

RCS Pylons

Support structures designed for low RCS measurements



Unique ogival shape:
extremely low backscatter



A broad selection of pylons, combined with the choice of rotator types allows for a custom fit between pylon and DUT (Device under test). As a result of the unique ogival shape, front and rear sharp edges, and structure surface accuracy, ORBIT/FR pylons demonstrate extremely low backscatter, essential for RCS measurements.

Our pylons can be installed on a concrete base, adapter plate, ORBIT/FR positioner, linear slide, elevator or any combination of the above.

SOLUTION FOR

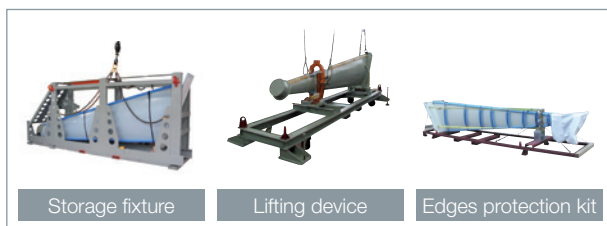
- RCS measurements
- R&D applications
- Far-field measurements

Key Features

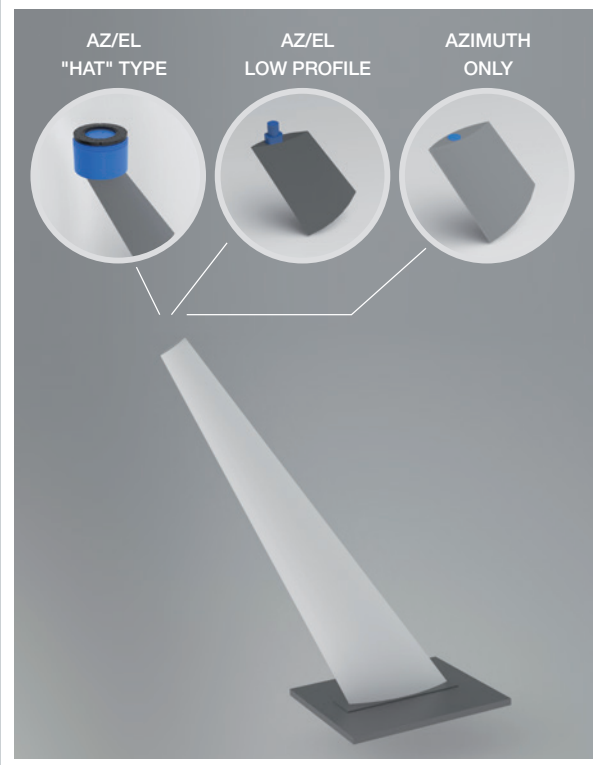
- Ogive ratio: 1:4 standard, 1:6 and 1:7 available for most models
- Pylons for multiple applications (RCS, Antenna measurement)
- Height: standard from 3 to 70 feet (1 to 21 meters), or custom order
- Interchangeable tips (Optional)
- Three types of rotator heads: two AZ/EL and one AZ only
- Load capacity: From 500 - 80,000 lbs.
- Sharp edges: 0.004 - 0.008 inch
- Surface finish – 63 microinch
- Optimal power-to volume ratio
- Position feedback readout: synchro or rotary encoders

System Configuration

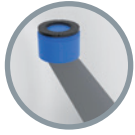
- Pylon structure: steel, aluminum or combination of steel and aluminum
- Rotators: AZ/EL and AZ only
- Environment: indoor (standard), outdoor (optional)
- Mini model tower (optional)
- Storage fixture
- Cover and edges protection kit
- Lifting device for installation



