

DKE110F Guyed Frangible Mast



Vaisala Guyed Frangible Mast DKE110F is 10 meters (33 feet) high and suitable for a wide range of surface weather and climatological applications, including locations at the airports.

DKE110F mast tubes are made of glass-fiber reinforced plastic (GRP) which has very good weathering properties. The same material is also used for the guying sets. Though the mast is light weight, even with one set of guy wires it is rigid enough to resist wind speeds up to 60 m/s (134 mph) with the weather station enclosure, solar panel, and sensors installed. With the optional second guy wire set, DKE110F withstands winds of up to 75 m/s (168 mph).

Excellent Weather Resistance

DKE110F has excellent corrosion and environmental resistance verified with salt spray and solar radiation tests. The metal parts are made of anodized aluminum alloy and maritime-grade stainless steel to achieve excellent weather resistance.

Tilting for Easy Maintenance

The hinged base allows the mast to be manually tilted down for easy maintenance of the sensors and other equipment installed on the upper assembly. Optionally, the mast can be fitted with a separate lifting rod device to allow tilting the mast with a winch.

The Choice for Airport Locations

DKE110F is an excellent choice for airport locations. The mast is frangible according to ICAO Annex 14 and ICAO Doc 9157, Aerodrome Design Manual, Part 6 – Frangibility.

Mast Delivery Contents

The mast delivery consists of the basic round tube mast complemented with the appropriate accessories, such as foundation, air terminal, and top guying set. An optional middle guying set kit is available for even increased maximum wind load tolerance. The mast components are packed in durable containers suitable for air freight.

Features

- Low mass and frangible according to ICAO Annex 14 and ICAO Doc 9157, Aerodrome Design Manual, Part 6 – Frangibility
- Hinged base with options to tilt manually or with a winch
- Withstands winds up to 60 m/s (134 mph); up to 75 m/s (168 mph) with two sets of guy wires
- Glass-fiber reinforced plastic material is UV-stabilized and RF-transparent to electromagnetic signals, such as instrument landing system (ILS) and microwave landing system (MLS)
- Suitable for a wide range of meteorological automatic weather station applications

Environmental Impact

- Manufacturing process consumes far less energy than with aluminum or steel mast
- GRP material is recyclable
- Recycling according to EU directive 2008/98/EC

Technical Data

Mechanical Specifications

Recycling	According to EU directive 2008/98/EC
Height (assembled)	10 m (33 ft)
Height, mast tube 1	0 ... 3 m (0 ... 9 ft 10 in)
Height, mast tube 2	3 ... 6 m (9 ft 10 in ... 19 ft 8 in)
Height, mast tube 3	6 ... 9 m (19 ft 8 in ... 29 ft 6 in)
Heights, top section	9 ... 10 m (29 ft 6 in ... 32 ft 10 in)
Length, mast tubes 1, 2, 3	3 m (9 ft 10 in) each
Length, top section	1 m (3 ft 4 in)
Diameter, mast tubes 1, 2, 3	106 mm (4.17 in)
Diameter, top section	60 mm (2.36 in)
Weight (mast only)	35 kg (77 lb)

Mast Tube Material

Mast tubes 1, 2, 3	Glass-fiber reinforced plastic (GRP)
Top section	Aluminum alloy
Base and hinge	Aluminum alloy
Other parts	Aluminum alloy or maritime grade stainless steel
Fastener parts	Maritime-grade stainless steel

Guy Wires and Optional Rods

Guy Wires

Rod material	GRP
Fasteners material	Maritime-grade stainless steel
Number of guy wire rods	18 pcs (top guying) or 30 pcs (top and middle guying)
Breaking strength	15 kN

Lifting Rod (Optional)

Material	Aluminum alloy
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Tilt Rod (Optional)

Material	Aluminum alloy
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Foundation Set

Material	Galvanized steel
Thread of foundation bolts	M20
Length of foundation bolts	350 mm (13.78 in), cast in or drilled to concrete

Coating

GRP	Painting, red and white in 7 sections (ICAO compliant, others available on request)
Aluminum parts	Anodizing and painting
Steel parts	Galvanized
Stainless steel	Painted

Packaging

Material	Plywood
Mast package dimensions (L × W × H)	3100 × 500 × 390 mm (122.05 × 19.69 × 15.35 in)
Mast package weight	48 kg (106 lb)
Foundation set package dimensions (L × W × H)	385 × 275 × 110 mm (15.16 × 10.83 × 4.33 in)
Foundation set package weight	12 kg (26.5 lb)

Operating Environment

Maximum wind speed (top guying)	60 m/s
Maximum wind speed (top and middle guying)	75 m/s

Compliance

Frangibility Certification

ICAO	Aerodrome Design Manual Part 6: Frangibility Doc 9157 AN/901 1st edition, 2006
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FAA	Advisory Circular (AC) 150/5345-45C
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Material Certifications

Salt spray test	STD-810F, Method 509.4, Paragraph 4.5.2., Procedure I
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Solar radiation test	STD-810F, Method 505.4, Paragraph 4.4.3., Procedure II
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