

## Instruction for Use

021364/12/06

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### *Telescopic Mast, Tilting Device, Rope Winch* 4.31xx.30.xxx, 4.3181.x3.xxx, 4.3182.x3.xxx



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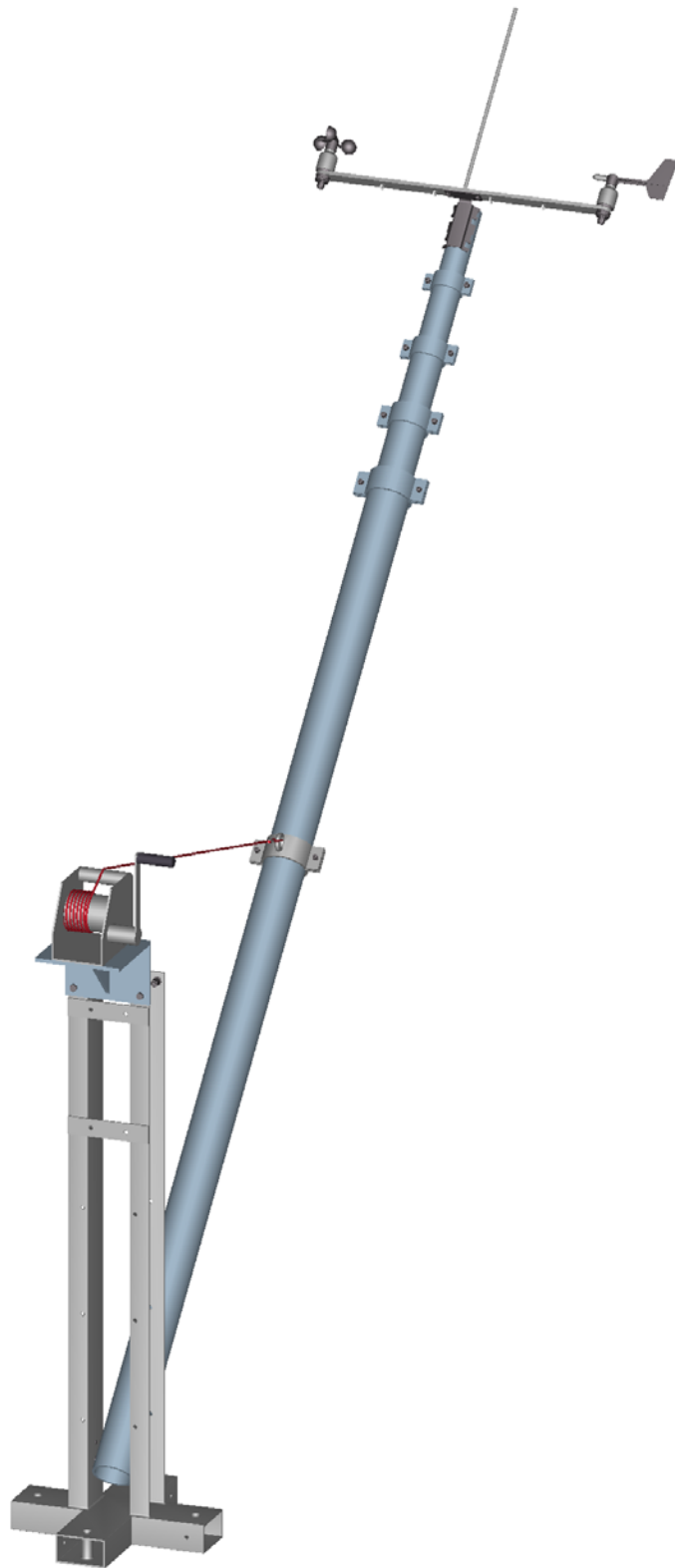
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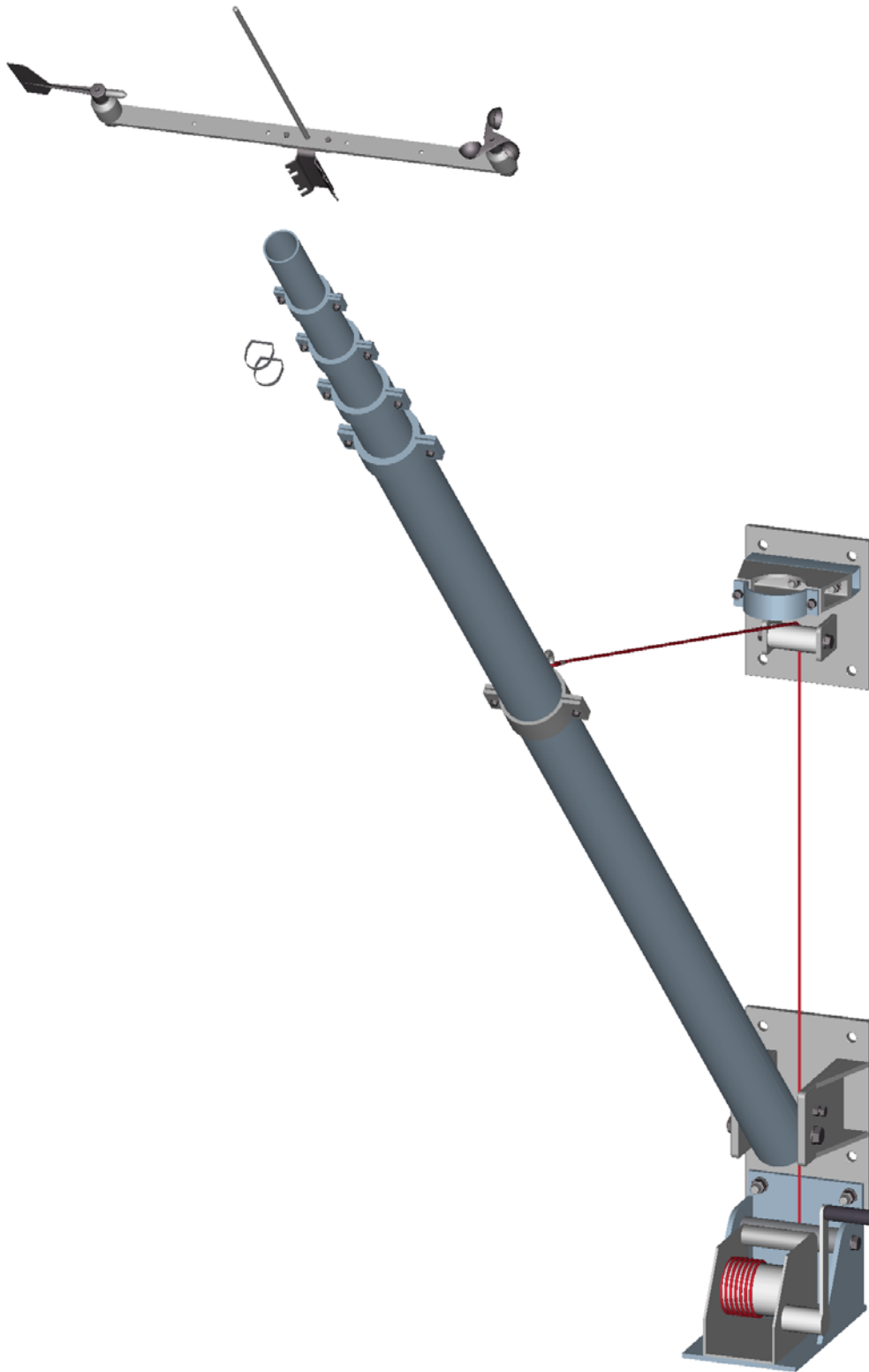
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**Figure 1: Telescopic Mast with tilting device- field mounting and rope winch**



