

MATSING[®]

LENS TECHNOLOGY ENABLED

MBC Installation & Alignment General Guide *(Multi Beam Cylindrical Antenna)*



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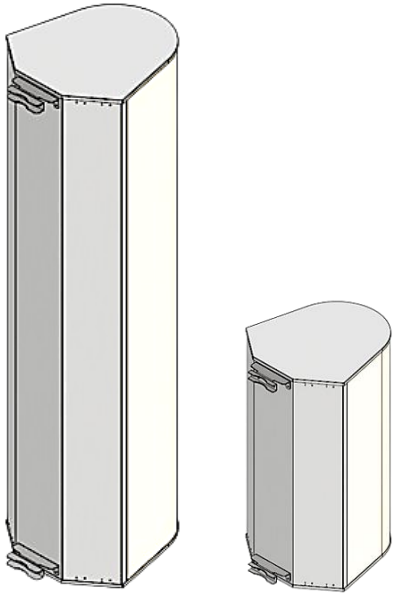


Revision History:

<u>Date</u>	<u>Description</u>	<u>Rev By</u>	<u>Check By</u>	<u>Rev no</u>
28-Mar-2025	Initial Release	RL	Pavel	0

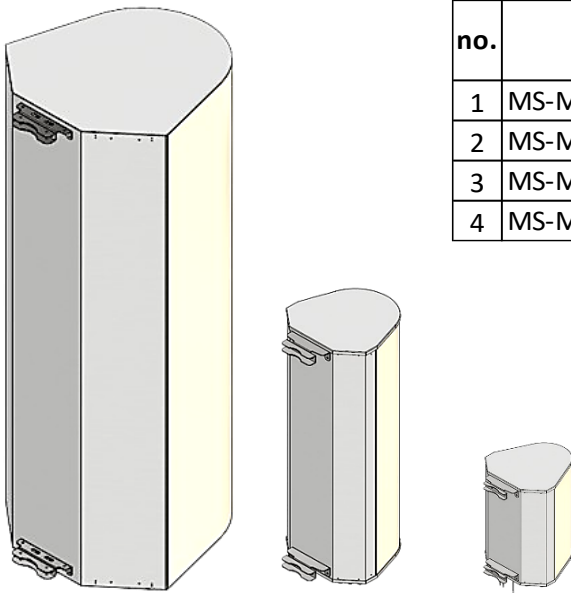
1.00 Multi Beam Cylindrical Antenna (MBC) overview

1.10 MBC- 2 series models



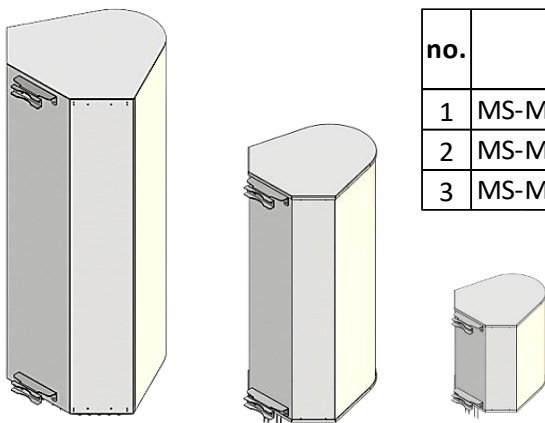
no.	Model	Dimensions (cm)			Wtg (kg)
		Height	Width	Depth	
1	MS-MBC-2-L2-15	125.0	65.0	75.7	37.96
2	MS-MBC-2-L4-15	245.5	65.0	77.1	61.90

1.20 MBC- 3 series models



no.	Model	Dimensions (cm)			Wtg (kg)
		Height	Width	Depth	
1	MS-MBC-3-H2-12	78.2	48.3	55.6	20.08
2	MS-MBC-3-H4-12	127.4	48.3	55.9	30.74
3	MS-MBC-3-L4-16	245.0	96.8	106.3	127.5
4	MS-MBC-3-T4-16	245.0	96.8	106.3	127.5

