



## **LS 5000 5 Meter Satellite Earth Station Antennas**

**C Band & KU Band**



- ✓ Aluminum spun system one piece reflector
- ✓ Parabolik Prime Focus
- ✓ AZ/EL or Polar Mount
- ✓ Easy Installation

# Electronic Performance Specifications

Frequency	3.7.....4.2 Ghz	10.95.....12.2 Ghz
Gain At Midband	45 db	54 db
WSWR	1.25.1	1.25.1
Beamwidth -3db	1.05	0.34
<u>Antenna Noise Temperature</u>		
10° Elevation	36° K	56° K
20° Elevation	30° K	47° K
40° Elevation	25° K	43° K
<u>Sidelobe Pattern</u>		
<u>Performance</u>		
1st Sidelobe	-14 db	-14 db
Antenna F/D Ratio	0.36	0.36
Focal Length	183 cm	183 cm

# Mechanical Product Specifications

Reflector Material	Aluminium Thickness 3mm
Azimuth Travel	120° Continuous
Elevation Travel	5° to 85° Continuous
Surface Accuracy	0.3 mm Reflector
Weight Reflector	200 Kg
Weight Pedestal	300 Kg
Operation Wind Speed	120 Kmh
Reflector Surface	Color White Polyamid Paint
Pedestal	Hot Galvanized
Foundation Sizes	300 * 300 * 50 cm
Concrete Volume	4.5 m <sup>3</sup>
Reinforcing Steel	230 Kg
Soil Bearing Pressure	10.000 Kg m <sup>2</sup>

# LASER LS 5000

5 meter Satellite Earth Station Antenna is 3 mm thickness and 1050 quality produced with special quality aluminium and Spun system machinery is used for production.

Reflector is being moulded at the diameter of 507 cm. as one piece. Because the size of the reflector creates problem in the shipping the reflector is cut in half and shipped in transportation cases.

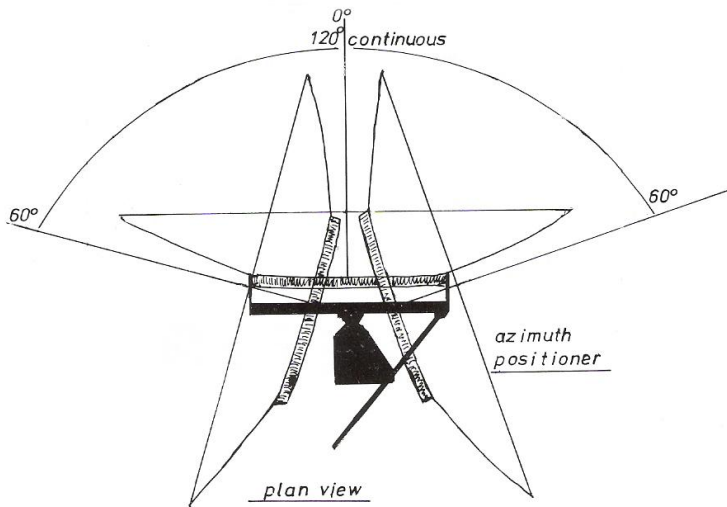
It can only be transported inside Turkey in a case produced by our company.

It is crucial to ship the reflector as one piece right from the mould to the customer which causes the antenna to work at higher performances and ideal for montage.

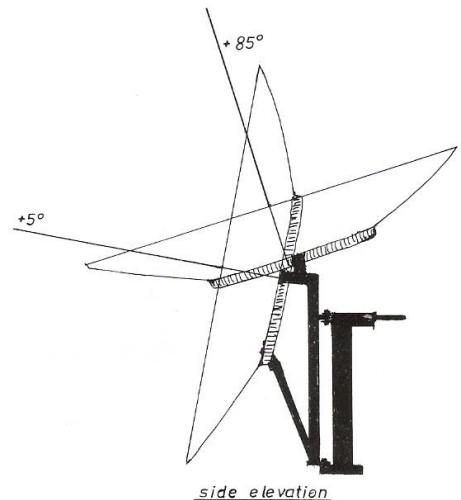
- ✓ The stands for the antennas are AZ/EL or Polar Mount and hot galvanized.
- ✓ The finalized dish is special polyamide paint.

