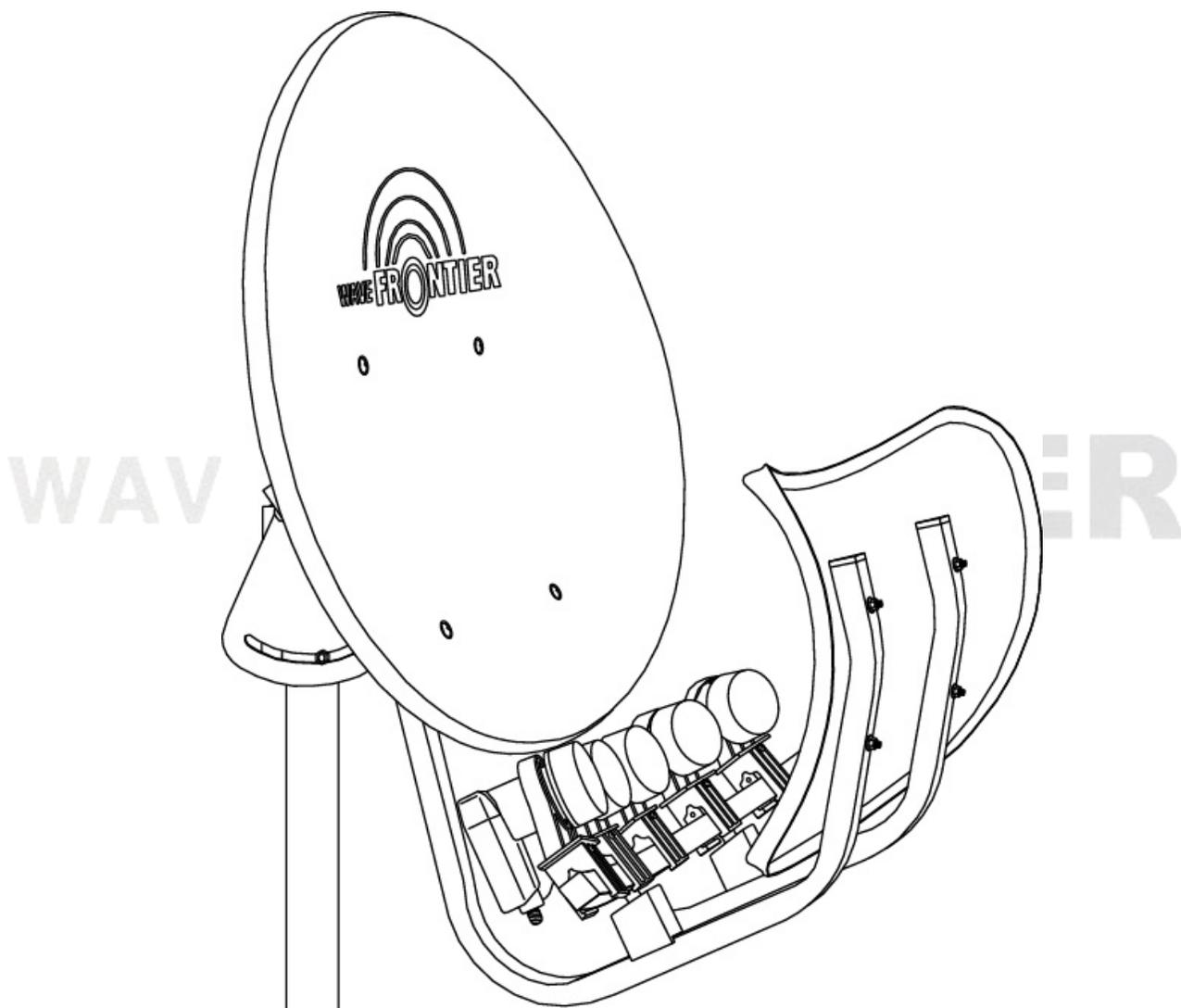


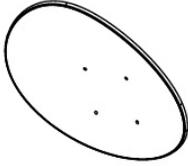
INSTALLATION MANUAL

For Toroidal 55 Multi-Beam Satellite Antenna



PARTS LIST

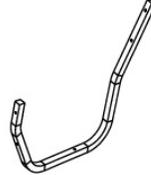
A1 : Main Reflector
(1ea)



