


DISH 500 Installation Instructions with Angles Table

INTRODUCTION

These *Instructions* explain how to install a DISH 500 satellite dish. These *Instructions* cover both DISH InteractiveSM receiver menus *and* non-DISH InteractiveSM menus.

 <p>ATTENTION!</p>	<ul style="list-style-type: none"> • Alternate procedures apply to some receivers. See page 24. • If you are replacing an existing satellite dish with a DISH 500, see page 26. • For procedures that cover existing multi-dish systems, see page 27. • For the angles to use in aiming a DISH 500 satellite dish, see page 28.
---	---



CONTENTS

Important Safety Instructions	1
Safety Tips	2
Before You Start	3
Unpacking and Checking the Contents	3
What the Words Mean	3
DISH Interactive Menus and Non-DISH Interactive Menus	3
Before Mounting the Dish	3
Finding the Best Mounting Location	4
Finding the Satellites	4
Finding a Clear Line of Sight	5
Mounting the Satellite Dish	6
Mounting Locations	6
Signal Interference	6
Aligning the Top Part of the Mast	6
Assembling the Satellite Dish	7
Aiming the Dish for the Strongest Signal	9
Grounding and Wiring the System	11
General Guidelines	11
Installing the Ground Block	12
Running the Coaxial Cables to the Ground Block	12
Running the Coaxial Cable(s) to the Receiver(s)	12
Connecting Each Receiver to a Telephone Line	13
Wiring Diagrams	15
Alternate DISH 500 Aiming	24
Replacing a DISH 300 with a DISH 500	26
Multi-Dish Installations	27
DISH 500 Angles	28



WARNING VS. ATTENTION

You *must* keep safety in mind when you install and use this system. These *Instructions* provide various procedures. Some of these procedures could result in injury or property damage if you do them improperly. Other procedures require special attention.

In these *Instructions*, the following notes tell you when you need to pay special attention:

<p>WARNING!</p> 	<p>Marks a procedure where the following may happen:</p> <ul style="list-style-type: none">• Personal injury or death may occur.• Equipment or property may be damaged.
<p>ATTENTION!</p> 	<p>Marks the following issues:</p> <ul style="list-style-type: none">• Important operation or maintenance instructions follow.• Special attention is required.

FOR YOUR SAFETY

<p>WARNING!</p> 	<ul style="list-style-type: none">• Do <i>not</i> try to open the case of the receiver. There is risk of electrical shock, which may cause damage to the receiver and/or personal injury or death to you. There are <i>no</i> user-serviceable parts inside the receiver. Opening the receiver case or making unauthorized changes will void the warranty.
<p>WARNING!</p> 	<ul style="list-style-type: none">• To reduce the risk of fire or electric shock, do <i>not</i> expose this appliance to rain or moisture.

Copyright © 2000, EchoStar Technologies Corporation, Englewood, Colorado 80112
All rights reserved.

The information in these *Instructions* may change without notice. Revisions may be issued to tell you about such changes.

You should address comments or questions about these *Instructions* to *Technical Publications, EchoStar Technologies Corporation, 90 Inverness Circle East, Englewood, Colorado 80112*.


Document Number: 104437

Printed in the United States of America.

DISH Network is a trademark and service mark of EchoStar Communications Corporation.

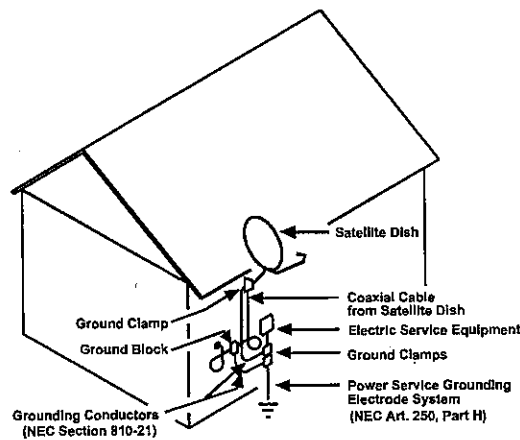
All product names, trade names, or corporate names mentioned in these *Instructions* are acknowledged to be the proprietary property of the registered owners.

IMPORTANT SAFETY INSTRUCTIONS

WARNING! 	You should <i>always</i> follow these instructions to help ensure against injury to yourself and damage to the system.
--	--

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Use only attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Note to Satellite TV System Installer: This reminder is provided to call the satellite TV system installer's attention to Article 820-40 of the *National Electrical Code (NEC)* that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.



DISH 500 Installation Instructions with Angles Table

SAFETY TIPS

ATTENTION!

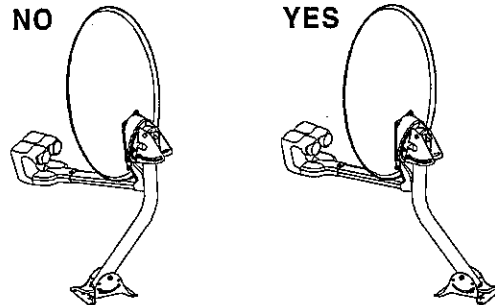


You can get safety guidelines from the Occupational Safety and Health Administration (OSHA). To contact OSHA, see the blue pages of your telephone book, under *United States Government, Occupational Safety and Health Administration*.

- Assemble the satellite dish in a safe location before climbing up to the mounting location.
- Use caution when *climbing* up to, and when working at the mounting location.
- If you use a *ladder*, follow the safety instructions provided by the ladder manufacturer. Use only a fiberglass ladder, to avoid the risk of electrical shock if the ladder were to contact any overhead power lines, lights, or power circuits.
- Use the proper *tools* for each procedure. Follow the safety instructions provided by the tool manufacturers.
- While working, avoid wearing loose-fitting *clothes* and wear safe shoes.
- If you mount the satellite dish on a *roof*, you should be in good physical condition in order to climb up to, and work on the roof. Also, keep the following safety considerations in mind:
 - Beware of small holes in the roof or loose shingles, which may 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;
 - Do not work on a roof that is 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 that the center bolts are attached directly to a building stud or other solid material. Use the appropriate drilling and attachment hardware for the type of surface.
- Make sure you have determined the best location for the satellite dish *before* drilling the holes in the building or setting up the mounting pole. Make sure that you can run the cable from the location into the building. If you install a mounting pole, make sure that you can run the cable overhead, or underground to the building.
- Before *drilling* any holes in the building, make sure there are no wires or pipes in the area of the holes. Before digging any holes in the ground, contact the local utility and telephone companies for help in locating underground utility or telephone lines.
- All installations should *conform* to the local building and electrical codes. If you are not sure, contact a licensed building inspector or electrician in your area to assist you. Be aware that community covenants, if any, may have additional requirements. Also, check your homeowner's insurance policy for any restrictions or exceptions that may apply.
- Choose a location that is easily *accessible* in most weather conditions. You may need to clean snow or debris off the satellite dish. Such materials can interfere with signal reception.
- Place the satellite dish as *close* to the receiver as possible. Do not use more than 100 feet of RG-6 cable between the receiver and the satellite dish without a line amplifier to boost the satellite signal. Otherwise, the system is more likely to lose the signal, especially during periods of rain, snow, or heavy cloud cover. If the setup requires over 100 feet of cable, you should consider having the system professionally installed.
- Consider *seasonal* changes. The location may appear clear in the winter, but spring and summer leaves could block the signal to the satellite dish.
- As you work, be aware of your *surroundings*. Take adequate precautions to avoid injury to yourself or damage to buildings, structures, or equipment.
- *Never* install the satellite dish near *power lines*.
- Do *not* install the satellite dish where it can be jostled, bumped, or blocked by people, animals, or vehicles.
- Do *not* install the satellite dish where it is exposed to high winds. *Do not* try to install the satellite dish in windy or stormy weather, particularly if there is a chance of lightning.
- Do *not* attempt to fasten the satellite dish to the *mortar* between bricks or cinder blocks.
- Do *not* mount the satellite dish on vinyl or aluminum *siding*. These materials are structurally too weak to securely hold the satellite dish, even with a building stud underneath.
- Do *not* mount the satellite dish *downwind* of a chimney or furnace vent. Ashes and dirt could collect on the dish, possibly causing damage and poor reception. If practical, locate the dish so that it faces away from the vent.
- Do not install the satellite dish on *stucco* or imitation masonry unless the base material is solid.
- Do *not* mount 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.
- Do *not* mount the satellite dish on a *railing*, on a tile roof, or in a tree.

DISH 500 Installation Instructions with Angles Table

- Do *not* mount the satellite dish on a chimney that is not structurally *sound*. Wind causes the dish to vibrate, and these vibrations can damage an unsound chimney. Install the dish on a chimney only if there is no other suitable mounting location.
- Place the mounting foot so that you can aim the satellite dish *away* from the mounting foot, as shown on the right, below. This gives the dish the most room to move for azimuth and elevation adjustments.



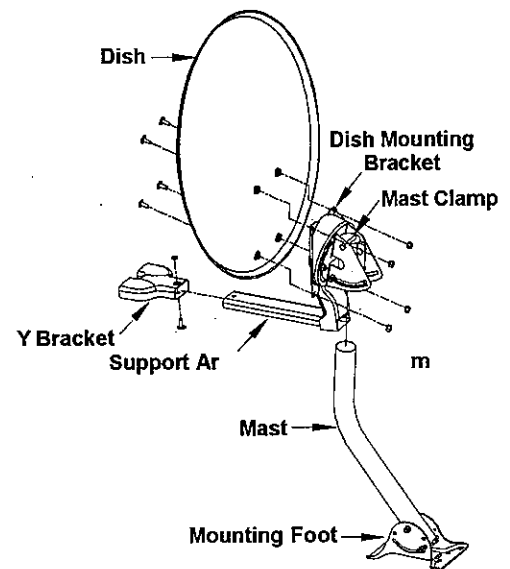
BEFORE YOU START

UNPACKING AND CHECKING THE CONTENTS

Unpack the contents carefully. Electronic devices can easily be damaged if bumped or handled roughly. Check all the parts for damage during shipment. If you find any damage, call the location where the you bought the system or the Service Center *before* doing the installation. Keep the shipping materials, in case you ever need to return the parts.

WHAT THE WORDS MEAN

The DISH 500 satellite dish allows you to receive programs from several DISH NetworkSM satellites. These satellites orbit Earth at two locations, called 110 West and 119 West. These *Instructions* use “satellites” to mean *all* the satellites, “satellite” to mean the satellite(s) at one orbit location, and “110” or “119” to refer to one location or the other.



DISH INTERACTIVE MENUS AND NON-DISH INTERACTIVE MENUS

The receiver may display *either* DISH InteractiveSM menus *or* non-DISH InteractiveSM menus on the TV screen. When the receiver accepts a transmission (“download”) of the latest operating software via the satellite, the menus may *change* from non-interactive to interactive. These *Instructions* show you the interactive *and* non-interactive versions of *each* receiver menu.

BEFORE MOUNTING THE DISH

Because you will make changes at the location where you mount the dish, you should be somewhat familiar with, and able to safely do the following:

- You should be able to use a bubble level to set both horizontal and vertical surfaces. This is especially important for vertical surfaces.
- You should know how to drill holes in the mounting surface (wood, brick, cinder block, *etc.*).
- You should know how to run cables through your building. This includes sealing the holes once you have run the cables.

DISH 500 Installation Instructions with Angles Table

FINDING THE BEST MOUNTING LOCATION

Do the following to find the best location for the dish. Keep in mind the tips in *Mounting Locations* on page 6.
Note: If you are installing more than one receiver, use the newest receiver with the most advanced operating software to do the installation. This will make it as *easy* as possible.

FINDING THE SATELLITES

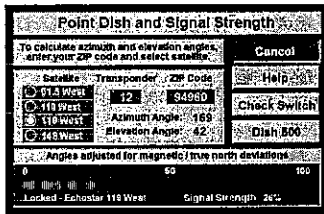
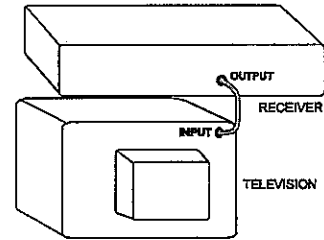
To find the satellites in the sky, you need to know the azimuth angle (the south, southeast, or southwest direction to the satellites) and the elevation angle (the angle up to the satellites) from your location.

Note: You also need to get the skew angle, which you will use later.

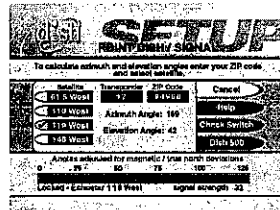
Do the following:

1. Connect the receiver to a television, using the receiver back panel **TV Set Out** connection (or another video output connection if the receiver does not have a **TV Set Out** connection).
2. Make sure that the TV is tuned to the channel that you select for receiver output.
3. Make sure that the remote control batteries are fresh, and are installed properly. If needed, make sure that the remote is in **SAT** mode to control the satellite receiver. If needed, make sure that the UHF remote control antenna is attached to the receiver.
4. Turn ON the television and receiver.
5. Open the **Point Dish and Signal Strength** menu, unless the receiver already displays it.

Note: This diagram shows the receiver temporarily connected to the television. For permanent wiring setups, see *Grounding and Wiring the System*.



or:

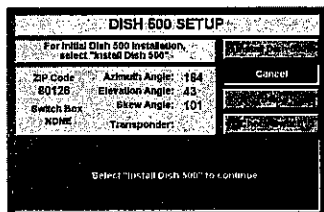


6. Enter your ZIP code in the **ZIP Code** box.
7. Select the **Dish 500** option.

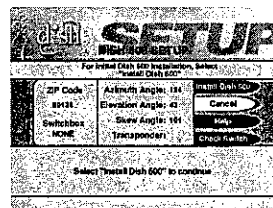
Note: If the **Point Dish** menu does not display the **Dish 500** option, or if it displays a **Dish 500** checkbox *instead* of a **Dish 500** option, get the angles from the table that starts on page 28, write them in the blanks provided in step 8, but *skip* step 8 and go on to the next page.

8. The receiver displays the **DISH 500 Setup** menu. This menu displays the azimuth, elevation, and skew angles. Write down these numbers:

Azimuth: _____ Elevation: _____ Skew: _____



or:

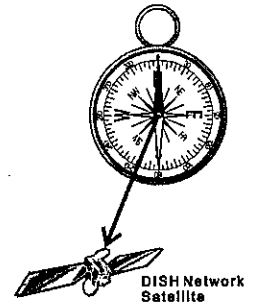


DISH 500 Installation Instructions with Angles Table

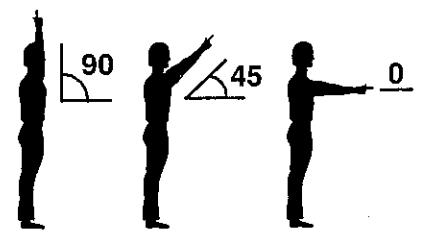
FINDING A CLEAR LINE OF SIGHT

You *must* find a location for the dish with a clear view of the satellites, a view not blocked by trees, buildings, or anything else. Make sure that trees are not likely to grow up or out into the line of sight. Also, consider seasonal changes. A location that is clear in winter may be blocked by leaves in spring and summer.

