

2017

Radio Masts
Accessories

Towers

Ballast masts

Foundations

Safety Systems

Cable ladders

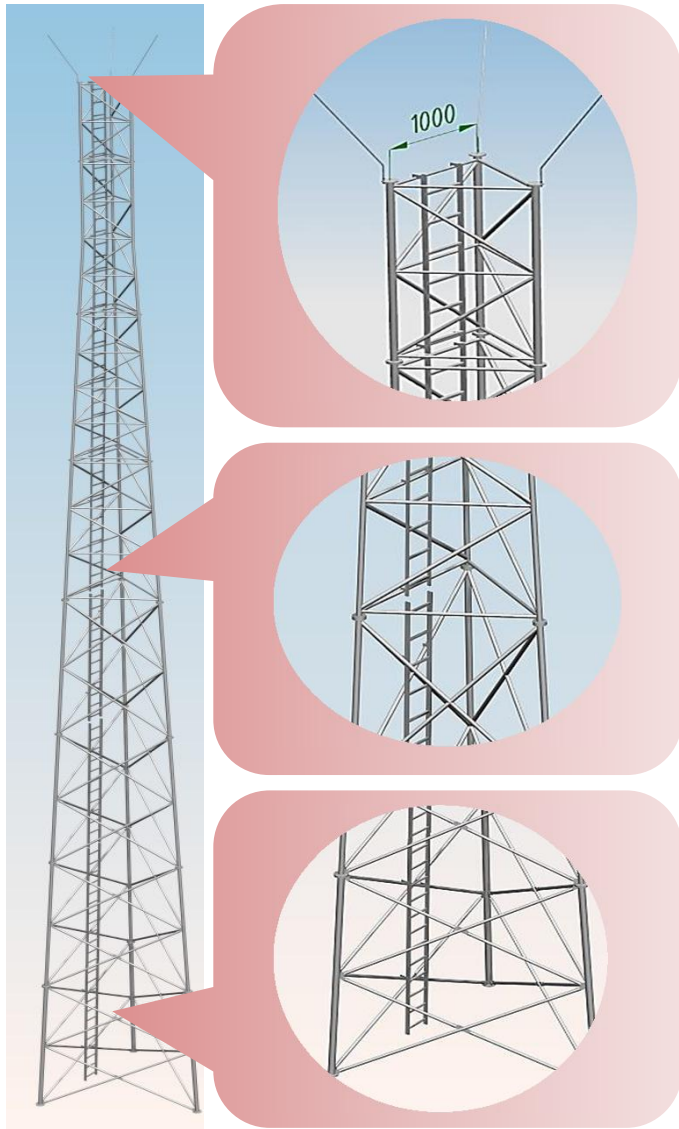


2017

RADIO TOWERS



Aluminum freestanding towers T1000 series



Set contains:

- number of aluminum sections,
- **stainless hardware**,
- lightning protection rod(s)
- ladder system

Height: 4m to 30m (up to 36 meters custom),
Climbing ladder inside tower,
1,5 m² maximum antennas load,
Optional Securo System (see details in
Accessories section),
Optional anodizing and/or powder coating
possible

Parameter	Value
Width at top	1000 mm
Max antenna surface (1 wind zone, 1 icing zone)	1.5 m ²
Bottom Section Width	4 m: 1.2 m
	8 m: 1.2 m
	12 m: 1.6 m
	16 m: 2.0 m
	20 m: 2.4 m
	24 m: 2.8 m
	28 m: 3.2 m
	30 m: 3.6 m
Section length	4 m
Tower Weight	4 m: ~24 kg
	8 m: ~52 kg
	12 m: ~73 kg
	16 m: ~110 kg
	20 m: ~190 kg
	24 m: ~270 kg
	28 m: ~380 kg
	30 m: ~460 kg
Material	AW 6060/6063 T6
Corner Members (depending on height)	fi60x2/3, fi70x3/5, fi80x3/5, fi100x5, fi120x5/8
X-members horizontal (depending on height)	fi30x2, fi30x3, fi35x2, fi35x3, fi40x3
X-members diagonal (depending on height)	fi30x2, fi30x3, fi35x2, fi35x3, fi40x3, fi50x3, fi60x3
Welding technique	TIG
Section Joints	Flanges with bolts M10/M12, M14/M16 /M20, 9 psc/section stainless
Tower Mounting	3 points, main bolt

*) profile thickness changes with height

Aluminum freestanding towers T500 series



Set contains:

- number of aluminum sections,
- **stainless hardware**,
- lightning protection rod(s)

Height: 4m to 24m,

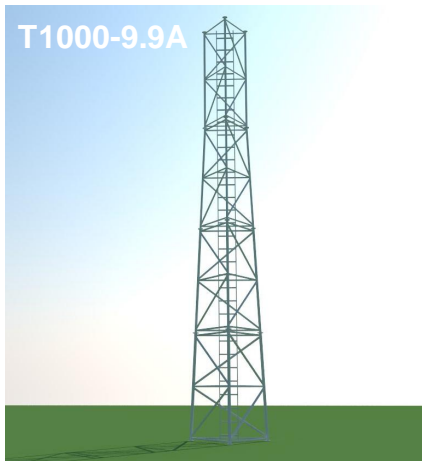
Cost effective for smaller antenna systems,
Optional anodizing and/or powder coating possible,
Can work with M500 accessories (see further in the catalogue),
Optional climbing pegs on corner member pipe
0,5 m² maximum antennas load,

Parameter	Value
Width at top	500 mm
Max antenna surface (1 wind zone, 1 icing zone)	0,5 m ²
Bottom Section Width	4 m: 500 mm
	8 m: 750 mm
	12 m: 1000 mm
	16 m: 1500 mm
	20 m: 2000 mm
	24 m: 2400mm
Section length	4 m
Tower Weight	4 m: ~12 kg
	8 m: ~30 kg
	12 m: ~52 kg
	16 m: ~83 kg
	20 m: ~140 kg
	24 m: ~170 kg
Material	AW6060/6063 T6
Corner Members (depending on height)	fi35x1.5, fi5x2, fi40x2, fi50x2, fi60x2, fi60x3, fi70x3, fi70x5
X-members horizontal (depending on height)	fi20x2, fi25x2, fi30x2, fi35x2, fi40x2
X-members diagonal (depending on height)	fi 20x2, fi 25x2, fi 30x2, fi 35x2, fi 40x2, fi 45x2
Welding technique	TIG
Section Joints	Flanges, bolts M8/M10/M12, 18 pcs/section stainless
Tower Mounting	3 points, main bolt

*) profile thickness changes with height

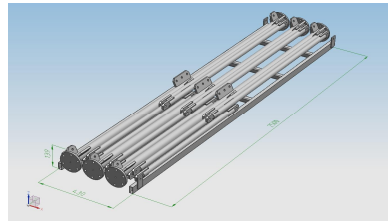
Aluminum freestanding towers H=9.9

NO BUILDING PERMISSION IN GERMANY



T1000-9.9A

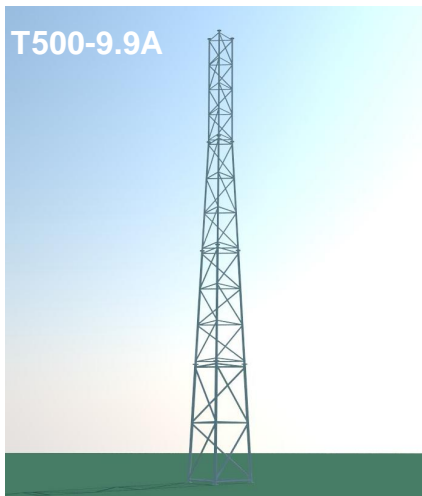
- 4 packets as shown below
- Packet size 2500x730x140 [mm]
- Packet weight: 35 kg
- Manual Instruction for mounting



- No building permission needed in Germany,
- Easy transportation even with courier services,
- Max antenna load 1,5 m² (Wind & Icing Zone I)
- Total Weight: 140 kgs

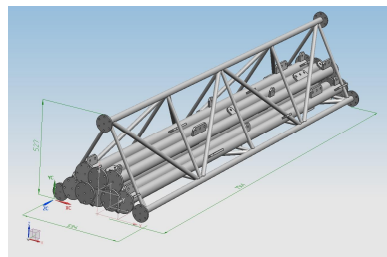
Set contains:

- number of aluminum sections,
- Set of stainless bolts and nuts
- Lightning rod



T500-9.9A

- 1 packet as shown below
- Packet size 2500x730x140 [mm]
- Packet weight: 78 kg
- Manual Instruction for mounting



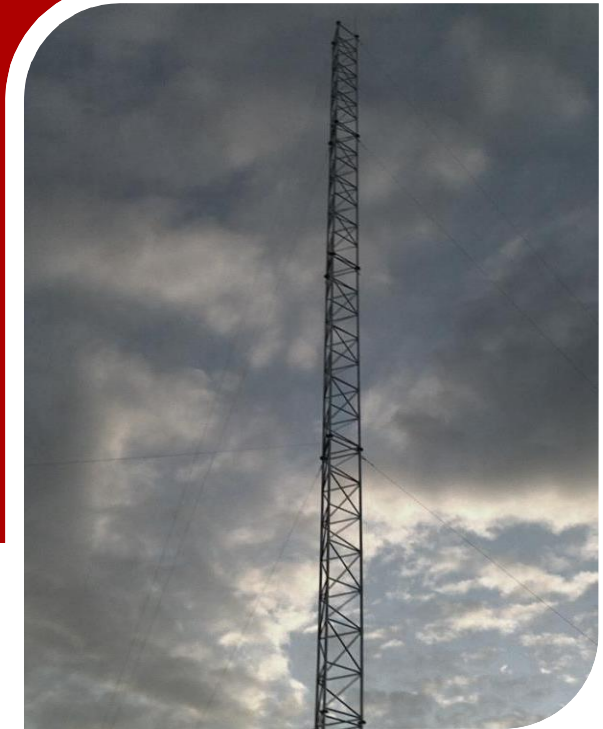
- No building permission in Germany needed,
- Easy transportation even with courier services,
- Max antenna load 0,5 m² (Wind & Icing Zone I)
- Total Weight: 78 kgs

Set contains:

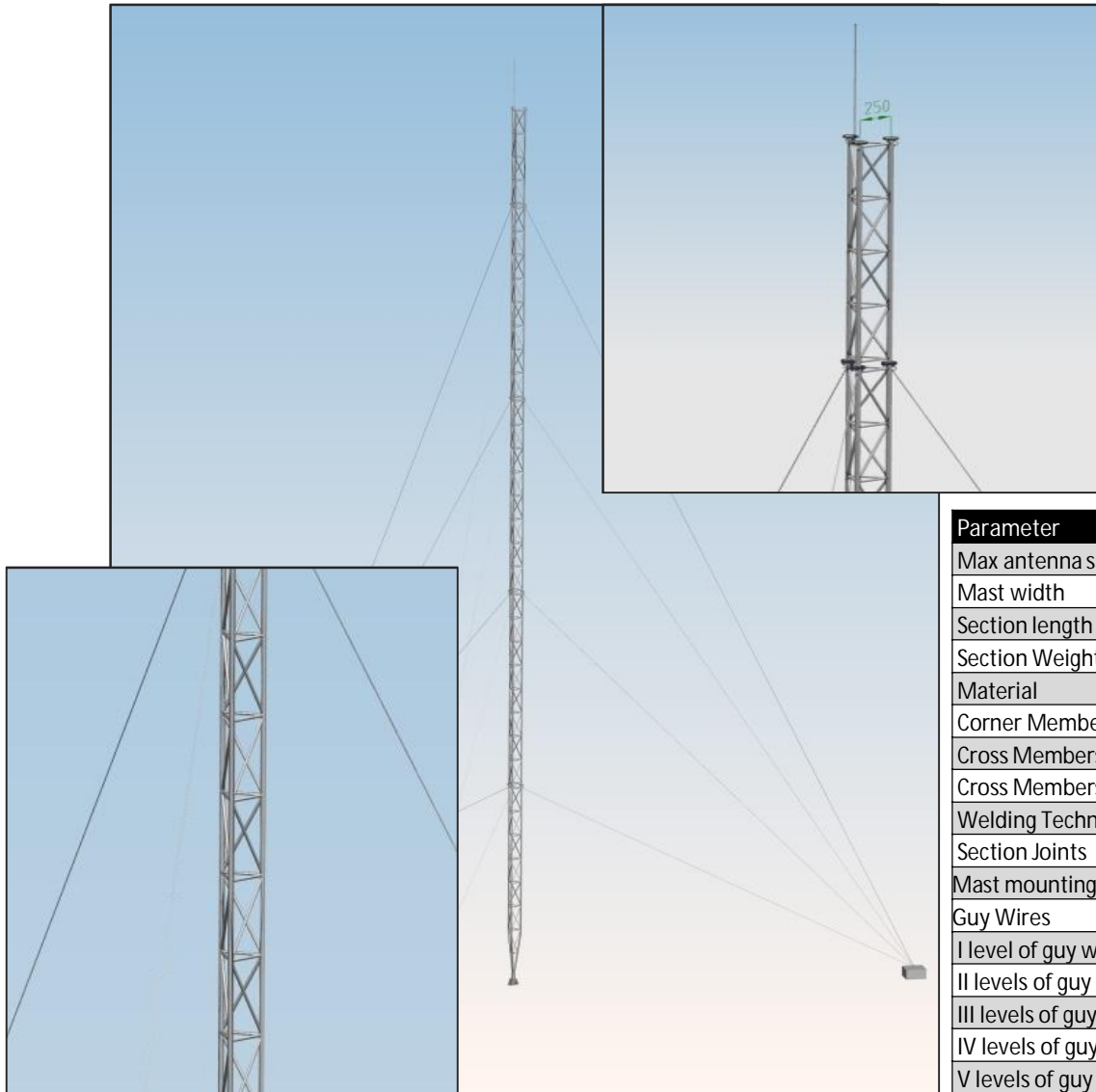
- One package consisting all elements for 4 sections,
- Set of stainless bolts and nuts
- Lightning rod

2017

TRUSS MASTS



Aluminum truss guyed mast M250 S2M



Set contains:

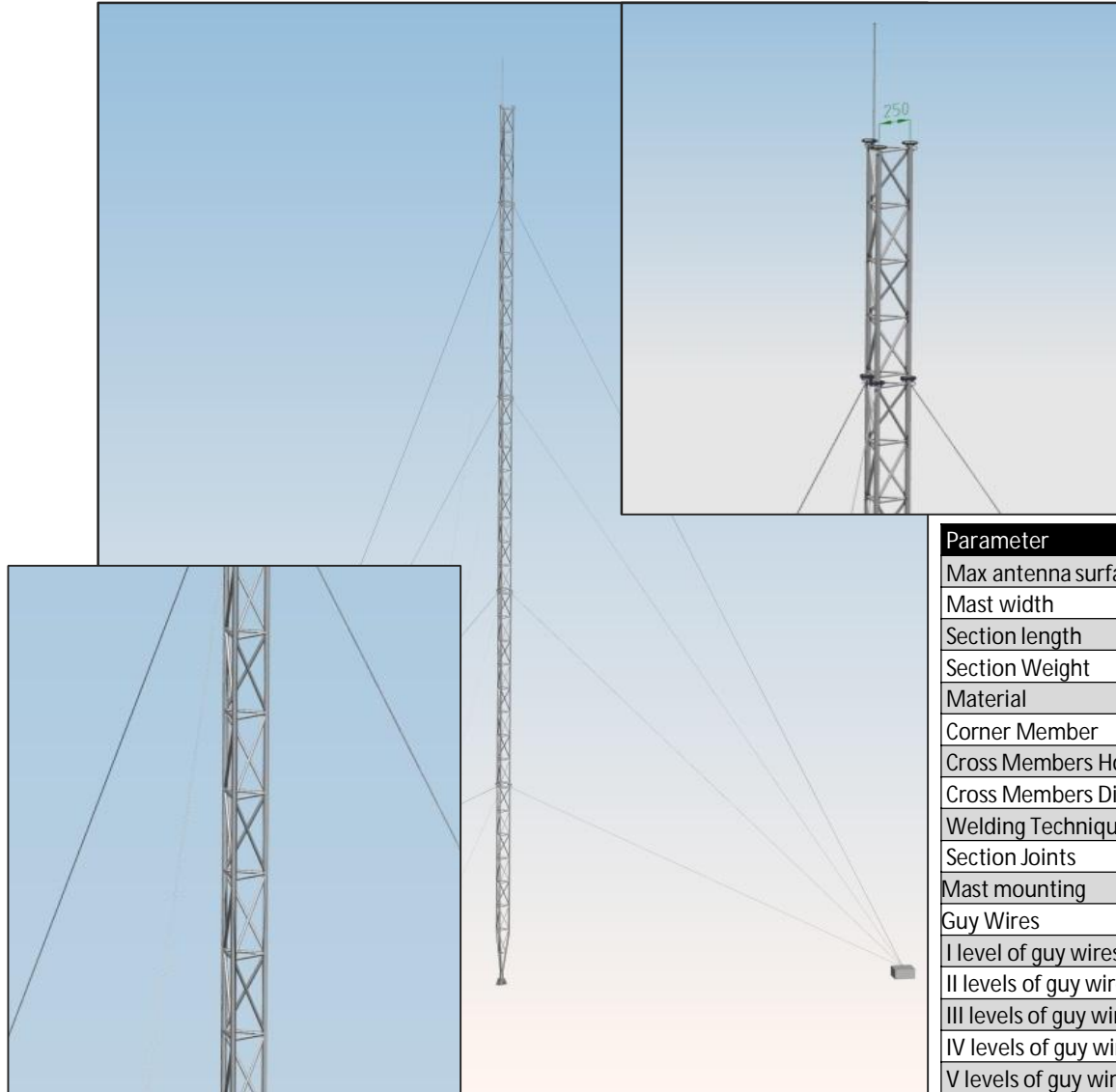
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Optional powder coating
- Anodizing optional
- **Easy to transport/install short sections**

Parameters:

- Height 3-20m
- Section length 2m
- **0,5 m² antenna load**

Parameter	Value
Max antenna surface (I wnd & icg zone)	0,5 m ²
Mast width	250 mm
Section length	2 m
Section Weight	5,3kg
Material	6060/6063
Corner Member	fi 35x1.5
Cross Members Horizontal	fi 20x1.5
Cross Members Diagonal	fi 20x1.5
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 4mm with accessories
I level of guy wires	up to 4 m
II levels of guy wires	up to 8 m
III levels of guy wires	up to 12 m
IV levels of guy wires	up to 16 m
V levels of guy wires	up to 20 m

Aluminum truss guyed mast M250 S4M



Set contains:

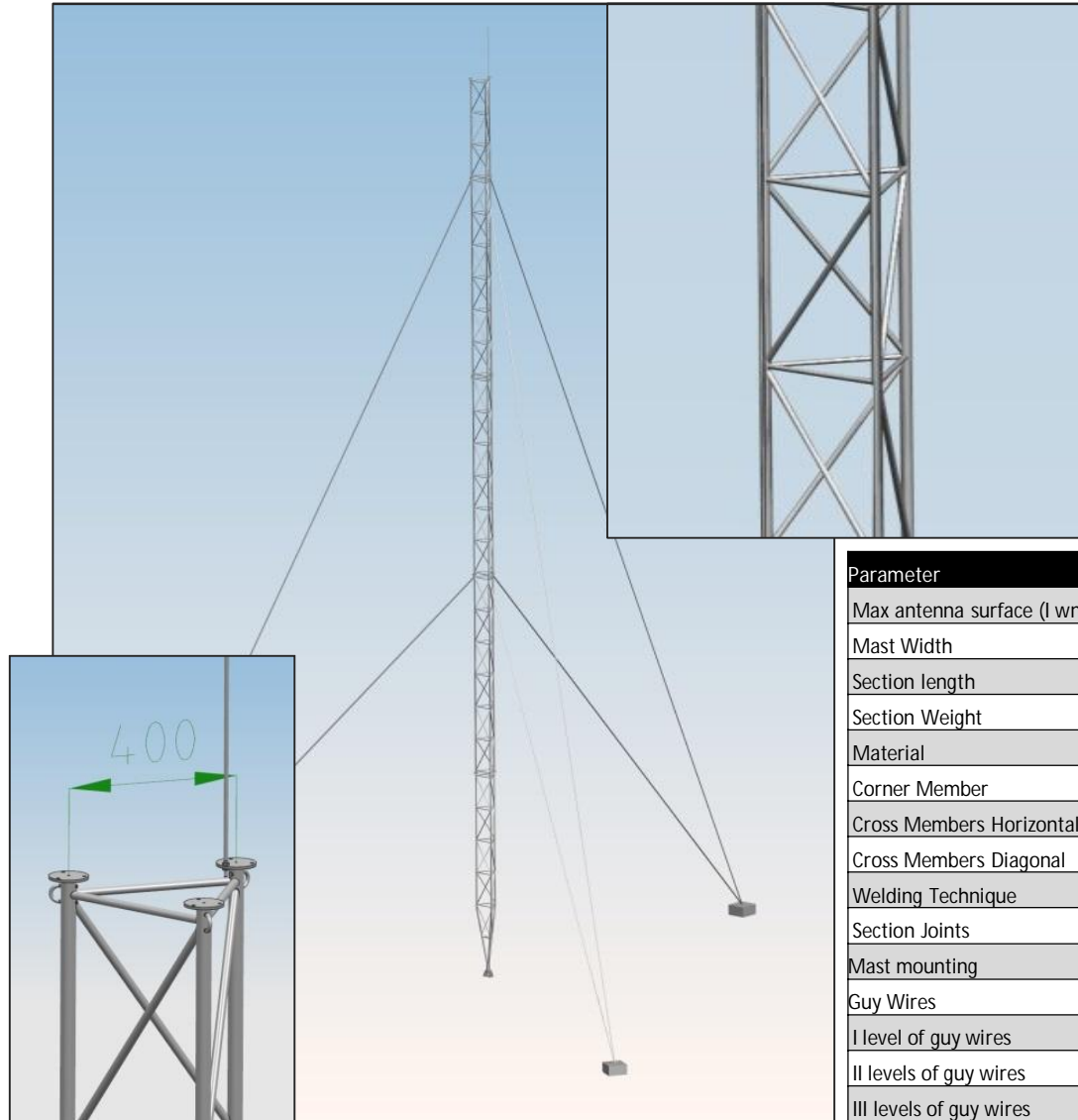
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Optional powder coating
- Anodizing optional

Parameters:

- Height 3-20m
- Section length 4m
- **0,5 m² antenna load**

Parameter	Value
Max antenna surface (I wnd & icg zone)	0,5 m ²
Mast width	250 mm
Section length	4 m
Section Weight	6.8 kg
Material	6060/6063
Corner Member	fi 35x1.5
Cross Members Horizontal	fi 20x1.5
Cross Members Diagonal	fi 20x1.5
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 4mm with accessories
I level of guy wires	up to 4 m
II levels of guy wires	up to 8 m
III levels of guy wires	up to 12 m
IV levels of guy wires	up to 16 m
V levels of guy wires	up to 20 m

Aluminum truss guyed mast M400 S2M



Set contains:

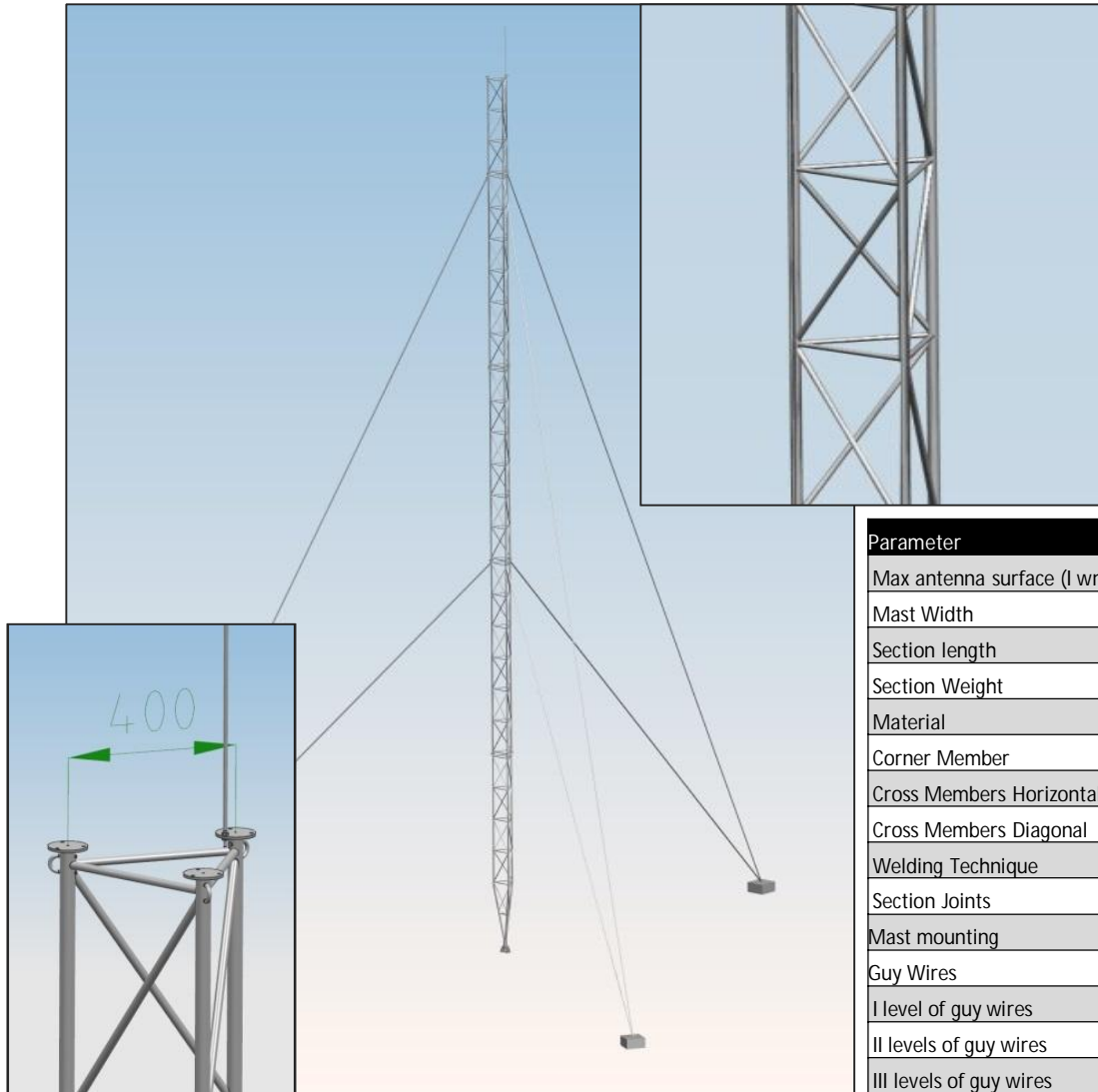
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Optional powder coating
- Anodizing optional
- **Easy transportation/installation due to short section**

Parameters:

- Height 3-24m
- Section length 4m
- **0,7 m² antenna load**

Parameter	Value
Max antenna surface (I wnd & icg zone)	0,7 m ²
Mast Width	400 mm
Section length	4 m
Section Weight	10,5 kg
Material	Pipes AW6063T6 Flanges AW6082T6
Corner Member	fi 35x1.5
Cross Members Horizontal	fi 20x1.5
Cross Members Diagonal	fi 20x1.5
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 4mm with accessories
I level of guy wires	up to 8 m
II levels of guy wires	up to 16 m
III levels of guy wires	up to 24 m

Aluminum truss guyed mast M400 S4M



Set contains:

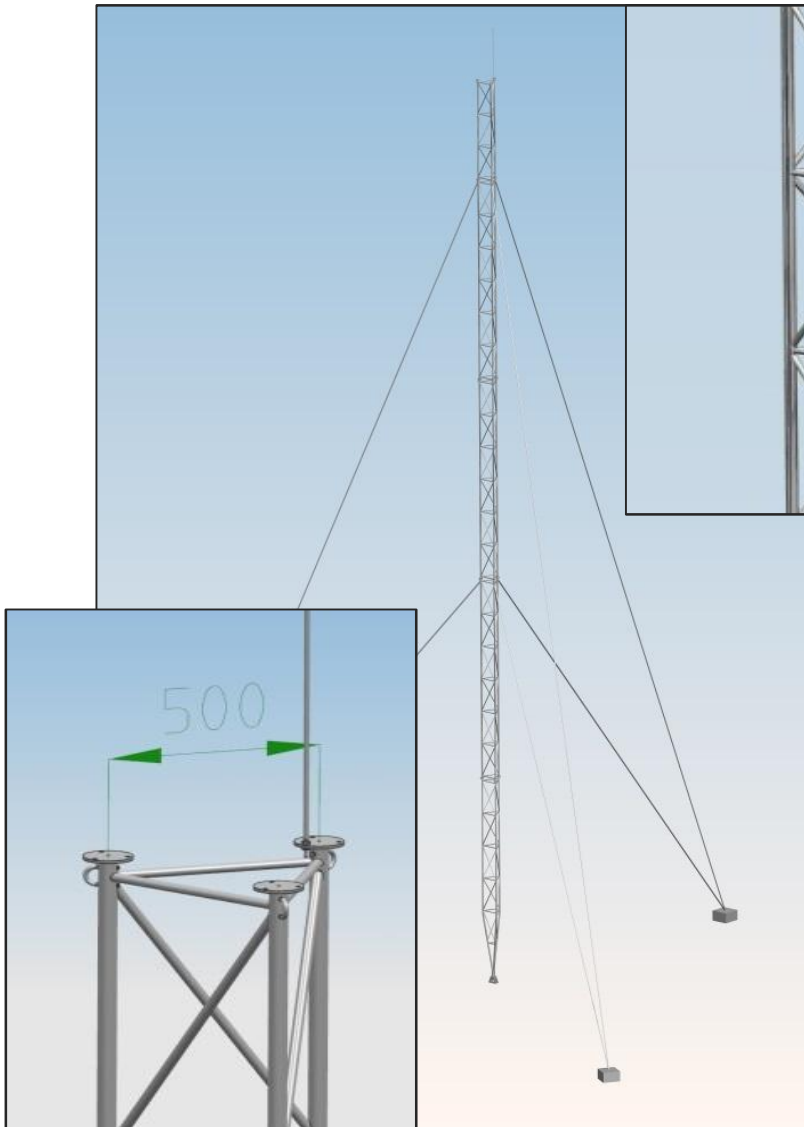
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Optional powder coating
- Anodizing optional