**Figure 2: Telescopic Mast with tilting device – wall mounting and rope winch**

# 1 General

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The mounting of mast, tilting device and accessories has to be carried out by qualified personnel. By means of this instruction for use the qualified mounting personnel is able to effect a possible installation process. This manual serves as rough aid only as in realities the mounting conditions might be different depending on the constitution of measuring site, area etc.

## 1.1 Application

Telescopic mast, tilting device and accessories such as traverses, and hangers serve for the mounting of meteorological measuring instruments (wind transmitter, hygro-thermo transmitter, radiation transmitter etc.)

Depending on the measurement task and measurement site mast and tilting device are available as different models.

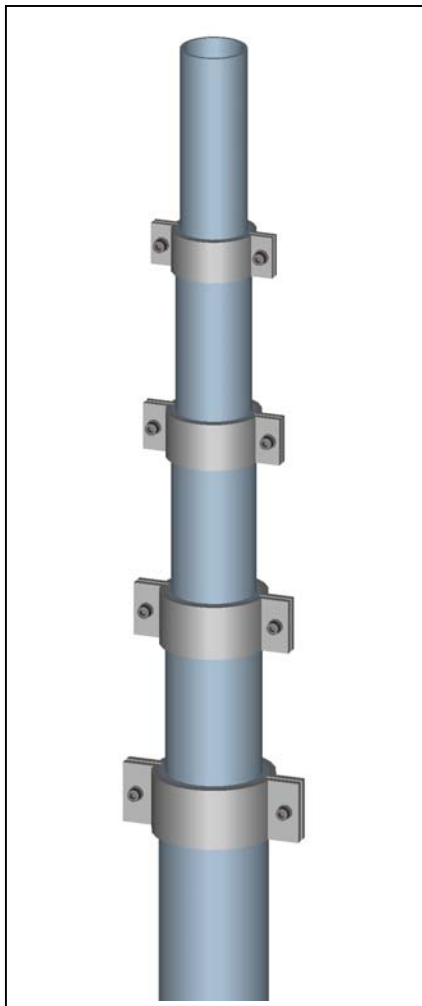
## 1.2 Site Selection

The measurement site shall be selected according to the measurement task. You should call in accordant advisors.

The required space of a measuring station is approx. 3 x 8 m; in addition the tilting range of the used telescopic mast should be considered.