1. Take a compass and the angles to a location for the dish. Make sure the compass is at least a foot away from other metal objects, and that there are no magnetic objects or electronic devices nearby.
2. Hold the compass level so the needle can swing freely. Turn the compass until the marked end of the compass needle is aligned on the N. This points to magnetic North. The compass face is divided into 360 degrees. North is zero degrees (0), East is 90, South is 180, and West is 270.
3. On the compass, find the required azimuth angle. Look in this direction, which is the direction to the satellites. Find a landmark, or lay a stick or board on the ground in that direction.



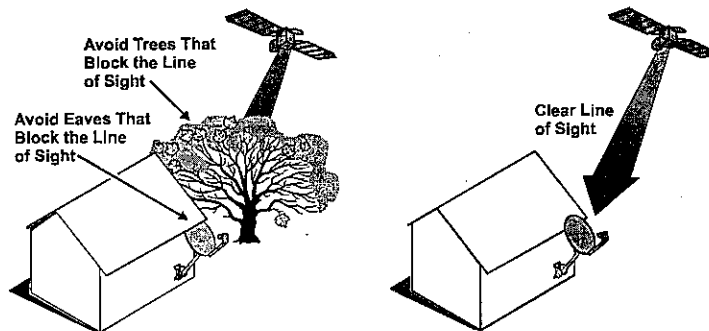
4. Use the elevation angle to find out how high the satellites are in the sky from your location. Vertical is 90, horizontal is 0, and halfway in between is 45. Stand close to where you plan to mount the dish and face in the direction that you marked for the direction to the satellites. Use your arm to measure the elevation angle in the sky. You are now pointing to the *general* location of the satellites.
5. Note whether anything blocks the line of sight. Leave a margin of at least ten degrees (about as wide as your hand when you hold your arm out straight) to the East (left) and to the West (right).



ATTENTION!



If you mount the dish on a structure that has an eave or overhang, make sure that the eave or overhang does *not* block the line of sight. If something does block the line of sight, you *must* find a new mounting location, or remove the obstacle, if possible. Make sure that the mounting location provides room for the dish, and that you have room to adjust the azimuth and elevation settings. Also, make sure that you can get to the dish to remove snow, ice, and other debris if necessary. Such things can block the satellite signal.



6. If needed, repeat steps 1 through 5 until you have found the best location for the dish. Mark the spot and the direction to the satellites.

DISH 500 Installation Instructions with Angles Table

MOUNTING THE SATELLITE DISH

MOUNTING LOCATIONS

When you look for dish locations, keep in mind that you can mount the dish in a variety of ways: on brick, on solid siding, on wood, on a roof, or on a metal pole. Because installing the dish may involve drilling into the wall or roof of your building, or digging a hole and using cement, you should be *very* sure of the location *before* you begin the installation. Errors can be costly and waste time.

SIGNAL INTERFERENCE

The dish can withstand most kinds of weather. However, extremely strong winds could damage the surface where you mount the dish. A strong wind can cause the dish to put several hundred pounds of pressure on the mounting surface, so the surface *must* be stable and strong. Such a mounting surface also helps keep the dish from moving, which would interrupt signal reception.

In general, the stronger the signal you maintain, the better your chance of uninterrupted reception during periods of snow, rain, and heavy cloud cover. If you live where snowfall is heavy, you should mount the dish in a place where you can reach it easily to remove snow or ice, which also could cause signal loss.

Some radar detectors emit a signal strong enough to cause interference with satellite reception. If a radar detector is used nearby, see if it can be removed or turned off. If not, try locating the dish so as to use the house to block the detector.

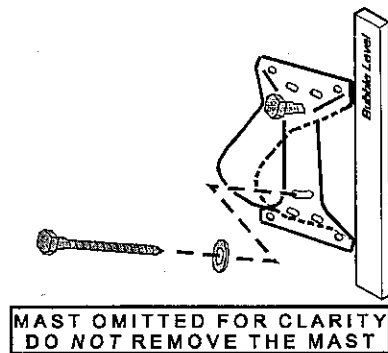
ALIGNING THE TOP PART OF THE MAST

Before you secure the dish mounting foot to a location, you *must* make sure that the top part of the mast is as close as possible to vertical. If the top of the mast is off vertical by only a few degrees, it will be difficult or impossible for you to find the satellites. **Note:** If you use a metal pole to mount the satellite dish, you *must* make sure that the pole is as close as possible to vertical.

To make sure that the top part of the mast is vertical, do two things:

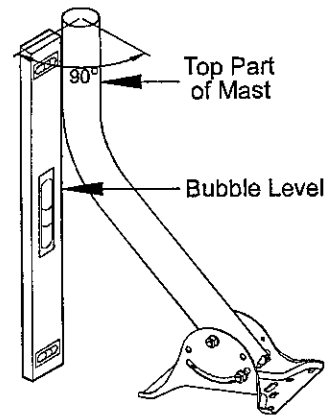
- If you attach the mounting foot to a vertical surface, make sure that the foot is vertical. One of the foot's center bolt holes may be a curved slot instead of a round hole, so you can adjust the position of the foot before you tighten the bolts. **Note:** Use a washer with the bolt that you place through the slot. Also, place bolts through the four corner holes, to firmly secure the foot.

(continued on the next page)



DISH 500 Installation Instructions with Angles Table

- Take at least two readings with a bubble level, on sides of the mast that are 90 degrees apart from one another. When you are sure that the top part of the mast is vertical, tighten the bolts.



ASSEMBLING THE SATELLITE DISH

1. Set the skew by rotating the dish mounting bracket to align the skew point with the required skew angle (from page 4) on the skew scale. Tighten both skew bolts securely, to keep the dish from rotating.

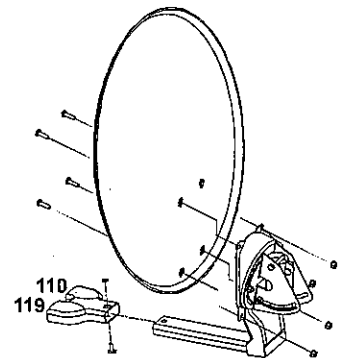
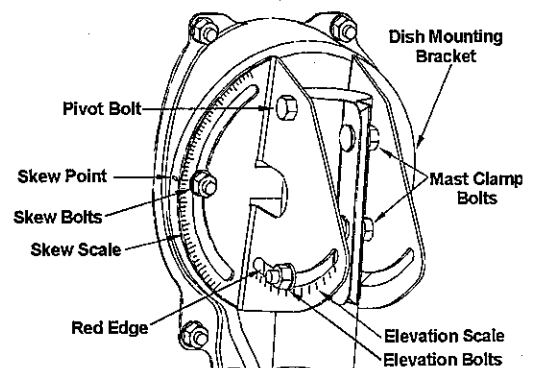
Note: *Once you have set the skew angle, do not loosen the skew bolts.* Do not try to fine-tune the skew angle, because this may affect the azimuth and elevation settings.

2. Set the elevation by tilting the mounting bracket to align the red edge with the required angle on the elevation scale. Tighten *both* elevation bolts to keep the dish from tilting.

Note: *Use the elevation scale.* This is the *only* reliable way to set the elevation.

3. Align the square bolt holes in the dish with the bolt holes on the mounting bracket. Insert each flathead bolt into one of the holes, and secure it by threading a lock nut onto the bolt on the back side. When all four bolts are inserted, tighten the bolts securely.
4. See the *Wiring Diagrams* that start on page 15 to find out how many coaxial cables you need to use. *Mark both ends of each cable for the required satellite (for example, 110 or 119),* according to the wiring diagram that applies to your setup.
5. Run the coaxial cables through the support arm, being careful not to kink or pinch them. Adjust the cables so that each one extends about seven inches out the end of the support arm.

Note: Use *only* RG-6 coaxial cables with weather-proof "F" connectors. Do not use cable TV cables or cables from other satellite TV systems. These cables may cause signal loss. Also, do not use existing cable setups. Such cable setups may include hidden signal splitters that would keep the system from operating properly. For a less-cluttered look, you can run the cables through the mast.



DISH 500 Installation Instructions with Angles Table

6. Run the cables through the Y bracket, with the 110 and 119 marks on the bracket facing up (toward the dish). Make sure to run the 119 cable(s) through the 119 side of the bracket, and the 110 cable(s) through the 110 side.
7. Attach the Y bracket to the end of the support arm, using the screw and hex nut provided.

Note: Slide the Y bracket onto the support arm until the end of the arm rests against the ridge inside the bracket. Fit the hex nut into the recess in the Y bracket.
8. Attach each cable to the appropriate LNBF.
9. Attach the LNBF(s) to the Y bracket, using the screw provided.

Note: Slide each LNBF onto the Y bracket until the end of the bracket rests against the ridge inside the LNBF.
10. Slide the dish assembly down onto the mast. Make sure that the pivot bolt rests on the top of the mast.

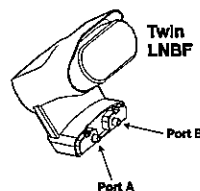
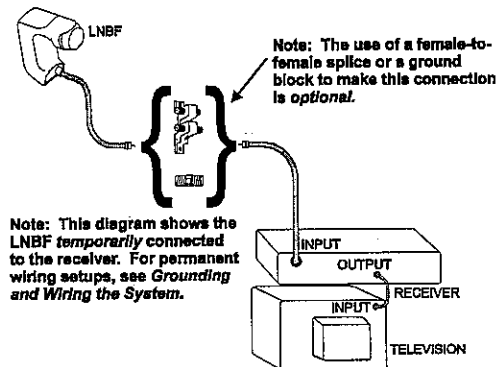
Note: The mast clamp bolts and the pivot bolt should be tight enough that the dish assembly does not wobble on the mast. This will help you in fine-tuning the aim of the dish.
11. Connect *only* the 119 coaxial cable (*either* one if there are two) from the LNBF directly to the receiver, using the receiver back panel **Satellite In** connection (or another tuner input connection if the receiver has no **Satellite In** connection).

Note: You may use a female-to-female splice to make this connection, or you may use a ground block, but do *not* use a multi-dish switch. You will connect the switch and the other cable(s) later.

Note: When you direct-connect a Twin LNBF to a receiver, you may use *either* the cable from the Twin LNBF's Port A *or* its Port B. But if you use a signal strength meter or audible peaking device (also called a "squawker box"), you *must* run the cable from the Twin LNBF's Port A to the meter.

12. Turn the dish so that it points in the general direction of the satellites. Use a compass and the azimuth angle from page 4. Make sure that the compass is not affected by the metal mast or dish.

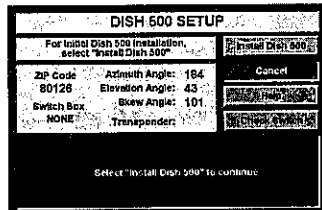
Note: Remember that you *cannot* aim the dish exactly at this time, and that you will fine-tune the aim later. Tighten both mast clamp bolts *just enough* so that you are still able to turn the dish.



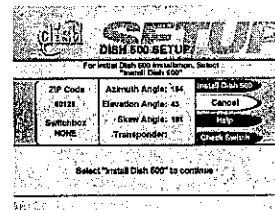
AIMING THE DISH FOR THE STRONGEST SIGNAL

1. Open the **Point Dish and Signal Strength** menu. Select the **Dish 500** option to open the **DISH 500 Setup** menu.

Note: Only if the **Point Dish** menu displays a **Dish 500** checkbox *instead* of a **Dish 500** option, do the *Alternate DISH 500 Aiming* procedure that starts on page 24 *instead* of this procedure.



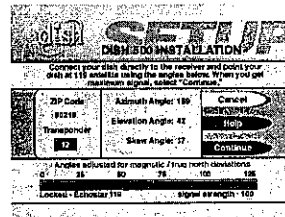
or:



2. On the **DISH 500 Setup** menu, select the **Install Dish 500** option. This opens the **DISH 500 Installation** menu. The menu displays one *signal strength* bar.



or:



Note: Look at the signal strength bar while aiming the dish. Or, have one person aim the dish while the other watches the signal strength and/or listens to the signal tone. Do *not* stand in front of the dish while aiming it, because your body may block much or all of the satellite signal. When you adjust the aim of the dish, wait for the dish to flex back into position before checking the signal strength. **Remember not to adjust the skew setting!**

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

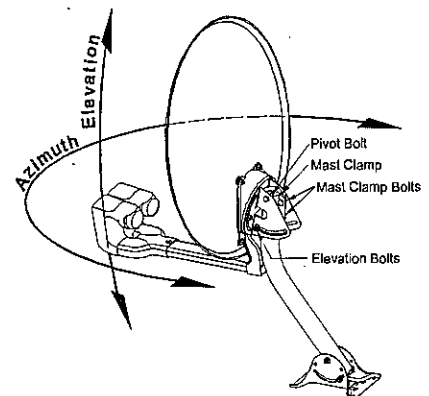
Note: If you cannot find the signal, turn the dish back to the original azimuth setting. Then, loosen both elevation bolts *just enough* to be able to tilt the dish. Tilt the dish up by two degrees, and then tighten both bolts. Now, try turning the dish back and forth again. *If you still cannot find the signal*, keep tilting the dish up *very slightly*, turning the dish back and forth each time to try to find the signal.

4. Once the signal strength bar is *green*, turn the dish back and forth *very slightly*, until the signal strength bar displays the strongest possible signal. When you find the strongest signal, tighten both mast clamp bolts.

5. Loosen both elevation bolts, *just enough* to be able to tilt the dish. Tilt the dish up and down *very slightly*, until the signal strength bar displays the strongest possible signal. When you find the strongest signal, tighten both elevation bolts and the pivot bolt.

Note: Do *not* tighten the pivot bolt so much that the top of the mast is no longer round.

6. Once the signal strength bar is *green* and displays the strongest possible signal, select the **Continue** option. The receiver displays an **Attention** message that tells you about connecting a multi-dish switch. This includes reconnecting the coaxial cables and the receiver.

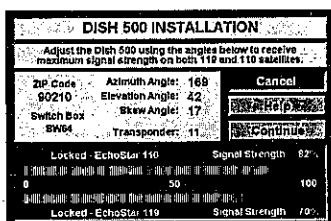


DISH 500 Installation Instructions with Angles Table

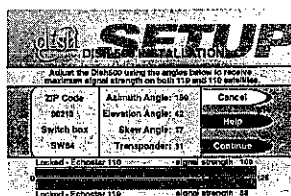
Note: Do one of the following procedures, depending on the LNBF(s) that you use. Use one of the wiring diagrams on pages 15 through 23.

- If you are using *single- or dual-output LNBFs with a multi-dish switch*, connect the switch and the cables now.
- If you are using *just a Twin or Quad LNBF*, you do *not* need to install a switch because the LNBF has a built-in switch.
- If you are using a *Twin LNBF with SW21 multi-dish switch(es)* for a three-satellite setup, do *not* connect the switch(es) now. Instead, do this as part of step 18 on page 11.

