

AZ/EL/AZ Positioners - Heavy Duty

AL-4586-1 • AL-4587-1 • AL-4588-1 • AL-4589-1 • AL-4590-1

The Performance Series AZ/EL/AZ positioners represent the latest generation of multi-axis rotary positioning subsystems. They offer enhanced capabilities and improved performance relative to size and incorporate new engineering advances.

Their rugged and straightforward construction ensures maximum reliability and trouble-free operation, yielding the best size and weight / performance ratio. This series includes a counter weight option which improves overall system stability and accuracy while allowing for higher DUT loads.

Typically, the unit includes the main body, precise slew bearings, DC motors, gear reducers, encoder and limit switch assemblies. The turntable surface is designed with a threaded mounting hole pattern for ease of use. A large variety of options is available for this MVG-Orbit/FR standard product family. See the Options pages in the Positioners Overview or on the website for slip rings, rotary joints, high precision encoders, speed options and more.

AL-4589-1 (Shown with optional wedge & base riser)



Applications

- General purpose positioning subsystems
- Far-field & near-field antenna measurements
- Aircraft measurements
- Indoor & outdoor use

Product Highlights

- Vertical loads ranging from 18,000 to 45,195 lbs (8,165 to 20,500 kg)
- Turntable diameters ranging from 30.0 to 70.9 in (762 to 1,800 mm)
- Optimum performance relative to size
- Excellent angular position accuracy
- Low backlash design
- Precision bearings
- Closed loop servo control
- Industry-standard wiring
- Tachometers for optimum speed regulation & control
- Wide operating temperature range: - 4° F to 140° F (- 20° C to 60° C)
- Fully enclosed design of drive gear train & data take-off
- Wide variety of available options

Specifications - Performance Series AZ/EL/AZ Heavy Duty Positioners

| PARAMETER | | UNITS | | | | | |
|----------------------------|--|------------|------------|------------|------------|-------------|--|
| | | AL-4586-1 | AL-4587-1 | AL-4588-1 | AL-4589-1 | AL-4590-1 | |
| Dimensional Drawing Number | | DCD27-6169 | DCD27-6169 | DCD28-6507 | DCD28-6506 | DCD219-4590 | |

OPERATIONAL

| | | | | | | | |
|----------------------------------|---------------|---------|------------------|------------------|------------------|------------------|------------------|
| Bending Moment | Upper Azimuth | ft-lbs | 40,000 | 40,000 | 75,000 | 150,000 | 270,000 |
| | | kg-m | 5,530 | 5,530 | 10,370 | 20,740 | 37,500 |
| | Lower Azimuth | ft-lbs | 35,000 | 50,000 | 180,000 | 180,000 | 270,000 |
| | | kg | 4,840 | 6,910 | 24,890 | 24,890 | 37,500 |
| Vertical Load | | lbs | 28,600 | 28,600 | 40,000 | 40,000 | 45,000 |
| | | kg | 12,970 | 12,970 | 18,140 | 18,140 | 20,500 |
| Delivered Torque | Upper Azimuth | ft-lbs | 2,850 | 5,000 | 18,000 | 30,000 | 30,000 |
| | | kg-m | 390 | 690 | 2,490 | 4,150 | 4,150 |
| | Elevation | ft-lbs | 20,000 | 20,000 | 75,000 | 100,000 | 180,000 |
| | | kg-m | 2,770 | 2,770 | 10,370 | 13,830 | 25,000 |
| | Lower Azimuth | ft-lbs | 2,850 | 5,000 | 18,000 | 35,000 | 30,000 |
| | | kg-m | 390 | 690 | 2,490 | 4,840 | 4,150 |
| Withstand Torque | Upper Azimuth | ft-lbs | 4,300 | 6,000 | 18,000 | 35,000 | 43,000 |
| | | kg-m | 590 | 830 | 2,490 | 4,840 | 6,000 |
| | Elevation | ft-lbs | 23,500 | 23,500 | 75,000 | 150,000 | 270,000 |
| | | kg-m | 3,250 | 3,250 | 10,370 | 20,740 | 37,500 |
| | Lower Azimuth | ft-lbs | 4,200 | 7,500 | 18,000 | 45,000 | 43,000 |
| | | kg-m | 580 | 1,040 | 2,490 | 6,220 | 6,000 |
| Drive Power | Upper Azimuth | hp | 3/4 | 3/4 | 5 | 5 | 5 |
| | Elevation | hp | 3/4 | 3/4 | 5 | 5 | 5 |
| | Lower Azimuth | hp | 3/4 | 3/4 | 5 | 5 | 5 |
| Nominal Speed | Upper Azimuth | rpm | 0.5 | 0.3 | 0.3 | 0.3 | 0.2 |
| | Elevation | deg/min | 25 | 25 | 25 | 20 | 20 |
| | Lower Azimuth | rpm | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 |
| Standard Angle Transducer Format | | | Absolute Encoder | Absolute Encoder | Absolute Encoder | Absolute Encoder | Absolute Encoder |
| Standard Accuracy | Upper Azimuth | deg | ± 0.03 | ± 0.03 | ± 0.02 | ± 0.02 | ± 0.02 |
| | Elevation | deg | ± 0.03 | ± 0.03 | ± 0.03 | ± 0.03 | ± 0.03 |
| | Lower Azimuth | deg | ± 0.03 | ± 0.03 | ± 0.02 | ± 0.02 | ± 0.02 |
| Maximum Backlash | Upper Azimuth | deg | 0.05 | 0.05 | 0.05 | 0.04 | 0.02 |
| | Elevation | deg | 0.05 | 0.05 | 0.04 | 0.04 | 0.02 |
| | Lower Azimuth | deg | 0.05 | 0.05 | 0.05 | 0.04 | 0.02 |
| Elevation Limit-to-Limit Travel | | deg | ± 92 | ± 92 | ± 92 | ± 92 | - 45 to + 92 |

