

Installation Manual

IM_AXE_GM_EX

Exclusive Tilted Ground Mounting System

For framed PV modules in portrait orientation

V1



Declaration

- Only the highest quality components are used in the mounting system to ensure trouble-free operation of your solar power system. The following information explains the proper setup of the Axe Struct Ground Mount system.
- Any unique structural features must be documented so that the surrounding unique features can be considered when planning the layout.
- Always fasten the bolted connection by turning the bolt head. Do not turn the nut; hold it in position. Do not use an impact driver. Use a calibrated torque wrench to fasten the connection to the specified torque.

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1. Components

Posts/Adaptors

Post Section

AXE_L_CHS

Support member



Tube Adaptor

AXE_AT_SH

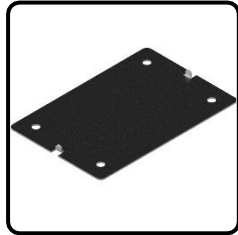
Purlin connection



Nesting Adaptor

AXE_AN_SH

Purlin connection



Purlin Adaptor

AXE_AP_SH

PV module support

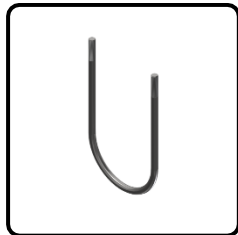


Fasteners

U-Bolt

AXE_BU_10/12_SH

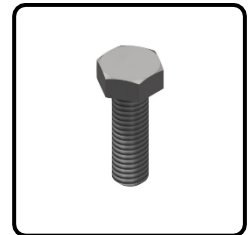
Structural fastening



Bolt Hexagon

AXE_BH_16_SH

Structural fastening



Cap Screw Hexagon

AXE_CS_6_SS

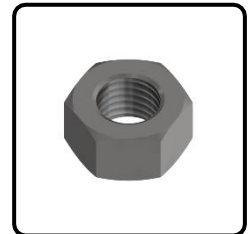
Structural fastening



Hex Nut

AXE_NH_6/10/12/16_SS/SH

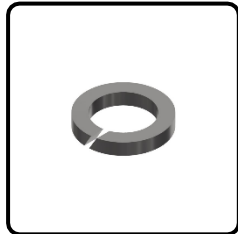
Structural fastening



Spring Washer

AXE_WS_6/10/12/16_SS/SH

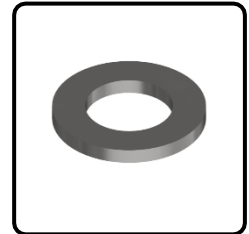
Structural fastening



Plain Washer

AXE_WP_6/10/12/16_SS/SH

Structural fastening



2. Torque Specifications

The specified settings below are assumed to have a dry application. Should a lubrication agent or anti-seizing be used, 80% of the below-listed values would apply. Do not exceed the specified tightening torque values, as excessive tightening may cause deformation of aluminium components.

Size	Stainless Steel (N.m)	Galvanised Grade 8.8
M8	18 N.m	N/A
M10	38 N.m	N/A
M12	60 N.m	93 N.m
M16	150 N.m	230 N.m
M20	300 N.m	464 N.m
M24	N/A	798 N.m

Seizing (Galling) Prevention

Anti-Seize compound should be applied to all threaded connections, specifically stainless-steel fasteners. This will prevent fasteners from seizing and promote good practice. A further step to prevent seizing is to tighten fasteners at low rpm, without interruptions and apply steady pressure.

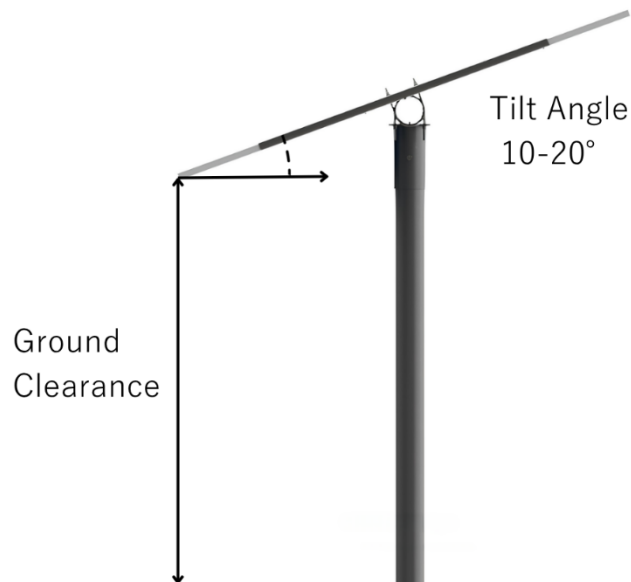
3. Configuration Options

Ground Mount Exclusive is available with one panel in portrait and up to three panels in a row. The tilt angle is adjustable from 10 to 20 degrees in 5-degree increments.