1.30 MBC-4 series models



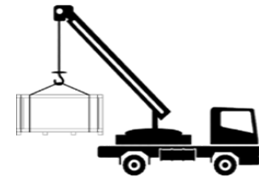
no.	Model	Dimensions (cm)			Wtg (kg)
		Height	Width	Depth	
1	MS-MBC-4-H2-12	78.0	54.6	66.2	25.46
2	MS-MBC-4-H4-12	135.5	54.6	66.2	38.92
3	MS-MBC-4.2-H4-12-L4-20	173.7	77.3	77.3	67.02

2.00 Antenna Unloading, Transportation, and Unpacking

⚠ **Important Note:** Unloading and transportation must be conducted by **certified logistics personnel** using appropriate lifting and handling equipment. The following guidelines ensure safe and correct handling of the antenna to prevent damage.

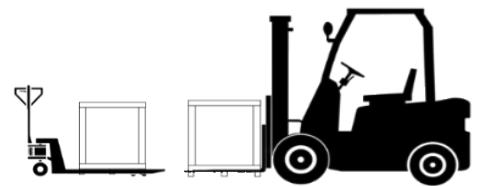
2.10 General Unloading Guidelines

- The **antenna must remain in its original packaging** until ready for installation.
- Use only **approved lifting methods** (crane, forklift, hydraulic jack) to handle the antenna.
- **Do not drop, tilt, or drag** the antenna to avoid damage to internal components.
- If using a **forklift**, position the forks **under the designated lifting base** of the crate.



2.20 Transportation Best Practices

- The antenna should be transported in an original packaging position and secured to prevent movement.
- Use **ratchet straps** or other securing methods to prevent shifting during transport.
- Avoid **excessive vibration or impact**, which may affect internal components.



2.30 Antenna Unpacking Procedure

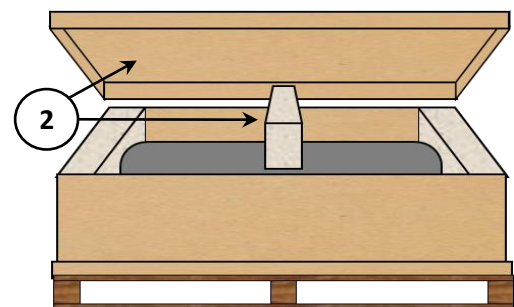
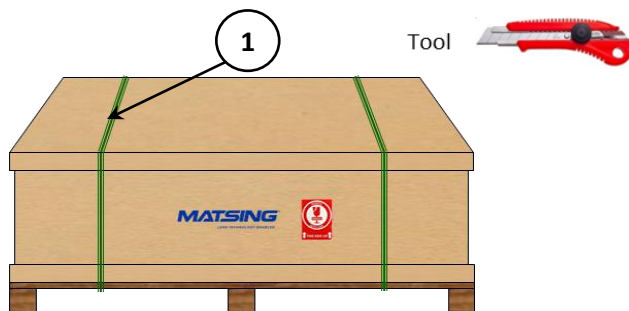
⚠ **Caution:** Ensure unpacking is done on a **stable and level surface** with at least **two people**.

2.31 Prepare the work area

- Clear the area to ensure **enough space** for safe unpacking.
- Wear **appropriate PPE** (gloves, safety boots, and safety glasses).

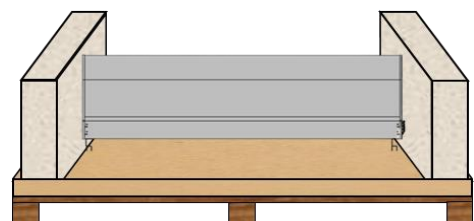
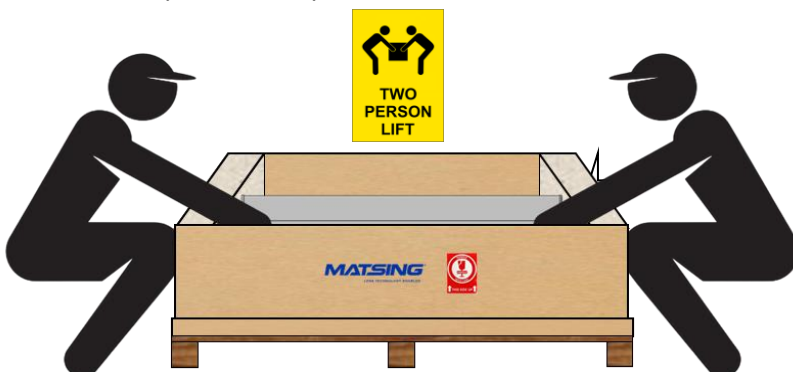
2.32 Carton box unpacking (Small antenna)

