing an all-DishPro system, you can have as much as 200 feet of cable between the LNB and the receiver so long as you use only RG-6 coaxial cables *rated for 950 to 2150 MHz*. Some cables may say “Swept tested for 2150 MHz.” If you have any doubt about this, ask your DISH retailer, or look on the container the cable came in. Do not use cable company TV cables or cables from other satellite TV systems not rated for 950-2150 MHz. These other cables may cause signal loss. Do not use existing cables such as RG-59. Also, be sure that any outdoor connections are made using waterproof “F-connectors.”

1. Thread two RG-6 coaxial cables through the mast (optional), support arm and the Y-bracket. These cables should be long enough to run from your receiver to your LNB.



2. Attach the Y-bracket, using the Y-bracket screw.
3. Connect the two RG-6 cables from the DishPro Twin LNB directly to the **Satellite In 1** and **Satellite In 2** connections on the back of the receiver. Be sure there are no multi-dish switches between the LNB and the receiver.

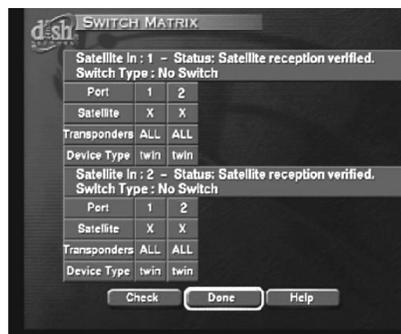


4. Attach the LNB to the Y-bracket, using the two LNB screws.

5. Slide the dish assembly down onto the mast. Make sure the pivot bolt rests on the top of the mast. Turn the dish assembly so that it points in the general direction of the satellites, using the azimuth angle from page 102.
6. Make sure both the receiver and your TV is on. You should see the **Point Dish** menu. If not, press Menu on the remote and select **System Setup**, then **Point Dish** or press Menu-6-2 on the remote.



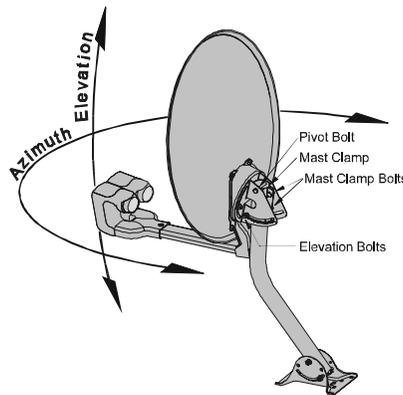
7. Select **Switch**. The **Switch Matrix** screen will open.
8. Select **Check**. The receiver shows you a progress bar and a processing graphic.
9. When the check switch procedure finishes, you should see an installation summary screen similar to the one shown below.



In the **Satellite** line, you will see Xs for both the **Satellite In 1** and **Satellite In 2** tuners. You will also see **Switch Type: No Switch** for both tuners. This is okay and does not mean there is anything wrong with your receiver. You should also see **Twin** next to **Device type** for both tuners. If your **Installation Summary** screen matches this, you can go directly to step #10. If not, do one of the following:

- If, by chance, you happened to pick up a satellite at this point, you may see “110” or “119” in the Satellite line. If “119” shows under **Port 1**, then go to step #10. If “119” shows under **Port 2**, move the dish about 9 degrees to the east, and then select **Check** to run **Check Switch** again. If “110” shows under **Port 2**, then go to Step #10.

- If “110” shows under **Port 1**, move your dish about 9 degrees to the west, and then select **Switch** to run **Check Switch** again.
10. Select **Done** to return to the **Point Dish** screen. Make sure the check mark is next to **119 West**. If not, move the highlight to **119 West** and press Select. Also make sure there is a check mark next to **Sat Input 1**. If not, move the highlight to **Sat Input 1**, and press Select. Notice the signal strength bar. This is used to help you aim the dish by showing the strength of the signal you are receiving. Look at the signal strength bar while you aim the dish. Or, have one person aim the dish while another watches the signal strength or listens to the signal tone. Don't stand in front of the dish while you aim it, because your body will block the satellite signal. After you adjust the aim, let go of the dish so that it can settle back in place by itself. **Do not change the skew setting.**
  11. Turn the dish back and forth *very slowly*, until the signal strength bar turns *green*. This shows you've found the signal.



- Note:** If you cannot find the signal, turn the dish back to the first azimuth angle. Then, loosen both elevation bolts *just enough* so you can tilt the dish. Tilt the dish up by two degrees, and then tighten both bolts. Now, turn the dish back and forth again. *If you still can't find the signal*, tilt the dish up again *very slightly* and turn the dish back and forth until you find the signal.
12. Once the signal strength bar is *green*, turn the dish back and forth *just a little*, to where the signal strength bar shows the strongest signal. When you find the strongest signal, tighten both mast clamp bolts. Then loosen both elevation bolts, *just enough* so you can tilt the dish. Tilt the dish up and down *just a little*, to where the signal strength bar shows the strongest signal. **Do not adjust the skew.** When you find the strongest signal, tighten all bolts in the dish assembly so the dish cannot be moved.
  13. You are now ready to verify reception from both satellites. Select **Check**. When the **Switch Matrix** screen opens, select **Check**. The receiver shows a progress bar and a “Processing” indicator. When the procedure is finished, you will see the **Switch Matrix** screen again.”



This time, you *must* see that you have signals from both the **110 West** and **119 West** Satellites *for both* **Satellite In 1** and **Satellite In 2**, and the message “Satellite reception verified” for both satellite inputs. Select **Done** to exit this menu.

If you do not see “110,” under **Port 2**:

- Check to make sure the skew angle you wrote down on page 102 is exactly the same as the skew angle you set in step #5 on page 105. If it is not, reset the skew angle as described on page 105. Following this, go back to page 108, and start over from step #10.
14. Look at the **Point Dish** menu. If you have good signal strength with the check mark in **119 West**, move the check mark to **110 West**. If you have good signal strength on **110 West**, go to step #15. If you do not have good signal strength with the check mark in **110 West**, repeat step #12, and fine-tune the dish but with the check mark in **110 West** instead of **119 West**. While the **110 West** and **119 West** signals will not be equal, you should be able to fine-tune the dish until you have the strongest possible signal from both satellites. When you have finished this, select **Check Switch**. When the **Check Switch** menu opens, select **Switch** to run **Check Switch** again.
  15. Select **Done** to exit the **Point Dish** menu.
  16. The receiver will begin taking a software upgrade in the background. You will be able to watch TV while this software upgrade is being downloaded from the satellite. However, you will be able to use only the **Browse Banner**, **Program Banner** and Up/Down/Left/Right arrows to find programs to watch during this time (for more information on this, see page 3 under “How to Get Started”).
 

**Note:** If you would like to see how the upgrade is progressing, press Menu and select **System Setup** and then **Software Update** or press Menu-6-7.
  17. After about 45 minutes, you will see a message regarding the upgrade. When this upgrade finishes, you will be able to watch TV. If you will be installing a multi-dish system, follow the instructions that begin below. If you are installing a system with more than one receiver, you can turn to the DishPro Wiring Diagrams that begin on page 112 for more information.