Structural parts are manufactured according to project-specific inputs. Confirm that the following are correctly communicated before installation:

- Site location (altitude and wind speed)
- PV module specification
- Front ground clearance height of the PV module

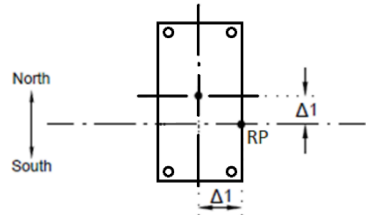
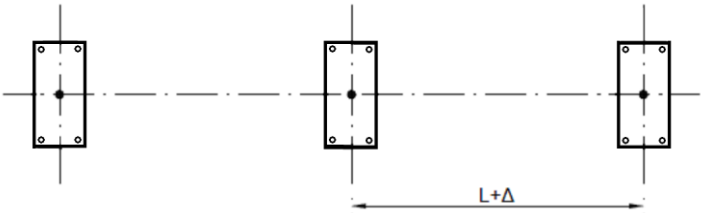
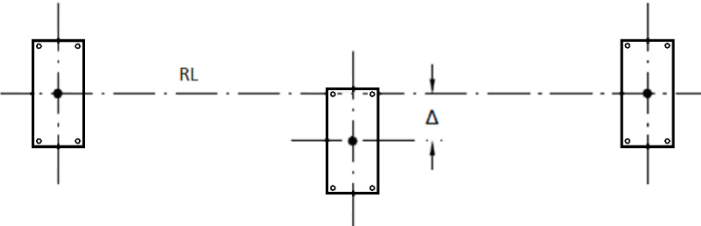
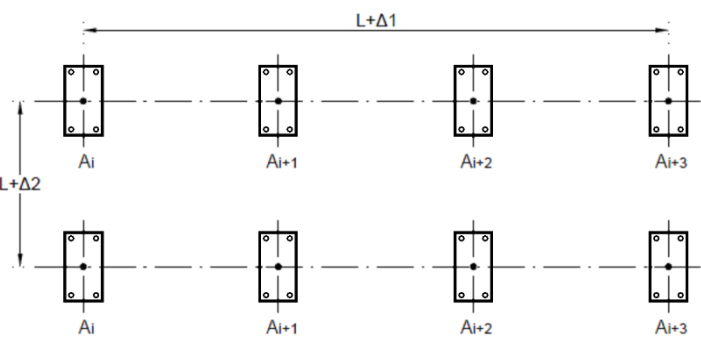
Side view of the Ground Mount Exclusive structure:

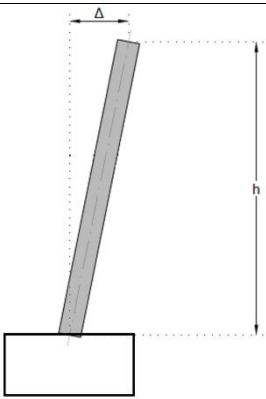
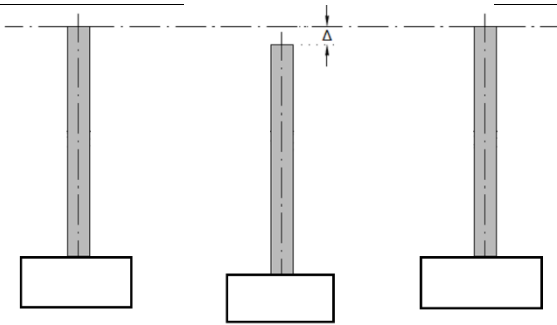


4. Foundation Fixings

Mark out the positions of all foundation locations accurately as per the layout drawings. Prepare the designated areas for the concrete bases, ensuring proper ground compaction before placing or casting the reinforced concrete bases.

The following tolerances apply when aligning post positions in concrete bases (measured at ground level):

Description	Depiction	Tolerance
Individual 4 rod grouping position relative to the reference point (RP)		$\Delta 1 = \pm 5 \text{ mm}$
Individual 4 rod grouping spacing relative to the adjacent 4 rod grouping		$\Delta = \pm 5 \text{ mm}$
General 4 rod grouping alignment relative to the reference line (RL)		$\Delta = \pm 5 \text{ mm}$
Overall table length and North–South spacing		$\Delta 1 = \pm 20 \text{ mm}$ $\Delta 2 = \pm 5 \text{ mm}$

Individual post inclination		$\Delta = h/300$
Individual base level relevant to the adjacent base		$\Delta = \pm 5 \text{ mm}$

5. Foundation Specifications

The following sections outline essential guidelines for on-site earthworks and the construction of a suitable foundation. For precise foundation design and rebar scheduling, consult the relevant layout drawings.

