
CityBoy plug-in hybrid eDrive User manual

Scale 1:50



Plug-in Hybrid eDrive

CITYBOY



Spierings SK487-AT3 City Boy Plug-in Hybrid eDrive

Dear model crane enthusiast,

You've got the model of the most innovative crane of this century. The SK487-AT3 is equipped with many revolutionary features which you can also find in detail on this model.

We hope you will experience the advantages of the model in the same way as on our actual cranes.

Spierings Mobile Cranes

The 1:50 scale model

We have incorporated our many years of model crane making experience into this SK487-AT3 model. We also felt it was important to include the small, finer details in this model.

- A reliable and environmentally conscious choice and at the same time an innovative solution to reach places which were unreachable before. With 3 driving modes you have everything within your reach. Diesel, hybrid or 100% electric
- Driving cabin, elevator and crane cabin in one. The multifunctional driver seat turns automatically from driving to operating position. The fully automatic program erects the crane within 14 minutes
- All dashboard functions are fitted in a compact touch screen. A clear and user friendly interface is guiding the driver instinctively through all functions
- The elevator cabin brings the operator to any preferred height. With an enormous window surface the operator has an optimal view from his ergonomic multifunctional cabin

**MAXIMUM PERFORMANCE
THE CITY BOY
PLUG-IN HYBRID eDRIVE**

SK487-AT3

40 meter reach / 7.000 kg max / 1.700 kg tip load

Drive 100% electric into the green-zone city center

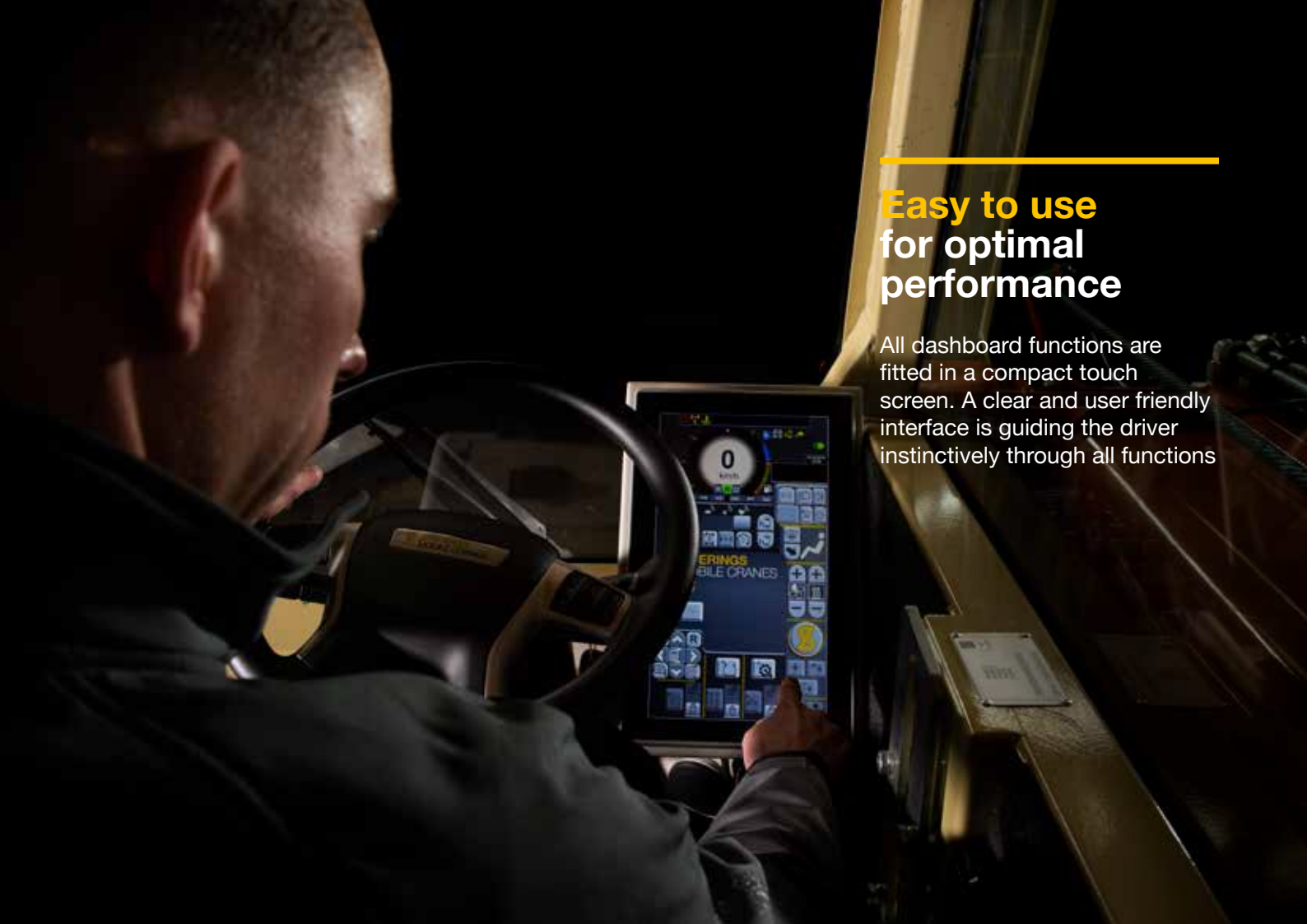
A reliable and environmentally conscious choice and at the same time an innovative solution to reach places which were unreachable before

With 3 driving modes you have everything within your reach. Diesel, hybrid or 100% electric



Easy to use for optimal performance

All dashboard functions are fitted in a compact touch screen. A clear and user friendly interface is guiding the driver instinctively through all functions



Maneuvering by remote for safe setup in tight spaces

By using the remote control
the operator can maneuver the
crane at the most challenging
places





Electric crane operation

The battery as a buffering energy source is already sufficient to operate electric. Plug your crane to the grid (16A or 25A) to work 100% electric through the day

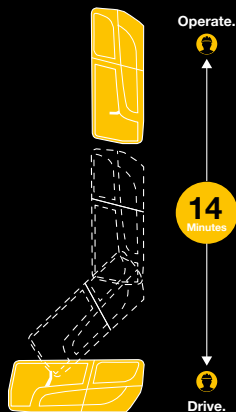


Intelligent technologies create new boundaries

The Intelligent Foot Print (IFP) Outrigger Technology® makes it possible to create a wider outrigger spread with a lighter construction. It's possible to set each outrigger in a different position, the safety system adjusts the lifting capacity automatically

One cabin, one seat, one man.

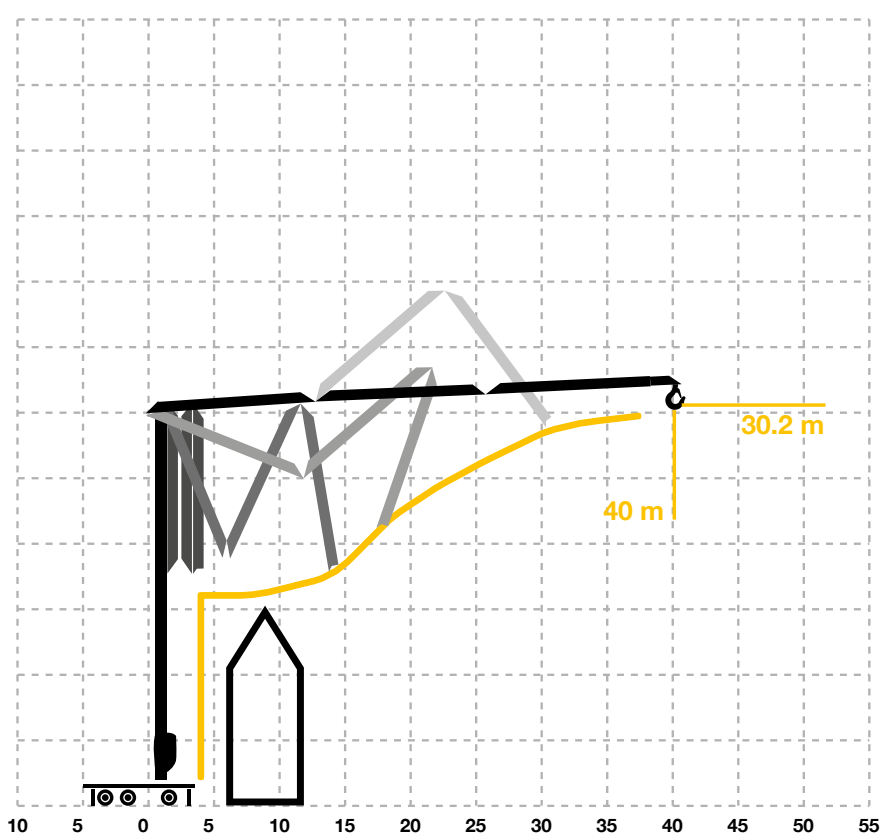
Driving cabin, elevator and crane cabin in one. The multifunctional driver seat turns automatically from driving to operating position. The fully automatic program erects the crane within 14 minutes





