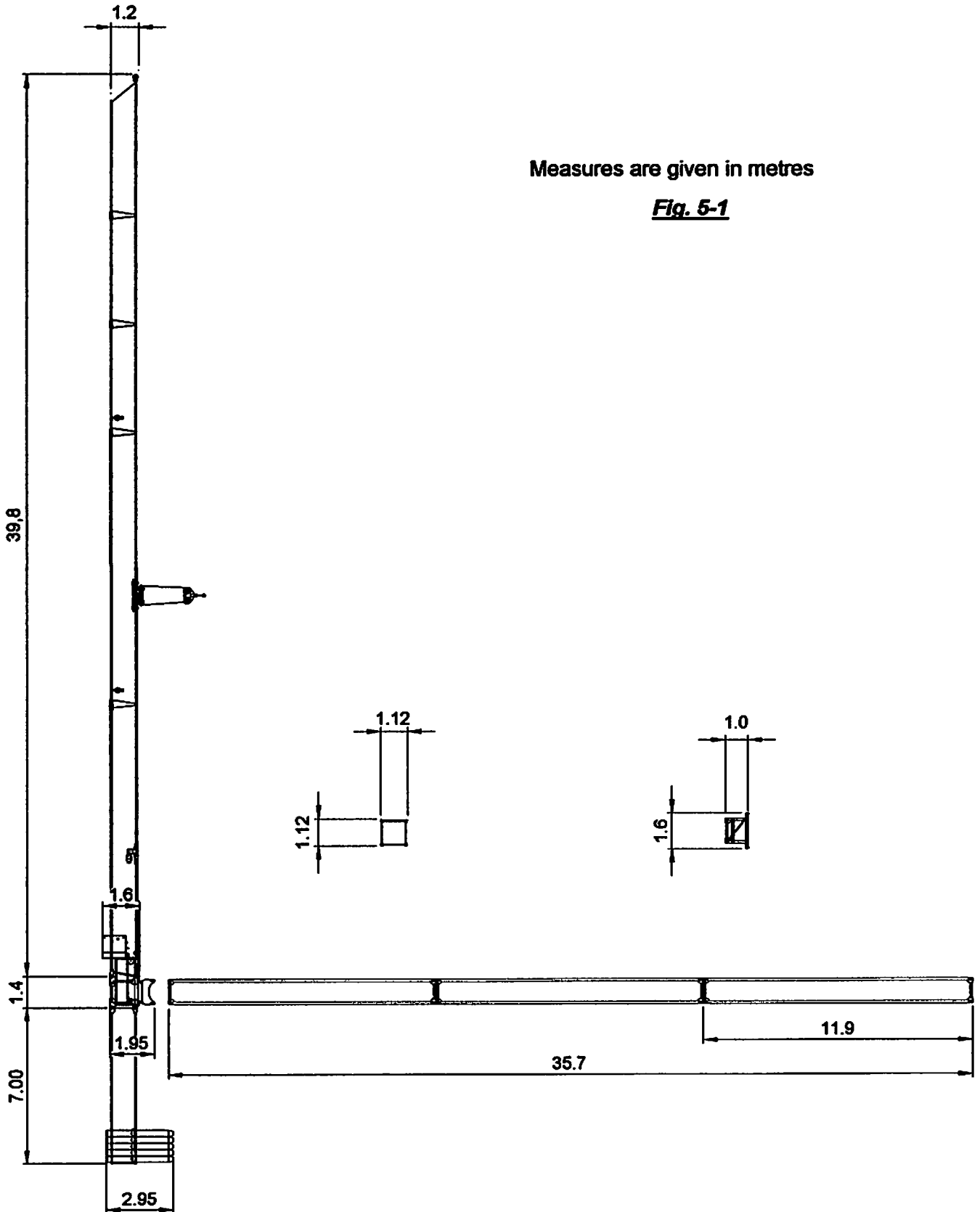


5 - ERECTION INSTRUCTIONS

5.0 - OVERALL DIMENSIONS



Measures are given in metres

Fig. 5-1

5.1 – SAFE ERECTION

5.1.1 - Requirements

For safety, during the erection of the crane it is necessary to observe the following requirements:

- ◆ The rigger or the operator in charge of the erection of the crane must answer for the requirements listed at § 2.5.1.4.
- ◆ The rigger or the operator must know the right procedures concerning the intervention and erection indicated in this manual.
- ◆ To wear proper accident-prevention equipment.
- ◆ During the erection procedures nobody can stay under the parts in motion.

5.1.2 – Checks to carry out before the erection

- Verify the presence of all necessary materials (see § 2.2.7).
- Verify that the grounding and atmospheric discharge system is connected.
- Verify the efficiency of safety devices such as limit-switch and limiting devices.
- Lubricate and grease the parts involved in the mounting.
- Check the oil in the reduction gears.
- Check the framing is in good condition.
- Check the efficiency of the welded, broached and bolted joints.
- Ensure about the integrity of pulleys, ropes and ties.
- Ensure the three-monthly check of ropes and chains has been made.
- Verify the components of the crane didn't suffer any buckling or crushing during the transport.
- Execute every possible repair before making any kind of erection operation.

5.2 – SOCKET ASSEMBLING

5.2.1 – Foundation check.

- Check the concrete is completely dry.
- Verify the ground consistency and that the foundations follow the instructions listed in § 1.9.

5.2.2 – Foundation with frame let into the plinth

This crane is erected in fixed position by anchoring the frame into the foundation plinth. The anchoring frame is described in § 1.6.2.10 and shown in *Fig. 1.17*. *Benazzato Gru S.p.A.* delivers this element earlier than the crane in order to enable the positioning into the reinforced concrete plinth and so obtain a consolidation of the construction.

The directions of *Benazzato Gru S.p.A.* recommend to let into the concrete a section of frame at least of 700 mm.

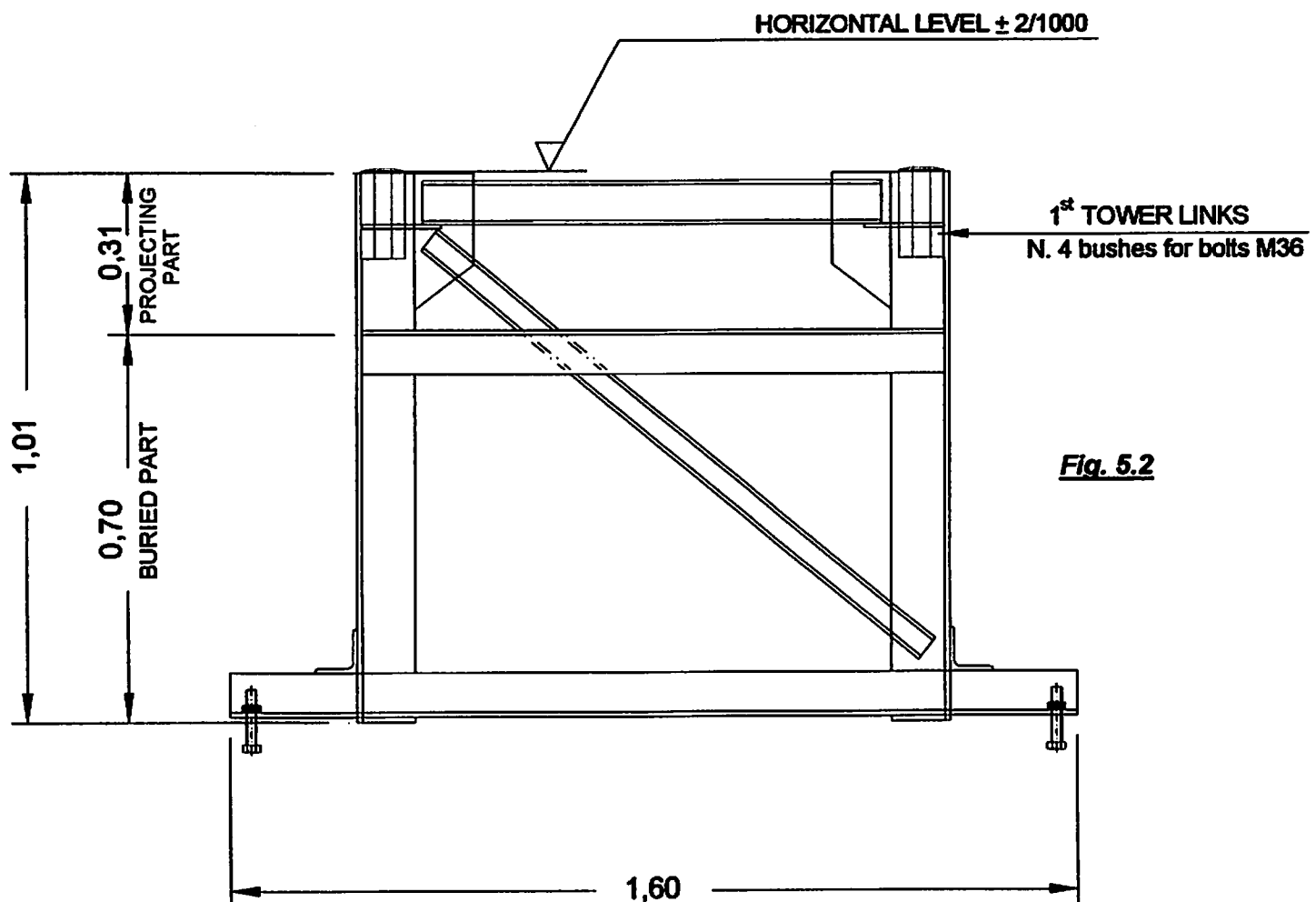
The construction of the foundation plinth and the location of the anchoring frame are made by the crane's buyer under his own responsibility and care.

Benazzato Gru S.p.A. confines itself to give directions in order to execute the operations in § 1.9.2; in § 1.9.2.1 and § 1.9.2.2 you can find an exemplifying scheme of a plinth, which is compatible with a ground having pression at least 2 Kg/cm².

In § 1.9.2.1 is also underlined the action condition (force scheme) acting on the anchoring frame.

It is also very important to check the horizontal position of the tower's links, so as underlined in Fig. 5.2. We remember that an unfit location of the anchoring frame can cause serious risks.

In the same picture are also described size and total weight of the anchoring frame.



TOTAL WEIGHT OF THE STRUCTURE = Kg 270

BLANK PAGE

5.2.3 – Assembly of the safety ballast

OMISSIS

Since this crane is in "**stationary version on foundation plinth**", you needn't any other base ballast: the plinth of reinforced concrete acts as counterweight mass, giving stability to the machine.

5.3 – ERECTION OF THE 1st TOWER

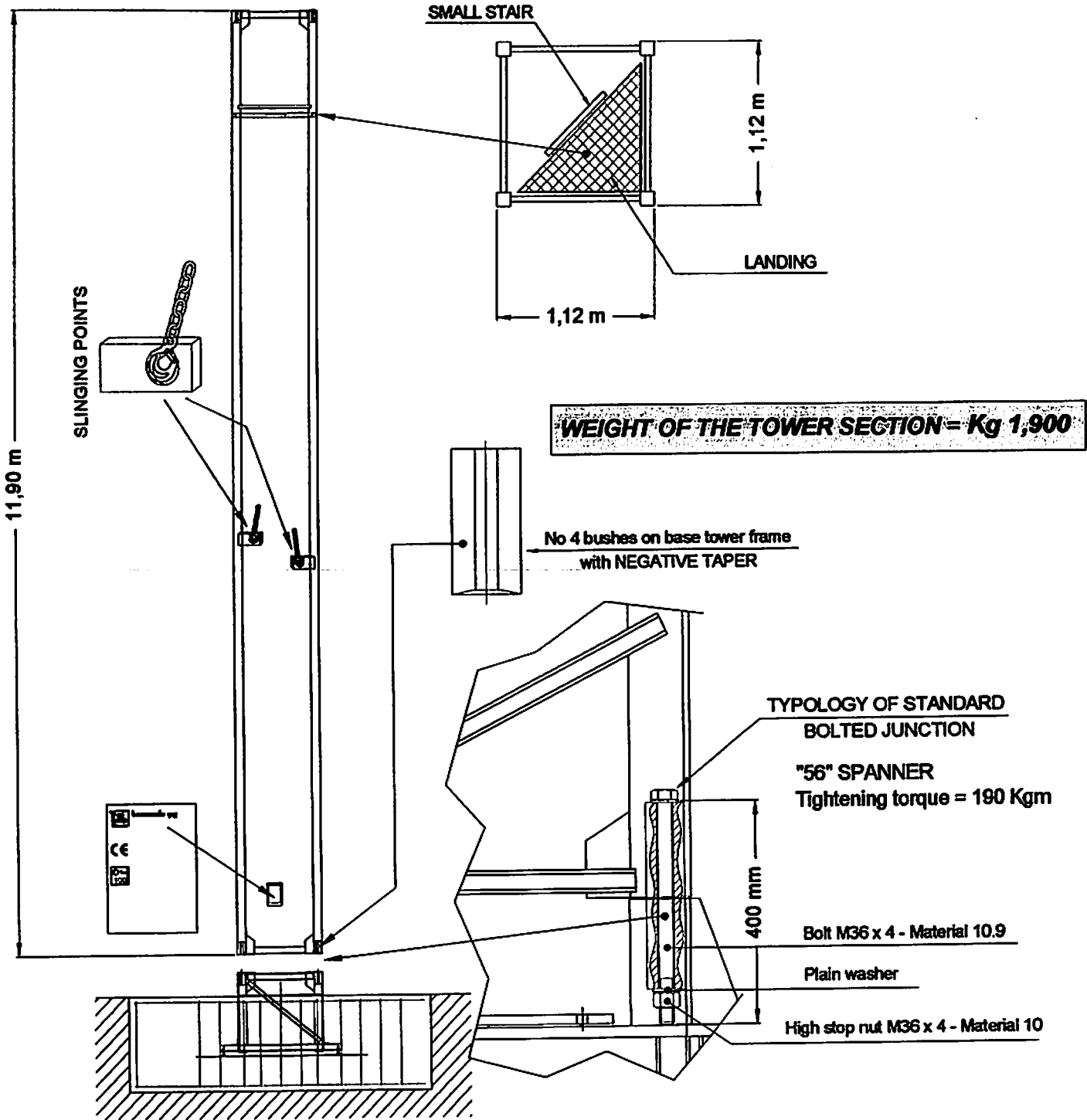
The tower frames are listed in § 1.6.2.9 and shown in *Fig. 1.16*, with reference to different assembling schemes according to the height of the crane.

The operations to carry out are listed here below and refer to *Fig. 5.7*.

This figure gives also measures and total weight of the structure.

- Identify the 1st tower you have to assemble to the anchoring frame (see § 1.6.2.9 and *Fig. 1.16*).
- Ensure that the little frame housing the plate, indicated at § 1.0.2, is placed on the lower part of the tower and that the landing is mounted in the upper part.
- Couple the 1st tower at the *two slinging points* with the ropes of the truck crane and put it on the anchoring frame.
- Align the bushes welded on the tower base with the bushes welded on the anchoring frame and insert the *bolts M 36* issued with the crane; after having inserted a plain washer, fix the bolted link with the *nuts M 36*.

It is not necessary to grease the pins before inserting.



ATTENTION!

During the use of the crane, every 40 WORKING HOURS or rather WEEKLY, it is necessary to check the tightening of the screws constituting the standard bolted junction and to verify their integrity.

During this operation the bolted junctions must be discharged from tractive forces through compensation of the slewing ring according to the procedure described at § 4.4.2

In case of loose junction, restore the tightening by means of a torque wrench.

5.4 – BASE BALLAST COMPLETION

OMISSIS

Since this crane is in "stationary version on foundation plinth", you needn't any other base ballast: the plinth of reinforced concrete acts as counterweight mass, giving stability to the machine.

5.5 – TOWER FRAMES ASSEMBLY

Now it's time to assemble the other tower frames to the 1st tower already linked to the anchoring frame.

The tower frames are listed in § 1.6.2.9 and shown in *Fig. 1.16*, with reference to different schemes of assembling according to the height of the crane.

The operations to carry out are listed here below and refer to *Fig. 5.9*. This figure gives also measures and total weight of the structure.

- Identify the remaining tower frames you have to assemble to the 1st tower (see § 1.6.2.9 and *Fig. 1.16*).
- Ensure that the landings of the remaining frames are mounted in the upper part.
- Couple the single tower frame at the *two slinging points* with the ropes of the truck crane and put it on the 1st tower.
- Align the bushes welded on the base of the tower frame to assemble with the bushes welded to the upper end of the 1st tower and insert the *bolts M 36* issued with the crane; after having inserted a plain washer, fix the bolted link with the *nuts M 36*.

It is not necessary to grease the pins before inserting.