The following requirements should be followed when constructing the foundation. Use concrete with a minimum compressive strength of 30 MPa. It is crucial to allow sufficient time for proper concrete curing, with a minimum duration of 7 days.

When performing compaction, the following parameters should be targeted:

- 300 mm over excavations
- Compact 150 mm in-situ material to 93% Mod AASHTO
- 150 mm G5 compacted to 95% Mod AASHTO

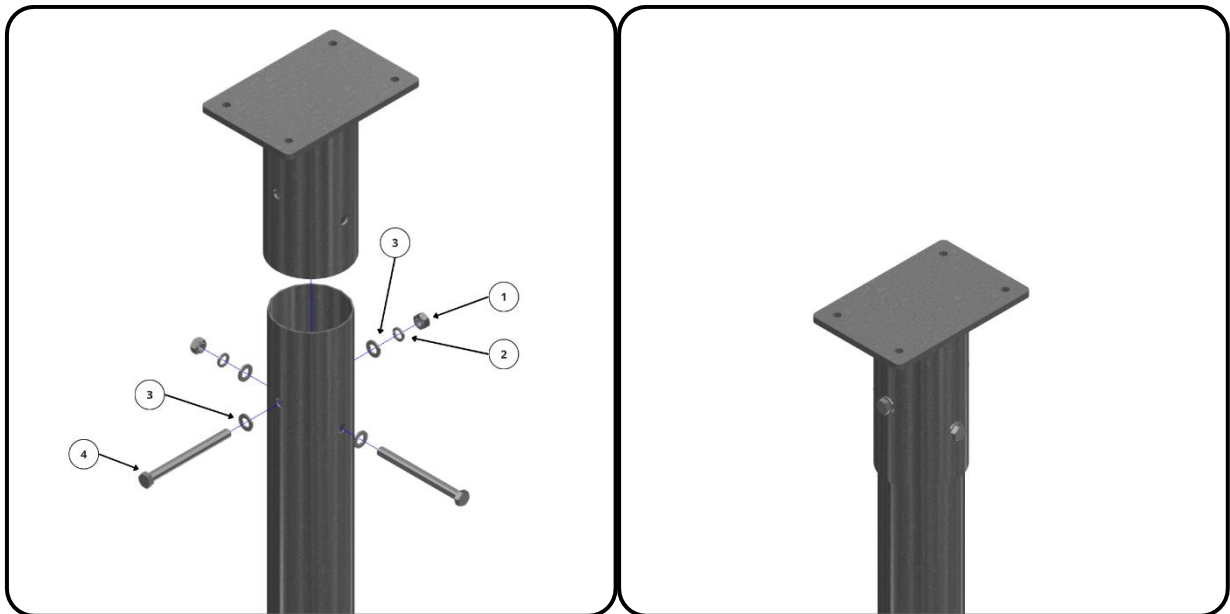
The above parameters serve as a general reference and are subject to adjustment based on the results of the soil compaction assessment.

6. Post Connections

Tube Adaptor Connection:

Position the Tube Adaptor over the Post and align the holes. Secure the Tube Adaptor to the Post using the fasteners listed below.

