

Cobham Mast Systems

COBHAM

Cobham Mast Systems is the leading manufacturer and supplier of lightweight telescopic composite masts

The most important thing we build is trust



TELESCOPIC MAST SYSTEMS

The lightweight telescopic masts are designed to meet the most demanding requirements of mobile communication systems



EASY TO OPERATE

Every mast is designed for reliability and quick and safe operation



ANTENNA POINTING DEVICES

A wide range of different antenna pointing devices



TRANSPORTATION KITS

Transportation kits are available for different vehicle models, shelters and containers



Cobham Mast Systems

The leading manufacturer and supplier of telescopic light weight composite masts



Cobham Mast Systems

Cobham Mast Systems' know-how and understanding of customer requirements and material expertise is based on more than 30 years experience of mast applications for communication systems worldwide. Thousands of masts and hundreds of different solutions - from plain masts to complete mast systems including antenna pointing devices and vehicle mounting systems have been delivered over the years.

Products

The lightweight telescopic masts are designed to meet the most demanding requirements of mobile communication systems. The masts are applicable to military, police, fire fighting, rescue, emergency service and many other communication purposes. Masts are designed to perform excellently in arctic and tropical areas, as well as in desert environments.

Cobham Mast Systems manufactures seven main product lines: TM-, TR-, EX-, EXL- and EXB-masts, telescopic lifting poles and tripods including accessories for deployment. Masts are available from vehicle mounted unguied masts to 50 m stand alone field masts. Every detail is designed for reliability and quick and safe operation. Masts require very little service and have practically no wearing parts that are sensitive for sand, dust, ice or other natural elements on the field.

Quality and Testing

Cobham Mast Systems' quality system fulfils the requirements of ISO 9001 and AQAP 2110 standards.

The carbon and glass fiber composite masts have been proven to meet MIL-STD 810 F requirements to function in all extremes of environmental conditions. Masts are also tested against lightning strikes.

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Typical Mast Heights and Top Loads

MAST SERIES	HEIGHT	TOP LOAD
EXB	6 - 14 m	20 -110 kg
EXL	10 - 50 m	50 - 100 kg
EX	5 - 20 m	20 - 50 kg
TX	4 - 8 m	10 - 25 kg
TR	4 - 12 m	5 - 10 kg
TM	4 - 8 m	2 - 5 kg
Tripods	2 - 5 m	2 - 100 kg

Maximum top load depends on mast height and antenna size.

EXB-Masts



EXB-Masts

EXB-masts are mechanical winch and belt operated (fixed) vehicle masts. EXB-masts are designed for heights up to 14 m with max. 110 kg top load. Masts are designed for unguied through-the-roof vehicle installations. EXB-masts are made of composite material.

EXB-masts have double belt system. One belt is used for lifting top load up and the other for pulling it down, when vehicle is inclined or weather conditions otherwise require it. The electric winch has hand crank as a back-up system for power failures. EXB series are equipped with latch mechanism for controlling the raising order of the mast sections.

EXB-masts can be painted in customer specific colours.



Customization:

All masts can be built and customized according to your specification and requirements.

Cobham Mast Systems reserves the right to make changes to manufacture and design without prior notice.



Typical EXB-Masts

MAST TYPE	EXB269/ 6-1.2	EXB269/ 10-1.8	EXB333/ 10-1.7	EXB333/ 12-1.7
Extended height (m)	6	10	10	12
Transportation length (m)	1.2	1.8	1.7	1.7
Max. vertical top load (kg)	55	45	100	50
Max. wind area A (m ²)	0.2	0.2	0.6	0.3
Max. wind speed (m/s)	25	25	36	30
Sections	7	7	8	9
Mast weight (kg)	111	135	120	150

Above listed masts are examples. Other lengths with different top load specifications are available at request.

EXL-Masts



EXL-Masts

Light weight telescopic EXL-masts are mechanical winch and belt operated masts. EXL-masts are designed for larger and heavier top loads and are available in three sizes: EXL141 series is for heights 15-24 meters with max. 55 kg top load, EXL167 series is for heights 15-30 meters with max. 60 kg top load and EXL195 series for heights 20-50 meters with max. 100 kg top load.

EXL-masts are made of carbon and glass fibre composite material. Masts are delivered with full field deployment accessory kits and they can be supplemented with a wide range of mounting kits for vehicles and shelters.