A2 : Sub Reflector
(1ea)



A3 : Support Arm
(2ea)



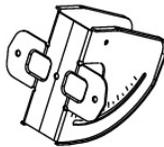
A4 : LNBf Guide
(1ea)



A5 : Back Mount Tilt
(1ea)



A6 : Back Mount Elevation
(1ea)



A7 : Weaving Tube
(1ea)



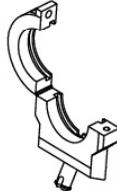
A8 : LNBf Guide Seat
(2ea)



A9 : Holder Supporter
(5ea)



A10 : LNBf Ku Band Holder
(5ea)



A11 : LNBf Ku Band Adapter
(5ea)



A12 : Support Arm Cap
(4ea)



A13 : Enduring Tube
(1ea)



B1 : M5*12 (4ea)



B2 : M5*30 (4ea)



B3 : M6*30 (4ea)



B4 : M6*37 (2ea)



B5 : M5*15 (2ea)



B6 : M5*15 (15ea)



B7 : M8*15 (4ea)



B8 : M6*12 (1ea)



B9 : M6*65 (1ea)



B10 : M6*20 (2ea)



B11 : M6*12 (2ea)



B12 : M5 NUT (8ea)



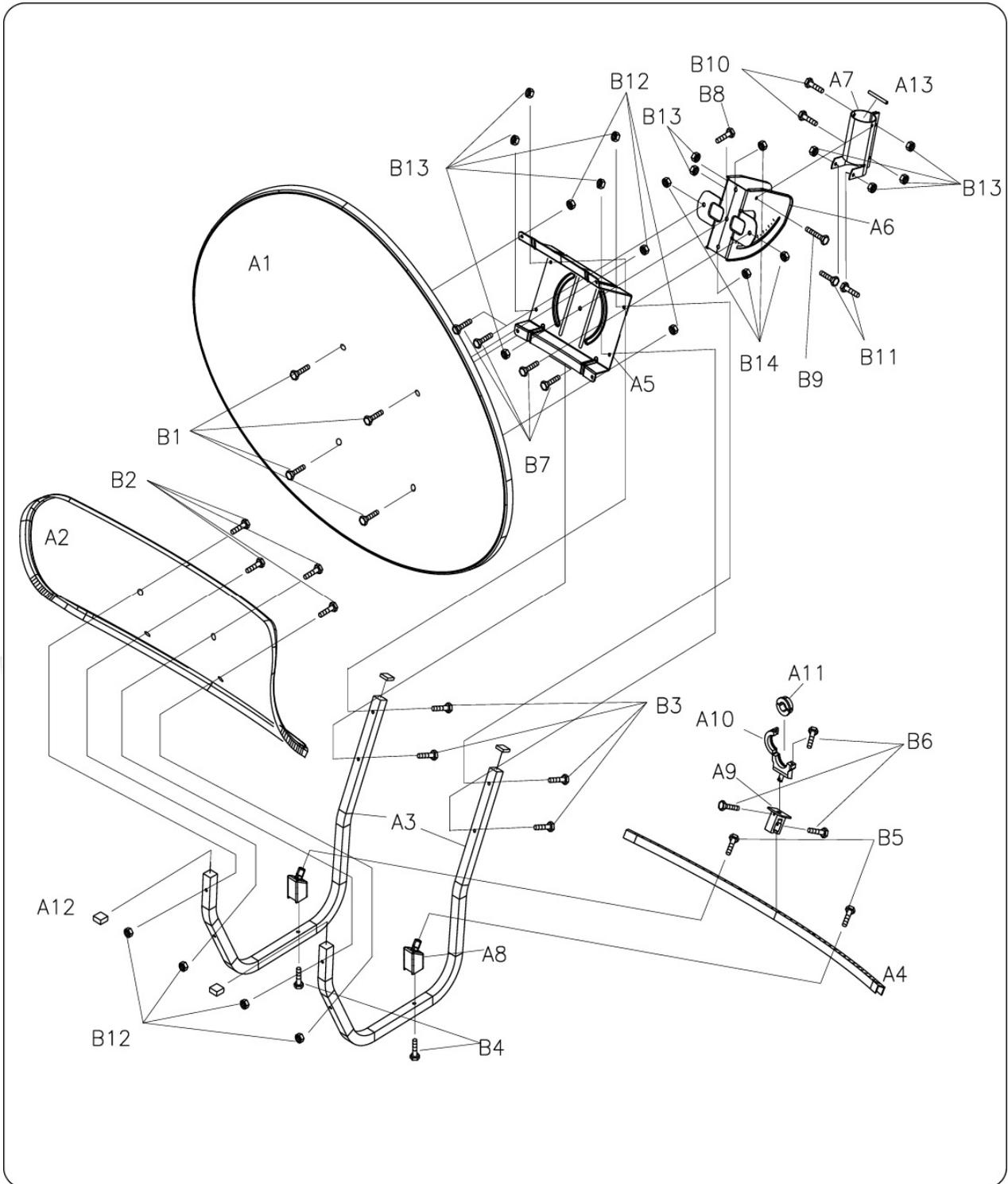
B13 : M6 NUT (10ea)