Note! *It is absolutely necessary that, when putting one tower on the other, the internal stairs are aligned, and the landings one opposed to the other.*

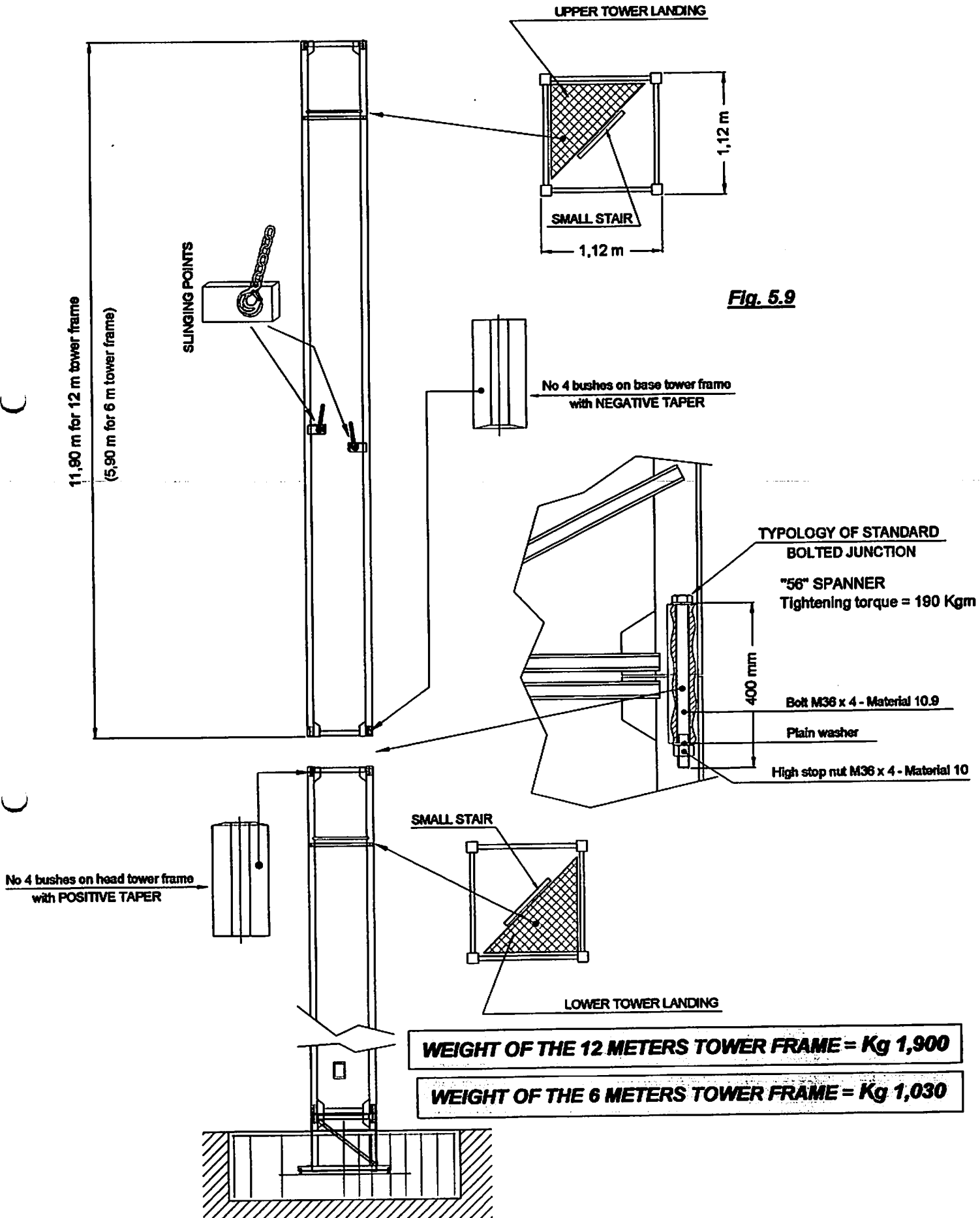


Fig. 5.9

5.6 – ASSEMBLY OF PIVOT AND COUNTERJIB

Note! The counterjib must be assembled together with the pivot when these two elements are still on the ground. During this operation you have also to link the landing to the turning pivot.

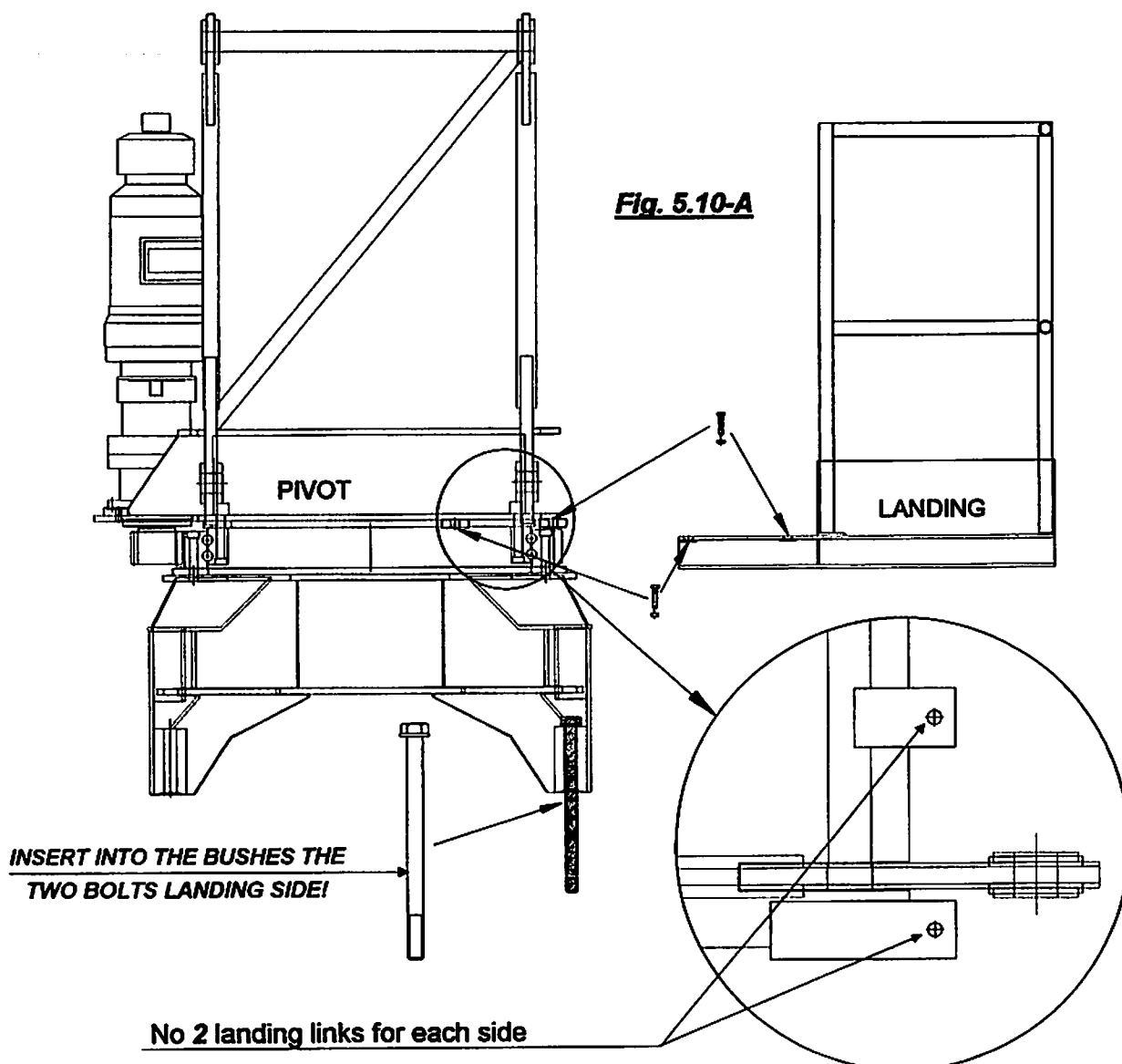
The counterjib is described in § 1.6.2.4 and shown in Fig. 1.11. The pivot, delivered by *Benazzato Gru S.p.A.* completely assembled and inclusive of the rotation reduction gear, is described in § 1.6.2.8 and shown in Fig. 1.15..

Listed here below there are the operations you have to carry out in order to obtain a single unit "*pivot with landing + counterjib*" to place at the top of the highest tower, once it has been completely positioned.

- Insert the *two bolts M36*, shown in Fig. 5.13, into the bushes welded on the fixed pivot on the side of the landing, as indicated in Fig. 5.10-A.

Note! ONCE ASSEMBLED, THE LANDING WILL NOT ALLOW THE INSERTION OF THE TWO BOLTS!

- Link the landing to the turning pivot at the *four points* shown in Fig. 5.10-A by means of the proper *bolts M16* delivered with the crane.

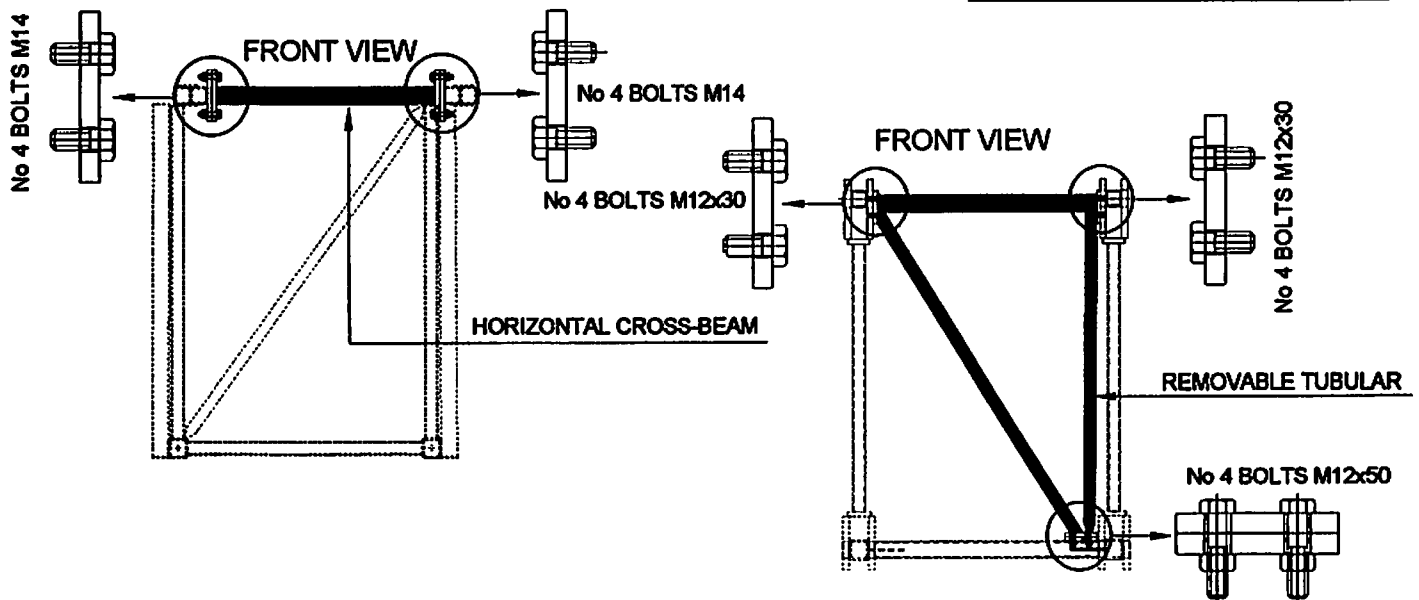
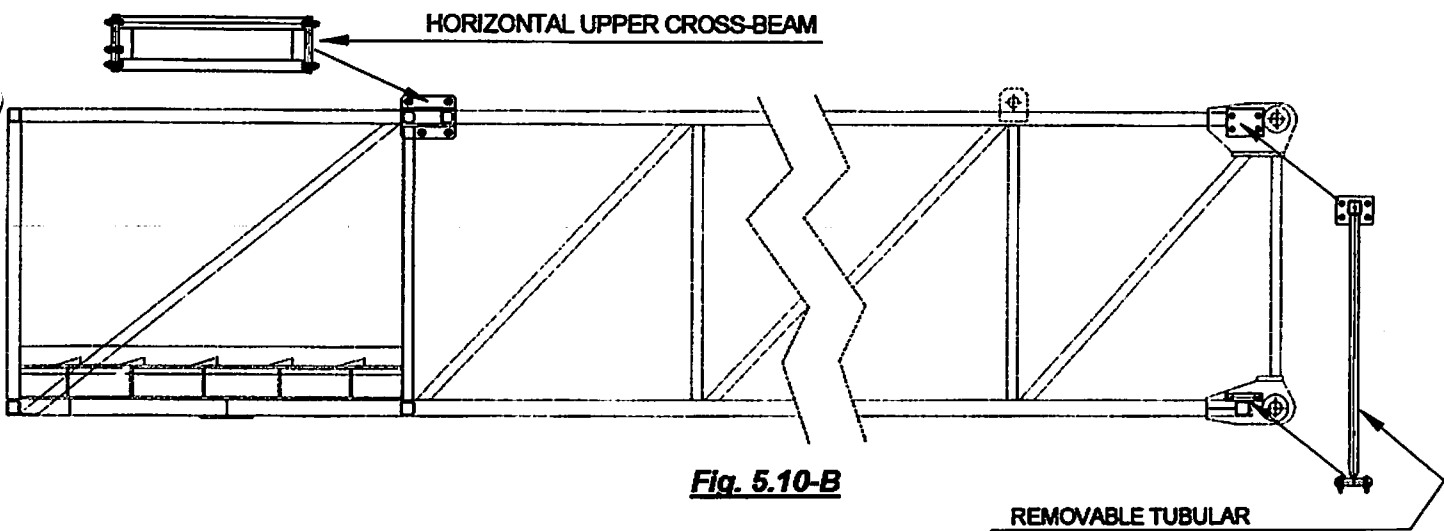


- Link the removable tubular to the head of the counterjib.
- Link the horizontal upper cross-beam delimiting the area housing the slabs.

Note! In order to save space on the truck transporting the crane, the diagonal and upright beams at the counterjib end are removable.

Benazzato also supplies apart a removable horizontal upper cross-beam to close the zone where the ballast plates are placed.

During this phase you have to reassemble the frame: link the part removed to the counterjib by means of the screws M 12 and M14 supplied with the crane, as suggested in *Fig. 5.10-B*.



Note! In case the mentioned two pieces were welded or already reassembled, go on with the next operation.

- Link the counterjib to the turning pivot by inserting the proper pins $\varnothing 50$ in the four corresponding holes.
- Note!** The side of the pivot you have to link to the counterjib is the one having distance between centres **1050 mm**, as shown in **Fig. 5.10-C**.
- Insert special split pins to fasten pins.

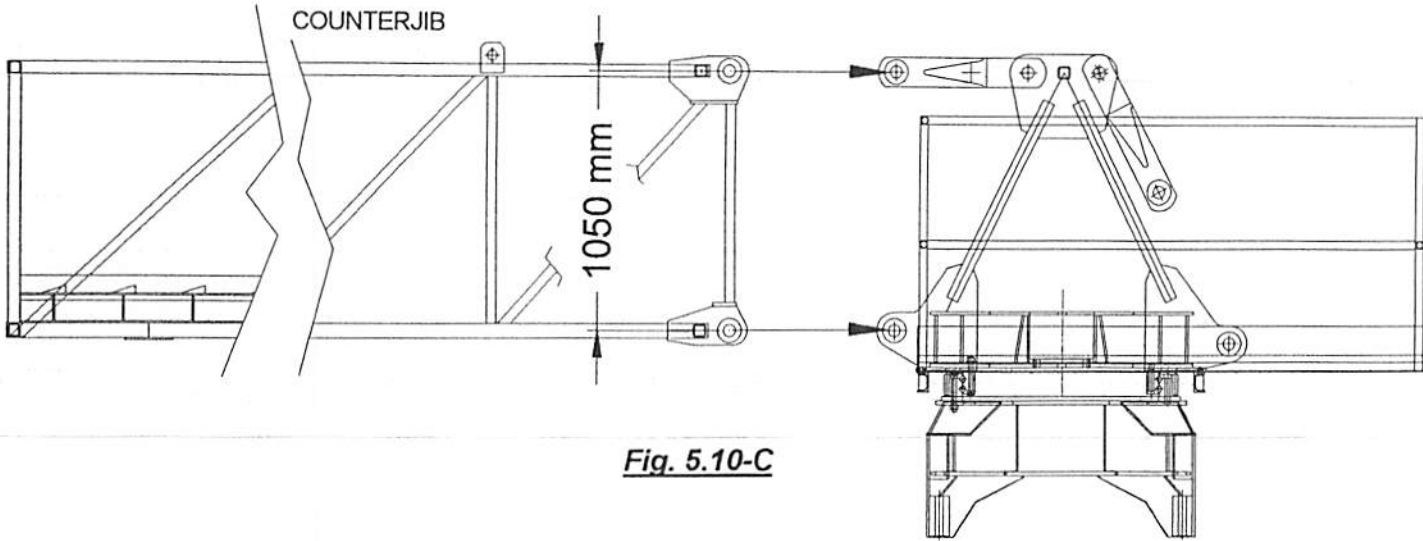


Fig. 5.10-C

- Choice preliminarily the direction to which you will subsequently place the jib. As regards to this direction, the slewing reduction gear should be on the opposite side of the electric cabinet mounted on the jib, as shown in **Fig. 5.11**.