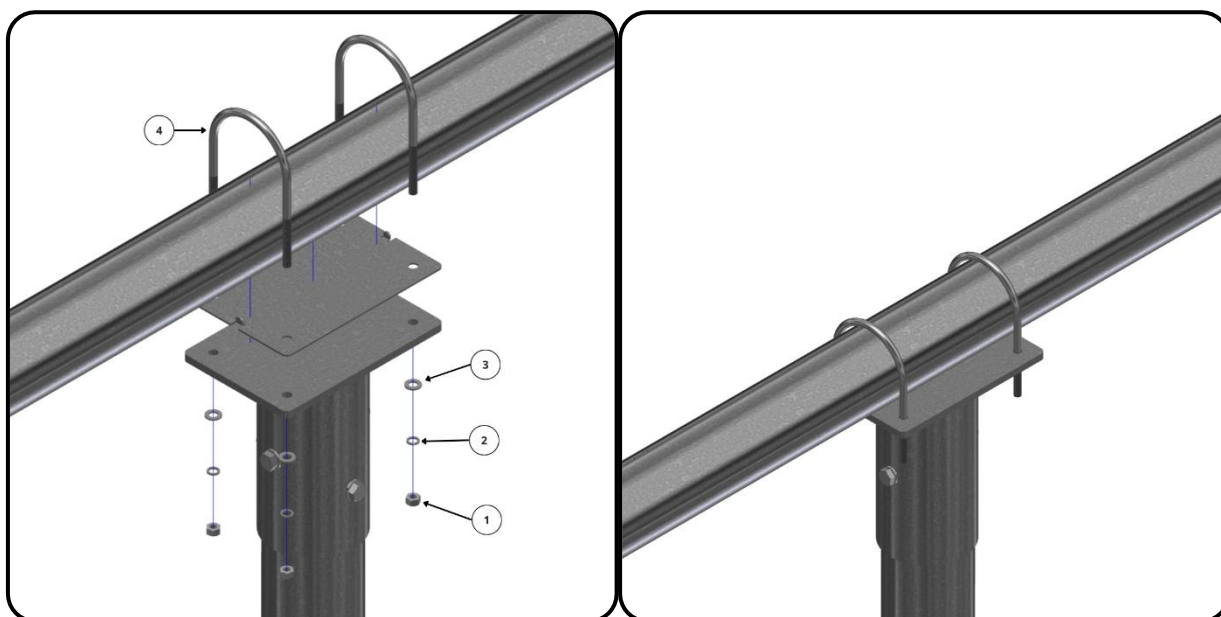
No.	Product description	Size	Quantity
①	Hex Nut, Hot Dip Galv Steel	M16	2
②	Spring Washer, Hot Dip Galv Steel	M16	2
③	Plain Washer, Hot Dip Galv Steel	M16	4
④	Bolt Hexagon, Hot Dip Galv Steel	M16x180	2



Purlin Tube Connection:

Position the Nesting Adaptor on top of the Tube Adaptor with the tabs pointing upwards. Place the Purlin Circular Tube on top of the Nesting Adaptor and align the tabs with the holes in the Purlin Circular Tube. Secure the Purlin Circular Tube to the Nesting Adaptor and Tube Adaptor using the fasteners listed below.

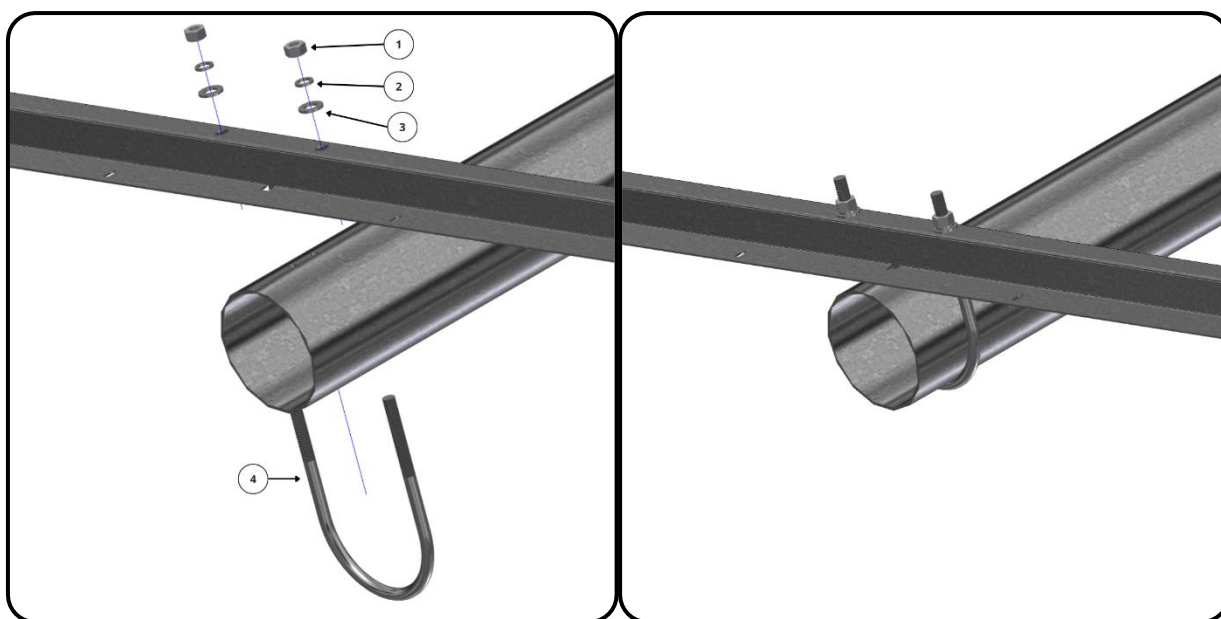
No.	Product description	Size	Quantity
①	Hex Nut, Hot Dip Galv Steel	M12	4
②	Spring Washer, Hot Dip Galv Steel	M12	4
③	Plain Washer, Hot Dip Galv Steel	M12	4
④	U-Bolt, Hot Dip Galv Steel	M12	2



7. Purlin Adaptor Connection

Position the Purlin Adaptor on top of the Purlin Circular Tube with the tabs pointing downwards. Align the tabs with the holes in the Purlin Circular Tube. Secure the Purlin Adaptor to the Purlin Circular Tube using the fasteners listed below.