With easy montage Laser 5 meter antennas are designed for maximum performance and mechanical trustibility.

We strongly advise you to read this instruction manuel before assembling the antenna to learn the correct order of montage.



(Azimuth) The boundaries for setting up the direction from South Pole to the East.

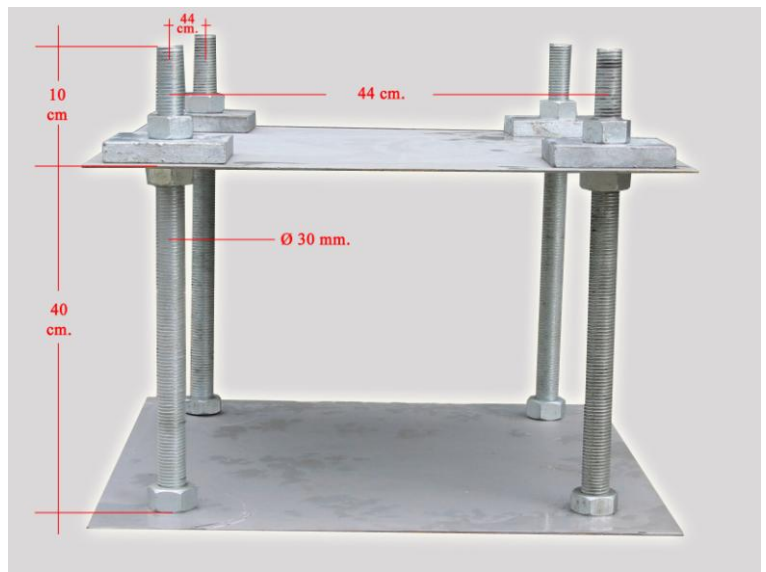


(Elevation) Antenna elevation Setting.

Replace the concrete template shown in Picture 01 at the center of concrete mould in Picture 02 as shown.

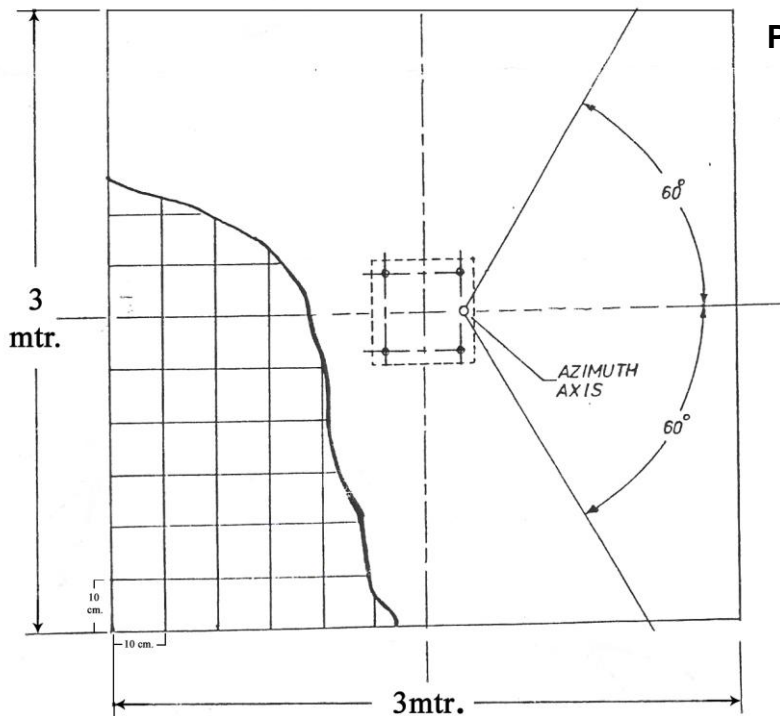
Asamble the iron matting as illustrated and at the same time connect the iron matting to the concrete mould.

The top plate of the mould (60 x 60) must be at the same level and balance with the concrete.

