



# Radio Frequency Systems



## APM40 MOUNTING KIT INSTALLATION INSTRUCTIONS

REV. 4 | 2021.05



# APM40 Mounting Instructions (Configurations A & B)

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# APM40 Mounting Instructions (Configurations A & B)

## 1. APPLICATIONS

The APM40 Kits are mounting hardware options to be used for Base Station antennas up to 2.6 meters length. The same APM40 can be mounted with **2 different Antenna Interfaces: Configuration A and B.**

## 2. FEATURES

- Basic direct mount kit
- Beam sliding tilt mount for mechanical tilt
- Scissor tilt option for fixed at mast (or wall) downtilt
- Option for azimuth adjustment independent of mast
- All kits fully upgradable
- Pipe diameter : 60-120 mm, Wall mount option
- Mechanical downtilt, depending of antennas
- Azimuth adjustment up to +/-30 degrees

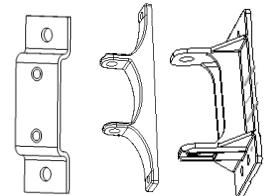
## 3. MECHANICAL SPECIFICATIONS

<b>Weight of Kit (kg)</b>	4.0 Max (type of mounting F) 1.8 Min (type of mounting A)
<b>Mounting Kit Material</b>	Aluminum, Galvanized Steel
<b>Packaging Material</b>	Plastic Sleeve
<b>Dynamometric Tools Required</b>	19 and 18mm AF socket 10mm AF spanner or socket

## 4. MOUNT KIT INSTALLATION WITH ANTENNA CONFIGURATION **A**

### Mounting Options

Refer to the following table to identify mount kits supplied. The mount kit packages are marked with the APM variation. Refer to the relevant instruction Figure for assembly information. The letter designation is referenced in the antenna model description.



LETTER	TYPE OF MOUNTING	MOUNTING KIT(S)	FIGURE REFERENCE
<b>A</b>	Direct pipe (no tilt)	APM40-1	3
<b>B</b>	Azimuth upgrade	APM40-1 & APM40-E3	6
<b>C</b>	Beam tilt	APM40-2	4
<b>D</b>	Beam tilt with azimuth upgrade	APM40-2 & APM40-E3	7
<b>E</b>	Beam tilt with scissor upgrade	APM40-2 & APM40-E2	5
<b>F</b>	Beam tilt with scissor and azimuth upgrades	APM40-2, APM40-E2 & APM40-E3	8
-	Direct to beam upgrade	APM40-E1	4
-	Bracket interface for APM40	APM40-E4	2
<b>7</b>	No mount kit	-	-

## APM40 Mounting Instructions (Configurations A & B)

### Assembly and Installation

<p><b>Figure 1a : Pipe Mount Installation</b>          For pipe mounting, bolt front and rear pipe brackets to pipe. Tighten from front as rear bracket holds nut captive. Refer to Table 2 for top to bottom mount bracket separation.</p>	<p><b>Figure 1b : Wall Mount Installation</b>          For wall mounting, fix front bracket to wall with appropriate masonry anchors. Pre-drill holes with centres 134mm apart, at top to bottom separation shown in Table 2.</p>

<p><b>Figure 2: Interface Bracket Assembly</b>          Attach interface bracket to antenna with M6 hardware where required.          Top and bottom mounting points are identical.</p>	<p><b>Figure 3: Direct Mount Assembly</b>          Pipe mounting shown. For wall mounting, refer to Figure 1b. Rear pipe bracket is not required. Top and bottom mounting arrangements are identical.</p>
<p><b>APM40-E4</b></p>	<p><b>APM40-1</b></p>

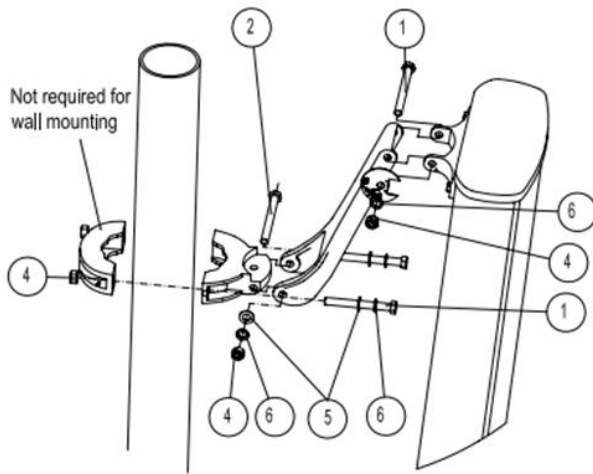
## APM40 Mounting Instructions (Configurations A & B)

**Figure 4: Beam Tilt Assembly for downtilt**

This assembly attaches to top of antenna, Bottom mount assembly is the same as direct mount (Figure 3). Ensure tilt indicator has BEAM tilt markings visible.