#### INSTALLING A MULTIPLE DISH DISHPRO SYSTEM

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**Important:** You cannot use DishPro LNBFs and switches (those marked with the DishPro logo) together with Legacy switches and LNBFs (those without the DishPro logo). You must install your DISH antenna system with either all DishPro LNBFs and switches or all Legacy LNBFs and switches. *If you mix the two, the system will not work.*

**Note:** Since you are installing an all-DishPro system, you can have as much as 200 feet of cable between the LNBF and the receiver so long as you use only RG-6 coaxial cables *rated for 950 to 2150 MHz*. Some cables may say “Swept tested for 2150 MHz.” If you have any doubt about this, ask your DISH retailer, or look on the container the cable came in. Do not use cable company TV cables or cables from other satellite TV systems not rated for 950-2150 MHz. These other cables may cause signal loss.

Do not use existing cables such as RG-59. Also, be sure that any outdoor connections are made using waterproof “F-connectors.”

Once you have installed the DISH 500 with DishPro LNBFs (using the preceding instructions), you can now install a DISH 300 with a single DishPro LNBF as follows:

1. Turn on the television and the receiver if they are not already on. You should see the **Point Dish** screen. If not, press Menu on the remote and select **System Setup** and then **Point Dish, or** press Menu-6-2 on the remote.
2. Make sure there is a check mark next to the satellite your dish will be pointing at. If there is not, use the Up and Down arrows on the remote to move the highlight to the box next to the correct satellite, and then press select on the remote.
3. Enter your Zip code to get the necessary azimuth and elevation. Write these down at left.
4. Mount the dish following the mounting instructions that came with it.
5. Connect an RG-6 cable *directly* from the Single DishPro LNBF to the **Satellite In 1** port on the DishPro receiver’s back panel. Make sure there are no multi-dish switches between the LNBF and the DishPro receiver (refer to the wiring diagrams that begin on page 127 for detailed cabling instructions).
6. Point the dish for the strongest possible signal, following the instructions that came with it.
7. Connect any switches in your system, using the instructions that came with the switch(es).

Azimuth: \_\_\_\_\_

Elevation: \_\_\_\_\_

8. Select **Switch** from the **Point Dish** menu. When the **Check Switch** screen opens, select **Check**. When the procedure completes, you will see the **Switch Matrix** screen again. This time you should see that the switch(es) in your system has been correctly identified, and that both **Satellite In 1** and **Satellite In 2** show “Satellite reception verified” from all the satellites in the system appear in the “Satellite” line.
9. Select **Done** to exit this menu, and then **Done** to exit the **Point Dish/Signal** screen.
10. If there are other receivers in your system, make sure you run **Check Switch** on all of them.

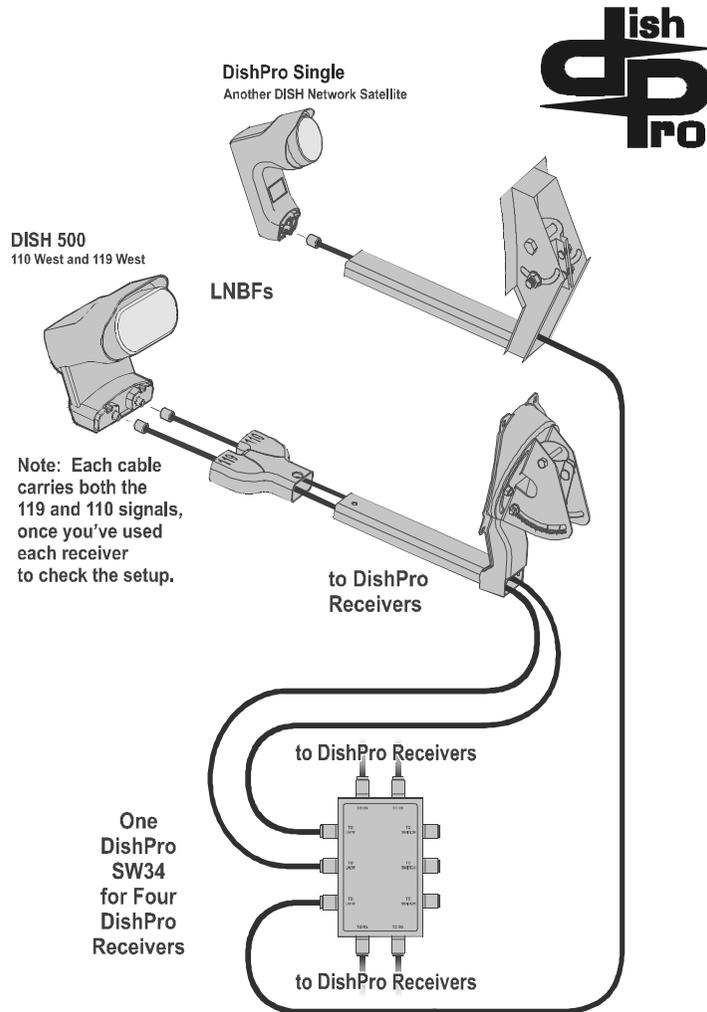
## DISHPRO WIRING DIAGRAMS

### DISH 500 WITH A DISHPRO TWIN LNBF, ONE DISHPRO SINGLE LNBF, ONE DP34 SWITCH, UP TO FOUR RECEIVER TUNERS (ALL DISHPRO)

**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code* (NEC) and all local electrical codes.



**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.

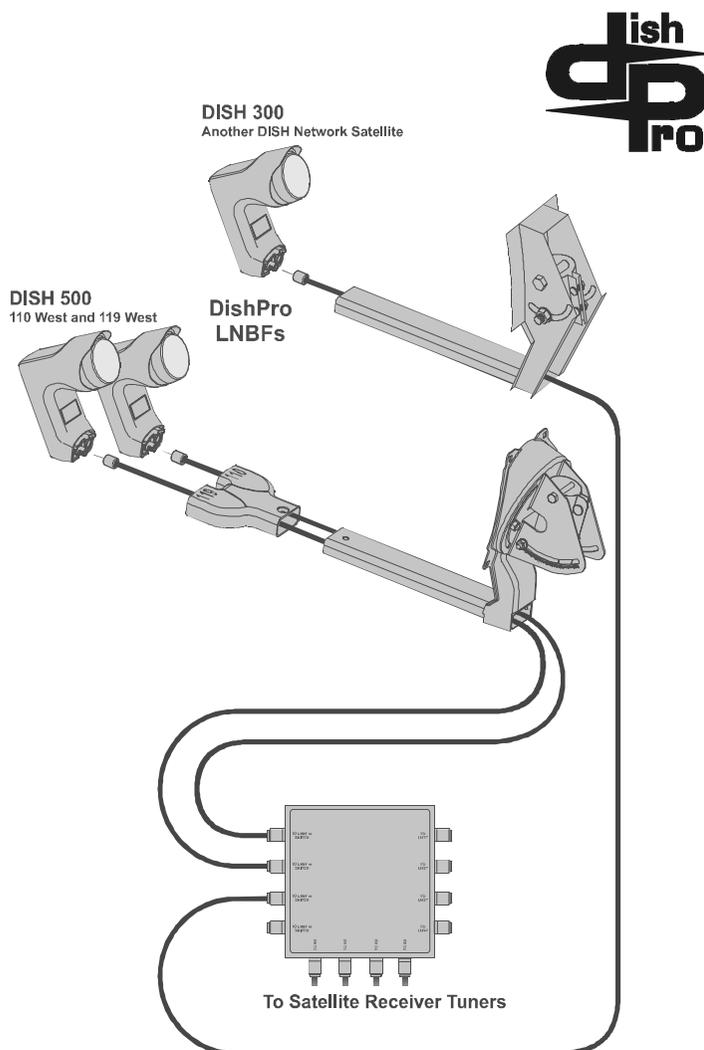


**Note:** You can add more receivers to your system by using DP34 Switches as shown above.

## TWO DISHES, THREE SINGLE-OUTPUT DISHPRO SINGLE LNBFs, THREE CABLES, ONE DP44 SWITCH, UP TO FOUR RECEIVER TUNERS (ALL DISHPRO)