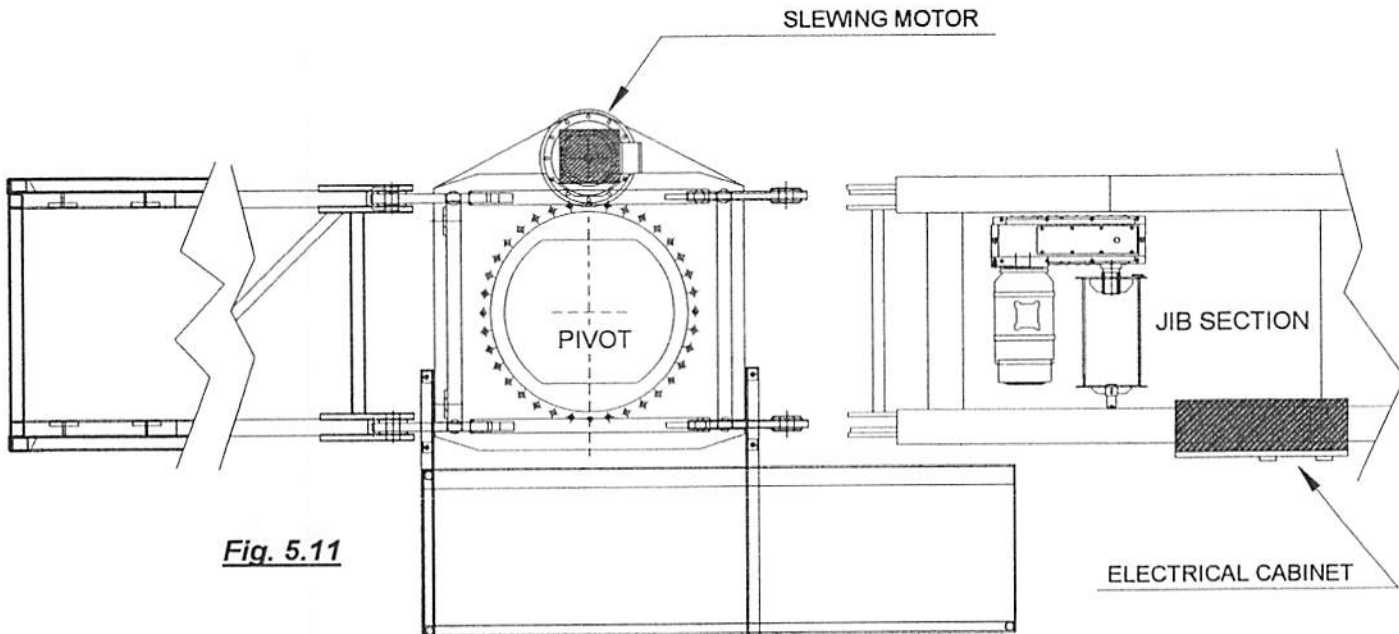
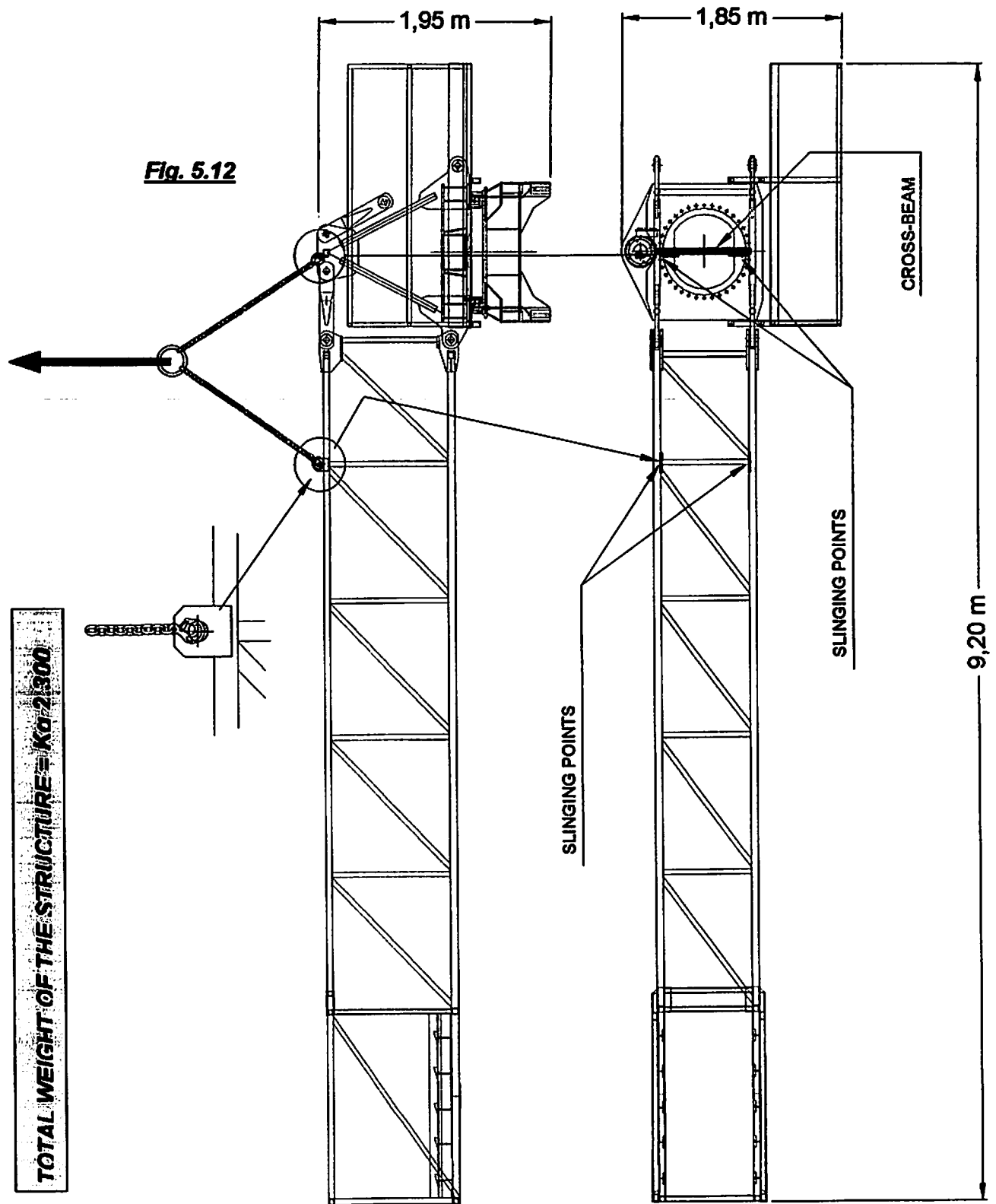


Fig. 5.11

- Sling this assembled structure at the **four points: two flats side by side on the counterjib and two side by side on the pivot (one for each side) and then hoist it, as suggested in Fig. 5.12.**
Note! In case the crane has not the two flats on the pivot, arrange a suitable sling using the terminal points of the beam. Do not hoist by slinging the central part of the beam.
 In this picture are also given dimensions and total weight to hoist.



- With the truck crane, hoist the structure "pivot + counterjib" beyond the end of the last tower and then lower the structure aligning the bushes welded on the fixed pivot with the bushes welded at the upper end of the last tower.
- Insert the **bolts M36** issued with the crane, insert a plain washer and then fasten them with the **nuts M36**.

This link type is shown in **Fig. 5.13**

It is not necessary to grease the pins before inserting.

ATTENTION! In order to control the screw torque of the bolted junctions refer to the same instructions given in the footnote of § 5.3 for the assembly of the 1st tower.

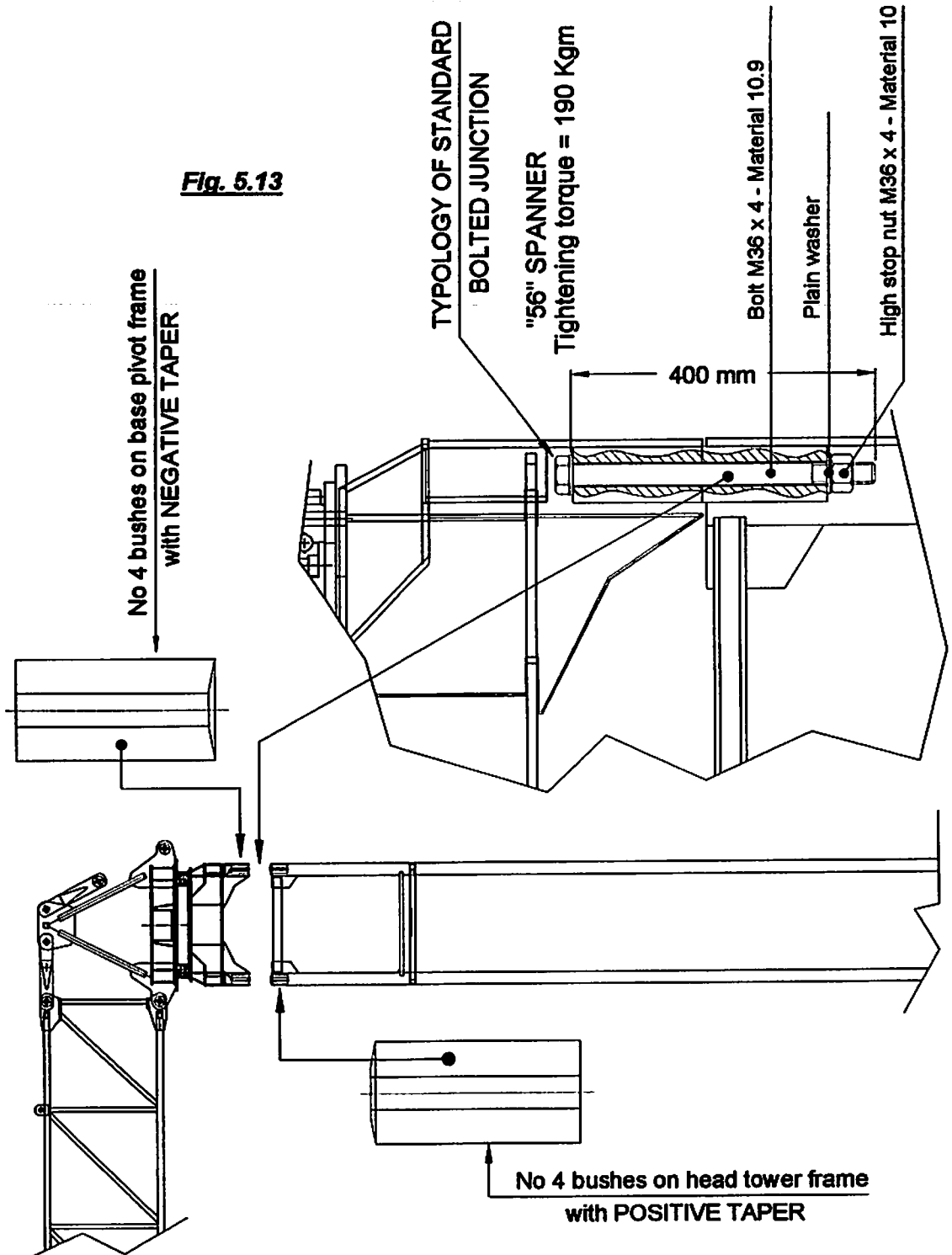


Fig. 5.13

5.8 – ASSEMBLY OF THE JIB

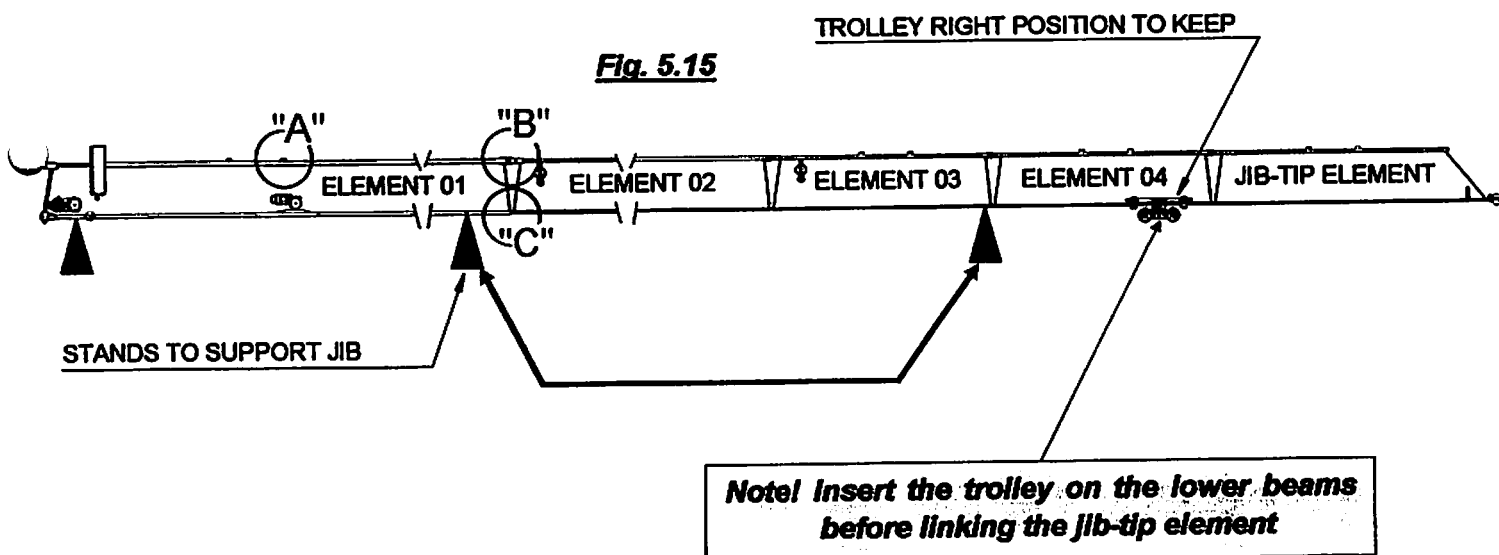
5.8.1 – Jib preparation

The parts composing the jib are listed at § 1.6.2.3 and shown in *Fig. 1.10*. The assembling procedure refers to *Fig. 5.15*. We remind you that during this phase you should also place the sliding trolley on the lower beams.

- Hoist *element 01* from the ground and lay it on the two stands at its ends.
- Hoist *element 02* by means of the truck crane and bring its male terminal connection towards the female seat of the *element 01*. Link these two sections by means of the connecting *pin* $\varnothing 60$ mm supplied and fix it with the proper cotters. Use *bolts M 16* supplied to link the lower beams (No 1 bolt for each side)

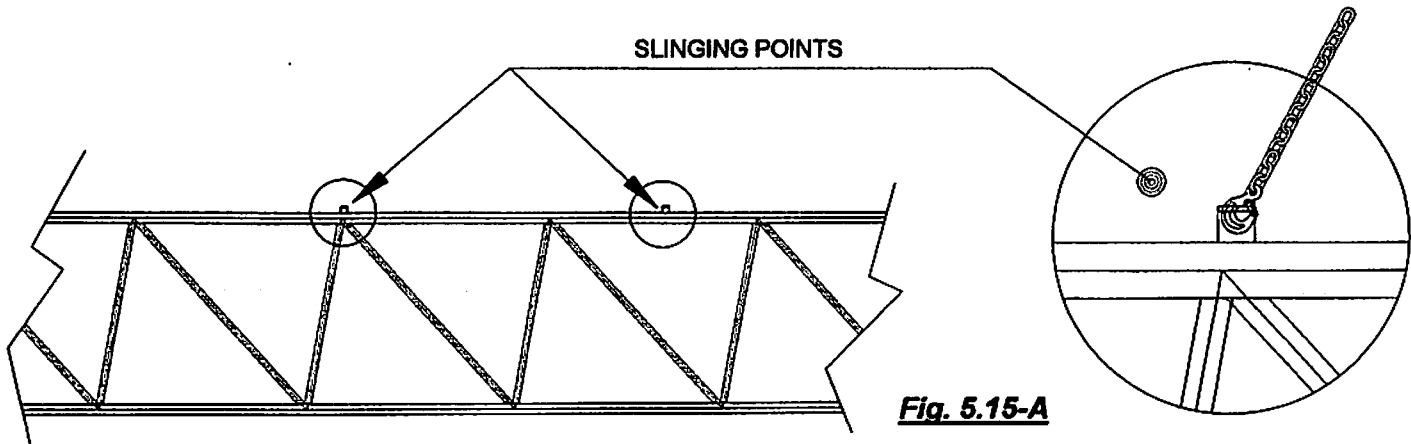
We remind you that it is better to carry out before the connection of the upper beam and then the connection of the lower beams.

- Hoist a little the assembled unit and bring the second stand in correspondence with the new end.
- Following the same procedure, assemble the other jib sections except the last one with the driving pulleys, paying attention to the sequence indicated at §1.6.2.3 –*Fig. 1.10*.
- Now insert the trolley on the lower beams, paying attention to the right position to keep. This position is shown at § 1.6.2.2. – *Fig. 1.9*: the side with the safety device preventing the breaking of the rope faces the jib-tip.
- It is now possible to finish the jib assembly by positioning with the procedure already described the terminal element with tip driving pulleys.

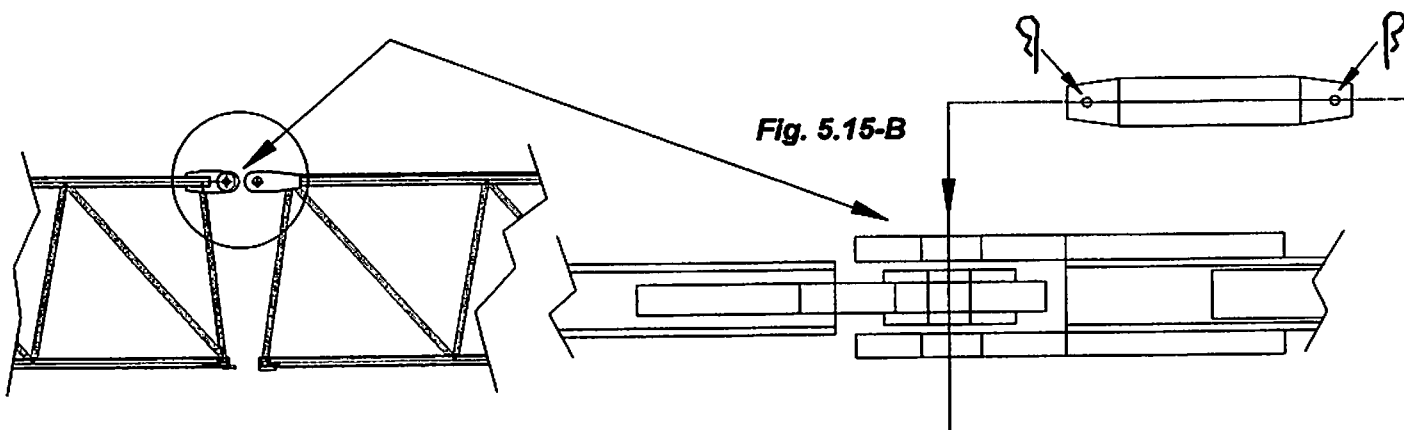


◆ In the following page are shown in detail the parts named "A", "B" and "C" in *Fig. 5.15*.

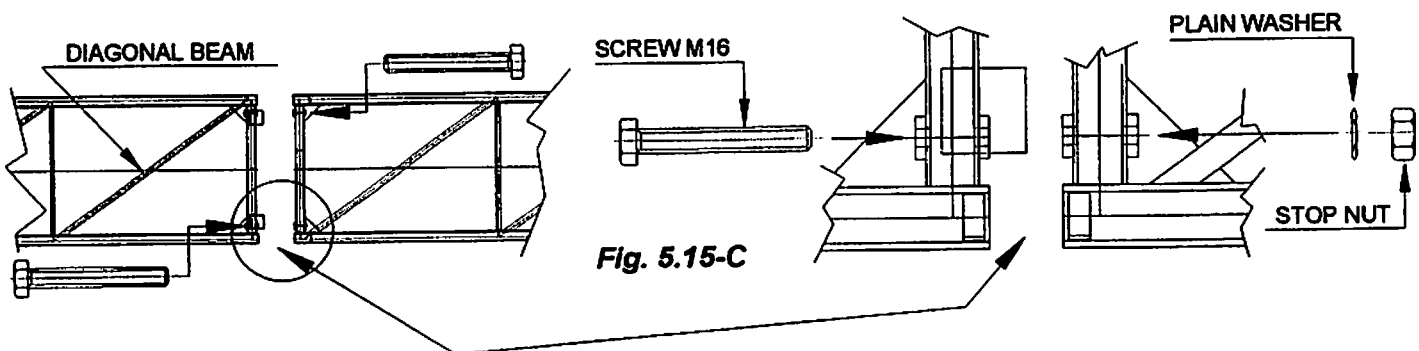
- Part "A": Every jib element has **two** slinging points (shown in Fig. 5.15-A) required for moving the element itself with the truck crane.



- Part "B": The link between the upper beams of the different elements is "male - female" type and made up by pins fixed with cotters, as shown in Fig. 5.15-B.



- Part "C": The link between the lower beams of the different elements is made up by two bolted connections (one for each side) and is shown in Fig. 5.15-C. In particular, the screws must be inserted in the holed seats on the terminal bolsters, on the side without the diagonal end.