7. Select the **Continue** option. The receiver begins checking the installation.
8. The receiver displays another **Attention** message that says it is checking the installation. Wait for this test to finish. When the test is done, the receiver displays an **Attention** message. If this message shows the wrong switch or no switch at all, check the connections and select the **Detect Again** option. When the receiver displays a message that shows the correct switch type, select the **Continue** option.
9. The receiver displays two *signal strength* bars on the **DISH 500 Installation** menu. One bar is for the 110 West satellite and the other is for the 119 West satellite.



or:



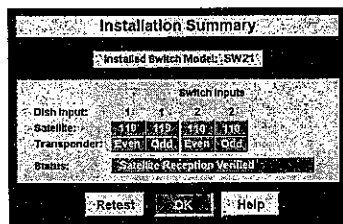
10. *Only if needed*, fine-tune the aim of the dish again to receive the strongest signal from both satellites. **Remember not to adjust the skew angle!**

Note: The 110 West signal strength should be about the same as that for 119 West.

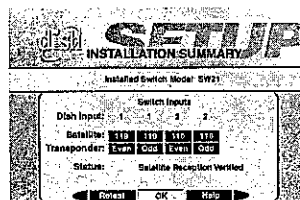
11. When both *signal strength* bars are *green* and show the strongest possible signals, tighten all the azimuth and elevation adjustment bolts.

Note: Tighten the mast clamp bolts *only* enough to close the gap in the clamp. Do *not* tighten the pivot bolt so much that the top of the mast is no longer round.

12. Mark the final settings on the mast and mounting bracket, using a permanent marker. This helps you later if you have to re-aim the dish. **Note:** Do *not* scratch marks in the paint. This will cause rusting.
13. Select the **Continue** option. The receiver displays an **Attention** message that says it is checking the installation again. Wait while the receiver does this test.
14. When the test is done, the receiver displays the **Installation Summary** menu. If the **Status** box shows an error, check the connections and select the **Retest** option. When the menu displays the correct switch type, **Satellite Reception Verified** in the **Status** box, and **110** and **119** in the **Satellite** boxes, select the **OK** option.



or:



DISH 500 Installation Instructions with Angles Table

15. The receiver displays the **DISH 500 Setup** menu. Select the **Cancel** option to exit this menu.
16. The receiver displays the **Point Dish and Signal Strength** menu.
Select the **Cancel** option to exit this menu.
17. The receiver accepts a transmission (“download”) of the latest operating software via the satellites.
Wait for this download to finish. Follow any instructions that the receiver displays.
18. If the setup includes any other receiver(s), do the following:
 - a) Use coaxial cables to connect the receiver(s) to the multi-dish switch.
 - b) Using *each* receiver, check the multi-dish switch installation.

Note: If you are using a Twin LNBF with SW21 multi-dish switch(es), connect the switch(es) *now*. Use *each* receiver to check the multi-dish switch installation *after* you install the switches.
19. Call the Service Center at 1-800-333-DISH (3474) to order your programs. Then, display the **Program Guide** to find a program that you want to watch.

Note: This is to take full advantage of all the programs available from both 110 West and 119 West, not just 119 West.

GROUNDING AND WIRING THE SYSTEM

You should ground the satellite dish(es) and the coaxial cable(s) per the latest revision of the *National Electrical Code* (NEC) and local electrical codes to provide some protection against damage caused by lightning strikes and other electrical discharges. Even lightning strikes several miles away can generate enough electricity in the air to damage the system.

WARNING!



Proper grounding will minimize the possibility of damage to the system and maximize safety. How you ground the system can also affect its performance. *This section is intended as a guideline only.* For more information, see the NEC and local electrical codes.

The NEC and some local electrical codes permit the use of types of grounding other than those discussed in these *Instructions*. Follow the NEC and all local electrical codes. Contact a licensed electrician or the local electric utility company if you have any questions.

Locate and avoid underground sewer, gas, water, and telephone lines *before* digging. Local utility companies can tell you where these are located.

GENERAL GUIDELINES

The following guidelines apply to *all* grounding systems.

- Make sure that the grounding system provides a solid, permanent earth grounding per the *National Electrical Code* (NEC) and local electrical codes. Contact a licensed electrician or the local electric utility company if you have any questions.
- See the grounding diagram in the *Important Safety Instructions*. This diagram suggests grounding the satellite dish and coaxial cable to the power service grounding electrode system of the building.
- If you install a grounding electrode separate from the power service grounding electrode system, connect the separate electrode to the grounding system in accordance with the NEC and local electrical codes.

DISH 500 Installation Instructions with Angles Table

INSTALLING THE GROUND BLOCK

WARNING!

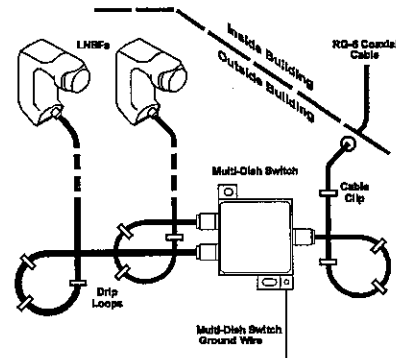


A properly grounded multi-dish switch *can take the place of* a ground block. The following instructions apply to a block *or* a switch.

You may want to install the ground block onto the side of the building, or on some other sturdy structure near the satellite dish. Make sure that the location is stable, and that you fasten the ground block tightly to the surface. Article 820-40 of the *National Electrical Code* (NEC) states that you should locate the ground block as close as possible to where you have the system grounded (*for example*, to a water pipe or to a rod driven into the ground).

RUNNING THE COAXIAL CABLES TO THE GROUND BLOCK

1. Mount the ground block so that its connections are horizontal. This helps keep moisture from leaking into the block.
2. Using the shortest path possible, run the coaxial cable(s) from the LNBF(s) to the input(s) on the ground block.
3. Put a drip loop in each cable to allow moisture to drip from the cable before it runs into the ground block.



FOR EXAMPLE ONLY

4. Run the ground wire to the power entry ground of the building in accordance with the *National Electrical Code* (NEC) and all local electrical codes.

WARNING!



A ground wire must *always* be a single piece of wire. *Never* splice two wires together for a ground. Corrosion and weathering can lead to a poor connection at the splice, making the ground ineffective and dangerous. If you cut the ground wire too short, replace it with a single wire cut to the correct length.

5. Use cable clips to attach the cable to the side of the building. This helps prevent damage.

RUNNING THE COAXIAL CABLE(S) TO THE RECEIVER(S)

1. Using the shortest path possible, run the coaxial cable(s) from the ground block to the satellite receiver(s). Do *not* kink or pinch any cable. Cables should be bent *only* in gentle curves.

WARNING!



Do *not* use more than a total of 100 feet of RG-6 coaxial cable between the satellite dish and the receiver, without installing a line amplifier to boost the satellite signal. Otherwise, the system is more likely to lose the signal during periods of rain, snow, or heavy cloud cover. If the setup requires more than 100 feet of cable, you should consider having the system professionally installed.

DISH 500 Installation Instructions with Angles Table

- Put a drip loop in each cable at a point before it enters the building. A drip loop allows moisture to drip from the cable before it runs into the building.



Before drilling any holes in the wall or roof of your building, make sure that there are no wires or pipes in the area of the holes. If you are not comfortable doing this, contact a professional in your area. Make sure that you follow all safety instructions and building codes.

- Locate each receiver inside the building, against or near an outside wall. Then drill a hole through the outer wall to pass a cable inside the building. If a receiver is located in an interior room, run a cable through the outside wall, and into an attic, basement, or crawl space in order to reach the receiver.
- Seal all holes that you drill in the building with silicone or other weatherproof sealant after installation. Once each cable is inside the building, you may attach it to a wall receptacle or directly to a receiver.



Tighten the back panel 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 in the *User Guide* that came with the system.

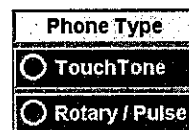
CONNECTING EACH RECEIVER TO A TELEPHONE LINE

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.

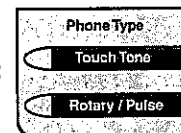
Note: You *may* be able to use a wireless telephone extender. However, this may *not* support all the features of some receivers.

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.

- Open the **Installation and Setup** menu.
- Select the **(Tele)Phone System** option to open the **(Tele)Phone System Setup** menu.
- Select the **Touch Tone** or the **Rotary/Pulse** option in the **Phone Type** list.

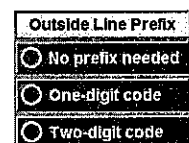


or:

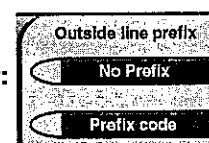


Note: Usually, you need a telephone number prefix *only* for business installations. For most residential installations, all you need to do is set the telephone system type. The default setting of **No Prefix needed** will allow correct dialing. If this is the case, select the **Save** option to save 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.

- Move the highlight to the appropriate option in the **Outside Line Prefix** list.



or:



Press the **Select** button to select the highlighted option.

DISH 500 Installation Instructions with Angles Table

5. The menu may highlight a box where you enter the number of digits in the prefix (this may be "1" or larger number). If so, enter the number.

The receiver may highlight a box where you enter the first (maybe the only) digit of the prefix, or you may need to highlight the box yourself. Enter the number.

The receiver may highlight another box, where you enter the second digit (if any) of the prefix, or you may need to highlight the box yourself. Enter the number.

Continue to enter the digit(s) of the prefix, in the same way as above.


When you are done entering the digit(s) of the prefix, go on to step 6.

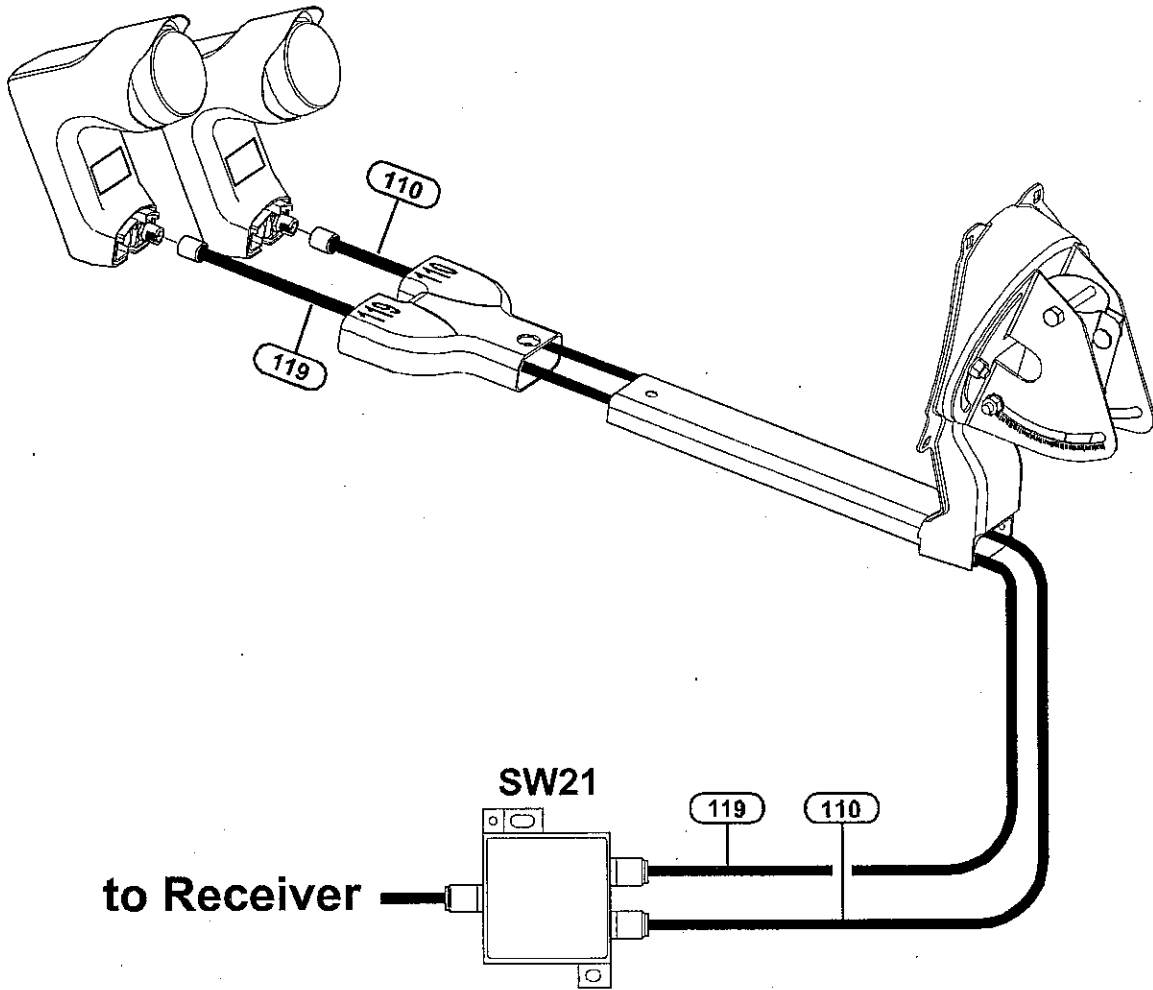
6. Move the highlight to the **Save** option. Press the **Select** button to save the settings.