## 2 Telescopic Mast 4.3179.30.080, 4.3180.30.090, 4.3181.30.xxx

### 2.1 Application



The Telescopic Mast serves for mounting meteorological measuring instruments (wind transmitters, hygro-thermo transmitters, radiation transmitters, etc.). The mast consists of seawater-proof aluminium tubes.

Depending on the measuring task and measuring location the can be delivered in different lengths.

The Telescopic Mast is mounted in the field or at a wall by means of a special tilting device. Tilting devices for field installation and wall mounting are deliverable as optional accessories.

In addition, the mast must be equipped with a lightning rod and a grounding set (optional accessories) in order to protect both the employees and the data transmitters from lightning.

- Statics of the telescopic mast on request
- The telescopic mast is delivered in retracted state.

### 2.2 Models available

Order-No.	Length	Tube Diameter	Weight	Included in Delivery
4.3179.30.080	4 m	80/71 mm	15 Kg	2 x Rohr with clamp
4.3180.30.090	6 m	90/80/71 mm	19 Kg	3 x Rohr with clamp
4.3181.30.116	10 m	116/102/90/80/71	43 Kg	5 x Rohr with clamp
4.3181.30.132	12 m	132/116/102/90/80/71	68 Kg	6 x Rohr with clamp

### 2.3 Technical Data

Material	aluminium, seawater-proof
Mast length	see model
Transport length, retracted	depending on model approx. 2,4 – 4 m
Tube diameter	see model
Weight	see model

## 2.4 Site Selection

See chapter 1.2

## 2.5 Mounting

**Note:**

When using a tilting device mounting and mounting preparation are to be carried out in advance, before mounting of the original mast.

- Mounting the telescopic mast at the tilting device for field installation (4.3181.03.xxx) see chapter 3
- Mounting the telescopic mast at the tilting device for wall mounting (4.3181.13.xxx) see chapter 4
- Mounting the telescopic mast by means of clamps for wall mounting 4.3181.13.xxx) refer to M 258

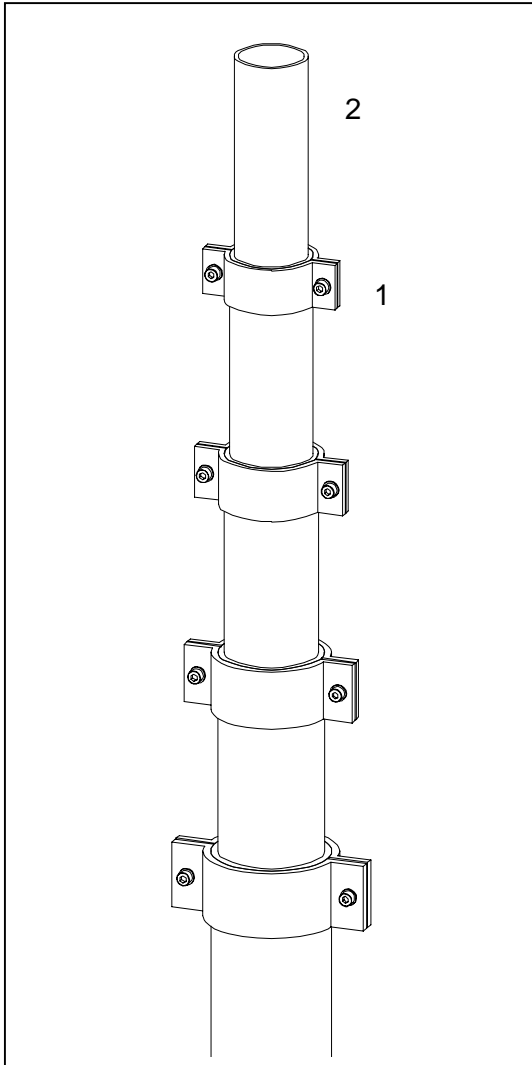
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**Remark**

■ *The mounting of traverses, hangers, lightning rods, and measuring instruments is carried out according to the mounting instructions.*

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## 2.5.1 Getting the Telescopic Mast to Final Length



First of all, the tilting device (4.3181.03.xxx, 4.3181.13.xxx) must be mounted. See chapter 3 and 4

The extension of the mast starts with the smallest tube.

Never unscrew 2 mast clamps at the same time on the same mast tube.

The mast tubes must be extended at most to the second marking.

The telescopic mast must be supported in order to avoid the mounted sensors, traverses, and mast clamps to be soiled.

Procedure:

- Lay down the telescopic mast in horizontal position.
- Unscrew the topmost clamp (1) .
- Pull out the innermost mast tube (2) from the lower mast tube until the two ring markings appear.
- Then reinsert the mast tube (2) a little bit until the lower marking is covered again.

Note:

The lower marking is the maximum clamping point; do not continue extension for stability reasons.

- Screw-down again the upper clamp (2).
- Extend other mast tubes in the same way.
- Finally tighten all screws!