**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



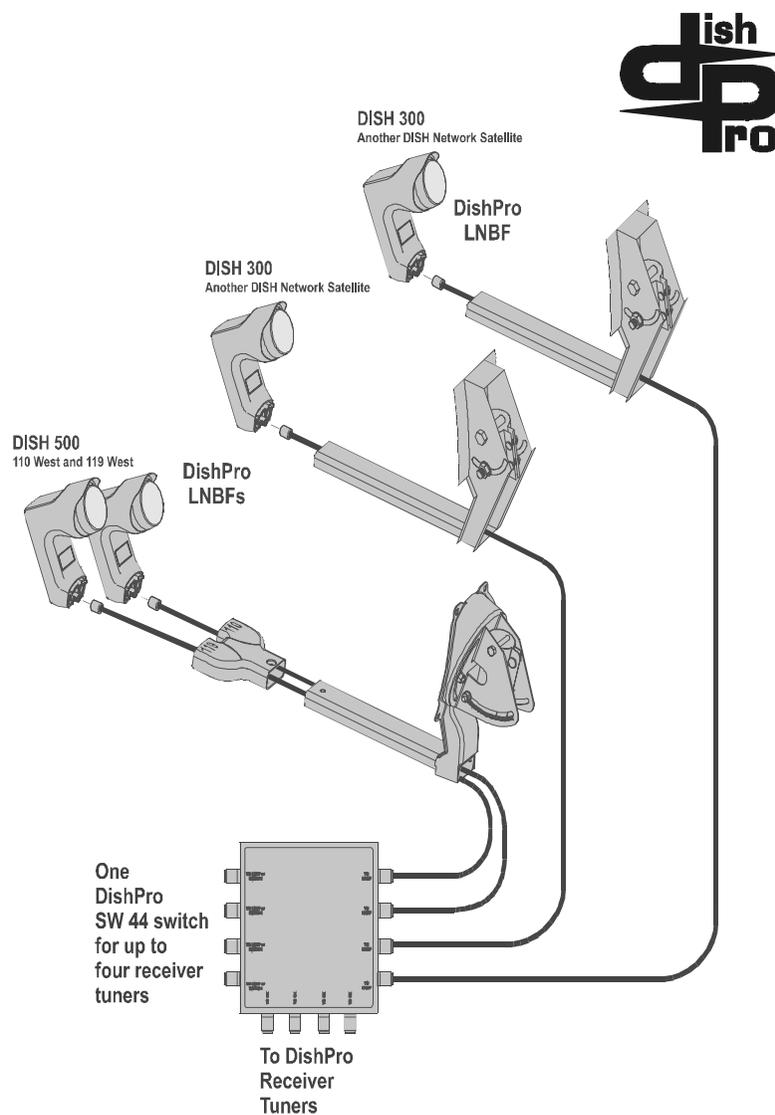
**Note:** You can add more receivers to your system by using DP44 Switches as shown above.

### THREE DISHES, FOUR SINGLE-OUTPUT DISHPRO SINGLE LNBFs, FOUR CABLES, ONE DP44 SWITCH, UP TO FOUR RECEIVER TUNERS (ALL DISHPRO)

**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

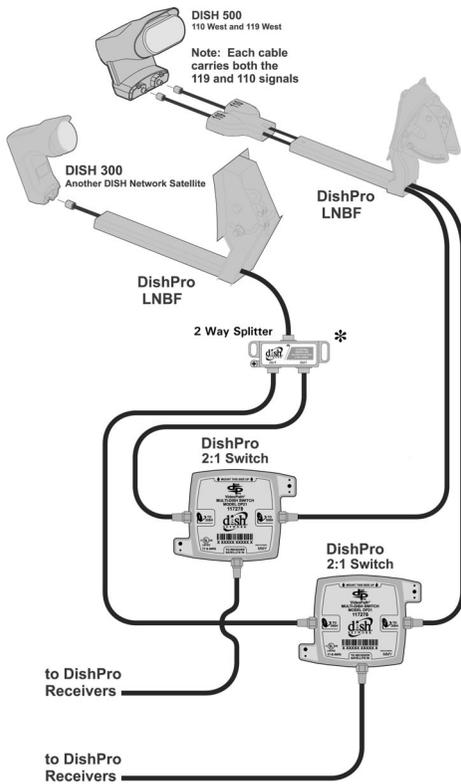


**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



**TWO DISHES, ONE DISHPRO TWIN LNBF, ONE DISHPRO SINGLE LNBF, ONE DISHPRO COMPLIANT SPLITTER, TWO DISHPRO 21 SWITCHES, TWO RECEIVERS. SUPPORTS TWO RECEIVERS FROM THREE SATELLITE LOCATIONS.**

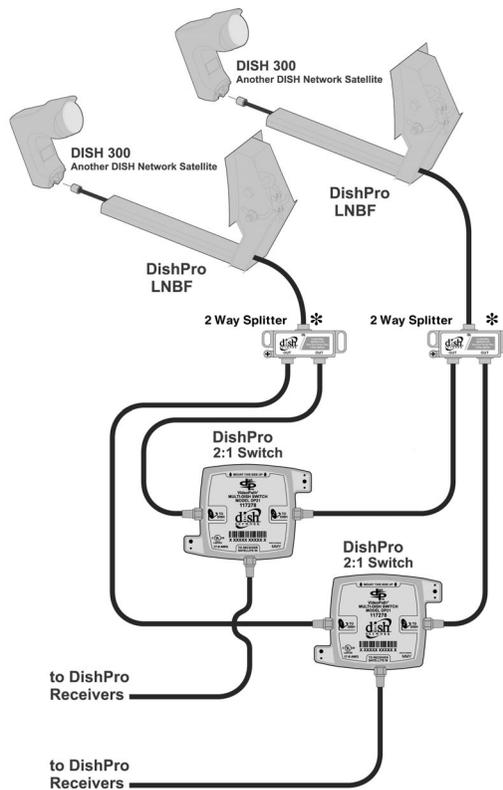
**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code (NEC)* and all local electrical codes.



\* When using a DishPro compliant splitter to split the signal from a DishPro single LNBF, the receiver whose DP21 switch is connected to the passing side of the splitter must be plugged into a live power outlet at all times. If not, the DishPro single LNBF will not have any power and will not be able to provide satellite signal to the other receiver.

### TWO DISHES, TWO DISHPRO SINGLE LNBFs, TWO DISHPRO COMPLIANT SPLITTERS, TWO DISHPRO 21 SWITCHES, TWO RECEIVERS. SUPPORTS TWO RECEIVERS FROM TWO SATELLITE LOCATIONS.