Parameters:

- Height 3-24m
- Section length 4m
- **0,7 m² antenna load**

Parameter	Value
Max antenna surface (I wnd & icg zone)	0,7 m ²
Mast Width	400 mm
Section length	4 m
Section Weight	10,5 kg
Material	Pipes AW6063T6 Flanges AW6082T6
Corner Member	fi 35x1.5
Cross Members Horizontal	fi 20x1.5
Cross Members Diagonal	fi 20x1.5
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 4mm with accessories
I level of guy wires	up to 8 m
II levels of guy wires	up to 16 m
III levels of guy wires	up to 24 m

Aluminum truss guyed mast M500 S4M



Set contains:

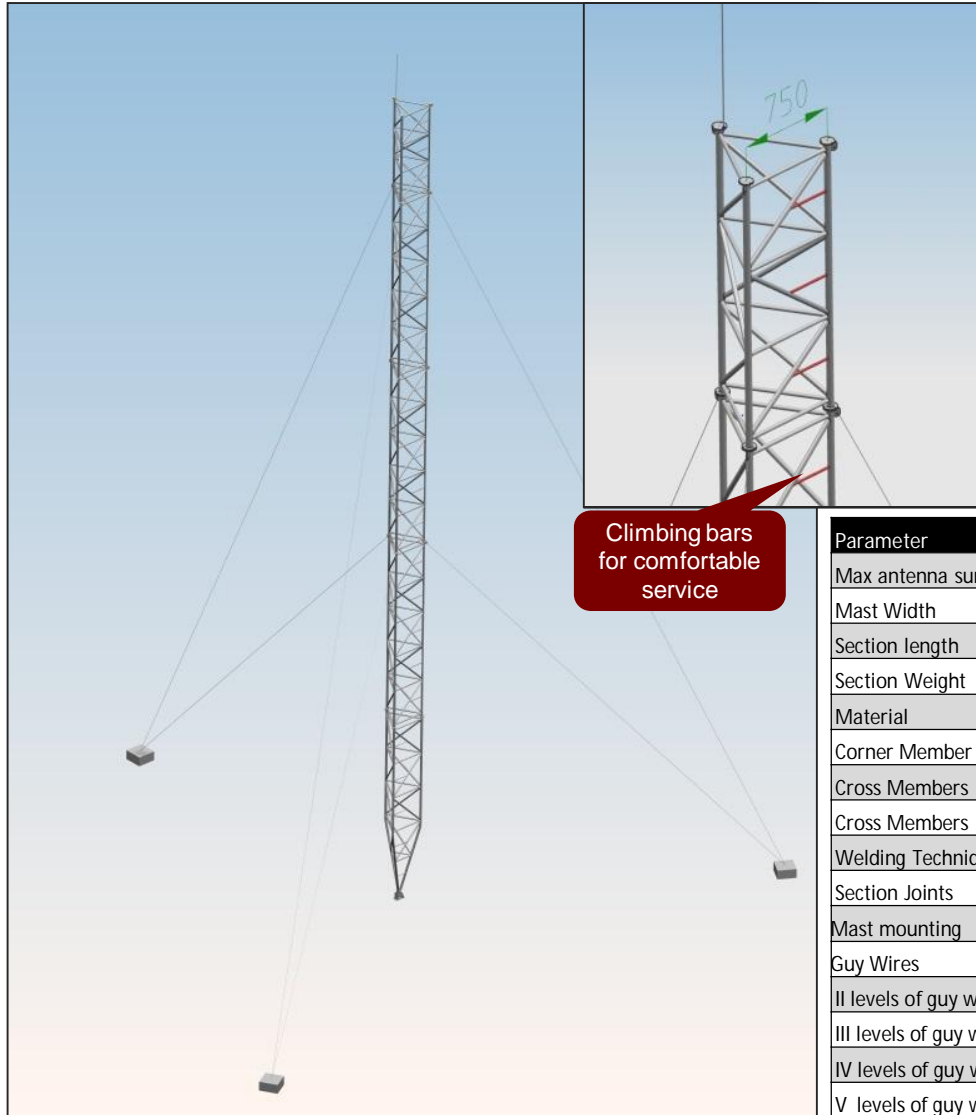
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Optional powder coating
- Optional Anodizing

Parameters:

- Width: 500 mm
- Height 3-28m
- Section length 4m
- **1 m² antennas at top**

Parameter	Value
Max antenna surface (I wnd & icg zone)	1 m ²
Mast Width	500 mm
Section length	4 m
Section Weight	~ 11,7 kg or 15,1 kg - depending on height
Material	AW6060/6063T6
Corner Member	fi 35x1.5 /fi 35x2 – depending on height
Cross Members Horizontal	fi 20x1.5, fi 20x2 – depending on height
Cross Members Diagonal	fi 20x1.5, fi 20x2 – depending on height
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 4mm / fi 5mm with accessories
I level of guy wires	up to 8 m
II levels of guy wires	up to 16 m
III levels of guy wires	up to 24 m
IV levels of guy wires	up to 28 m

Aluminum truss guyed mast M750 S4M



Set contains:

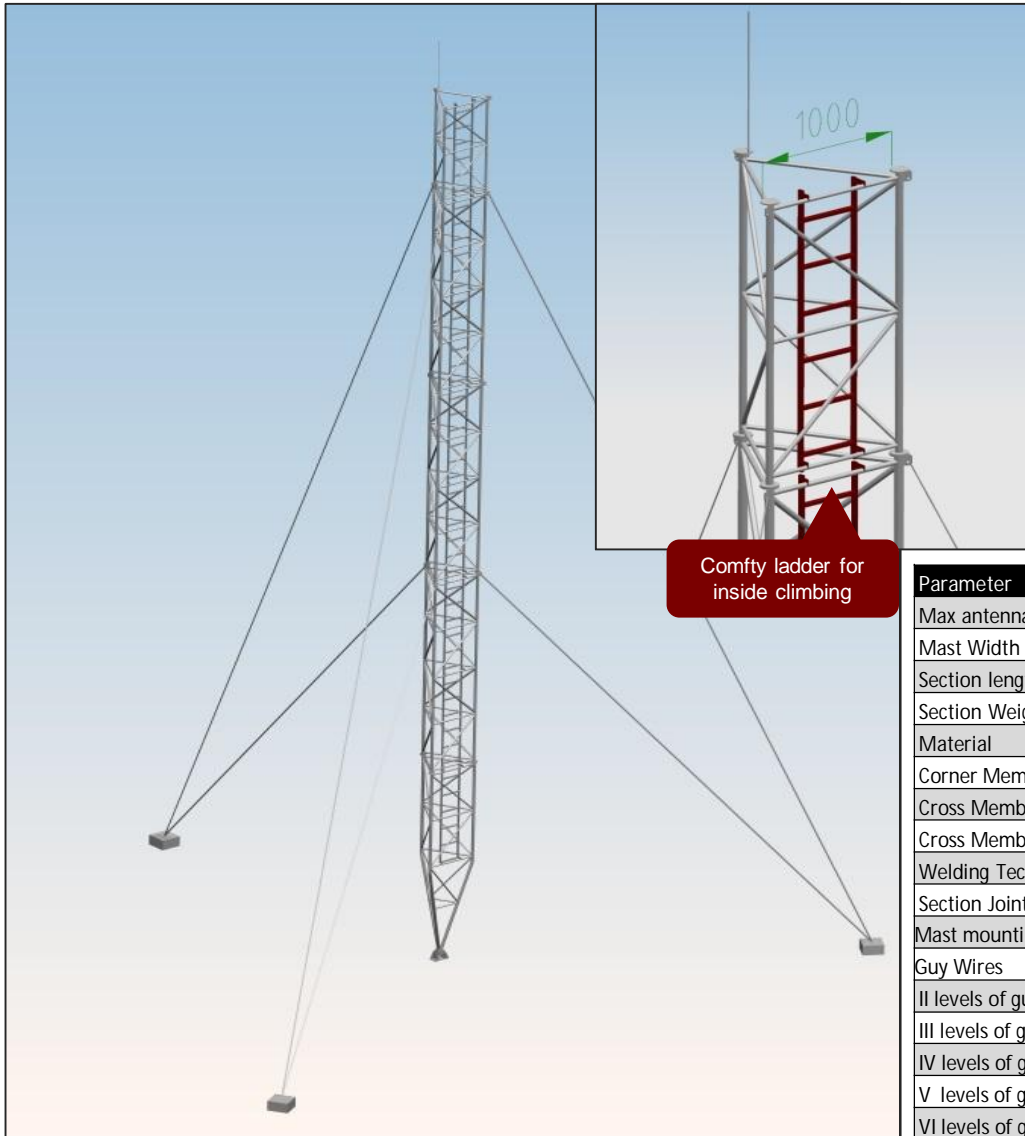
- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Powder coating optional
- Anodizing optional
- **Ladder bars for easy climbing**

Parameters:

- Width: 750 mm
- Height 12-40 m (**up to 120 m on special demand**)
- Section length 4m
- **1,5 m² antennas at top**

Parameter	Value
Max antenna surface (I wnd & icg zone)	1,5 m ²
Mast Width	750 mm
Section length	4 m
Section Weight	from 23,3 kg through 30,1 up to 45,8 kg -depending on height
Material	AW6060/6063T6
Corner Member	fi 50x2 lub fi50x3 – depending on height
Cross Members Horizontal	fi 25x2 lub fi 30x2 – depending on height
Cross Members Diagonal	fi 25x2 lub fi 30x2 – depending on height
Welding Technique	TIG
Section Joints	Flanges, bolts M 8x25, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wire fi 5mm / fi 6mm with accessories
II levels of guy wires	up to 16 m
III levels of guy wires	up to 24 m
IV levels of guy wires	up to 32 m
V levels of guy wires	up to 40 m

Aluminum truss guyed mast M1000



Set contains:

- Number of aluminum sections,
- Flexible coupling,
- **Stainless hardware:**
 - guy-wires with turnbuckles, shackles and accessories,
- Lightning protection rod,
- Ladder system
- Powder coating optional

Parameters:

- **Up to 2 m² of antenna load**
- Width: 1000 mm
- Height 12-48 m (up to 160m on special demand)
- Section length 4m
- **Ladder inside for safe service**
- **Optional fall arrest system (see details in Accessories Section)**

Parameter	Value
Max antenna surface (I wnd & icg zone)	2 m ²
Mast Width	1000 mm
Section length	4 m
Section Weight	from 37,8 kg through 50,3 up to 54,5 kg
Material	AW 6060/6063 T6
Corner Member	fi 60x2 /fi 60x3 – depending on heihgt
Cross Members Horizontal	fi 30x2 / fi 35x2 – depending on heihgt
Cross Members Diagonal	fi 30x2 /fi 35x2 /fi 35x3 – depending on heihgt
Welding Technique	TIG
Section Joints	langes, bolts M10x40, 9 pcs, stainless
Mast mounting	Flexible coupling, 2 degrees of freedom
Guy Wires	stainless wires fi 5 mm /fi 6 mm /fi 8 with accessories
II levels of guy wires	up to 16 m
III levels of guy wires	up to 24 m
IV levels of guy wires	up to 32 m
V levels of guy wires	up to 40 m
VI levels of guy wires	up to 48 m

2017

WALL MOUNTED MASTS



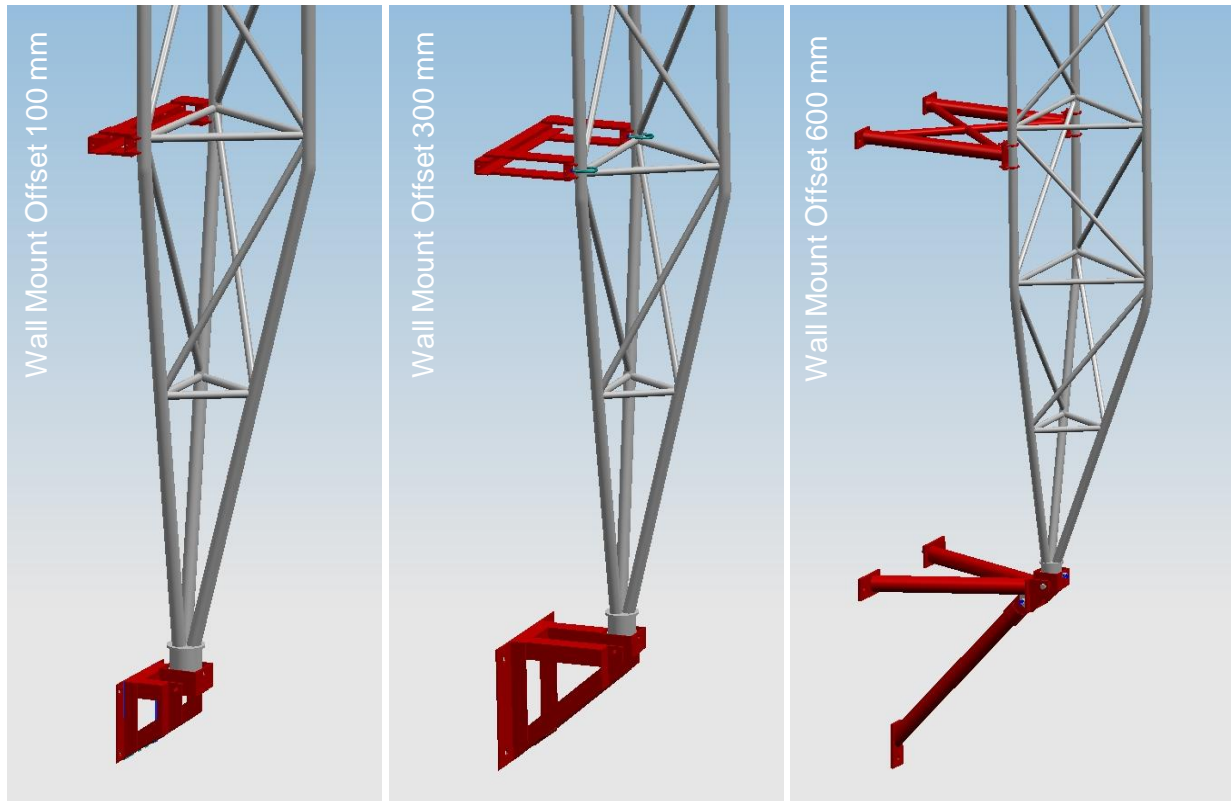
Aluminum truss wall mounted masts

Set contains:

- Number of sections
- Upper bar,
- Bottom bracket
- Set of Stainless bolts and nuts,
- Lightning rod
- Wall mounting materials not included (chemical anchor, threaded rods)

Things to know:

- Measure wall offset, specify this in order, standard are 10, 30 and 60 cm
- Check wall type to choose proper mounting technique
- Consider contacting local architect to consult if the wall takes reactions from the mast mounts



Model	Lenght between brackets [m]	Lenght above upper mount [m]	Total lenght [m]	Mast width [mm]	Single Section Lenght [m]	Number of sections	Selectable Mast Offset [mm]	***Max Antena Load [sq.m]	Wall Mount Weight Offset 100 [kg]	Wall Mount Weight Offset 300 [kg]	Wall Mount Weight Offset 600 [kg]
M250-6 S2 WM	min. 2	4	6	250	2	3	100 / 300 / 600	0,5	3	6,5	7,7
M250-8 S2 WM	min. 2	6	8	250	2	4	100 / 300 / 600	0,5	3	6,5	7,7
M250-8 S4 WM	min. 2	6	8	250	4	2	100 / 300 / 600	0,5	3	6,5	7,7
M500-12 S2 WM	min. 3	8	12	500	2	6	100 / 300 / 600	1	3	6,5	7,7
M500-12 S4 WM	min. 3	8	12	500	4	3	100 / 300 / 600	1	3	6,5	7,7
M750-14 S2 WM	min. 4	10	14	750	2	7	100 / 300 / 600	1,5	6	13	15,3
M750-16 S4 WM	min. 4	12	16	750	4	4	100 / 300 / 600	1,5	6	13	15,3

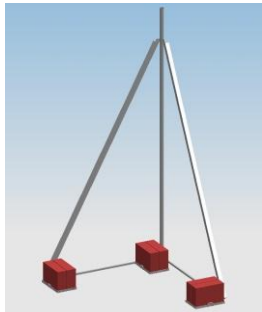
*** Wind Zone I, Icing Zone I

2017

BALLAST MASTS



Ballast Supports



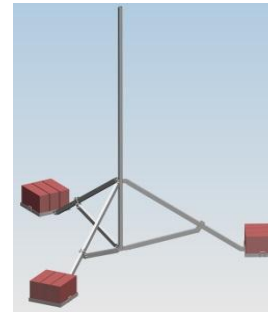
Single pipe corner set MBRQ3/4

- for small antennas sets
(up to 0.3m² in 1st wind zone)
- vertical adjustment in range of +/-5°
- quick and easy install
- height 3m or 4m
- pipe diameter to install antennas f 40mm

Model Name	MBQR 3&4
Number of concrete blocks	6 pcs
Weight of one block	24 kg
Alu construction weight	circa 9 kg
Total weight	155 kg
Distance between blocks holders	1.5m x 1.5m

Set consists of:

- aluminum construction
- Inox hardware
- 3 belts to secure blocks.
- Concrete blocks not incl.