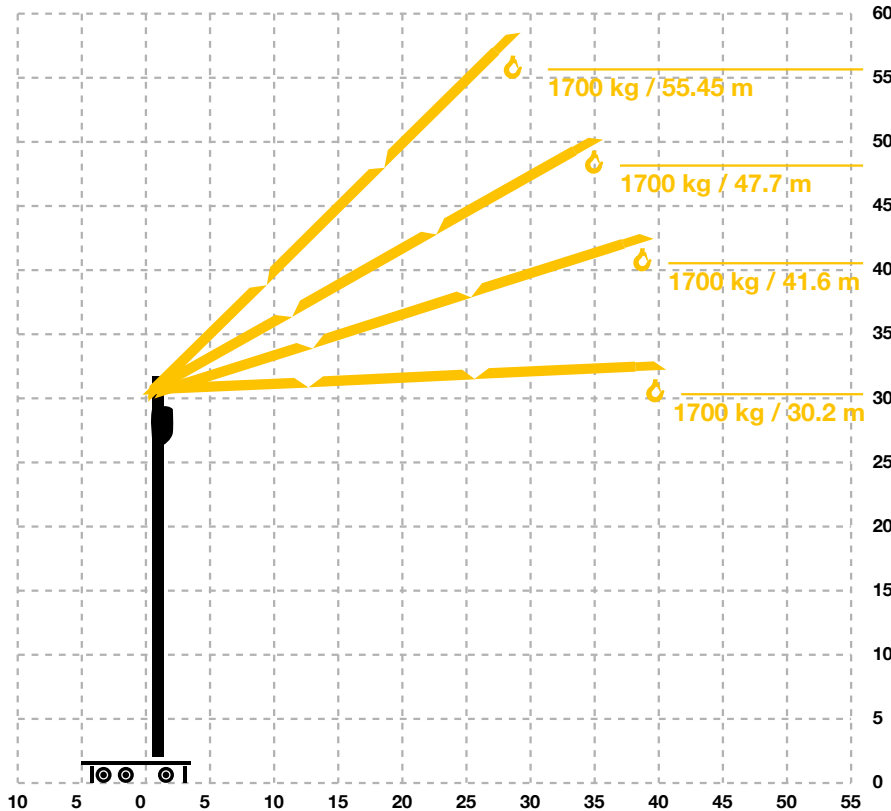
Work efficient and safe through an optimal view

The elevator cabin brings the operator to any preferred height. With an enormous window surface the operator has an optimal view from his ergonomic multifunctional cabin



High erecting curve

The setup of the crane is possible in the narrow city center. The jib starts unfolding at a height of 17 meters. The total length of the jib is 40 meter



Incredible crane dimensions

Total weight: 36.000 kg

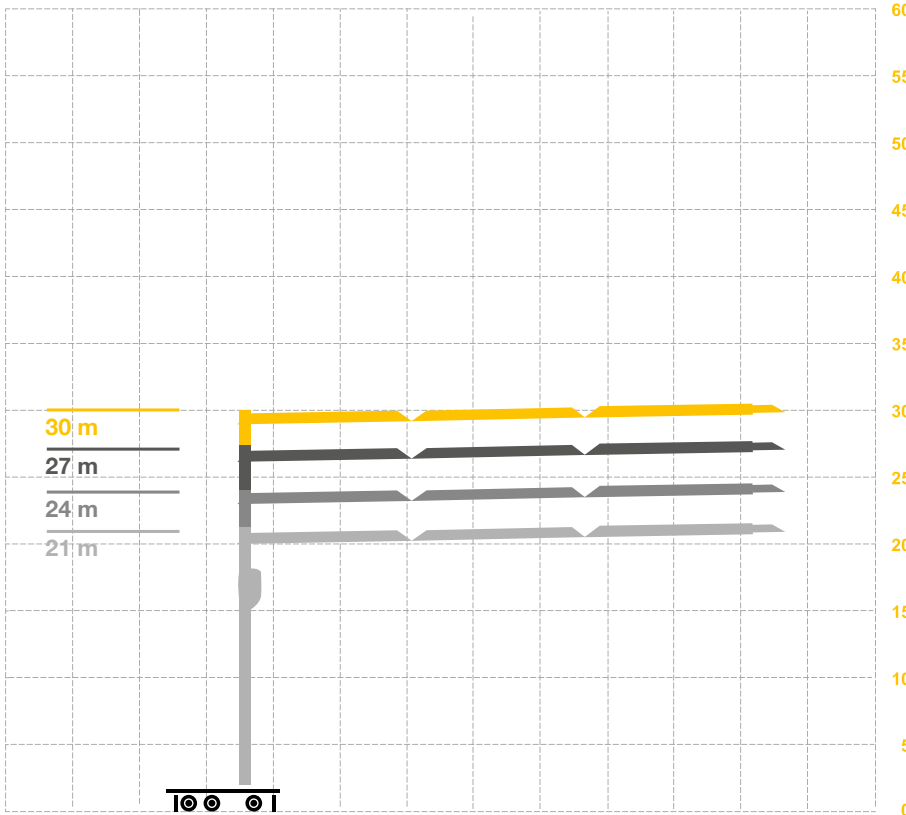
Max. outrigger force: 315 kN

Outrigger support pads:

1000 x 900 mm

Ground pressure: 0,35 N/mm²

Luffing the jib 15°/30°/45° which can be controlled from the crane cab or remote controlled



Four different tower heights

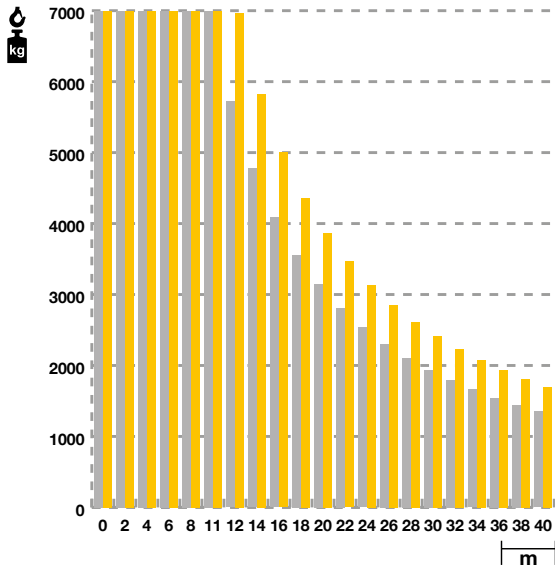
The crane can be erected at 4 different heights:

- 30 meter
- 27 meter
- 24 meter
- 21 meter

Lifting Chart*

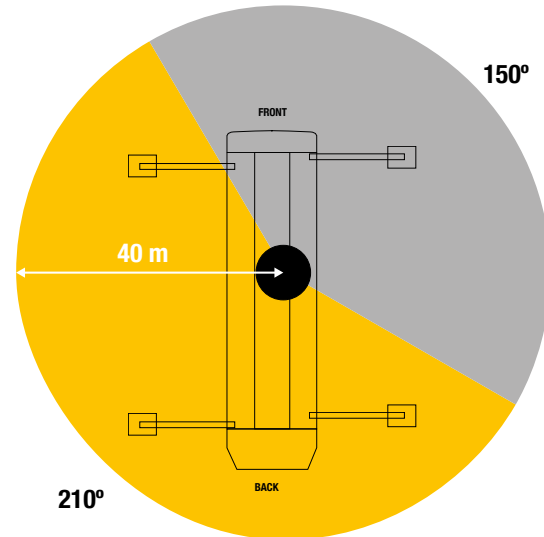
SK487-AT3 150° vs 210°

■ 150° ■ 210°

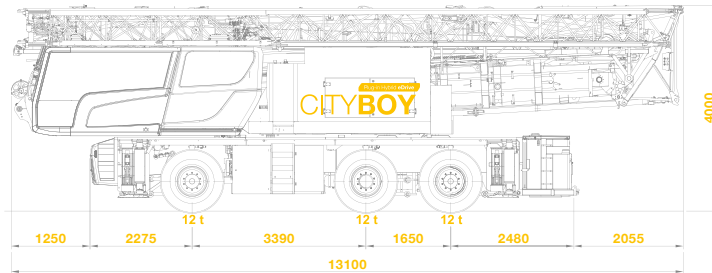
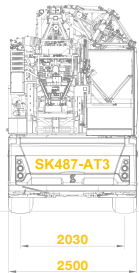
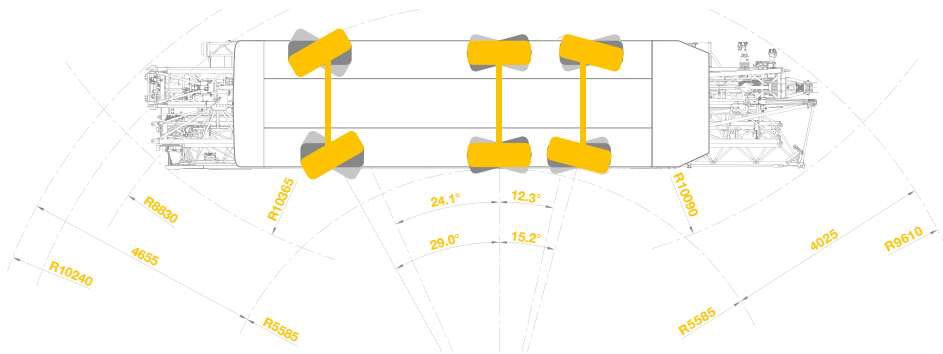


*Jib horizontal

150° - The maximum tip load is 1350 kg
 210° - The maximum tip load is 1700 kg



Changes subject to modifications



Compact truck dimensions

Axle 1: steer / drive axle

Axle 2: steer axle

Axle 3: steer / drive axle

Kessler-axes with disc brakes

Tires:

445 / 75 R 22.5

Suspension: Hydro-pneumatic on all axles

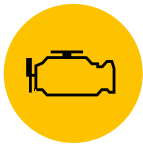
Stroke suspension cylinder:

247 mm

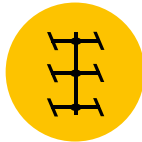
Max. speed carrier: 80 km/h

Overall weight: 36.000 kg

Technical specifications



Range extender



All axles steered



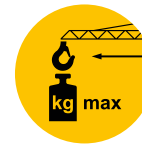
Electric crane operation



100% electric driving mode



IFP®
Outrigger Technology



Incredible crane dimensions



Hydraulic motions

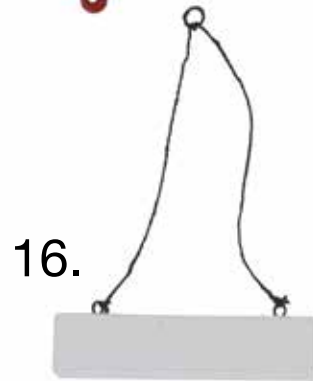
Diesel engine	John Deere 6068HFC09, Stage V, Power: 224 kW / 2400 rpm, Torque: 1141 Nm / 1600 rpm
Generator / electric motor	PM synchronous generator, Power: 170 kW / 2300 rpm, Torque 840 Nm
Drive motor	PM synchronous electric motor, Power: 330 kW / 2600 rpm, Torque: 1900 Nm
Battery	Lithium-ion cells 85 kWh, Max. discharging power: 175 A, Max. charging power: 175 A
Battery performance	Full electric drive range: 30 km at 50 kph. Fully electric crane operation: Approx. 4 hrs
Cable reel	50 m
Hydraulic pumps	3 hydraulic pumps are mounted for all crane motions which are hydraulic proportional controlled

General recommendations

- Please study the manual before you start building up the model and take your time
- Execute it step by step, carefully and slowly
- We recommend to have a second person to assist, because some of the points are not easy to handle
- Please try to guide the wire with your fingers while winding it up to a winch. It will help to avoid that it gets jammed aside of a winch
- Please don't put too much force on parts of the boom while folding or unfolding. This might cause damage on the small and filigree parts
- Leave the strings at the crane systems until it is noted to take these off

Parts list overview

- | | | | |
|----|---------------------------|----|------------------------------------|
| 01 | Tower lock pin | 09 | Trolley |
| 02 | Front side bracket A (2x) | 10 | Jib extension |
| 03 | Upper structure bracket B | 11 | Hook |
| 04 | Upper structure bracket C | 12 | Second cab guiding rail |
| 05 | Upper structure bracket D | 13 | Third cab guiding rail |
| 06 | Connection pin (2x) | 14 | Winch key |
| 07 | Connection bolt (2x) | 15 | Support plates for outriggers (4x) |
| 08 | Connection nut (2x) | 16 | Hook weight |



Rigging up the boom



01 Extend the outriggers



02

Turn the feet of the outriggers clockwise to lower these until the crane can stand straight with its wheels off the ground



Lift to the max.

-
- 03** Take out the lock pin (part #1) and put the boom in a 90° position



- 04** Push in the tower lock pin (part #1) in the bottom of the auto tower to fix it



05

Place the brackets (part #2) at the front of the crane

A.



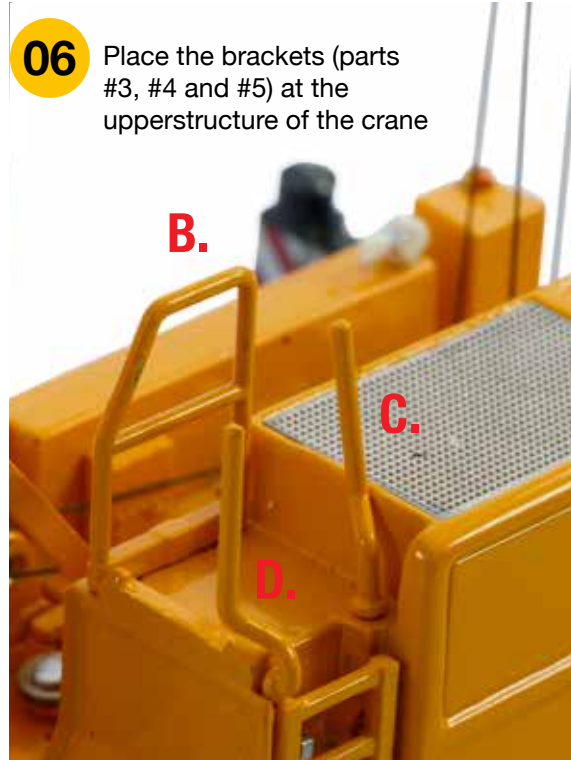
06

Place the brackets (parts #3, #4 and #5) at the upperstructure of the crane

B.