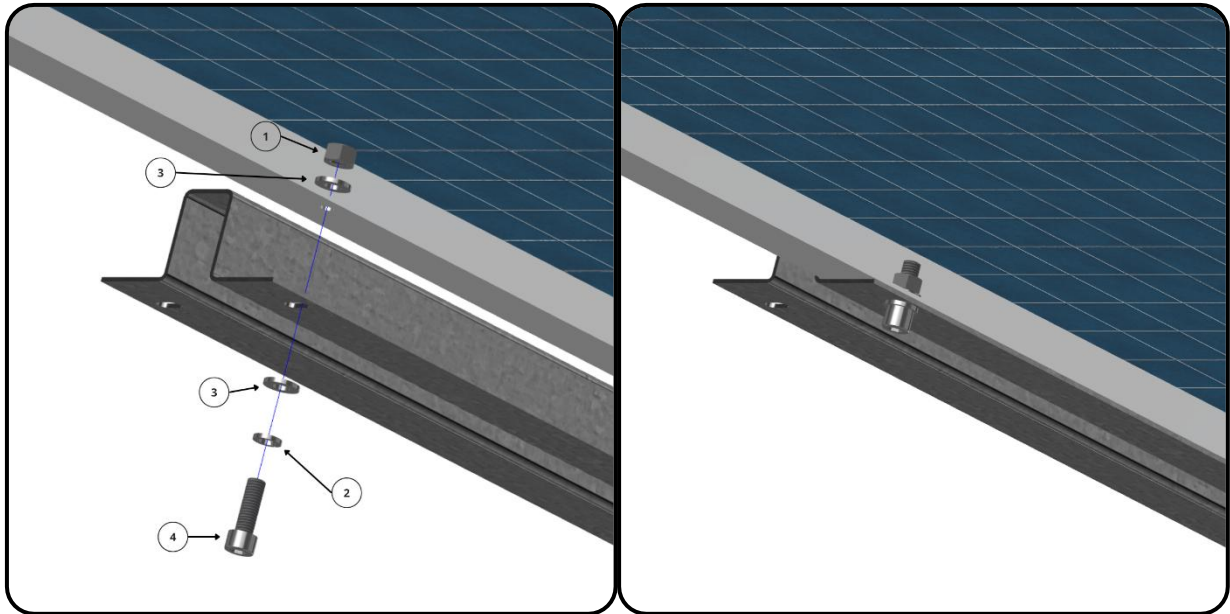
No.	Product description	Size	Quantity
①	Hex Nut, Hot Dip Galv Steel	M10	2
②	Spring Washer, Hot Dip Galv Steel	M10	2
③	Plain Washer, Hot Dip Galv Steel	M10	2
④	U-Bolt, Hot Dip Galv Steel	M10	1



8. PV Module Installation

Place the PV module between two Purlin Adaptors and align the PV module mounting holes with the slots on the Purlin Adaptors. Secure the PV modules to the Purlin Adaptors using the fasteners listed below.

No.	Product description	Size	Quantity
①	Hex Nut, Hot Dip Galv Steel	M6	1
②	Spring Washer, Hot Dip Galv Steel	M6	1
③	Plain Washer, Hot Dip Galv Steel	M6	2
④	Cap Screws Hexagon, Stainless Steel	M6	1



9. Maintenance

The products are to be inspected annually in the form of a visual inspection of the whole installation. Axe Struct must be notified at the first sign of corrosion or abnormal deformation.

Annual spot checks are to be done on fasteners to ensure that the minimum required tightening torque specified in this Manual is maintained.

Zinc paint touch-ups must be done where galvanising layers have been damaged.

The product must be cleaned using water with a pH between 6 and 10 and without chemical additives.

10. Liability

Axe Struct can accept no liability for damage arising due to improper use, installation, operation or maintenance. Liability is further excluded if Axe Struct is not at fault due to gross negligence or intent.

The text and images in this Installation Manual correspond to the state of the art upon printing. This document is subject to change without notice.