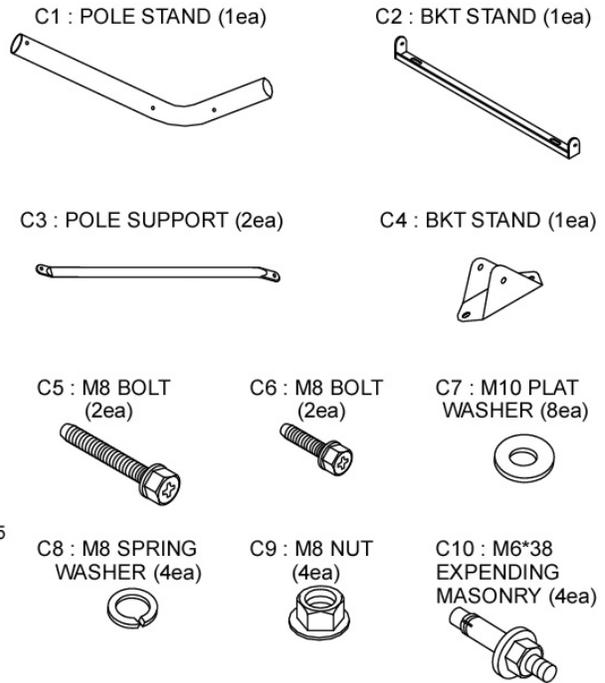
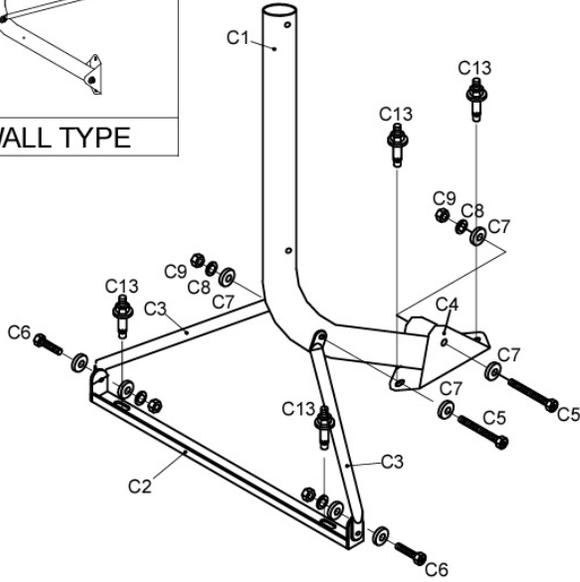
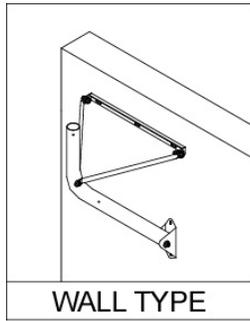
B14 : M8 NUT (4ea)