EXL-masts are deployed by two or three persons and are elevated with a hand cranked winch or by an optional electric winch motor unit. The entire mast is rotatable by 360°. In EXL-masts sections open one by one and 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.

EXL-masts can be painted in customer specific colours.



Typical EXL141-Masts

MAST TYPE	EXL141/ 15-3.6	EXL141/ 18-4.1	EXL141/ 24-5.15
Extended height (m)	15	18	24
Transportation length (m)	3.6	4.1	5.15
Max. vertical top load (kg)	55	55	30
Max. wind area cxA (m ²)	1.2	1.0	0.5
Max. wind speed (m/s)	35	35	30
Guy radius (m)	14	14	16
Guy and levels	4x4	4x4	4x4
Sections	6	6	6
Mast weight (kg)	59	70	73
Accessories weight (kg)	60	60	57

Above listed masts are examples. Other lengths with different top load specifications are available at request.

Typical EXL167-Masts

MAST TYPE	EXL167/ 18-3.8	EXL167/ 21-4.2	EXL167/ 24-4.3	EXL167/ 30-5
Extended height (m)	18	21	24	30
Transportation length (m)	3.8	4.2	4.3	5.0
Max vertical top load (kg)	60	60	55	50
Max wind area A (m ²)	1.5	1.5	1.0	0.8
Max wind speed (m/s)	35	35	35	35
Guy radius (m)	12	14	16	18
Guy and levels	4x3	4x4	4x4	4x5
Sections	7	7	8	8
Mast weight (kg)	72	80	86	98
Accessories weight (kg)	52	62	67	73

Above listed masts are examples. Other lengths with different top load specifications are available at request.

Typical EXL195-Masts

MAST TYPE	EXL195/ 24-3.9	EXL195/ 30-5	EXL195/ 34-5.6	EXL195/ 50-7.6
Extended height (m)	24	30	34	50
Transportation length (m)	3.9	5.0	5.6	7.6
Max. vertical top load (kg)	50	75	75	50
Max. wind area A (m ²)	1.0	2.5	1.5	1.0
Max. wind speed (m/s)	35	35	35	30
Guy radius (m)	16	25	20	45
Guy and levels	4x4	4x5	4x5	4x7
Sections	10	8	8	8
Mast weight (kg)	108	125	132	160
Accessories weight (kg)	64	85	105	120

Above listed masts are examples. Other lengths with different top load specifications are available at request.

EX-Masts



EX-Masts

Light weight telescopic EX-masts are mechanical winch and belt operated masts. EX-masts are available in three sizes: EX105 series is for heights 8-15 meters with max. 20 kg top load, EX128 series for heights 10-18 meters with max. 40 kg top load and EX141 series is for heights 10-20 meters with max. 50 kg top load.

EX-masts are made of carbon and glass fibre composite material. The masts can be supplemented with a wide selection of mounting kits for vehicles and shelters.

EX-mast can be deployed by one to three persons and are elevated with a hand cranked winch or by an optional electric winch power unit. The entire mast is rotatable by 360°.

EX-masts can be painted in customer specific colours.



Typical EX105-Masts

MAST TYPE	EX105/ 8-2	EX105/ 10-2.3	EX105/ 12-2.7	EX105/ 15-3.2
Extended height (m)	8	10	12	15
Transportation length (m)	2	2.3	2.7	3.2
Max. vertical top load (kg)	20	20	20	20
Max. wind area A (m ²)	0.5	0.3	0.5	0.5
Max. wind speed (m/s)	35	35	35	35
Guy radius (m)	7	7	10	10
Guys and levels	4x2	4x2	4x3	4x3
Sections	6	6	6	6
Mast weight (kg)	20	21	22	27
Accessories weight (kg)	29	29	40	40

Above listed masts are examples. Other lengths with different top load specifications are available at request.

Typical EX128-Masts

MAST TYPE	EX128/ 8-2	EX128/ 10-2.3	EX128/ 15-3.4	EX128/ 18-4
Extended height (m)	8	10	15	18
Transportation length (m)	2	2.3	3.4	4.0
Max. vertical top load (kg)	40	40	35	35
Max. wind area A (m ²)	1.2	1.0	1.2	0.9
Max. wind speed (m/s)	35	35	35	35
Guy radius (m)	6	7	10	12
Guys and levels	4x2	4x2	4x3	4x3
Sections	6	6	6	6
Mast weight (kg)	24	27	36	41
Accessories weight (kg)	29	29	40	41

Above listed masts are examples. Other lengths with different top load specifications are available at request.