PHYSICAL

| | | | | | | |
|------------------------|-----|-------|-------|--------|--------|--------|
| Height at 0° Elevation | in | 71 | 71 | 94 | 101 | 137 |
| | mm | 1800 | 1800 | 2380 | 2560 | 3,500 |
| Weight | lbs | 4,846 | 5,286 | 23,128 | 26,432 | 55,116 |
| | kg | 2,198 | 2,398 | 10,490 | 11,989 | 25,000 |
| Turntable Diameter | in | 30.1 | 30.1 | 47.2 | 48.0 | 71 |
| | mm | 765 | 765 | 1,199 | 1,219 | 1,800 |

ENVIRONMENTAL

| | | |
|-----------------------|-------------------------------------|---------------------|
| Operating Temperature | - 4° F to 140° F (- 20° C to 60° C) | 32-122° F (0-50° C) |
|-----------------------|-------------------------------------|---------------------|

| PARAMETER | UNITS | | | | | |
|-----------|-------|-----------|-----------|-----------|-----------|-----------|
| | | AL-4586-1 | AL-4587-1 | AL-4588-1 | AL-4589-1 | AL-4590-1 |

OPTIONS

| | | | | | | | |
|-------|--|-----|--|--|--|--|----------------------------|
| EN001 | Incremental Encoder (Standard Accuracy) | | Opt | Opt | Opt | Opt | Opt |
| | Accuracy – Upper Azimuth | deg | ± 0.03 | ± 0.03 | ± 0.02 | ± 0.02 | ± 0.02 |
| | Accuracy – Elevation | deg | ± 0.03 | ± 0.03 | ± 0.03 | ± 0.03 | ± 0.03 |
| | Accuracy – Lower Azimuth | deg | ± 0.03 | ± 0.03 | ± 0.02 | ± 0.02 | ± 0.02 |
| EN002 | Direct Incremental Encoder (High Accuracy) | | Opt | Opt | Opt | Opt | Opt |
| | Accuracy – Upper Azimuth | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| | Accuracy – Elevation | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| | Accuracy – Lower Azimuth | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| EN003 | Direct Absolute Encoder (High Accuracy) | | Opt | Opt | Opt | Opt | Opt |
| | Accuracy – Upper Azimuth | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| | Accuracy – Elevation | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| | Accuracy – Lower Azimuth | deg | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 | ± 0.005 |
| SR | Slip Ring ³ | | SR051U SR101U SR201U SR301U SR402U SR502U | SR051U SR101U SR201U SR301U SR402U SR502U | SR051U SR101U SR201U SR301U SR402U SR502U SR602U SR512U SR812U | SR051U SR101U SR201U SR301U SR402U SR502U SR602U SR512U SR812U | |
| RJ | Rotary Joint ³ | | RJ12U RJ18U RJ26U RJ40U RJ50U | RJ12U RJ18U RJ26U RJ40U RJ50U | RJ12U RJ18U RJ26U RJ40U RJ50U | RJ12U RJ18U RJ26U RJ40U RJ50U | |
| TH | Central Thru-Hole Inner Diameter | | TH002-HD TH003-HD | TH002-HD TH003-HD | TH002-HD TH003-HD | TH002-HD TH003-HD | TH002-HD TH003-HD |
| | | in | 3 | 3 | 4 | 4 | 4 |
| | | mm | 76.2 | 76.2 | 102.0 | 102.0 | 102.0 |
| EX | Internal Harnessing | | EX002 | EX002 | EX002 | EX002 | EX002 |
| CF | Connector Format | | – | – | – | – | – |
| LS | Leveling Screw (set) | | LS002-6 | LS002-6 | LS002-10 | LS002-10 | LS002-10 |
| ST | Stow Lock | | ST002U ST002E ST002L | ST002U ST002E ST002L | ST002U ST002E ST002L | ST002U ST002E ST002L | ST002U ST002E ST002L |
| MM | Mounting Thread | | MM002 MM003 | MM002 MM003 | MM002 MM003 | MM002 MM003 | MM002 MM003 |
| IC | Interlock Circuit | | IC002 | IC002 | IC002 | IC002 | IC002 |