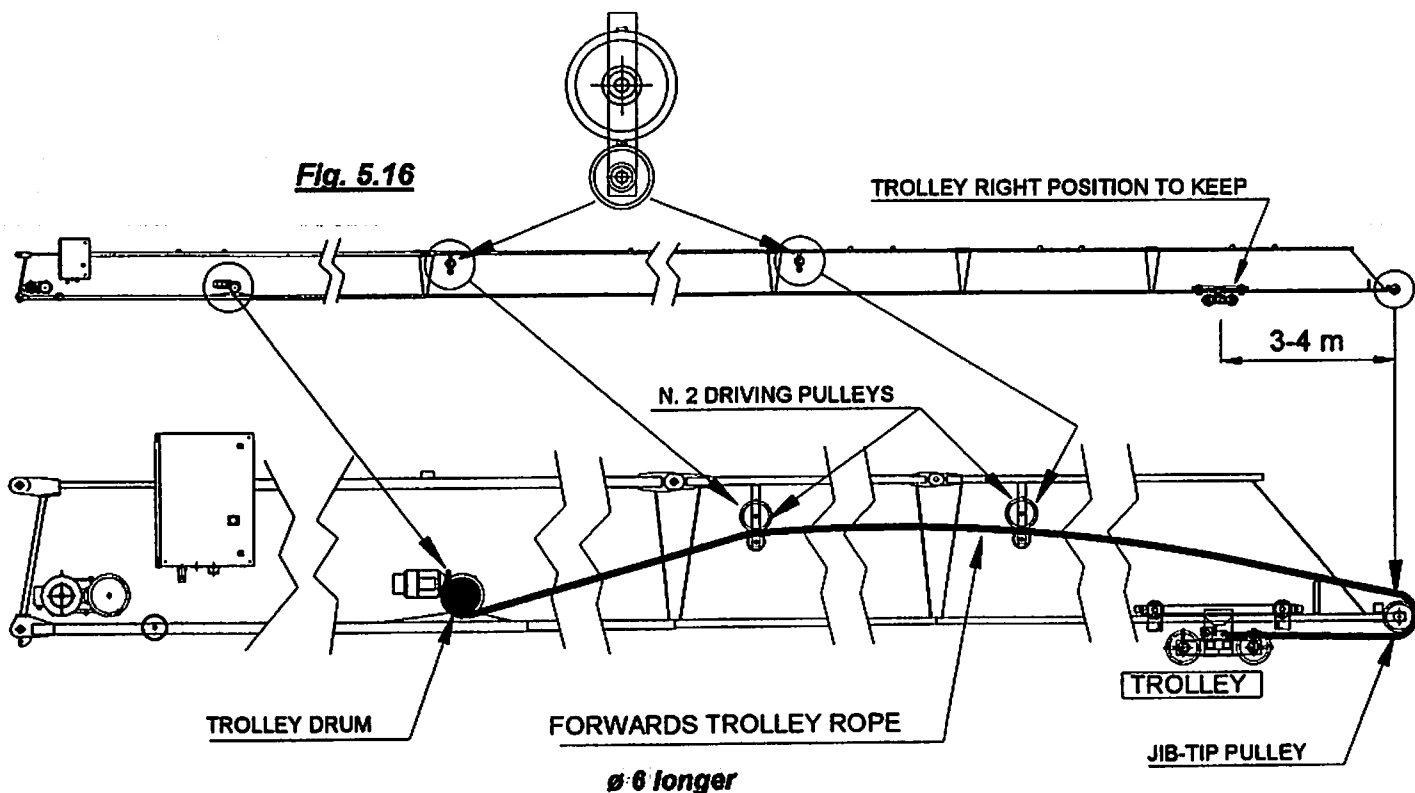


5.8.2 – Assembly of the trolley rope

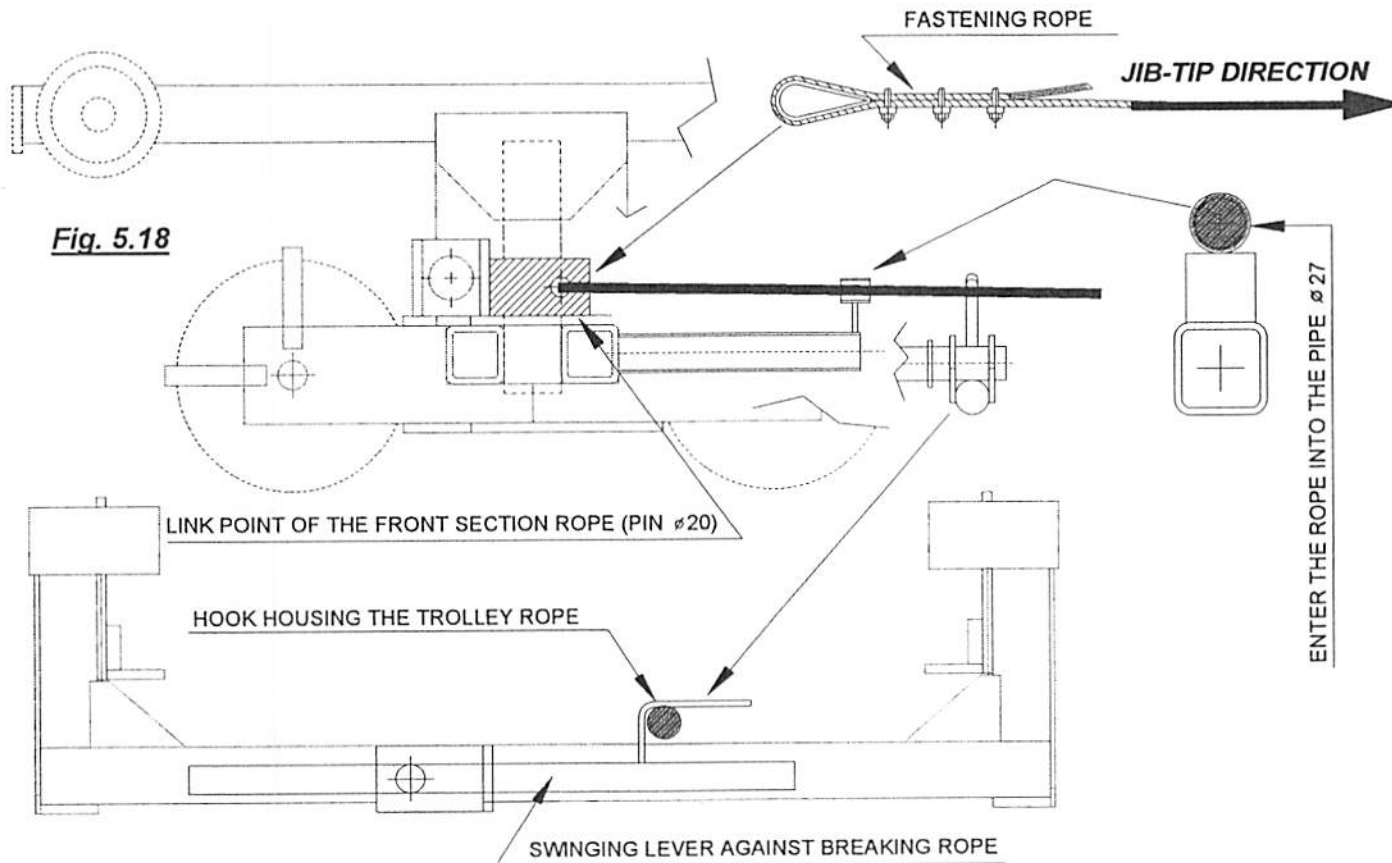
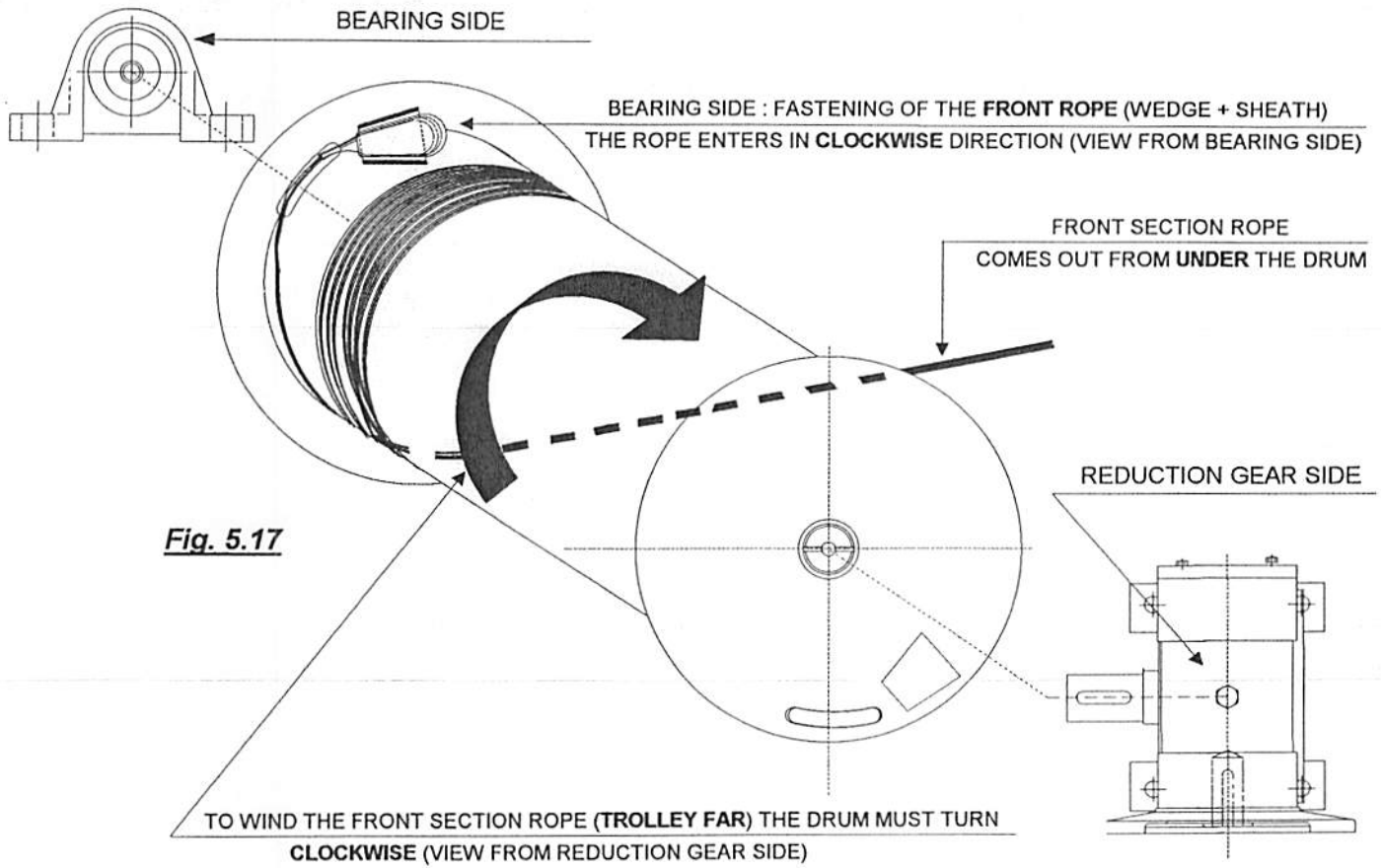
Now carry out the run of the trolley travel, formed by two different rope sections. Mechanisms and component parts are described at § 1.7.2.

We remind you that it is necessary to connect the electrical supply to cause the rotation of the drum on which the ropes have to be wound. For the connection to the electrical line refer to § 3.3.4: it is possible to connect the line of the control panel of the building site at the isolator supplied, still placed on the jib near the hoisting winch.

- Push the trolley towards the last section of the jib, stopping it at about **3÷4 meters** from the tip.
- Carry out first the rope run **TROLLEY FAR** following the instructions and using the **FRONT ROPE SECTION** described at § 1.7.2.1.5.
- ◆ Carry out the passages of the rope in the pulleys as shown in **Fig. 5.16**.



- ◆ Carry out the fastening on the trolley drum placed on the bearing side, through wedge + sheath and let the rope come out from under as shown in **Fig. 5.17**.
- ◆ Pushing the button **TROLLEY FAR** on the button control box, wind the rope, paying attention that the positioning in the grooves of the drum occurs in a correct way, leaving unwinded a section of rope necessary for arriving near the trolley.
- ◆ Carry out the fastening on the trolley in the proper seat (see § 1.6.2.2 - **fig. 1.9 - part. 07**) through thimble + clamps and fix it with the pin supplied following the sequence indicated in **Fig. 5.18**. In particular, pay attention to the passage through the device preventing the breaking of the rope and through the little supporting pipe $\varnothing 27$.
- ◆ Pushing the button **TROLLEY FAR** on the button control box, bring the trolley near the buffers at the jib tip. The front section is now wound on the drum with the maximum number of turns.



Note! The trolley is provided with a safety device preventing the breaking of the translation rope: it is the swinging lever shown in *Fig. 5.18* and described at § 1.6.2.2 - *fig. 1.9 – part. 05*. The front section of the rope should pass under the hook welded on the swinging lever, then enter into the little supporting pipe $\varnothing 27$ and then be fastened to the trolley.

Making this way, the hook is placed on the rope: in case of rope breaking, the swinging lever falls and hooks the trolley at the bars of the lower part of the jib preventing its advancing.

- Now carry out the rope run **TROLLEY NEAR** following the instructions and using the **BACK SECTION ROPE** described at § 1.7.2.1.5.
- ◆ Make the rope pass in the pulleys, as suggested in *Fig. 5.19*.

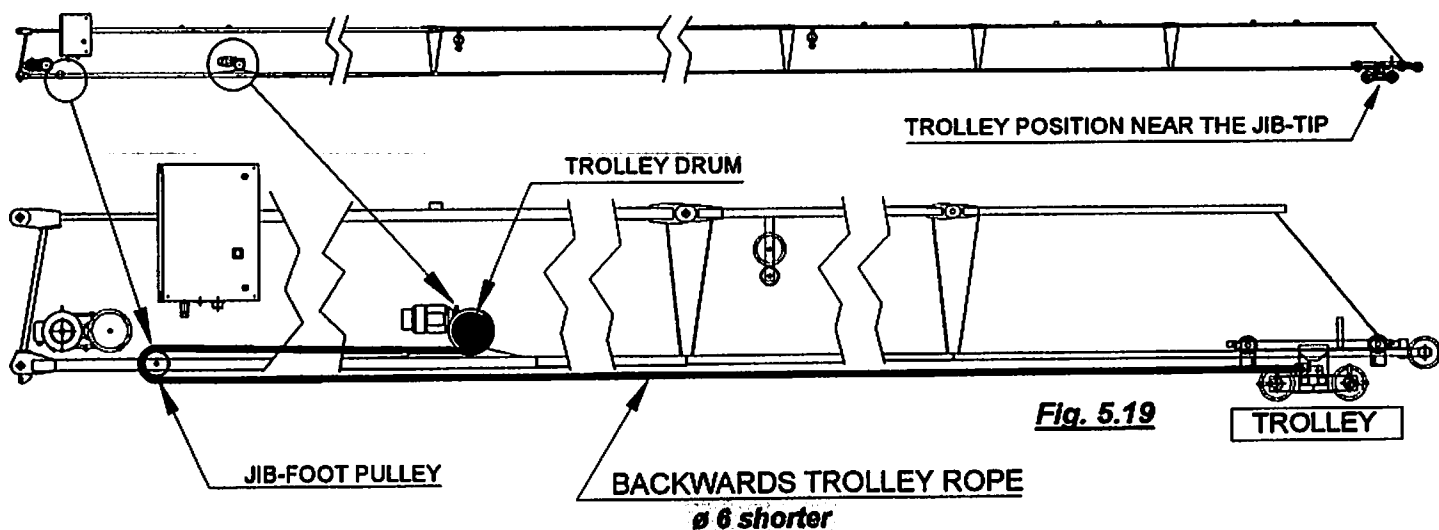
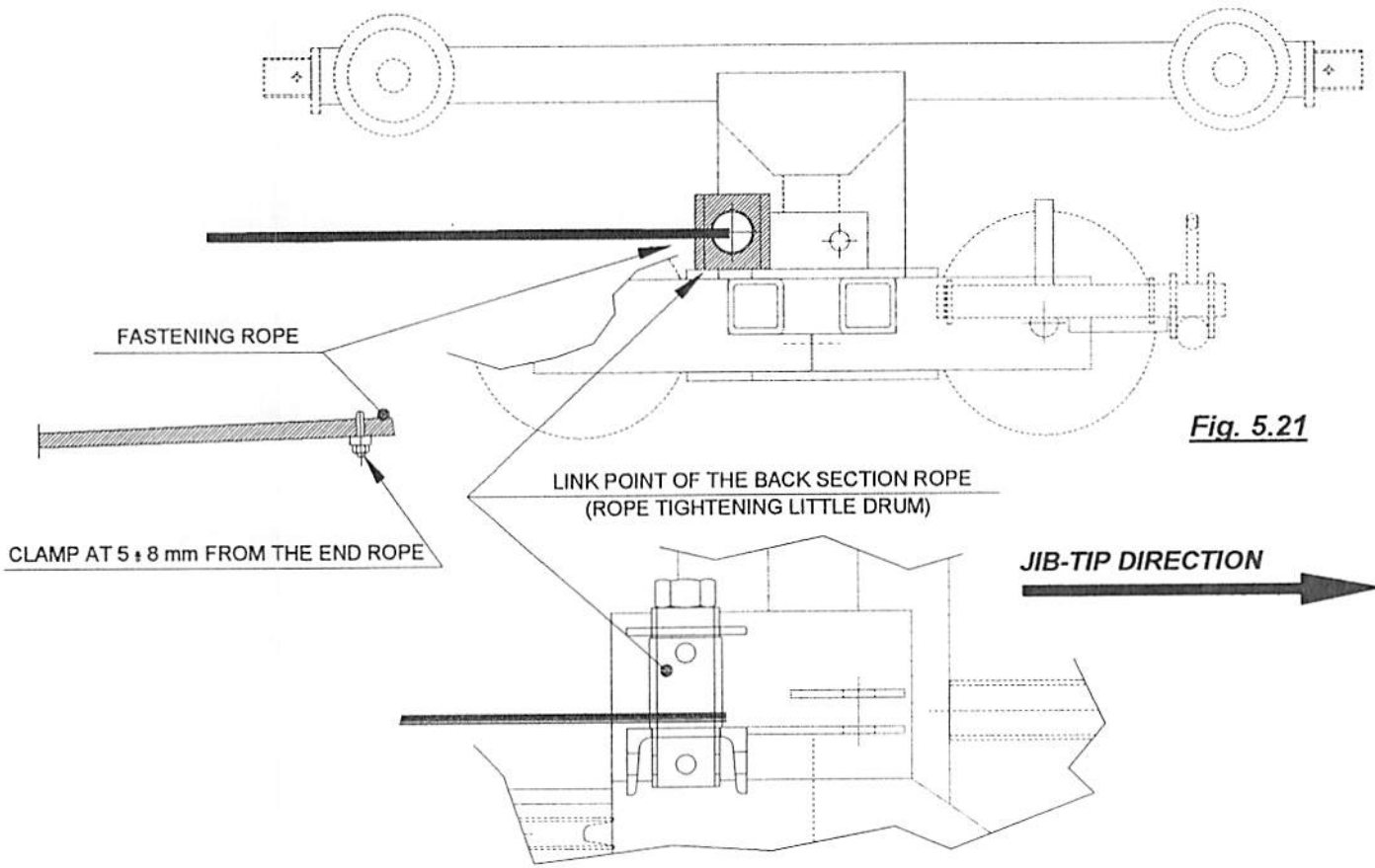
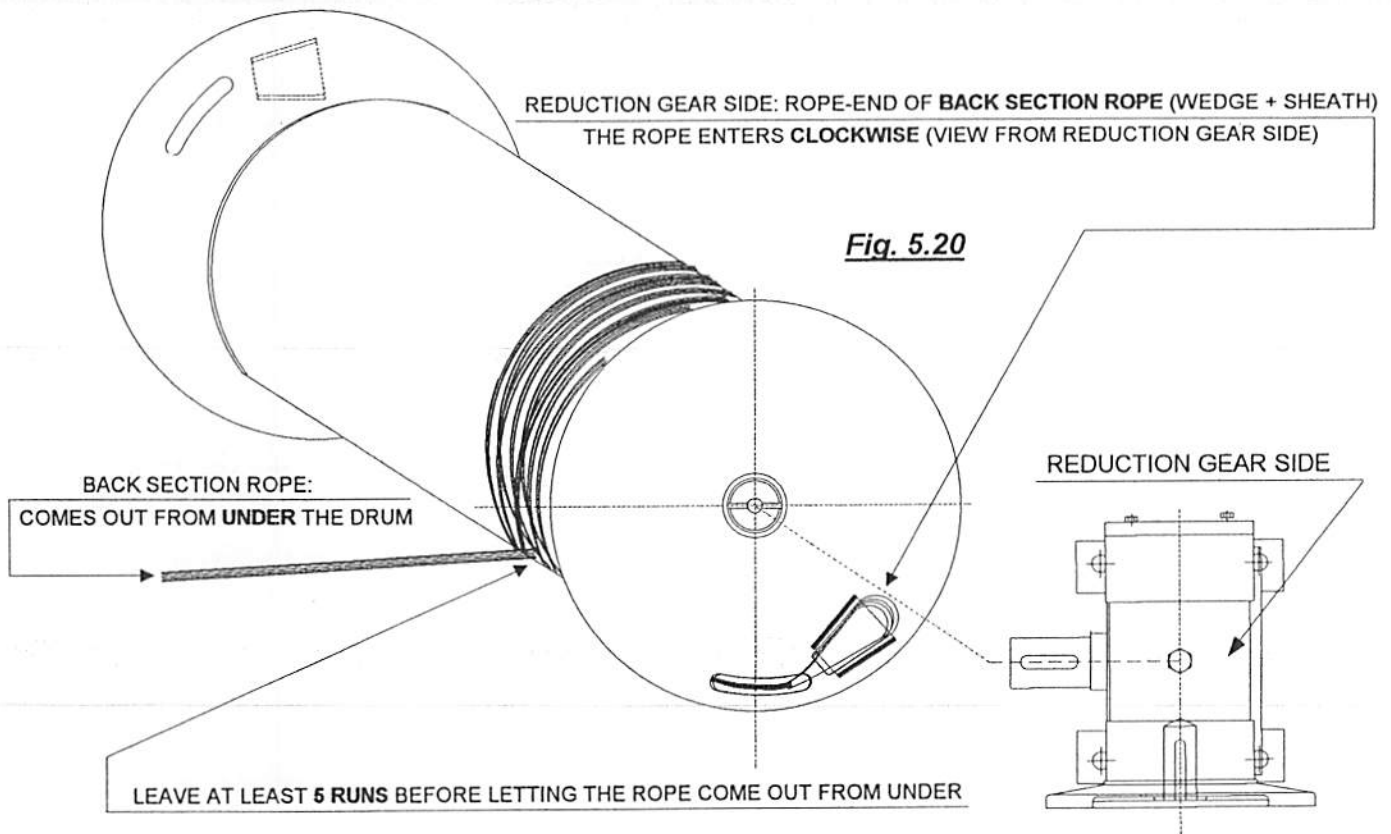