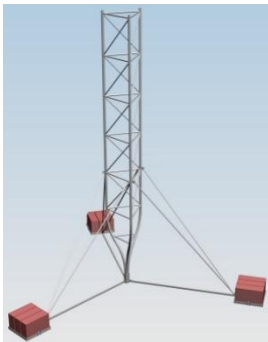
Single pipe set MBR3/4

- for small antennas sets
(up to 0.35m² in 1st wind zone)
- installing on pitched roof possible
- vertical adjustment in range of +/-10°
- quick and easy install
- height 3m or 4m
- pipe diameter to install antennas f 40mm

Model Name	MBR 3&4
Number of concrete blocks	9 pcs
Weight of one block	24 kg
Alu construction weight	circa 11 kg
Total weight	227 kg
Concrete blocks holders arrangement	r = 1.5m / 120°

Set consists of:

- aluminum construction
- Inox hardware
- 3 belts to secure blocks.
- Concrete blocks not incl



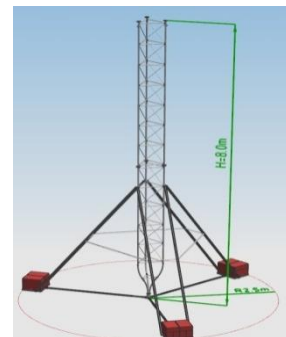
Truss set light MBKL3/4

- for small antennas sets
(up to 0.5m² in 1st wind zone)
- high torsional stiffness
- installing on pitched roof possible
- vertical adjustment in range of +/-10°
- quick and easy install
- height 3m or 4m
- climbing on the construction allowed
- pipe diameter to install antennas f 34mm

Model Name	MBKL 3&4
Number of concrete blocks	9 pcs
Weight of one block	24 kg
Alu construction weight	14 -16,5 kg
Total weight	230 kg
Blocks holders arrangement	r = 1.5m / 120°
Truss width	500 mm (250 mm option)

Set consists of:

- aluminum construction
- Inox hardware
- 3 belts to secure blocks.
- Concrete blocks not incl.
- Lightning rod



Truss set light MBKL8

- for small antennas sets
(up to 0.5m² in 1st wind zone)
- high torsional stiffness
- installing on pitched roof possible
- vertical adjustment in range of +/-10°
- quick and easy install
- height 8m
- climbing on the construction allowed
- pipe diameter to install antennas f 34mm

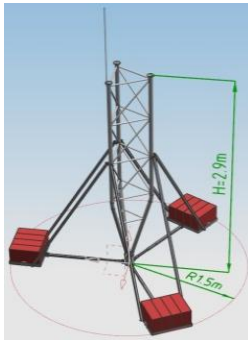
Model Name	MBKL8
Number of concrete blocks	18 pcs
Weight of one block	24 kg
Alu construction weight	23 kg
Total weight	470 kg
Blocks holders arrangement	r = 2.5m / 120°
Truss width	500 mm

Set consists of:

- aluminum construction
- Inox hardware
- 3 belts to secure blocks.
- Concrete blocks not incl.
- Lightning rod

Ballast Supports

Truss set heavy duty MBKC3



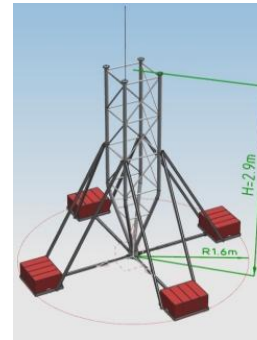
- for small base or radio link
- **(up to 0.8m² in 1st wind zone)**
- high torsional stiffness
- installing on pitched roof possible
- vertical adjustment in range of +/-10°
- quick and easy install
- height 2.9m
- climbing on the construction allowed
- pipe diameter to install antennas f 50mm

Model Name	MBKC3
Number of concrete blocks	12 pcs
Weight of one block	24 kg
Alu construction weight	circa 25 kg
Total weight	320 kg
Blocks holders arrangement	r = 1.5 m / 120°
Truss width	500 mm

Set consists of:

- aluminum construction
- Inox hardware
- 3 belts to secure blocks.
- Concrete blocks not incl.
- Lightning rod

Truss set heavy duty 4 supports MBKC3S



- for small base or radio link
- **(up to 1.0m² in 1st wind zone)**
- high torsional stiffness
- installing on pitched roof possible
- vertical adjustment in range of +/-10°
- quick and easy install
- height 2.9m
- climbing on the construction allowed
- pipe diameter to install antennas f 50mm

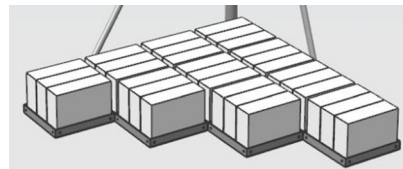
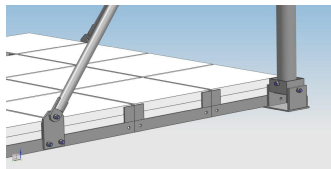
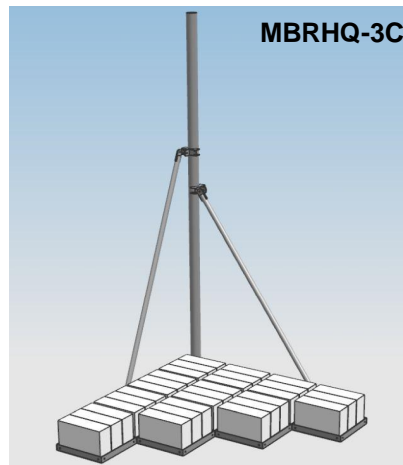
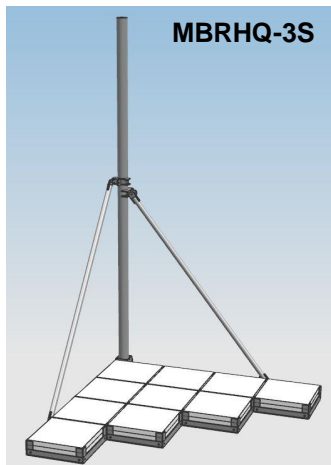
Model Name	MBKC3S
Number of concrete blocks	16 pcs
Weight of one block	24 kg
Alu construction weight	circa 31 kg
Total weight	415 kg
Blocks holders arrangement	r = 1.6 m / 90°
Truss width	500 mm

Set consists of:

- aluminum construction
- Inox hardware
- 4 belts to secure blocks.
- Concrete blocks not incl.
- Lightning rod



Ballast Supports

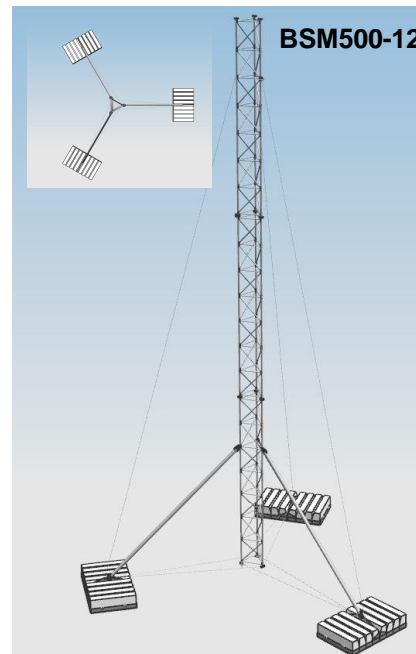


MBRHQ masts come in 4 versions:

- MBRHQ-3S – pavement slab ballast, H=3m
- MBRHQ-2S - pavement slab ballast, H=2m
- MBRHQ-3C – foundation block ballast, H=3m
- MBRHQ-2C - foundation block ballast, H=2m

Technical specifications:

- Pavement slab size: 40x40x4 (4 in tray, 40 altogether)
- Foundation concrete block size: 38x24x12, 3 in tray, 30 altogether)
- Total ballast weight for „S” version: 510 kgs
- Total ballast weight for „S” version: 750 kgs
- Total construction weight = 32 kgs (+/- 2 kgs depending on version)
- Main pipe: 80x3 AW6063 aluminum
- Ballast Surface: 50% of 1650x1650 mm square
- Max wind load (wind zone I, icing zone I):
 - **1,5 square meter for H=2m pole version**
 - **1 square meter for H=3m pole version**



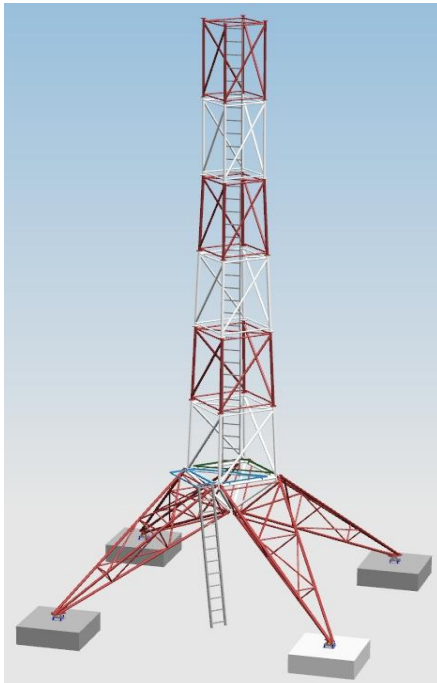
BSM500-12 Ballast Mast:

Main use: concerts, infrastructure failures (temporary installations), GSM
BSM500-12 is easy to relocate 12 meters mast for general purpose, mostly for on the ground installation

Technical specifications:

- 24 concrete curb slabs used as ballast (trays can be adjusted to local ballast availability in terms of size)
- Total ballast weight 2400 kgs.
- Construction mass: 154 kgs
- Trays radius: 3,8 metres
- Steel wires: 6 mm
- Truss width: 500 mm
- Regulated verticality (+/- 10 deg.)
- **Max wind load (wind zone I, icing zone I): 1 square meter**

Ballast Towers

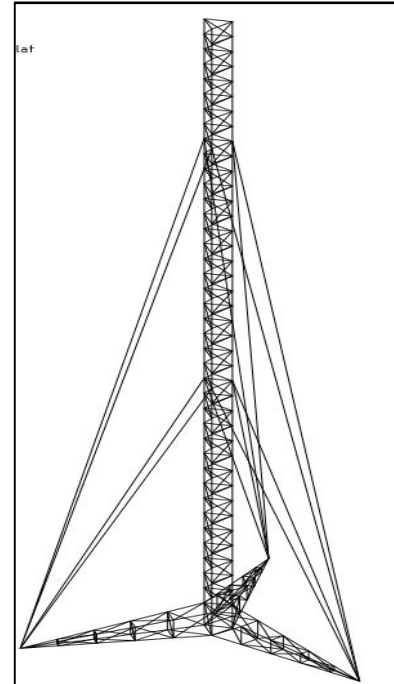


BT16 Ballast Tower

BT ballast towers are biggest, most heavy Altruss ballast structures. Main target for these are backup lines, emergency GSM towers, concerts/events wireless infrastructure or CCTV

Key Specifications:

- Tower legs foldable
- Total height: 16 meters
- Internal ladder and gallery
- Total weight: 530 kg (alu)
- Ballast: 4 concrete blocks 1,5x1,5x0,5m in size, weight 2,2 tons / piece (not covered in price)
- Total weight: 9,3 tones
- **Max antennas Surface (Wind zone I): 2 square meters**



BT40 Ballast Tower

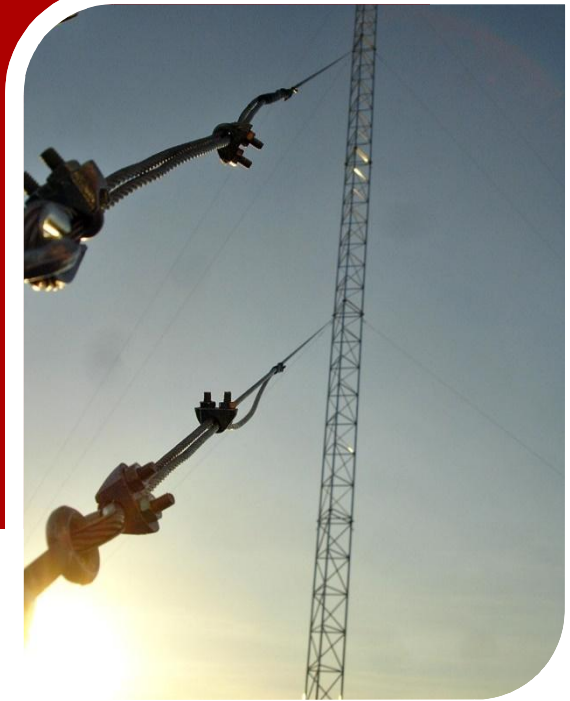
BT ballast towers are biggest, most heavy Altruss ballast structures. Main target for these are backup lines, emergency GSM towers, concerts/events wireless infrastructure or CCTV

Key Specifications:

- Steel guy wires 12 mm
- Aluminum main pole 1000 mm width (optional ladder)
- Steel legs
- Height: 40 metres
- Ballast: military concrete road pavement slabs (or alternatives of the same weight) 10,5 tonnes per side / 32,5 tonnes total (not covered in price)
- Construction weight: steel 1 550 kg, aluminum 850 kg
- **Max antennas Surface (Wind zone I): 3 square meters**

2017

ACCESSORIES



Mast Accessories



Separation crown for sectorial antennas, KM series

- may be installed on top of the mast or between sections.
- anti-twisting option (double guy-wires)
- other dimensions possible on request.
- material: AW6063T6

