

Lightweight Composite Telescopic Mast Systems

COBHAM

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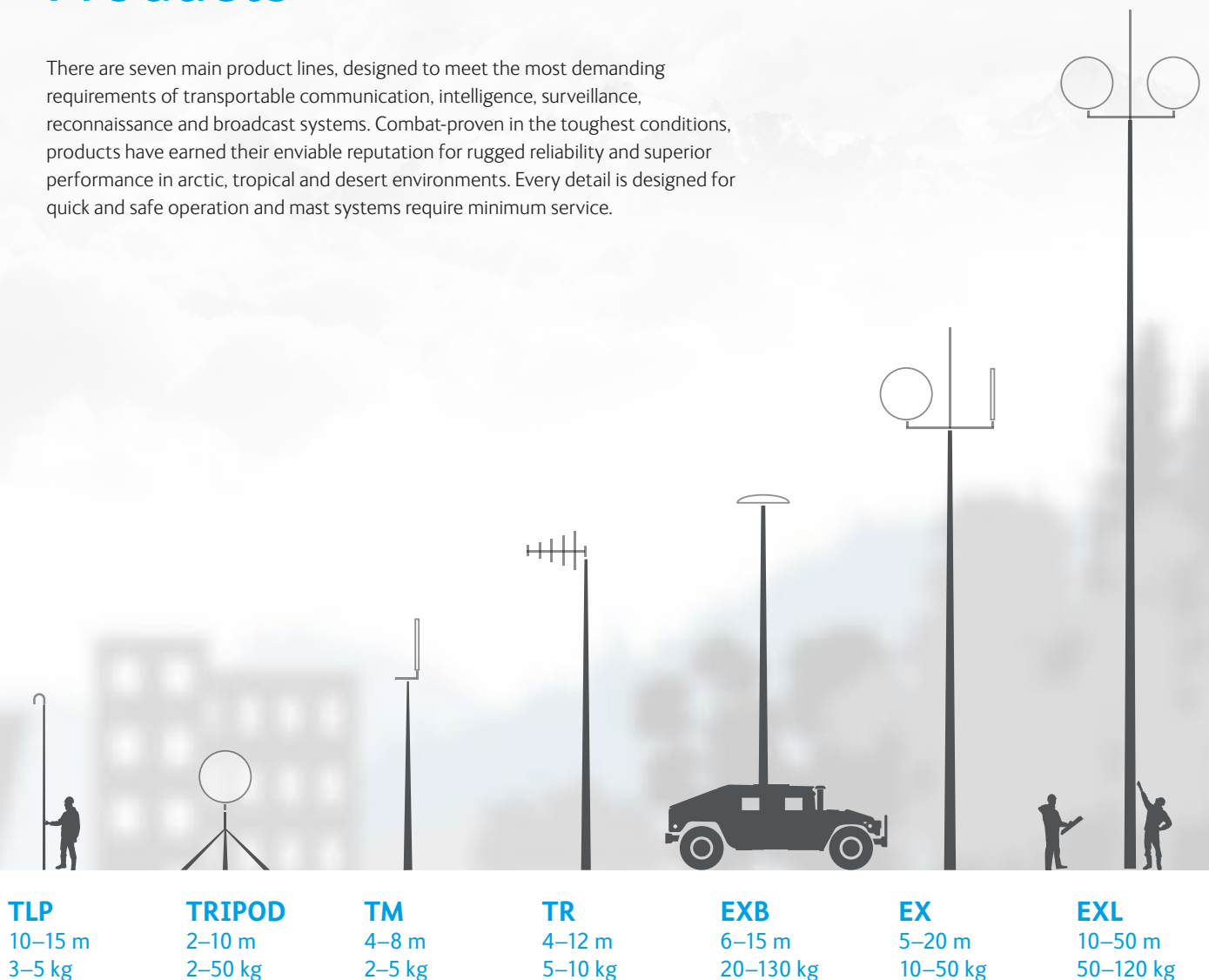


Cobham Mast Systems

Cobham Mast Systems' know-how and understanding of customers' specific needs and requirements are based on more than 30 years of experience. Its lightweight telescopic masts are used extensively around the world by defence forces, police, fire fighters and other emergency and surveillance services. In addition to the industry's widest product range, Cobham Mast Systems provides customized, fully integrated solutions precisely tailored to the application.