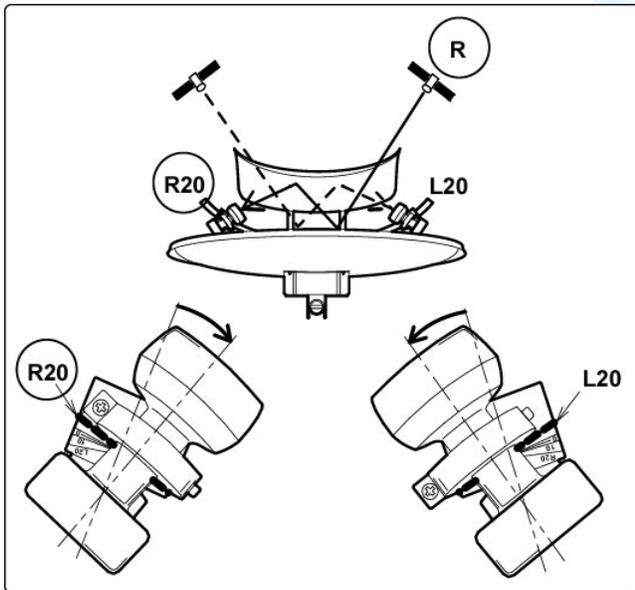
ASSEMBLY DIAGRAM



POLE MOUNT ASSEMBLY



BASIC: HOW TOROIDAL WORKS



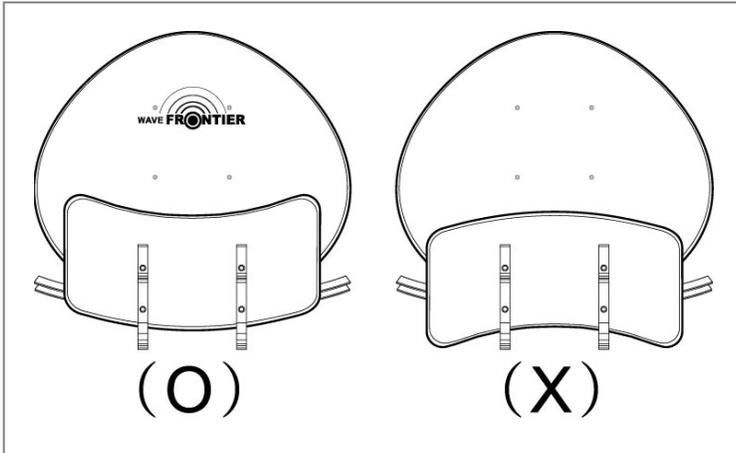
The illustration shows how signal travels through Toroidal. Signals are reflected twice; 1st on the main reflector and 2nd on the sub reflector. This is how Toroidal can capture multiple signals within **40 degrees in arc**. [In other words, you can capture satellites from 90W ~ 130W or 60W ~ 100W or 110W ~ 150.]

Please note that LNBF for your upper right satellite (e.g. 119W) is on the left side of guide at R20 (if you stand behind the dish).

You will find markings (from R20 to L20) on both guide(A4) and holder supporter(A9).

BEFORE ALIGNMENT PROCESS

■ Check Your Assembly (Sub Reflector)

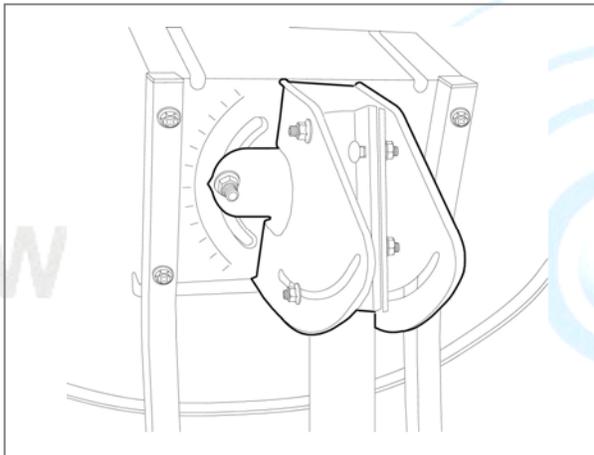


Follow the assembly diagram to assemble your Toroidal.