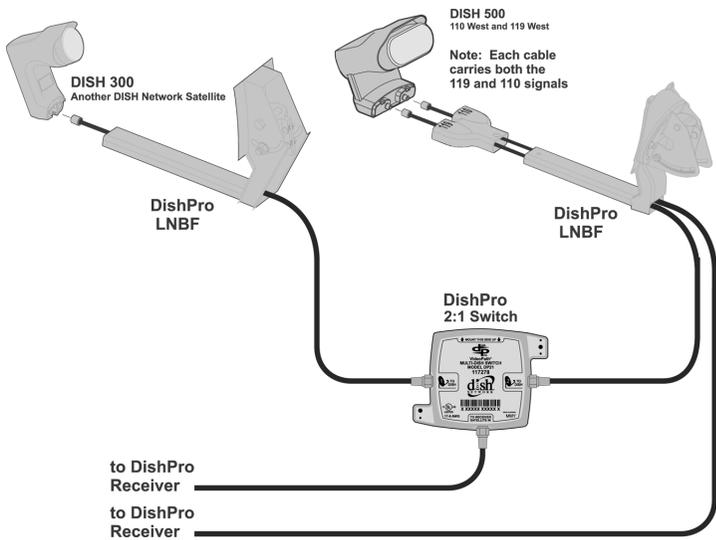
**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code* (NEC) and all local electrical codes.



\* When using a DishPro compliant splitter to split the signal from a DishPro single LNBF, the receiver whose DP21 switch is connected to the passing side of the splitter must be plugged into a live power outlet at all times. If not, the DishPro single LNBF will not have any power and will not be able to provide satellite signal to the other receiver.

**ONE DISH 500 WITH A TWIN LNBF, ONE DISH 300 WITH A SINGLE LNBF, AND ONE DP21 SWITCH. SUPPORTS ONE RECEIVER FROM THREE SATELLITE LOCATIONS AND ONE RECEIVER FROM TWO SATELLITE LOCATIONS.**

**WARNING!** This diagram leaves out grounding to be clear. Make sure you ground the system per the *National Electrical Code (NEC)* and all local electrical codes.



#### INSTALLING A LEGACY DISH 500 SYSTEM

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If the LNBFs in your system do not have the DishPro logo, you are installing a Legacy system.

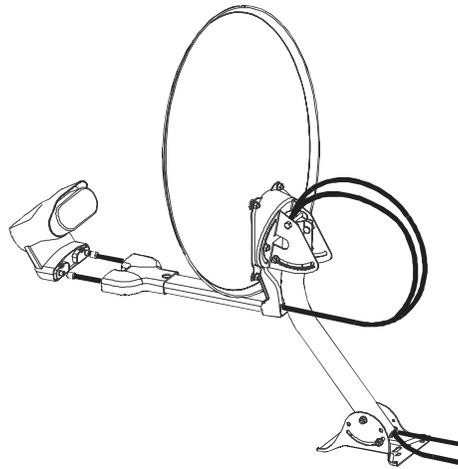
**Important:** You cannot use DishPro LNBFs and switches (those marked with the DishPro logo) with Legacy switches and LNBFs (those without the DishPro logo).

**Note:** If you are installing a Legacy system with dual LNBFs, follow the instructions that begin below. If you will be installing a Legacy system with a Twin LNBF, skip the following section and go to page 118.

#### FOR INSTALLING A LEGACY SYSTEM WITH A TWIN LNBF

**Note:** If you are installing a Legacy (non-Dishpro) LNBF (that does not have a DishPro logo), *you can have as much as 100 feet of cable between the satellite dish's LNBF connectors and the receiver, so long as you use only RG-6 cables. Also, be sure that any outdoor connections are made using waterproof "F-connectors."*

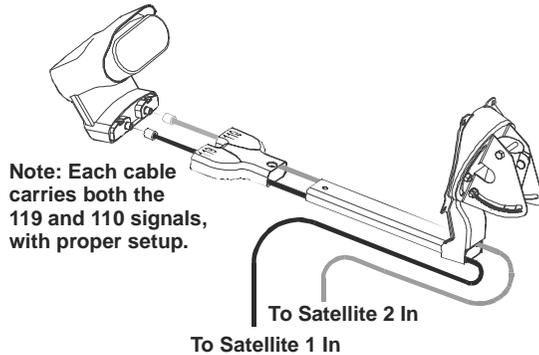
1. Once you have the dish mounted, per the instructions titled *Installing a DISH 500 Antenna* that begin on page 101, thread two coaxial cables through the support arm, mast (optional), and the Y-bracket. The cable should be long enough to reach from the LNBF on the satellite dish to the receiver.



2. Attach the Y-bracket, using the Y-bracket screw.

3. Connect one RG-6 cable from the **Satellite 1 In** connection on the back of the receiver *directly to one port of the Twin LNBF*. Connect the second RG-6

cable from the **Satellite 2 In** connection directly to the other port of the Twin LNBF. Be sure there are no multi-dish switches between the LNBF and the receiver.

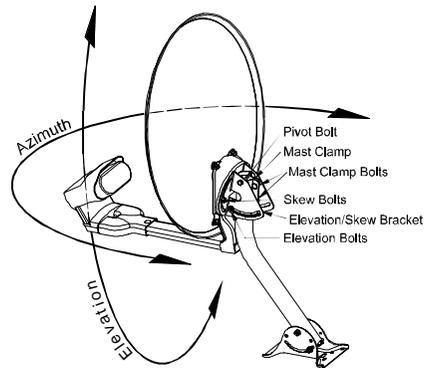


4. Attach the LNBF to the Y-bracket using the two LNBF screws.
5. Slide the dish assembly down on the mast. Make sure the pivot bolt rests on the top of the mast. Turn the dish assembly so that it points in the general direction of the satellite, using the azimuth angle from page 102.
6. Turn On the television and the receiver. The **Point Dish** menu should be displayed (see example below).



If not, press Menu on the remote and then select **System Setup** and then **Point Dish** or press Menu-6-2 on the remote. Select the **119 West** option and the **Dish 500** option if they are not already selected.

- Turn the dish back and forth *very slowly*, until the signal strength bar turns *green*. This shows that you have found the signal.



**Note:** If you cannot find the signal, turn the dish back to the original azimuth setting. Then, loosen both elevation bolts *just enough* to be able to tilt the dish. Tilt the dish up by two degrees, and then tighten both bolts. Now, try turning the dish back and forth again. Repeat these steps, raising and lowering the elevation, until you find the satellite signal.

- Once you have a signal, turn the dish assembly back and forth very slightly until the signal strength bar displays the strongest possible signal strength. Tighten the mast clamp bolts. Then, loosen the elevation bolts and adjust the elevation of the dish up and down slightly until the signal strength bar displays a strong signal. *Do not adjust skew*. Tighten all the bolts in the dish assembly so that the dish cannot be moved.
- Select **Switch** from the **Point Dish** menu. When the **Switch** menu opens, select **Check**. The receiver will check your satellite system. After the system checks your installation, an **Switch Matrix** screen will appear.



- Verify that the 119 and 110 satellites are verified for both tuners. Select **Done**.
- At the **Point Dish** menu, select the **110 West** option and verify that you have a green signal strength bar with a locked signal.
  - If there is no signal strength on **110 West**, check your connections and

select **Check Switch** again. If there is still no signal, confirm that your skew angle is correct, and start over with step #3.

