

9.0 Meter Cassegrain Antenna

Antenna Technologies



Overview

The CPI Antenna Technologies' 9.0 meter antenna delivers exceptional performance for transmit/receive and receive only applications for L through Ka-Band frequencies. This antenna offers a reflector design that incorporates precision-formed panels, truss radials and hub assembly using matched tooling for interchangeable components.

It features an innovative Cassegrain feed and subreflector design which results in high gain, low noise temperature, high antenna efficiency and excellent rejection of noise and microwave interference.

A large center hub provides spacious accommodation for equipment mounting. The reflector is supported by a galvanized Kingpost pedestal that provides the required stiffness for pointing and tracking accuracy. The pedestals are designed for full orbital arc coverage and are readily adaptable to ground or rooftop installations.

The electrical performance is compliant with FCC 25.209 regulations, ITU-RS-580 sidelobe specifications and Intelsat (F3) and Eutelsat requirements.

FEATURES:

- All-aluminum reflector with fully inter-changeable components
- Designed for 1.5 to 31 GHz operation, meeting FCC and ITU-RS-580 requirements
- Galvanized steel elevation-over-azimuth pedestal with jackscrews
- Survives 165 mph winds in any position

OPTIONS:

- L, S, C, X, Ku, DBS and Ka-Band feed configurations
- C/Ku receive only feed systems
- CP/LP manual or remote switchable feeds
- Specialized feed systems (e.g., extended, multi-band)
- Antenna control system with tracking
- Reflector and feed deicing systems
- Environmental hub configurations
- Integrated transmit cross axis kits
- Integrated LNA or LNB systems
- HPAs, converters and M&C systems
- Load frame mounts
- Packing for sea and air transport
- Turnkey installation and testing

UPGRADES:

- X-Band low PIM reflector/feed configurations
- Ku and Ka monopulse tracking available
- Extended azimuth travel, in segments and continuous
- High wind
- Low operating temperatures
- High power configurations
- High stiffness configuration for Ka-Band operation

BENEFITS:

- High antenna efficiency
- Excellent rejection of noise and microwave interference

APPLICATIONS:

- Communications, Data Transfer, Broadcast

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Specifications

ELECTRICAL ⁽¹⁾	C-Band 4 Port Circular Polarized		X-Band 4 Port CP		Ext. C-Band 4 Port Linear Polarized		Ku-Band 4 Port Linear Polarized		Ka-Band 4 Port CP	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.400 - 4.200	5.725 - 6.725	7.250 - 7.750	7.900 - 8.400	3.400 - 4.200	5.725 - 6.725	10.700 - 12.750	13.750 - 14.800	17.700 - 22.000	27.000 - 31.000
Antenna Gain, Midband dBi ⁽²⁾	49.90	53.50	54.90	55.70	50.00	53.60	58.10	60.20	62.60	65.00
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth ⁽²⁾										
-3 dB, at midband	0.53°	0.35°	0.29°	0.26°	0.53°	0.35°	0.20°	0.16°	0.11°	0.08°
-15 dB, at midband	1.11°	0.73°	0.61°	0.55°	1.11°	0.73°	0.42°	0.34°	0.23°	0.17°
Antenna Noise Temperature										
5° Elevation	66 K		86 K		55 K		94 K		233 K	
10° Elevation	57 K		76 K		46 K		81 K		189 K	
20° Elevation	52 K		70 K		40 K		72 K		150 K	
40° Elevation	50 K		68 K		38 K		69 K		124 K	
Typical G/T (dB/K) ⁽³⁾										
(4.000 GHz, 30 K LNA)					31.5					
(CP 4.000 GHz, 35 K LNA)	30.5									
(7.250 GHz, 60 K LNA)			33.3							
(11.200 GHz, 70 K LNA)							36.7			
(19.850 GHz, 120 K LNA)									38.3	
Axial Ratio (dB)	0.50 dB	0.50 dB							0.50 dB	0.50 dB
Power Handling (total)	2 kW CW		2 kW CW		10 kW CW		2 kW CW		500 watts	
Cross Polarization Isolation (dB)										
On Axis	30.8 dB	30.8 dB	30.8 dB	30.8 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	30.8 dB	30.8 dB
Within a 1.0 dB Beamwidth	30.8 dB	30.8 dB	30.8 dB	30.8 dB	30.0 dB	30.0 dB	35.0 dB	35.0 dB	30.8 dB	30.8 dB
Port-to-Port Isolation (dB)										
Rx/Tx (Rx frequency)	0 dB	-85 dB	0 dB	-110 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-110 dB	0 dB	-85 dB	0 dB	-115 dB	0 dB	-85 dB	0 dB
Sidelobe Performance	Meets ITU-RS-580, FCC									
RF Specification	975-5037		975-5283		975-5028		975-5123		975-5094	