Products

There are seven main product lines, designed to meet the most demanding requirements of transportable communication, intelligence, surveillance, reconnaissance and broadcast systems. Combat-proven in the toughest conditions, products have earned their enviable reputation for rugged reliability and superior performance in arctic, tropical and desert environments. Every detail is designed for quick and safe operation and mast systems require minimum service.



Superior performance tailored to the application

Masts are designed based on our standard mast product line. Specific masts can be tailored to requirements or applications resulting in a mast with optimal performance.

Combat-proven reliability through straightforward design

Composite material withstands all weather conditions. Belt driven mechanical structure guarantees reliable performance in arctic, tropical and desert environments.

COBHAM MAST SYSTEMS TACTICAL COMPOSITE TELESCOPIC MASTS

Light in weight, heavy indurability

Composite material combines strength and easy mobility. Telescopic structure enables minimal transportation length with maximal operational length.

Rapid deployment even in the toughest conditions

Masts are designed to withstand the toughest conditions. Each detail is designed for reliable, quick and safe operation.

Accessories & Ancillaries



MAST ACCESSORIES



WINCHES



ANTENNA POINTING DEVICES



ANTENNA BRACKETS



VEHICLE MOUNTING KITS



SPECIAL GUYING KITS

Quality & Testing

Cobham Mast Systems quality system fulfills the requirements of ISO 9001, ISO 14001 and AQAP 2110 standards. Masts and accessories have been proven to meet the environmental requirements in accordance with the MIL-STD 810 and DEF STAN 00-35:9999.



MIL-STD 810 Tests:

500.4	Low pressure
501.4	High temperature - Storage +71°C - Operation +55°C
502.4	Low temperature - Storage -46°C - Operation -40°C
504	Contamination by fluids
505.4	Solar radiation
506.4	Rain
507	Humidity
508.5	Fungus
509.4	Salt fog
510.4	Sand and dust
512	Immersion
514.5	Vibration
516.5	Functional shock
516.5	Transit drop
521.2	Icing/freezing rain

DEF STAN 00-35:9999 Test:

Test CL19 Blowing dust

Mast construction is also tested against lightning strikes.

Mast model naming:

EXL195/34-5.4

Mast type	Bottom section diameter (mm)	Extended height (m)	Retracted length (m)
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TLP

Access poles for rapid and covert access on ships or buildings

Data Sheet

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TLP

Access poles for rapid and covert access on ships or buildings



Telescopic lifting poles are mechanical winch and belt-operated access poles. It is compact, fast and strong and designed for use both on land and at sea. Carbon composite poles are available for heights up to 15 meters. All components withstand immersion and salt water and are designed to survive rough handling.

Telescopic lifting poles are designed for covert access on ships or buildings. The lifting pole is extended while in vertical position for easy operation. Poles can be used to securely attach a ladder to a structure in order to gain rapid and covert access or to gain visibility to restricted locations through windows or over fences and roofs via a camera mounted on the pole.

Accessories and Ancillaries

- camera brackets
- compatible with grapnel hooks



Poles listed below are examples. Other lengths are available at request.

Mast type:	TLP61	
Extended height (m)	10	15
Transportation length (m)	2.75	4
Vertical top load (kg)	3	3
Pole weight (kg)	9.5	12.5

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Tripods

Tripods for light and heavy top loads

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Tripods

Tripods for light and heavy top loads

Tripods can be used for several applications instead of small masts. Lightweight tripods are designed for 2–5 kg top loads and heavy duty tripods for a maximum 50 kg top loads. Tripods are made of glass fiber composite material. Tripod legs are telescopic and sections are pushed out and locked in place with mechanical latches. For windy conditions, tripods can also be guyed.

Tripods are quick to deploy and they provide excellent pointing accuracy for heavy narrow beam antennas. Tripods can also handle inertial loads.

Tripods are applicable, for example, for mountain top link applications as well as deploying a communication system on rooftops in urban areas. Tripods are excellent for temporary communication networks in rescue, police and fire fighting as well as temporary lighting applications. Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours.