Check the orientation of your sub reflector and guide as illustrated on the figure.

(O) is the correct assembly of sub reflector.

■ Check Your Assembly (Back Mount Unit)



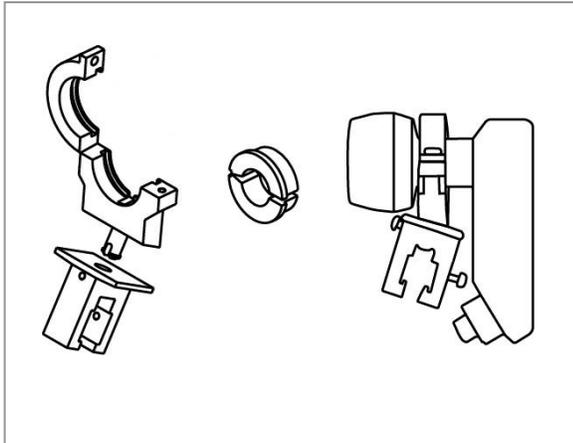
Check the orientation of back mount unit as illustrated on the figure.

■ Check Your Receiver

1. Please check your receiver if it is properly working with your regular parabolic dish before you try to connect to Toroidal.
2. Some receiver requires frequency range information in its setup process;

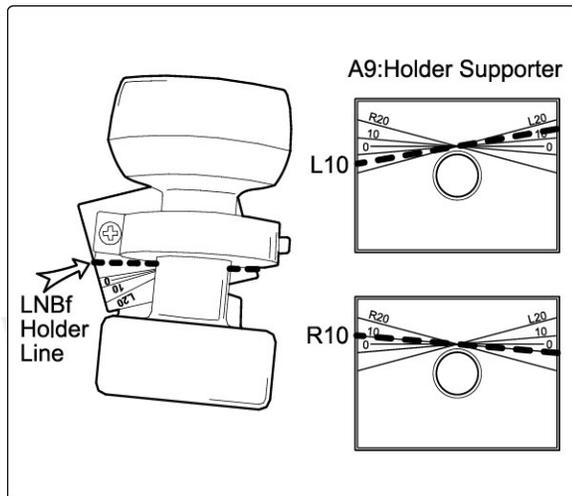
Model	Description	Frequency Range	Used For
M20R	Reversed DSS LNBF	12.2 Ghz ~ 12.7 Ghz	DirecTV: 101/119W DishNet: 61.5/110/119/148W Bell Express Vu: 82/91W
C10R	Reversed Sat C LNBF	12.6 Ghz ~ 12.7 Ghz	DirecTV 110W Only

PRE-ALIGNMENT: LNBF HOLDER



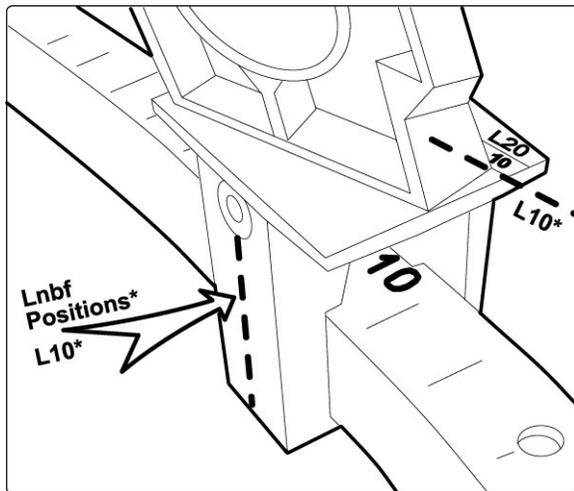
Please refer to the setup information provided to you. If you have not received the information, please request your zip code specific information at the "Setup Info" section on www.WaveFrontier.US.

Assemble holder parts by hand at this stage. Adapter will be required if neck size of your LNBF is less than 40 mm.



Align the LNBF holder line to the corresponding scale on the holder supporter. If your setup info indicates that "A" satellite is L10, rotate the holder till holder line reaches the L10 line on the supporter.

This adjustment has a minimal impact on signal strength. If you setup info indicates a value with decimal number such as L14.7, place between L10 and L20.