(-) N/A Opt Optional

Supplied Accessories

Digital Documentation Set

User Manual (Installation, Setup, Operation & Maintenance)

Technical Notes

- 1** All accuracy data is based on no-load conditions
Contact MVG-ORBIT/FR for accuracy under load conditions
- 2** All models are equipped with adjustable limit switches capable of approx 20° to 900° total travel in AZ axes. When rotary joint and slip ring options are specified, limit switches remain but are electrically disabled.
Multi-axis positioners are factory-set at:
- Upper Azimuth Axis: 400° (± 200°)
 - Elevation Axis: 184° (± 92°)
 - Lower Azimuth Axis: 400° (± 200°)
- 3** Slip Ring & Rotary Joint Option:
- Certain slip ring options may require an extension cap that protrudes above the turntable surface. Positioner height may increase. Consult MVG-ORBIT/FR
 - Slip ring contacts are provided with dedicated connectors
 - When rotary joint and/or slip ring options are specified, no central thru-hole is available to the user. Option TH002-HD and TH003-HD are available in lieu of rotary joint and/or slip ring options

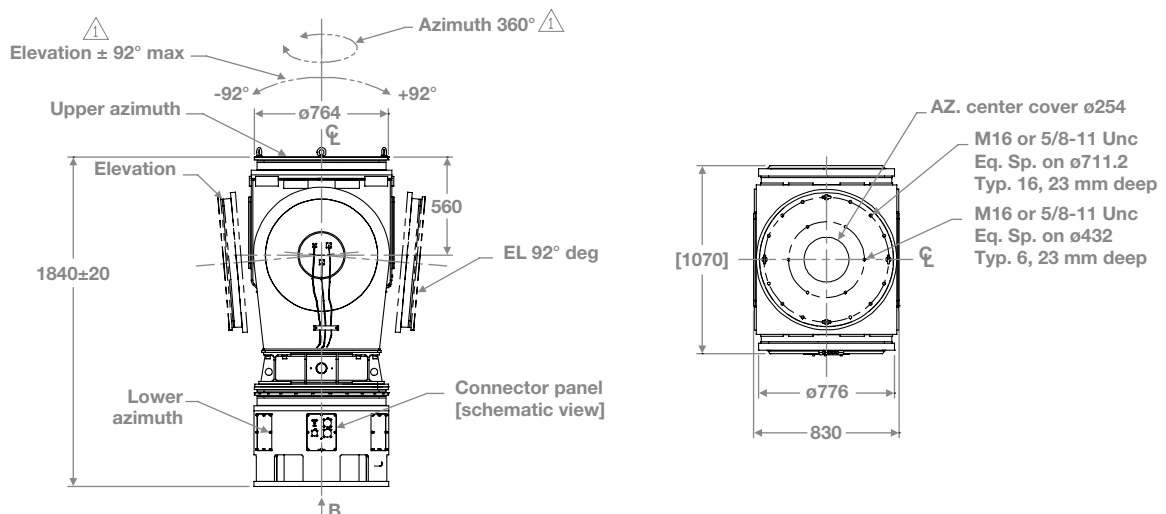
AL-4590-1 (Shown with optional counterweights & base riser)



AL-4586-1 (Shown with optional counterweights & base riser)



Dimensional drawing - AL-4586*



* Example drawing for general reference, please consult MVG-Orbit/FR for ICD.



Contact your local sales representative for more information

www.mvg-world.com/en/contact

www.mvg.link/positioners