Accessories and Ancillaries

- guying accessories
- antenna brackets
- TR- and EX-masts can also be equipped with tripod legs



Tripods listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	TRIPOD TM58	TRIPOD MAST TM58	TRIPOD MAST TR86	TRIPOD MAST EX105
Extended height (m)	3.5	6	3.5	6
Transportation length (m)	1.2	1.8	1.4	2.2
Vertical top load (kg)	10	10	10	30
Wind area CxA (m ²)	0.1	0.1	0.3	0.3
Operational wind speed (m/s)	20	20	20	20
Mast weight (kg)	14	10	17	34
Accessories weight (kg)	3	3	10	19

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TM-Masts

Lightweight, telescopic push-up masts

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TM-Masts

Lightweight, telescopic push-up masts

Lightweight telescopic TM-masts are push-up masts for heights up to 8 meters and for 2–5 kg top loads. Mast sections are pushed out and locked with friction locks one by one.

TM-masts are made of glass fibre composite material. Standard designs can be customised according to customer's specifications and requirements. Mast tube colour is dark green. Other tube colours are available at request.



Accessories and Ancillaries

- variety of mast base supports for ungued mast
- guying accessories
- vehicle mounting kits
- antenna brackets

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Masts listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	TM51	TM58	
Extended height (m)	4	6.5	7.6
Transportation length (m)	1.2	1.35	1.8
Vertical top load (kg)	5	5	5
Wind area CxA (m ²)	0.1	0.1	0.1
Operational wind speed (m/s)	15	15	15
Mast weight (kg)	2.5	3.8	6.5
Accessories weight (kg)	optional	optional	optional

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TR-Masts

Lightweight, telescopic push-up masts

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TR-Masts

Lightweight, telescopic push-up masts

Lightweight telescopic TR-masts are push-up masts for heights up to 12 meters. Mast sections are pushed out and locked in place with mechanical latches one by one. TR-masts can be deployed by two persons.

TR-masts are made of glass fibre composite material. Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours. TR-masts can be supplemented with a wide range of mounting kits for vehicles and shelters.



Accessories and Ancillaries

- sledge hammer
- spikes, guy stakes
- guy reels
- accessory bag
- vehicle mounting kits
- antenna brackets



Masts listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	TR72		TR86		
	6.6	9.5	8	10	12
Extended height (m)	6.6	9.5	8	10	12
Transportation length (m)	1.3	1.7	1.4	1.7	1.7
Vertical top load (kg)	10	10	10	10	10
Wind area CxA (m ²)	0.2	0.3	0.3	0.3	0.3
Operational wind speed (m/s)	25	25	25	25	25
Mast weight (kg)	6	9	11	12	13
Accessories weight (kg)	9	11	11	11	11

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EXB-Masts

Lightweight, telescopic masts for highly mobile operations

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EXB-Masts

Lightweight, telescopic masts for highly mobile operations

EXB-masts are designed for operations where minimal time and manpower for deployment is available. Push-button, vehicle-mounted masts allow rapid extension and operation without guy ropes. Top section can be guyed, if required. EXB-masts extend to heights up to 15 m from the platform. Maximum payloads of up to 120 kg, depending on mast performance requirements. EXB-masts are made of carbon and glass fibre.



EXB269-series

EXB-masts have a double-belt system. One belt is used for mast extension, the second belt is to assure proper operation under adverse conditions of wind and slope. This effective, well-proven technique is more reliable under severe conditions, especially sand and dust.

EXB-masts are equipped with an automatic latch mechanism for controlling the order in which tube sections extend. The winch is operated by an electric winch power unit (WPU) with remote control. Voltage options: DC 24V, AC 110–230V with power transformer. A manual hand crank is provided as a backup for power failure.

Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours.



Winch power unit (WPU)

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Accessories and Ancillaries

- antenna positioners
- vehicle mounting kits
- antenna brackets
- guying ropes (optional)
- power transformer (110–230V)
- computer interface (RS485)



EXB333-series

Masts listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	EXB269-MASTS		EXB333-MASTS	
	Extended height (m)	6	10	10
Transportation length (m)	1.2	1.8	1.7	2.4
Vertical top load (kg)	50	50	120	120
Wind area CxA (m ²)	0.5	0.4	0.6	0.3
Operational wind speed (m/s)	25	25	25	25
Mast weight (kg)	120	140	160	200

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EX-Masts

Lightweight, winch and belt-operated telescopic masts

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EX-Masts

Lightweight, winch and belt-operated telescopic masts



Lightweight telescopic EX-masts are mechanical winch and belt-operated masts made of carbon and glass fibre composite material.

EX-masts are available in three sizes. Please see the table below for more specific information.