Pylon structure

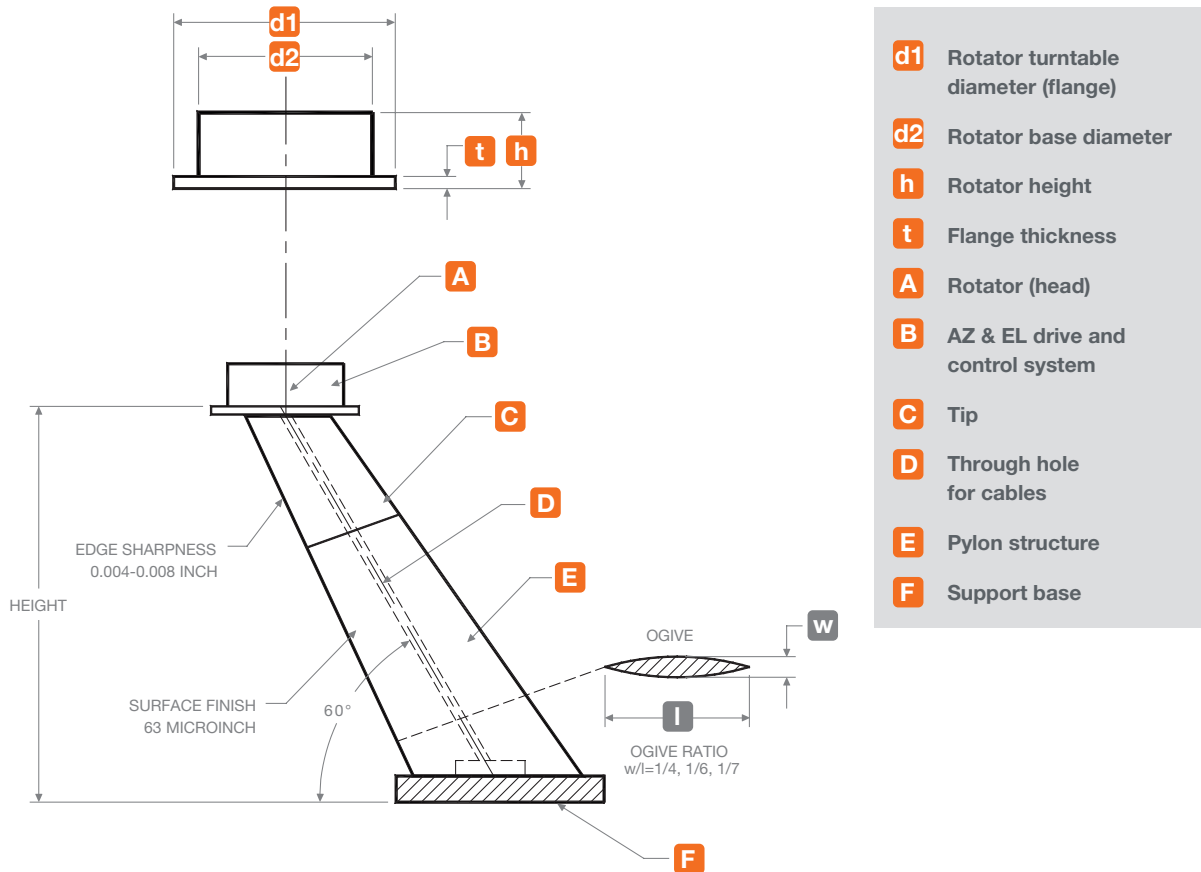


ORBIT/FR offers three types of DUT rotation mechanisms (heads): two Azimuth-over-Elevation (AZ/EL) rotators and one Azimuth (AZ) - only rotator.



Rotators / AZIMUTH - OVER - ELEVATION (AZ/EL)

"HAT" type rotator with pylon



The **"HAT" type** pylon rotators are used for heavy duty DUT measurement.

This unique hat-shaped rotator is positioned on top of the pylon and provides a mounting interface on its bottom flange to allow the rotator to fit inside the DUT.



Fitting the rotator inside the DUT minimizes the rotator's interference in the measurement results.

Above a 20 ton DUT load, the mounting interface is on top of the rotator.