- If the signal from the **110 West** satellite is weak and you do not see a green signal strength bar, repeat step #7 to fine-tune the dish until you have good signal strength for both the **119 West** and **110 West** satellites.

12. When you have the strongest possible signal, select **Done** to exit the **Point Dish** menu.
13. The receiver will begin taking a software upgrade in the background. You will be able to watch TV while this software upgrade is being downloaded from the satellite. However, you will be able to use only the **Browse Banner, Program Banner** and Up/Down/Left/Right arrows to find programs to watch during this time (for more information on this, see page 3 under “How to Get Started”).

**Note:** If you would like to see how the upgrade is progressing, press Menu and select **System Setup** and then **Software Update** or press Menu-6-7.

If you will be installing a multi-dish system, follow the instructions that begin on page 125.

## FOR INSTALLING A LEGACY DISH 500 SYSTEM WITH TWO DUAL LNBFs

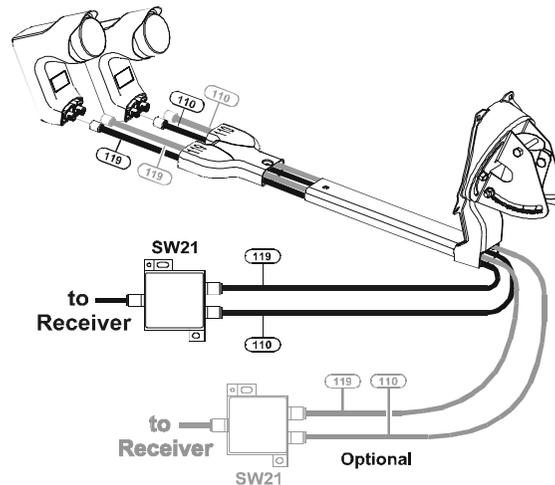
**Note:** If you are installing a Legacy LNBF (that does not have a DishPro logo), you can have as much as 100 feet of cable between the satellite dish’s LNBF connectors and the receiver, so long as you use only RG-6 cable. Also, be sure that any outdoor connections are made using waterproof “F-connectors.”

**WARNING!** Tighten all the coaxial cable connections *only* by hand. Using a wrench may over-tighten the connections, causing damage. Such damage is *not* covered by the Limited warranty.



1. Once you have the dish mounted by completing all the steps in the section titled *Mounting the Dish*, label two coaxial cables “119” on both ends, and the other two coaxial cables “110” on both ends. These cables need to be long enough to reach from the receiver to the LNBF. If you are installing dual LNBFs and want to support two receivers or multiple dishes (see the *Wiring Diagrams* that begin on page 127), you will also need to thread two additional cables. If you do, make sure you also label one cable “119” on both ends, and the other “110” on both ends.

2. Thread the coaxial cables through the mast (optional) support arm and the Y-bracket. Make sure the cables labeled “119” are threaded through the 119 side and the “110” cables are threaded through the “110” as shown.

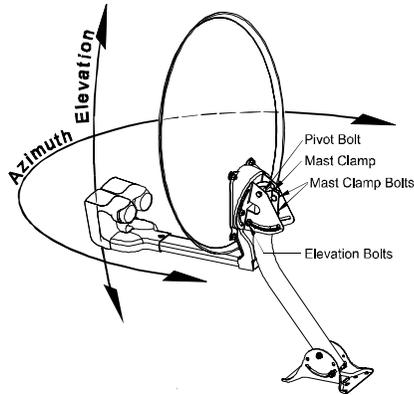


### *Two dual LNBFs and an SW21 multi-dish switch*

3. Attach the Y-bracket using the Y-bracket screw. Connect the cables to the LNBFs as shown above. Attach the LNBFs to the Y-bracket using the two LNBF screws.
4. Slide the dish assembly down on the mast. Make sure the pivot bolt rests on the top of the mast. Turn the dish assembly so that it points in the general direction of the satellite, using the azimuth angle from page 102.
5. Connect the RG-6 coaxial cable from the “119” LNB *directly* to the **Satellite In 1** connection on the receiver’s back panel. You may temporarily need to use a female-to-female splice in place of where your switch will go later to do this. *Do not* connect the multi-dish switch at this time.
6. Turn On the television and the receiver. The **Point Dish** menu should be displayed. If not, press Menu and select **System Setup** and then **Point Dish** or press Menu-6-2 on the remote. You will see this menu.



7. Make sure the number under **Transponder** is an odd number greater than 10.
8. Make sure the check mark is next to **119 West**. If it is not, move the highlight to **119 West** and press Select on the remote control.
9. Turn the dish back and forth *very slowly*, until the signal strength bar turns *green*. This shows that you have found the signal.



**Note:** If you cannot find the signal, turn the dish back to the original azimuth setting. Then, loosen both elevation bolts *just enough* to be able to tilt the dish. Tilt the dish up by two degrees, and then tighten both bolts. Now, try turning the dish back and forth again. Repeat these steps, raising and lowering the elevation, until you find the satellite signal.

10. Once you have a signal, turn the dish assembly back and forth very slightly until the signal strength bar displays the strongest possible signal strength. Tighten the mast clamp bolts. Then, loosen the elevation bolts and adjust the elevation of the dish up and down slightly until the signal strength bar displays a strong signal. Do not adjust skew. Tighten all the bolts in the dish assembly so that the dish cannot be moved.
11. Connect the cables as shown in the figure on page 122.

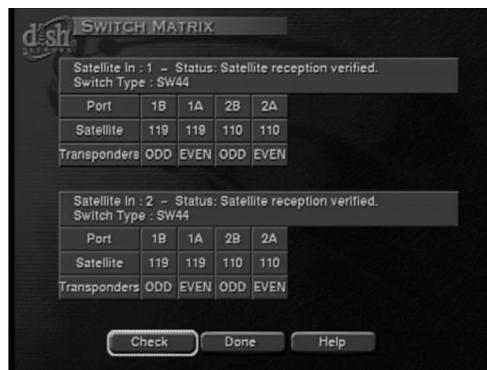
You can use one of the wiring diagrams shown here, or one of the alternate wiring diagrams that begin on page 127.

12. Press Menu and then select System Setup and Point Dish or press Menu-6-2 on the remote to again open the **Point Dish** menu. Select **Switch**. The receiver will check your multi-switch installation. After the system checks the installation, you will see the **Switch Matrix** screen. Make sure that the correct switch is displayed and that you have "Satellite reception verified" from both the **110 West** and **119 West** satellites.

13. At the **Point Dish** menu, select the **110 West** option. Verify that you have a green signal strength bar with a locked signal.
  - If the signal from the **110 West** satellite is weak and you do not see a green signal strength bar, repeat step #8 to fine-tune the dish until you have about the same signal strength for both the **119 West** and **110 West** satellites.
  - If there is no signal strength on **110 West**, check your connections and select **Switch** again. If there is still no signal strength, check to make sure your skew angle is correct, and start over, beginning with step #1 until you have a good signal from both the **110 West** and **119 West** satellites.
14. Select **Done** to exit the **Point Dish** menu.
15. The receiver will begin taking a software upgrade in the background. You will be able to watch TV while this software upgrade is being downloaded from the satellite. However, you will be able to use only the **Browse Banner, Program Banner** and Up/Down/Left/Right arrows to find programs to watch during this time (for more information on this, see page 3 under “How to Get Started”).

