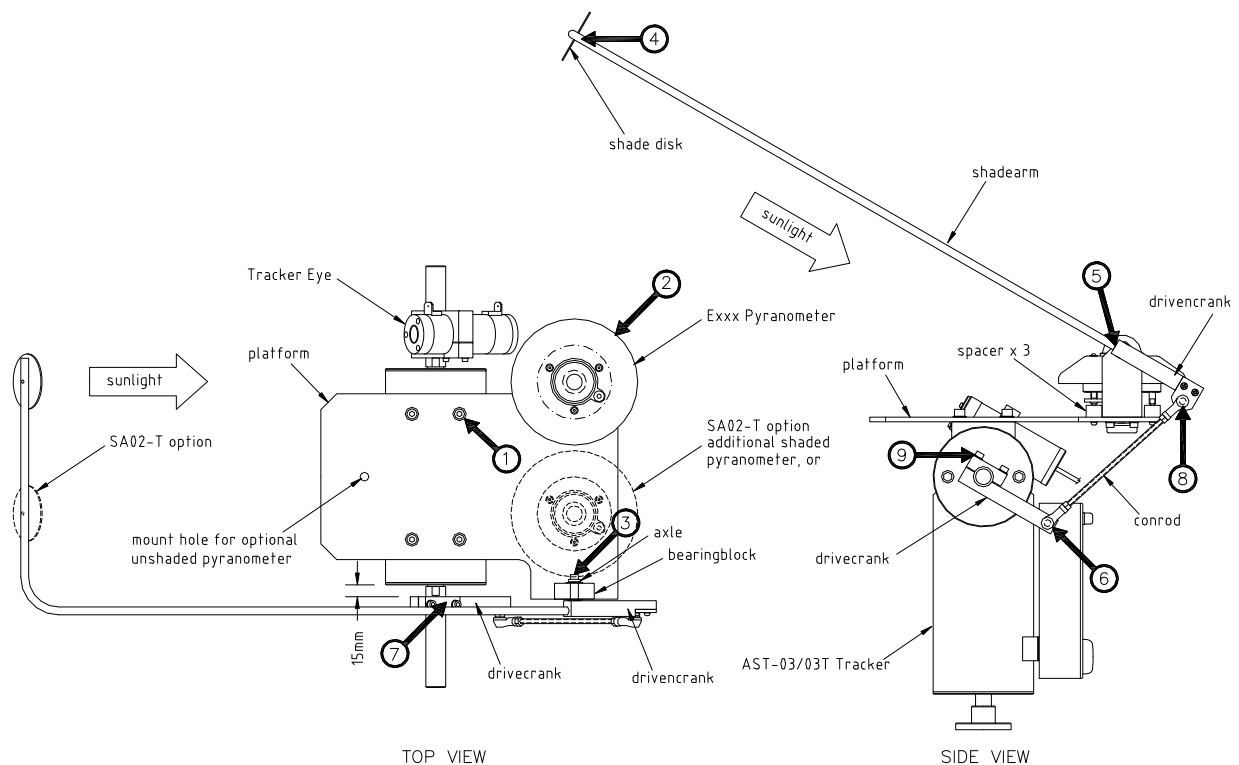




## MIDDLETON SOLAR SA02 & SA02-T SHADING ARM ASSEMBLY APPLICATION NOTE

The SA02 Shading Arm Assembly is an accessory for the AST-03 and AST-03T Active Solar Trackers. The SA02 provides a means to measure diffuse solar radiation with a pyranometer by continuously shading it from direct solar radiation. The SA02 has one shade disk, and SA02-T version has two shade disks.



### Installation to AST-03/3T Tracker

1) Fit the Platform to the top of the Tracker.

Orient the Platform on the Tracker, as per the illustration.

- use four M8x16 capscrews & flatwashers
- tighten securely with a 6mm AF hexkey

2) Fit a Middleton Solar Exxx type Pyranometer to the Platform.

Ensure the Pyranometer feet are located on the three spacers on the Platform.

Ensure the Exxx is adjusted level to the Platform

- use the M10 mounting screw supplied with the Pyranometer

3) a) Fit Bearingblock to Platform.

- use two M6x16mm capscrews & flatwashers
- tighten securely with a 5mm AF hexkey

3) b) Fit Axle & Drivencrank to Bearingblock.

Orient the Drivencrank on the Bearingblock, as per the illustration.

- use M6x35mm capscrew
- tighten securely with a 5mm AF hexkey

4) Fit the Shade Disk(s) to the Shadearm.

Orient the Shade Disk on the underside of the Shadearm, as per the illustration.

- use M4x12 screw & flatwasher
- tighten securely with X-head screwdriver

5) Fit the Shadearm to the Drivencrank.

Ensure the Shadearm is fully inserted into the Drivencrank.

Orient the Shadearm parallel to the Tracker horizontal axle.

- use two M4 grub screws
- tighten securely with a 2mm AF hexkey

6) Fit the Conrod to the Drivecrank.

Orient the Conrod on the Drivecrank, as per the illustration.

- screw one end of the Conrod into the M6 hole in the Drivecrank

7) Position the Drivecrank on the horizontal axle of Tracker.

Select left hand Tracker axle (when facing the sun), as per the illustration.

- do not tighten the two Drivecrank capscrews yet

8) Fit the Conrod to the Drivencrank.

Orient the Conrod on the Drivencrank, as per the illustration.

- use M6 hexnut & flatwasher
- tighten securely with a 10mm AF spanner

9) Set the elevation of the Shadearm & secure the Drivecrank to the Tracker axle.

The Tracker must be tracking correctly and the sun clearly visible.

Adjust so the Shade Disk blocks direct solar radiation from the Pyranometer.

When adjustment is correct the Shadearm will be parallel to the Tracker Eye.

- 15mm clearance between the Drivecrank and the Tracker
- tighten securely the two M6 capscrews of the Drivecrank

It may be necessary to bend the Shadearm to obtain the correct lateral location.

### Specification

shade disk diameter	70mm (5° blocking FOV)
shade arm length	795mm
operating torque	1.5Nm
construction	aluminium & stainless steel
weight, complete with fasteners	2.5kg
shipping size & weight	93x41x5cm; 4.5kg