- ① Use a cutter to cut and remove plastic straps
- ② Open cover and remove center support foam

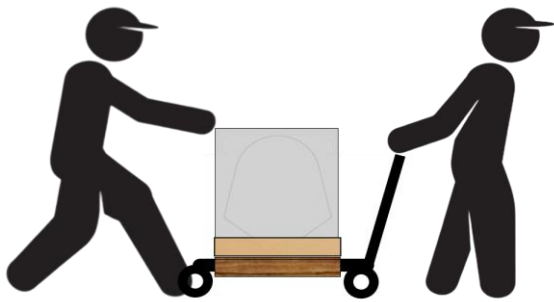


- ③ 2 person lift-up antenna from carton box

- ④ Place antenna on pallet and seated horizontally



⑤ Use a hydraulic jack for safe transporting

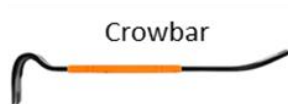


⑥ ⚠️ Connectors are located at the bottom.



2.33 Wooden crate unpacking (Medium and Large Antenna)

Unpacking Tools



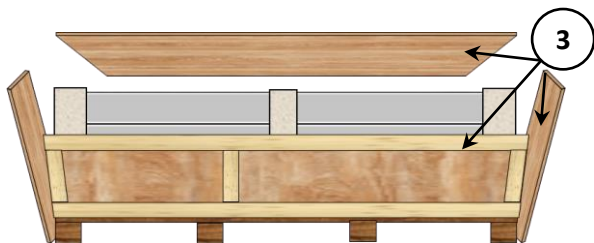
① Use a cutter to cut and remove plastic straps



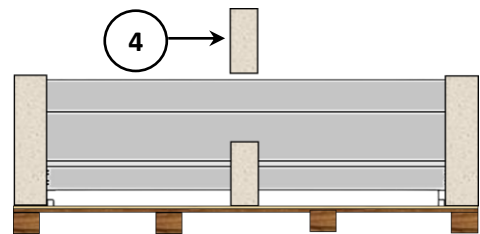
② Use a hand drill to unscrew all wooden panels



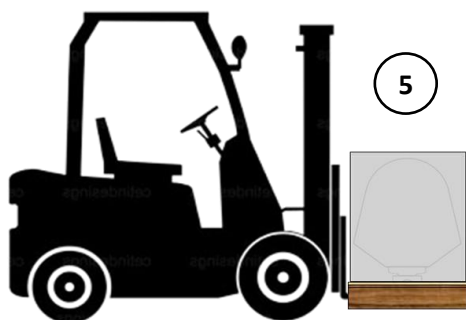
③ Remove top and 4 side panels



④ Remove center top support foam



⑤ Use a forklift for safe transporting



⑥ ⚠️ Connectors are located at the bottom.



2.34 Final inspection Before Installation

- ✓ Ensure the antenna is **free from physical damage** (dents, scratches, or loose parts).
- ✓ Verify that all **mounting brackets and connection ports are intact**.
- ✓ Confirm that all **required installation components** are included in the package.

3.00 Antenna Lifting and Installation

⚠ **Important Note:** Lifting and installation should be performed by **certified rigging professionals** using appropriate equipment. The following recommendations are provided to ensure correct handling and mounting of the antenna.