⁽¹⁾ All values are at rear feed flange. ⁽²⁾ C-Band Rx values are at 4 GHz. ⁽³⁾ Typical G/T at 20° elevation with clear horizon using single bolt-on LNA feed.

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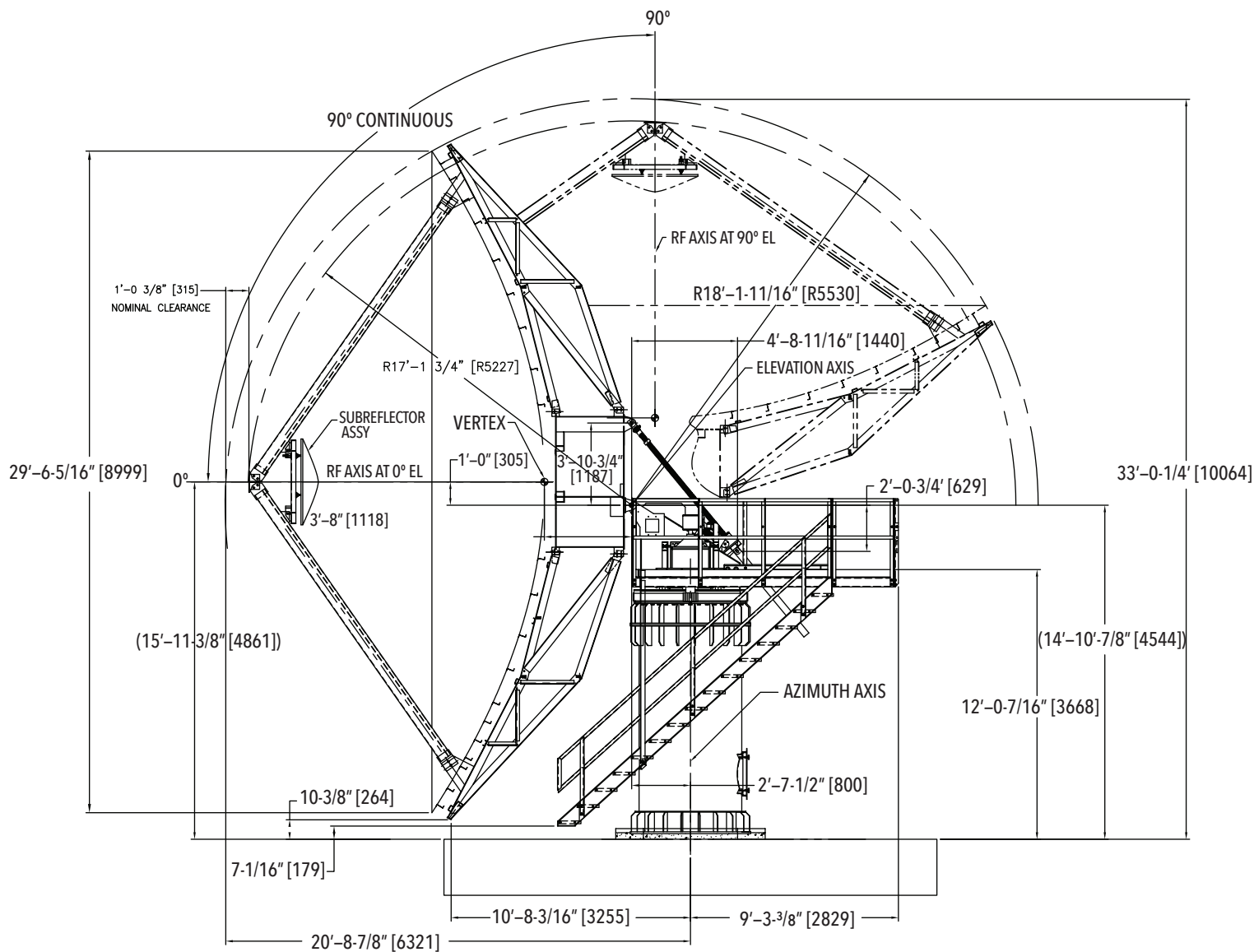
Specifications

