

## Assembling Toroidal

Thanks for choosing Toroidal. This file is developed to assist you in assembling and aligning Toroidal Dish.

With Toroidal dish, you are aiming for more than 1 satellite and therefore this process will require more time for assembling and aligning the dish. If you follow this process carefully, you will cut down the installation time and achieve optimal signal strength for all satellites you are aiming for.



**TIP: Assemble and align Toroidal at ground level** with small TV and receiver right next to you. This will save you a tremendous time. After the alignment, you can put the assembled dish on your roof and adjust azimuth only, take a minute and reducing the risk and sweat!

**Use extreme caution when installing the satellite dish. Since we cannot be responsible for any risks or damages involved in the process of installing the dish.**

## Before You Begin

You will find two pouches including bolts and nuts. One pouch is to assemble the dish and the other is for the pole mount. (Pole mount assembly is not illustrated here. Use the diagram in the box.)

- Print out (if you have not) the part list. Sort and group the bolts and nuts according to the part list. This will save a lot of time and confusion.
- You will need Phillips Screw Driver and 10, 11, 12 mm Wrenches for the assembly.
- Begin the process on flat surface.
- Make sure your location is not blocked from building or a huge tree. Remember you are installing more than one satellite, thus you need a wider clear view of the sky.

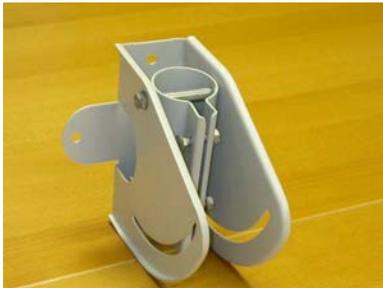
## Step 1: Assembling the Toroidal



Start with **Weaving Tube**. Do not tighten since you will need to put this over the pole mount later on.

Parts: B11, B13

Tools:



Place **Enduring Tube** across **Weaving Tube** and **Back Mount Elevation**. Tighten with bolt and nut.

Parts: A6, A13, B9, B13

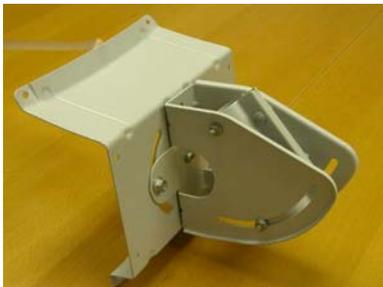
Tools:



Insert B10, B13. Make sure that nuts are outside of **Back Mount**. This is where you make elevation adjustment later on. For T90, use washer for extra holds. Washer also makes it easier adjusting elevation control later on.

Parts: B10, B13, Washer

Tools:



There are 3 connection points on **Back Mount Tilt unit**. Use B8 on the center with B13. Use Phillips driver to tighten. Then, tighten B7 with B14 with hands. Nuts should be on the back of the unit so you can adjust skew angle later on.

Parts: B8, B13, B7, B14

Tools: Phillips



Attach **LNBF Guide Seat** onto **Support Arms**. Then, plug in Support Arm Cap.

Parts: A3, A8, B4, A12

Tools: Phillips



Assemble Support Arms on both side using B3 & B13. Do not use B2.

Parts: B3, B13

Tools: Phillips, Wrench



Attach **Sub Reflector** using B2 & B12. You will find a little hold on the center of the side. This side with hole should be placed down.

Parts: B2, B12

Tools: Phillips, Wrench



Attach LNBF Guide using B5. Pay attention on the orientation of LNBF Guide. The arc is toward outside from the pole mount.

Parts: A4, B4

Tools: Phillips



Attach **Main Reflector** using B1, B12.

Parts: B1, B12

Tools: Phillips, Wrech

## Step 2: LNBF Mounting and Location

For illustration purpose, we will use the following setting for A city. This set up information is provided to the customers. If you have not received one from your supplier, you can request on using a set up information request form at [www.multilnbdish.com](http://www.multilnbdish.com).

### Example for

**Model:** Toroidal 55  
**City:** A City, CA  
**Country:** USA

Azimuth	Elevation	Skew	91W	101W	110W	119W
156	45	95	L20.0	L10.0	R0.0	R10.0

The below illustration shows the LNBF Holder setting procedure for **119W** with **R10.0**.



Look closely on the top of LNBF holder supporter. It has grid showing L20, L10, R10, R20.

Parts: A9

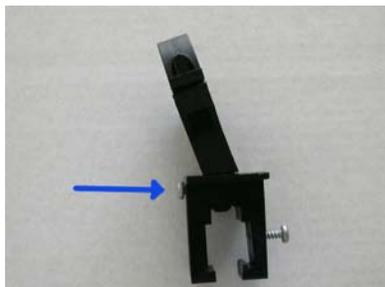
Tools:



Insert LNBF Holder into the Supporter. Rotate/Align the bottom of Holder so it can align to R10 Grid.

Parts: A10

Tools:



Tighten the aligned holder by using B6. Place another B6 with your hand. Do not tight this one. This (2<sup>nd</sup> one) will be tightened at the very end of this whole process.