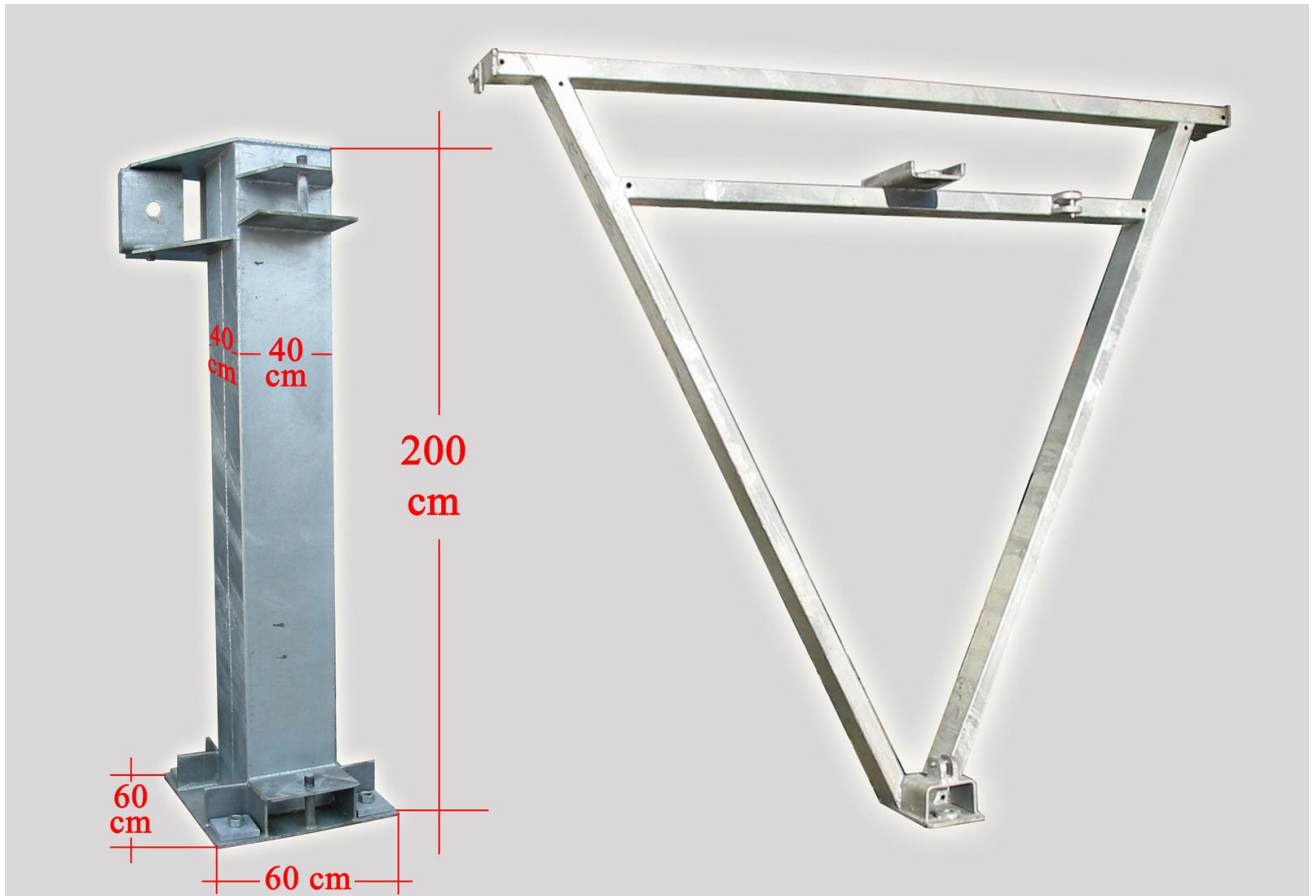


**Picture 01 – Concrete Template**

The concrete quality must be BS25. After concrete application you will have 3Mtr x 3 Mtr x 50cm foundation and 4 pieces 30 Ø mm diameter bolts and bolt ends with 10 cm from the concrete for assembling.



**Picture 02-Concrete Measurements.**



**Picture 03 – Kingpost**

**Picture 04 – V Frame**

## Pedestal Installation

### Kingpost Installation

Without the use of a crane, three workers can lift the kingpost into position over the anchor patterns. Be sure the pedestal is properly oriented with the foundation heading. Install the remaining anchor hardware and torque to 740 ft-lbs dry.

### V Frame Installation

- ✓ After having secured the kingpost in place in accordance with Picture 04, the V frame is carried with 2 persons and fitted in its place.
- ✓ The 3rd person should mount the two bolts and the teflon bushings.
- ✓ The V frame should rotate freely without binding.