MECHANICAL/ENVIRONMENTAL ⁽⁴⁾		Kingpost Pedestal (KX200)	Turning Head (TH)	Kingpost Pedestal (KX180-HW / KXKA)
Antenna Diameter		9.0 meters (29.5 feet)		
Antenna Type		Cassegrain design		
Reflector Construction		16 precision-formed aluminum panels with heat-diffusing white paint Cleaned and brightened aluminum back-up structure		Galvanized steel reflector backup structure
Hub Dimensions		70 in (178 cm) OD, 36 in (91 cm) depth		
Mount Configuration		Elevation over azimuth pedestal, constructed of galvanized steel		
Drive Type		Manual jack screw	Elevation jack screw	Manual jack screw
Azimuth Travel		200° (2 segments @ 120°)	Azimuth gear drive	180° (2 segments @ 95°)
Elevation Travel		0 to 90° continuous	240° continuous	0 to 90° continuous
Pol Travel ⁽⁵⁾		+/- 90°	0- 90° EL, +/- 90°	+/- 90°
Foundation (L x W x D)		22.0 x 22.0 x 1.5 ft (6.7 x 6.7 x 0.46 m)	22 x 22 x 1.5 ft (6.7 x 6.7 x 0.46 m)	26.5 x 26.5 x 2.5 ft (8.1 x 8.1 x 0.76 m)
	Concrete	27 cubic yards ³ (20.6 m ³)	27 cubic yards ³ (20.6 m ³)	65 cubic yards ³ (49.7 m ³)
	Reinforcing Steel	3,560 lbs (1,615 kgs)	2,966 lbs (1,345 kgs)	8,335 lbs (3,799 kgs)
	Subbase	2000 PSF	2000 PSF	3000 PSF
Weights	Reflectors	4,200 lbs (1,905 kgs)	4,200 lbs (1,905 kgs)	10,000 lbs (4,535 kgs)
	Pedestals	3,200 lbs (1,452 kgs)	8,000 lbs (3,628 kgs)	11,000 lbs (4,989 kgs)
Shipping Containers		One 40 ft HC container plus 20 ft STD container if deiced	Two 40 ft HC containers plus 20 ft STD container if deiced	Two 40 ft HC containers plus 20 ft STD container if deiced
Wind Loading	Operational	45 mph (72 km/h) gusting to 60 mph (97 km/h)	45 mph (72 km/h) gusting to 60 mph (97 km/h)	Up to 62 mph (100 km/h)
	Survival			
	Any Position	165 mph (265 km/h)	125 mph (201 km/h)	180 mph (290 km/h)
	At Stow	165 mph (265 km/h)	150 mph (241 km/h)	200 mph (322 km/h)
Temperature	Operational	+5° to +122°F (-15° to +50° C)		
	Survival	-22° to +140°F (-30° to +60° C), low temperature options available		
Rain		Up to 4 in/h (10 cm/h)		
Relative Humidity		0 to 100% with condensation		
Solar Radiation		360 BTU/h/ft ² (1,000 Kcal/h/m ²)		
Ice	Survival	1 in (2.5 cm) on all surfaces or 1/2 in (1.3 cm) on all surfaces with 80 mph (130 km/h) wind gusts		
Atmospheric Conditions		As encountered in coastal regions and/or heavily industrialized areas		
Shock and Vibration		As encountered during shipment by airplane, ship or truck		

⁽⁴⁾ Some specifications may vary based on the combination of equipment, options and/or upgrades ordered.