Tightening torques for the screws:

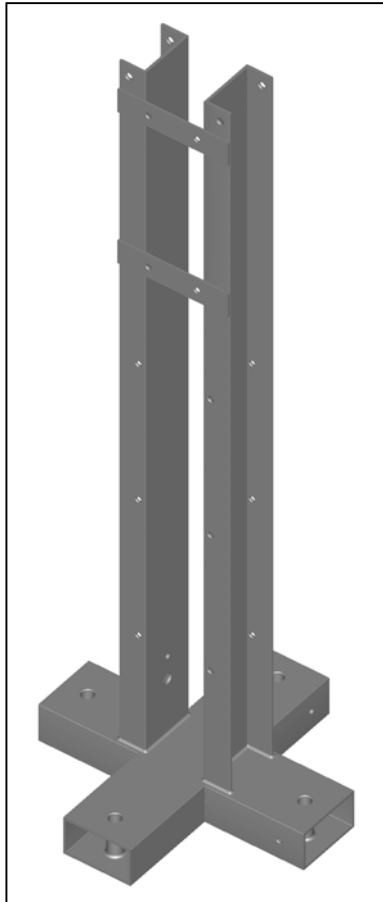
Mast clamp up to Ø 80 mm = 40 Nm

Mast clamp up to Ø 132 mm = 55 Nm



### 3 Tilting Device for Field Mounting 4.3181.03.xxx

#### 3.1 Application



The tilting device serves as stand for a telescopic mast. Telescopic mast and tilting device are free-standing, and therefore do not need any staying. For maintenance purpose the telescopic mast can be tilted by means of a rope winch (special accessories).

- Fundament drawings are available
- Statics on request

#### 3.2 Models available

Order-No.	Suitable for Telescopic Mast	Weight	Included in Delivery
4.3181.03.080	4.3179.30.080 (4 m)	60 Kg	1 x Tilting device
4.3181.03.090	4.3179.30.090 (6 m)	60 Kg	2 x Clamp
4.3181.03.116	4.3179.30.116 (10 m)	60 Kg	4 x Threaded bolt
4.3181.03.132	4.3179.30.132 (12 m)	70 Kg	1 x Template
			1 x Set fastening adapters (screws, nuts, etc.)

#### 3.3 Technical Data

Dimensions	Height: 1580 mm Fixing borings 4 x Ø 23 mm; 450 x 450 mm
Material	Steel, galvanized
Weight	See models available

#### 3.4 Dimensional Drawing

See **dimensional drawing 272** (for 4m / 6m and 10m telescopic mast) ; **dimensional drawing 273** (for 12m telescopic mast)

### 3.5 Site Selection

See chapter 1.2

### 3.6 Mounting

For a firm standing the tilting device must be installed on a concrete fundament.

For this, respective preparations are necessary.

For these preparations please refer to the following literature:

- **M 264** - **Mounting preparation for tilting device**
- **M 266, 265** - **Fundament drawing for tilting device** (4, 6, 10m mast)
- **M 269, 270** - **Fundament drawing for tilting device** (12m mast)

After building and curing of the concrete fundament the tilting device can be installed on the fundament. The device is fixed by means of threaded bolts, which have been fitted first in the fundament, as well as of discs, nuts, and counter nuts.

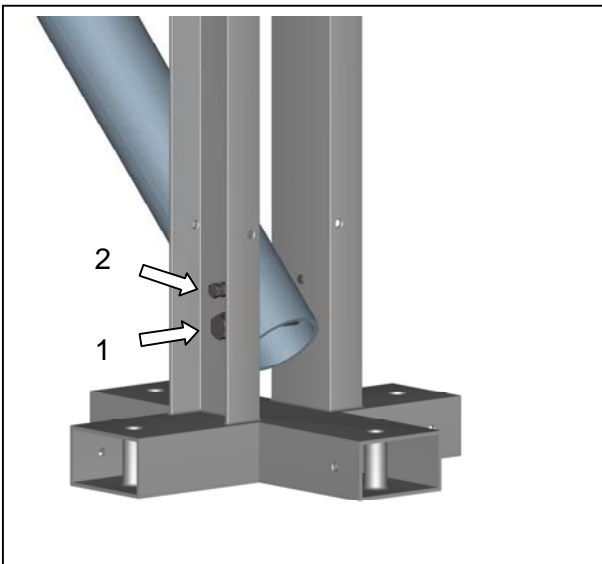
When the tilting device is fastened the telescopic mast can be mounted and erected. For this, please refer to chapter 3.6.1. Once the mast is erected, please tighten all screws and nuts. Erecting is done either by several persons or by means of a rope winch. The rope winch is not included in delivery.