Typical EX141-Masts

MAST TYPE	EX141/ 10-2.4	EX141/ 15-3	EX141/ 18-4	EX141/ 20-4.3
Extended height (m)	10	15	18	20
Transportation length (m)	2.4	3.0	4.0	4.3
Max. vertical top load (kg)	45	45	40	50
Max. wind area A (m ²)	1.5	1.5	1.2	0.75
Max. wind speed (m/s)	35	35	35	35
Guy radius (m)	7	10	12	12
Guys and levels	4x2	4x3	4x3	4x3
Sections	6	5	6	6
Mast weight (kg)	25	41	48	45
Accessories weight (kg)	31	40	39	45

Above listed masts are examples. Other lengths with different top load specifications are available at request.

TR-Masts



Typical TR-Masts

MAST TYPE	TR72/ 9.5-1.7	TR86/ 8-1.35	TR86/ 10-1.7	TR86/ 12-1.7
Extended height (m)	9.5	8	10	12
Transportation length (m)	1.7	1.35	1.7	1.7
Max. vertical top load (kg)	5	5	5	5
Max. wind area A (m ²)	0.2	0.3	0.2	0.2
Max. wind speed (m/s)	25	25	25	25
Guy radius (m)	5	4	5	5
Guys and levels	3x3	3x3	3x3	3x3
Sections	7	9	8	9
Mast weight (kg)	9	11	12	13
Accessories weight (kg)	11	11	11	11

Above listed masts are examples. Other lengths with different top load specifications are available at request.

TR-Masts

Light weight telescopic TR-masts are push-up masts for heights up to 12 meters and for 5-10 kg top loads. Mast sections are pushed out and locked in place with mechanical latches one by one.

TR-masts are made of glass fibre composite. The masts can be supplemented with a wide range of mounting kits for vehicles and shelters.

Light weight telescopic TX-masts, a variant of TR-masts, are push-up masts for heights up to 7 meters and for max. 25 kg top loads. TX-mast sections are pulled out horizontally to their full length and the mast is then lifted up in vertical position.

TR- and TX-masts can be painted in customer specific colours.

TM-Masts



TM-Masts

Light weight 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 series are made of glass fibre composite.

Mast tube colour is dark green. Other tube colours are available at request.



Typical TM-Masts

MAST TYPE	TM51/ 4-1.2	TM51/ 6.3-1.8	TM58/ 4.8-1.2	TM58/ 7.6-1.8
Extended height (m)	4	6.3	4.8	7.6
Transportation length (m)	1.2	1.8	1.2	1.8
Max. vertical top load (kg)	5	3	5	5
Max. wind area A (m ²)	0.1	0.05	0.1	0.1
Max. wind speed (m/s)	25	25	25	25
Mast weight (kg)	2.8	3.6	4.2	5.2

Above listed masts are examples. Other lengths with different top load specifications are available at request.

Telescopic Lifting Poles



Typical Telescopic Lifting Poles

MAST TYPE	TLP61/ 10-2.75	TLP61/ 15-4
Extended height (m)	10	15
Transportation length (m)	2.75	4
Max. vertical top load (kg)	3	3
Mast weight (kg)	9.5	12.5

Above listed poles are examples. Other lengths with different top load specifications are available at request.



Telescopic Lifting Pole

Telescopic lifting poles are mechanical winch and belt operated access poles designed to be used both at land and sea. Carbon and glass fibre 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. Poles can be used to securely attach a ladder to a structure in order to gain rapid and covert access or to gain a visibility to restricted locations via a camera mounted on the pole, through the window, over fences and over roofs.

TLP-poles can be painted in customer specific colours.



Tripods

Tripods

Tripods can be used for several applications instead of small masts. Light weight tripods are designed for 2-5 kg top loads and heavy duty tripods for maximum 100 kg top loads.

Tripods are made of glass fiber composite. Tripod legs are telescopic and sections are pushed out and locked in place with mechanical latches. For windy conditions the heavy duty 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 roof tops in urban areas. Tripods are excellent for temporary communication networks in rescue, police and fire fighting as well as temporary lighting applications.

Tripods can be painted with customer specific colours.



Accessories



Accessories

Each mast system is supplied with a full field deployment accessory kit. Mast accessories are designed to enable easy and fast mast deployment in all weather conditions. Accessory kits are packed in all-weather bags. The standard colour of bags is green. Other colours are available at request.