Note: Indicator marked 2.5m to be used with corresponding antenna length or greater.

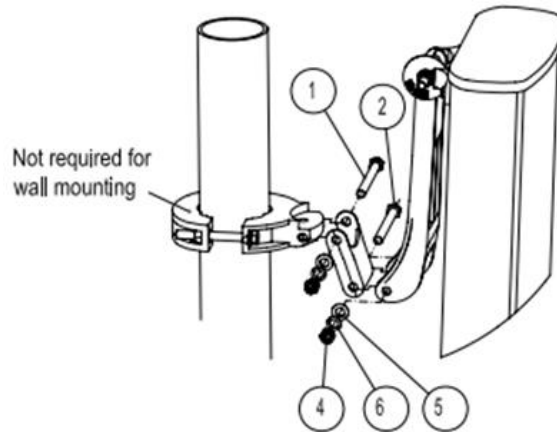
**APM40-2**



**Figure 5: Scissor Tilt Extension**

Insert scissor arm into beam tilt assembly. Bottom mount assembly is the same as direct mount (Figure 3). Reverse tilt indicator to have SCISSOR tilt markings visible.

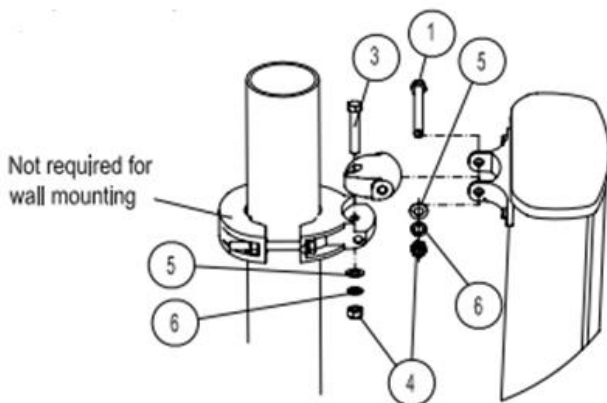
**APM40-2 and APM40-E2**



**Figure 6: Azimuth Tilt Extension**

Top and bottom mounting arrangements are identical.

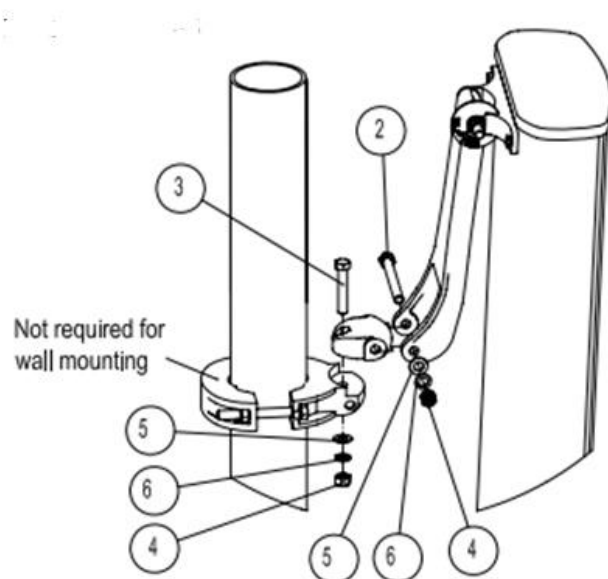
**APM40-1 and APM40-E3**



**Figure 7: Azimuth Tilt with Beam Tilt**

At top, insert azimuth bracket between arms of tilt beam, bolting down onto flat surface of pipe bracket, Bottom arrangement as shown in Figure 6.