**Note:** If you would like to see how the upgrade is progressing, press MENU and Select **System Setup** and then **Software Update** or press MENU-6-7.

  - When this upgrade finishes, your screen will go blank and you will not be able to watch TV for about 10 minutes
16. Connect any other receivers in the system, and then turn them off so they can take the software upgrade. Following this, make sure you run **Check Switch** on all the receivers in the system. When the procedure is finished, you will see a **Switch Matrix** screen similar to the one below.



**Note:** If you are installing a multi-dish system, follow either these instructions or the instructions for installing a system with a twin LNBF, and then follow the instructions that begin on page 125 to complete your system.

## INSTALLING A LEGACY MULTIPLE DISH SYSTEM

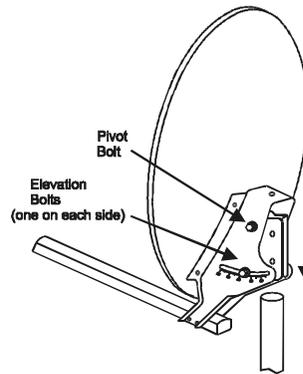
Once you have installed the DISH 500 with its Legacy Dual LNBFs, you can install a DISH 300 with a Legacy Dual LNBF as follows (please see the section titled *Alternate Legacy Wiring Diagrams* on page 127 for more information on wiring the system).

1. Turn on the television and receiver. You should see the **Point Dish** menu. If you do not, press Menu and then select **System Setup** and then **Point Dish** or press Menu-6-2 on the remote.
2. On the **Point Dish** menu, use the Up/Down/Left/Right arrow buttons to move the highlight to the Satellite field and choose the satellite at which you would like to aim, for example **61.5**.
3. If there is not a check mark next to the DISH 300 option, move the highlight to it and press Select.
4. Enter your zip code in the **ZIP Code** field
5. The receiver displays the azimuth and elevation angles on the menu. Write down these numbers as you will use them later in this procedure.
6. Using these azimuth, and elevation angles, find a location for the satellite dish. Then, use the elevation angle to find out how high the satellite is in the sky from your location. Make sure nothing blocks the line of sight to the satellites.
7. Mount the satellite dish following the instructions that came with it. Connect the RG-6 cable directly from the LNBF to the **Satellite 1 In** port on the receiver's back panel. Make sure there are no multi-dish switches between the LNBF and the receiver.
8. When the dish is mounted, you should still be on the **Point Dish** menu. If not, press Menu on the remote and select **System Setup** and then **Point Dish**, or press Menu-6-2 on the remote.
9. Make sure there is a check mark next to **Sat Input 1**.
10. Look at the Signal Strength bar. Turn the dish back and forth *very slowly*, until the signal strength bar turns *green*. This shows that you have found the signal.

Azimuth: \_\_\_\_\_

Elevation: \_\_\_\_\_

**Note:** If you cannot find the signal, turn the dish back to the original azimuth setting. Then, loosen both elevation bolts *just enough* to be able to tilt the dish.



Tilt the dish up by two degrees, and then tighten both bolts. Now, try turning the dish back and forth again. Repeat these steps, raising and lowering the elevation, until you find the satellite signal.

11. Once you have a signal, turn the dish assembly back and forth very slightly until the signal strength bar displays the strongest possible signal strength. Tighten the mast clamp bolts. Then, loosen the elevation bolts and adjust the elevation of the dish up and down slightly until the signal strength bar displays a strong signal. Tighten all the bolts in the dish assembly so that the dish cannot be moved.
12. Mark the final locations on the mast and mounting bracket with a permanent marker. This assists you later if you have to realign the dish because of movement due to wind or weather. Do not scratch the painted surfaces to mark them. This will cause rusting.
13. Connect the LNBFs to the switch(es). (See the Alternate Wiring diagrams on page 127 for more information.)
14. Connect the switch(es) to both **Satellite In** ports on the receiver.
15. Run **Check Switch** from the **Point Dish** menu. Verify that the correct switches have been identified and that you have “Satellite reception verified” for all the satellites in your system for both the **Satellite In 1** and **Satellite In 2** tuners.

## ALTERNATE LEGACY WIRING DIAGRAMS

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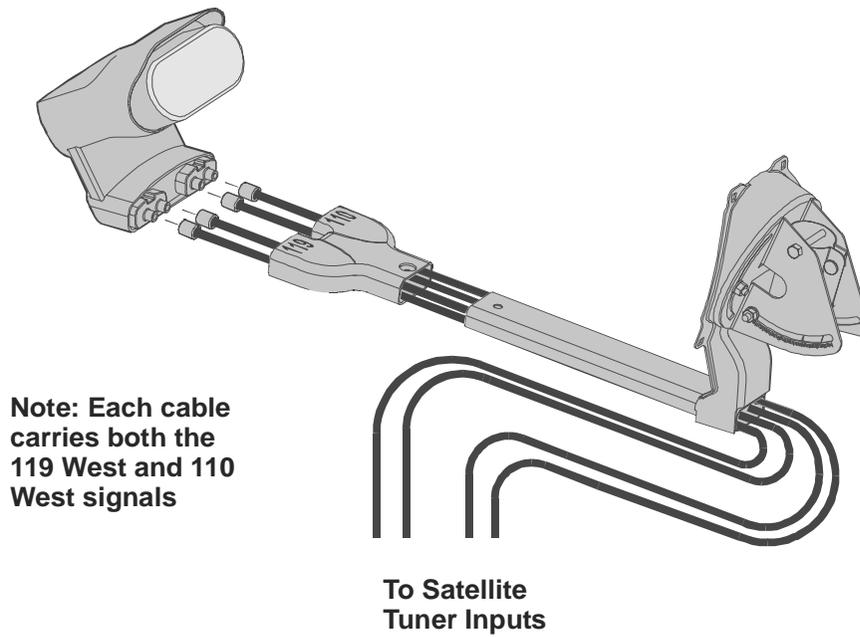
### DISH 500, ONE QUAD LNBF, UP TO FOUR RECEIVER TUNERS



**WARNING!** This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.

**DISH 500**  
110 West and 119 West

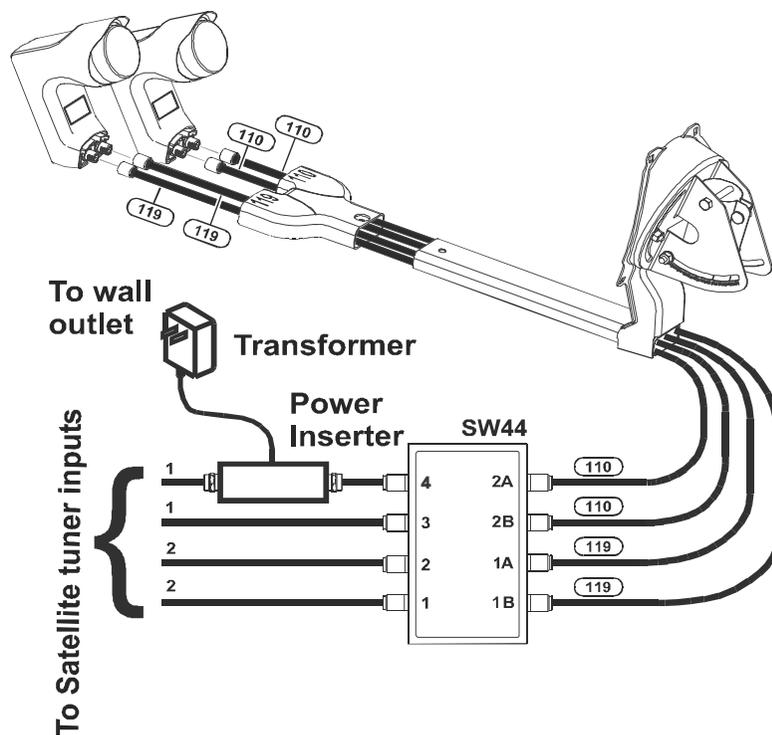


### DISH 500, TWO DUAL-OUTPUT LNBFs AND ONE SW44 MULTI-DISH SWITCH, UP TO FOUR TUNERS



This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



**Note:** The DishPVR 721 can *only* be connected to input pair 1 or input pair 2. DO NOT combine types of input to the DishPVR 721.