Special user friendly guy reel design makes tensioning the guys and plumbing the mast quick and easy. Guy ropes are available in polyester or aramid. Heavy duty aramid core guy ropes are durable yet easy to use. Hardened guy stakes are suitable for long term use in a wide variety of ground conditions.

All deployment accessories are fabricated from the state of the art materials to assure optimal performance.





Ancillaries

Tilter and Rotator-Tilter



Antenna Pointing Devices

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

Tilter and Rotator-Tilter

Tilter is an antenna pointing device for pointing the antenna in elevation.

Rotator-tilter is an antenna pointing device for pointing the antenna system both horizontally (azimuth) and vertically (elevation).

Tilters and rotator-tilters are operated from the ground level with maneuvering ropes. Antennas can be mounted directly on the tilter or rotator-tilter top or on antenna specific brackets.

Ancillaries

Rotator, Double-Rotator and RCU

Rotator and Double Rotator

Rotator is an antenna pointing device for pointing an antenna system horizontally (azimuth). Double-rotator is designed for two antenna systems that can be rotated independently from each other.

Rotators are operated from the ground level with maneuvering ropes. Antennas can be mounted directly on the rotator top tube or on antenna specific brackets. Electric remote control units are also available for antenna rotators and double rotators

Remote Control Unit (RCU)

Rotator can be controlled with RCU. Operation voltage is 24 VDC.



Antenna Brackets



Antenna Brackets

Antenna brackets for different antenna types are available for various applications.

Antenna brackets are available in all mast colours.

Transportation Kits

Transportation Kits

Mast transportation kits are available for different vehicle models, shelters and containers. Transportation kits enable safe mast transportation and quick deployment.

Vehicle and shelter transportation kits enable the use of mast either attached to the vehicle or shelter or as a free standing mast.

Transportation kits are available in all mast and vehicle colours.



WPU (Winch Power Unit)

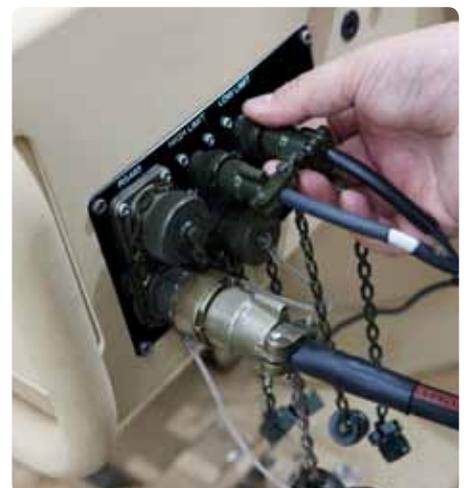


WPU (Winch Power Unit)

WPU can be used with all EX-, EXL- and EXB-type mast winches. Motor unit is an add-on device that is fixed on the winch with two hand screws to replace the crank handle. 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.

WPU kit consists of an electric motor drive, remote controller and power cable packed in a transportation bag. Motor is controlled with a remote controller. Voltage options: 12 VDC, 24 VDC, 48 VDC, 110 VAC and 230 VAC.

WPU's are available in all mast colours.



Quality & Testing

Quality and Testing

Cobham Mast Systems quality system fulfils the requirements of ISO 9001 and AQAP 2110 standards.

Masts and accessories have been proven to meet the environmental requirements in accordance with the MIL-STD 810 F and DEF STAN 00-35:9999.