**APM40-2 and APM40-E3**



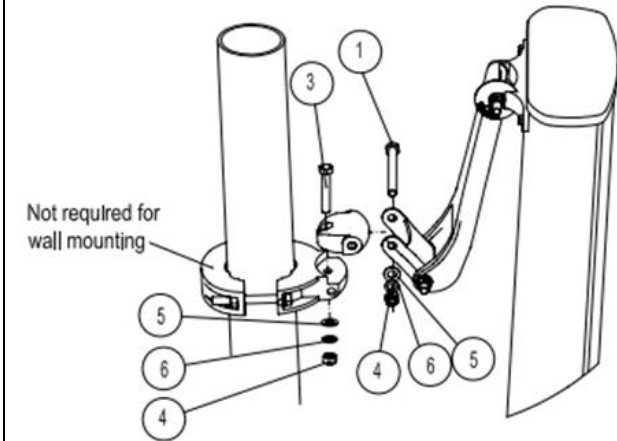


## APM40 Mounting Instructions (Configurations A & B)

**Figure 8: Scissor Tilt Extension with Azimuth**

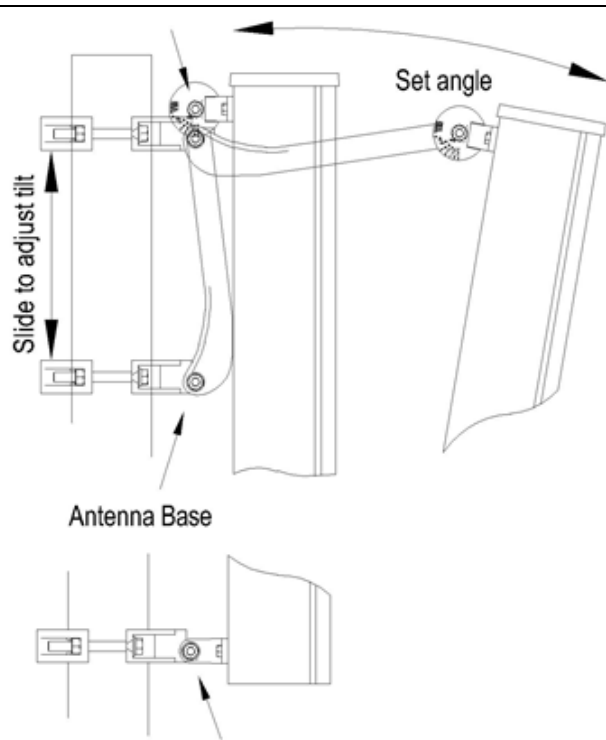
Insert scissor arm into tilt beam as shown in Figure 5. Insert azimuth bracket into scissor arm, and bolt down onto flat surface of pipe bracket. Ensure tilt indicator has scissor tilt markings visible. Bottom assembly as shown in Figure 6.

**APM40-2 and APM40-E2 and APM40-E3**



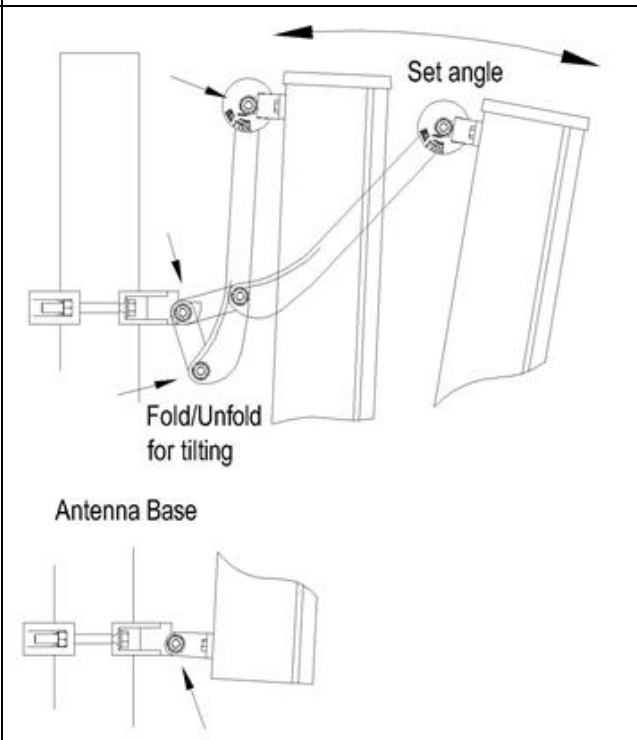
**Figure 9: Adjusting Tilt with Beam Assembly**

To adjust tilt, loosen top pipe clamp bolts, bolts through tilt beam, and bolts at antenna bracket base (as shown by arrows). Slide arm up or down pipe to achieve tilt. Align mark with indicator angle. Tighten nuts to lock in position.