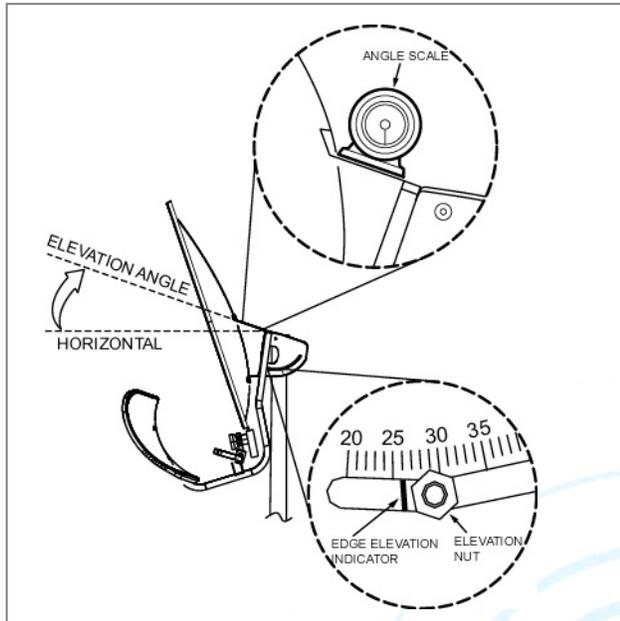


Place your pre-assembled holder onto the guide. Locate the center of the holder to the value give on the information. If your setup info indicates that "A" satellite is at L10, place the holder at L10 on the guide.

You will be making adjustment of this location when you do the fine tuning of Toroidal alignment at the final stage.

PRE-ALIGNMENT: TOROIDAL

■ ELEVATION



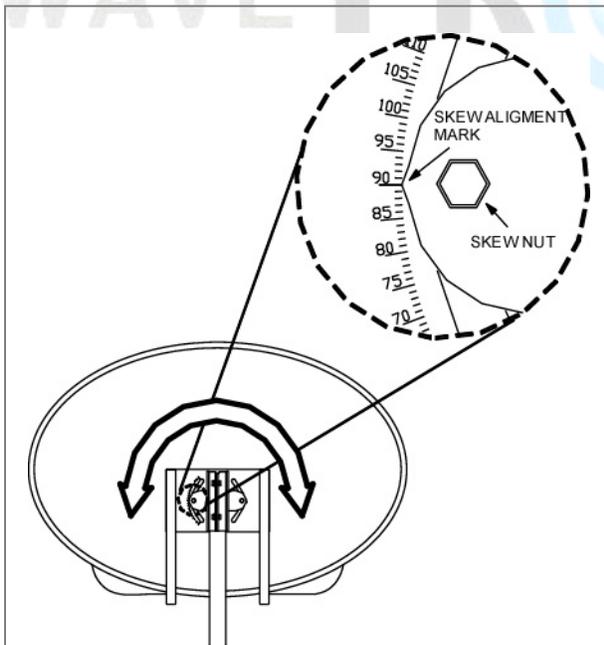
Tip: You will be making adjustment on elevation, skew and azimuth angles when optimizing your setup throughout the process. Do not use excessive force when assembling moving parts.

VERY IMPORTANT: Make sure that your pole mount is in absolute vertical position.

Use angle scale locator or adjust 'Edge Elevation Indicator' to the value provided.

Note that elevation is the most important and critical factor in aligning Toroidal dish.

■ SKEW



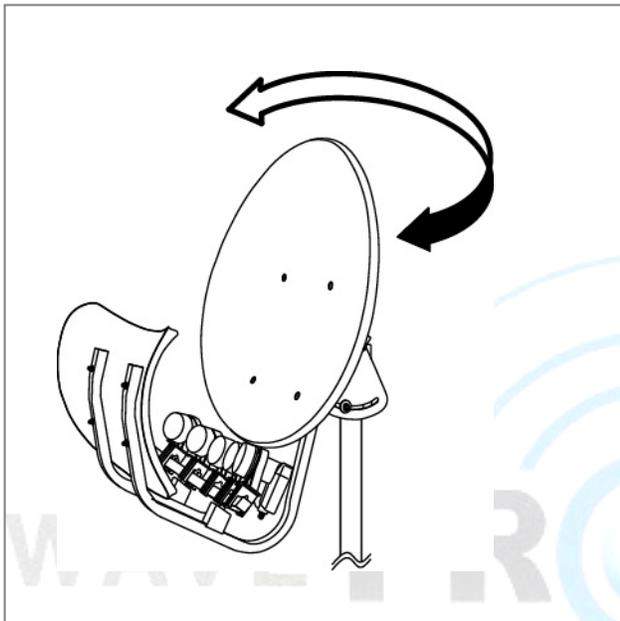
Adjust skew angle as given in the setup information.