C.

D.



Lift to the max.

-
- 07** Remove the rubber band at the top of the jib package



- 08** If the tiebar is connected, disconnect it by unmounting the bolt and nut (part #7 and #8). Then lay it flat on the worktop

09

Extend the vertical telescopic boom sections by pushing in the fixing pins until these pins will automatically lock. Take in mind the cab must be lowered as described in the next step



Lift to the max.



10

After retracting each boom part, turn winch #5 counterclockwise to lower the operating cab

11

Take the cab off the guiding rail and turn the chair carefully by flipping the pin at the side of the cab



Lift to the max.

Rigging up the jib parts



- 12** Place the model near the edge of a table, to make sure the jib parts can go down completely in the following steps

- 13** Remove the rubber band at the lower end while holding the jib parts together carefully





14 Take the second and third jib part off from the first jib part

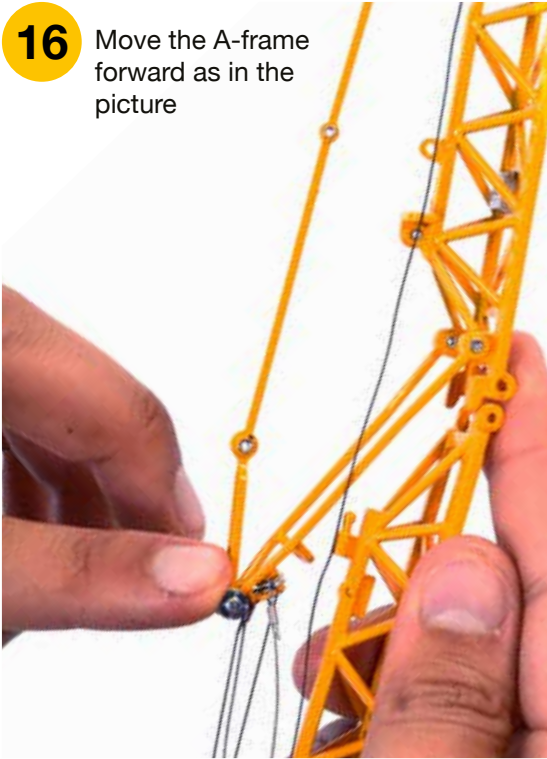


15 Fold the third jib part so it is parallel with the second jib part

Lift to the max.

16

Move the A-frame forward as in the picture



17

Connect the second jib part to the first jib part by using the lock pin (part #6)



18

Guide the jib parts carefully so they point downwards



19

Remove all tape on winch #1 and the tiebar that holds the rope in place



Lift to the max.



20 Turn winch #1 clockwise to release the cable while holding the tiebar



21 Connect the tiebar to the connection rod at the top of the boom with the bolt and nut (part #7 and #8)

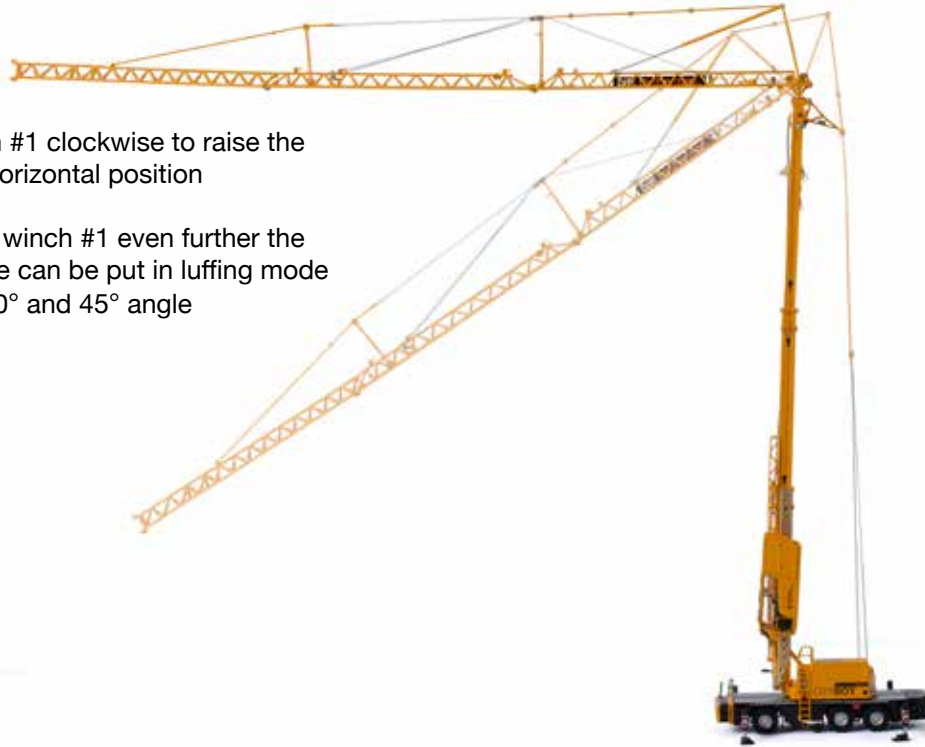


For the following steps it is recommended to have a second person who can support the jib package

22

Turn winch #1 clockwise to raise the jib to the horizontal position

By turning winch #1 even further the jib package can be put in luffing mode in a 15°, 30° and 45° angle



Lift to the max.



23

Check if the rope is placed correctly on the winches. See photo for the correct setup. The string which holds the rope can be removed



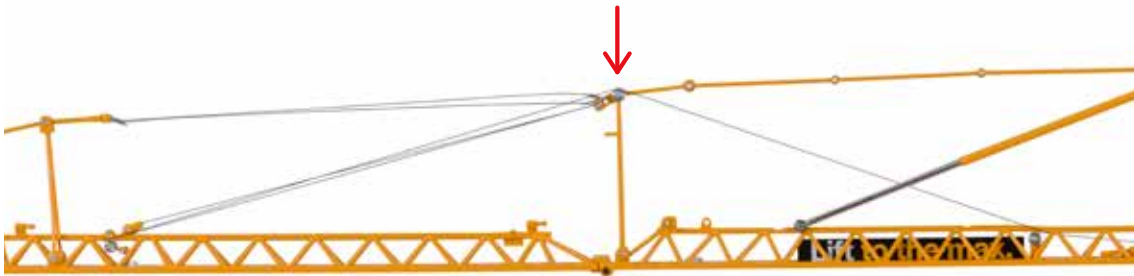
Lift to the max.



24

Turn winch #3 clockwise to have the second jib part stay parallel to the first jib section

Make sure the rope is placed over the pulley, marked with the arrow in picture below



-
- 25** Attach the jib extension (part #10) to the third jib section with the lock pin (part #6) and bolt and nut (part #7 and #8)



Lift to the max.