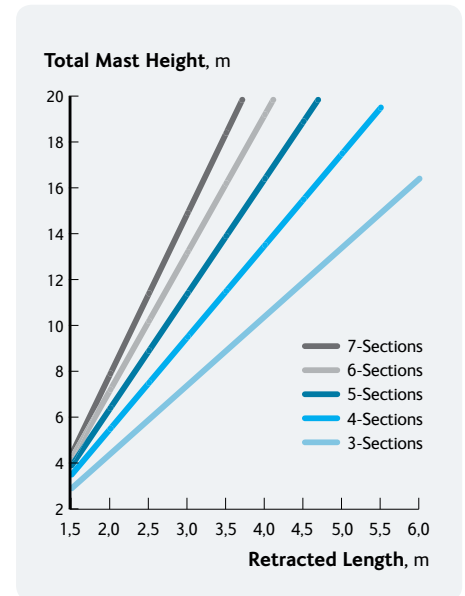
EX-masts can be deployed by one to three persons and are elevated with a hand-cranked winch or by an optional electric

winch power unit (WPU). The entire mast is rotatable by 360 degrees.

Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours. EX-masts can be supplemented with a wide selection of mounting kits for vehicles and shelters. Sand plate kit or hard ground kit also available.

Accessories and Ancillaries

- sledge hammer, guy stakes
- ground spike, spike, eye bar, base plate
- guy reels and measuring rope
- accessory bags
- winch, winch power unit (WPU)
- antenna positioners
- vehicle mounting kits
- antenna brackets



Masts listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	EX105-MASTS			EX128-MASTS			EX141-MASTS		
	8	10	12	10	15	18	15	18	20
Extended height (m)	8	10	12	10	15	18	15	18	20
Transportation length (m)	2.0	2.4	2.7	2.4	3.4	4.0	3.0	3.4	4.3
Vertical top load (kg)	20	20	20	50	40	40	50	50	40
Wind area CxA (m ²)	0.5	0.4	0.3	1	0.7	0.5	0.7	0.5	0.5
Operational wind speed (m/s)	25	25	25	25	25	25	25	25	25
Mast weight (kg)	20	21	22	27	35	40	41	48	50
Accessories weight (kg)	30	30	40	30	40	40	40	40	45

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EXL-Masts

Lightweight, telescopic masts for large and heavy top loads

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EXL-Masts

Lightweight, telescopic masts for large and heavy top loads

Lightweight telescopic EXL-masts are mechanical winch and belt-operated masts, designed for larger and heavier top loads. EXL-masts are made of carbon and glass fibre composite material.

EXL-masts are available in three sizes. Please see the table below for more specific information.

EXL-masts can be deployed by two or three persons and are elevated with a hand-cranked winch or by an optional electric winch power unit (WPU). The entire mast is rotatable by 360 degrees. EXL-mast sections open one by

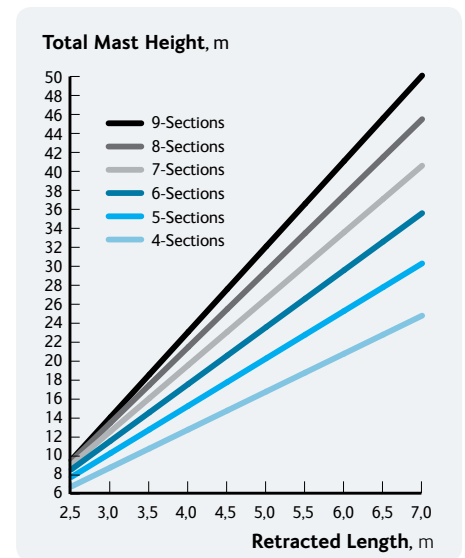
one and an automatic mechanical locking mechanism allows guying each lower section separately during winching up. This allows safe handling of higher top loads especially under windy conditions.

Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours. EXL-masts can be supplemented with a wide selection of mounting kits for vehicles and shelters. Sand plate kit or hard ground kit also available.



Accessories and Ancillaries

- sledge hammer, guy stakes
- ground spike, spike, eye bar, base plate
- guy reels and measuring rope
- accessory bags
- winch, winch power units (WPU)
- antenna positioners
- vehicle mounting kits
- antenna brackets



Masts listed below are examples. Other lengths with different top load specifications are available at request.