⁽⁵⁾ Polarization drive can mechanically travel +/- 90°. Final Polarization travel will depend on the design of the integrations and RF electronics/plates. Most CPI designs using all CPI products and electronics are designed to travel +/- 90° for standard products.

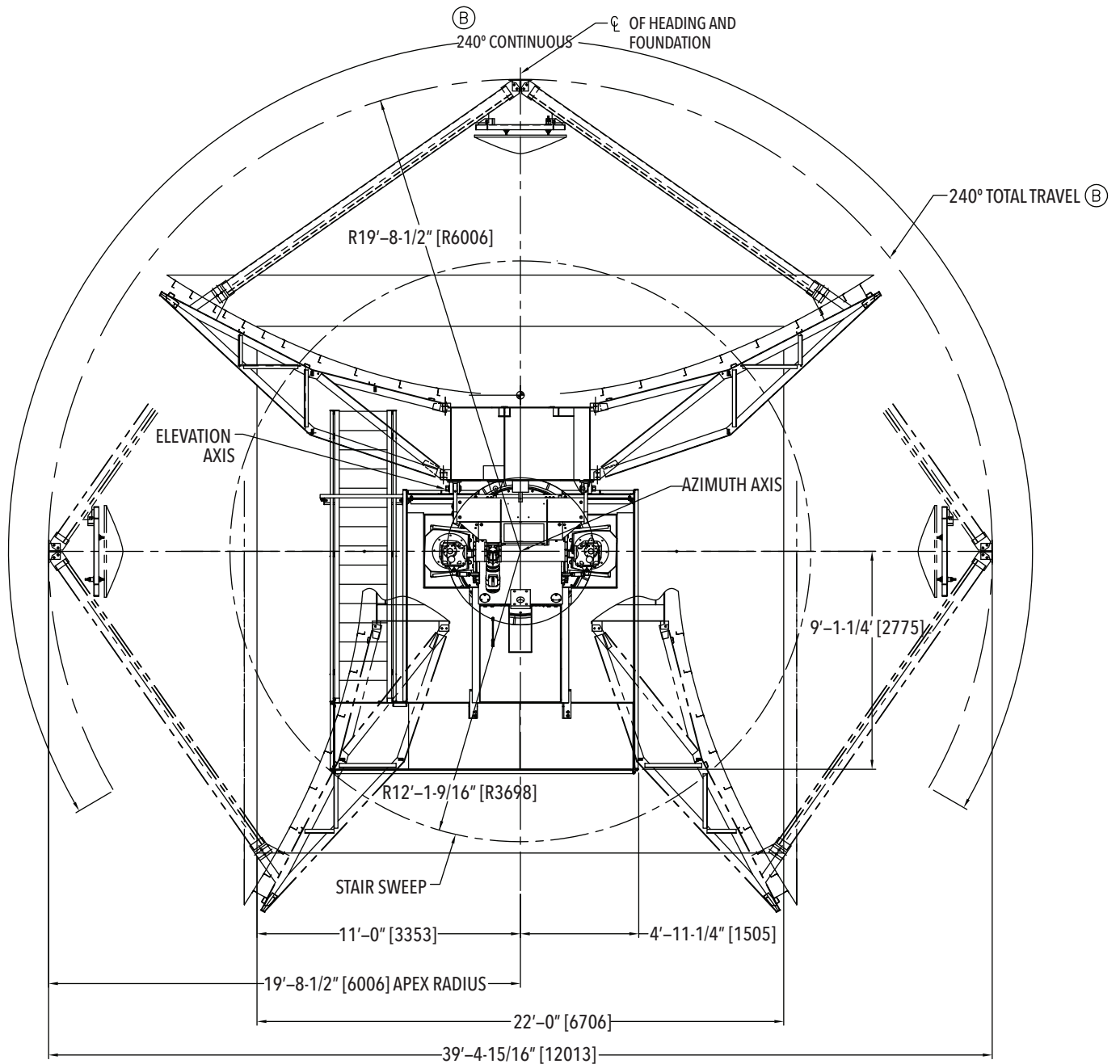
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ELEVATION VIEW