**Figure 10: Adjusting Tilt with Scissor Assembly**

To adjust tilt, loosen bolts through scissor and tilt beam. Loosen bolt at base of antenna to allow rotation (as shown by arrows). Fold or unfold scissor to achieve tilt angle. Align Scissor mark with indicator angle. Tighten nuts to lock position.



## APM40 Mounting Instructions (Configurations A & B)

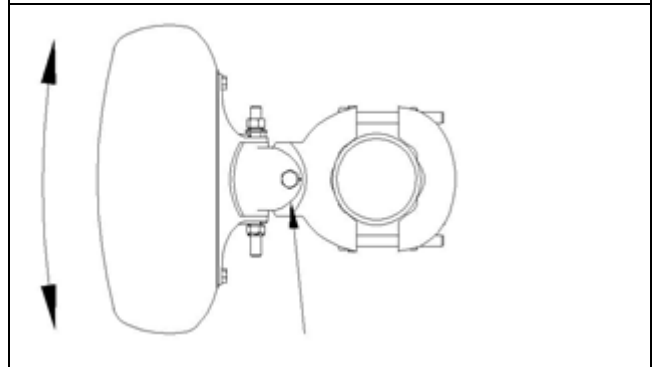
### Reference Data

**Table 1:** Item numbers for the Mount Kit Hardware

Item #	Description
1	Screw Hex M12x110
2	Bolt Hex M12x130
3	Bolt Hex M12x65
4	Nuts Hex M12
5	Washer Flat M12
6	Washer Spring M12
7	Screw Hex M6x16
8	Washer Spring M6

**Figure 11: Adjusting Azimuth Tilt**

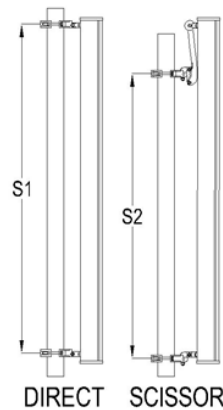
To adjust tilt, loosen bolts through azimuth bracket (top and bottom), and rotate to desired angle. Tighten nuts to lock position.



**Table 2:** Bracket Separation "S", in millimeters

Kits	Separation
Direct	S1
Azimuth	
Scissor	S2
Scissor+Azimuth	
Beam	Variable with tilt
Beam+Azimuth	

**S1** = Refer to antenna mount points separation for dimension  
**S2** = (S1 - 255) mm



### Tightening Torque Values

Unless stated otherwise, the following general tightening torque values shall be used for metric hexagon bolts and screws, coarse pitch threads, property class 4.6.

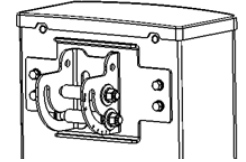
Dia.	Pitch (mm)	Bolt Tension (kN)	Torque (Nm)
M6	1.00	2.94	3.5
M12	1.75	12.4	40.0

## APM40 Mounting Instructions (Configurations A & B)

### 5. MOUNT KIT INSTALLATION WITH ANTENNA CONFIGURATION **B**

#### Mounting Options

Refer to the following table to identify mount kits supplied. The mount kit packages are marked with the APM variation. Refer to the relevant instruction Figure for assembly information. The letter designation is referenced in the antenna model description.



LETTER	TYPE OF MOUNTING	MOUNTING KIT(S)	FIGURE REFERENCE
<b>A</b>	Direct pipe (no tilt)	APM40-1	3
<b>B</b>	Azimuth upgrade	APM40-1 & APM40-E3	6
<b>C</b>	Beam tilt	APM40-2	4
<b>D</b>	Beam tilt with azimuth upgrade	APM40-2 & APM40-E3	7
<b>E</b>	Beam tilt with scissor upgrade	APM40-2 & APM40-E2	5
<b>F</b>	Beam tilt with scissor and azimuth upgrades	APM40-2, APM40-E2 & APM40-E3	8
-	Direct to beam upgrade	APM40-E1	4
-	Interface bracket	APM40-E10	-
<b>7</b>	No mount kit	-	-

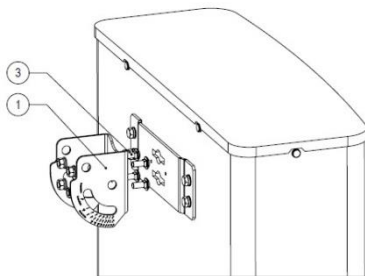
#### E10 Bracket Attachment

If the E10 bracket was shipped in a separate box with the antenna, please attach it first.