Pylon with "HAT" type rotator

AZ/EL Rotator "HAT" Type and Pylon Specifications

COMPLETE PYLON ASSEMBLY MODEL												
		AL-28005-50	AL-28007-150	AL-28010-300	AL-28013-600	AL-28014-1200	AL-28014-2000	AL-28015-2750	AL-28015-3000	AL-28016-5000	AL-28017-8000	
TIP & ROTATOR ONLY ⁽¹⁾												
		AL-28205-50	AL-28207-150	AL-28210-300	AL-28213-600	AL-28214-1200	AL-28214-2000	AL-28215-2750	AL-28215-3000	AL-28216-5000	AL-28217-8000	
DUT Weight (max)	kg	225	681	1,362	2,724	5,448	9,080	12,485	13,620	22,700	36,300	
	lbs	500	1,500	3,000	6,000	12,000	20,000	27,500	30,000	50,000	80,000	
Delivered Torque (EL)	kg-m	70	104	415	1,078	1,659	3,042	9,678	9,678	20,738	29,034	
	ft-lbs	500	750	3,000	7,800	12,000	22,000	70,000	70,000	150,000	210,000	
Delivered Torque (AZ)	kg-m	27.5	36	100	173	207	691	4,148	4,148	5,530	6,913	
	ft-lbs	200	260	720	1,250	1,500	5,000	30,000	30,000	40,000	50,000	
Side Bending Moment	kg-m	40	51	142	346	346	1,383	4,148	4,148	5,530	8,295	
	ft-lbs	283	370	1,030	2,500	2,500	10,000	30,000	30,000	40,000	60,000	
Travel (EL)	deg	+ 5, - 45	+ 5, - 45	+ 5, - 45	+ 5, - 30	+ 5, - 30	+ 5, - 30	+ 10, - 30	+ 10, - 30	+ 10, - 30	+ 10, - 30	
Travel (AZ)	deg	360 Continuous										
Accuracy (EL) ⁽²⁾	deg	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	
Accuracy (AZ) ⁽²⁾	deg	± 0.05	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03	± 0.03	
Readout Resolution (EL)	deg	0.01	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Readout Resolution (AZ)	deg	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Backlash (EL) ⁽²⁾	deg	0.07	0.07	0.07	0.07	0.07	0.07	0.04	0.04	0.04	0.04	
Backlash (AZ) ⁽²⁾	deg	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04	
Rotation Speed (EL) ⁽²⁾ (± 20 %) ⁽³⁾	deg/min	6.5	10	6	5	4	4	20	20	20	2	
Rotation Speed (AZ) ⁽²⁾ (± 20 %) ⁽³⁾	deg/min	42	36	35	30	30	30	20	20	20	12	
Rotator Height (h)	mm	127	152	183	305	508	635	584	851	1219	1422	
	in	5	6	7.2	12	20	25	23	33.5	48	56	
Turntable Diameter (d1) (Flange)	mm	254	327	406	660	559	864	1524	1524	1880	2413	
	in	10	12.9	16	26	22	34	60	60	74	95	
Base Diameter (d2)	mm	228.6	279	358	597	508	813	1394	1397	1778	2311	
	in	9	11	14.1	23.5	20	32	54.9	55	70	91	
Flange Thickness (t)	mm	25.4	8.1	8.1	15.9	25.4	25.4	30	30.0	38.1		
	in	1	0.32	0.32	0.63	1	1	1.2	1.2	1.5		