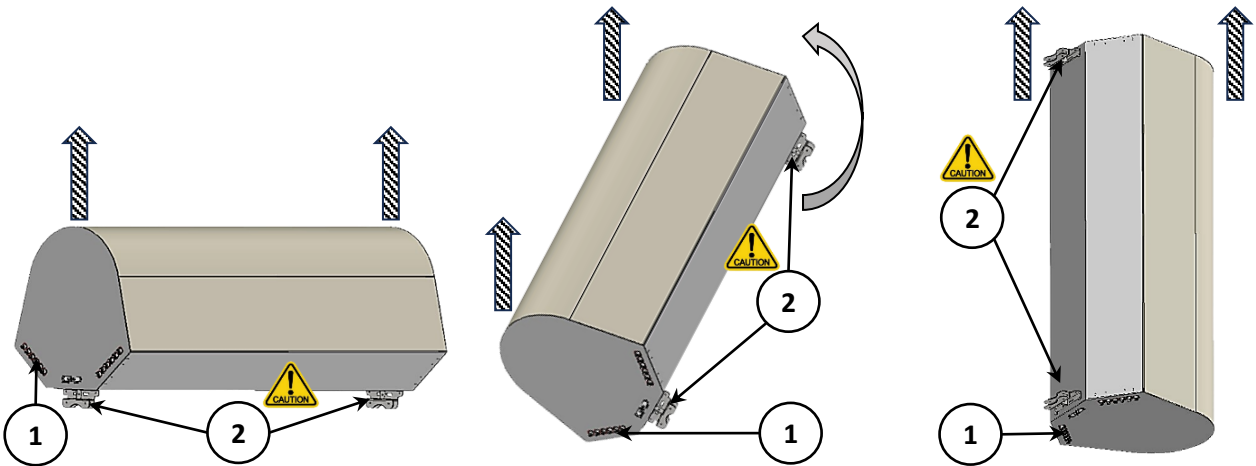
⚠ **Critical Handling Caution:** Before lifting and installing the antenna, follow these important precautions to prevent damage and ensure a safe installation:

3.10 Antenna Orientation During Lifting

- ① **The connectors are located at the bottom of the antenna.**
 - When lifting, choose one of the following manufacturer-recommended methods:
 - **Option 1:** Lift the antenna **horizontally first, then tilt it to a vertical position** before securing.
 - **Option 2:** Lift the antenna **vertically from the start** if the mounting structure allows.

3.20 Bracket Usage During Lifting

- ② ⚠ **Always secure and lift using two brackets simultaneously.**
 - Lifting with **only one bracket can cause overstress**, potentially damaging the structure.
 - Ensure the **brackets are properly tightened** before lifting to prevent shifting.



3.30 General Handling Precautions

- Only use **certified lifting equipment** suitable for the antenna weight.
- Always follow **local workplace safety regulations** for hoisting and mounting.
- Ensure the mounting structure is **capable of supporting the antenna's load and wind forces**

3.40 General Lifting Guidelines

- The **antenna must be lifted using designated lifting points** to avoid structural damage.
- **Tag lines** should be used to control movement and prevent accidental impact.
- **Avoid sudden movements** to prevent misalignment or damage.

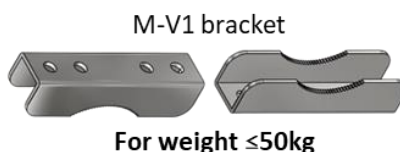
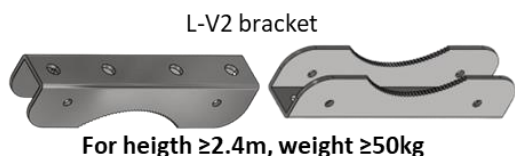


3.50 Antenna Mounting Process

3.51 Mounting accessories

Accessories				
Bracket Qty	Bolts		Nuts	
	Size	Qty	Size	Qty
2	M12 x 200mm	4	M12	10