**Picture 05 – Azimuth and Elevation Adjustments**

### Azimuth Strut (Picture 05)

The horizontal turn adjustment pin is provided complete and ready for use. Attach loosely this pin to its place between the kingpost and the V frame. Tighten all bolts after having made all the necessary adjustments.

### Elevation Strut

Mount the elevation strut loosely through one of the 2 mounting holes -one on top of the other – on the V frame according to the degree that you want to use. The other end of the strut will be attached to the dish after the dish is mounted. This adjustment pin group ensures easy elevation adjustment. A 10 mm diameter metal bar in the middle of elevation strut when returned left or right will provide for easy movement of the antenna up and down. Strongly tighten the two bolts after completing all adjustments.



## Polar Mount



**Picture 06 – Polar Mount**

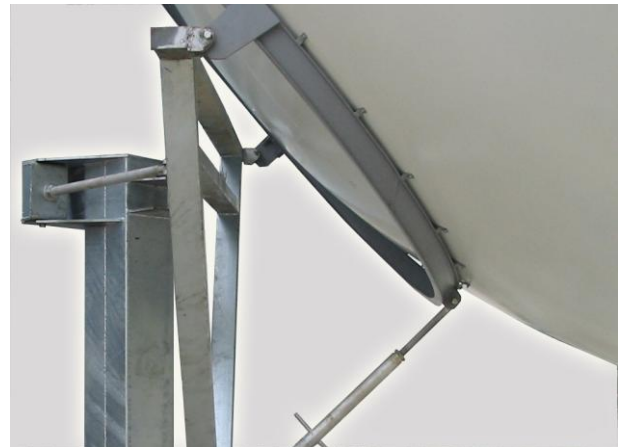
For 5 meter antenna Polar Mount is controlled with two motors. As shown in Picture 06; For two pieces of 36" motor, connection elements are designed and applied during the production instead of the Azimuth Adjustment and Elevation Adjustment of AZ/EL Mount. 2 units of antenna positioner is needed for controlling 2 motors. Some companies produce antenna positioners with two positioners including the receiver. You can also use two different antenna positioners by using the same brand and same model such as Echosphere, Drake etc.



**Picture 07 – Azimuth Adjustment Axle**



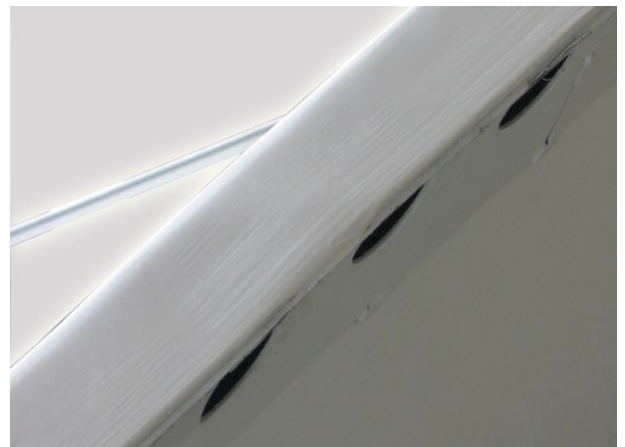
**Picture 08 –Stand connection with V Frame and elevation axle connection.**