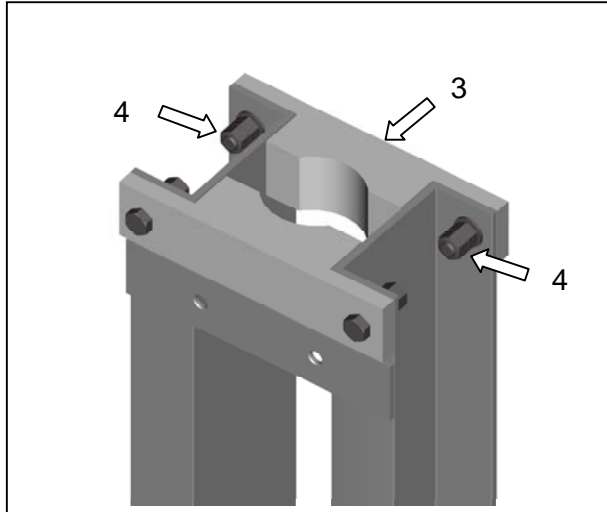
#### 3.6.1 Mounting the Telescopic Mast at the Tilting Device (4.3181.03.xxx)

First of all, the tilting device (4.3181.03.xxx) must be mounted on a fundament. See chapter 3.6

Procedure:

- With the help of 2-3 persons put the telescopic mast in retracted state into the respective position to the tilting device in tilting direction.
- Unscrew the lower screw (1) M20x160/M20x180 of the tilting device and remove it.
- Put the lower mast tube of the extended telescopic mast close to the screw (1).
- Put the screw (1) through tilting device and borings of the lower mast tube, and tighten it by the nut.
- Screw-off the two fixing screws (2) M12x25 situated above the screw (1).





- There is a clamp (3) situated in the upper part of the tilting device, on the tilting side. Open this clamp by removing 2 screws (4) M12x45.
- Install and align the traverses, hangers, lightning rods, and measuring instruments (sensors) at the mast with connected cables. Partly, the masts are prepared for the cables to run through. *Refer also to remark!*
- Prepare the telescopic mast (extending) acc. to **chapter 2.5.1**.
- With the help of 2-3 persons, erect the telescopic mast slowly until the lower mast tube snaps in the opened clamp of the tilting device. Afterwards, close the clamp and tighten the screws.
- Screw-in the fixing screws (2) M12x25 and, in doing so, align the telescopic mast by means of a level.
- Fasten the fixing screws (2) by means of the counter nuts.
- Make sure that all screws and nuts are tightened well.
- Ground the telescopic mast respectively the tilting device.

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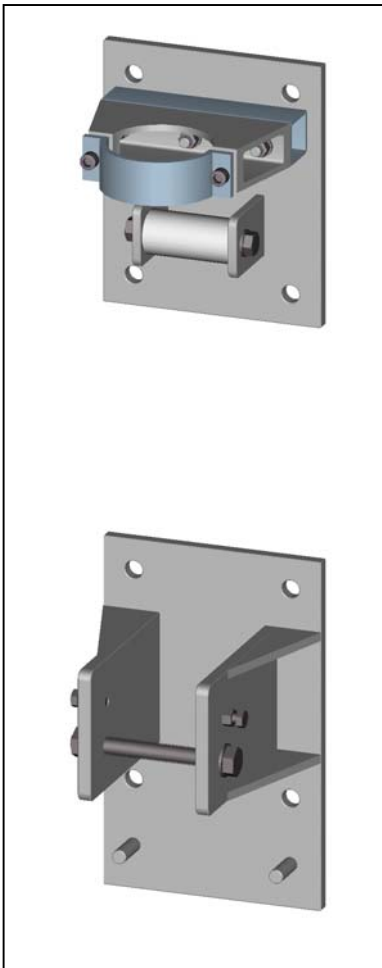
*Remark:*

*The installation of sensors/accessories is easier when you start mounting at the mast top, and extend the telescopic mast step by step together with the mounted parts.*

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## 4 Tilting Device for Wall Mounting 4.3181.13.xxx

### 4.1 Application



The tilting device serves for the fixing a telescopic mast at a wall or façade. For maintenance purpose the telescopic mast can be tilted by means of a rope winch (special accessories).

- The statics of the wall or façade should be ascertained by a specialist before start of mounting.

### 4.2 Models available

Order-No.	Suitable for telescopic masts	Weight	Included in delivery
4.3181.13.090	4.3179.30.090 (6 m)	60 Kg	1 x mast holder (below)
4.3181.13.116	4.3179.30.116 (10 m)	60 Kg	1 x mast holder (above)
4.3181.13.132	4.3179.30.132 (12 m)	60 Kg	1 x clamp with distance underlay 8 x Threaded bolt 1 x Set fastening adapters (screws, nuts, etc.)

### 4.3 Technical Data

Dimensions (mast holder below)	400 x 250 mm (H x B) fixing boring 4 x Ø 25 mm detailed information refer <b>boring template d.-no. 4.3181.13.116-4-07</b>
Dimensions (mast holder above)	300 x 250 mm (H x B) Fixing boring 4 x Ø 25 mm detailed information refer <b>boring template d.-no. 4.3181.13.116-4-07</b>
Material	Steel, galvanized
Weight	See models available

## 4.4 Site Selection

See chapter 1.2

## 4.5 Mounting

The tilting device must be installed securely at a wall or façade. For this, respective preparations are necessary.

For ex.:

- Ascertainment of the static condition of the wall or façade. For this, please contact a structural engineer.

After inspection of the statics the tilting device can be mounted by means of threaded bolts .