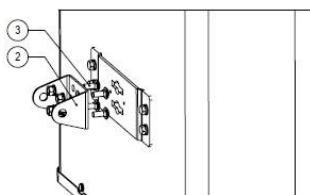
##### Attaching the E10 bracket

1. Attach interface bracket to antenna with M8 hardware where required.
2. **The arc is downward !!!**

**Figure 1 :** Top mounting interface bracket



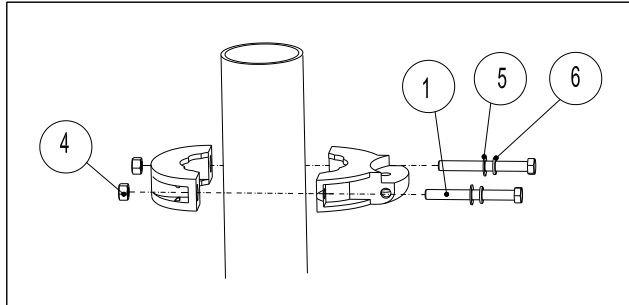
**Figure 2 :** Bottom mounting interface bracket





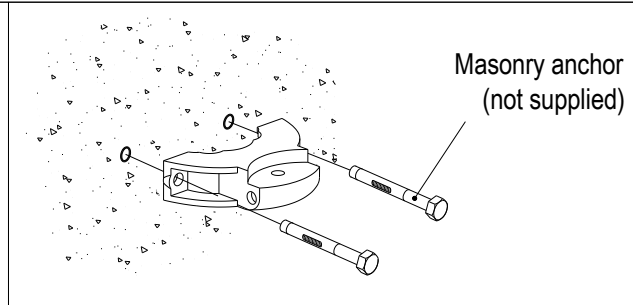
## APM40 Mounting Instructions (Configurations A & B)

### Assembly and Installation



**Figure 1a : Pipe Mount Installation**

For pipe mounting, bolt front and rear pipe brackets to pipe. Tighten from front as rear bracket holds nut captive. Refer to Table 2 for top to bottom mount bracket separation.



**Figure 1b : Wall Mount Installation**

For wall mounting, fix front bracket to wall with appropriate masonry anchors. Pre-drill holes with centres 134mm apart, at top to bottom separation shown in Table 2.

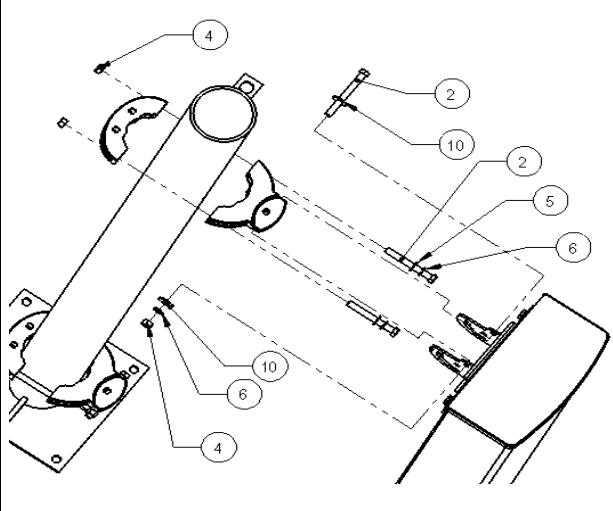
**Figure 3: Direct Mount Assembly**

Pipe mounting shown. For wall mounting, refer to Figure 1b. Rear pipe bracket is not required. Top and bottom mounting arrangements are identical.