Fig. 5.19

- ◆ Wind at least 5 runs on the drum on the reduction gear side (pay attention to the housing in the grooves) and let the rope come out from under, as shown in *Fig. 5.20*. Let the other end of the rope come out from the slot made on the bracket and carry out the rope-end on the bush side by means of wedge + sheath. During this phase do not use the motive power of the electric motor.
- ◆ Carry out the rope-end in the proper seat on the trolley (see § 1.6.2.2 - *fig. 1.9 – part. 08*) using a clamp you will place at 5+8 mm from the end of the rope. Wind the rope on the little drum (see *Fig. 5.21*) and then fix it with screw and bolt. So this rope-end is a device tightening the trolley rope. The prescriptions concerning this device and its functioning are given in the next paragraph § 5.8.2.1
- Calibrate the tension of the trolley rope by means of the special little drum (see § 5.8.2.1 – *fig. 5.22*).
- Check that in the configurations of the trolley “completely back” or “completely front” there are at least 3 runs winding on the drum. Check this condition before going on assembling the crane.



5.8.2.1 – Device tightening the trolley rope

As suggested at § 5.8.2, now you have to tighten the trolley rope by means of the little drum serving as rope-end (see Fig. 5.22)

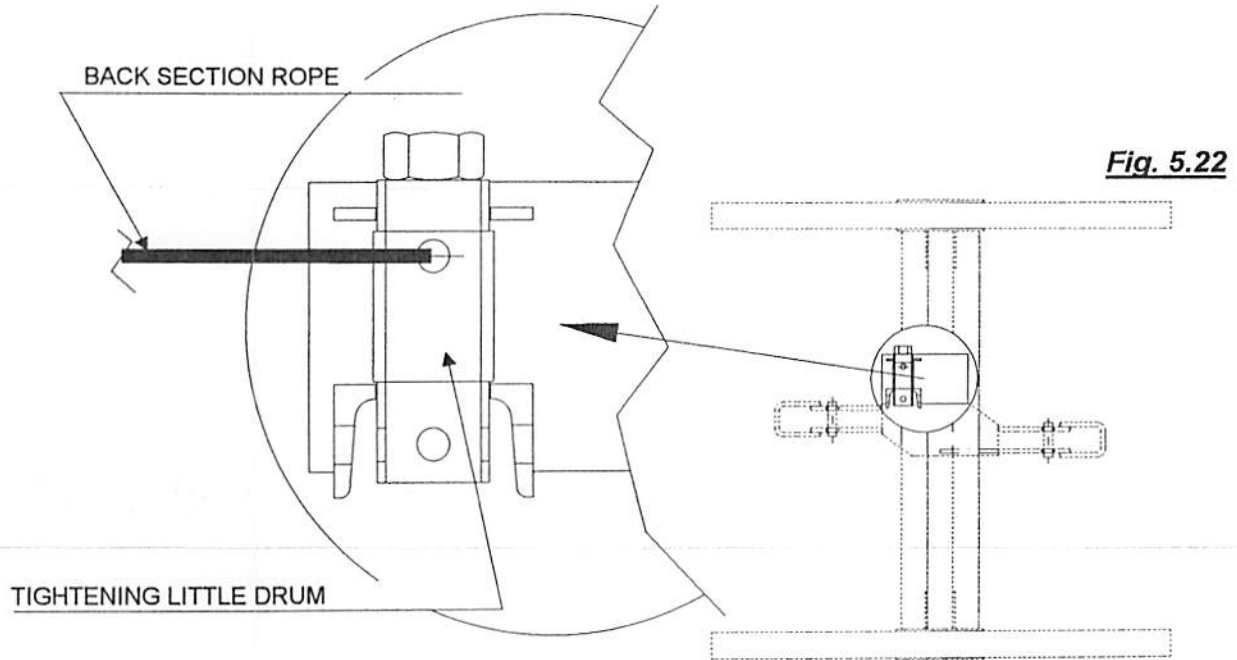
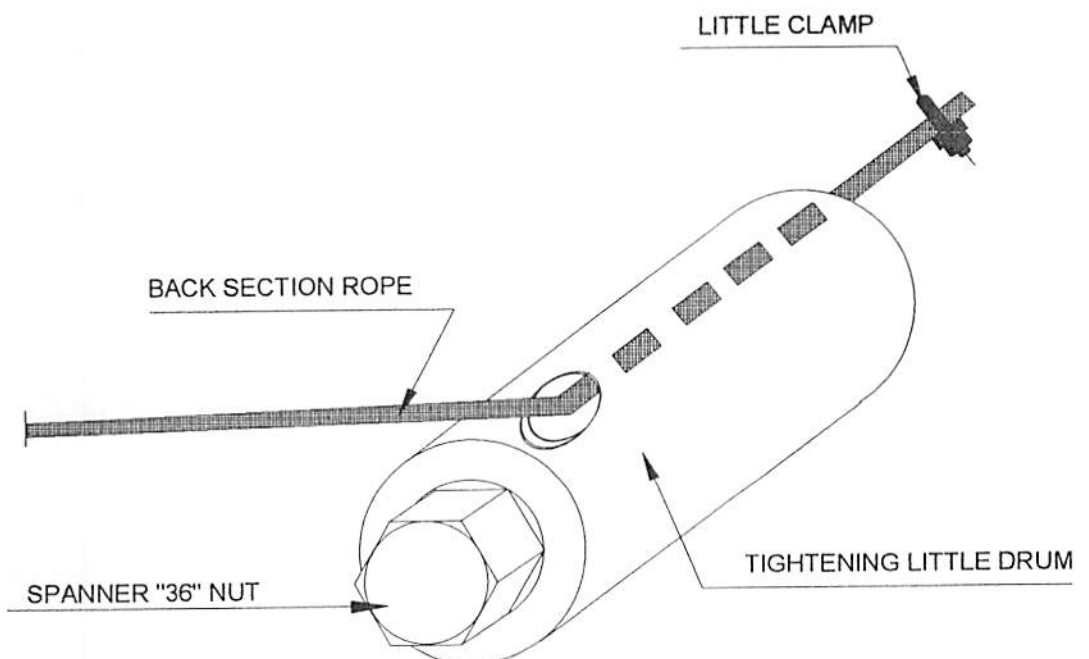


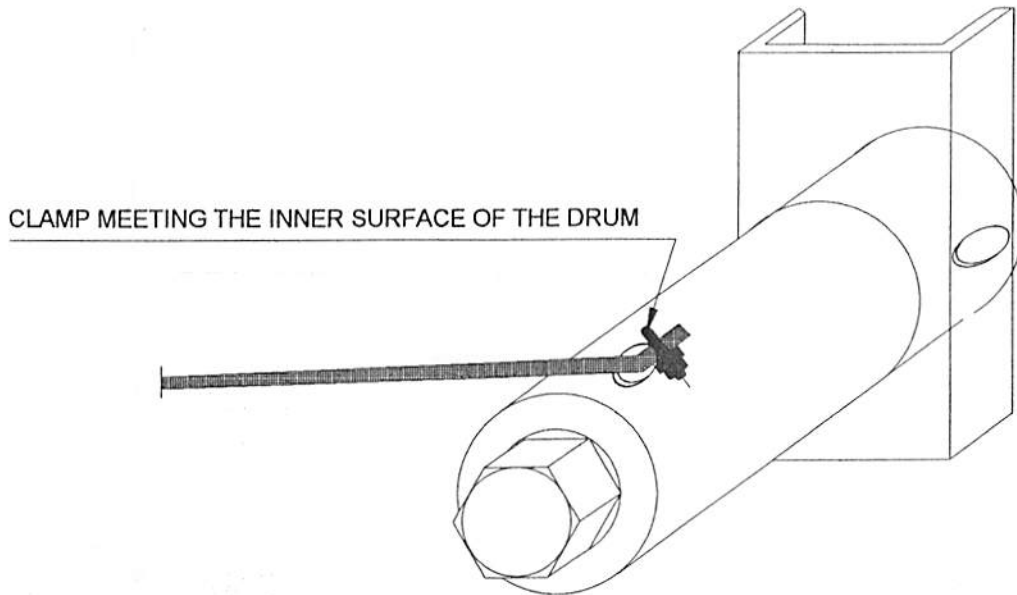
Fig. 5.22

The operations here below should be carried out in the same order they are given:

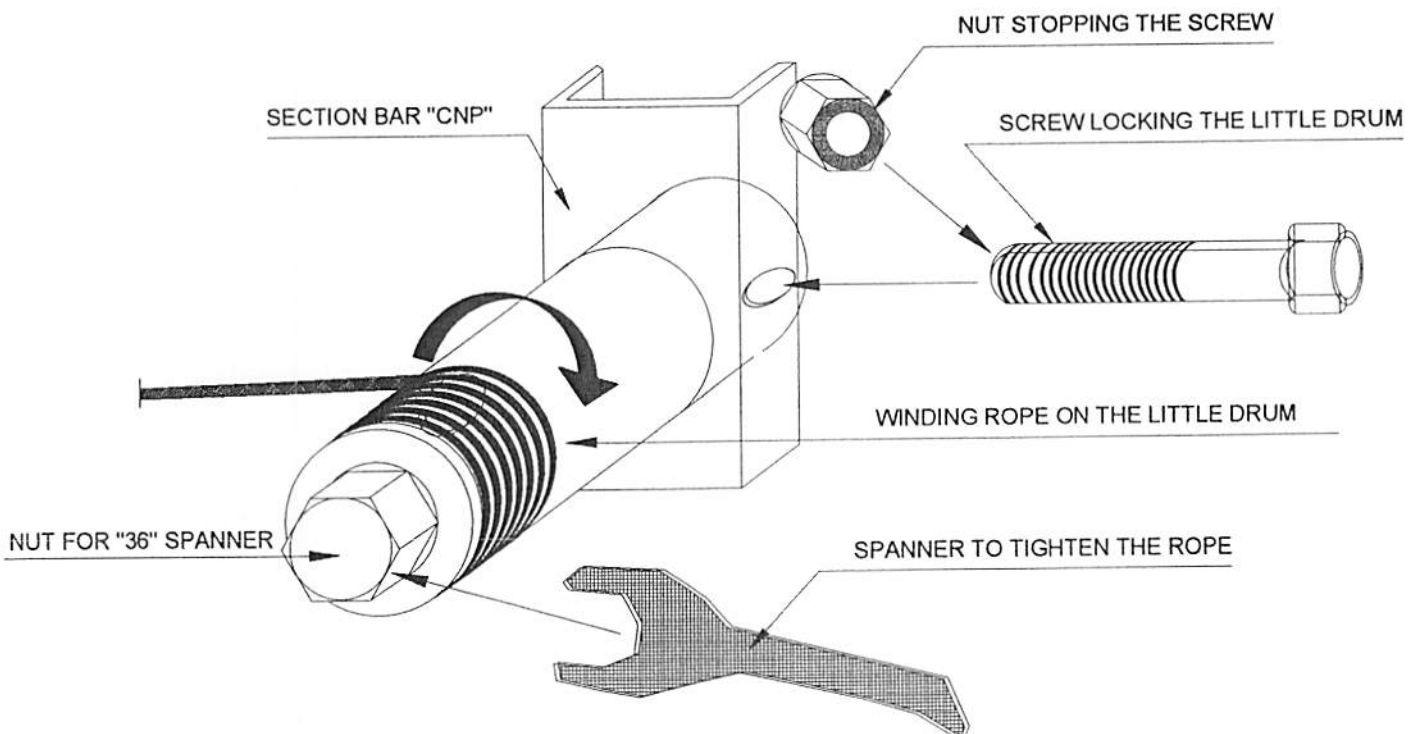
- Insert the back section rope into the hole of the little drum on the side of the nut for *spanner* "36" and let it come out from the opposite side, as shown in the following picture. As already said, the rope-end is made up by a little clamp fixed a few millimeters from the end.



- Reinsert the rope with clamp into the little drum till the clamp meets the internal surface of the little drum, as shown in the following picture:



- Fasten the nut using a "36" spanner and so wind the back section rope on the little drum till it reaches a right tension. Stop the little drum against the **CNP** bar placed vertically using a screw (supplied by the manufacturer) and fix all with the suitable nut, as suggested in the following picture:



5.8.3 – Assembly of the hoisting rope

Now carry out the run of the hoisting rope: the mechanisms and the component parts are described at § 1.7.1. The length of the rope depends on the height of the hook: at § 1.7.1.1.5 are listed all the features identifying the type of the rope.