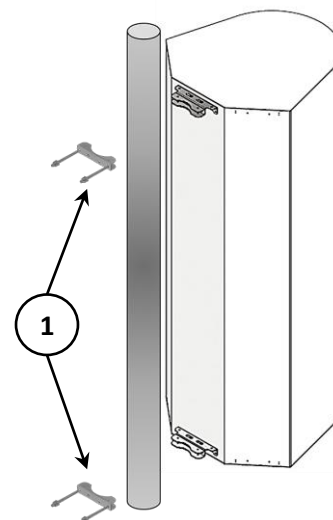
Mounting Bracket Dimensions					
Bracket Parts	W x D x H (mm)	Thickness (mm)	Holes Size (mm)	Spacing (mm)	Qty
L-V2	225 x 50 x 40	4	Ø12.5	185	2
M-V1	175 x 40 x 40	4	Ø12.5	135	2



3.52 General mounting step

Once the antenna is positioned at the mounting location:

- ① **Align** the antenna mounting holes with the bracket holes.
- ② **Insert mounting bolts** and **hand-tighten** them before making final adjustments.
- ③ **Tighten all bolts** to the standard torque values.
 - **⚠ Ensure the antenna is fully secured and does not shift under normal handling.**

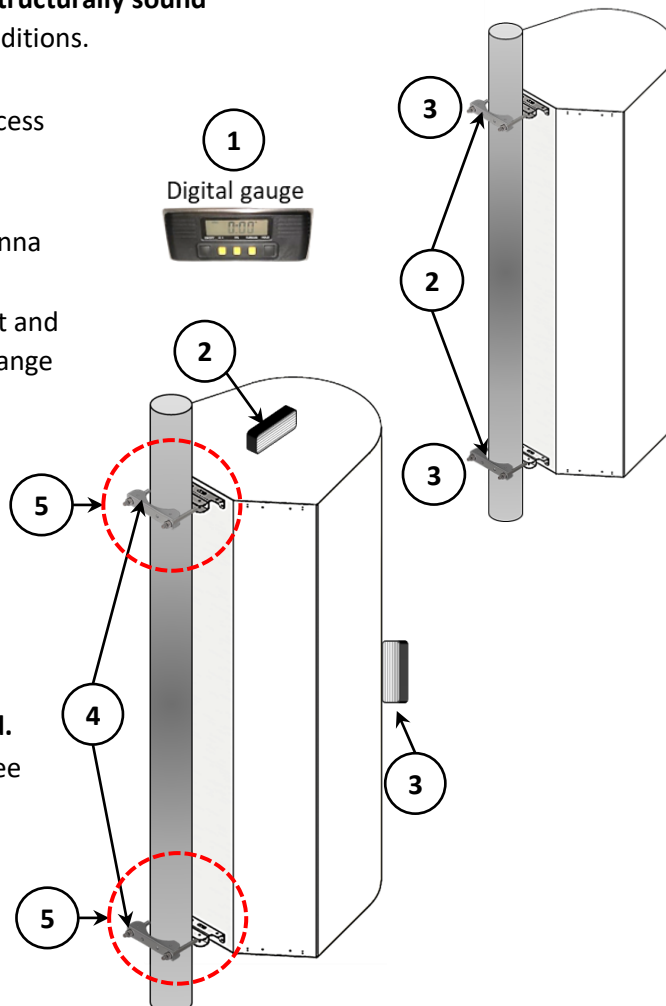


3.53 Additional support considerations

- If required, **reinforce the mounting structure** with additional brackets (custom-made by the installer).
- Ensure that the **mounting location is structurally sound** to handle wind and environmental conditions.

3.54 Antenna leveling and securing process

- ① Digital gauge calibrate to Zero level
- ② Place the gauge on top of the antenna
- ③ Place the gauge at the side of the antenna
 - Acceptable range $0^\circ \leq 2.0^\circ$
 - If any of this side the level is off-set, tilt and adjust the antenna to the acceptable range
- ④ Re-secure the bracket, bolts and nuts
- ⑤ Mark the final position for reference



3.55 Final inspection after installation

- ✓ Verify that the antenna is **secure and correctly aligned**.
- ✓ Ensure all **fasteners are fully tightened**.
- ✓ Check the antenna and connector is free from physical damage.
- ✓ Mark **final alignment positions** for future reference.