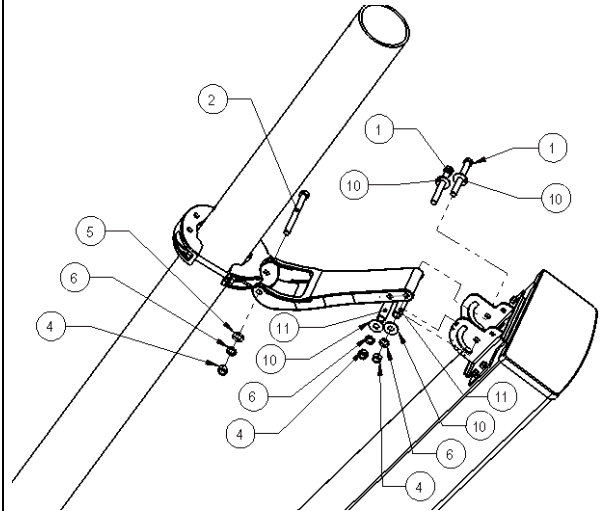
**Figure 4: Beam Tilt Assembly (downtilt)**

Bottom mount assembly is the same as direct mount (Figure 3).

**APM40-1**



**APM40-2**

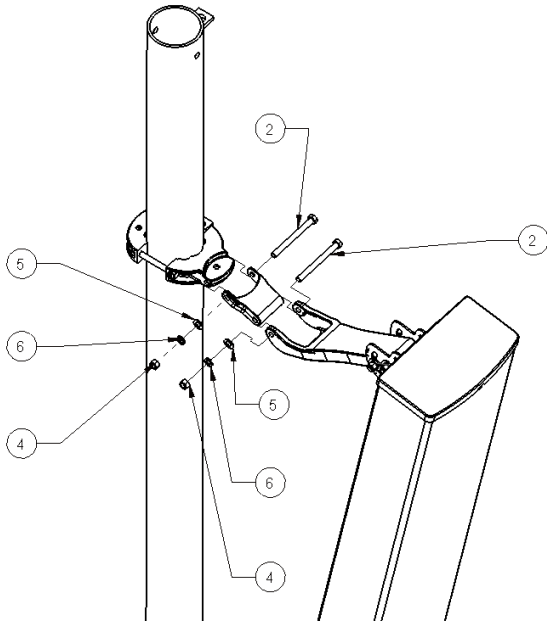


## APM40 Mounting Instructions (Configurations A & B)

**Figure 5: Scissor Tilt Extension**

Insert scissor arm into beam tilt assembly. Bottom mount assembly is the same as direct mount (Figure 3).

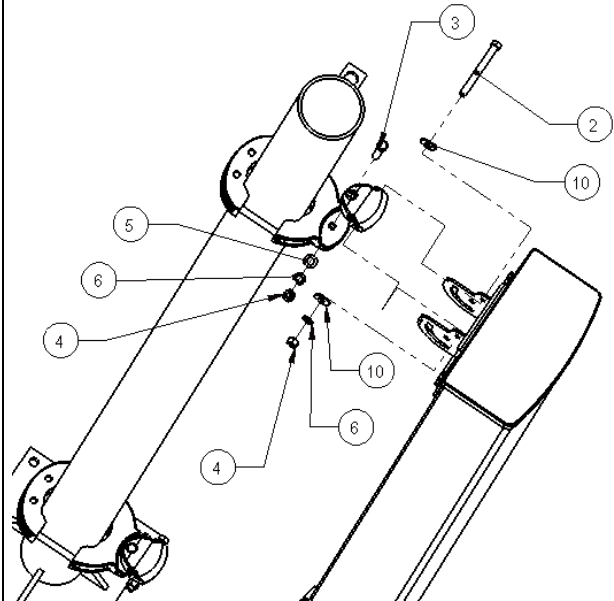
**APM40-2 and APM40-E2**



**Figure 6: Azimuth Tilt Extension**

Top and bottom mounting arrangements are identical.

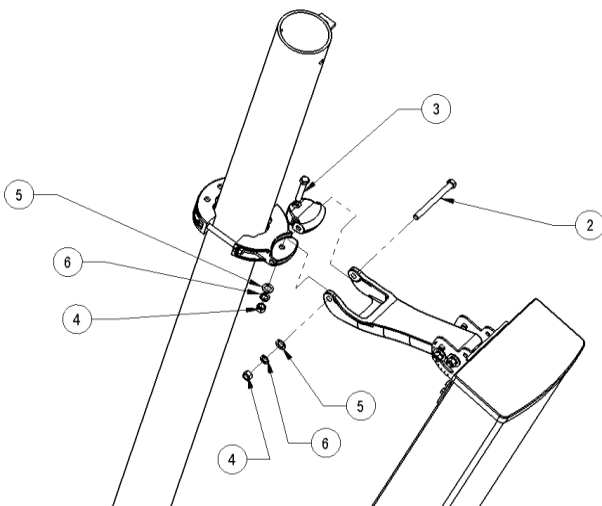
**APM40-1 and APM40-E3**



**Figure 7: Azimuth Tilt with Beam Tilt**

Insert azimuth bracket between arms of tilt beam, bolting down onto flat surface of pipe bracket. Bottom arrangement as shown in Figure 6.