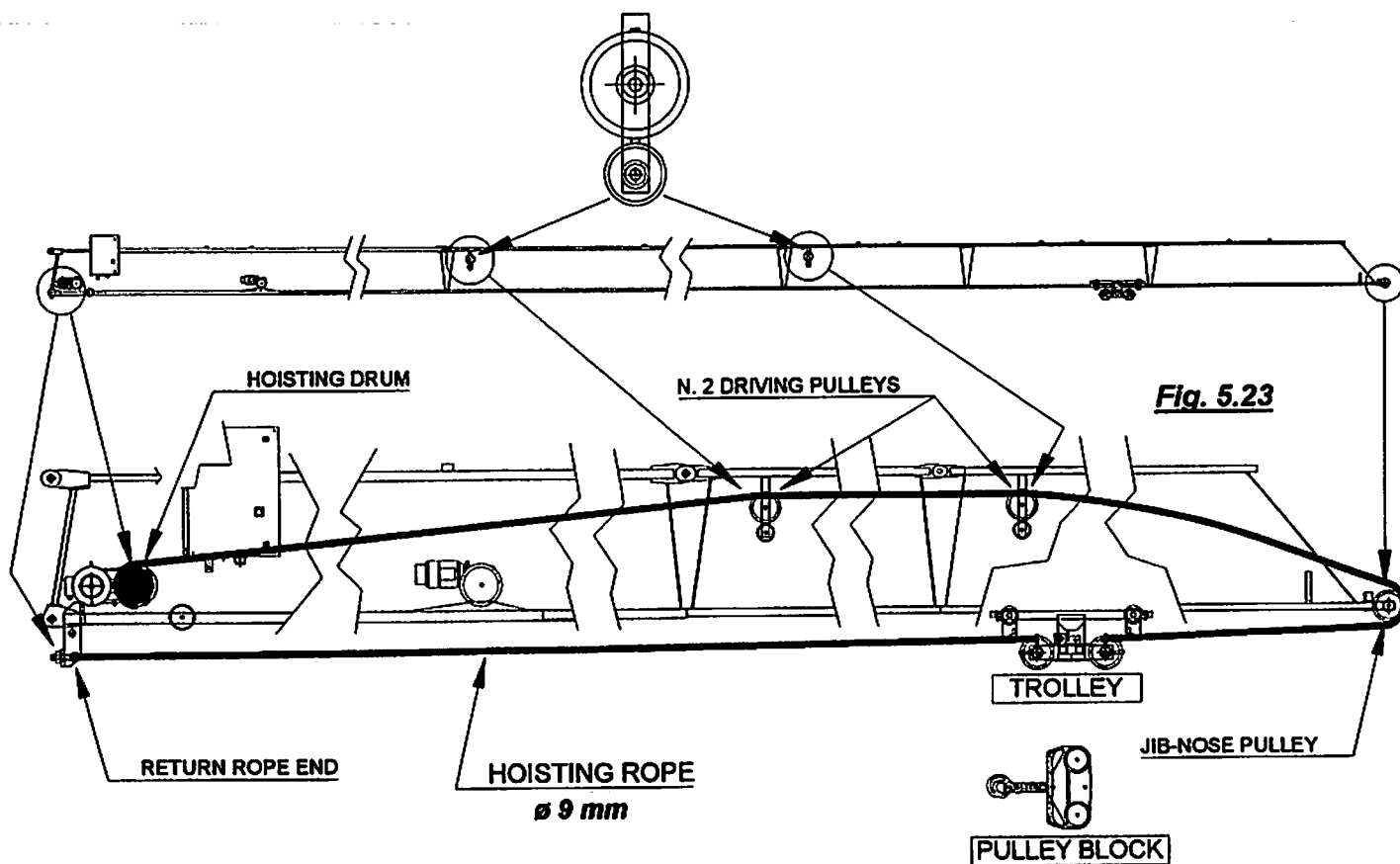
We remind you that it is necessary to connect the power supply because you will make the drum turn in order to wind the rope.

For the connection to the electric line see the instructions given at § 3.3.4.

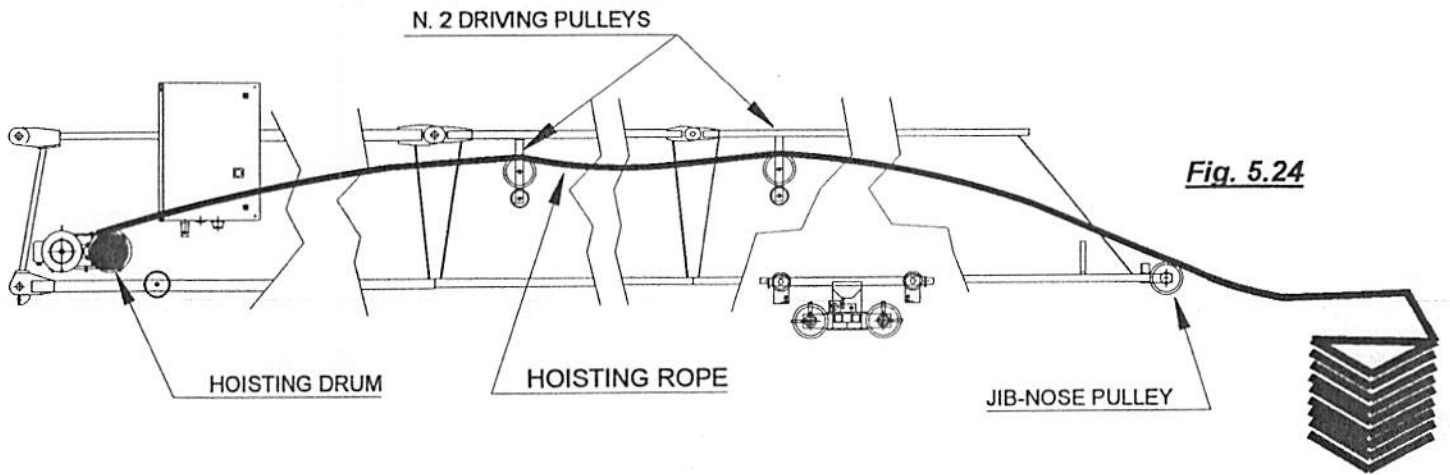
It is possible to connect the line of the yard electric panel to the knife switch supplied, which is still placed on the jib near the hoisting winch.

The optimal sequence for carrying out the run of the hoisting rope is described here below.

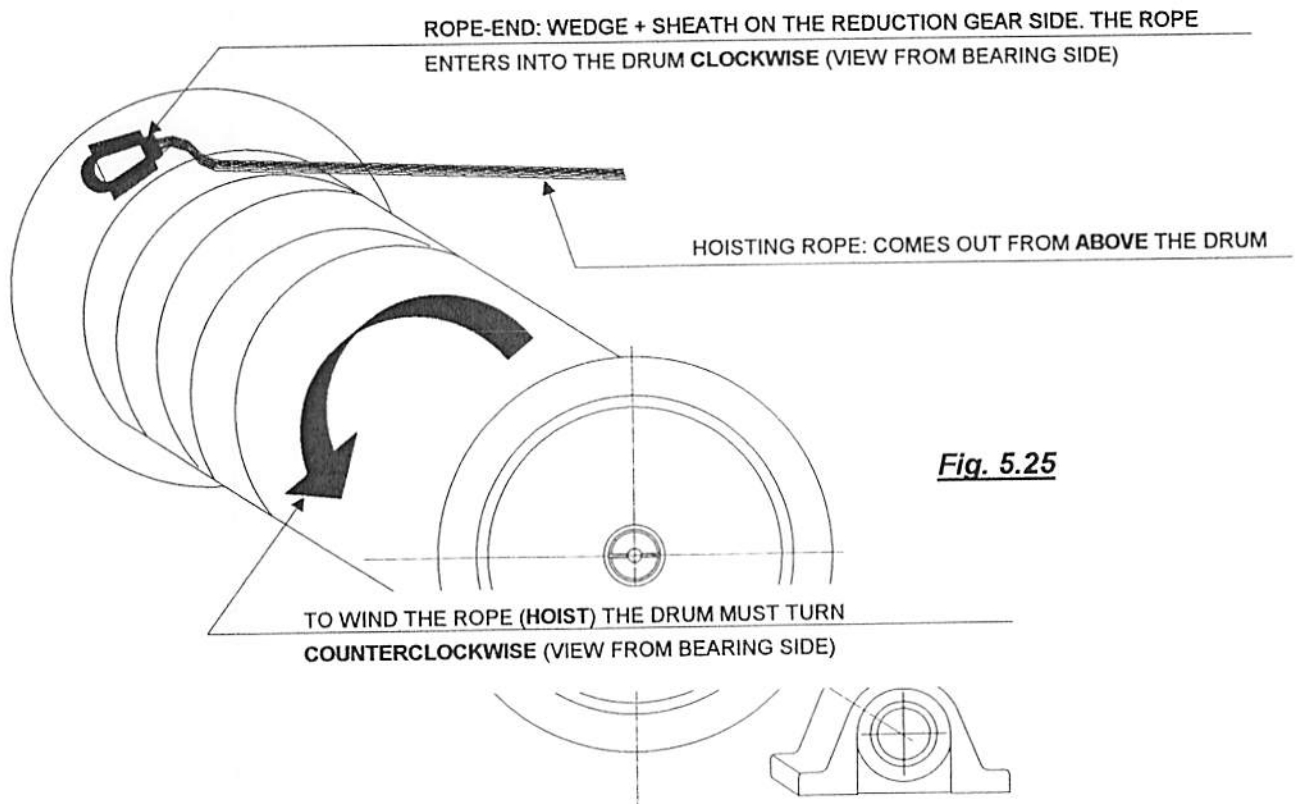
- The trolley can be positioned everywhere on the lower beams of the jib.
- The pulley block should be positioned horizontally under the trolley; the jib is sustained by the stands.
- Once carried out, the run of the rope in the pulleys will present the passages indicated in *Fig. 5.23*.



- Insert the rope by making it slide on the fleeting pulley placed at jib-tip and carry out the passages in the driving pulleys along the jib, as shown in *Fig. 5.24*, then bring the rope-end to the hoisting drum.



- Insert the rope into the drum from above on the reduction gear side and carry out the rope-end by means of a link wedge + sheath, as shown in Fig. 5.25. By means of the button "HOISTING UP" on the button control box, wind the rope on the drum leaving a section of about **40-metres** long beyond the fleeting pulley at jib-tip. This section permits to complete the return run under the jib.



- The other end of the rope is the return towards the jib-foot after the runs in the pulleys of the trolley and of the pulley block. You find the scheme for winding the hoisting rope in Fig. 5.26: it refers to the crane having pulley block for 2 fall.

PULLEY BLOCK FOR 2 FALL

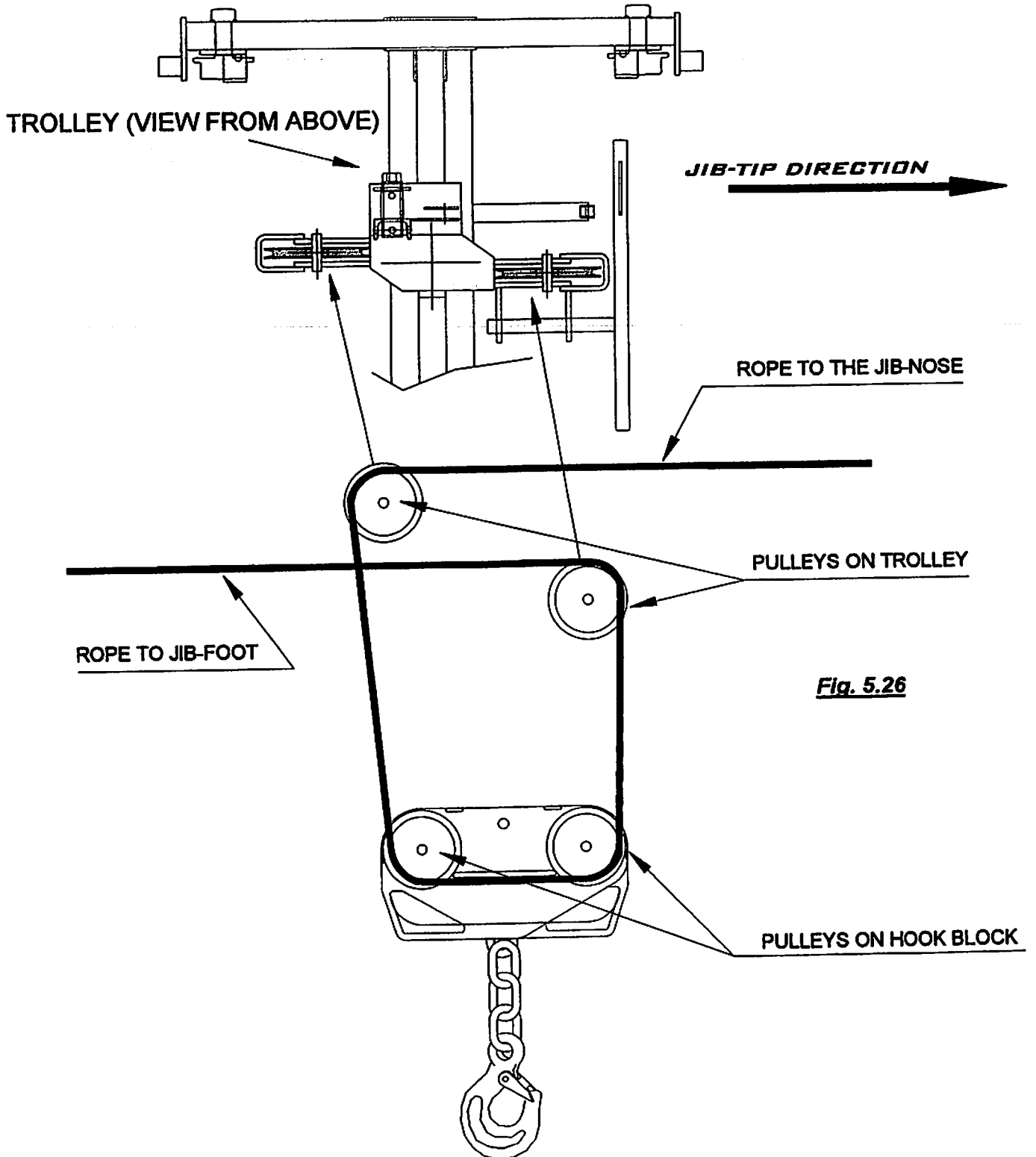
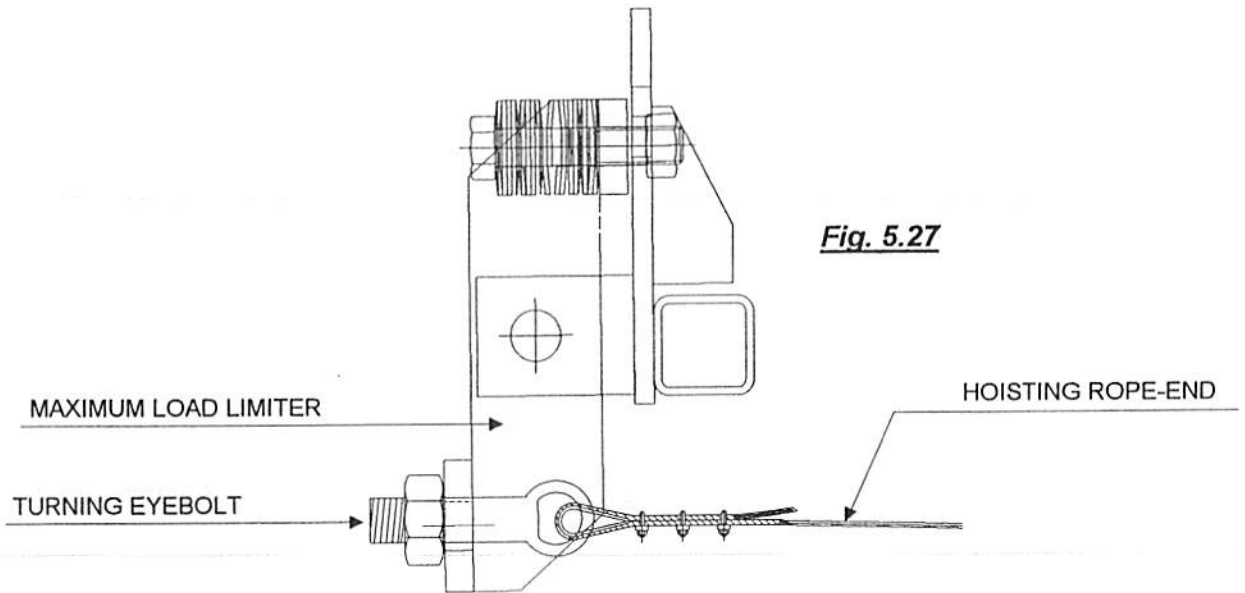


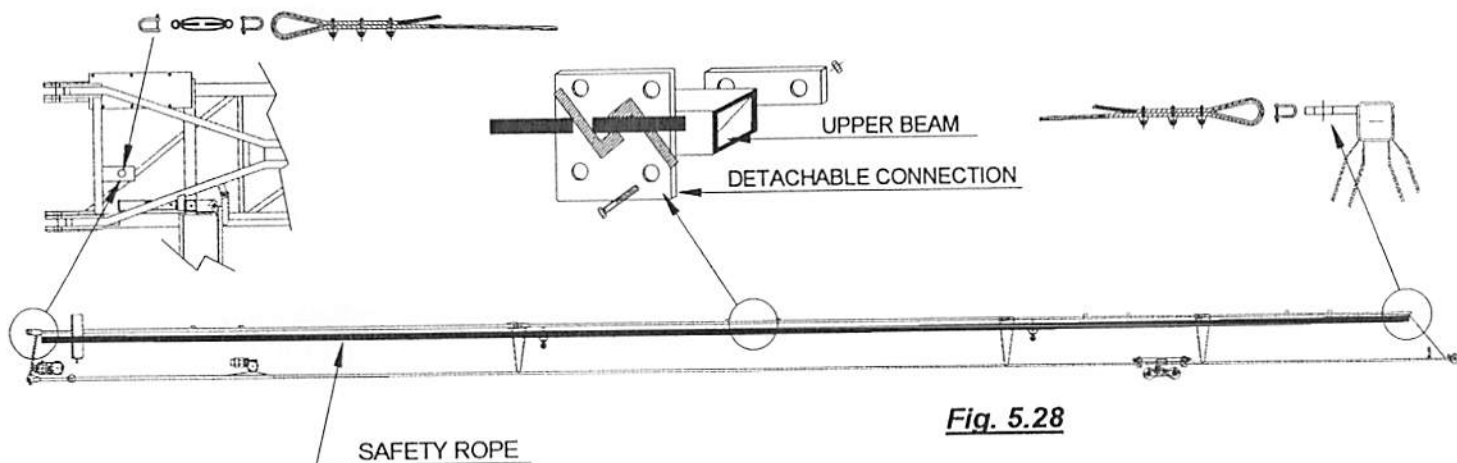
Fig. 5.26

- Then go on assembling the rope: carry out the rope-end at jib-foot by means of thimble + clamps, as shown in *Fig. 5.27*. Then link it to the turning eyebolt with thrust bearing which is mounted on the maximum load limiter (see § 1.7.1 – *fig. 1.20 – part. 02*).



5.8.4 – Assembly of the safety rope

Now assemble the supplied safety rope, using the proper connections: two supports of bored plates, placed at the ends of the jib in the positions shown in *Fig. 5.28*. The rope-ends should be fastened by means of thimble + clamps and linked to shackles and tensioner supplied. The rope should be sustained also in the central part of the jib: these passage can be obtained by fixing with bolts the special detachable connection to the upper beam.