ALIGNMENT: TOROIDAL

■ TIP

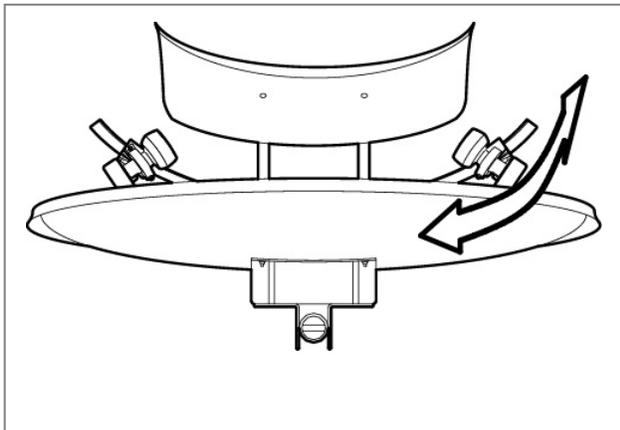
If possible, align Toroidal on the ground level with your receiver and monitor right next to Toroidal. (or use a sat finder equipment). It is MUCH FASTER, EASIER and SAFER.

■ AZIMUTH SETTING



1. Connect your receiver to the center LNBF (closest one to the center). Do not use any switch at this point unless you are absolutely certain that your switch and receiver works properly.
2. Swing the dish left/right to find signal on your center LNBF. You may also need to adjust elevation to do this.
3. Once you found signal, do the fine-tuning by adjusting elevation and azimuth and check signal strength simultaneously, get the best possible signal you can get.
4. You will need to move the dish (up/down and left/right) a little by little to get the best signal. It will take your time and patience.

■ LNBF LOCATION ADJUSTMENT

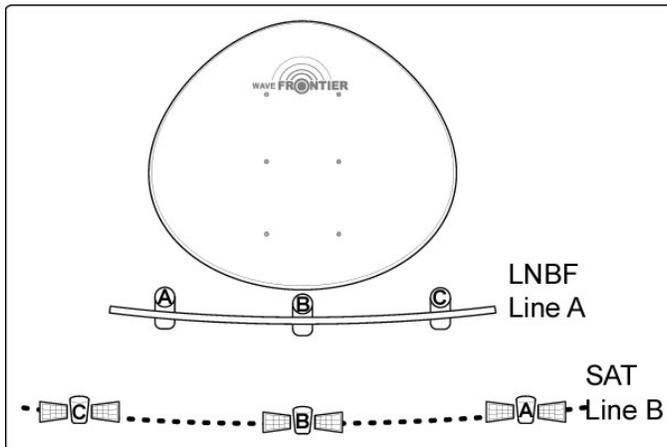


Once you have a satisfactory signal on the center LNBF, move on to the next LNBF.

You can also make adjustment on location of each LNBF (except center-LNBF) to get a better signal.

Tip: Even if your azimuth is off from the calculated setup info, you can recover azimuth offset by adjusting LNBF location on the guide.