DISH 500 Installation Instructions with Angles Table

WIRING DIAGRAMS

TWO SINGLE-OUTPUT LNBFs AND ONE SW21 MULTI-DISH SWITCH

WARNING! 	This diagram omits grounding for clarity. Make sure to ground the system per the <i>National Electrical Code (NEC)</i> and all local electrical codes. See <i>Grounding and Wiring the System</i> for grounding procedures.
--	---



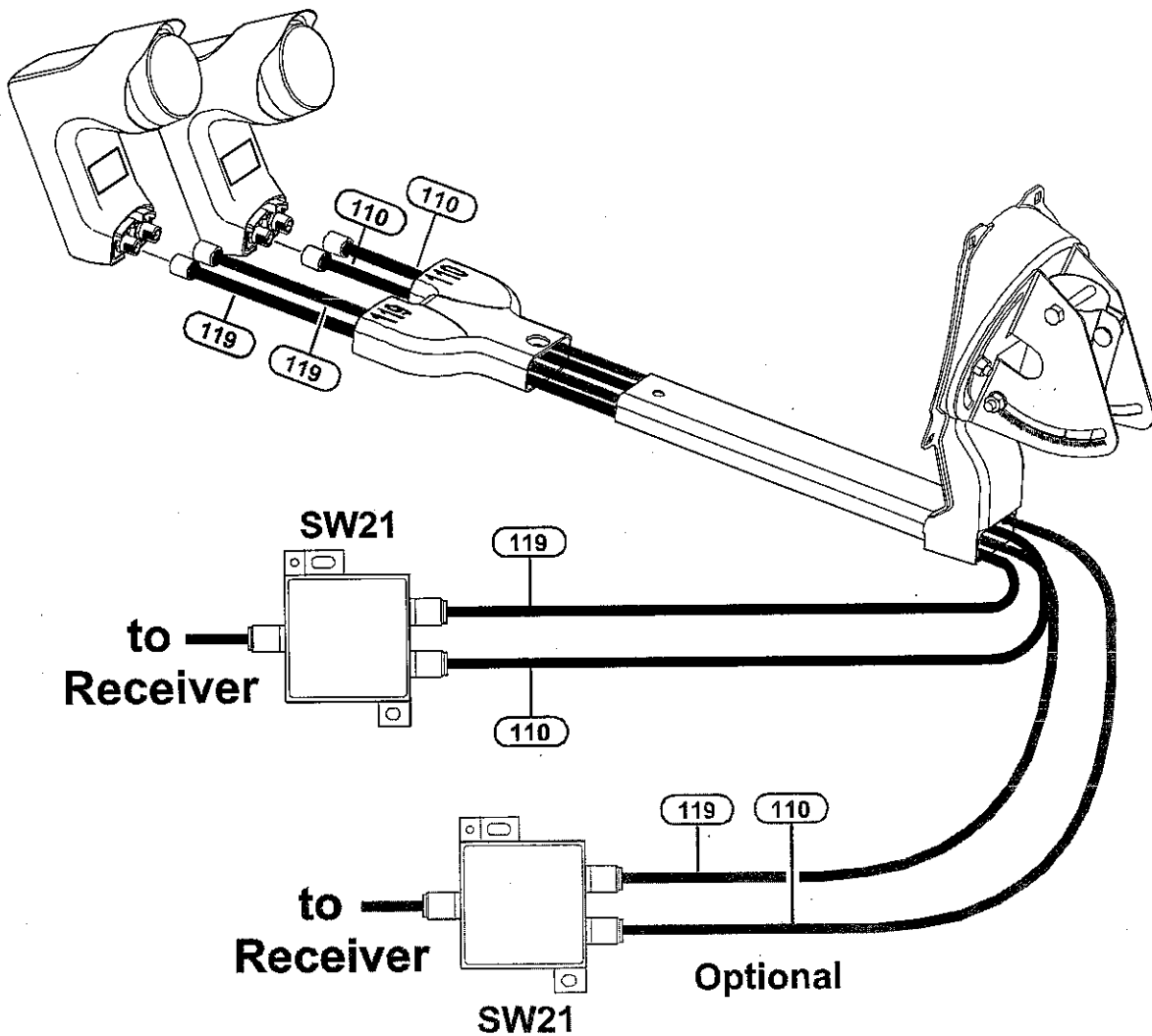
DISH 500 Installation Instructions with Angles Table

TWO DUAL-OUTPUT LNBFs AND ONE (OPTIONALLY TWO) SW21 MULTI-DISH SWITCH(ES)

WARNING!



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



ATTENTION!



Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown.

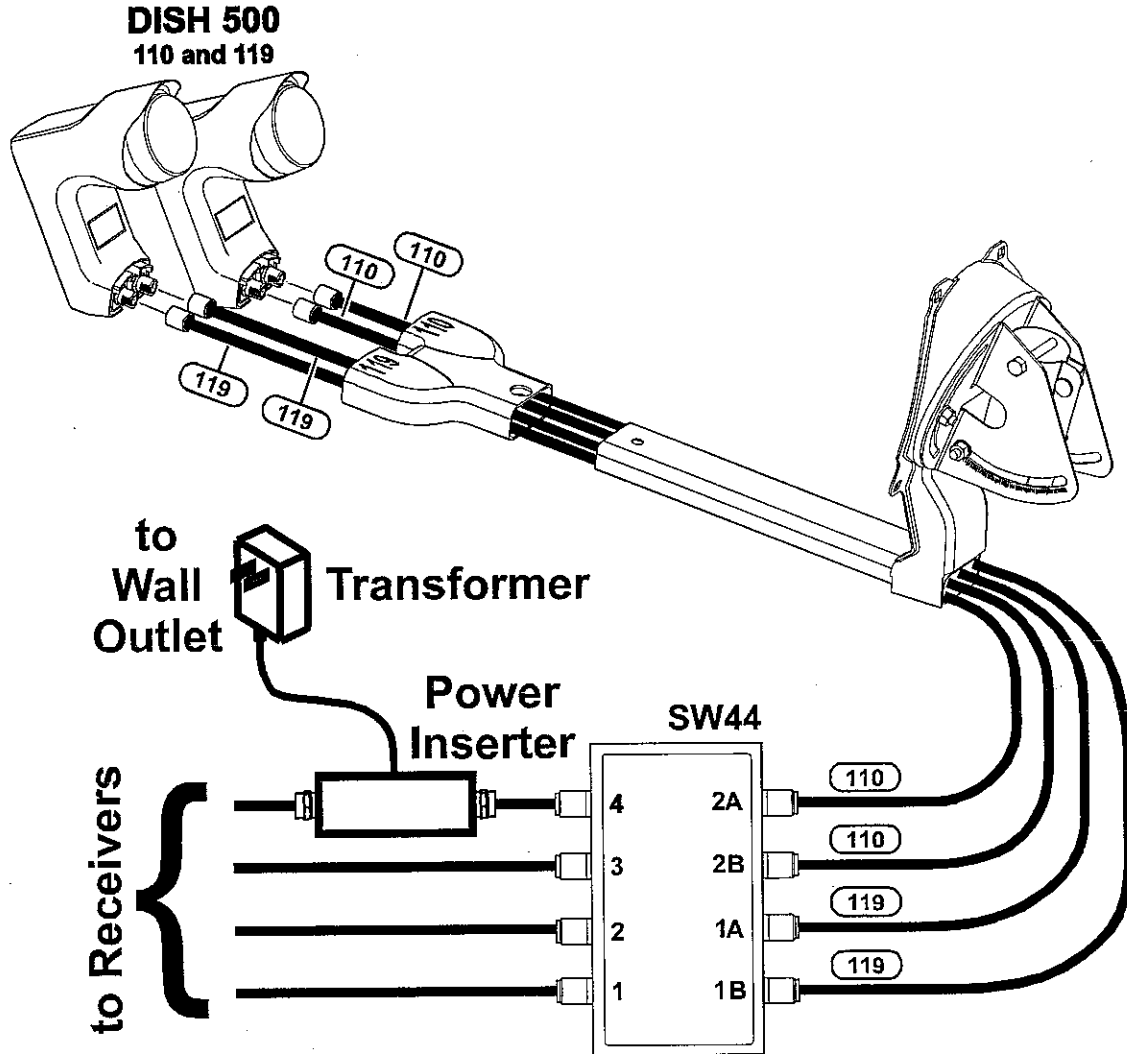
DISH 500 Installation Instructions with Angles Table

TWO DUAL-OUTPUT LNBFs AND ONE SW44 MULTI-DISH SWITCH

WARNING!



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



ATTENTION!



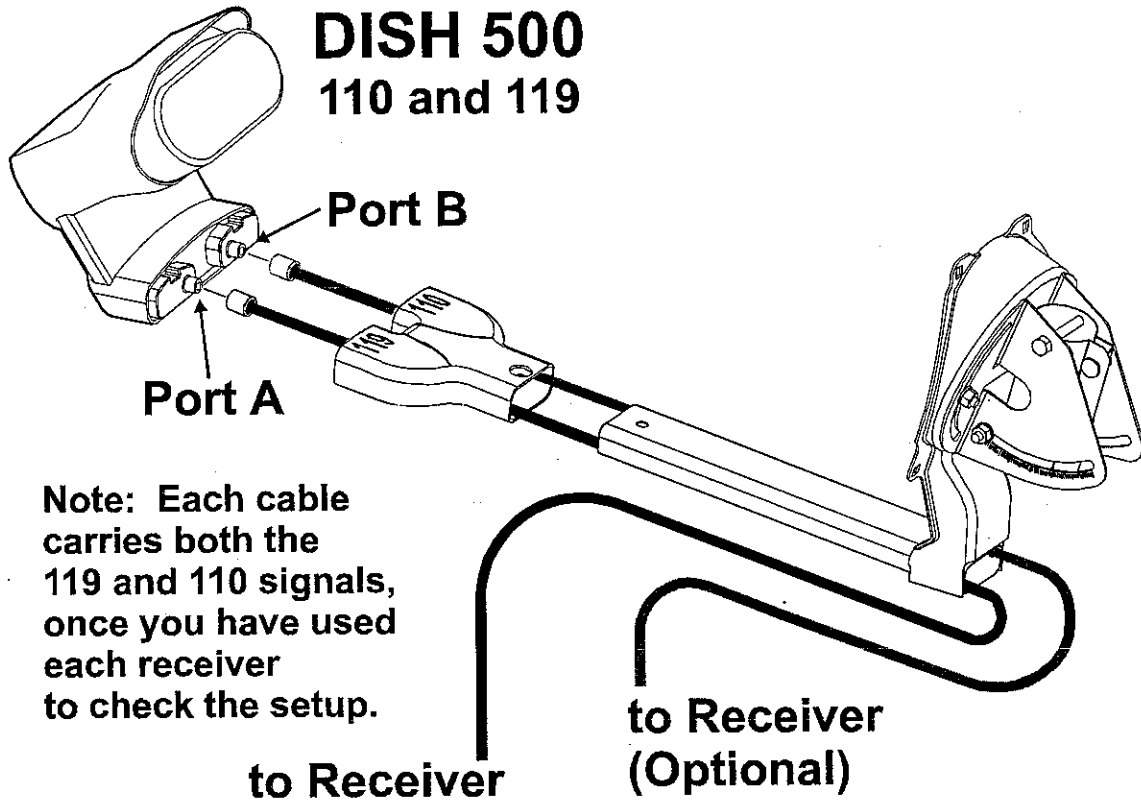
Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown.

DISH 500 Installation Instructions with Angles Table

ONE TWIN LNBF



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

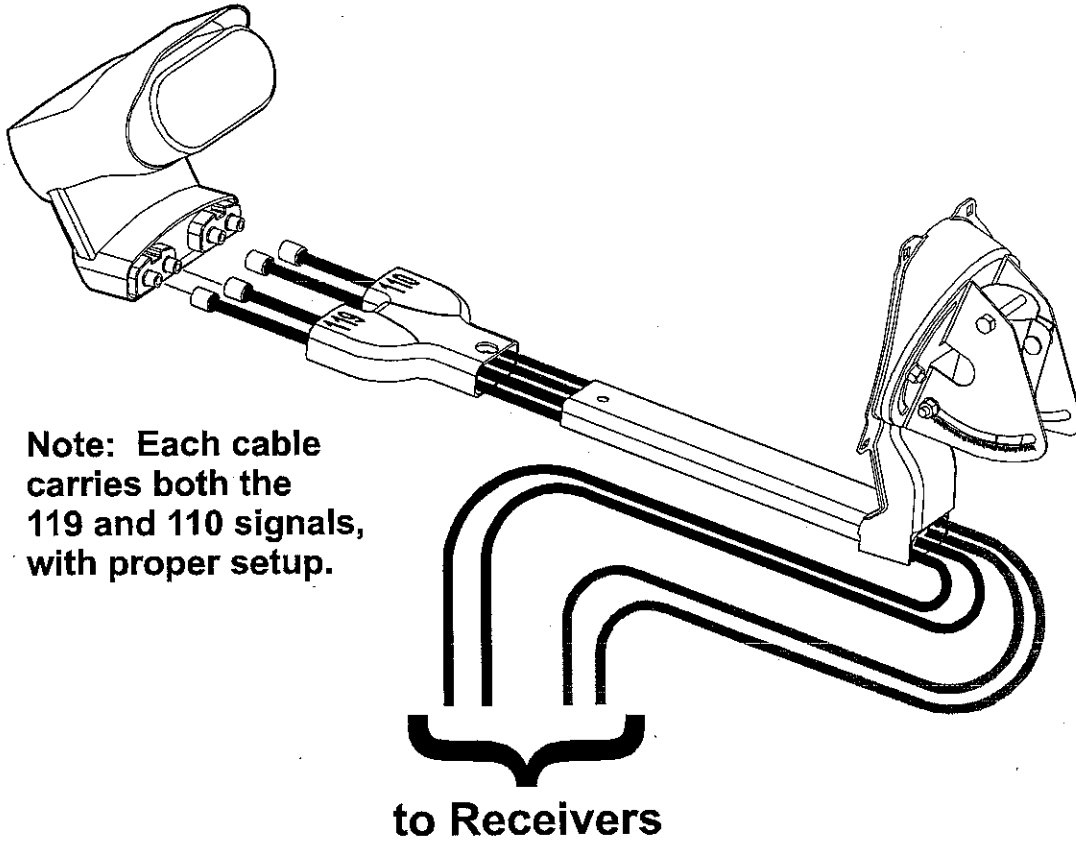


ONE QUAD LNBF

WARNING!



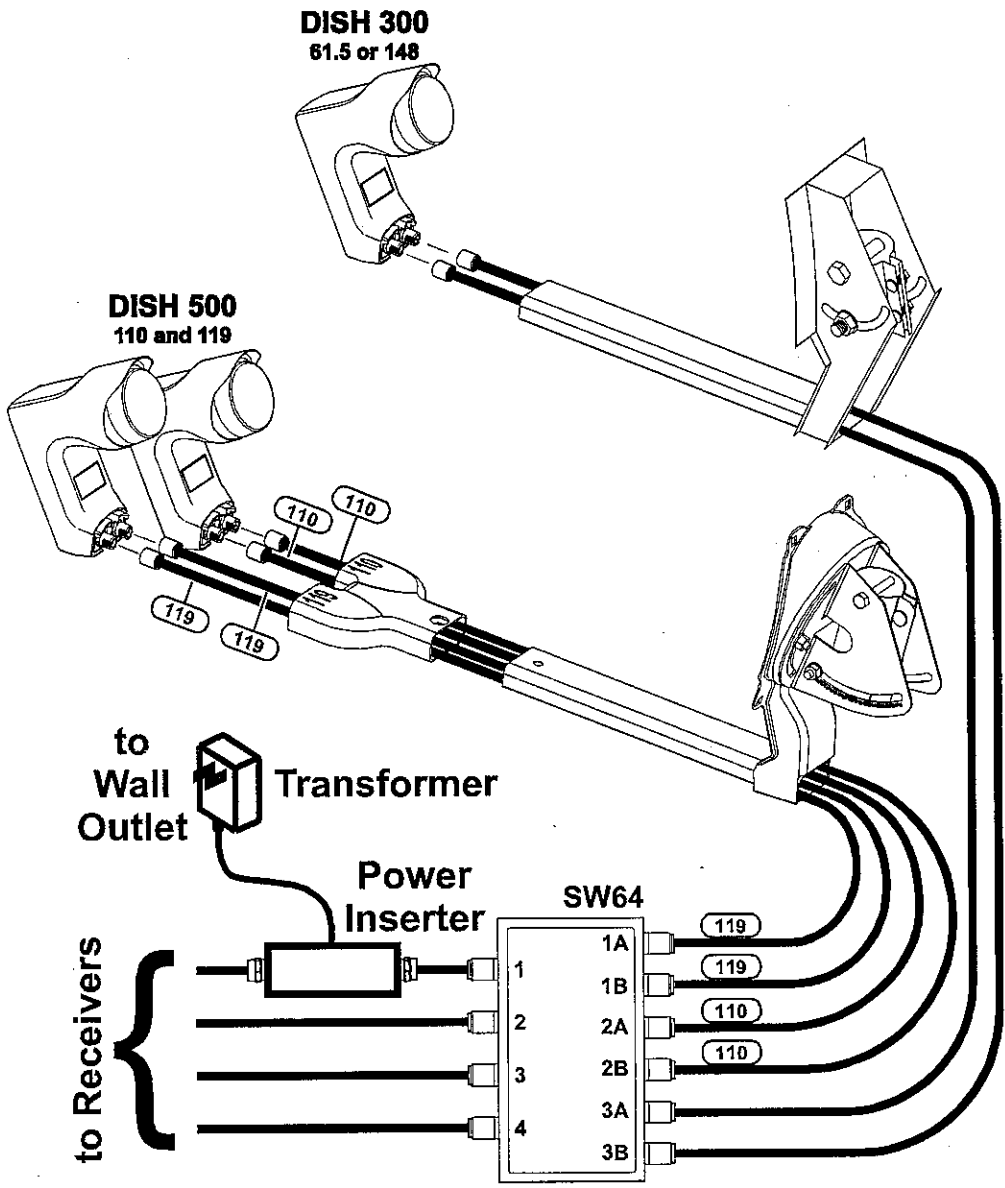
This diagram omits grounding for clarity. Make sure to ground the system per the *National Electrical Code (NEC)* and all local electrical codes. See *Grounding and Wiring the System* for grounding procedures.