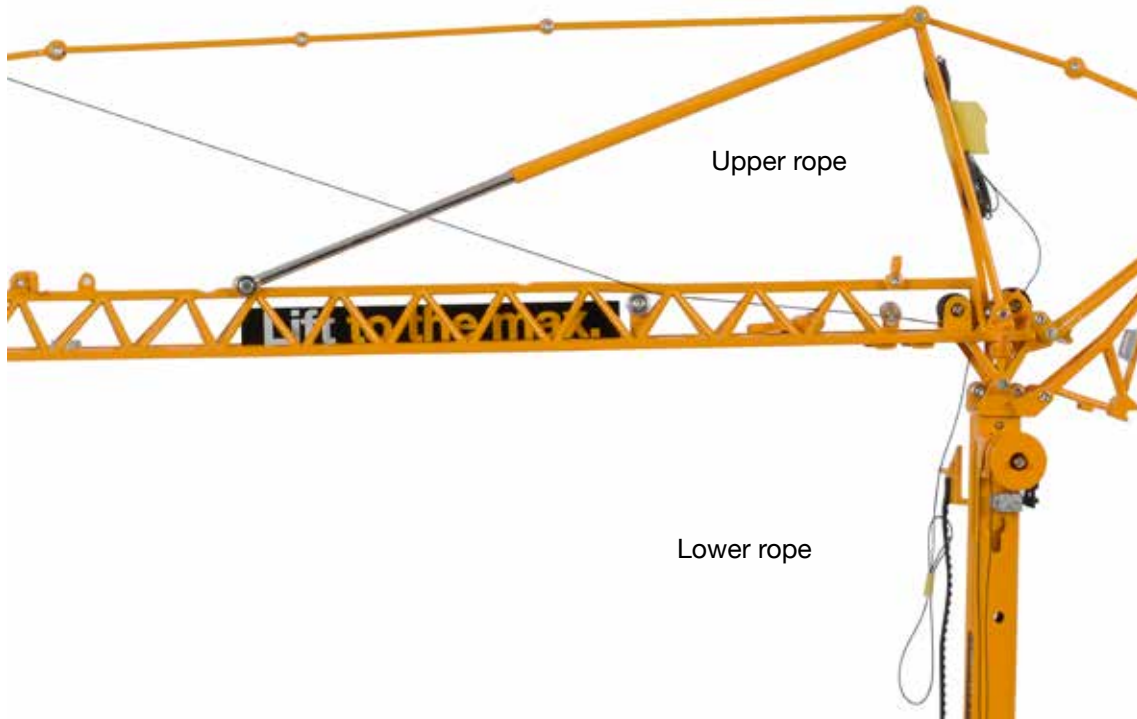
Placing the trolley



26

Place the trolley onto the jib at the top end of the jib extension section and push it to the desired position

Attaching the rope of the trolley is meant for decoration purposes only. The system cannot be used as a fully working system



Lift to the max.

27 Take off the tape of the upper rope



28

Take off the tape of the lower rope and unwind the rope by turning winch #4 counterclockwise until the rope is long enough to reach the trolley

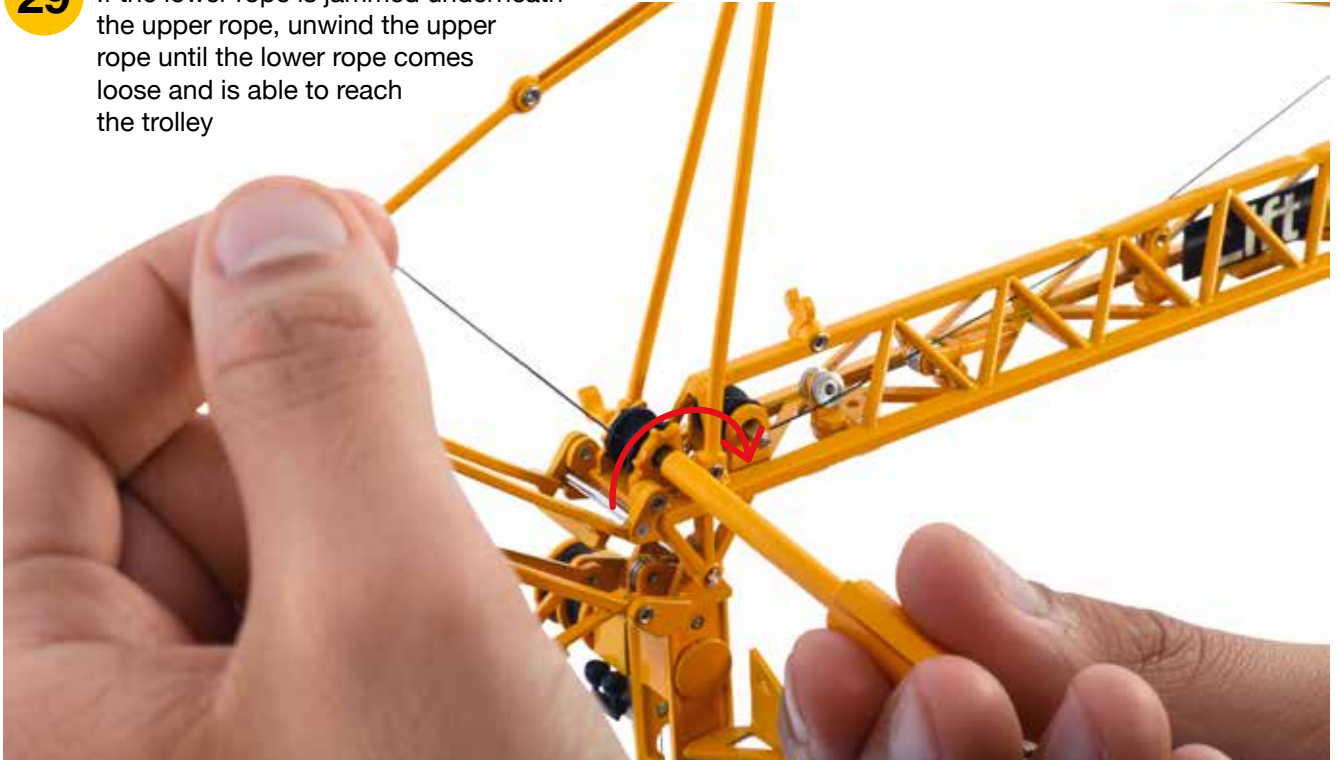
If the lower rope is jammed underneath the upper rope, follow step 29 and 30



Lift to the max.

29

If the lower rope is jammed underneath the upper rope, unwind the upper rope until the lower rope comes loose and is able to reach the trolley

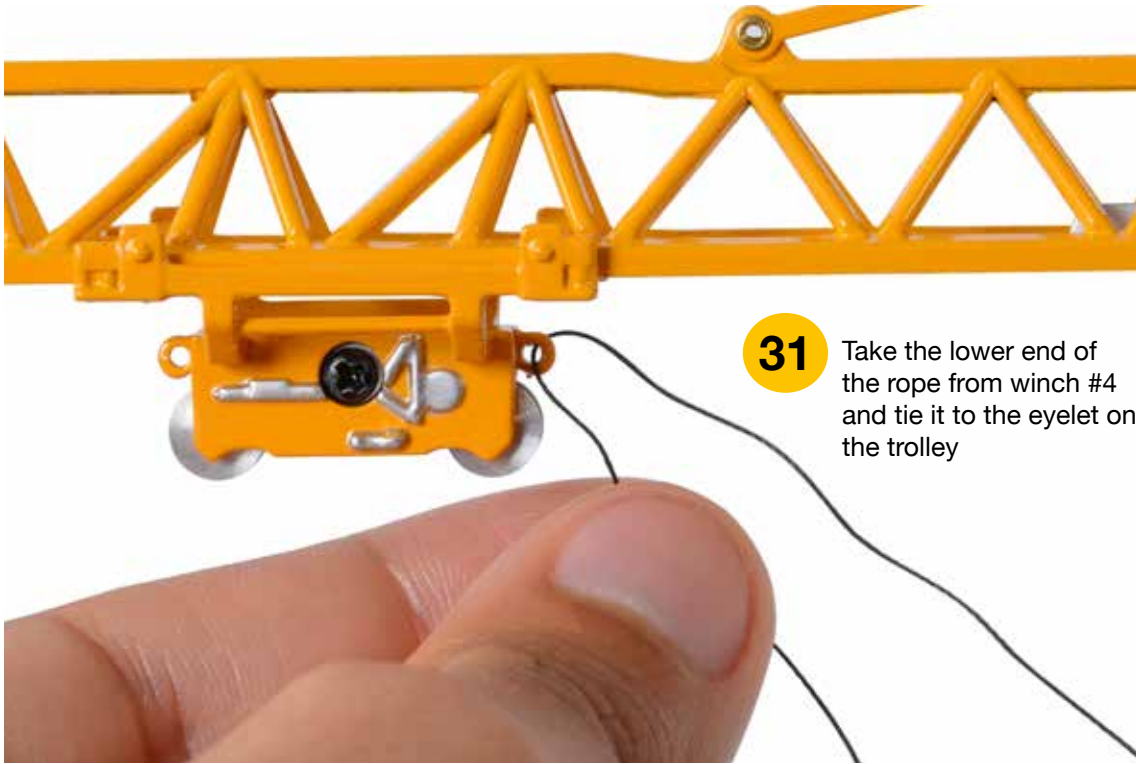


30

If desired the upper rope can be placed onto the pulley again by stringing it around the pulley



Lift to the max.