	KM250	KM400	KM500	KM750	KM1000
Height	640 mm	640 mm	640 mm	860 mm	1075 mm
Separation	500 mm	1000 mm	1000 mm	1500 mm	2000 mm
Weight	3.2 kg	3.6 kg	3.8 kg	10.4 kg	20.5 kg
Antenna mounting clamp size	fi 35mm	fi 35mm	fi 35mm	fi 50mm	fi 50mm



Single pipe top for omnidirectional antennas, AM Series

- Good for any type of antennas, including radiolink
- Other dimensions possible on request.
- Material: AW6063T6

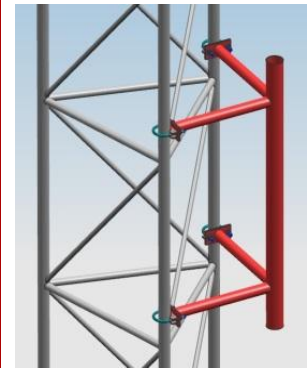
	AM250	AM400	AM500	AM750	AM1000
Height	87 mm	1000 mm	1000 mm	1125 mm	1250 mm
Top pipe length	500 mm	1000 mm	1000 mm	1500 mm	2000 mm
Weight	1.4 kg	1.5 kg	1.6 kg	2.3 kg	3.8 kg
Antenna mounting clamp size	fi 50mm	fi 50mm	fi 50mm	fi 50mm	fi 60mm



Anti-twisting adapter (double guy-wires), DM series

- may be installed on top of the mast or between sections.
- Other dimensions possible on request.
- Material: AW6063T6

	DM250	DM400	DM500	DM750	DM1000
Height	640 mm	640 mm	640 mm	860 mm	1075 mm
Top pipe length	500 mm	1000 mm	1000 mm	1500 mm	2000 mm
Weight	2.1kg	4.5 kg	4.7 kg	7.5 kg	14.3 kg
Antenna mounting clamp size	fi 35 mm	fi 35mm	fi 35 mm	fi 50 mm	fi 50 mm

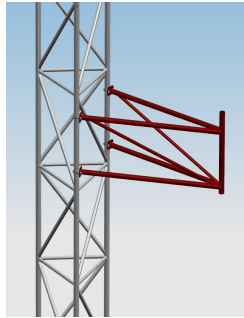


Radio link antenna holder, WRM series

- high torsional stiffness
- material AW6063T6
- clamps included
- other dimensions possible on request

	WRM400	WRM500	WRM750	WRM1000
Height	760 mm	760 mm	980 mm	1000 mm
Top pipe length	500 mm	500 mm	750 mm	1000 mm
Weight	1.4 kg	1.5 kg	2.2 kg	3.9 kg
Antenna mounting clamp size	fi 60 mm	fi 60 mm	fi 60 mm	fi 80 mm

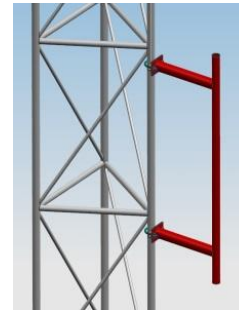
Mast Accessories



Side holder for omnidirectional antenna, WADM series

- Possible mounting on any height on the mast
- Other dimensions possible on request.
- Material: AW6063T6

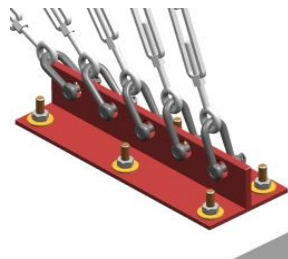
	WADM250	WADM400	WADM500	WADM750	WADM1000
Height	400 mm	400 mm	400 mm	700 mm	900 mm
Separation from mast	1000 mm	1000 mm	1000 mm	1500 mm	2000 mm
Weight	1.0 kg	1.0 kg	1.0 kg	1.7 kg	3.3 kg
Antenna mounting clamp size	fi 50mm	fi 50mm	fi 50mm	fi 60mm	fi 60mm



Antenna side holder flat, WM series

- Basic installation, cost effective
- Possible mounting on any height on the mast
- Other dimensions possible on request.
- Material: AW6063T6

	WM2550	WM750	WM1000
Height	760 mm	980 mm	1000 mm
Separation from the mast	300 mm	500 mm	700 mm
Weight	1.0 kg	1.7 kg	3.3 kg
Antenna mounting clamp size	fi 50 mm	fi 60 mm	fi 60 mm



Guy wire anchors set U3M-U6M series

- Anchors for flat concrete roof slabs or concrete foundation piles
- Material: AW6063T6
- X in model name is replaced with number of holes
- 3 to 6 are possible for stock sets
- Other dimensions possible on request.

	UXM250 / UXM500	UXM750 / UXM1000
Guy Wire Diameter	3-5 mm	5-8 mm
Width	100 mm	100 mm
length	100-320 mm	200-450 mm
Height	55 mm	60 mm
Shackle whole diameter	fi 16 mm	fi 20 mm

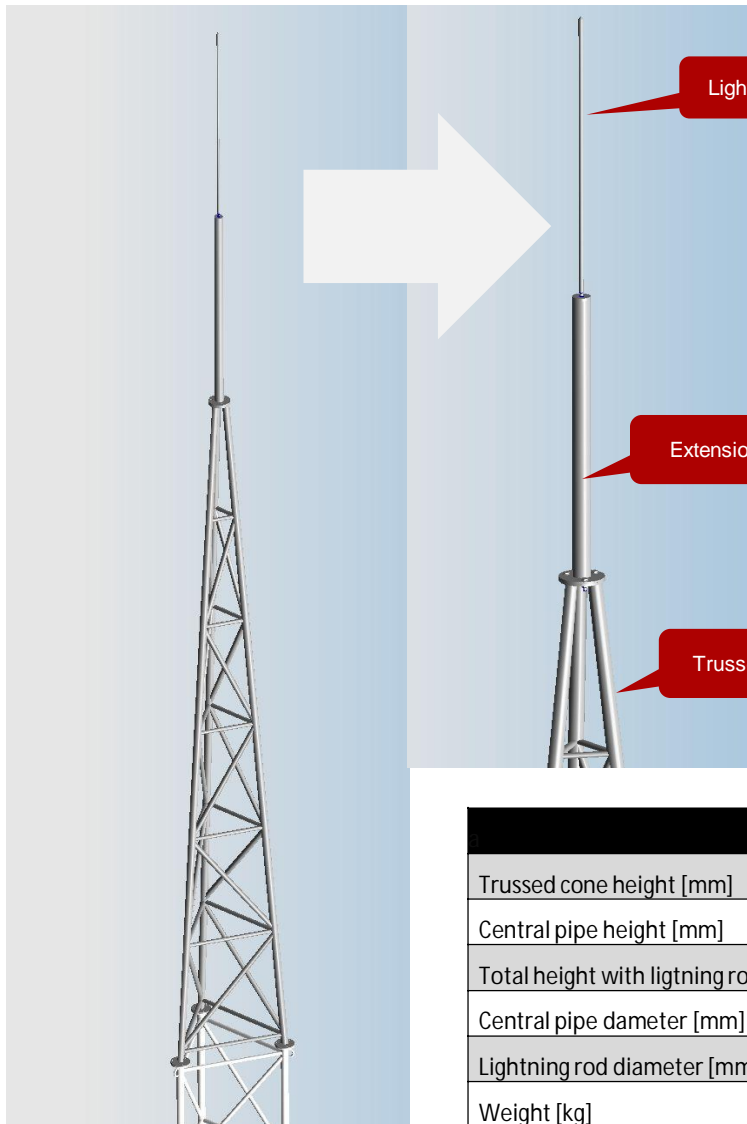


Wind turbine holder, UTM series

- Other dimensions possible on request.
- Material: AW6063T6
- Contact us for other green energy solutions, we do solar panel holders and sun trackers, this can be used as alternative power supply for towers in remote locations (eg. mountain tops)

	UTM250	UTM400	UTM500	UTM750	UTM1000
Height	1250 mm	1500 mm	1500 mm	1750 mm	2000 mm
Weight	2,5 kg	2,7 kg	2,8 kg	4,2 kg	8,6 kg
Main pipe diameter	fi 50 x 2mm	fi 50 x2 mm	fi 50 x2 mm	fi 60 x 3 mm	fi 60 x3 mm

Mast Accessories



Lightning rod

Extension pipe,

Trussed cone,

Top lightning protection cone for omni antennas TEC series

Set contains:

- Trussed cone section,
- Pipe extension
- stainless bolts and nuts,
- Lightning rod

Height: 5,5 m to 6 m

Compatibility: M250 – M1000 mast series

Optional: anodizing and/or powder coating

Reasons to have:

- Protects omnidirectional antennas mounted below from lightnings
- Lighter than additional sections over the top of omnidirectional antennas
- Cost effective vs. higher mast
- Wind load reduced by 50% if compared to full section extension

	TEC250	TEC400	TEC500	TEC750	TEC1000
Trussed cone height [mm]	3500	3500	3500	4000	4000
Central pipe height [mm]	1000	1000	1000	1000	1000
Total height with lightning rod [mm]	5500	5500	5500	6000	6000
Central pipe diameter [mm]	fi 35x2	fi 40x2	fi 40x2	fi 50x2	fi 50x2
Lightning rod diameter [mm]	fi 10	fi 10	fi 10	fi 12	fi 12
Weight [kg]	8,5	9,6	10,5	14,3	17,4

Masts and Towers General Accessories

Anti Theft Hatch ATH Series



This series of safety hatches restricts access to the tower. They are mounted at top of bottom section in towers and at any height desired for T1000 masts. All aluminum structure.

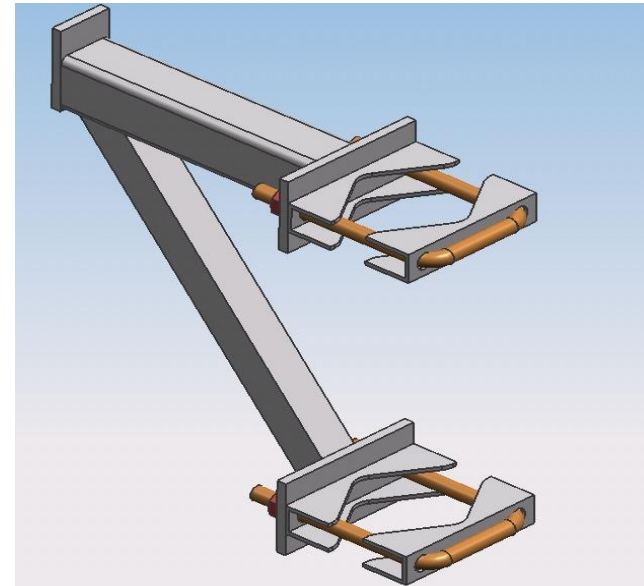
Set consists of:

- 1 lockpad closing hatch
- 3 comb wire flatbar sections
- Set of U-bolts and screws for installation



Model	Size [mm]	Weight [kg]	Compatibility
ATH-750	750	5,0	T500-12
ATH-1000	1000	8,7	T500-16, T1000-8, TA500-9.9 S2,5
ATH-1200	1200	12,7	TA1000-12 S3
ATH-1500	1500	19,9	T500-20, T500-24, TA1000-9.9 S2,5
ATH-2000	2000	35,3	T1000-24,

Universal climbing peg UCP 4060



Universal peg is great way to facilitate working conditions for servicemen on any construction not equipped with climbing ladders (T1000/M1000) or outside horizontal steps (M750). This is recommended solution for T500 series towers and M500 masts

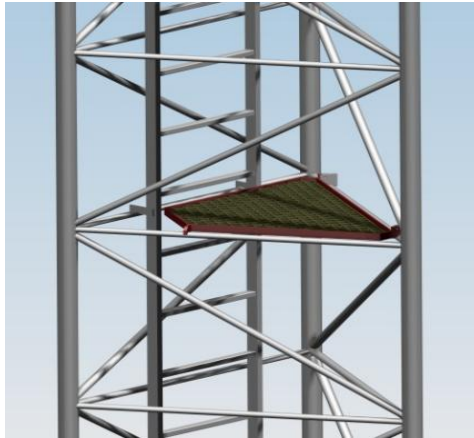
Set consists of:

- 1 peg, 2 stainless ubolts, 4 nuts

Specification:

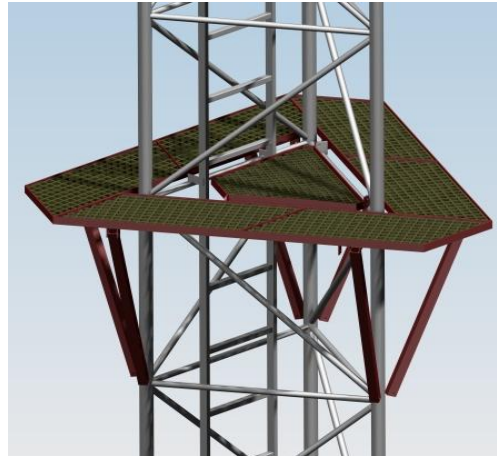
- For main pipe diameter ranging from 40 to 60 mm
- Mass: 0,4 kg aluminum + 0,5 steel per piece
- Anti-skid peg surface

Specific Accessories for T1000 and M1000



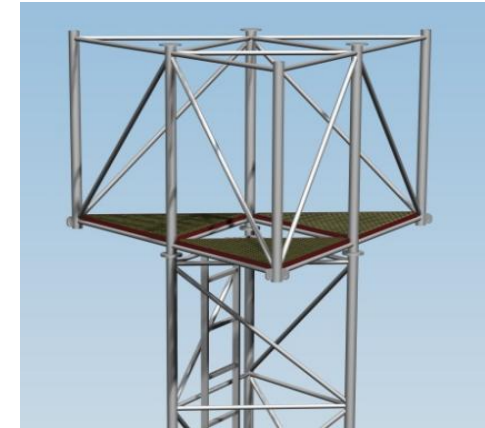
Safety Hatch
KBM 1000

- Possible mounting on any height on the mast
- 2 hinges
- Lightweight composite perforated platform
- M1000 masts only
- Material: AW6063T6 & Composite floor
- Alu grille floor optional (same price)



Outer platform
PZM 1000

- Possible mounting on any height on the mast
- Walking width 0,5 meter
- Lightweight composite perforated platform
- M1000 masts only
- Material: AW6063T6 & Composite floor
- Alu grille floor optional (same price)



Separation Crown
Platform PSM 1000

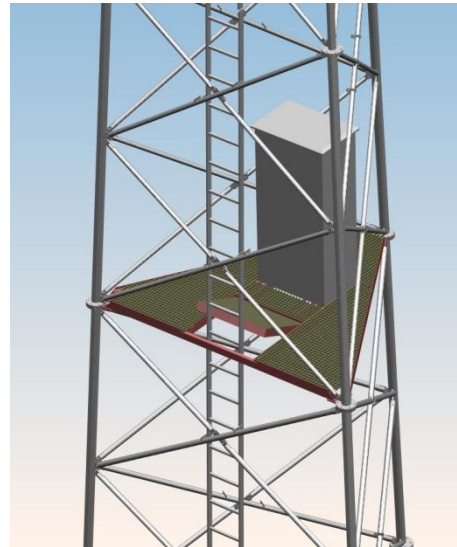
- Possible mounting on any height on the mast
- Lightweight composite perforated platform
- M1000 masts only
- Material: AW6063T6 & Composite floor
- Alu grille floor optional (same price)

Specific Accessories for T1000 and M1000



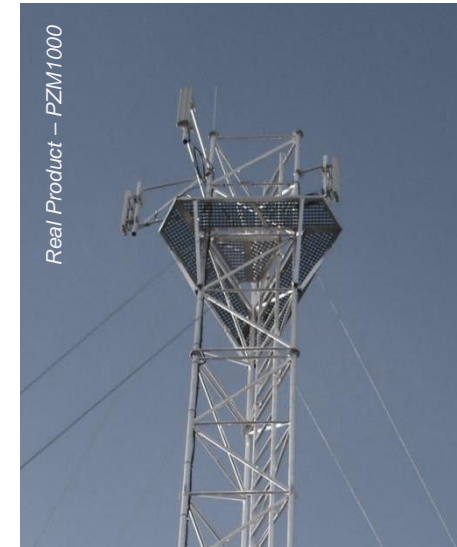
**Round separation platform
PSRM 1000**

- Possible mounting on any height,
- Lightweight composite floor, or aluminum grille
- For masts and towers M1000, T1000
- Material: AW6063T6 & Composite or Alu floor (same cost)



**Internal tower platform
PWT 1000**

- Possible mounting on any height,
- Lightweight composite floor, or aluminum grille
- For towers only
- Material: AW6063T6 & Composite or Alu floor (same cost)
- Good for technical containers



Mast Accessories - Mast sections

FOR REPAIR OR EXPANDING

Altruss is serious about supporting customers, we provide independent sections for service or extending constructions in our client's possession.