Mast type:	EXL141-MASTS			EXL167-MASTS			EXL195-MASTS		
Extended height (m)	10	15	18	21	24	30	30	34	50
Transportation length (m)	3.6	4.1	4.6	4.2	4.7	5.5	5.1	5.6	7.6
Vertical top load (kg)	100	80	70	100	80	80	120	80	50
Wind area CxA (m²)	1	0.7	0.5	1.2	1	1	1.2	1	0.5
Operational wind speed (m/s)	25	25	25	25	25	25	25	25	25
Mast weight (kg)	45	50	55	80	90	100	120	140	190
Accessories weight (kg)	50	55	60	60	70	90	90	100	190

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Accessories

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Accessories



Each field mast system is supplied with a full field deployment accessory kit to enable easy mast deployment and fast tear down. Mast accessories are designed for easy and comfortable deployment in all extremes of environmental conditions. Accessory kits are packed in all-weather tarpaulin bags.

Mast system deployment accessories are fabricated from the state of the art materials and have gone through rigorous testing to assure optimum performance with long life span.

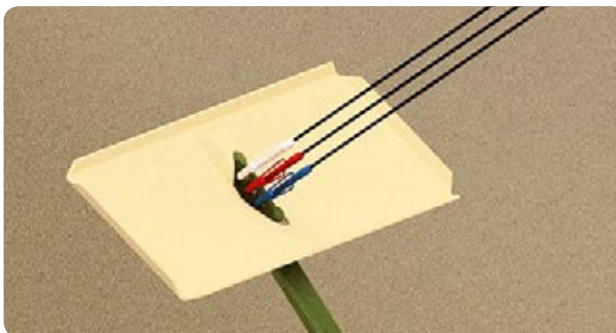
Special user friendly guy reel design makes the task of tensioning the guy ropes and plumbing the mast quick and easy. Guy ropes are available in 100% polyester or with aramid core and polyester mantle. Heavy duty aramid core guy ropes are durable yet easy to use. Hardened guy stakes and sledge hammers are suitable for repeated use in a wide variety of ground conditions including permafrost.

For special anchoring requirements also tree straps, soft and hard ground anchoring kits are available.

Winch power units (WPU) are available for all EX-, EXL- and EXB- mast winches. The motor unit is an add-on device that is fixed on the winch with two hand screws to replace the crank handle. The motor unit can be easily and quickly detached in case of power failure to enable manual back up. A circuit breaker together with a mechanical torque limiter protects the motor and mast against overload. WPU kit consist of an electronic motor drive, remote controller and power cable packed in a transportation bag. The motor is controlled with a remote controller. Voltage options: DC24V as standard and AC110-230V available with power transformer.



Tree straps



Soft ground fixing with sand plate



Hard ground fixing



Winch power unit for EX- and EXL-masts



Winch power unit for EXB-masts

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Vehicle Mounting Kits

For safe transportation and quick deployment of masts

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Vehicle Mounting Kits

For safe transportation and quick deployment of masts

Vehicle mounting kits are available for all Mast Systems' mast series and can be used with vehicles, shelters and containers. Mounting kits enable safe mast transportation and quick deployment.

Standard designs can be customised according to customer's specifications and requirements and painted in customer specific colours. Vehicle mounting kits enable the use of mast either attached to the vehicle or shelter or as a free-standing mast. Vehicle mounting kits are available in all mast and vehicle colours.

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Antenna Pointing Devices and Brackets

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Antenna Pointing Devices and Brackets



Antenna positioners, such as rotators, double rotators, tilters and rotator-tilters are available for different pointing functions. Antenna pointing devices are available in all mast colours.

All antenna pointing devices are designed to meet the most demanding harsh environment of communication and manufactured to resist external forces and ensure quick and safe operation. A wide range of pointing device accessories and tailor made fastenings are available to meet the most demanding customer needs.

Antenna pointing devices are operated manually from the ground by maneuvering ropes. Electric remote control units are (24 VDC) also available for rotators.

Antennas can be mounted directly on the antenna pointing device or on antenna specific brackets.



	SINGLE ROTATOR	DOUBLE ROTATOR	TILTER	ROTATOR-TILTER
Max Payload	50 kg*	50 kg*	50 kg*	50 kg*
Load capacity				
-Pan axis range	150 Nm*	150 Nm*	-	150 Nm*
-Tilt axis range	-	-	150 Nm*	250 Nm*
Product weight	5.5 kg	8.5 kg	5.5 kg	9.8 kg
No. of antennas	Rotates one antenna 360°	Rotates two separate antennas 360° independent of each other	Tilts one antenna ±15-30° from horizontal plane	Rotates one antenna 360° and tilts another antenna ±15-30° from horizontal plane

Antenna brackets for different antenna types are available for various applications. We also design and manufacture customer specific antenna brackets



* Final performance depends on antenna set up and balancing of the top load.