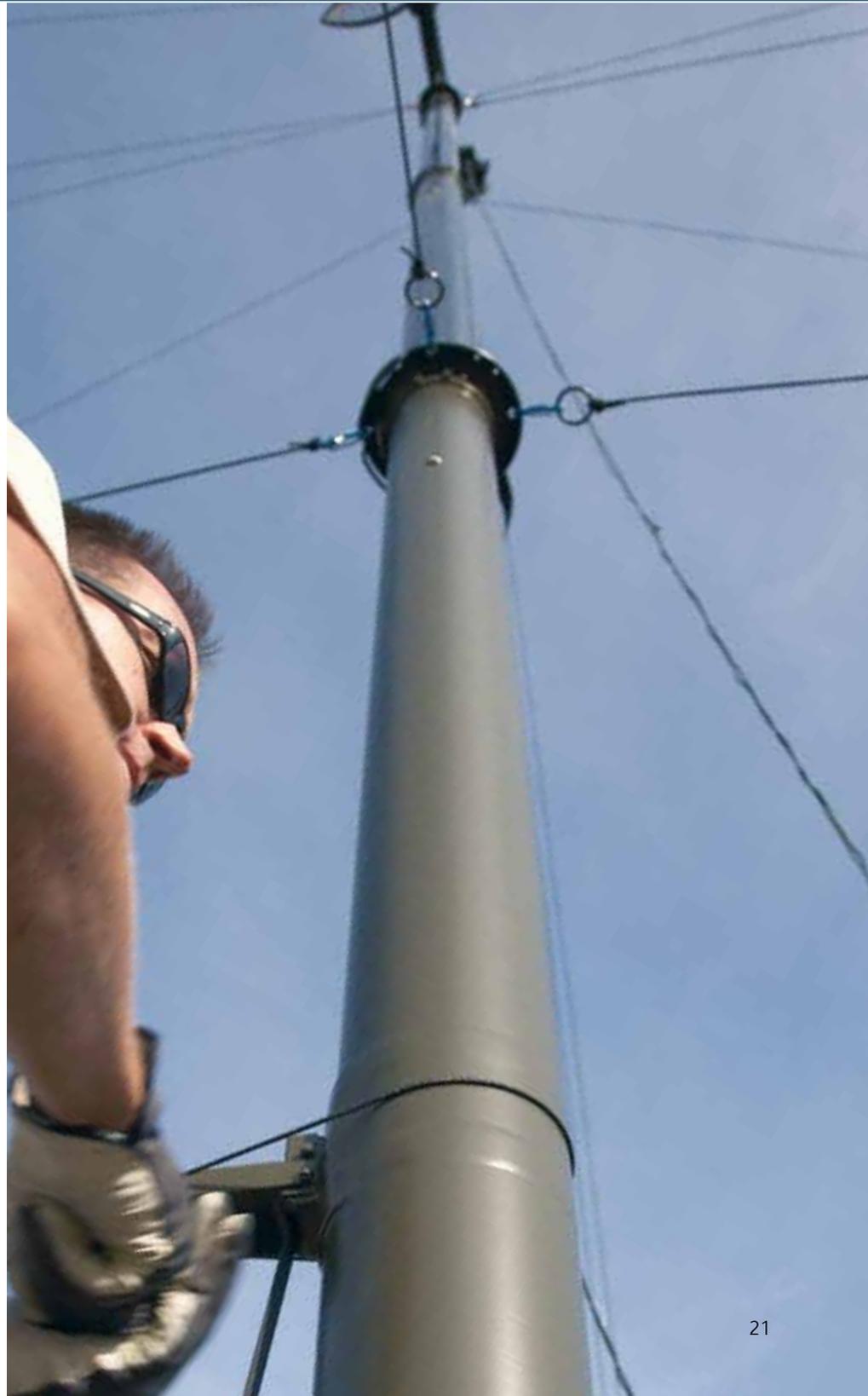
MIL-STD 810 F Tests:

500.4	Low pressure
501.4	High temperature
502.4	Low temperature
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.



Services



Services

Cobham Mast Systems designs all masts according to application specific requirements.

Full-scale simulated wind load tests are used for verifying mast design and performance. Wind load test facilities enable testing masts up to 50 m height.

Mast system deployment and service training is normally included in system deliveries. Mast maintenance and repair services in factory are available at request.

Questionnaire

ITEM	Description	Unit	Tick Off	Specification
1	Height	m		
2	Retracted length	m		
3	Max wind speed for system deployment	m/s		
4	Max wind speed for system operation	m/s		
5	Max wind speed for system survival	m/s		
6	Antenna and cable wind surface	m ²		
7	Vertical head load: antenna	antenna kg		
		cables kg		
8	Required antenna pointing accuracy at operational wind speed	.		
9	Application			
	- Field mast		<input type="checkbox"/>	
	- Vehicle mast		<input type="checkbox"/>	
	- Trailer mounted mast		<input type="checkbox"/>	
10	Description of antenna system			
	- Antenna type			
	- Manufacturer product code			
11	Antenna pointing devices			
	Azimuth (Rotation)		<input type="checkbox"/>	
	Elevation (Tilting)		<input type="checkbox"/>	
	Motorized		<input type="checkbox"/>	
12	No. of persons available to operate the system			
13	Surface treatment, colour			
14	Quantity			
15	Special requirements			

***** Please fill in the questionnaire and email or fax it to us for a quotation. *****

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Customers around the world put their trust in Cobham

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