31 Take the lower end of the rope from winch #4 and tie it to the eyelet on the trolley

32

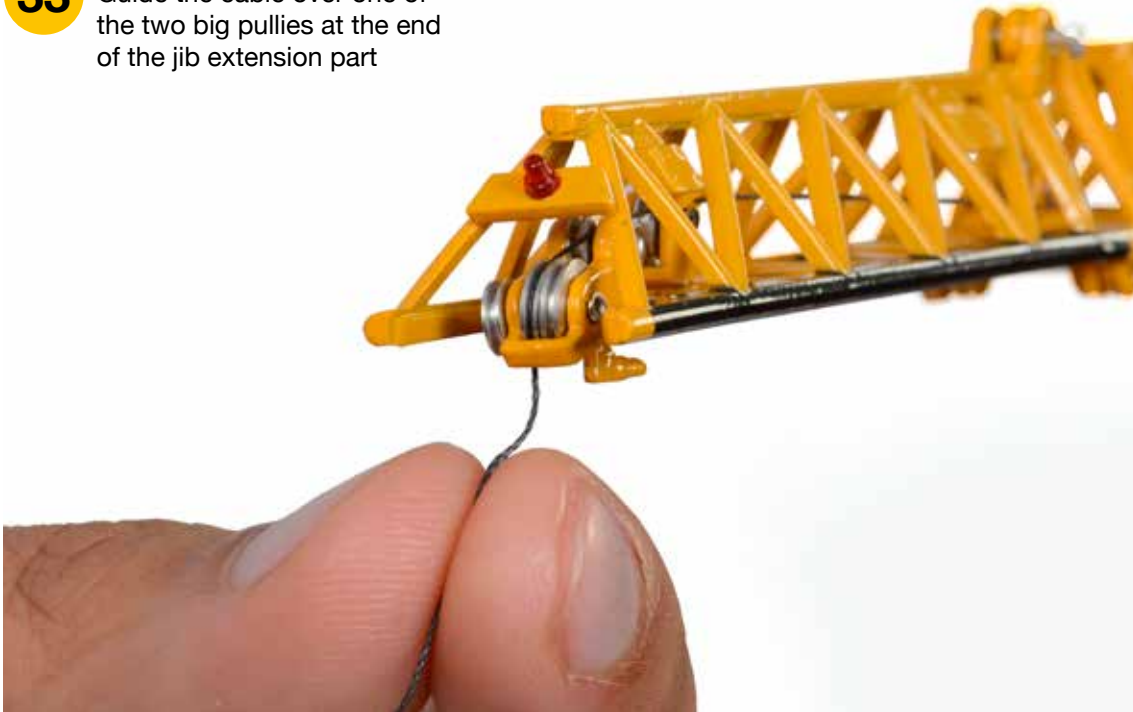
Take the upper end of the rope on winch #4 and guide it through the jib sections



Lift to the max.

33

Guide the cable over one of the two big pullies at the end of the jib extension part



34

Tie the rope end to the eyelet
on the front of the trolley

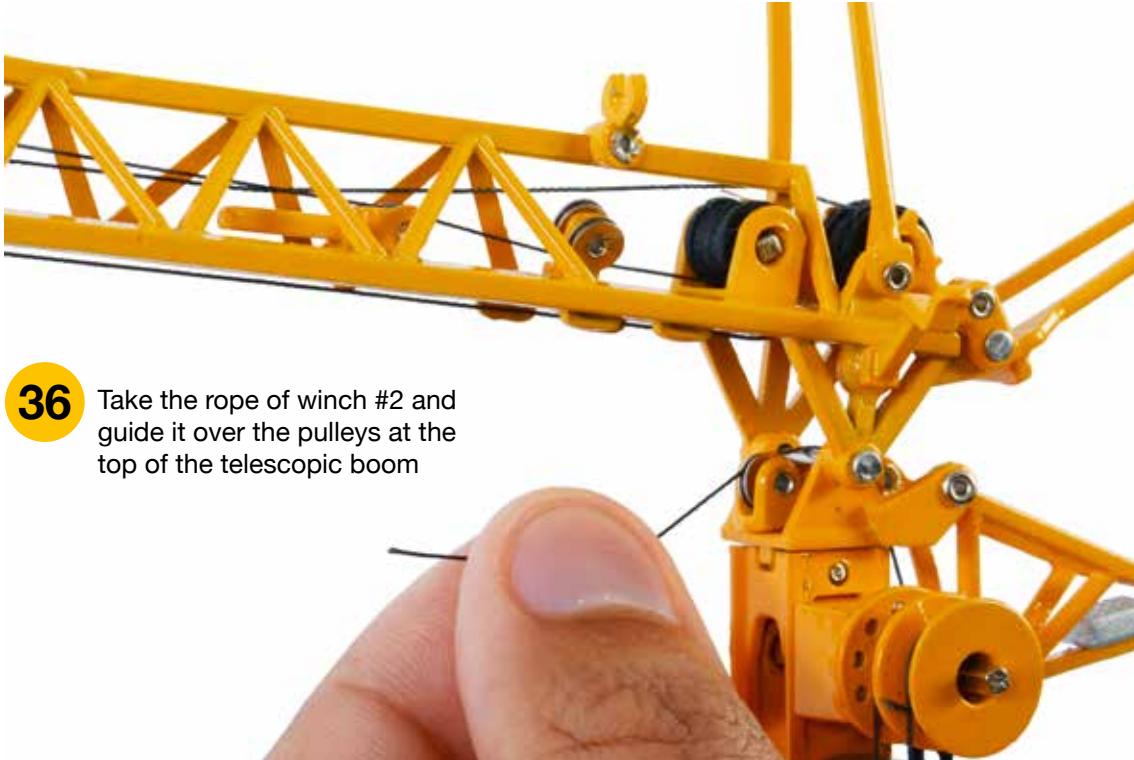


Lift to the max.