If anything goes bad you do not always have to exchange the whole mast, order what is broken and change what is necessary

General specification:

- All exchange sections are made with 2 mm thick pipes, 1,5 mm or 3 mm versions are available on demand
- Material: AW 6060/6063 T6
- No bolts and nuts in the set
- No lightning rod
- 3 holes flange for masts
- 6 holes flange for wall mounted guyed free masts and towers

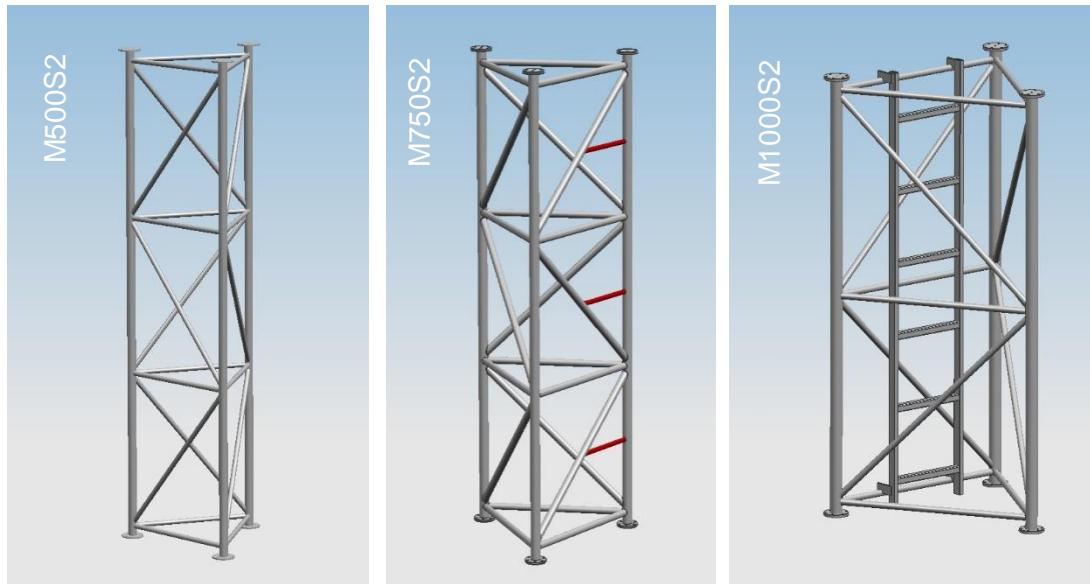
Safety Precautions:

- Never use the additional sections to lengthen the mast over specification, the foundations may fail, guy wires and/or additional hardware may fail. Masts are carefully calculated for certain forces, increasing these may cause structure collapse,
- Extending existing mast may be done only under supervision from static engineer, architect or Altruss specialist,
- Please note - masts over 30 meters high use different sections at the bottom and at the top. They look alike, but pipe wall thickness differ. Pay special attention (consult Altruss) if you do exchange sections in such masts. You might need custom section to do this



Mast Accessories - Mast sections

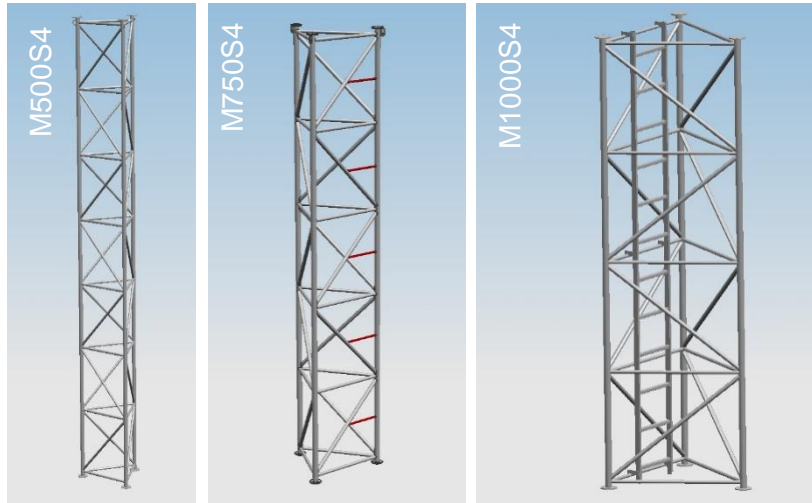
FOR REPAIR OR EXPANDING



Model	Weight [kg]	Length [m]	Truss width [mm]	Corner Member dia x thick [mm]	Cross Member dia x thick [mm]	Hole diameter [mm]	Flange diameter x thickness [mm] / number of holes
M250S2 X6	6,7	2	250	35x2	20x2	9	94x6 /6
M250S2 X3	6,7	2	250	35x2	20x2	9	94x6 /3
M400S2 X6	7,2	2	400	35x2	20x2	9	94x6 /6
M400S2 X3	7,2	2	400	35x2	20x2	9	94x6 /3
M500S2 X6	7,75	2	500	35x2	20x2	9	106x6 /6
M500S2 X3	7,75	2	500	35x2	20x2	9	106x6 /3
M750S2 X6	15	2	750	50x2	25x2	11	126x8 /6
M750S2 X3	15	2	750	50x2	25x2	11	126x8 /3
M1000S2 X6	18,9	2	1000	60x2	30x2	13	148x10 /6
M1000S2 X3	18,9	2	1000	60x2	30x2	13	148x10 /3

Mast Accessories - Mast sections

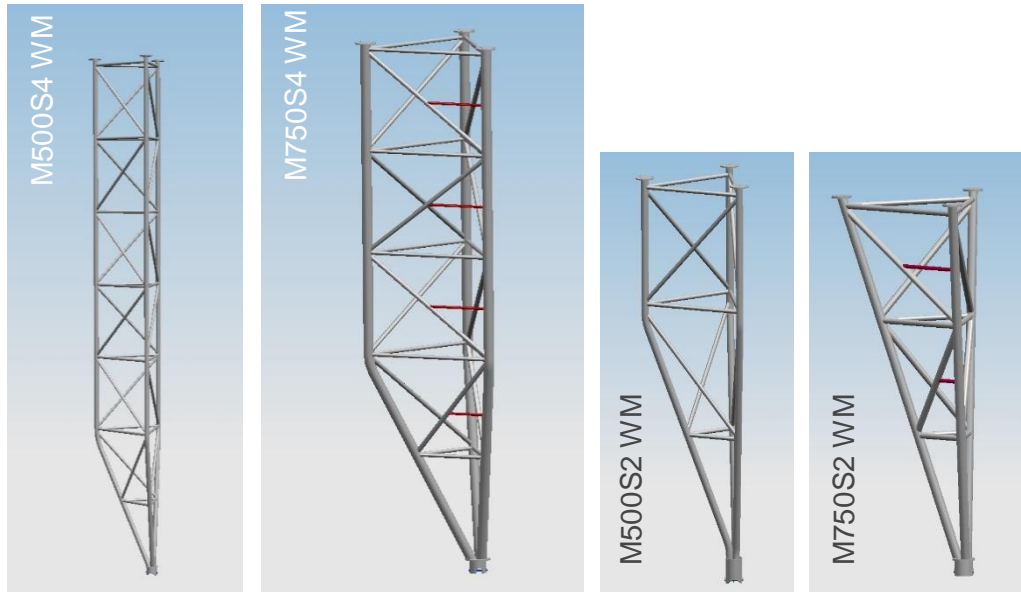
FOR REPAIR OR EXPANDING



Model	Weight [kg]	Length [m]	Truss width [mm]	Corner Member dia x thick [mm]	Cross Member dia x thick [mm]	Hole diameter [mm]	Flange diameter x thickness [mm] /number of holes
M250S4 X6	12,6	4	250	35x2	20x2	9	94x6 /6
M250S4 X3	12,6	4	250	35x2	20x2	9	94x6 /3
M400S4 X6	13,5	4	400	35x2	20x2	9	94x6 /6
M400S4 X3	13,5	4	400	35x2	20x2	9	94x6 /3
M500S4 X6	15,2	4	500	35x2	20x2	9	106x6 /6
M500S4 X3	15,2	4	500	35x2	20x2	9	106x6 /3
M750S4 X6	23,3	4	750	50x2	25x2	11	126x8 /6
M750S4 X3	23,3	4	750	50x2	25x2	11	126x8 /3
M1000S4 X6	37,8	4	1000	60x2	30x2	13	148x10 /6
M1000S4 X3	37,8	4	1000	60x2	30x2	13	148x10 /3

Mast Accessories - Mast sections

FOR REPAIR OR EXPANDING



Model (Wall Mounted)	Weight [kg]	Length [m]	Truss width [mm]	Corner Member dia x thick [mm]	Cross Member dia x thick [mm]	Hole diameter [mm]	Flange diameter x thickness [mm] / number of holes
M250S4WM	12,6	4	250	35x2	20x2	9	94x6 /6
M250S2WM	6,7	2	250	35x2	20x2	9	94x6 /6
M400S4WM	13,5	4	400	35x2	20x2	9	94x6 /6
M400S2WM	7,2	2	400	35x2	20x2	9	94x6 /6
M500S4WM	15,2	4	500	35x2	20x2	9	106x6 /6
M500S2WM	7,75	2	500	35x2	20x2	9	106x6 /6
M750S4WM	23,3	4	750	50x2	25x2	11	126x8 /6
M750S2WM	15	2	750	50x2	25x2	11	126x8 /6
M1000S4WM	37,8	4	1000	60x2	30x2	13	148x10 /6
M1000S2WM	18,9	2	1000	60x2	30x2	13	148x10 /6

Securo System for M1000 and T1000 - type 2S

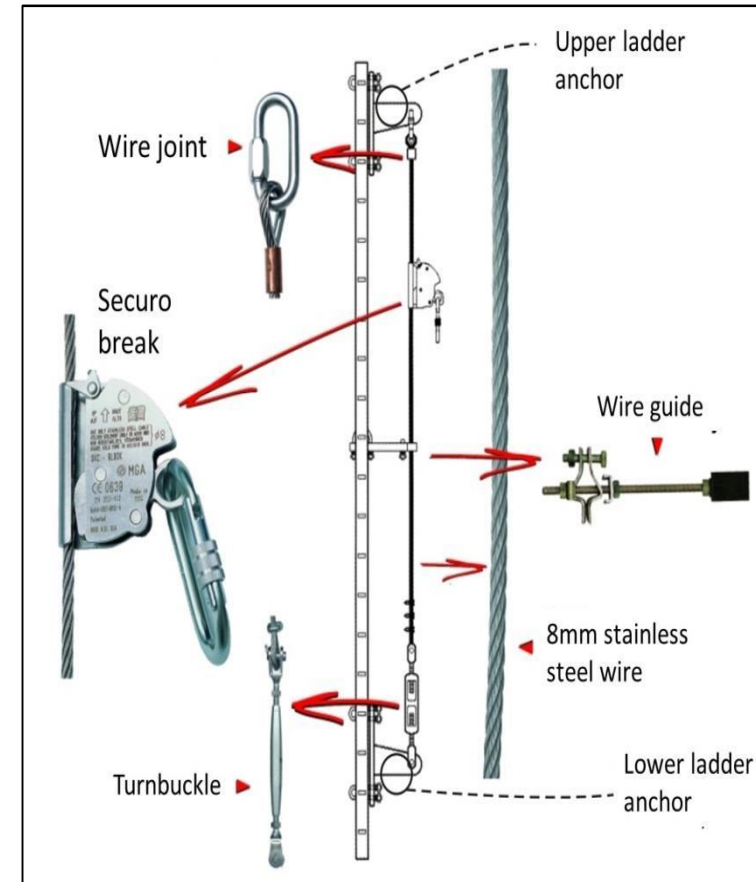
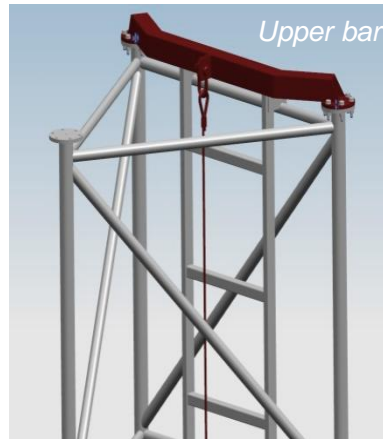
Securo is a security fall arrest system for masts and towers maintenance crew. Just connect your harness to Securo Break and reduce chances of falling down to zero. It's hassle free as well, and does not limit servicemen movement.