DISH 500 Installation Instructions with Angles Table

THREE DUAL-OUTPUT LNBFs AND ONE SW64 MULTI-DISH SWITCH

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



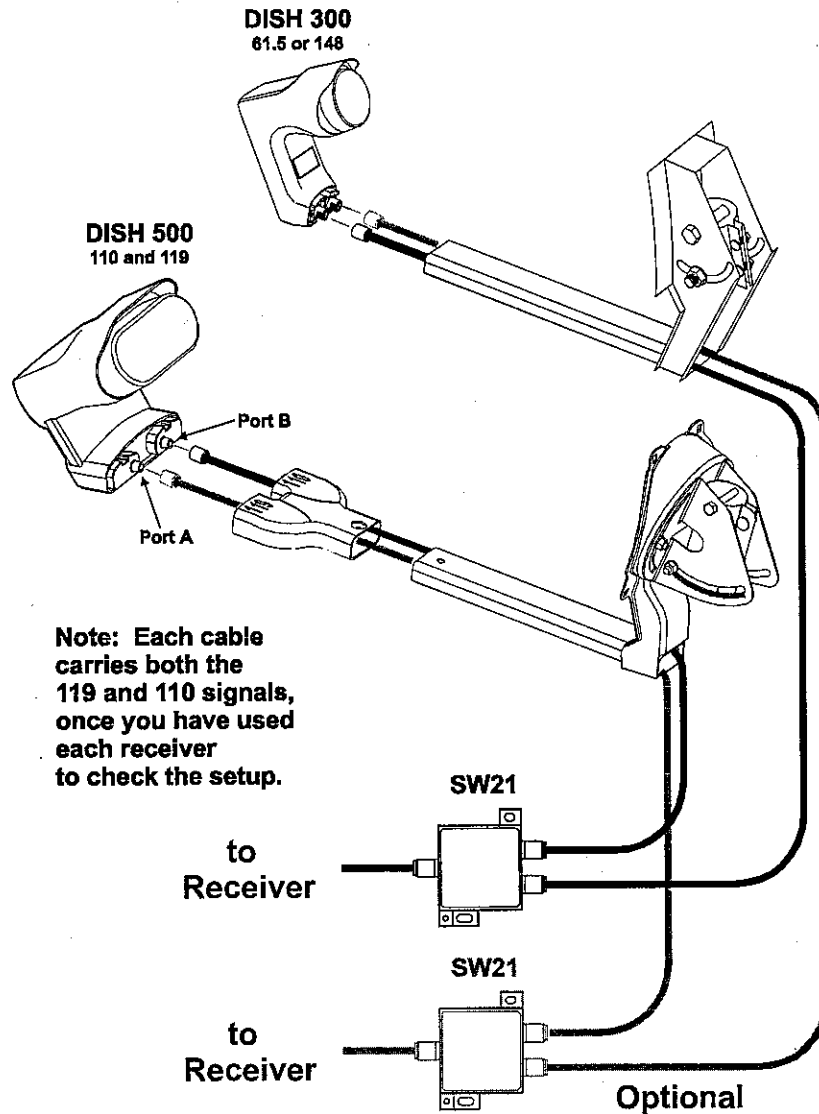
ATTENTION! Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown.

DISH 500 Installation Instructions with Angles Table

ONE TWIN LNBF, ONE OTHER LNBF, AND ONE (OPTIONALLY TWO) SW21 MULTI-DISH SWITCH(ES)



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



ATTENTION!



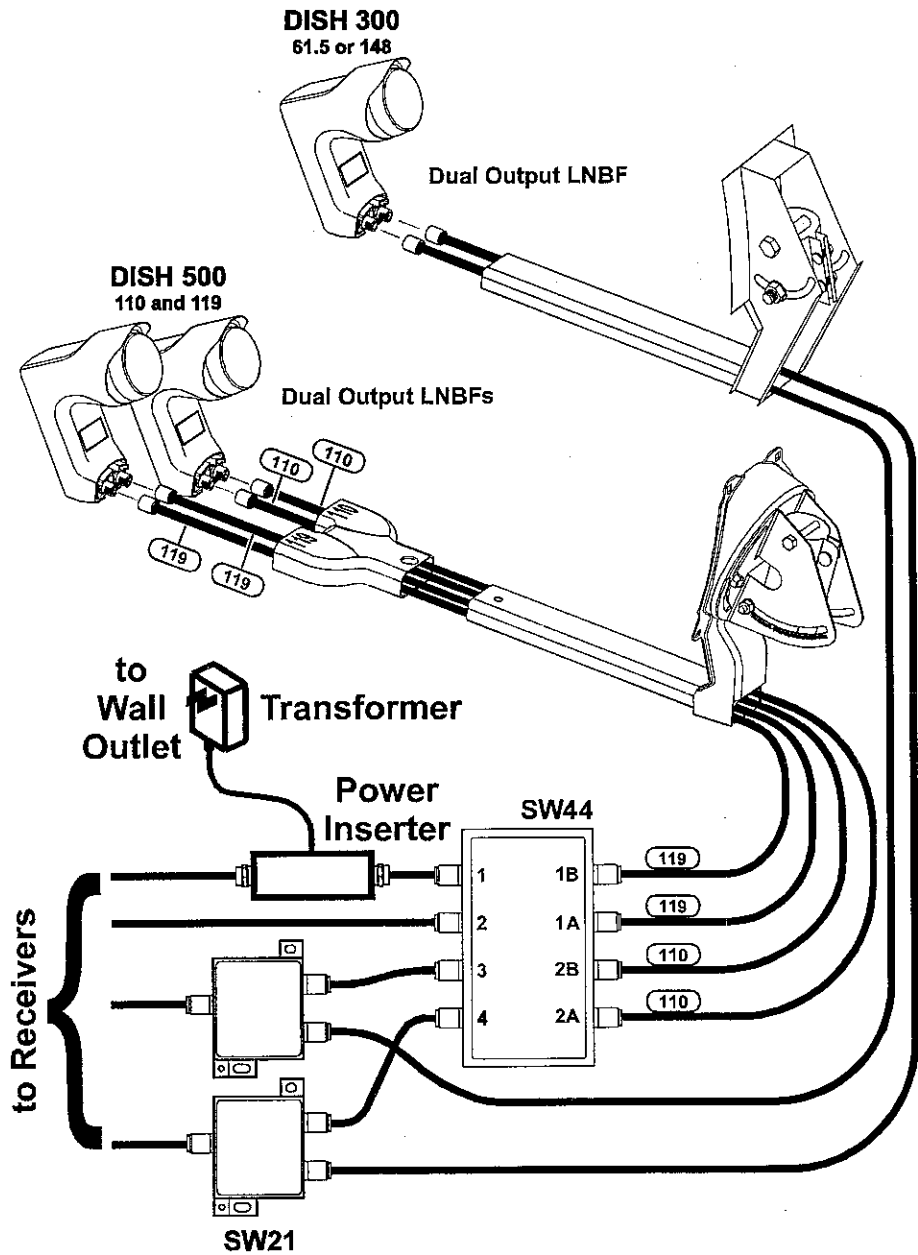
Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown.

Some receivers do *not* support the setup shown above.

DISH 500 Installation Instructions with Angles Table

THREE DUAL-OUTPUT LNBFs, ONE SW44 SWITCH, AND TWO SW21 SWITCHES

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



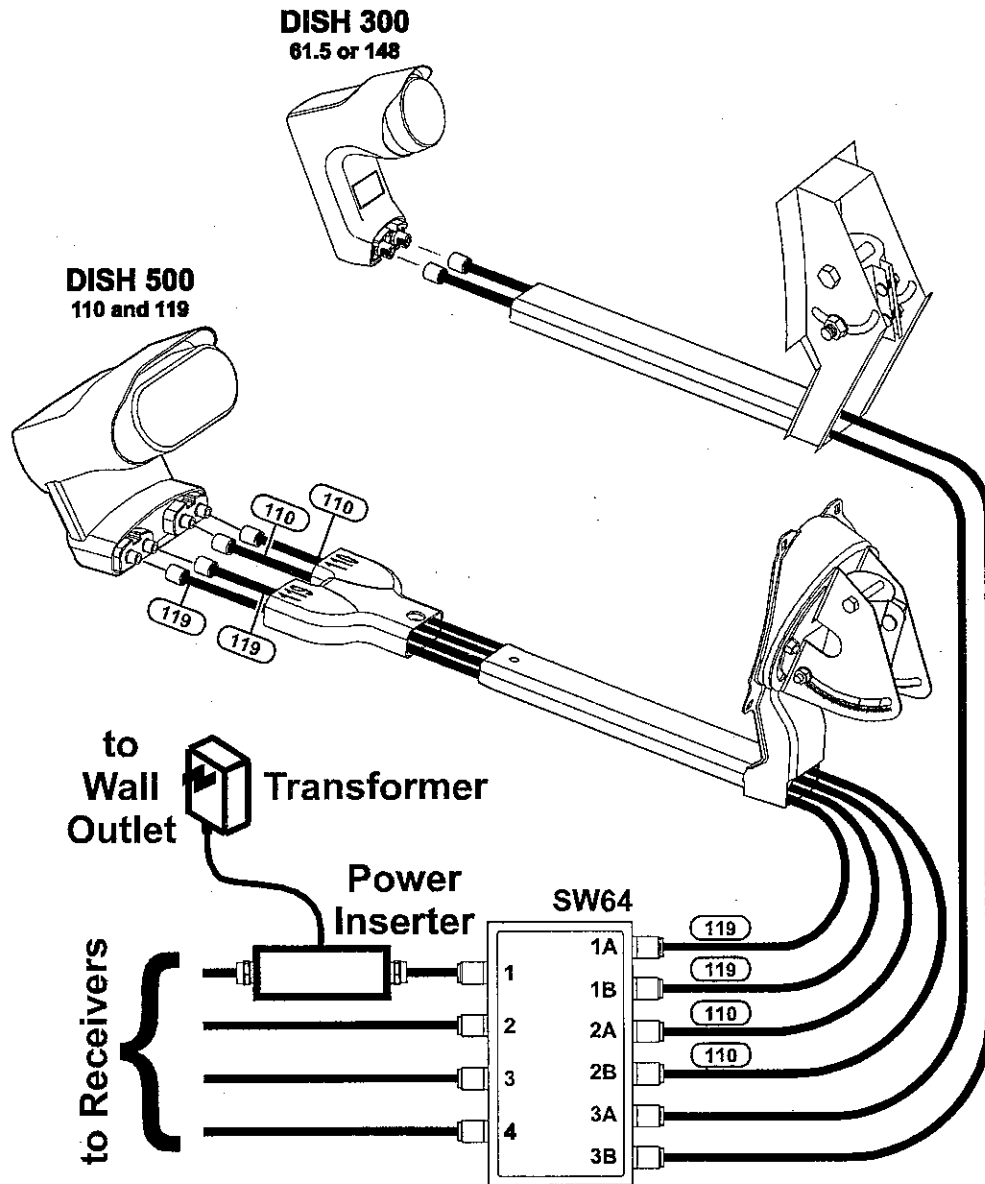
ATTENTION! Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown.

Some receivers do *not* support the setup shown above.

DISH 500 Installation Instructions with Angles Table

ONE QUAD LNBF, ONE DUAL-OUTPUT LNBF, AND ONE SW64 MULTI-DISH SWITCH

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



ATTENTION! Pay close attention to where each cable connects to each device. In most cases, you *must* connect each cable to a particular connector on each device, as shown. See page 27 for a note on connecting a Quad LNBF to an SW64 switch.

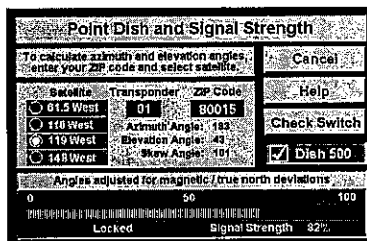
DISH 500 Installation Instructions with Angles Table

ALTERNATE DISH 500 AIMING

Note: Do this procedure *instead* of the *Aiming the Dish for the Strongest Signal* procedure that starts on page 9, *only* if the **Point Dish and Signal Strength** menu displays a **Dish 500** checkbox *instead* of a **Dish 500** option. When you finish this procedure, *go back* and do the *Grounding and Wiring the System* procedure that starts on page 11.

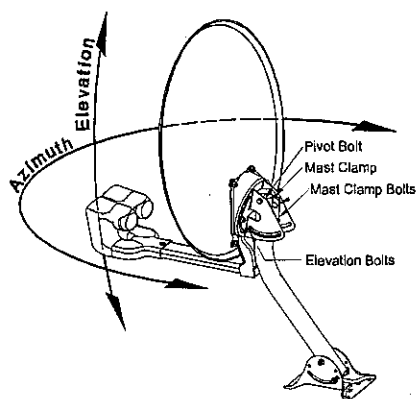
1. On the **Point Dish and Signal Strength** menu, make sure that the **119 West** option is selected and the **Dish 500** box is checked.

Note: Look at the signal strength bar while aiming the dish.
Or, have one person aim the dish while the other watches the signal strength and/or listens to the signal tone. Do *not* stand in front of the dish while aiming it, because your body may block much or all of the satellite signal. When you adjust the aim of the dish, wait for the dish to flex back into position before checking the signal strength. **Remember not to adjust the skew setting!**



2. 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. *If you still cannot find the signal*, keep tilting the dish up *very slightly*, turning the dish back and forth each time to try to find the signal.



3. Once the signal strength bar is *green*, turn the dish back and forth *very slightly*, until the signal strength bar displays the strongest possible signal. When you find the strongest signal, tighten both mast clamp bolts.
4. Loosen both elevation bolts, *just enough* to be able to tilt the dish. Tilt the dish up and down *very slightly*, until the signal strength bar displays the strongest possible signal. When you find the strongest signal, tighten both elevation bolts and the pivot bolt.

Note: Do *not* tighten the pivot bolt so much that the top of the mast is no longer round.

5. Select the **Cancel** option. The receiver displays an **Attention** message that tells you about connecting a multi-dish switch. This includes reconnecting the coaxial cables and the receiver.