Connecting the hook

- 35** Remove the tape on winch #2 and unwind the rope by turning the winch counterclockwise

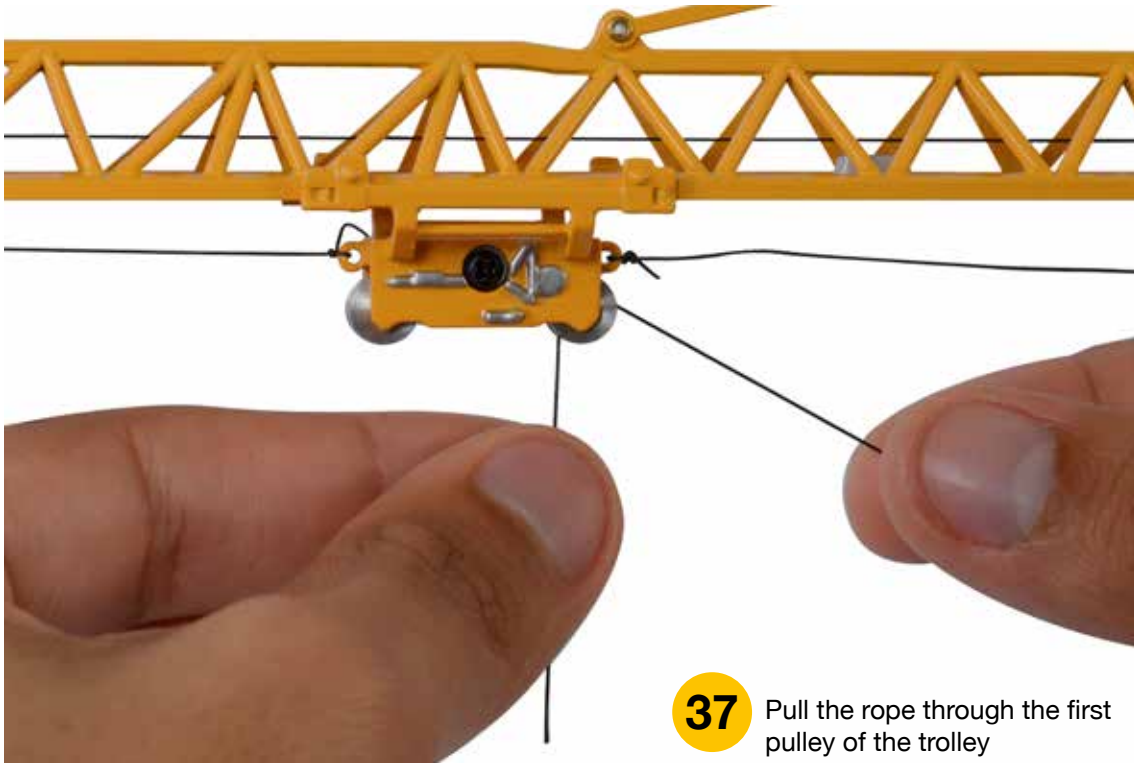




36

Take the rope of winch #2 and guide it over the pulleys at the top of the telescopic boom

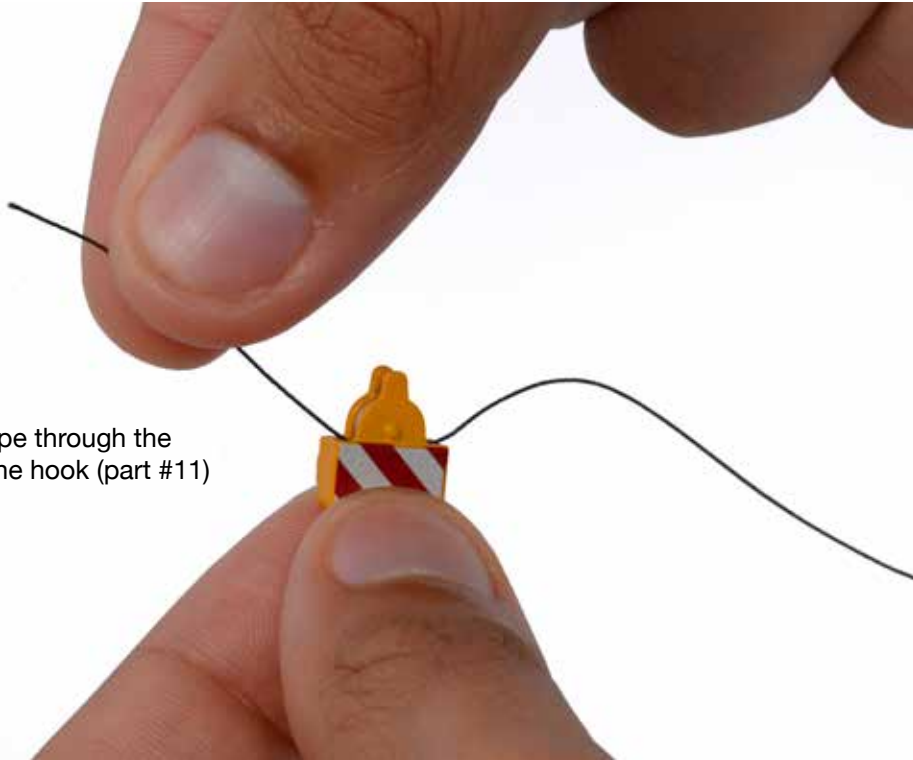
Lift to the max.



37 Pull the rope through the first pulley of the trolley

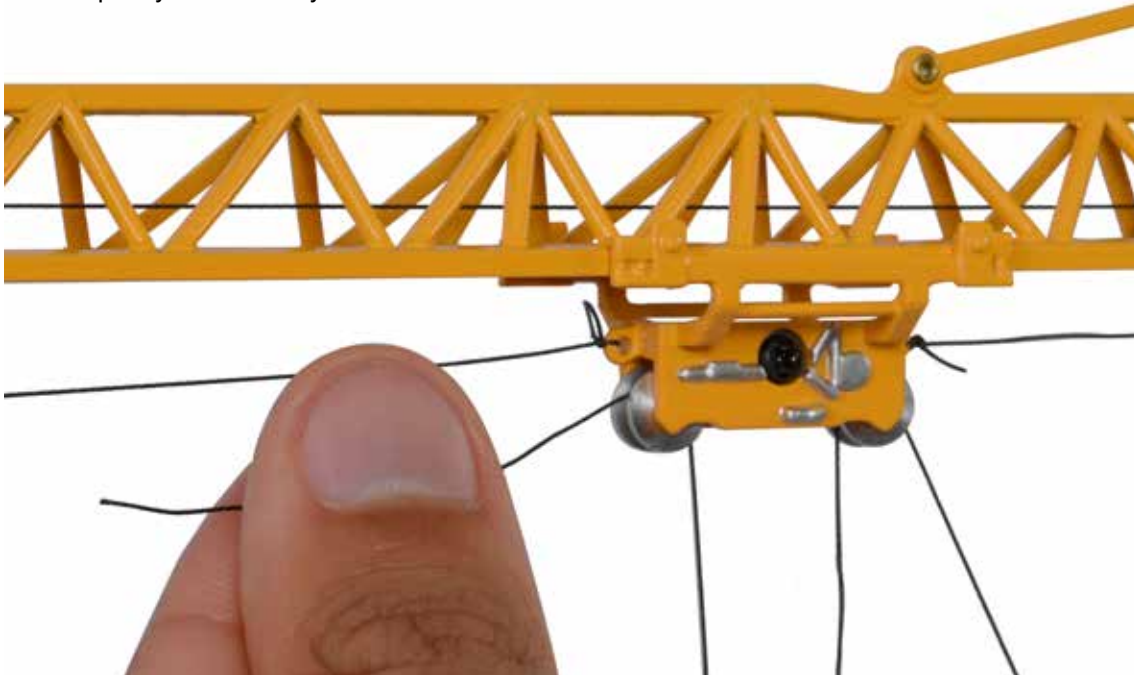
38

Pull the rope through the pulley of the hook (part #11)