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Maintenance Service and Training

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Maintenance Service and Training



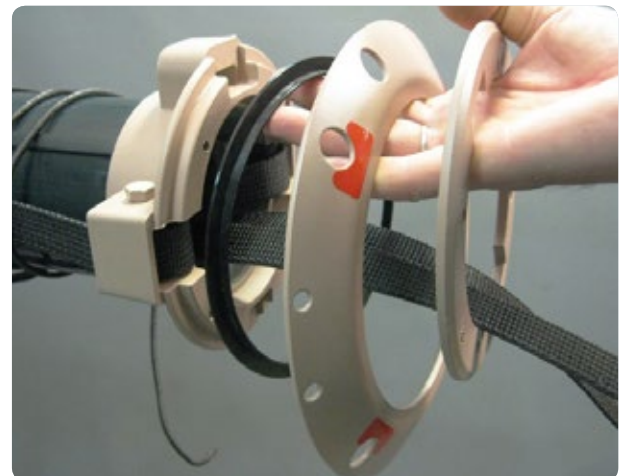
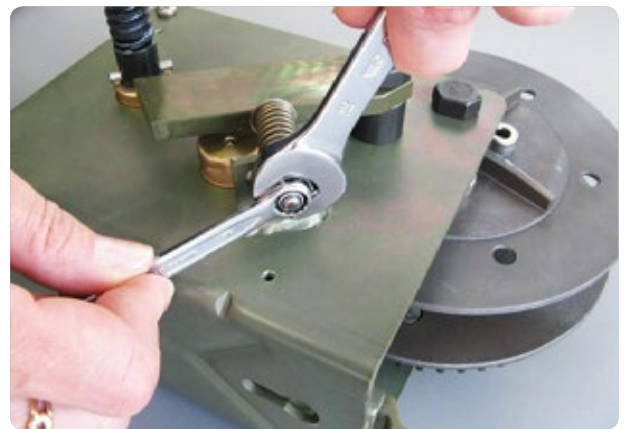
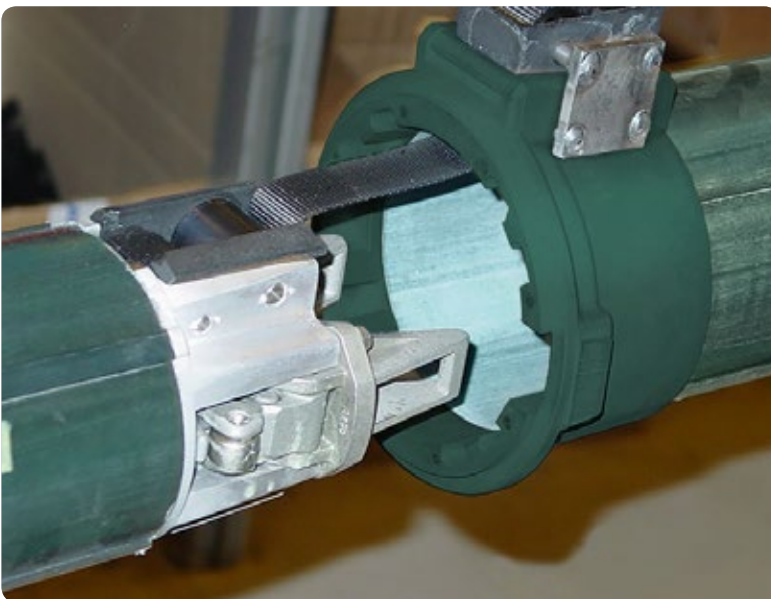
Maintenance service at scheduled intervals increases the life span of the product.

Cobham Mast Systems' masts require minimal maintenance and service. However, like any other piece of equipment some maintenance is required

from time to time. In order to maintain maximum performance a mast system needs to be serviced according to a mast type specific service interval.

We offer our experience and expertise as well as long-term availability of the spare parts to help our customers with this task.

We provide maintenance service either at Cobham factory in Finland, at our distributors' locations or at the customer site. Cobham also organizes maintenance service training for customers in order to build up user knowledge on mast maintenance.



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