9M TURNING HEAD
240° AZ TRAVEL, EL 0°-90°

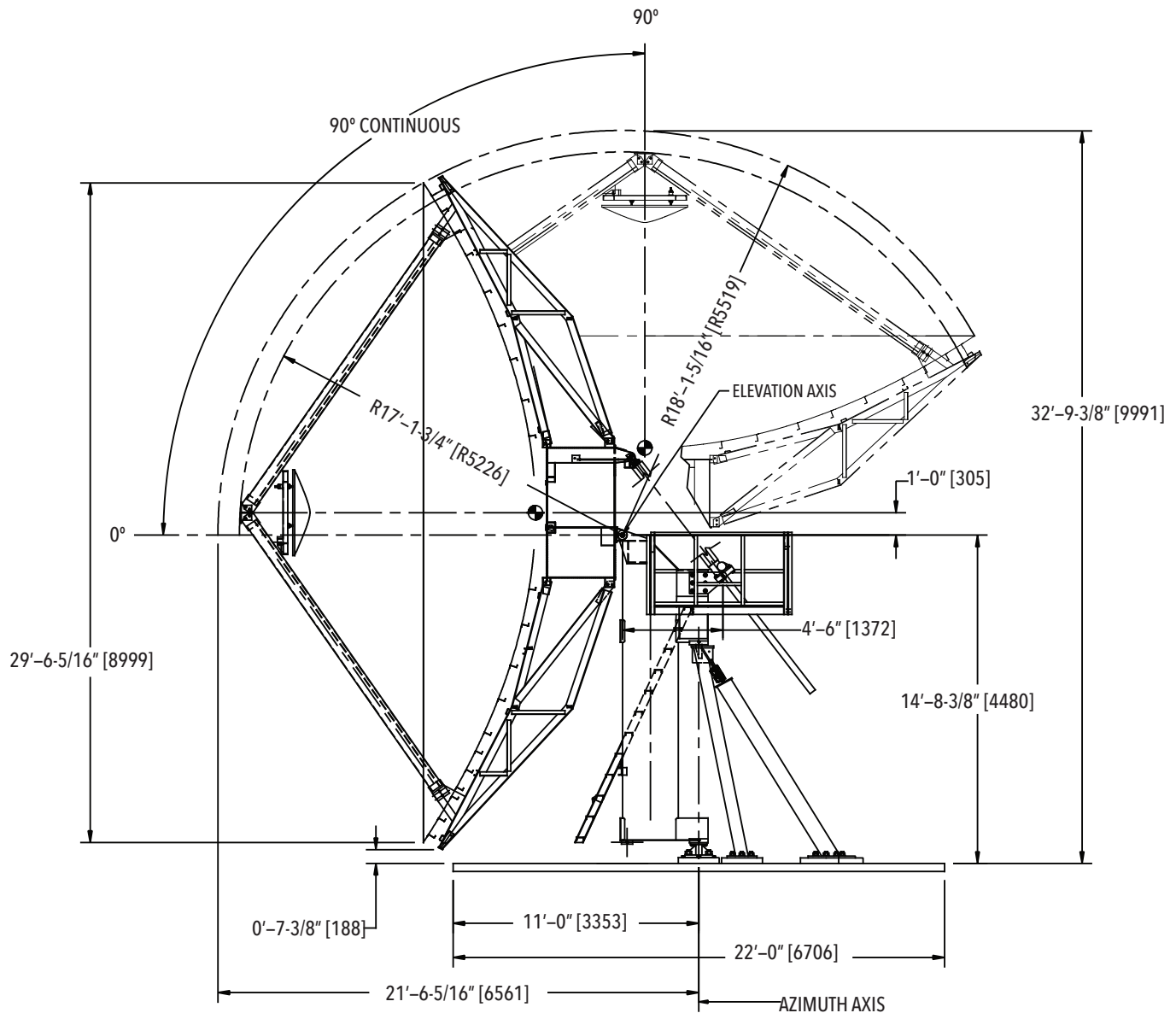
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PLAN VIEW