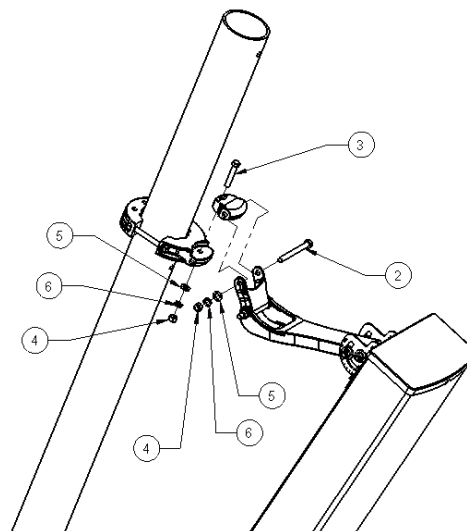
**APM40-2 and APM40-E3**



**Figure 8: Scissor Tilt Extension with Azimuth**

Insert scissor arm into tilt beam as shown in Figure 5. Insert azimuth bracket into scissor arm, and bolt down onto flat surface of pipe bracket. Bottom assembly as shown in Figure 6.

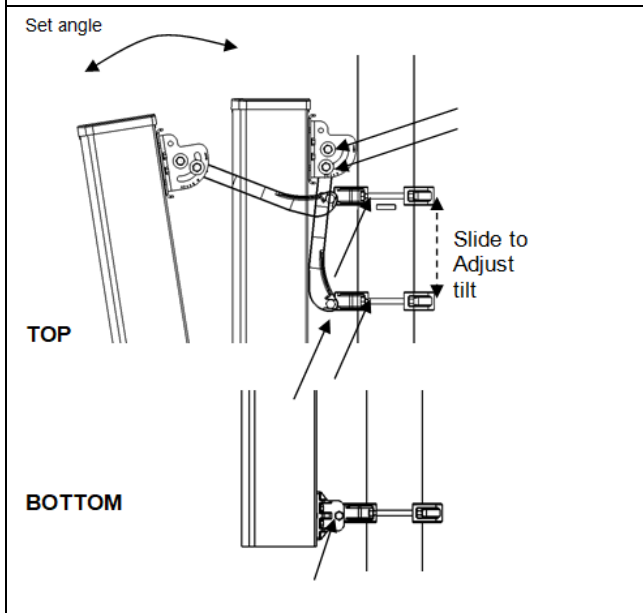
**APM40-2 APM40-E2 and APM40-E3**



## APM40 Mounting Instructions (Configurations A & B)

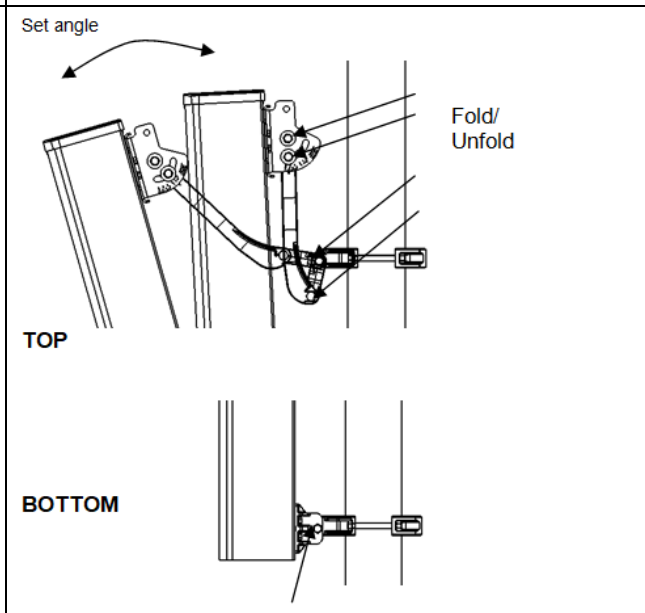
**Figure 9: Adjusting Tilt with Beam Assembly**