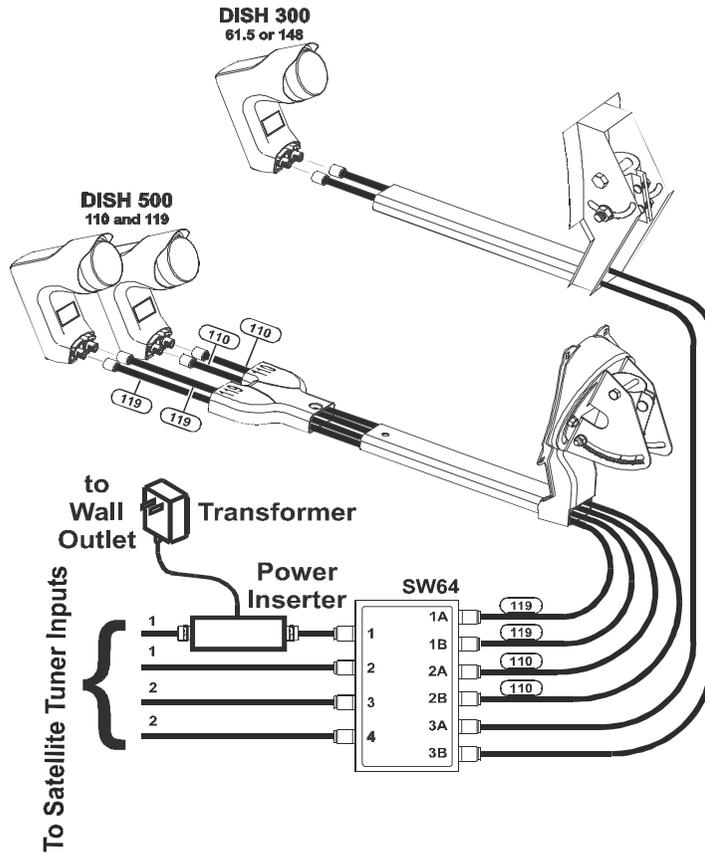
## TWO DISHES, THREE DUAL-OUTPUT LNBFs, ONE SW64 MULTI-DISH SWITCH, UP TO FOUR RECEIVER TUNERS

This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code (NEC)* and all local electrical codes.

WARNING!



**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



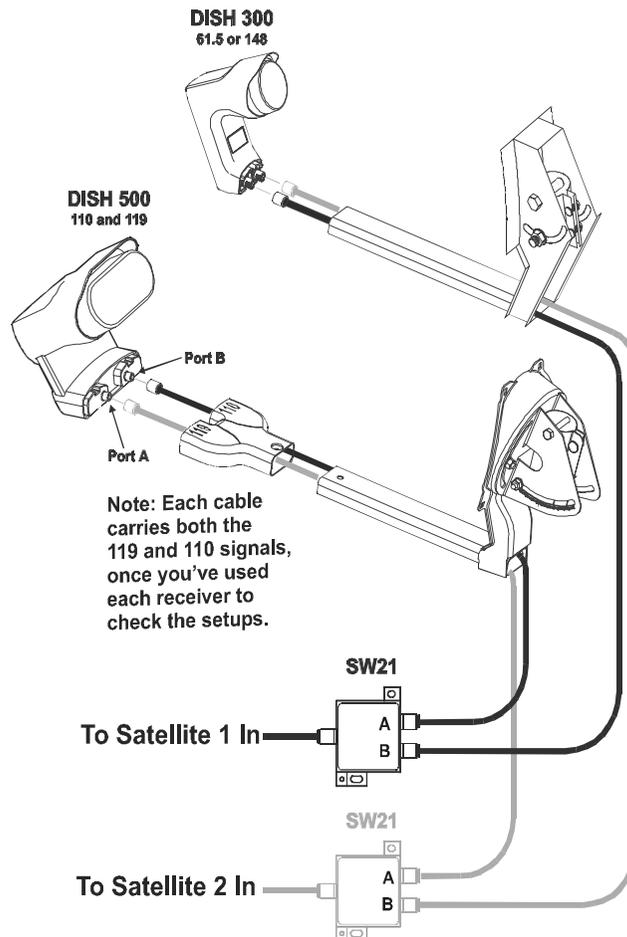
**Note:** The DishPVR 721 can *only* be connected to input pair 1 or input pair 2. DO NOT combine types of input to the DishPVR 721.

### TWO DISHES, ONE DUAL LNB, ONE SINGLE LNB, TWO SW21 MULTI-DISH SWITCHES, TWO RECEIVER TUNERS

This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code* (NEC) and all local electrical codes.



**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



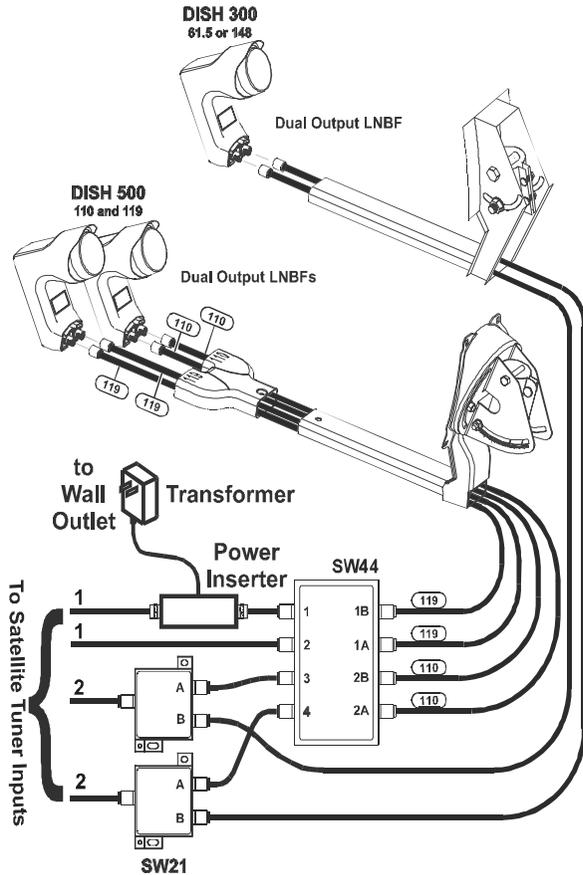
**Note:** The **A** posts on both SW21s must be connected to the Dish 500 LNB and the **B** posts must be connected to the Dish 300 LNB.