**Picture 09 – Complete AZ/EL Mount**

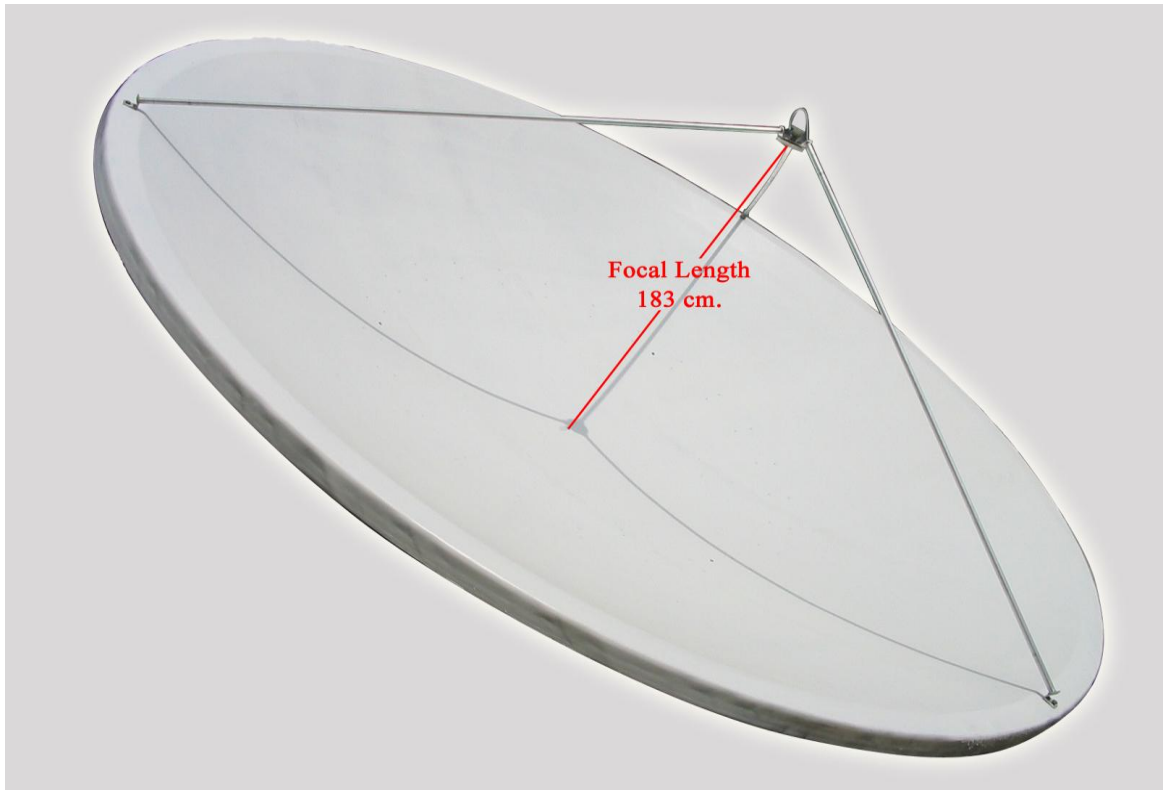


**Picture 10 – Reflector's connection to mount.**



**Picture 11 – Reflector Side Format.**





## Antenna Focal Adjustment

- ✓ Adjust the Focal Point after assembling the Feed Horn Stand and attaching the LNB to Feed Horn.
- ✓ The focal length of a 5 meter dish is 183 cm.
- ✓ The focal length is the distance between the plastic cover at the point of Feed Horn and the Ø16 mm hole which is at the center of the Reflector.
- ✓ Feed Horn can be adjusted from 182.5 cm to 183.5 cm by the adjustment screws with springs located at the center of Feed Horn.
- ✓ First adjust the Focal length to 183 cm.
- ✓ Then while the Antenna and the Satellite test equipment is working, find the maximum gain level by adjusting it to either 5 mm below or 5 mm above while checking it from your equipment.

## Feed Horn Tripod and Feed Horn



**Picture 12 – Feed Horn and Stand**



**Picture 13 – Focal Length Adjustment.**

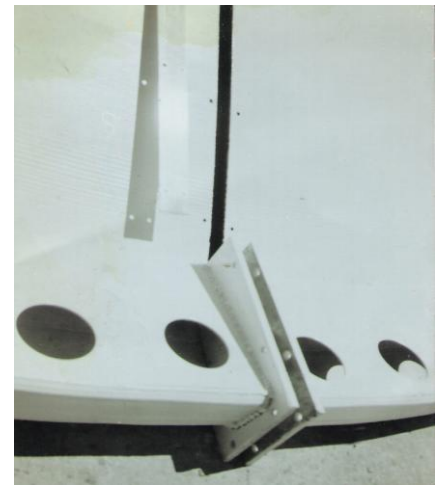
- ✓ Feed-horn tripod consists of three aluminium pipes and one central collector unit.
- ✓ Before the pipes are bolted to the edges of the dish they should first be connected to the central collector unit.
- ✓ When feed-horn is mounted at the center (Picture 12) it should be exactly in the middle of the dish facing flat the center of the dish.
- ✓ In the event of slanting, stretch by hand the aluminium central collector plate and correct it.
- ✓ If your focal distance is correct your antenna will now be ready for operation.
- ✓ After this you can fix your antenna on any satellite.