Parts: B6

Tools: Phillips



Place LNBF inside the holder and tighten another B6. You may need to **LNB Adapter (A11)** to secure LNBF depending on the neck size of your LNBF.

Parts: B6, LNBF

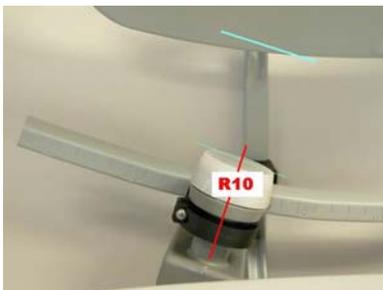
Tools: Phillips



Align the center of **LNB Holder Unit** at the **R10** marking of LNB Guide. Note that each end of the LNB guide has the marking of "L" and "R".

Parts:

Tools:



After setting LNB Holder Unit into through the guide, loosely tight screw so that the unit can stay on the guide. You will tighten this screw at the very end of this process. You will find that surface of LNB and Sub Reflectors are symmetrically aligned.

Parts:

Tools: Phillips



Install other LNB Units as you require using the same method.

Parts:

Tools:

### Step 3: Aligning Toroidal

We will use the same setting used before for illustration purpose.



First, makes sure that your pole mount is absolutely vertical. Without vertical pole, all other setting are meaningless.

Parts:

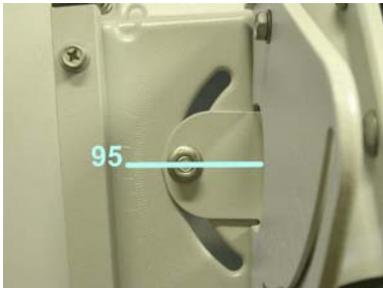
Tools:



Without any skew adjustment, adjust elevation. You can use an angle locator as shown or use elevation reading on the bracket. (Align the edge of tube to the readings)

Parts:

Tools: Wrench

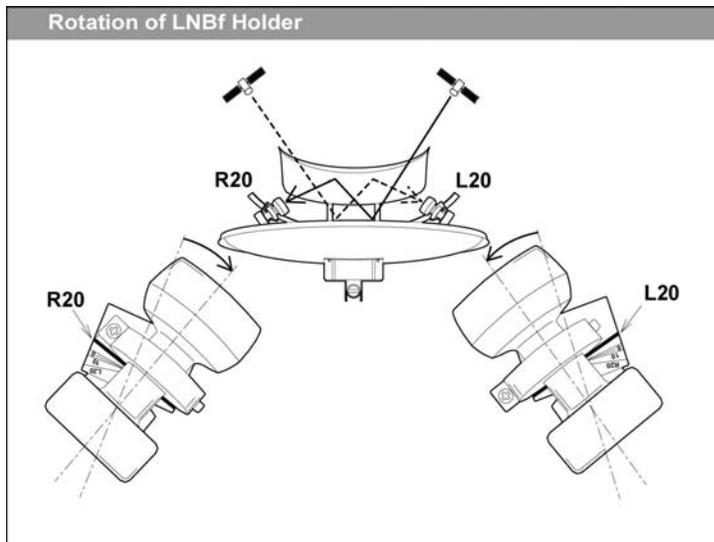


Make skew adjustment. Tighten but remember you may need to adjust this later on. So do not use excessive force.

Parts:

Tools: Wrench

## Step 4: Aiming for Satellites



This illustration shows the basic principle of Toroidal how it captures multiple satellites.

When you stand behind Toroidal, the far left side LNBF will recognize the far right side satellites.

This can be only achieved when your set up has a proper azimuth, elevation, skew and LNBF positions.

Pay attention on the adjustment of LNBF rotation and its location on the guide. R20 location requires alignment of R20 on the LNBF holder.

1. It is easier to start with the center LNBF (or the LNBF nearest to the center, 101W for this case) Connect the center LNBF to your receiver or a satellite finder.
2. **Adjust elevation and skew angles** as indicated on the set up info provided to you. (You should've already set up the angles if you followed this instruction. You will need to adjust these angles as you go along the steps. So don't tighten them too much.)
3. **Adjust azimuth** by moving antenna unit left and right to find the best signal. Then, tighten Weaving Tube Unit to the pole. Now you find a signal for the center LNBF, you need to optimize the signal.
4. **Adjust elevation and azimuth** ( $\pm 1$  degree) at the same time to achieve the highest signal strength for the center LNBF. **The elevation is the most critical factor** aligning the antenna. So far it is the same procedure with setting up a parabolic antenna.
5. Now connect the cable to the other LNBFs (ones at the end) and measure the signal strength. **Adjust LNBF holder position** until you get good signal strength.
6. Repeat step 5 for other LNBFs.
7. If you are not satisfied with signals on all satellites, your next step would be **adjusting skew angle**  $\pm 1$  degree and measure the signal and repeat step 4~6.
8. When you achieve good signals on all satellites, tighten all screws, bolts and nuts. Also make sure that your pole mount is securely attached to the roof, wall or ground. **[Especially if you live in a windy area.]**