**TWO DISHES, THREE DUAL-OUTPUT LNBFs, ONE SW44 SWITCH, TWO SW21 SWITCHES, UP TO FOUR RECEIVER TUNERS**



This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



**Note:** In this installation, only two receivers will get signal from all three LNBFs. The other two receivers will get signal from only two LNBFs.



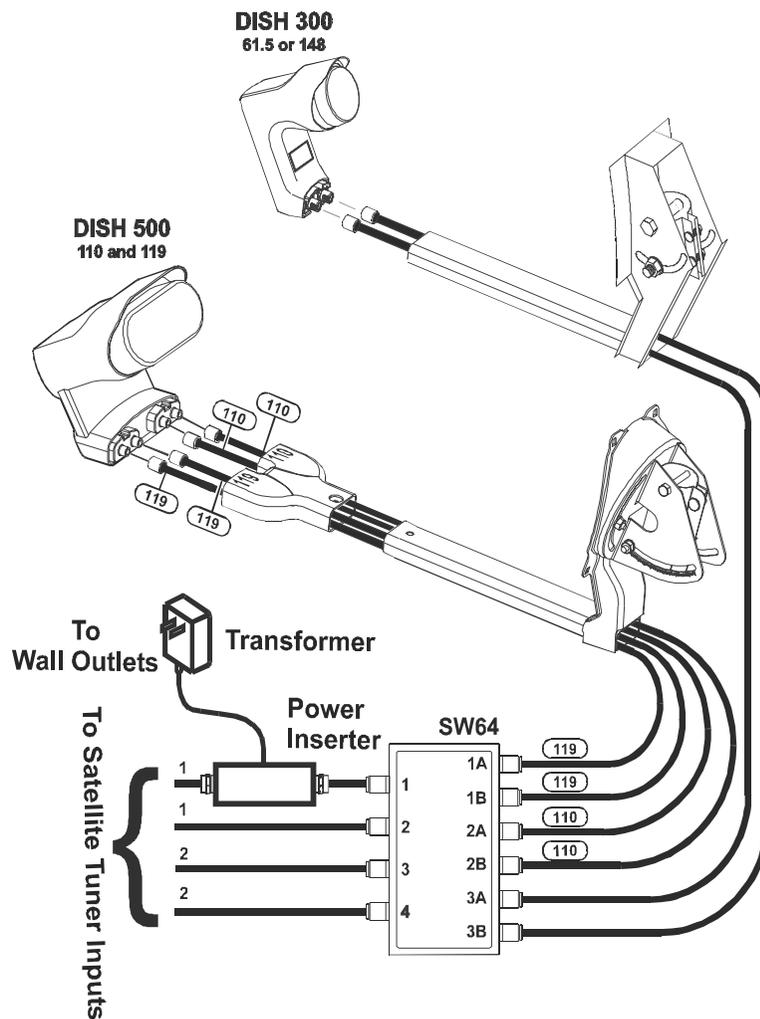
If you install a power inserter and an SW21 switch on the same cable, you must install the SW21 switch between the receiver and power inserter, otherwise you could damage the SW21 switch.

**Note:** The DishPVR 721 can *only* be connected to input pair 1 or input pair 2. DO NOT combine types of input to the DishPVR 721.

### TWO DISHES, ONE QUAD LNBF, ONE DUAL-OUTPUT LNBF, ONE SW64 MULTI-DISH SWITCH, UP TO TWO TUNERS

**WARNING!** This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code* (NEC) and all local electrical codes.

**Note:** A DISH Network satellite receiver can have either one or two tuners, depending on the model.



**Note:** The DishPVR 721 can *only* be connected to input pair 1 or input pair 2. DO NOT combine types of input to the DishPVR 721.

## CONNECTING EACH RECEIVER TO A TELEPHONE LINE

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You *must* keep each receiver connected to an active telephone line. Otherwise, you may not be able to order pay per view programs. Run a telephone cable with a standard RJ-11 connector from each receiver's back panel **Phone Jack** to an active telephone connection.

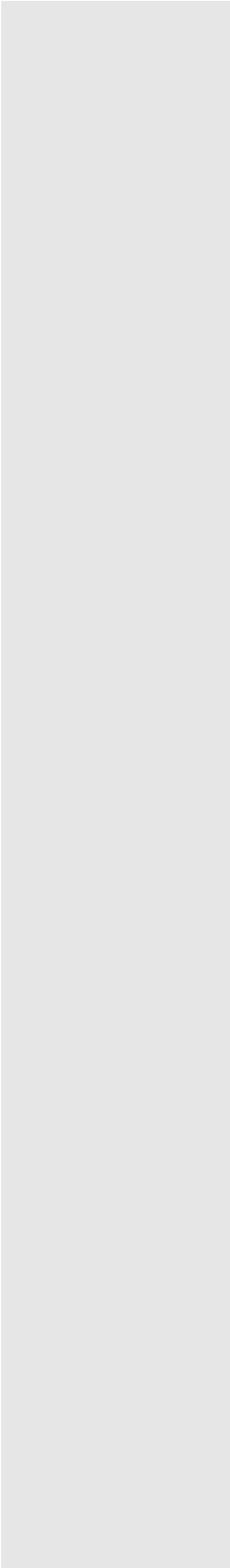
**Note:** You *may* be able to use a wireless telephone extender. However, this may *not* support all the features of some receivers.

You *must* also set up each receiver for your telephone system (touchtone or rotary/pulse), and set a telephone number prefix, if you need a prefix to make an outside call.

1. Display the **System Setup** menu.
2. Select the **Telephone** option to display the **Telephone System Setup** menu.
3. Select the **Touch Tone** or the **Rotary/Pulse** option in the **Phone Type** list.

**Note:** Usually, you need a telephone number prefix only for business installations. For most residential installations, all you need to do is set the telephone system type. The default setting of **No Prefix needed** will allow correct dialing. If this is the case, select the **Done** option to save the above setting, and stop here. If you do need to set a prefix, then instead of selecting the **Save** option, go on to step 4.

4. Move the highlight to the **Prefix Code Select** option in the **Outside Line Prefix** list. Press the **Select** button to select the highlighted option.
5. Move to number of digits, enter the number of digits for your prefix, move down and enter the prefix in the boxes provided.
6. Select **Done**.



**Notes**

# Chapter 6

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## Reference

### WHAT YOU WILL FIND IN THIS CHAPTER:

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Troubleshooting by Message Number	page 137
Troubleshooting Problems with DishPro Twin LNBF	page 139
Troubleshooting Problems with the Remote Control	page 139
Troubleshooting Problems with Hearing and Watching Programs	page 141
Troubleshooting Problems with the Program Guide and Browse Banner, and Using the Menus	page 143
Troubleshooting Problems Changing Channels	page 143
Troubleshooting Problems with Favorites Lists	page 144
Troubleshooting Problems with Locks	page 144
Troubleshooting Problems using the Telephone for Voice/Data/Fax	page 145
Troubleshooting Problems Buying Pay Per View Programs	page 145
Troubleshooting Problems with Caller ID	page 146
Troubleshooting Problems with Event Timers	page 146
Remote Control Device Codes	page 148