## Reflector With Two Halves

The reflector is generally divided into two halves when exported. To ensure ease of installation and attain its original form, 10 mm aluminium assembly plates are soldered on the two sides and the center of both of the two halves. Firstly, these plates on the two halves and the center of the dish should be bolted on a flat surface near the foundation.

After this, the aluminium belts should be bolted in place by controlling the numbers engraved on them. Similarly, please also pay attention to hoop numbers engraved on the hoop so that the numbers on the hoop and the dish coincide.

Be very attentive so that the dish is not damaged by accidents such as falling down, something hitting it, somebody walking on it etc. during assembly. After this process and before raising the dish for installation, you should perform an accuracy test for undesired stretching of the dish with a rope as demonstrated in (Picture 17)



**Picture 14 – Two Halves Reflector**

If stretching is found out, 4 persons should stand one opposite the other at the edges of the dish; two of them should press the edges in one direction the other two in the opposite direction until the ropes are aligned. In this way the dish will yield best performance.

Now see the special lifting hole on the (back clamp). The reflector assembly should be hooked up through that hole by crane and lifted up very carefully and moved into position and mounted on the pedestal. Firstly, it will be bolted in place by two connection pieces on the left and right hand sides of the steel hoop on the back of the dish. Here you should be careful to see that the V frame and the hoop connections are comfortably and exactly aligned. Do not try to tighten bolts by stretching. If you insist bolting by stretching you may stretch the hoop which in turn will stretch the dish. After this process, connect the free end of the elevation strut to the steel hoop behind the dish.



Picture 15 - Preparation of 5 meter dishes inside the frames for the 20 foot open top containers.

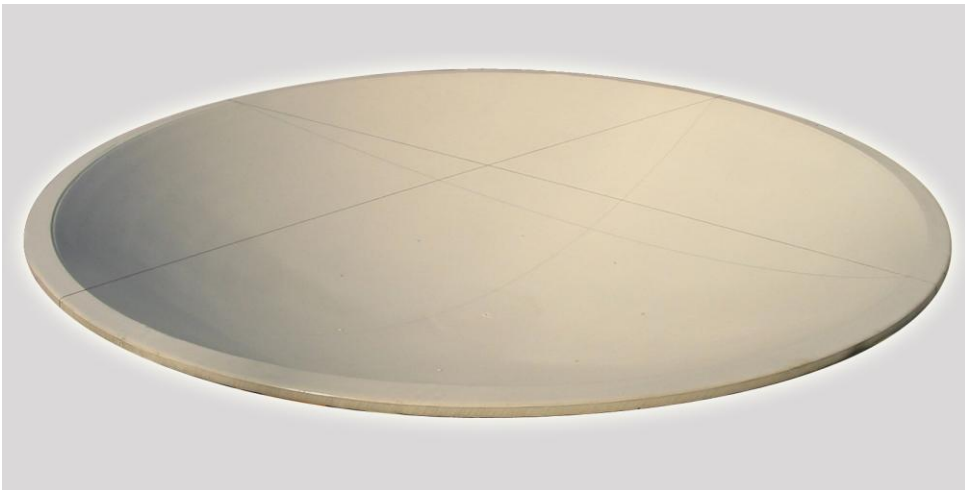


Picture 16 - 5 units of 5 meter Satellite dishes replaced inside 20 foot open top container