For the distance between lower and upper mast holder please refer to **boring template d.-no. 4.3181.13.116-4-07**

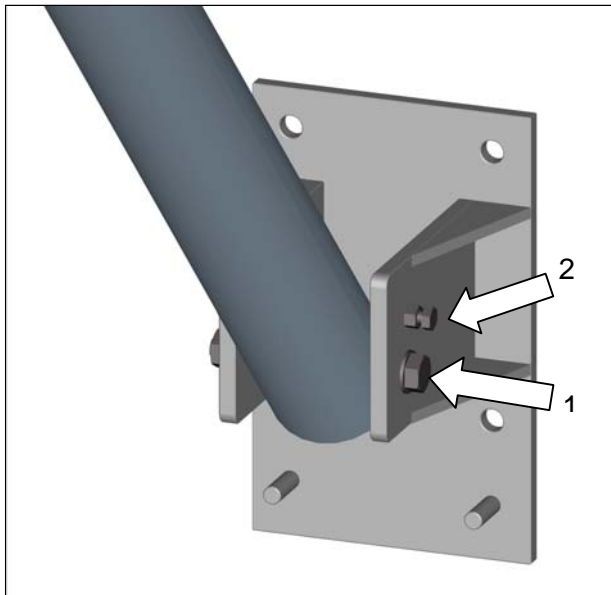
When the tilting device is fastened the telescopic mast can be mounted and erected. For this, please refer to chapter 4.5.1. Once the mast is erected, please tighten all screws and nuts. Erecting is done either by several persons or by means of a rope winch. The rope winch is not included in delivery.

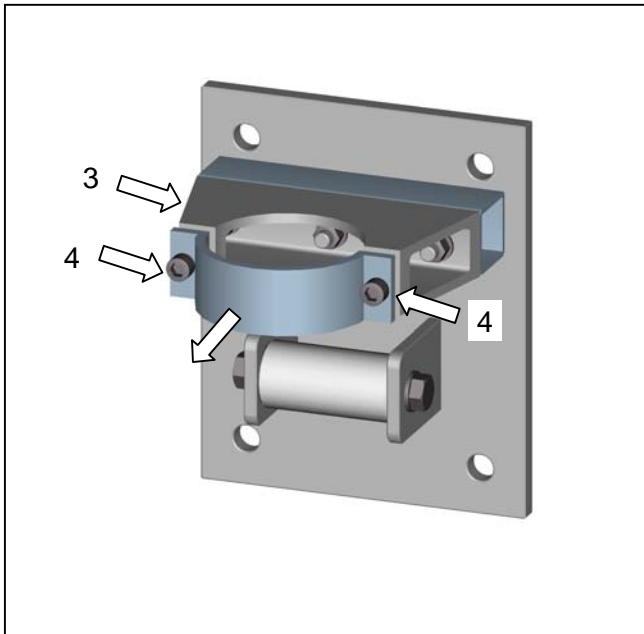
### 4.5.1 Mounting the Telescopic Mast at the Tilting Device (4.3181.03.xxx) (4.3181.13.xxx)

First of all, the tilting device (4.3181.03.xxx) must be mounted at the wall or façade. See chapter 4.5

Procedure:

- With the help of 2-3 persons hold the telescopic mast in retracted state into the respective position to the tilting device in tilting direction.
- Unscrew the lower screw (1) M20x160/M20x180 of the tilting device and remove it..
- Put the lower mast tube of the extended telescopic mast close to the screw.
- Put the screw (1) through tilting device and borings of the lower mast tube, and tighten it by the nut.
- Screw-off the two fixing screws (2) M12x25 situated above the screw (1).





- The front bracket of the clamp (3) at the upper mast holder is to be removed by unscrewing 2 screws (2).
- Install and align the traverses, hangers, lightning rods, and measuring instruments (sensors) at the mast with connected cables. Partly, the masts are prepared for the cables to run through.  
*Refer also to remark!*
- Prepare the telescopic mast (extending) acc. to **chapter 1.5**.
- With the help of several persons, erect the telescopic mast slowly until the lower mast tube snaps in the opened clamp (3) of the upper mast holder. Afterwards, close the clamp (3) and tighten the screws (4).
- Screw-in the fixing screws (2) M12x25 and, in doing so, align the telescopic mast by means of a level.
- Fasten the fixing screws (2) by means of the counter nuts.
- Make sure that all screws and nuts are tightened well.
- Ground the telescopic mast respectively mast holder.