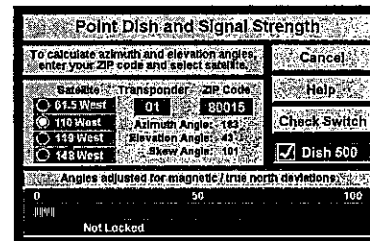
Note: Do *one* of the following procedures, depending on the LNBF(s) that you use.
Use *one of the wiring diagrams on pages 15 through 23*.

- If you are using *single- or dual-output LNBFs with a multi-dish switch*, connect the switch and the cables now.
- If you are using *just a Twin or Quad LNBF*, you do *not* need to install a switch because the LNBF has a built-in switch.
- If you are using a *Twin LNBF with SW21 multi-dish switch(es)* for a three-satellite setup, do *not* connect the switch(es) now. Instead, do this as part of step 13 on page 25.

DISH 500 Installation Instructions with Angles Table

6. Select the **Check Switch** option. The receiver tests the multi-dish switch and the coaxial cables. When the test is done, the receiver displays an **Attention** message. If this message shows the wrong switch or no switch at all, check the connections and select the **Detect Again** option. When the receiver displays a message that shows the correct switch type, select the **Continue** option.

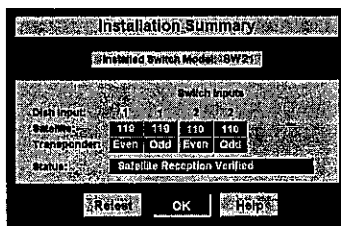
7. Select the **110 West** option in the **Satellite** list and make sure the **Dish 500** box is checked. The **Point Dish** menu will *not* display new angles, but may display a red signal strength bar (if it *does* display a green signal strength bar, skip the following step 8 and go on to step 9).



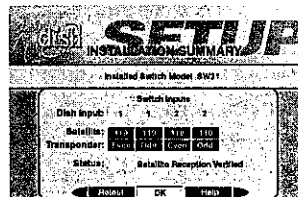
8. Slightly re-aim the dish to get a green signal strength bar for the 110 satellite.

9. When the **Point Dish** menu displays a green signal strength bar for the 110 satellite, select the **119 West** option again and look to see if the menu still displays a green signal strength bar. Continue switching between the **119 West** and the **110 West** options and slightly re-aiming the dish until the menu displays green bars for both satellites and the bars show the strongest possible signal.

10. Select the **Check Switch** option again. When the test is done, the **Installation Summary** menu will show both the 110 and 119 satellites, and it should show the correct switch type and **Satellite Reception Verified**. If it does not, check the connections and select the **Retest** option. When the menu shows a correct installation, select the **OK** option.



or:



11. Select the **Cancel** option to exit whatever menu(s) the receiver displays.

12. The receiver may accept a transmission (“download”) of the latest operating software via the satellites. If so, wait for this download to finish. Follow any instructions that the receiver displays.

13. If the setup includes any other receiver(s), do the following:

- a) Use coaxial cables to connect the receiver(s) to the multi-dish switch.
- b) Using *each* receiver, check the multi-dish switch installation.

Note: If you are using a Twin LNBF with SW21 multi-dish switch(es), connect the switch(es) *now*. Use *each* receiver to check the multi-dish switch installation *after* you install the switches.

14. Call the Service Center at 1-800-333-DISH (3474) to order your programs. Then, display the **Program Guide** to find a program that you want to watch.

Note: This is to take full advantage of all the programs available from both 110 West and 119 West, not just 119 West.

DISH 500 Installation Instructions with Angles Table

REPLACING A DISH 300 WITH A DISH 500

You may want to replace a DISH 300 dish aimed at the 119 West satellite with a DISH 500 aimed at both the 110 West and 119 West satellites. In this case, follow the *Instructions* carefully, except:

1. *Before you take apart the existing DISH 300 system, do these steps (a) through (c):*
 - a. Open the **Point Dish and Signal Strength** menu. Write down the current signal strength. The DISH 500 signal strength should be about the same as the DISH 300 signal strength, when you aim the dish at the *same* satellite and use the *same* transponder. The DISH Interactive **Point Dish** menu shows the signal strength on a scale of 0 to 125, while the non-DISH Interactive menu shows the strength on a scale of 0 to 100.
Signal Strength _____ for **Transponder** _____ on **Satellite** _____
 - b. Allow *each* receiver to download the latest software. See each receiver's *User Guide* for instructions that apply to that receiver. **Note:** The download may take 15 minutes or more. Do *not* disturb or unplug the receiver during this time.
 - c. Do the *Finding the Satellites* procedure.
2. *Now, take apart the existing DISH 300 system.*

ATTENTION!



You may be able to re-use the existing mast and mounting foot.

Use a bubble level to **make sure that the top part of the existing or new mast is as close as possible to vertical**. If the top of the mast is off vertical by only a few degrees, it will be difficult or impossible for you to find the satellites.

If you use a new dish mounting location for the DISH 500, you must ground the new setup per the National Electrical Code (NEC) and local electrical codes.

If you do not re-use the existing DISH 300 dish mounting, remove the mounting and its grounding system. Do not leave an existing dish mounting in place without grounding!

3. Do the *Finding a Clear Line of Sight* procedure.
Note: Remember that you need to aim the dish at a *new* location in the sky. This new location is about five degrees to the East of the *old* location (ten degrees is about as wide as your hand when you hold your arm out straight).
4. Do the *Mounting the Satellite Dish* procedures.
Note: Re-use the existing LNBF for the 119 West satellite signal.
5. Do the *Aiming the Dish for the Strongest Signal* procedure, except for the following:
 - Remember that you need to aim the dish at a *new* location in the sky.
 - Remember that the DISH 500 signal strength should be about the same as the DISH 300 signal strength, when you aim at the *same* satellite and use the *same* transponder. The DISH Interactive **Point Dish** menu shows the signal strength on a scale of 0 to 125, while the non-DISH Interactive menu shows the strength on a scale of 0 to 100.
 - If you use SW21 switch(es), *finish* installing the DISH 500 *before* you install the switches.
 - Use *each* receiver to check the switch setup.
6. Do the rest of the installation by following the *Instructions*.
7. Call the Service Center at 1-800-333-DISH (3474) to order your programs. Then, open the **Program Guide** to find a program that you want to watch. See the *User Guide* that came with the receiver for instructions.
Note: This is to take full advantage of all the programs available from *both* 110 West and 119 West, not just 119 West.

MULTI-DISH INSTALLATIONS

You may have an existing DISH 300 multi-dish system. In this case, you can use these *Instructions* except for the following:

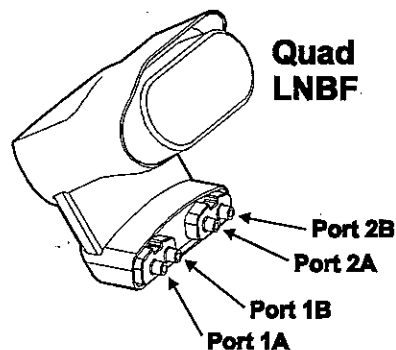
- **Before** you take apart the DISH 300 system, allow *each* receiver to download the latest software. See each receiver's *User Guide* for instructions that apply to that receiver. **Note:** The download may take 15 minutes or more. Do *not* disturb or unplug the receiver during this time.
- While you are replacing the DISH 300 with the DISH 500, **take care not to disturb any other DISH 300 in the system!** When you finish the DISH 500 installation, **then connect any other DISH 300 into the new system.** **Note:** If you replace the DISH 300 that is aimed at 119 West with a DISH 500 aimed at both 110 West and 119 West, you may not need a DISH 300 aimed at 61.5 West or 148 West.

WARNING!



If you do not re-use an existing DISH 300 dish mounting, remove the mounting *and* its grounding system. Do not leave an existing dish mounting in place without grounding!

- If you use a **Twin LNBF**, you can run each of the coaxial cables from this LNBF directly to a receiver. Or, you can run the cables to two SW21 multi-dish switches, along with the cables from a DISH 300 dish. You *cannot* run cables from a Twin LNBF to any other switch. The Twin LNBF has a built-in switch that works *only* with an SW21 switch. Some receivers do *not* support the use of a Twin LNBF with SW21 switches.
- If you install a **Twin LNBF with SW21 multi-dish switches**, do these steps (a) through (h):
 - a) Install the DISH 500 dish.
 - b) Aim the DISH 500 dish for the strongest signal.
 - c) Do *not* install the SW21 switch(es) yet.
 - d) Use a receiver to check the setup.
 - e) Connect the DISH 300 into the new system.
 - f) Aim the DISH 300 dish for the strongest signal.
 - g) *Now*, install the SW21 switches.
 - h) Use *each* receiver to check the setup.
- If you use a **Quad LNBF**, you can run each of the coaxial cables from this LNBF directly to a receiver. Or, you can run the cables to an SW44 or an SW64 multi-dish switch, but *not* to any other switch. The Quad LNBF has a built-in switch that works *only* with an SW44 or SW64 switch.
- If you use an **SW44 or an SW64 multi-dish switch**, you *must* connect the 119 coaxial cables to the **1A** and **1B** switch inputs. You *must* connect the 110 cables to the **2A** and **2B** switch inputs. For an SW64 switch, this leaves the **3A** and **3B** switch inputs for the cables from a DISH 300 dish. For *either* switch, you *must* connect the coaxial cable from the 1 switch output to a power inserter. You *must* connect the inserter to an AC/DC transformer, plugged into an AC power source (*for example*, a wall outlet).
- If you use a **Quad LNBF with a multi-dish switch**, you *must* connect the coaxial cable from each Quad LNBF output port to the matching connection on the switch. The Quad LNBF has **1A**, **1B**, **2A**, and **2B** output ports, as shown below.



- You *must* check any multi-dish switch setup using *each* receiver in the system.

DISH 500 Installation Instructions with Angles Table

DISH 500 ANGLES

The **Point Dish and Signal Strength** menu may not display the **Dish 500** option. In this case, use the following table to find the azimuth (direction), elevation (angle up), and skew (dish rotation) angles for the satellites at 110/119 West.

To use this table, do the following:

1. Find your ZIP code or the range of ZIP codes that includes your ZIP code. *For example*, if your ZIP code is 80232, use the angles for the range of 80200 - 80299, which are azimuth (AZ) 183, elevation (EL) 43, and skew (SK) 101.
2. Then, use the azimuth, elevation, and skew angles for your ZIP code or range of ZIP codes to find the satellites. The azimuth angle already has been corrected for magnetic deviation, so you can use this number on a compass. The azimuth angles, elevation angles, and skew angles provided in this table are in degrees.

ZIP Code	AZ	EL	SK
00001	112	13	69
00002	115	11	77
00003	112	15	67
00004	115	14	71
00006	116	13	73
00008	134	25	79
00011	117	15	71
00013	155	44	83
00019	154	42	83
00020	157	45	84
00022	149	43	79
00025	153	41	83
00028	154	43	82
00031	154	47	81
00032	156	48	82
00033	155	43	83
00034	150	41	80
00035	152	41	82
00037	150	42	80
00038	152	42	82
00039	150	42	80
00040	157	45	84
00044	155	44	83
00047	152	43	81
00048	151	43	80
00049	149	41	80
00050	149	41	80
00051	155	44	83
00052	155	44	83
00054	149	41	80
00055	150	41	80

ZIP Code	AZ	EL	SK
00058	157	45	84
00065	154	43	83
00087	238	40	136
00097	239	42	139
00116	216	47	124
00119	219	47	126
00120	219	47	126
00124	216	46	122
00125	253	20	123
00126	251	22	124
00127	255	21	126
00128	250	22	124
00130	254	21	125
00132	252	21	124
00133	251	22	124
00134	255	21	126
00135	253	21	124
00136	253	21	124
00137	255	20	124
00138	254	20	125
00139	250	22	125
00140	251	22	124
00141	254	21	125
00145	252	22	124
00147	251	22	125
00148	255	20	124
00151	255	20	126
00152	243	30	129
00155	241	30	128
00156	241	30	128
00157	241	30	128

DISH 500 Installation Instructions with Angles Table

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
00159	250	25	128
00160	210	30	110
00161	208	30	109
00164	199	31	106
00165	201	31	106
00166	201	31	106
00168	250	23	125
00169	250	23	125
00170	250	23	124
00172	250	23	125
00173	250	23	125
00174	250	23	125
00176	250	23	125
00177	250	23	125
00179	250	23	125
00180	250	23	125
00181	250	23	125
00182	250	23	125
00183	250	23	125
00184	250	23	125
00185	250	23	125
00186	250	23	124
00187	250	23	124
00188	207	53	120
00189	207	52	119
00190	249	23	124
00191	249	23	124
00192	249	23	124
00195	147	35	81
00198	117	15	73
00199	171	51	93
00200	170	52	92
00201	175	51	96
00203	159	48	84
00205	157	46	84
00206	158	49	83
00214	156	49	82
00215	156	50	82
00216	157	49	82
00217	158	47	85
00218	154	43	82
00219	184	44	101
00222	236	40	134
00223	239	41	138
00225	238	40	136
00226	239	42	139
00228	240	41	139
00229	235	40	134

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
00232	236	42	136
00234	239	41	138
00236	160	40	88
00238	217	46	123
00241	207	30	109
00243	222	45	126
00246	168	35	93
00250	182	47	101
00252	183	51	102
00255	199	46	111
00257	148	38	81
00258	151	38	82
00259	151	40	81
00260	150	37	83
00266	171	43	94
00267	151	33	84
00268	154	36	85
00270	152	36	84
00276	170	37	94
00277	152	33	85
00278	151	38	82
00279	169	38	93
00280	155	44	83
00281	169	41	93
00282	170	41	93
00283	233	30	122
00284	248	23	124
00285	245	27	127
00286	240	33	131
00401	245	27	126
00501	247	27	127
00544	247	27	127
01000 - 01099	248	25	126
01100 - 01199	248	25	126
01200 - 01299	246	26	126
01300 - 01399	248	25	126
01400 - 01499	248	25	126
01500 - 01599	248	25	126
01600 - 01699	248	25	126
01700 - 01799	250	25	127
01800 - 01899	250	24	126
01900 - 01999	250	24	127
02000 - 02099	250	25	127
02100 - 02199	250	24	127
02200 - 02299	250	24	127
02300 - 02399	251	25	127
02400 - 02499	250	25	127
02500 - 02599	251	25	128