(1) Possible to order a tip and rotator only

(2) Data is based on testing in "No Load" position

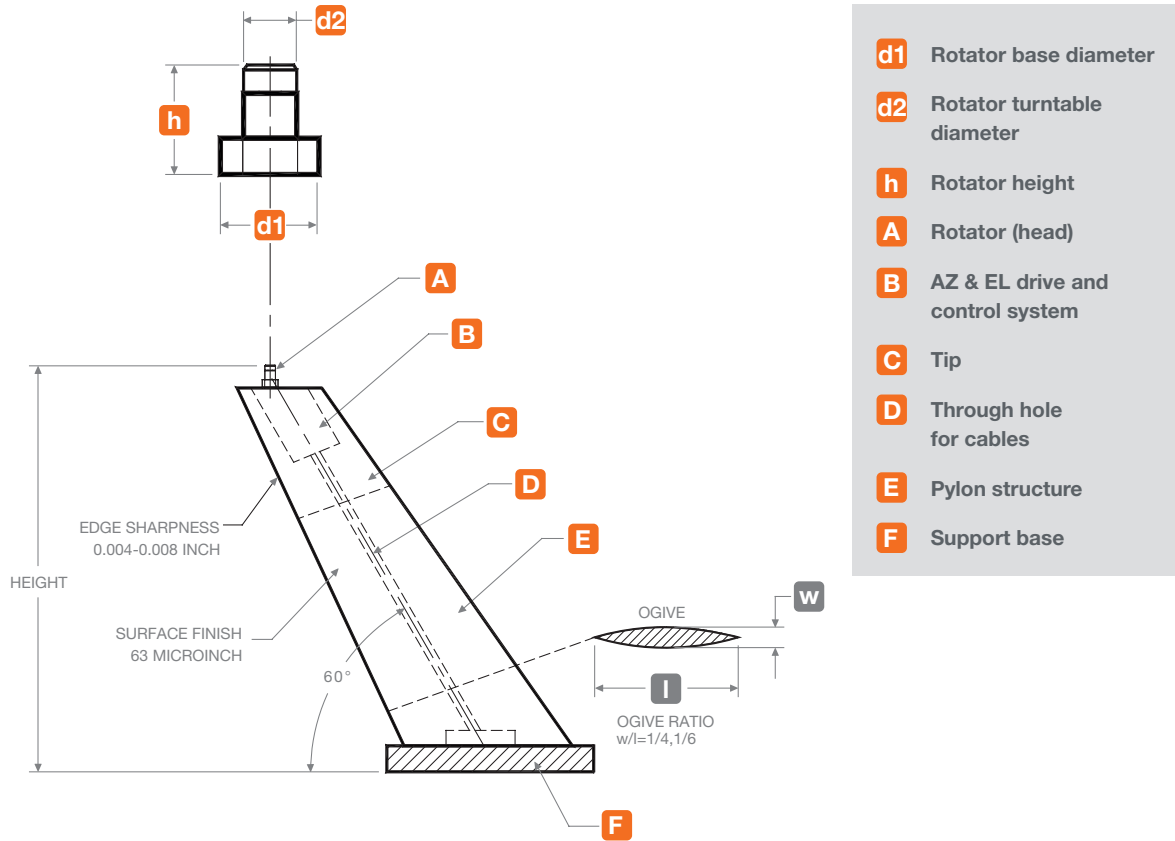
(3) (+/-20%) reflects a speed deviation

* Encoder / synchro are applicable for standard models (Optional: Absolute encoder for 6,000 lbs and above)



Rotators / AZIMUTH - OVER - ELEVATION (AZ/EL)

Low profile rotator with pylon



The **Low profile** pylon rotators are used for overall small size and light weight DUT measurement.

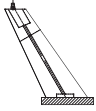

The rotator's drive and position feedback components (i.e. synchro and encoder) are installed inside the tip structure and only the "small" head protrudes from the top.

The DUT is secured to the top of the rotator.