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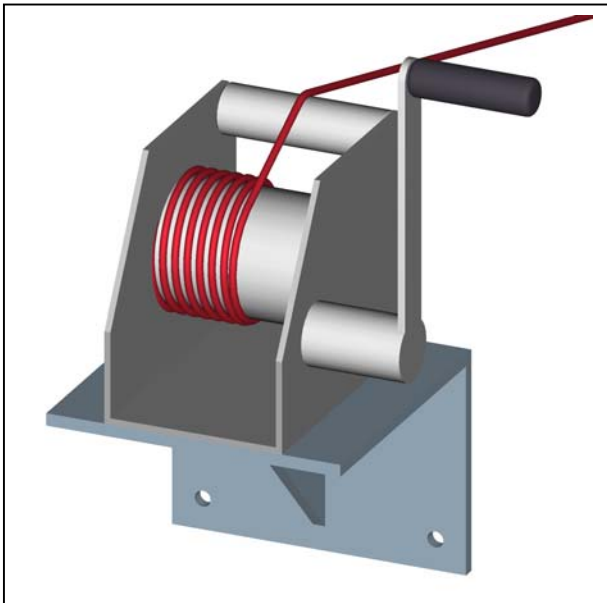
*Remark:*

*The installation of sensors/accessories is easier when you start mounting at the mast top, and extend the telescopic mast step by step together with the mounted parts.*

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## 5 Rope Winch 4.3182.03.xxx for Tilting Device (Field mounting)

### 5.1 Application



The rope winch serves as fit-up aid, in case only a few people are available for putting up the reclined telescopic mast. After fixing the telescopic mast the rope winch is demounted, and is thus available for the mounting of other masts.

**Attention:**

*The rope winch serves only for putting up and lowering the telescopic mast. Stilts or other auxiliary means must be used as holding aid.*

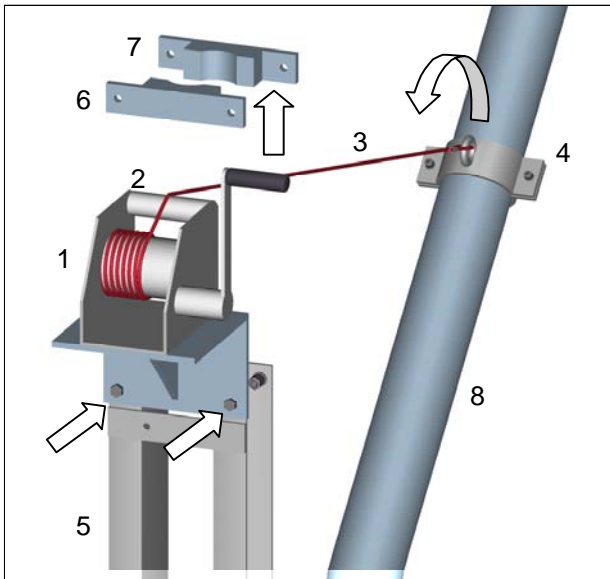
### 5.2 Models

Order-No.	Suitable for tilting device	Weight	Scope of Delivery
4.3182.03.116	4.3181.03.116	23 Kg	1 x Rope winch with holder, wire rope, and clamp
4.3182.03.132	4.3181.03.132	24 Kg	1 x gable clip with ring ear

### 5.3 Technical Data

Capacity: 1 <sup>st</sup> rope position	650 Kg
Capacity: 4 <sup>th</sup> rope position	400 Kg
Crank force	195 N
Rope length	10 m
Rope diameter	6,5 mm
Dimensions	Approx. 380 x 380 x 440 mm (H x B x T)
Material	Steel, zinc-plated
Gable clip with ring ear	Ø 116 / 132 mm
Gable clip material	Stainless steel V2A

## 5.4 Mounting



First, the tilting device (4.3181.03.xxx) must be installed on a fundament. See chapter 3.6

Procedure:

- Remove mast clamp (6) and (7) of the tilting device (5).
- Fix gable clip with ring ear (4) at lower mast tube (8) at **2-m-height**.
- Screw rope winch (1) together with tilting device (5).
- Pull rope (3) over the pulley (2) of the rope winch (1).
- Hook-in the clamp of the rope into the ring ear of the gable clip (4).
- Put the telescopic mast (8) (1) into vertical position by turning the crank at the rope winch.
- Re-screw the rear part of the mast clamp (7) to the tilting device (5).
- Remove the rope winch (1) from the tilting device (5).
- Screw-on the front part of the mast clamp (6).
- Remove gable clip with ring ear (4).
- Make sure that all screws and nuts are tightened well.

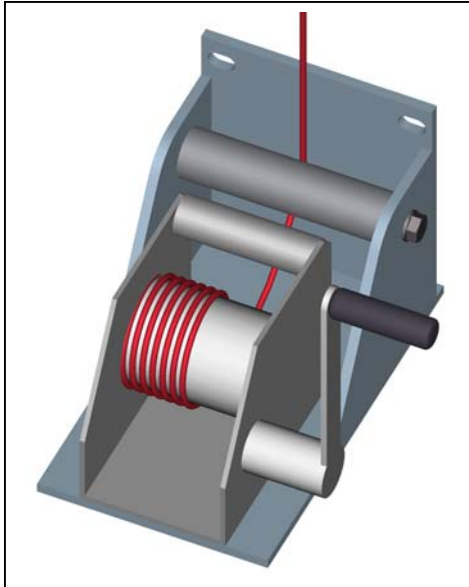
## 5.5 Maintenance

With appropriate handling the rope winch operates maintenance-free.