To adjust tilt, loosen top pipe clamp bolts, bolts through tilt beam, and bolts at antenna bracket base (as shown by arrows). Slide arm up or down pipe to achieve tilt. Align Beam mark with indicator angle. Tighten nuts to lock in position. (Refer to tightening torque values)



**Figure 10: Adjusting Tilt with Scissor Assembly**

To adjust tilt, loosen bolts through scissor and tilt beam. Loosen bolts at base of antenna to allow rotation (as shown by arrows). Fold or unfold scissor to achieve tilt angle. Align Scissor mark with indicator angle. Tighten nuts to lock position. (Refer to tightening torque values)



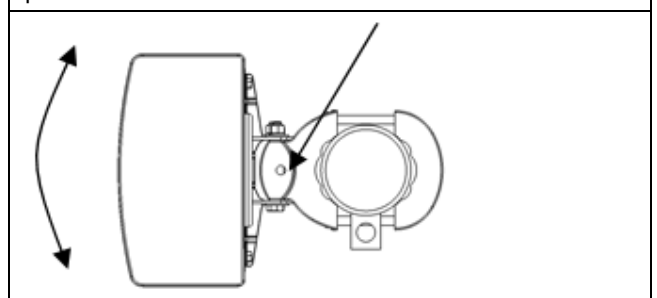
### Reference Data

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3	Bolt Hex M12x65
4	Nuts Hex M12
5	Washer Flat M12
6	Washer Spring M12
7	Screw Hex M6x16
8	Washer Spring M6
9	Washer Flat M6
10	Washer Flat M12 diameter 31,5
11	Stub Spacer arm

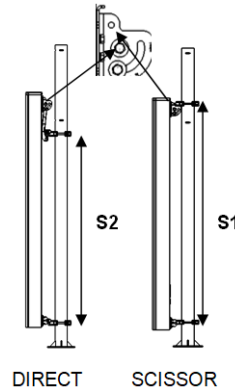
**Figure 11: Adjusting Azimuth Tilt**

To adjust angle, loosen bolts (as show by arrows) through azimuth bracket (top and bottom), and rotate to desired angle. Tighten nuts to lock position.



## APM40 Mounting Instructions (Configurations A & B)

Kits	Separation
Direct	S1
Azimuth	
Scissor	S2
Scissor+Azimuth	
Beam	Variable with tilt
Beam+Azimuth	
<b>S1</b> = Refer to antenna mount bracket separation for distance <b>S2</b> = (S1 - 316) mm	



### Tightening Torque Values

Unless stated otherwise, the following general tightening torque values shall be used for metric hexagon bolts and screws. All bolts must be property class 4.8 or over.

Dia.	Pitch (mm)	Bolt Tension (kN)	Torque (Nm)
M12	1.75	15.90	40.0

### 6. ANTENNA MECHANICAL DOWNTILT RANGE

Antenna Length (mm)	Mechanical Downtilt Range (°)
$L \geq 2600$	0-5
$2200 \leq L < 2600$	0-7
$1800 \leq L < 2200$	0-9
$1400 \leq L < 1800$	0-11
$1000 \leq L < 1400$	0-15
$500 \leq L < 1000$	0-23
$L < 500$	0-30

### 7. MAINTENANCE

Under normal conditions, no maintenance is necessary. However, the antenna should be visually inspected at regular intervals for damage (e.g. due to lightning strikes, and falling ice). Periodic checks should be performed to verify correct torque and bracket clearance settings. Accessories provided exclusively by RFS.

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## About RFS

Radio Frequency Systems (RFS) delivers the end-to-end RF solutions and expert services needed to evolve wireless and broadcast networks today and tomorrow. Our cables, connectors, antenna systems and RF conditioning products are based on more than 120 years of experience delivering cutting-edge RF solutions and industry firsts. As a result, our solutions are recognized globally for their innovation, superior performance and unmatched quality.

As an ISO-compliant company with global operations, we bring our customers world-class engineering and manufacturing skills backed with comprehensive local support services. Our customers know they can rely on our expertise and commitment to excellence from initial design to final delivery and beyond — whether they're looking to support 5G, deploy small cells, empower smart cities or improve indoor coverage in the most challenging locations.

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