Pylon with low profile rotator

AZ/EL Rotator Low Profile Type and Pylon Specifications

		COMPLETE PYLON ASSEMBLY MODEL				
			AL-28063-60	AL-28062-110	AL-28061-220	AL-28060-600
		TIP & ROTATOR ONLY ⁽¹⁾				
			AL-28263-60	AL-28262-110	AL-28261-220	AL-28260-600
DUT Weight (max)	kg	270	500	1,000	2,724	
	lbs	600	1,100	2,200	6,000	
Delivered Torque (EL)	kg-m	50	44	120	830	
	ft-lbs	360	320	865	6,000	
Delivered Torque (AZ)	kg-m	5	12	25	97	
	ft-lbs	33	87	181	700	
Side Bending Moment	kg-m	7	17	35	140	
	ft-lbs	50	123	253	1,020	
Travel (EL) ⁽²⁾	deg	0,-40	0,-40	0,-40	0,-40	
Travel (AZ)	deg	360 Continuous				
Readout Accuracy (EL) ⁽³⁾	deg	± 0.13	± 0.13	± 0.13	± 0.12	
Readout Accuracy (AZ) ⁽³⁾	deg	± 0.05	± 0.06	± 0.06	± 0.06	
Readout Resolution (EL)	deg	0.02	0.02	0.02	0.02	
Readout Resolution (AZ)	deg	0.001	0.001	0.001	0.001	
Backlash (EL) ⁽³⁾	deg	0.06	0.06	0.06	0.06	
Backlash (AZ) ⁽³⁾	deg	0.03	0.06	0.03	0.03	
Rotation Speed (EL) ⁽³⁾ (± 20 %) ⁽⁴⁾	deg/min	1	2	1	1	
Rotation Speed (AZ) ⁽³⁾ (± 20 %) ⁽⁴⁾	deg/min	22	44	22	22	
Rotator Height (h)	mm	119	140	140	234	
	in	4.7	5.5	5.5	9.2	
Base Diameter (d1)	mm	90	116	116	201	
	in	3.6	4.6	4.6	7.9	
Turntable Diameter (d2)	mm	60	88	88	136	
	in	2.36	3.46	3.46	5.36	

(1) For orders concerning tip & rotator only, contact our specialists with interface details.

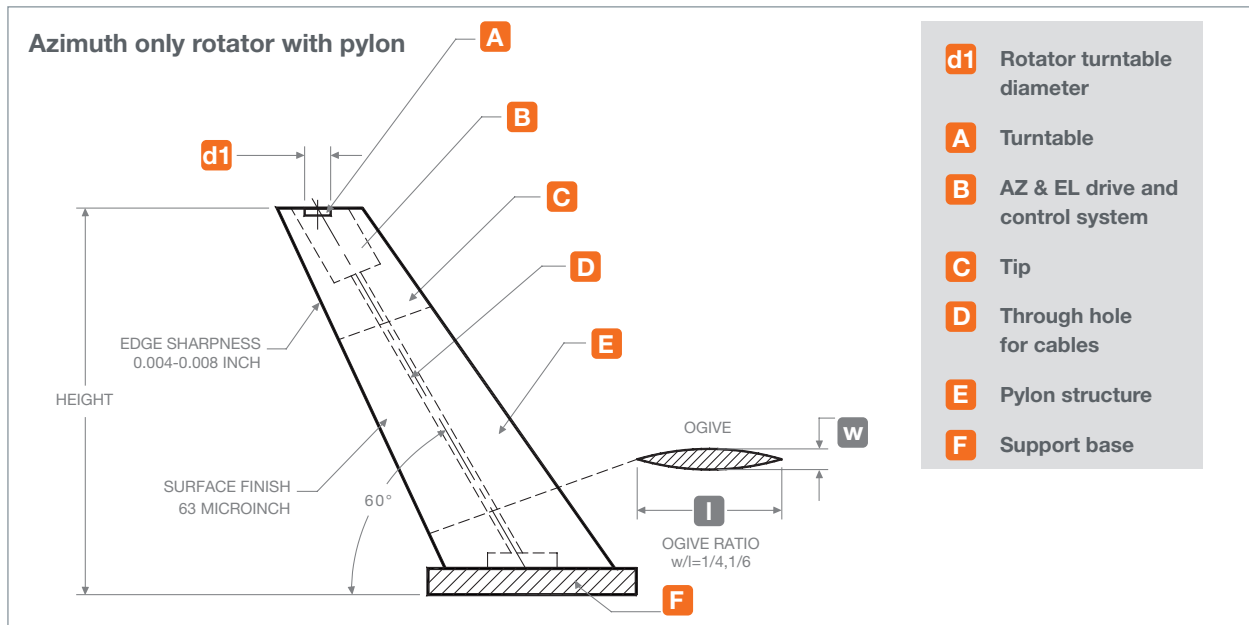
(2) Typical elevation travel is from 0-40 degrees. For other standard travel options, consult our specialists.