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
02600 - 02699	251	24	128
02700 - 02799	249	25	127
02800 - 02899	249	25	127
02900 - 02999	249	25	127
03000 - 03099	249	24	126
03100 - 03199	249	24	126
03200 - 03299	249	24	125
03300 - 03399	249	24	126
03400 - 03499	248	25	126
03500 - 03599	250	23	124
03600 - 03699	247	25	125
03700 - 03799	248	24	125
03800 - 03899	250	24	126
03900 - 03999	250	24	126
04000 - 04099	251	23	126
04100 - 04199	251	23	126
04200 - 04299	251	23	125
04300 - 04399	252	22	125
04400 - 04499	254	21	125
04500 - 04599	252	22	126
04600 - 04699	255	21	126
04700 - 04799	255	20	124
04800 - 04899	253	22	126
04900 - 04999	252	22	125
05000 - 05099	248	24	125
05100 - 05199	247	25	125
05200 - 05299	247	25	125
05300 - 05399	247	25	125
05400 - 05499	247	24	124
05500 - 05599	250	24	126
05600 - 05699	248	24	124
05700 - 05799	246	25	124
05800 - 05899	248	23	124
05900 - 05999	249	23	124
06000 - 06099	247	26	126
06100 - 06199	247	26	126
06200 - 06299	248	25	127
06300 - 06399	249	26	127
06400 - 06499	247	26	127
06500 - 06599	247	26	127
06600 - 06699	247	26	127
06700 - 06799	246	26	126
06800 - 06899	246	27	127
06900 - 06999	245	27	127
07000 - 07099	245	27	127
07100 - 07199	245	27	127
07200 - 07299	245	27	127
07300 - 07399	245	27	127

ZIP Code	AZ	EL	SK
07400 - 07499	245	27	126
07500 - 07599	245	27	126
07600 - 07699	245	27	127
07700 - 07799	245	28	127
07800 - 07899	243	28	126
07900 - 07999	245	28	126
08000 - 08099	244	29	127
08100 - 08199	243	29	127
08200 - 08299	244	29	128
08300 - 08399	244	29	127
08400 - 08499	244	29	128
08500 - 08599	244	28	127
08600 - 08699	244	28	127
08700 - 08799	245	28	127
08800 - 08899	244	28	127
08900 - 08999	244	28	127
10000 - 10099	245	27	127
10100 - 10199	245	27	127
10200 - 10299	245	27	127
10300 - 10399	245	28	127
10400 - 10499	245	27	127
10500 - 10599	245	27	126
10600 - 10699	245	27	127
10700 - 10799	245	27	127
10800 - 10899	245	27	127
10900 - 10999	248	27	126
11000 - 11099	245	27	127
11100 - 11199	245	27	127
11200 - 11299	245	27	127
11300 - 11399	245	27	127
11400 - 11499	245	27	127
11500 - 11599	245	27	127
11600 - 11699	245	27	127
11700 - 11799	246	27	127
11800 - 11899	246	27	127
11900 - 11999	247	26	127
12000 - 12099	245	26	125
12100 - 12199	245	26	125
12200 - 12299	245	26	125
12300 - 12399	245	26	125
12400 - 12499	244	26	125
12500 - 12599	246	26	126
12600 - 12699	245	27	126
12700 - 12799	244	27	125
12800 - 12899	245	25	124
12900 - 12999	245	24	123
13000 - 13099	241	27	123
13100 - 13199	241	27	123

DISH 500 Installation Instructions with Angles Table

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
13200 - 13299	241	27	123
13300 - 13399	242	26	124
13400 - 13499	242	26	124
13500 - 13599	243	26	124
13600 - 13699	243	26	123
13700 - 13799	242	27	124
13800 - 13899	242	27	124
13900 - 13999	241	27	124
14000 - 14099	236	28	122
14100 - 14199	236	28	122
14200 - 14299	236	28	122
14300 - 14399	236	28	122
14400 - 14499	238	28	122
14500 - 14599	238	28	123
14600 - 14699	238	28	122
14700 - 14799	236	29	122
14800 - 14899	239	28	123
14900 - 14999	240	28	124
15000 - 15099	234	31	123
15100 - 15199	234	31	123
15200 - 15299	234	31	123
15300 - 15399	234	31	124
15400 - 15499	235	31	124
15500 - 15599	237	31	124
15600 - 15699	235	31	124
15700 - 15799	236	30	124
15800 - 15899	236	30	123
15900 - 15999	236	30	124
16000 - 16099	234	31	123
16100 - 16199	234	31	122
16200 - 16299	236	30	123
16300 - 16399	235	30	123
16400 - 16499	233	30	122
16500 - 16599	233	30	122
16600 - 16699	237	30	124
16700 - 16799	237	29	123
16800 - 16899	238	30	124
16900 - 16999	239	28	124
17000 - 17099	239	29	125
17100 - 17199	239	29	125
17200 - 17299	239	30	125
17300 - 17399	240	30	126
17400 - 17499	240	30	126
17500 - 17599	241	29	126
17600 - 17699	241	29	126
17700 - 17799	240	29	124
17800 - 17899	240	29	125
17900 - 17999	241	29	125

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
18000 - 18099	243	28	126
18100 - 18199	243	28	126
18200 - 18299	242	28	125
18300 - 18399	243	28	126
18400 - 18499	242	28	125
18500 - 18599	242	28	125
18600 - 18699	242	28	125
18700 - 18799	242	28	125
18800 - 18899	241	28	124
18900 - 18999	243	28	126
19000 - 19099	243	29	127
19100 - 19199	243	29	127
19200 - 19299	243	29	127
19300 - 19399	242	29	126
19400 - 19499	243	29	126
19500 - 19599	241	29	126
19600 - 19699	241	29	126
19700 - 19799	242	29	127
19800 - 19899	242	29	127
19900 - 19999	243	30	128
20000 - 20099	240	31	127
20100 - 20199	239	31	126
20200 - 20299	240	31	127
20300 - 20399	240	31	127
20400 - 20499	240	31	127
20500 - 20599	240	31	127
20600 - 20699	241	31	127
20700 - 20799	240	30	127
20800 - 20899	240	30	126
20900 - 20999	240	30	127
21000 - 21099	240	30	127
21100 - 21199	240	30	126
21200 - 21299	240	30	127
21400 - 21499	241	30	127
21500 - 21599	237	31	125
21600 - 21699	242	30	127
21700 - 21799	239	30	126
21800 - 21899	243	30	128
21900 - 21999	242	29	127
22000 - 22099	239	31	126
22100 - 22199	239	31	127
22200 - 22299	240	31	127
22300 - 22399	240	31	127
22400 - 22499	240	31	127
22500 - 22599	240	31	128
22600 - 22699	238	31	126
22700 - 22799	238	31	126
22800 - 22999	237	32	126

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
22900 - 22999	237	32	127
23000 - 23099	240	32	128
23100 - 23199	240	31	128
23200 - 23299	239	32	128
23300 - 23399	242	31	129
23400 - 23499	242	31	129
23500 - 23599	242	31	129
23600 - 23699	242	31	129
23700 - 23799	242	31	129
23800 - 23899	240	32	128
23900 - 23999	238	33	128
24000 - 24099	235	34	126
24100 - 24199	235	34	126
24200 - 24299	231	35	125
24300 - 24399	233	35	126
24400 - 24499	236	33	126
24500 - 24599	236	33	127
24600 - 24699	231	35	125
24700 - 24799	233	34	125
24800 - 24899	233	34	125
24900 - 24999	234	33	125
25000 - 25099	232	34	124
25100 - 25199	232	34	124
25200 - 25299	232	33	124
25300 - 25399	232	34	124
25400 - 25499	238	31	126
25500 - 25599	230	34	124
25600 - 25699	231	34	124
25700 - 25799	230	34	123
25800 - 25899	233	34	125
25900 - 25999	233	34	125
26000 - 26099	233	32	123
26100 - 26199	232	33	124
26200 - 26299	234	32	125
26300 - 26399	233	32	124
26400 - 26499	234	32	124
26500 - 26599	234	32	124
26600 - 26699	233	33	125
26700 - 26799	236	31	125
26800 - 26899	236	32	125
27000 - 27099	234	35	127
27100 - 27199	235	35	127
27200 - 27299	236	34	128
27300 - 27399	236	34	128
27400 - 27499	236	34	128
27500 - 27599	237	34	129
27600 - 27699	237	34	129
27700 - 27799	237	34	128

ZIP Code	AZ	EL	SK
27800 - 27899	240	33	129
27900 - 27999	242	32	130
28000 - 28099	233	36	127
28100 - 28199	234	36	128
28200 - 28299	234	36	128
28300 - 28399	238	34	129
28400 - 28499	239	34	131
28500 - 28599	240	33	131
28600 - 28699	233	35	127
28700 - 28799	231	37	126
28800 - 28899	231	36	126
28900 - 28999	228	38	126
29000 - 29099	235	36	129
29100 - 29199	235	37	129
29200 - 29299	234	37	129
29300 - 29399	232	37	127
29400 - 29499	236	37	131
29500 - 29599	237	35	130
29600 - 29699	231	37	127
29700 - 29799	234	36	128
29800 - 29899	233	37	129
29900 - 29999	236	37	131
30000 - 30099	228	39	126
30100 - 30199	227	39	126
30200 - 30299	228	39	127
30300 - 30399	228	39	127
30400 - 30499	233	38	130
30500 - 30599	229	38	126
30600 - 30699	230	38	127
30700 - 30799	226	39	125
30800 - 30899	233	38	129
30900 - 30999	233	38	129
31000 - 31099	231	39	129
31100 - 31199	228	39	127
31200 - 31299	230	39	128
31300 - 31399	235	38	131
31400 - 31499	235	38	131
31500 - 31599	233	39	131
31600 - 31699	232	40	131
31700 - 31799	230	41	129
31800 - 31899	228	40	128
31900 - 31999	228	40	127
32000 - 32099	234	40	132
32100 - 32199	236	40	134
32200 - 32299	236	39	133
32300 - 32399	231	41	130
32400 - 32499	228	42	129
32500 - 32599	225	43	128

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
32600 - 32699	234	40	133
32700 - 32799	237	40	135
32800 - 32899	237	40	135
32900 - 32999	238	40	136
33000 - 33099	240	42	139
33100 - 33199	240	41	139
33200 - 33299	240	41	139
33300 - 33399	240	41	139
33400 - 33499	240	41	138
33500 - 33599	236	41	135
33600 - 33699	235	41	135
33700 - 33799	235	42	135
33800 - 33899	236	41	135
33900 - 33999	237	42	137
34200 - 34299	235	42	135
34400 - 34499	235	41	133
34600 - 34699	234	42	134
34700 - 34799	236	40	135
34900 - 34999	239	40	137
35000 - 35099	223	41	125
35100 - 35199	223	41	125
35200 - 35299	223	41	125
35400 - 35499	222	42	124
35500 - 35599	221	41	123
35600 - 35699	221	40	123
35700 - 35799	224	39	124
35800 - 35899	223	40	124
35900 - 35999	224	40	125
36000 - 36099	226	42	127
36100 - 36199	225	41	126
36200 - 36299	225	40	126
36300 - 36399	227	42	128
36400 - 36499	224	43	127
36500 - 36599	223	44	126
36600 - 36699	223	44	126
36700 - 36799	223	42	125
36800 - 36899	226	41	127
36900 - 36999	221	43	125
37000 - 37099	222	38	122
37100 - 37199	222	38	122
37200 - 37299	222	38	122
37300 - 37399	226	38	124
37400 - 37499	226	39	125
37500 - 37599	216	41	120
37600 - 37699	231	36	126
37700 - 37799	228	37	125
37800 - 37899	228	37	125
37900 - 37999	228	37	125

ZIP Code	AZ	EL	SK
38000 - 38099	217	40	120
38100 - 38199	216	41	120
38200 - 38299	218	39	120
38300 - 38399	219	40	121
38400 - 38499	221	39	123
38500 - 38599	225	38	123
38600 - 38699	217	41	121
38700 - 38799	216	43	121
38800 - 38899	219	41	122
38900 - 38999	217	42	122
39000 - 39099	218	44	123
39100 - 39199	218	44	123
39200 - 39299	218	44	123
39300 - 39399	220	43	124
39400 - 39499	220	44	125
39500 - 39599	221	45	126
39600 - 39699	218	45	123
39700 - 39799	219	42	123
39900 - 39999	228	39	126
40000 - 40099	225	36	122
40100 - 40199	223	37	121
40200 - 40299	223	36	121
40300 - 40399	227	35	123
40400 - 40499	226	36	123
40500 - 40599	226	35	122
40600 - 40699	225	36	122
40700 - 40799	227	36	124
40800 - 40899	229	36	124
40900 - 40999	228	36	124
41000 - 41099	226	35	122
41100 - 41199	229	34	123
41200 - 41299	230	35	124
41300 - 41399	228	35	123
41400 - 41499	229	35	124
41500 - 41599	231	35	124
41600 - 41699	230	35	124
41700 - 41799	229	36	124
41800 - 41899	229	35	124
42000 - 42099	218	39	120
42100 - 42199	224	37	122
42200 - 42299	221	38	121
42300 - 42399	221	37	121
42400 - 42499	219	38	120
42500 - 42599	226	36	123
42600 - 42699	226	37	123
42700 - 42799	224	37	122
43000 - 43099	228	33	122
43100 - 43199	229	33	122

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
43200 - 43299	228	33	122
43300 - 43399	228	33	121
43400 - 43499	229	32	120
43500 - 43599	226	32	119
43600 - 43699	227	32	120
43700 - 43799	231	32	123
43800 - 43899	231	32	122
43900 - 43999	233	32	123
44000 - 44099	231	31	121
44100 - 44199	231	31	121
44200 - 44299	231	31	122
44300 - 44399	231	31	122
44400 - 44499	232	31	122
44500 - 44599	233	31	122
44600 - 44699	232	32	122
44700 - 44799	232	31	122
44800 - 44899	229	32	121
44900 - 44999	230	32	121
45000 - 45099	226	34	121
45100 - 45199	227	34	122
45200 - 45299	226	35	121
45300 - 45399	226	34	121
45400 - 45499	226	34	121
45500 - 45599	226	34	121
45600 - 45699	229	34	123
45700 - 45799	231	33	123
45800 - 45899	225	33	120
45900 - 45999	226	35	121
46000 - 46099	222	35	119
46100 - 46199	222	35	120
46200 - 46299	222	35	119
46300 - 46399	219	34	117
46400 - 46499	219	34	117
46500 - 46599	222	34	118
46600 - 46699	221	34	118
46700 - 46799	223	33	119
46800 - 46899	223	33	119
46900 - 46999	222	34	119
47000 - 47099	224	35	121
47100 - 47199	223	36	121
47200 - 47299	223	35	120
47300 - 47399	224	34	120
47400 - 47499	221	36	120
47500 - 47599	220	36	120
47600 - 47699	220	37	120
47700 - 47799	220	37	120
47800 - 47899	219	36	119
47900 - 47999	220	35	118

ZIP Code	AZ	EL	SK
48000 - 48099	228	31	119
48100 - 48199	227	32	119
48200 - 48299	228	31	119
48300 - 48399	228	31	119
48400 - 48499	227	31	119
48500 - 48599	227	31	118
48600 - 48699	225	31	117
48700 - 48799	227	30	118
48800 - 48899	225	32	118
48900 - 48999	225	32	118
49000 - 49099	223	33	118
49100 - 49199	221	33	117
49200 - 49299	226	32	119
49300 - 49399	223	32	117
49400 - 49499	221	32	117
49500 - 49599	223	32	117
49600 - 49699	222	31	116
49700 - 49799	225	30	116
49800 - 49899	218	30	114
49900 - 49999	215	30	112
50000 - 50099	205	37	111
50100 - 50199	206	37	112
50200 - 50299	206	37	112
50300 - 50399	206	37	112
50400 - 50499	206	35	111
50500 - 50599	204	36	110
50600 - 50699	207	36	112
50700 - 50799	209	36	112
50800 - 50899	204	38	111
50900 - 50999	206	37	112
51000 - 51099	200	37	109
51100 - 51199	200	37	109
51200 - 51299	200	36	108
51300 - 51399	202	36	109
51400 - 51499	202	37	110
51500 - 51599	202	38	110
51600 - 51699	203	39	111
52000 - 52099	211	35	113
52100 - 52199	209	35	112
52200 - 52299	210	36	113
52300 - 52399	210	36	113
52400 - 52499	210	36	113
52500 - 52599	208	37	113
52600 - 52699	211	37	114
52700 - 52799	212	36	114
52800 - 52899	212	36	114
53000 - 53099	216	33	115
53100 - 53199	216	34	115