FINE-TUNING: TOROIDAL

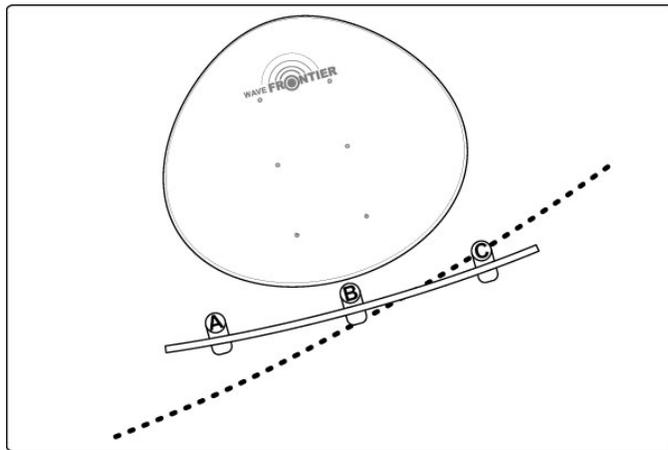


The alignment process of Toroidal is to adjust two lines in parallel.

Assume that "A" line is formed by your LNBFs and "B" line is formed by your target satellites.

The alignment process of Toroidal is to make these two lines parallel.

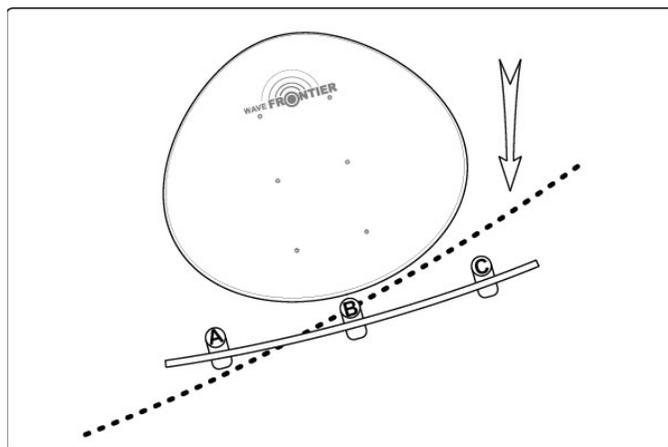
In reality, the line B is not a straight line.



Assume that you have 3 satellites that you want to target.

Assume Your signal readings are as follows after the initial alignment process;

- LNBF A: No signal
- LNBF B: 75%
- LNBF C: 95%



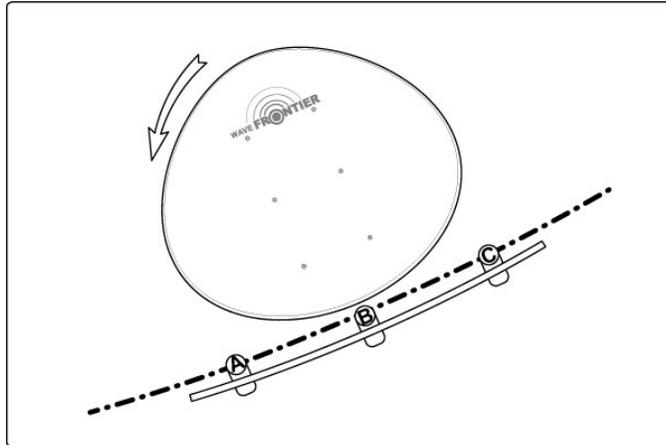
You will need to lower elevation since your center-LNBF is at a higher point than the satellite B's focal point.

After elevation adjustment, signal readings will be:

- LNBF A: 75%
- LNBF B: 95%
- LNBF C: 75%

Now your LNBF A is at higher point and LNBF C is at lower point.

FINE-TUNING: TOROIDAL



The final step would be changing a skew angle to align A & C.

After the skew angle adjustment:

- LNBF A: 95%
- LNBF B: 95%
- LNBF C: 95%

The adjustment of skew angle is same as adjusting the elevation angles for sat A & C.

REGISTRATION / SERIAL NUMBER

Your Toroidal comes with 1 year manufacturer's limited warranty. To ensure your warranty coverage, you must do the followings:

1. REGISTER YOUR TOROIDAL

- Visit www.WaveFrontier.US
- Logo on to REGISTER section
- Provide all required information

2. KEEP SERIAL NUMBER

- Please take off the serial number label and place this on the back of MAIN REFLECTOR. (at the bottom portion)
- Wave Frontier may require a customer to submit this serial number for any types of warranty or customer service inquiry and may refuse warranty request to a customer without a valid serial number.