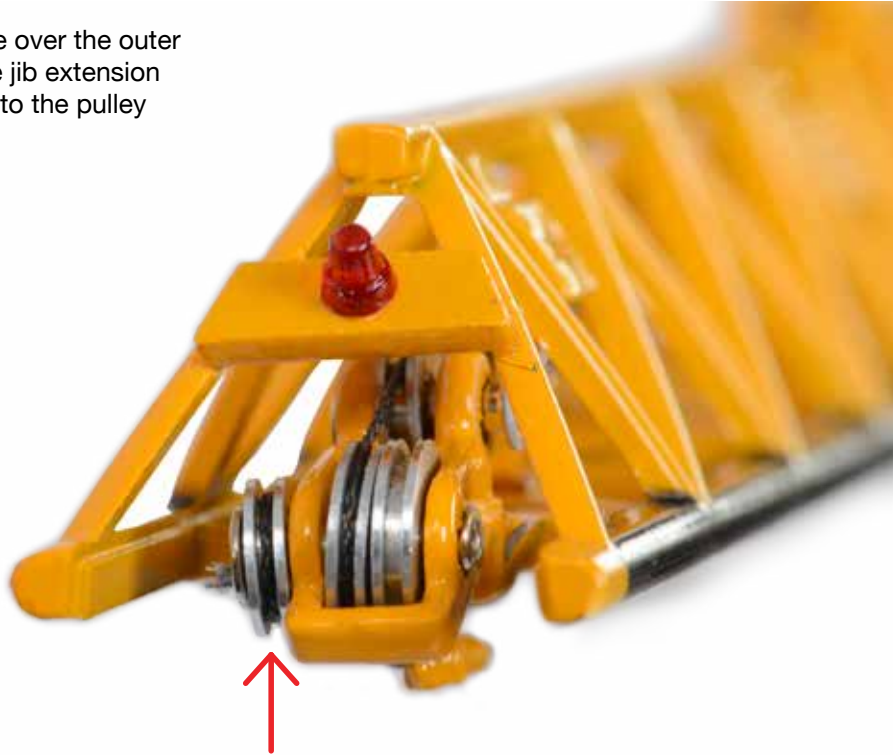
Lift to the max.

-
- 39** Pull the rope over the second pulley of the trolley



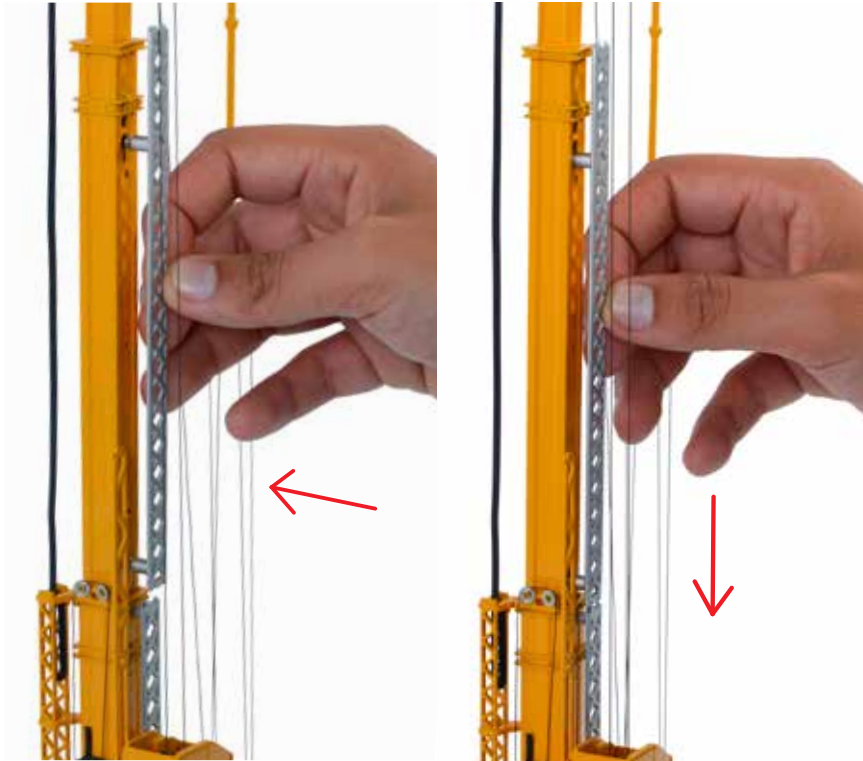
40

Pull the rope over the outer pulley of the jib extension part and tie to the pulley



Lift to the max.

Attaching the cab guiding rails



41 Attach the second cab guiding rail (part #12) to the second telescopic boom part by carefully pushing the connection pins in the holes at the side of the boom part

42 Slide the cab guiding rail down so it is fixed to the boom part

43 Repeat these two steps for the third cab guiding rail (part #13)

Placing the rope of the boom rigging system

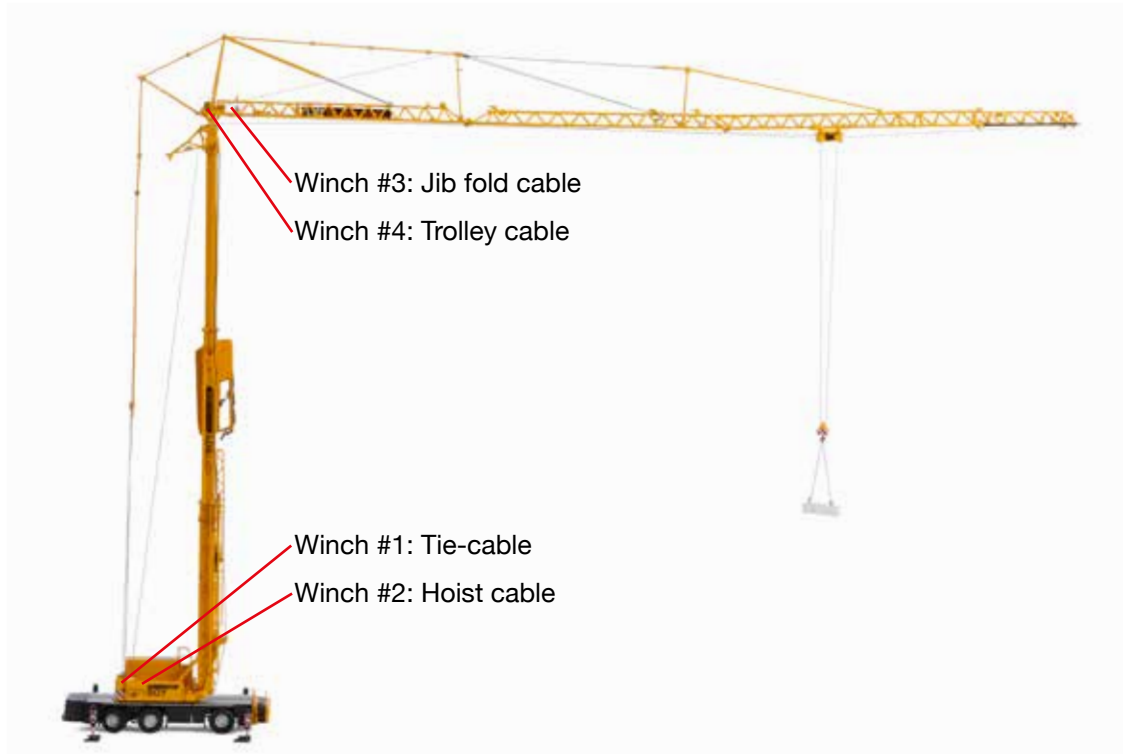


Please note the following steps are not necessary for the function nor stability of the crane

- 44** Place the rope onto the pulleys at the top of the first telescopic boom part (A)
- 45** Place the rope onto the pulleys at the bottom of the first telescopic boom part (B)
- 46** Place the rope onto the pulleys at the upperstructure (C)
- 47** Place the rope onto the pulleys at the bottom of the first telescopic boom part (D)

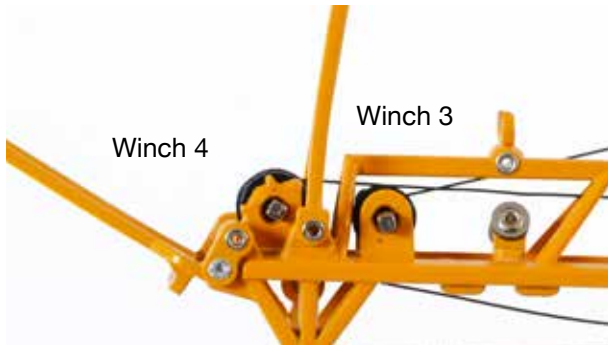


Overview of the rigged up model crane



Lift to the max.

Overview of the winches



Lift to the max.

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