DISH 500 Installation Instructions with Angles Table

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
53200 - 53299	217	33	115
53400 - 53499	218	34	116
53500 - 53599	214	34	114
53700 - 53799	214	34	114
53800 - 53899	211	35	113
53900 - 53999	213	34	114
54000 - 54099	207	33	110
54100 - 54199	217	32	114
54200 - 54299	217	32	114
54300 - 54399	217	32	114
54400 - 54499	213	33	113
54500 - 54599	212	32	112
54600 - 54699	211	34	112
54700 - 54799	209	33	111
54800 - 54899	209	32	110
54900 - 54999	215	33	114
55000 - 55099	206	33	110
55100 - 55199	205	34	110
55300 - 55399	204	34	109
55400 - 55499	205	34	110
55500 - 55599	204	34	109
55600 - 55699	210	30	110
55700 - 55799	206	31	109
55800 - 55899	207	31	109
55900 - 55999	208	34	111
56000 - 56099	204	35	110
56100 - 56199	201	35	108
56200 - 56299	200	34	108
56300 - 56399	202	33	108
56400 - 56499	202	32	108
56500 - 56599	198	33	106
56600 - 56699	202	31	107
56700 - 56799	197	31	105
57000 - 57099	198	36	107
57100 - 57199	199	36	108
57200 - 57299	198	35	106
57300 - 57399	196	36	106
57400 - 57499	193	35	105
57500 - 57599	191	37	104
57600 - 57699	188	36	102
57700 - 57799	185	38	101
58000 - 58099	196	33	105
58100 - 58199	197	33	106
58200 - 58299	195	32	104
58300 - 58399	192	32	103
58400 - 58499	192	34	104
58500 - 58599	188	34	102
58600 - 58699	185	35	101

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
58700 - 58799	187	33	101
58800 - 58899	182	33	100
59000 - 59099	174	36	96
59100 - 59199	174	36	96
59200 - 59299	179	33	98
59300 - 59399	179	36	98
59400 - 59499	168	35	93
59500 - 59599	171	34	94
59600 - 59699	167	36	92
59700 - 59799	167	37	92
59800 - 59899	163	36	90
59900 - 59999	162	34	90
60000 - 60099	217	34	116
60100 - 60199	217	34	116
60200 - 60299	217	34	116
60300 - 60399	217	34	116
60400 - 60499	217	35	117
60500 - 60599	217	35	116
60600 - 60699	218	34	116
60700 - 60799	217	34	116
60900 - 60999	218	35	117
61000 - 61099	214	35	115
61100 - 61199	215	35	115
61200 - 61299	213	36	115
61300 - 61399	215	35	116
61400 - 61499	213	36	115
61500 - 61599	214	36	116
61600 - 61699	215	36	116
61700 - 61799	216	36	117
61800 - 61899	218	36	118
61900 - 61999	217	36	118
62000 - 62099	214	38	117
62200 - 62299	215	38	117
62300 - 62399	212	37	115
62400 - 62499	217	37	118
62500 - 62599	216	37	117
62600 - 62699	214	37	116
62700 - 62799	214	37	116
62800 - 62899	217	38	119
62900 - 62999	217	38	119
63000 - 63099	213	39	117
63100 - 63199	214	38	117
63300 - 63399	212	38	116
63400 - 63499	210	38	114
63500 - 63599	209	38	114
63600 - 63699	213	39	117
63700 - 63799	216	39	118
63800 - 63899	216	40	119

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
63900 - 63999	214	40	118
64000 - 64099	206	40	113
64100 - 64199	205	40	112
64400 - 64499	204	39	112
64500 - 64599	204	39	112
64600 - 64699	207	39	113
64700 - 64799	206	41	114
64800 - 64899	206	42	114
64900 - 64999	205	40	113
65000 - 65099	210	39	115
65100 - 65199	210	39	115
65200 - 65299	209	39	115
65300 - 65399	208	40	114
65400 - 65499	211	40	116
65500 - 65599	211	40	116
65600 - 65699	209	41	115
65700 - 65799	209	41	116
65800 - 65899	208	41	115
66000 - 66099	204	40	112
66100 - 66199	204	40	112
66200 - 66299	204	40	112
66400 - 66499	201	40	111
66500 - 66599	201	40	111
66600 - 66699	203	40	111
66700 - 66799	205	42	113
66800 - 66899	201	41	111
66900 - 66999	198	40	109
67000 - 67099	199	43	110
67100 - 67199	199	43	110
67200 - 67299	199	42	111
67300 - 67399	203	42	113
67400 - 67499	198	41	109
67500 - 67599	196	42	109
67600 - 67699	194	41	107
67700 - 67799	191	42	106
67800 - 67899	192	43	107
67900 - 67999	192	44	106
68000 - 68099	200	38	109
68100 - 68199	201	38	110
68300 - 68399	200	39	109
68400 - 68499	200	39	110
68500 - 68599	200	39	109
68600 - 68699	197	38	108
68700 - 68799	197	38	107
68800 - 68899	195	39	107
68900 - 68999	195	40	107
69000 - 69099	191	41	105
69100 - 69199	190	40	104

ZIP Code	AZ	EL	SK
69200 - 69299	191	38	104
69300 - 69399	185	40	102
70000 - 70099	220	46	125
70100 - 70199	220	46	125
70300 - 70399	218	46	125
70400 - 70499	219	45	124
70500 - 70599	215	47	123
70600 - 70699	213	47	121
70700 - 70799	217	46	123
70800 - 70899	217	46	124
71000 - 71099	211	45	119
71100 - 71199	210	45	119
71200 - 71299	214	44	121
71300 - 71399	214	46	122
71400 - 71499	213	46	121
71600 - 71699	214	43	120
71700 - 71799	211	44	119
71800 - 71899	209	44	118
71900 - 71999	210	44	117
72000 - 72099	213	42	118
72100 - 72199	212	42	118
72200 - 72299	212	43	118
72300 - 72399	215	41	120
72400 - 72499	214	41	119
72500 - 72599	212	41	118
72600 - 72699	210	42	116
72700 - 72799	207	43	115
72800 - 72899	209	43	117
72900 - 72999	207	43	116
73000 - 73099	200	45	112
73100 - 73199	200	45	112
73300 - 73399	203	50	116
73400 - 73499	203	46	113
73500 - 73599	199	46	111
73600 - 73699	197	45	110
73700 - 73799	199	44	111
73800 - 73899	196	44	109
73900 - 73999	192	45	106
74000 - 74099	203	43	113
74100 - 74199	203	43	113
74300 - 74399	205	43	114
74400 - 74499	205	44	114
74500 - 74599	204	45	115
74600 - 74699	201	43	112
74700 - 74799	205	45	115
74800 - 74899	202	45	113
74900 - 74999	206	44	115
75000 - 75099	204	47	115

DISH 500 Installation Instructions with Angles Table

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
75100 - 75199	205	47	116
75200 - 75299	204	47	115
75300 - 75399	204	47	115
75400 - 75499	205	46	116
75500 - 75599	208	45	117
75600 - 75699	208	46	118
75700 - 75799	207	47	117
75800 - 75899	206	47	117
75900 - 75999	209	47	119
76000 - 76099	203	47	114
76100 - 76199	202	47	114
76200 - 76299	202	47	114
76300 - 76399	200	47	112
76400 - 76499	201	48	113
76500 - 76599	204	49	115
76600 - 76699	204	48	116
76700 - 76799	204	48	116
76800 - 76899	199	50	113
76900 - 76999	197	50	111
77000 - 77099	209	49	119
77200 - 77299	209	49	119
77300 - 77399	208	48	119
77400 - 77499	208	49	119
77500 - 77599	210	49	120
77600 - 77699	211	48	121
77700 - 77799	211	48	121
77800 - 77899	206	49	117
77900 - 77999	206	50	118
78000 - 78099	202	52	116
78100 - 78199	204	51	117
78200 - 78299	202	51	116
78300 - 78399	205	52	118
78400 - 78499	206	52	119
78500 - 78599	206	54	119
78600 - 78699	203	50	116
78700 - 78799	203	50	116
78800 - 78899	199	52	113
78900 - 78999	206	50	117
79000 - 79099	192	46	107
79100 - 79199	192	46	107
79200 - 79299	195	47	109
79300 - 79399	192	48	108
79400 - 79499	192	48	108
79500 - 79599	197	49	111
79600 - 79699	198	49	112
79700 - 79799	192	50	108
79800 - 79899	189	52	106
79900 - 79999	184	52	103

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
80000 - 80099	183	43	101
80100 - 80199	184	43	101
80200 - 80299	183	43	101
80300 - 80399	183	42	101
80400 - 80499	181	43	100
80500 - 80599	183	42	101
80600 - 80699	184	42	101
80700 - 80799	187	41	103
80800 - 80899	186	43	103
80900 - 80999	184	44	102
81000 - 81099	187	44	103
81100 - 81199	182	45	101
81200 - 81299	182	44	100
81300 - 81399	178	45	98
81400 - 81499	178	44	98
81500 - 81599	176	44	97
81600 - 81699	179	43	98
82000 - 82099	183	41	100
82100 - 82199	170	38	94
82200 - 82299	183	40	101
82300 - 82399	177	41	98
82400 - 82499	174	38	96
82500 - 82599	174	39	96
82600 - 82699	179	39	98
82700 - 82799	181	38	100
82800 - 82899	177	37	98
82900 - 82999	173	41	95
83000 - 83099	170	39	94
83100 - 83199	171	40	94
83200 - 83299	168	40	92
83300 - 83399	164	40	90
83400 - 83499	168	39	92
83500 - 83599	159	37	88
83600 - 83699	160	39	88
83700 - 83799	160	39	88
83800 - 83899	159	35	88
84000 - 84099	171	42	94
84100 - 84199	170	42	93
84200 - 84299	168	42	93
84300 - 84399	168	41	93
84400 - 84499	169	42	93
84500 - 84599	173	44	95
84600 - 84699	170	44	93
84700 - 84799	169	46	92
85000 - 85099	172	50	94
85200 - 85299	173	50	94
85300 - 85399	170	51	92
85500 - 85599	176	50	96

DISH 500 Installation Instructions with Angles Table

ZIP Code	AZ	EL	SK
85600 - 85699	175	52	96
85700 - 85799	174	51	96
85900 - 85999	176	49	97
86000 - 86099	172	48	94
86300 - 86399	171	49	93
86400 - 86499	167	49	91
86500 - 86599	176	47	97
87000 - 87099	182	48	101
87100 - 87199	182	48	101
87200 - 87299	182	48	101
87300 - 87399	178	48	98
87400 - 87499	178	46	98
87500 - 87599	183	47	101
87700 - 87799	185	47	103
87800 - 87899	181	49	100
87900 - 87999	182	51	101
88000 - 88099	181	51	101
88100 - 88199	188	48	105
88200 - 88299	188	50	106
88300 - 88399	186	50	103
88400 - 88499	188	46	104
88500 - 88599	184	52	103
88900 - 88999	164	48	89
89000 - 89099	164	47	89
89100 - 89199	164	48	89
89300 - 89399	163	44	89
89400 - 89499	157	43	85
89500 - 89599	156	43	84
89700 - 89799	156	44	84
89800 - 89899	162	42	89
90000 - 90099	159	49	84
90200 - 90299	159	50	84
90300 - 90399	159	50	84
90400 - 90499	159	49	84
90500 - 90599	159	50	84
90600 - 90699	160	50	85
90700 - 90799	159	50	85
90800 - 90899	159	50	85
91000 - 91099	160	49	85
91100 - 91199	160	49	85
91200 - 91299	159	49	85
91300 - 91399	159	49	84
91400 - 91499	159	49	84
91500 - 91599	159	49	84
91600 - 91699	159	49	84
91700 - 91799	160	50	85
91800 - 91899	160	49	85
91900 - 91999	162	51	86

ZIP Code	AZ	EL	SK
92000 - 92099	162	51	86
92100 - 92199	162	51	86
92200 - 92299	164	50	88
92300 - 92399	162	49	86
92400 - 92499	161	50	86
92500 - 92599	161	50	86
92600 - 92699	160	50	85
92700 - 92799	160	50	85
92800 - 92899	160	50	85
93000 - 93099	158	49	83
93100 - 93199	157	49	83
93200 - 93299	157	47	84
93300 - 93399	158	48	84
93400 - 93499	154	48	82
93500 - 93599	160	48	85
93600 - 93699	156	46	83
93700 - 93799	156	46	83
93800 - 93899	156	46	83
93900 - 93999	153	47	81
94000 - 94099	151	45	80
94100 - 94199	151	45	80
94200 - 94299	153	44	81
94300 - 94399	152	45	80
94400 - 94499	151	45	80
94500 - 94599	152	45	81
94600 - 94699	152	45	80
94700 - 94799	151	45	80
94800 - 94899	151	45	80
94900 - 94999	151	45	80
95000 - 95099	152	46	81
95100 - 95199	152	46	81
95200 - 95299	154	45	82
95300 - 95399	154	45	82
95400 - 95499	151	44	80
95500 - 95599	149	42	79
95600 - 95699	153	44	82
95700 - 95799	154	44	82
95800 - 95899	153	44	82
95900 - 95999	153	43	82
96000 - 96099	151	42	81
96100 - 96199	155	43	83
97000 - 97099	150	37	83
97100 - 97199	148	36	81
97200 - 97299	150	36	82
97300 - 97399	149	37	81
97400 - 97499	149	39	81
97500 - 97599	149	40	81
97600 - 97699	153	40	83

DISH 500 Installation Instructions with Angles Table

<u>ZIP Code</u>	<u>AZ</u>	<u>EL</u>	<u>SK</u>
97700 - 97799	153	39	84
97800 - 97899	156	37	86
97900 - 97999	158	39	87
98000 - 98099	150	34	83
98100 - 98199	149	34	83
98200 - 98299	150	33	83
98300 - 98399	149	34	83
98400 - 98499	149	35	83
98500 - 98599	148	35	82
98600 - 98699	150	36	82
98800 - 98899	154	34	85
98900 - 98999	153	35	84
99000 - 99099	157	35	87
99100 - 99199	156	35	87
99200 - 99299	157	35	87
99300 - 99399	155	36	86
99400 - 99499	158	36	88
99500 - 99599	113	13	69
99600 - 99699	112	13	69
99700 - 99799	113	10	74
99800 - 99899	130	22	78
99900 - 99999	133	24	79

Notes

Notes

Notes

Notes

Notes

Notes

Notes