(3) Data is based on testing in "No Load" position.

(4) (+/-20%) reflects a speed deviation



Rotators / AZIMUTH ONLY

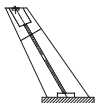




- d1** Rotator turntable diameter
- A** Turntable
- B** AZ & EL drive and control system
- C** Tip
- D** Through hole for cables
- E** Pylon structure
- F** Support base

The **Azimuth only** pylon rotators are used for an overall small size and light weight DUT in single axis measurement. They incorporate a positioner located in the tip of the pylon. The rotator seamlessly mates with the device under test, preserving the integrity of the DUT's test evaluation. DUT elevation adjustments can be implemented manually or via a motorized elevation positioner/leveling device at the base of the pylon.



AZ only Rotator and Pylon Specifications

		COMPLETE PYLON ASSEMBLY MODEL			
		 AL-28053-50	 AL-28055-100	 AL-28057-220	
		TIP & ROTATOR ONLY ⁽¹⁾			
DUT Weight (max)	kg	227	454	1,000	
	lbs	500	1,000	2,200	
Delivered Torque (max)	kg-m	2.8	4.1	6.9	
	ft-lbs	20	30	50	
Bending Moment (max)	kg-m	41.5	138.3	248.9	
	ft-lbs	300	1,000	1,800	
Backlash ⁽²⁾	deg	0.03	0.03	0.03	
Readout Accuracy ⁽²⁾	deg	+/- 0.05	+/- 0.05	+/- 0.05	
Readout Resolution	deg	0.001	0.001	0.001	
Speed	deg/min	30	15	12	
Azimuth Travel	deg	360 continuous			
Turntable Diameter (d1)	mm	70	70	159	
	in	2.75	2.75	6.25	

(1) For orders concerning tip & rotator only, contact our specialists with interface details
 (2) Data is based on testing in "No Load" position



PYLON ORDERING INFORMATION

Pylons can be ordered from our selection of standard models or can be customized to suit customer specific requirements.

To order a complete pylon assembly follow the example in the table below. Note the series number of the pylon model, the number representing the ogive aspect ratio, and the number of feet for the height of the pylon.

OPTIONS

- Slip rings with up to 30 contacts on the azimuth axis (depends on rotator's size)
- Rotary joints for "HAT" type rotators: 12 GHz, 18 GHz, 26 GHz and 40 GHz
- Service connector with static cover on top of the "HAT" type rotators
- Special mounting holes and interfaces are available upon request
- Special tilting device for installation or removal of the pylon

Basic models:

- 28xxx-xxx – complete pylon assembly, hat type
- 282xx-xxx – tip and rotator only, hat type
- 2806x-xxx – complete low profile pylon rotator
- 2826x-xxx – tip and rotator only, low profile

Aspect ratios:

- 4 – 1:4 ogive ratio
- 6 – 1:6 ogive ratio
- 7 – 1:7 ogive ratio

Pylon heights:

- Pylon heights from 3 ft to 70 ft are available in standard sizes in 1 ft increments.
- Pylon heights requiring ½ ft increments start from 3 ft are available upon request

BASIC MODEL SERIES	ASPECT RATIO	PYLON HEIGHT
AL-28007-150	7	11
Example: AL-28007-150-7-11		



Contact your local sales representative for more information

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www.mvg-world.com/positioners