9M TURNING HEAD
240° AZ TRAVEL, EL 0°-90°

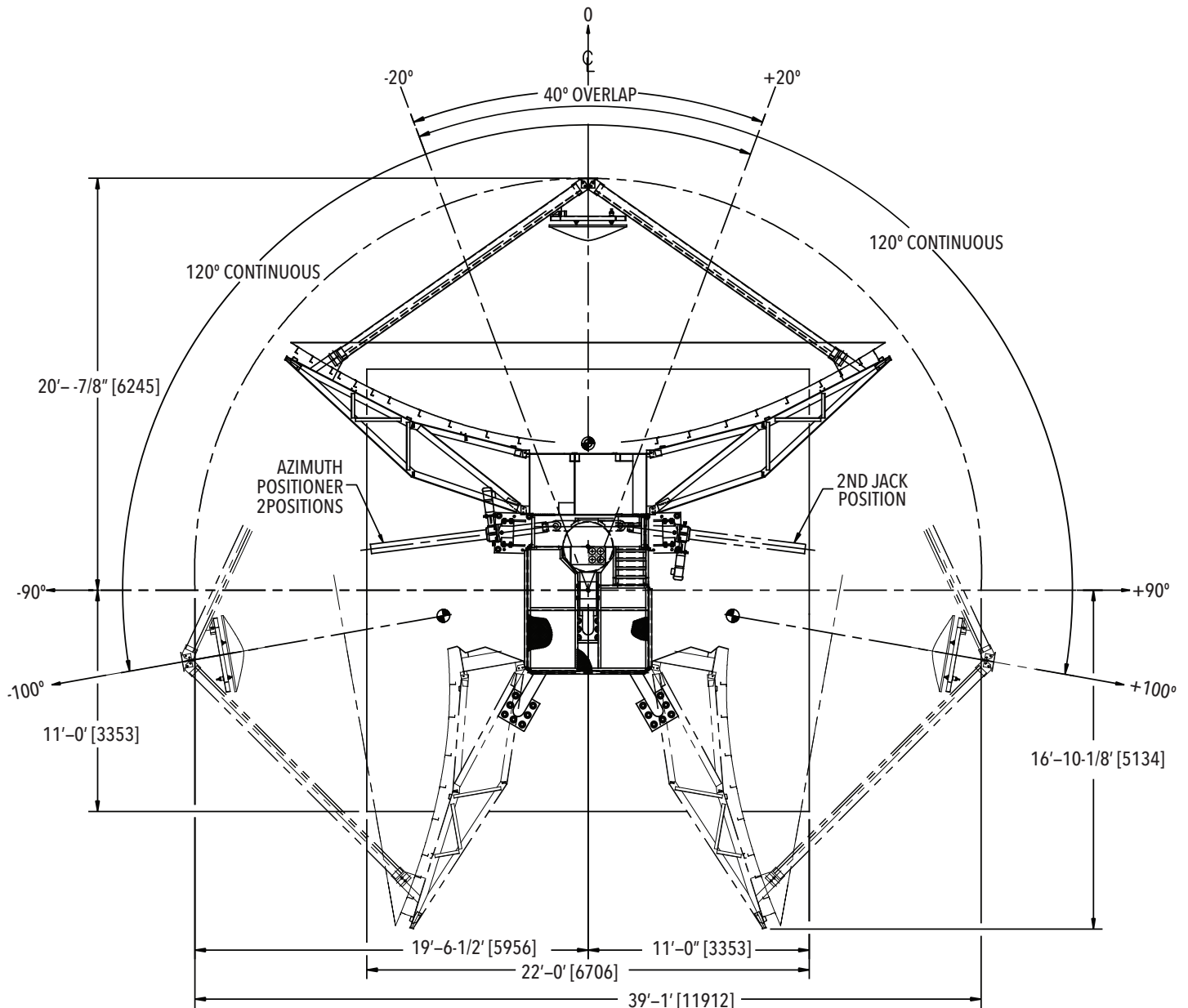
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SIDE ELEVATION

MODEL 9.0 KX200
ANTENNA GEOMETRY
AZ 200°, EL 0°-90°

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PLAN VIEW

MODEL 9.0 KX200
ANTENNA GEOMETRY
AZ 200°, EL 0°-90°

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The data should be used for basic information only.
Formal, controlled specifications may be obtained from CPI for use in equipment design.



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