5.8.5 – Positioning of the electrical cabinet

In order to save space, the electrical cabinet on jib section 01 is placed in parallel with the beams of the jib itself. During this phase, the electrical cabinet must be turned of 90 degrees so to reach the work position shown in *Fig. 5.29*.

The frame supporting the cabinet is fixed by a bolt. Unscrew it, turn the frame and then fasten it in the new position.

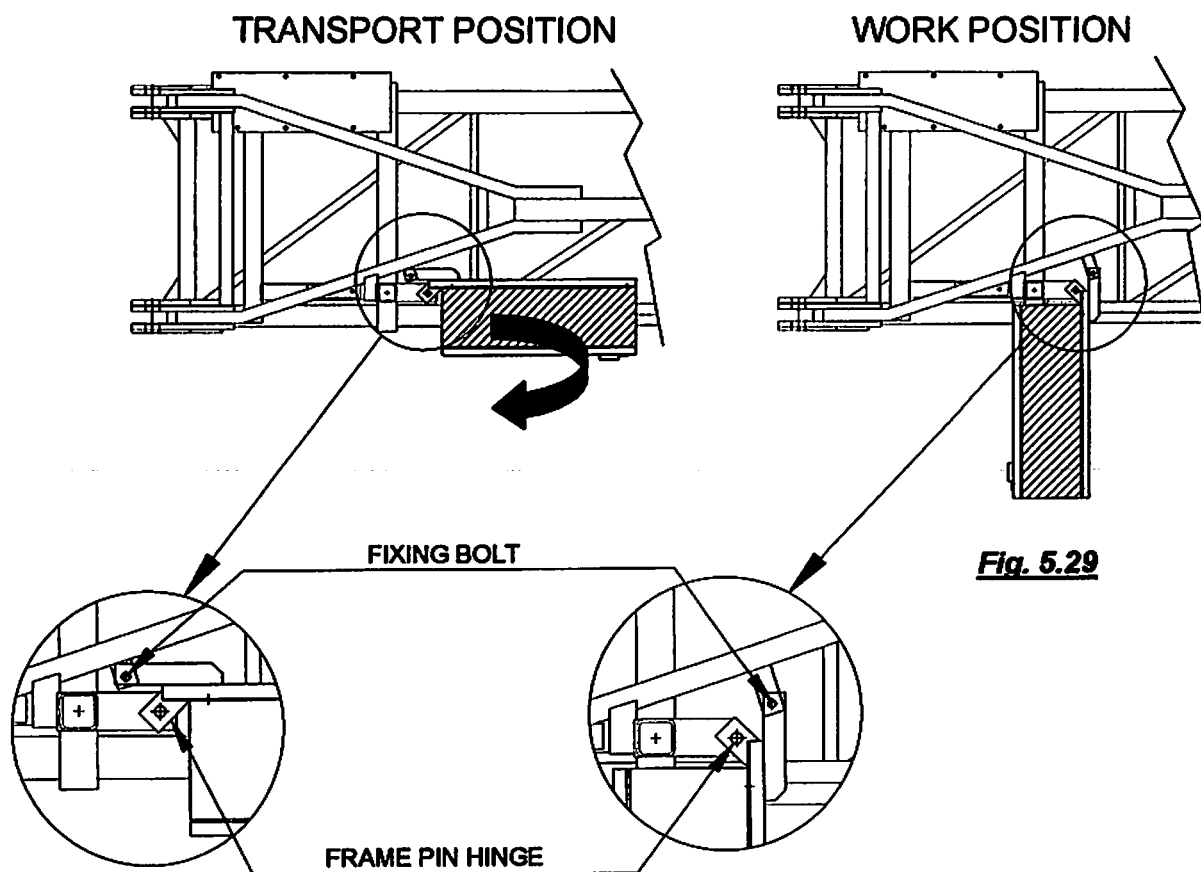


Fig. 5.29

5.8.6 – Check of the load signs

Be sure the load signs are mounted, otherwise place them in the positions shown in *Fig. 5.30*.

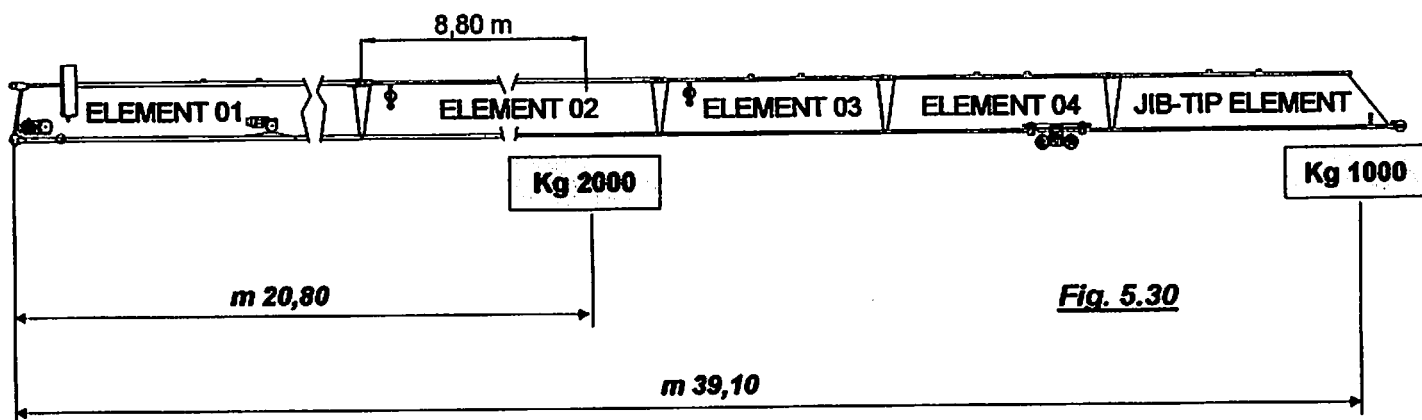


Fig. 5.30

5.8.7 – Assembly of the jib

Now the jib is complete. Listed here below you can find the operations to carry out for assembling it. The assembling procedure refers to *Fig. 5.31*, *Fig. 5.32* (that indicates also size and total weight of the structure), and *Fig. 5.33*.

- Apply the two special detachable connections on the upper beams in correspondence of the knots shown in *Fig. 5.31*.

The first knot is on section jib 01, **2.30 metres** from the junction with section jib 02, while the second one is on section 02, **2.80 metres** beyond the over mentioned junction.

Anyway, be sure the two detachable connections are placed as near as possible to the knots, formed by the welded connection of the diagonals to the upper beam of the jib, in order to avoid permanent deformations of the beam itself.

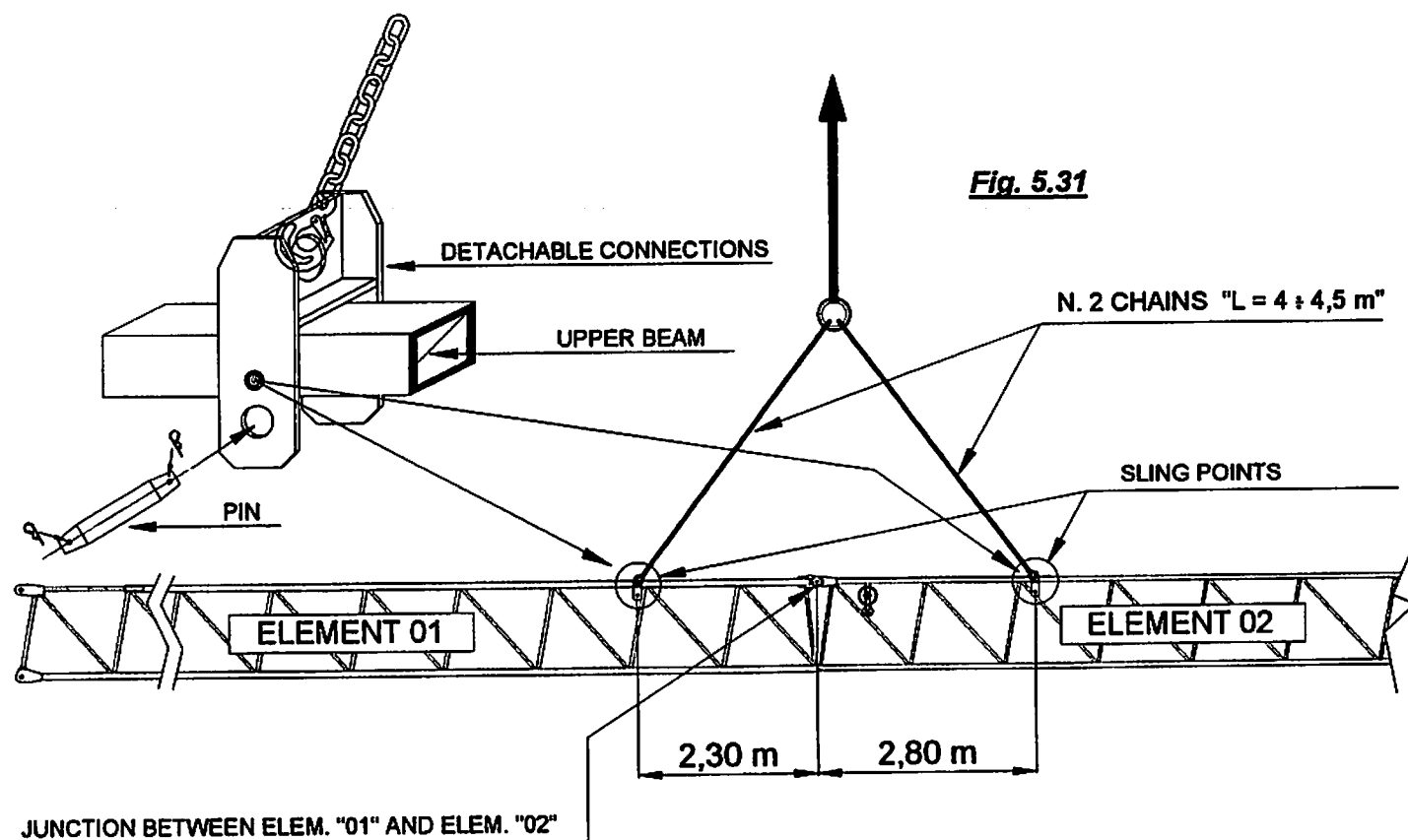


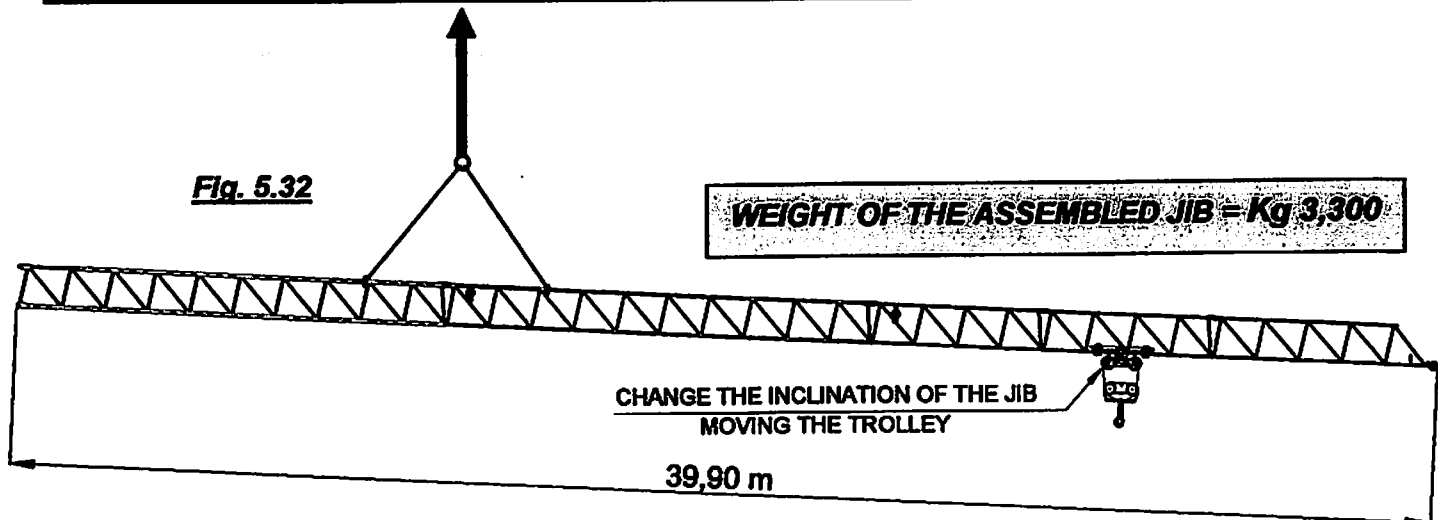
Fig. 5.31

- Sling the structure in the **two points** obtained. Now the jib can move; use chains **4 + 4,5-metre** long.

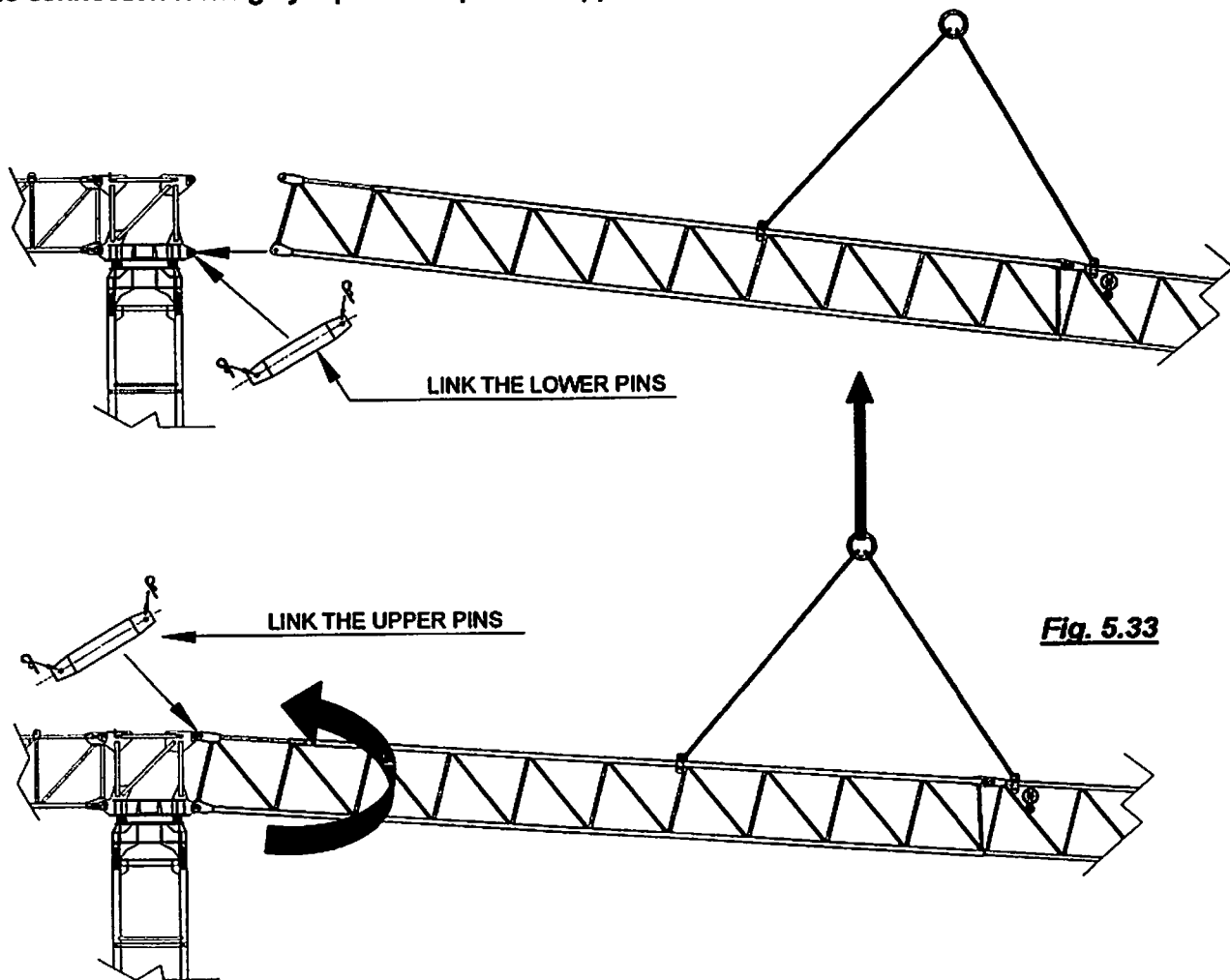
The present configuration is shown in *Fig. 5.32*. The jib should have a slightly negative inclination (**slope towards the jib tip**): this will help the connection to the pivot.

In order to obtain the desired slope, you can move the trolley forward or backwards.

- When the jib is raised from the ground, you can calibrate the TROLLEY LIMIT-SWITCH "FAR/NEAR" described at § 1.7.2.2, following the instructions given at § 4.3.4.



- Hoist the jib with the truck crane and link it to the turning pivot by means of the proper pins $\varnothing 55$ mm. This operation is shown in *Fig. 5.33*.
The negative inclination of the jib permits the connection of the lower beams. Insert the corresponding pins then hoist the jib: the jib will turn and position horizontally; now you can complete the connection locking by a pin the separated upper beam.



5.9 – COMPLETION OF THE COUNTER-JIB BALLAST ASSEMBLY

Now you can complete the assembly of the remaining *FOUR BLOCKS* of counter-jib ballast.

At § 5.7 – *Fig. 5.14* you had placed the first block on the terminal part of the counter-jib.

The concrete blocks are described at § 1.11 and shown in *Fig. 1.36*. Here below are listed the operations to carry out in order to obtain the assembly of the complete counter-jib ballast. The assembly procedure refers to *Fig. 5.14* (see § 5.7), that indicates also size and weight of each block.

At the end of the assembling procedure, the counter-jib ballast will have the configuration shown in *Fig. 5.34*.

- Sling the block in the proper hook on the upper part and insert the pin, supplied by Benazzato Gru S.p.A., into the hole passing from one side to the other.
- Lower the slinged block from above and centre the pin between the two side plates at jib-foot welded on the counter-jib.
- Lean the pin passing on the two triangular plates, one for each side, and let the block slide till it hits the block already mounted. In this position the block is stable thanks to its own weight and is contained by the triangular plate which serves as wedge.