# Antenna Dish Test

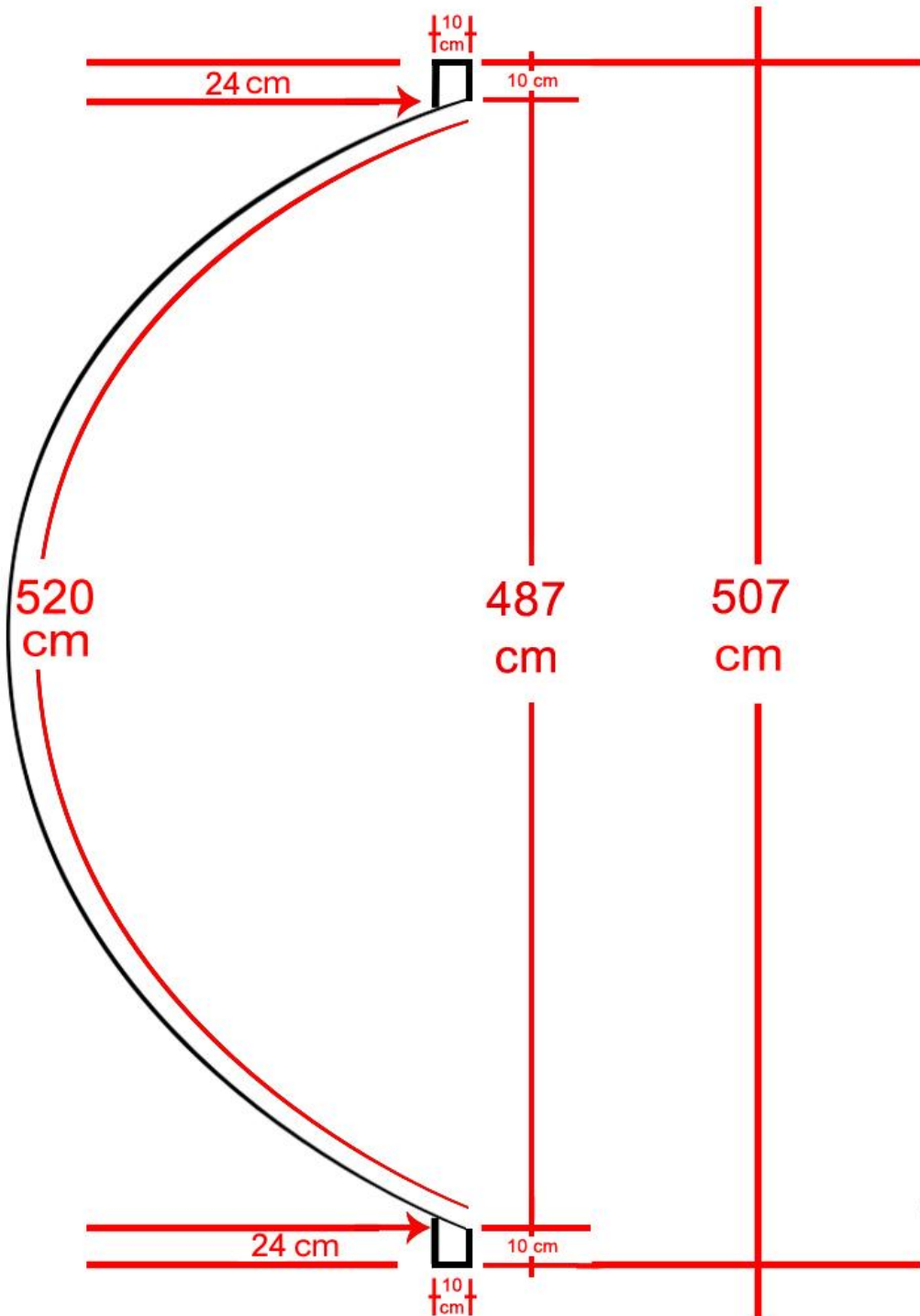
- ✓ Before installation lay down the dish and with four people pull tight good quality thin rope from four ends as demonstrated in the picture.
- ✓ The ropes should touch each other comfortably at the crossing point. In case one of the ropes is higher than the other then correct dish by pushing slightly from opposite sides.
- ✓ Apply same procedure from a number of different points.
- ✓ For the best result you should apply this procedure most correctly.



Picture 17



# 5 Meter Dish sizes





*Laser Elektronik Ayazağa Factory*

**LASER ELEKTRONİK SAN. TİC. LTD. ŞTİ.**

**HEAD OFFICE**

Teşvikiye Fırın Sokak Kadem Emiroğlu iş Merkezi No: 22 D:10 Teşvikiye İstanbul  
Tel: +90 ( 212 ) 249 56 72 Fax: +90 (212) 251 92 74

**FACTORY**

Kemberburgaz Yolu Caddesi No: 47 - 49 Ayazağa İstanbul  
Tel: +90 (212) 289 09 58

**<http://www.laserelektronik.org>**

**[contact@laserelektronik.org](mailto:contact@laserelektronik.org)**