## 6 Rope Winch 4.3182.03.xxx for Tilting Device (Wall mounting)

### 6.1 Application



The rope winch serves as fit-up aid, in case only a few people are available for putting up the reclined telescopic mast. After fixing the telescopic mast the rope winch is demounted, and is thus available for the mounting of other masts.

**Attention:**

*The rope winch serves only for putting up and lowering the telescopic mast. Stilts or other auxiliary means must be used as holding aid.*

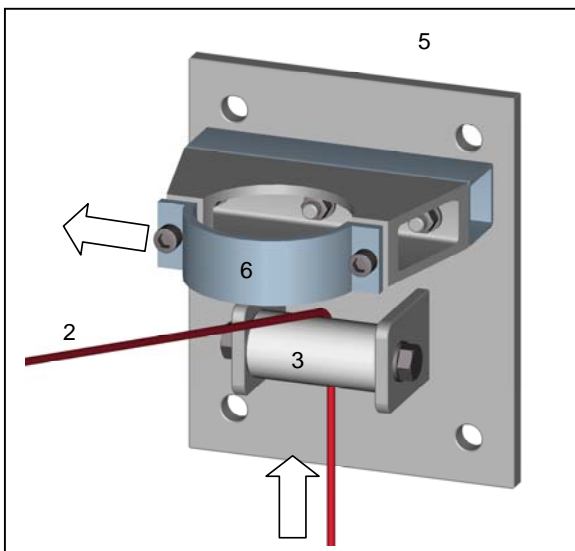
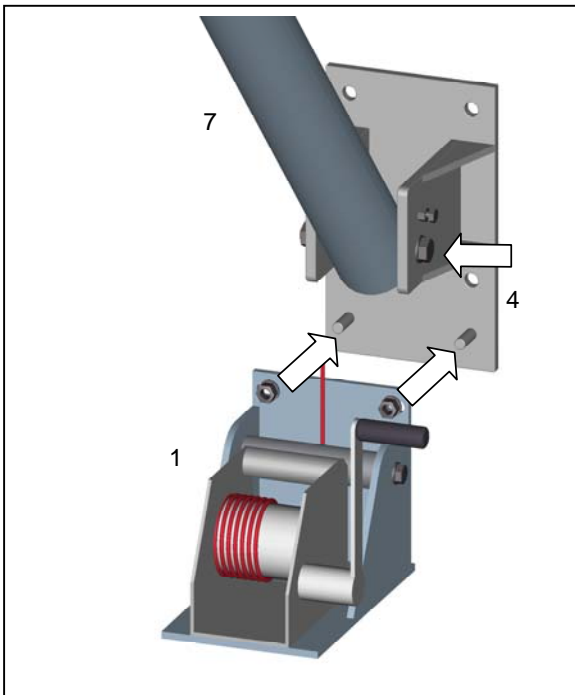
### 6.2 Geräteausführung

Order-No.	Suitable for tilting device	Weight	Scope of Delivery
4.3182.13.090	4.3181.13.090	23 Kg	1 x Rope winch with holder, wire rope, and clamp 1 x gable clip with ring ear
4.3182.13.116	4.3181.13.116	24 Kg	

### 6.3 Technical Data

Capacity: 1 <sup>st</sup> rope position	650 Kg
Capacity: 4 <sup>th</sup> rope position	400 Kg
Crank force	195 N
Rope length	10 m
Rope diameter	6,5 mm
Dimensions	260 x 380 x 580 mm (H x B x T)
Material	Steel, galvanized
Gable clip with ring ear	Ø 90 / 116 mm
Gable clip material	Stainless steel V2A

## 6.4 Montage



First, the tilting device (4.3181.03.xxx) must be installed at a wall or façade. See chapter 4

Procedure:

- Insert the telescopic mast (7) in to the lower mast holder (4), and screw tight.
- Put the telescopic mast (7) in horizontal position (for ex. by means of supports)
- Fix gable clip with ring ear at lower mast tube. See table!
- Prepare telescopic mast (extending) acc. to **chapter 2.5.1**
- Screw rope winch (1) together with tilting device (4).
- Pull rope (2) behind the telescopic mast (7) to the upper mast holder (5).
- Pull rope (2) over the pulley of the upper mast holder (5).
- Hook-in the clamp of the rope into the ring ear of the gable clip.
- Put the telescopic mast (7) into vertical position by turning the crank at the rope winch (1).
- Re-screw the rear part of the mast clamp (6) to the tilting device (5).
- Remove the rope winch (1) from the tilting device (4).
- Remove gable clip with ring ear
- Make sure that all screws and nuts are tightened well

Telescopic mast	Mounting height for gable clip with ring ear (measured from lower edge of mast tube)
4.3180.30.090 (10 m)	1000 mm
4.3181.30.116 (12 m)	1200 mm

**Table : Mounting height for gable clip with ring ear**

## 6.5 Maintenance

With appropriate handling the rope winch operates maintenance-free.

## **7 Accessories**

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Please contact us for accessories such as grounding sets, hangers, traverses, cables and additional mast- or system constructions.



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