Set contains:

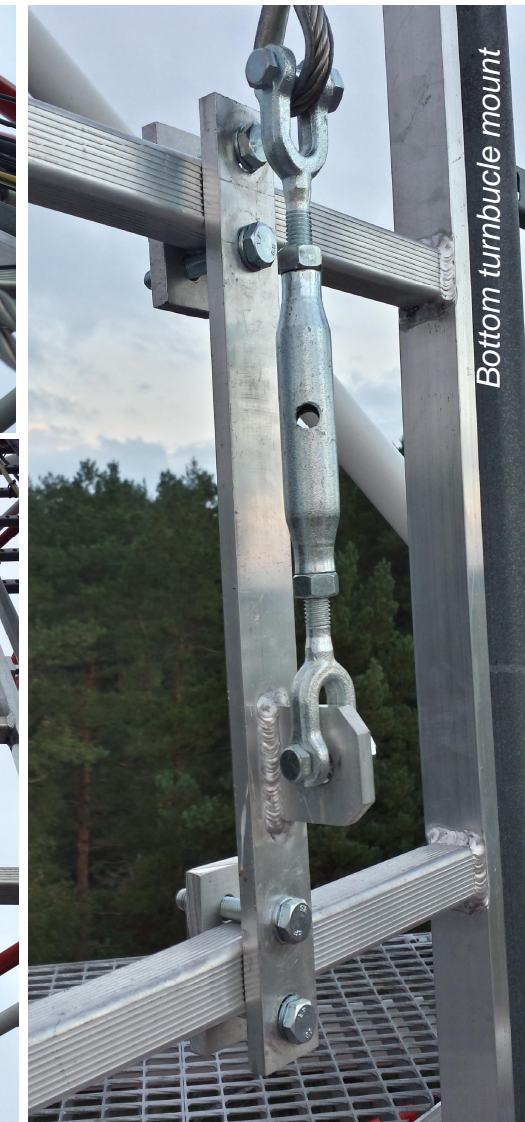
- Securo Break (1 piece)
- All hardware and holders for 10 meters system
- Upper bar (1 piece)
- Lower ladder hook (1 piece)
- 8 mm stainless steel wire (10 meters)
- Extender sets available
- Safety harness sold separately

Parameters:

- Max wire length between holders 10 m
- Max total system length unlimited
- Man weight – up to 120 kgs



Securo System for M1000 and T1000 - type 2S



Cable ladder System – DK series

Cable ladder system is an elegant and professional way of managing numerous cables and wires across the tower or mast:

Parameters:

- Aluminium AW 5754
- Width: 100, 200, 300, 400, 500 mm
- Depth: 50, 80 mm
- Section length: 1m, 2m, 3m or 4m
- Accessories: DKLH Ladder hinge, DKVP Horizontal Pipe Mount, DKSJ Straight Joint, DKDP Diagonal Pipe Mount
- Compatibility: FIMO cable mount

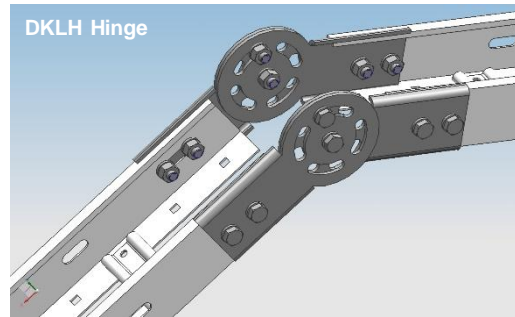
Cable Ladder – DK Series



Cable Ladder – DK Series



Cable ladder System – DK series

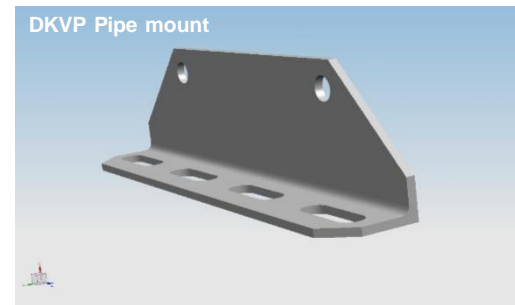
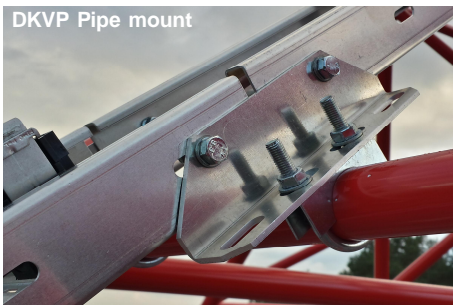


DKLH Ladder hinge

- Aluminum: AW 5754
- Angle set: -140 deg : +180 deg
- Blocking bolt to fix angle
- Works with any DK series ladder

Set consists of:

- 2 hinges,
- 12 bolts + nuts

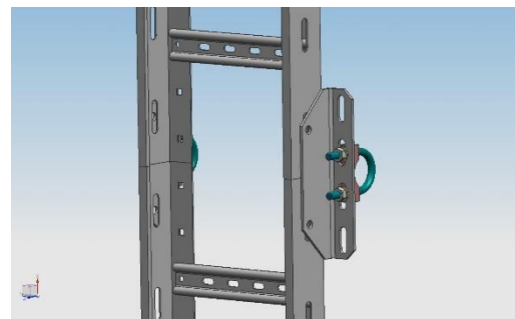
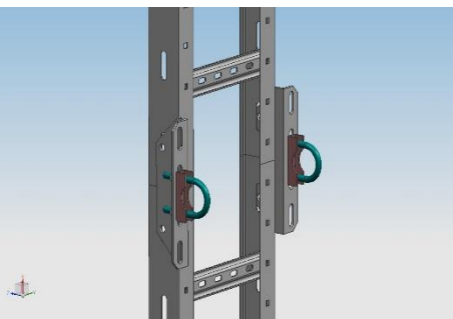


DKVP Horizontal Pipe Mount

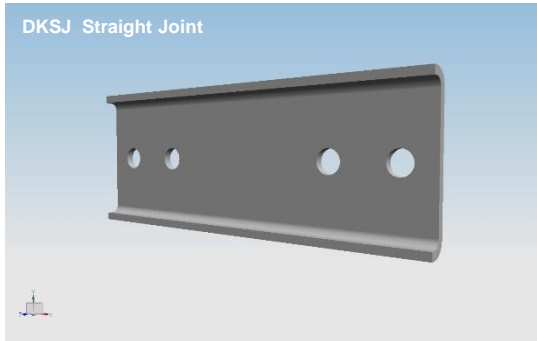
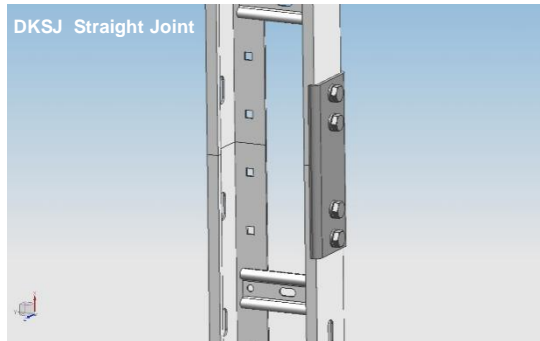
- Aluminum: AW 5754
- Mounts the ladder to horizontal pipes,
- Can join 2 ladders together
- Pipe diameter fi50 mm, other sizes on demand
- Works with any DK series ladder

Set consists of:

- 2 plates,
- 4 bolts + nuts
- 2 U-bolts



Cable ladder System – DK series

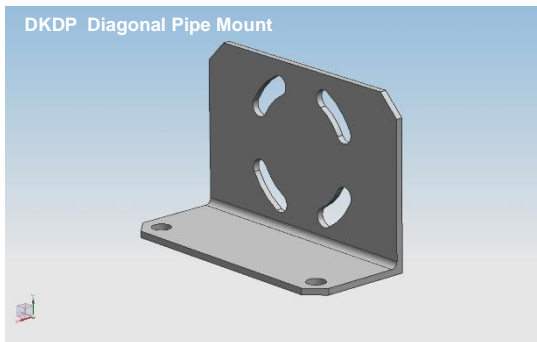
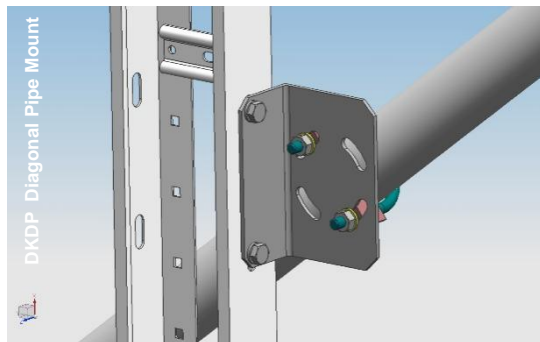


DKSJ Straight Joint

- Aluminum AW 5754
- Connects 2 ladders together
- Used where no support from cross member pipes is possible
- Works with any DK series ladder

Set consists of:

- 2 joints
- 8 bolts + nuts

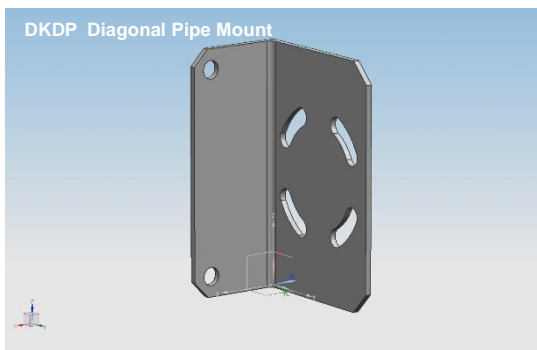
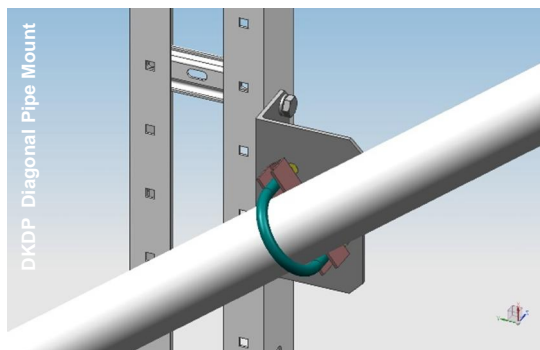


DKDP Diagonal Pipe Mount

- Aluminum AW 5754
- Angle set: +20 deg : +160 deg
- Works with any DK series ladder
- Used to hold the ladder by cross member pipes in masts or towers
- Designed to work with $\phi = 50\text{mm}$ pipes, other diameters on demand

Set consists of:

- 2 Mounts,
- 4 bolts + nuts
- 2 U- bolts



2017

FOUNDATIONS



Foundation Systems – Prefabricated Concrete Cones

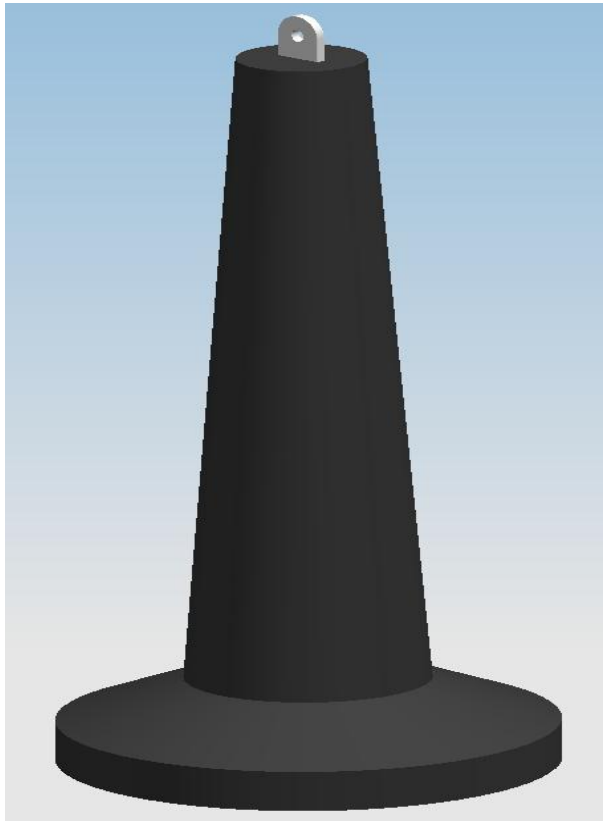


Prefabricated cones:

- Quick installation vs. poured slab,
- No additional time in project for concrete seasoning,
- Universal,
- Uses ground weight for ballast
- Can be used even in difficult geological conditions: then gravel and light concrete base shall be added,
- Does not need highly trained construction workers,
- Limited defect risk as cones are produced in controlled environment and standardized



Foundation Systems – Prefabricated Concrete Cones



Availability and installation:

- Production time: min. 4 weeks
- Stock may vary
- Water insulated with bitumens
- Always install above ground water level
- Might be installed on the ground level and covered with earthwork
- Always consult local architect before installation
- For tower installation we suggest filling bottom of the excavation with 20 cm of compacted gravel, then 10 cm of dry concrete (levelled and compacted) – this helps in precise aligning the cones plus counteracts sinking in the non cohesive ground
- Above procedure is not necessary if used as guy wires anchors
- Tower foundation hinge is included within tower price if foundation is bought with Altruss

Cone Model	Reinforcement [kg]	Total Weight [kg]	Round Base Diameter [mm]	Cone Height [mm]	Mast Compatibility - As Guy Wires Anchors***	Mast Compatibility - Trunk Base***	Towers Compatibility - As Base***
EF 115/200	31,5	860	1150	2150	up to 40 meters	all models	T500 : T1000 up to 24 meters
EF 150/200	49,4	1220	1500	2150	up to 60 meters	x	for T1000-28
EF 160/230	66,3	1515	1600	2450	up to 70 meters	x	for T1000-30
EF 180/250	81,8	1830	1800	2650	up to 90 meters	x	for T1000- up to 45

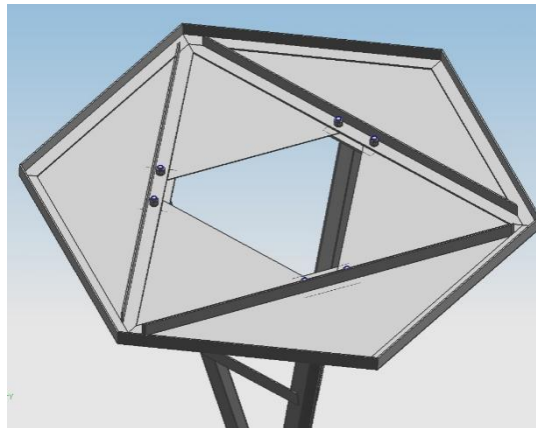
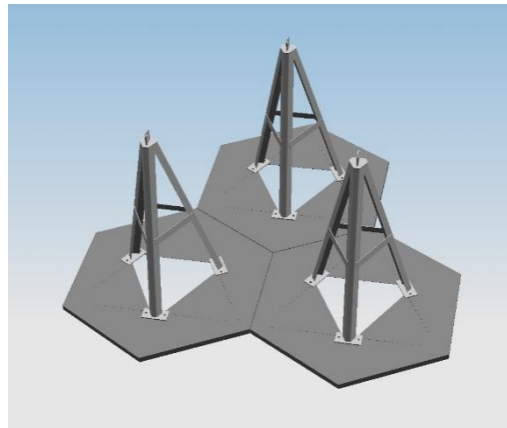
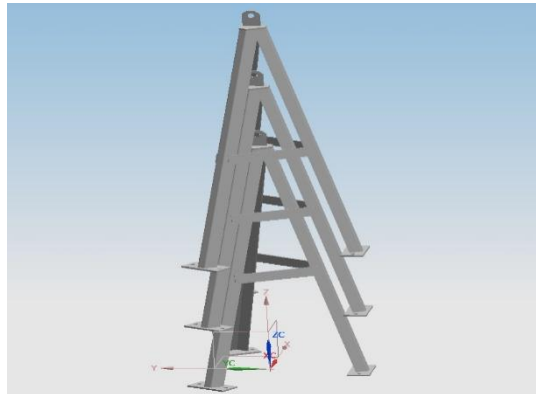
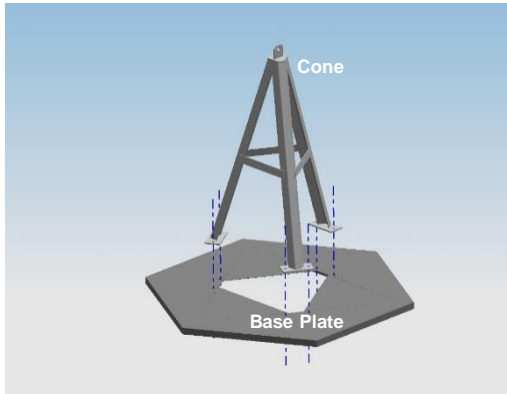
* additional data for architects available on demand,

** data given for max antenna load specified for each product, average geological conditions, windzone I, icing zone I, ground water level below base of the cone,

*** AluPro/Altruss suggests static calculations done for each installation to verify optimal/safe foundation model choice,