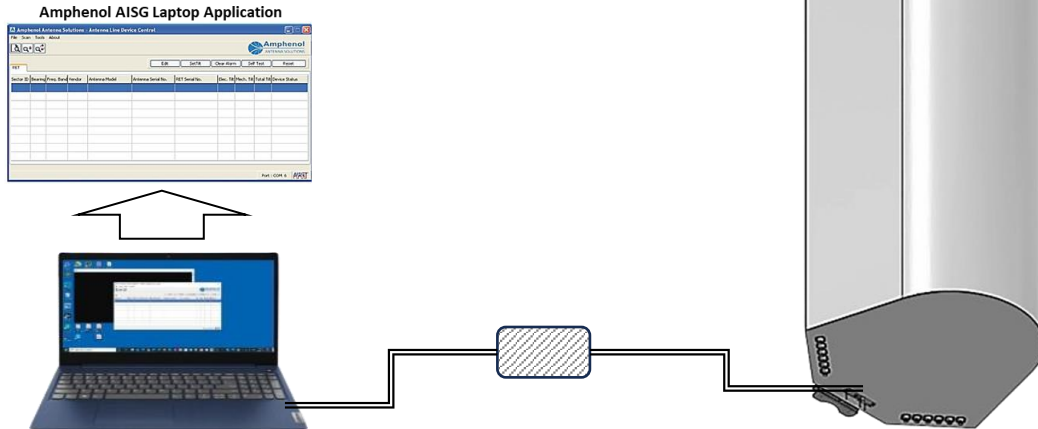
4.00 Antenna RET Operations and Information

⚠ Installer have the **option to pre-tilt setting** of the antenna **before the lifting and installation**, that may help in reducing the workload and safety concern comparing to adjust on-site.

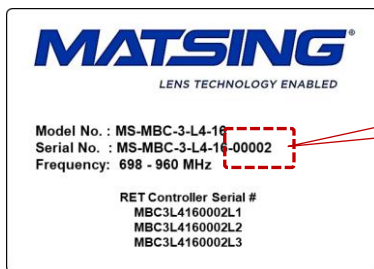
4.10 RET Connection and Operations (Example of MS-MBC-3-L4-16 sn: #02)

A standard AISG 2.0-compliant cable (not included) is used to connect the MDCU to the AISG interface control.

Once connected, use an AISG 2.0-compliant control software to perform a subunit SCAN to identify the RET elements.



4.20 Example of serial numbers label reference



Delete a zero in front if the serial number is more than 4 digits.

Reminder: If information has been edited, remember to perform a "radio hard reset" for changes to take place.

4.21 Controller display

ALD List												
NO	HDLC	Vendor	Serial Number	Product Number	H/W Version	S/W Version	3GPP	Device	AISG	Connect	Link	
1	1	MS	MBC3L4160002L1		5.04	5.0.4	6	Single RET	2	Connect	Link	
2	2	MS	MBC3L4160002L2		5.04	5.0.4	6	Single RET	2	Connect	Link	
3	3	MS	MBC3L4160002L3		5.04	5.0.4	6	Single RET	2	Connect	Link	

MBC3L4160002L1 (LB beam 1)
MBC3L4160002L2 (LB beam 2)
MBC3L4160002L3 (LB beam 3)

Model s/no. 4 digits

4.22 Beam numbers and ports number display

RET ID : MSMBC3L4160002L1

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model
1/1	Beam 1 (Port 1, 2, 3, 4)	MSMBC3L416

RET ID : MSMBC3L4160002L2

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model
1/1	Beam 2 (Port 5, 6, 7, 8)	MSMBC3L416

RET ID : MSMBC3L4160002L3

RET Status and Control

Antenna Information List

NO	Sector ID	Ant Model
1/1	Beam 3 (Port 9, 10, 11, 12)	MSMBC3L416