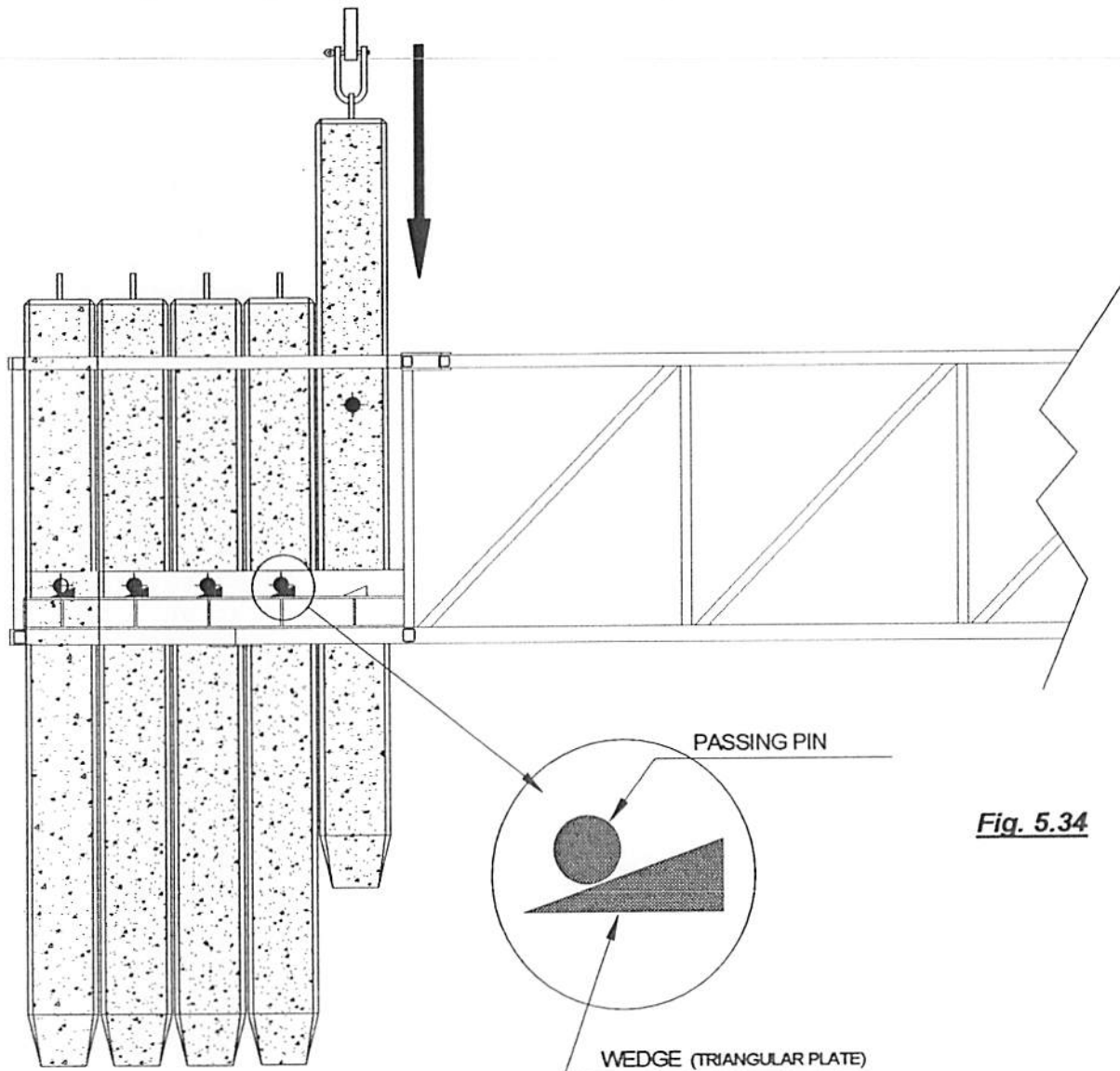


Fig. 5.34

5.10 – ELECTRICAL CONNECTION

Now carry out the electrical connection.

We remind you that the electrical cabinet of the crane is placed on jib section 01: under the cabinet there are the bundles of cables you will use for the electrical connection, which should be carried out when the crane is assembled.

We remind you also that all the connections to the hoisting motor and trolley travel motor have already been executed by Benazzato Gru S.p.A., and so the connections to the safety devices to which the two winches refer, it is to say the UP-DOWN limit-switch (see § 1.7.1.1 - fig. 1.21 - part. 06), the MAX. LOAD limiter (see § 1.7.1.2 - fig. 1.23) and the NEAR-FAR trolley limit-switch (§ 1.7.2.1 - fig. 1.25 - part. 06).

The connections to the MOMENT or TORQUE limiter have already been executed in the manufacturer's factory (see § 1.7.4 - fig. 1.30).

5.10.1 – Connection to the pivot

- Connect the SLEWING limit-switch. The corresponding cable is on jib section 01: it is already wired-up to the slewing limit-switch with pinion (see § 1.7.3 - fig. 1.28 - part. 06), and should be mounted on the proper bracket welded to the turning pivot according to the instructions given in Fig. 5.35.

Bring the cable to the bracket using the lock passes welded to the frame. Disassemble the roller of the limit-switch and insert the pin into the proper hole, then bolt the microswitch to the bearing and reassemble the roller on the pin.

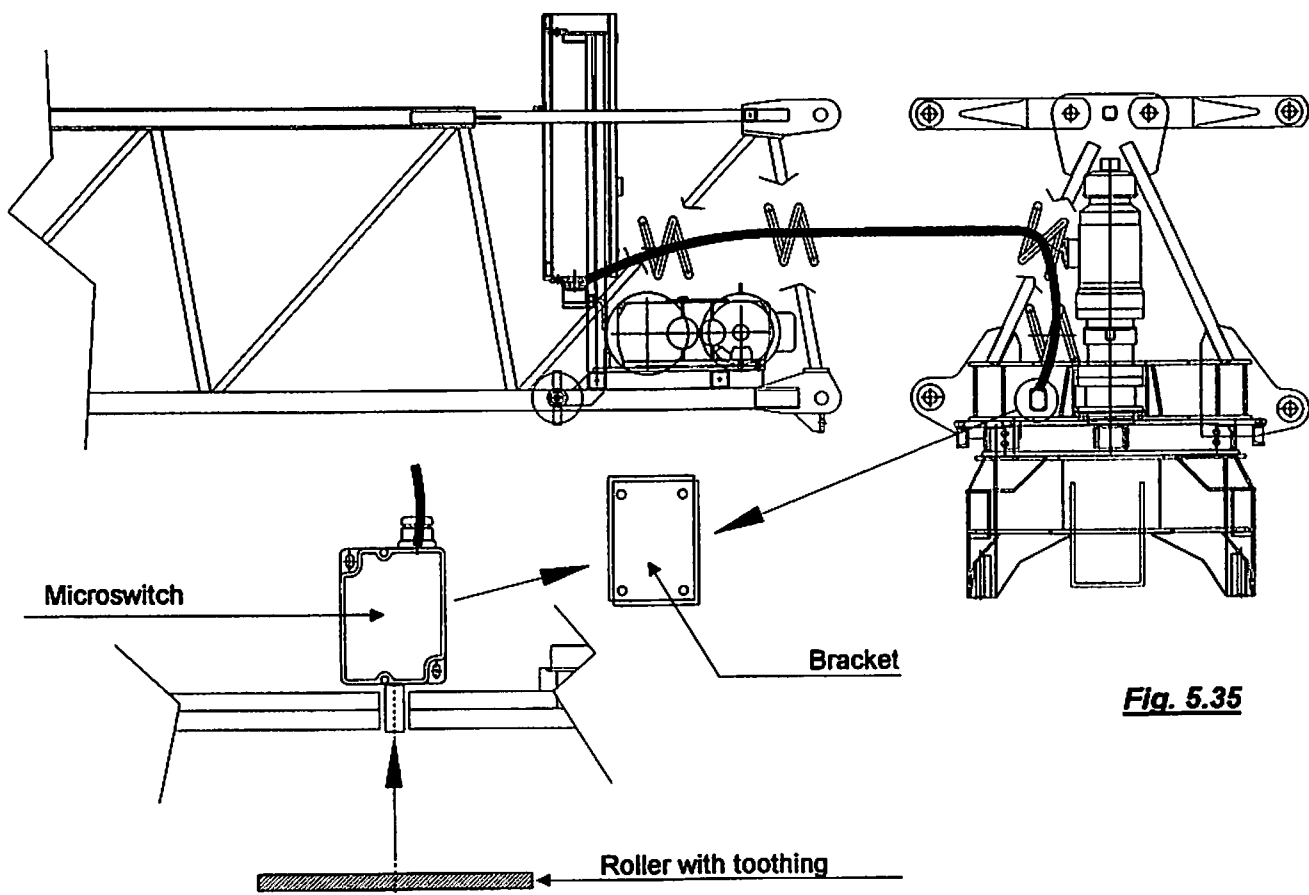
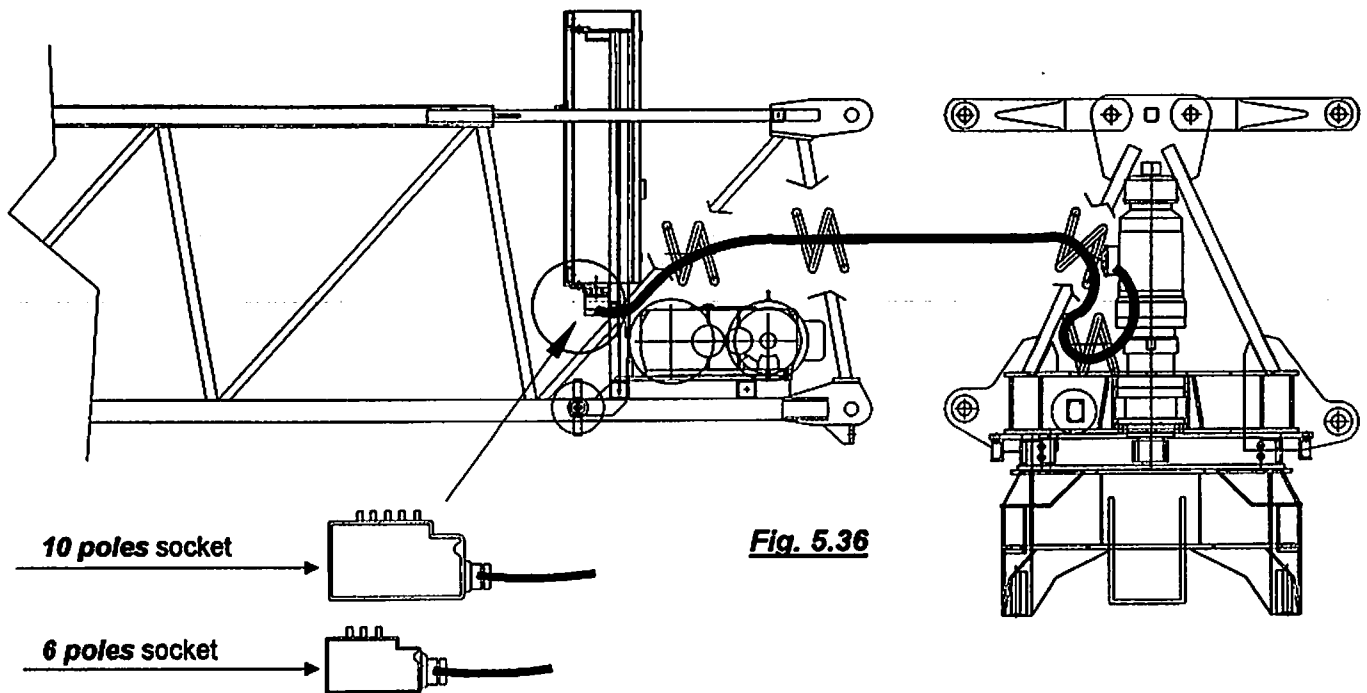


Fig. 5.35

- Connect to the electric panel the two bundles of cables endowed with sockets having **6 poles** and **10 poles**, coming from the terminal box of the slewing gearmotor placed on the pivot. These cables are placed on the turning pivot. Bring the cables to the electric panel using the lock passes welded to the frame, as shown in *Fig. 5.36*, and insert the sockets into the proper plugs placed in the lower part of the electrical cabinet, as suggested in *sheet 7/9* of the electrical scheme (see § 4.8).
We remind you that the wiring to the terminal box of the slewing motor has already been executed in the Benazzato Gru S.p.A.'s factory. In any case the terminal box is wired-up according to what indicated in *sheet 9/9* of the electrical scheme at § 4.8.

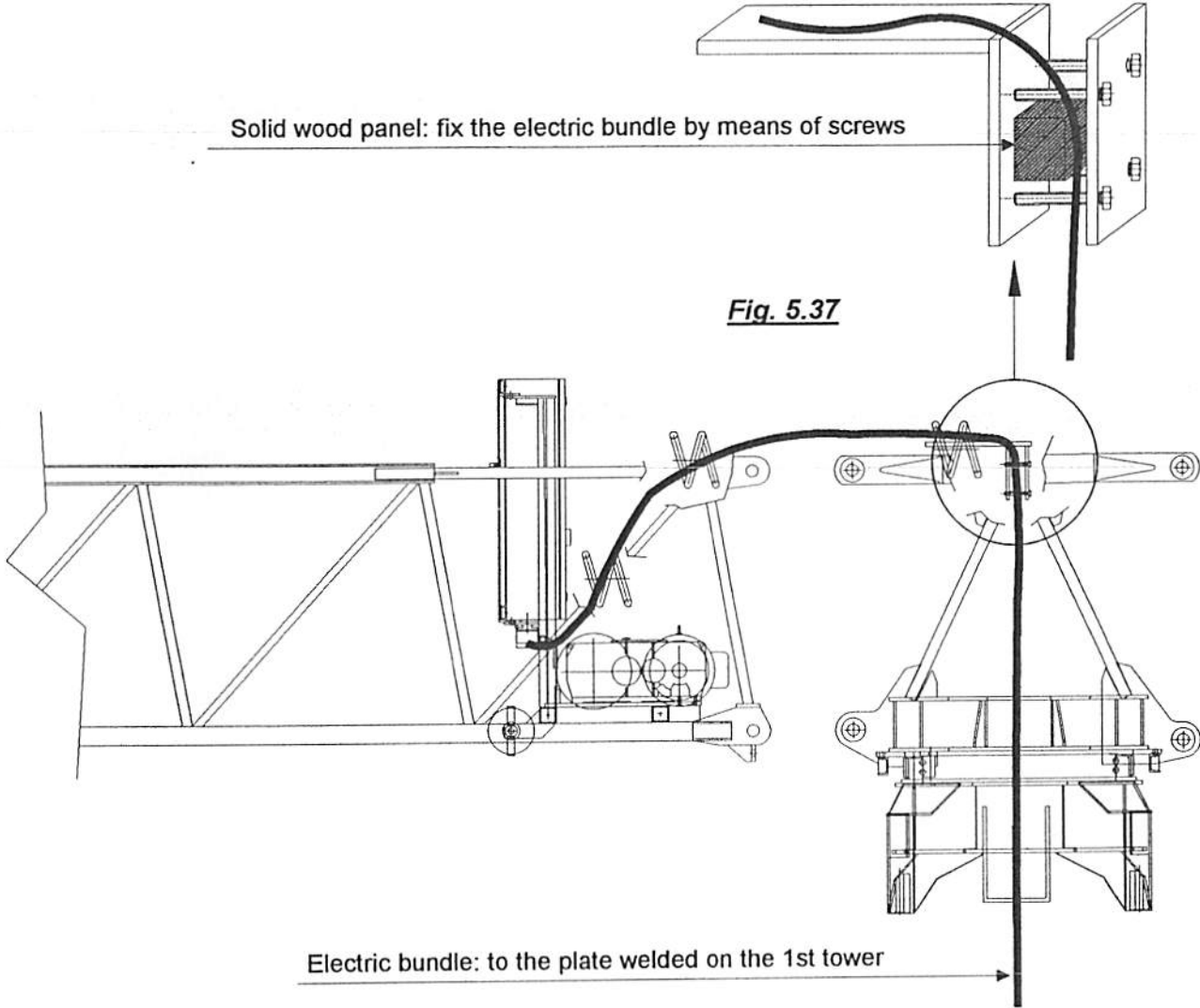


5.10.2 – Connection to the base of the 1st tower

- Lower the cable of LINE "4 x 16 mm²" placed near the electric panel on jib section 01: it is necessary for the electrical connection of the 63 Amp. LINE ISOLATING SWITCH, shown in § 3.3.4 - *fig.3.2*, which will be mounted on the proper plate welded to the 1st tower. The instructions for the wiring of this switch are indicated at § 3.3.4 - *fig. 3.3*.
- Lower the cable placed near the electrical panel on jib section 01: it is already wired up to the control box of the device "ELECTRIC UNLOCK OF THE SLEWING BRAKE", indicated at § 3.6.3 - *fig. 3.4*, which has to be mounted on the proper plate welded to the 1st tower.

All these cables form a single bundle to pass through the lock passages welded to the frame, according to what shown in *Fig. 5.37*.

Pay attention when you fix the electric bundle in the proper catch placed on the central axle of the pivot, using the solid wood panel supplied.



5.10.3 – Connection on the jib

All the connections on the jib have already been carried out by the manufacturer.

5.11 – FINAL OPERATIONS BEFORE USING THE CRANE

- Carry out the connection to the line of the yard, as suggested at § 3.3.4 - fig. 3.3.
- Carry out carefully what suggested in Part 4 – maintenance handbook in this instruction book, and especially § 4.0 (introduction), § 4.1 (maintenance before the first use), § 4.2 (brake calibration), and § 4.3 (calibration of safety and movement devices) in order to calibrate the following limit-switches and limiters:
 - ◆ WAY UP-DOWN limit-switch (see § 4.3.2)
 - ◆ MAXIMUM LOAD limiter (see § 4.3.7)
 - ◆ LOAD/SPEED limiter (see § 4.3.8)
 - ◆ STATIC MOMENT limiter (see § 4.3.5)
 - ◆ DYNAMIC MOMENT limiter (see § 4.3.6)
 - ◆ SLEWING limit-switch (see § 4.3.3)

5.12 – DISASSEMBLY

Such as for the assembly, you need a truck crane also for disassembling the machine. It should be of the same type indicated at § 2.1.1.

The disassembly of the machine has to be made following **exactly backwards** the instructions given in **part 5 – assembly instructions**, beginning from the dismantling of the electrical connections (see § 5.10) and ending with the disassembly of the 1st tower (see § 5.3), carrying out backwards and step by step all the prescriptions.

Keep in mind the same advices and the same requirements given for the assembly.

Note! *Usually the element in the plinth foundation is NOT dismantled because of the high costs, and it is left in the ground.*