Foundation Systems – Aluminum Cones

FOR TOWERS



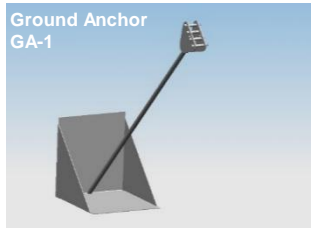
Cone Model	Cone Size W [mm]	Cone Size H [mm]	Base Plate Diameter	Cone Weight [kg]	Baseplate Weight [kg]	Tower Compatibility
AC-1	800x1600		1000	13	16	T500-12, T1000-4, T1000-8
AC-2	800x1600		1600	13	22	T500-16, T500-20, T1000-12
AC-3	800x1600		2000	13	32	T1000-16, T500-24
AC-4	800x1600		2400	13	48	T1000-24

Aluminum Cones for lightweight towers:

- Used for towers up to 20 meters,
- Base plates honeycomb shaped, helps in proper aligning cones one versus the another, helps to keep hinges parallel and in right spacing (please note – detailed measurement shall be taken and aligning made at the hinges before burying the foundation in the ground)
- Baseplate detachable,
- Easy transportation, cones may be stacked one into the other to save place,
- Baseplate size matches the tower model
- Good for both T500 and T1000 tower series,
- Quick installation,
- Material Cone AW5754, Base AW6060, AW6063
- Cone Weight: 13 kg – one for all
- Baseplate: see table

Foundation Systems – Steel Anchors

FOR MASTS



Mast Steel Anchors System:

- Quick, one day installation,
- For masts only,
- System consists of one MB-1 mast base, and number of GA-1 anchors (depending on guy wires layout)
- For high loads MB-1 shall be placed on dry concrete 20 cm thick leveled and compacted slab
- MB-1 takes up to 11 tons of downforce
- GA-1 takes up to 5 tons of pull force at depth = 3 meters (depends on how deep it is buried)

Mast Steel Anchors System:

- Compatibility: all Altruss masts, up to 40 meters
- Consult Altruss for use with higher masts (updated version works up to 120 meters)
- Uses ground weight for ballast – relatively independent of soil type
- Shall be used above ground water level

GA-1 set consists of:

- 1 bucket
- 1 fi 20 mm rod
- 1 set of guy wires mount

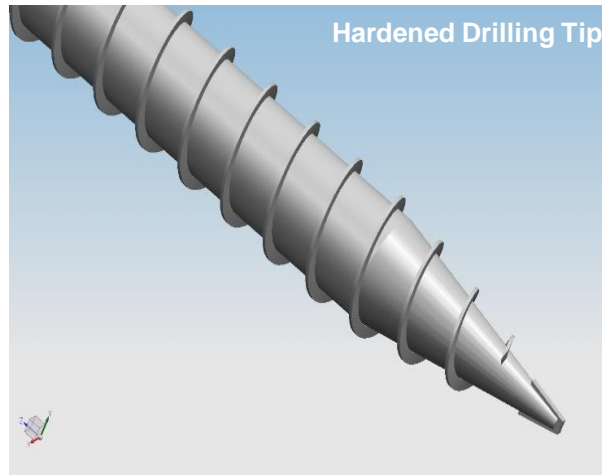
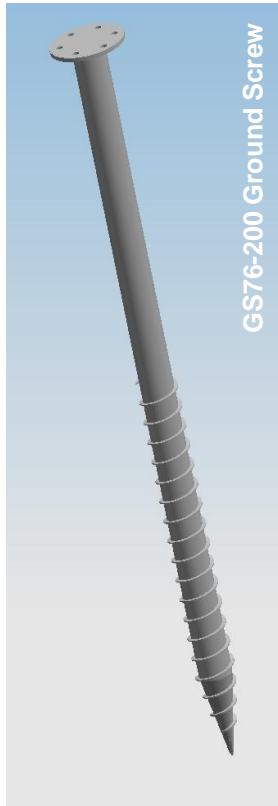
MB-1 set consists of:

- 1 stand
- 4 bolts and nuts for mast swivel base

Anchor Model	Material	Dimensions WxH [mm]	Max push/pull Force **	Weight [kg]	Tower Compatibility ***
MB-1 Base	S235 zinc coated	1000x1200	11 tonnes (on concrete slab)	60	masts up to 40 meters all types
GA-1 Anchor	S235 zinc coated	500x500 - 4 meters fi 20 rod	5 tonnes (pull force at depth min 3 meters)	40	masts up to 40 meters all types
*** This is suggested compatibility for optimal ground conditions, we suggest adding dry concrete slab for MB-1 for higher loads or plastic soils					
** For optimal ground conditions, although this type of foundation is less ground dependent than ground screws					

Foundation Systems – Ground Screws

FOR MASTS AND SMALL TOWERS



Ground Screws:

- Can be used for both masts and towers,
- Very quick installation (max 3 hours work for 2 people)
- No excavator or heavy machinery is needed to make the foundation
- Cost effective,
- Either ground survey must be done prior to installation, or pull test during installation, this foundation technique is ground type dependent,
- Should not be used when ground water level is higher than the screw length, certain plastic soil types (clay) exclude ground screws from use
- Material – zinc coated steel S235
- In good soil conditions takes up to 10 tons of pull / push force (GS76-200)
- Additional data for static engineers or architects available on demand

Ground Screw Model	Material	Pipe diameter [mm] x wall [mm]	Flange dia[mm]x thick [mm]	Lenght [mm]	Thread thick [mm] x width [mm] x pitch [mm]	Weight [kg]	Tower Compatibility***
GS50-160	S235 zinc coated	51x3	148x10	1600	3 x 10 x 50	7	max T500-12, max T1000-8
GS76-200	S235 zinc coated	76x3	148x15	2000	3 x 10 x 50	14	max T500-16, max T1000-12
GS89-240	S235 zinc coated	89x5	212x15	2400	4 x 12 x 50	29	max T500-20, max T1000-16

*** Suggested compatibility for optimal ground conditions, consult local architect for advise if you have ground survey, or have the pull test done at construction site

Foundation Systems – Poured Concrete Slabs



Main Features, use and precautions:

- This system uses mass of concrete (and the ground on top) to stabilize the tower,
- Suitable for big towers over 30 meters, steel and aluminum, heavy conditions
- Great choice for difficult ground conditions eg solid rock near the ground Surface, high ground water level
- Foundation must be installed above ground water level, if the water is high then earthwork must be applied on top of the concrete block
- Square or round slabs are common,
- Uses standard **Altruss Foundation Anchors**



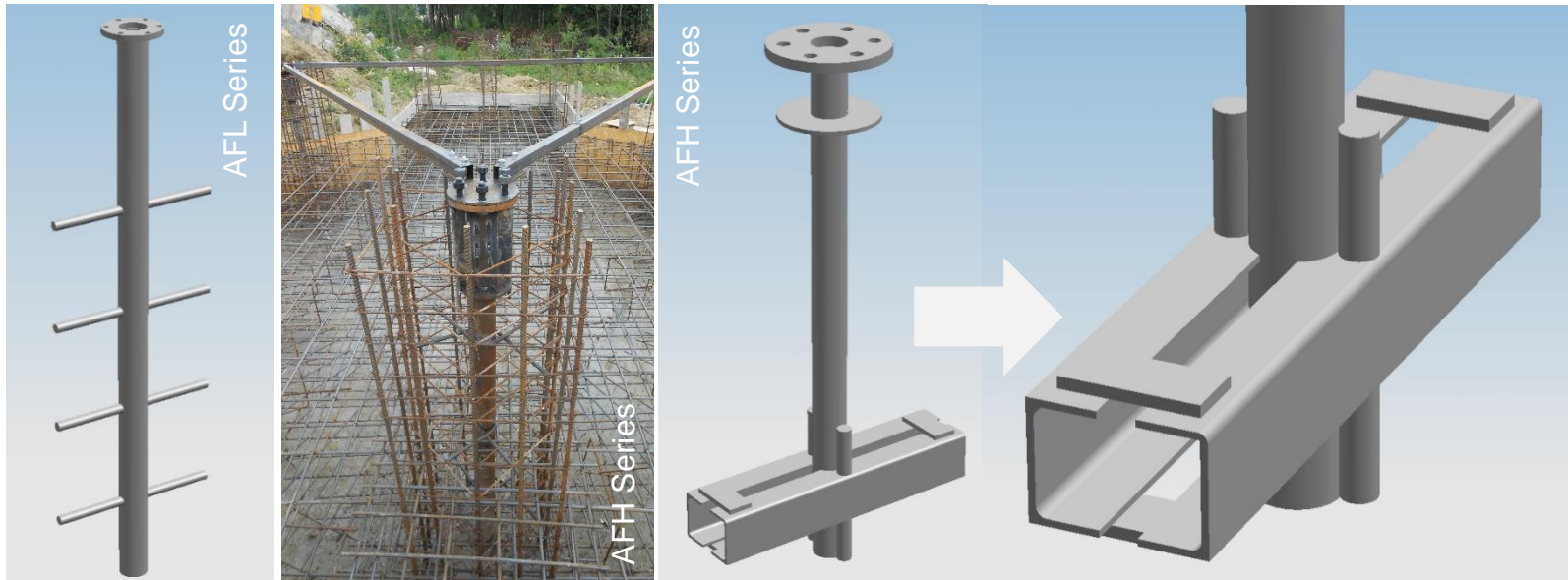
Foundation Systems – Altruss Foundation Anchors

Key information:

- Two series available: **AFL for light towers** and **AFH for heavy towers**
- Single length of 1200 mm (customizable)
- For poured steel reinforced concrete slabs
- Compatibility: T500-4 up to T1000-45

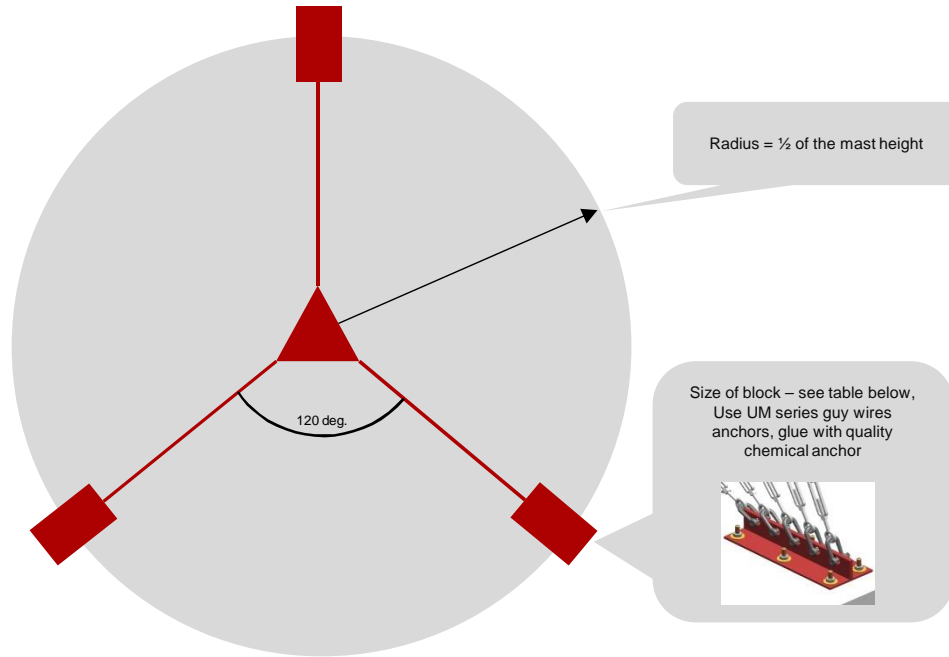


Anchor Type	Material	Max Width [mm]	Max length [mm]	Flange Size [mm]	Main Pipe [mm]	Weight [kg]	Compatibility - tower types
AFL-1	S235 steel	200	1200	148x10 - 6 holes	60,3x5	10	T500-8 : T500-16, T1000-8 : T1000-16
AFL-2	S235 steel	400	1200	170x15 - 6 holes	76x6,3	23	T500-16 : T500-24, T1000-16 : T1000-24
AFH-1	S235 steel	600	1200	212x15 - 6 holes	101,6x6,3	35	T1000-24 : T1000-30 alu
AFH-2	S235 steel	600	1200	212x20 - 6 holes	101,6x8	40	T1000-30 : T1000-36 alu, T1000-30 steel
AFH-3	S235 steel	800	1200	240x20 - 6 holes	114x8	48	T1000-30 : T1000-45 steel

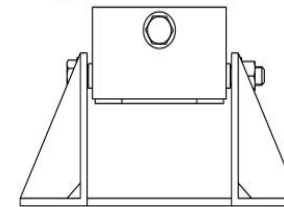


Foundation Systems – Poured Concrete Blocks

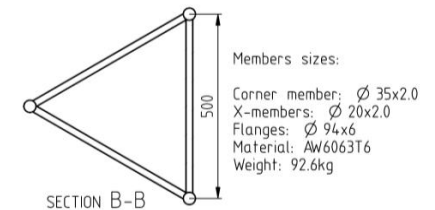
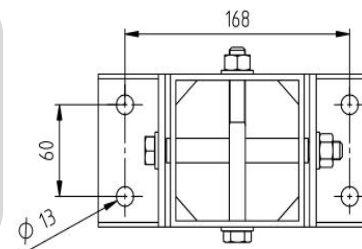
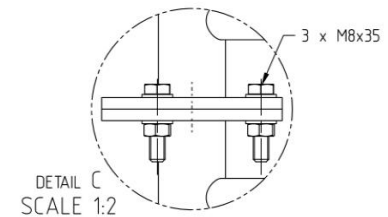
SUGGESTIONS FOR ARCHITECTS AND CONSTRUCTION COMPANIES - MASTS ONLY



Typical swivel base



Flanges



***Mast Type	Concrete Stem Base AxBxH [mm]	Concrete Guy Wires Foundation AxBxH [mm]	Threaded rod size / drilling depth [mm] for UM anchors	** Suggested Steel Reinforcement / Concrete
M250-M500: up to 16 meters	400x400x1200	1000x600x1200	4xM10 - 300	steel grid by the square walls, fi 10 mm, grid size 200x200 mm, B20
M750-M1000: up to 16 meters	600x600x1200	1400x800x1200	4xM12 - 300	steel grid by the square walls, fi 10 mm, grid size 200x200 mm, B20
M250-M500: 16 - 24 meters	600x600x1200	1400x800x1200	4xM12 - 300	steel grid by the square walls, fi 12 mm, grid size 200x200 mm, B20
M750-M1000: 16 - 24 meters	600x600x1200	1400x1000x1200	4xM12 - 300	steel grid by the square walls, fi 12 mm, grid size 200x200 mm, B20
M500: 24 - 32 meters	600x600x1200	2000x1200x1200	4xM16 - 300	steel grid by the square walls, fi 14 mm, grid size 200x200 mm, B20
M750-M1000: 24 - 32 meters	800x800x1200	2000x1500x1200	4xM16 - 300	steel grid by the square walls, fi 14 mm, grid size 200x200 mm, B20
M750-M1000: 32 - 40 meters	800x800x1200	2000x1500x1500	6xM16 - 300	steel grid by the square walls, fi 16 mm, grid size 200x200 mm, B20

***Calculated for average ground conditions, Wind Zone I, Icing Zone I, antennas load specified for each mast type (as in this catalogue)

** Additional drawings will be available on demand with mast purchase



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