



TEREX | COMEDIL

H20/HD23 Tower

Erection

- 1 ERECTION AND DISMANTLING PROCESS**
 - 1.1 GENERAL
 - 1.2 SAFETY PRECAUTIONS
 - 1.3 JOB SITE PREPARATION AND REQUIREMENTS
- 2 ERECTION**
 - 2.1 GROUND ASSEMBLY
 - 2.1.1 Assembling the tower sections (Installation "R")
 - 2.1.1.1 *Assembling HD23 base tower section*
 - 2.1.1.2 *Assembling HD23 22.6 tower sections*
 - 2.1.1.3 *Assembling HD23 26.6 tower sections*
 - 2.1.1.4 *Assembling "TT HD23-HA20" mast section adapter*
 - 2.1.1.5 *Assembling "HA20 18.10B" tower section*
 - 2.1.1.6 *Assembling "HA20 18.4" tower sections*
 - 2.2 ERECTION BY MOBILE CRANE
 - 2.2.1 Assembling the tower
 - 2.2.1.1 *Assembling HD23 tower (Installation "R")*
 - 2.2.1.2 *Connecting "HD23 22.6/26.6" tower elements*
 - 2.2.1.3 *Tensioning high strength bolts connecting HD23 tower*
 - 2.2.1.4 *HD23 high strength bolts*
 - 2.2.1.5 *Assembling "TT HD23-HA20" mast section adapter*
 - 2.2.1.6 *Assembling "HA20" tower sections*
 - 2.2.1.7 *Pin-connecting "HA20" tower sections*
 - 3 DISMANTLING**
 - 3.1 REQUIREMENTS FOR DISMANTLING
 - 3.2 DISMANTLING THE TOWER
 - 3.2.1 Dismantling H20 tower
 - 3.2.2 Dismantling HD23 tower
 - 3.4 CRANE STORAGE

Chapter 4

B

1

ERECTION AND DISMANTLING PROCESS

1.1

GENERAL

The erection and dismantling of the crane shall be done by skilled technicians, who have attended a specific training course.



Crane users are advised to contact Comedil after-sales Service or Comedil agents for qualified erectors.

Should the user employ other erectors, their ability shall be verified before handling the crane.

In this case, Comedil declines any criminal and public liability.



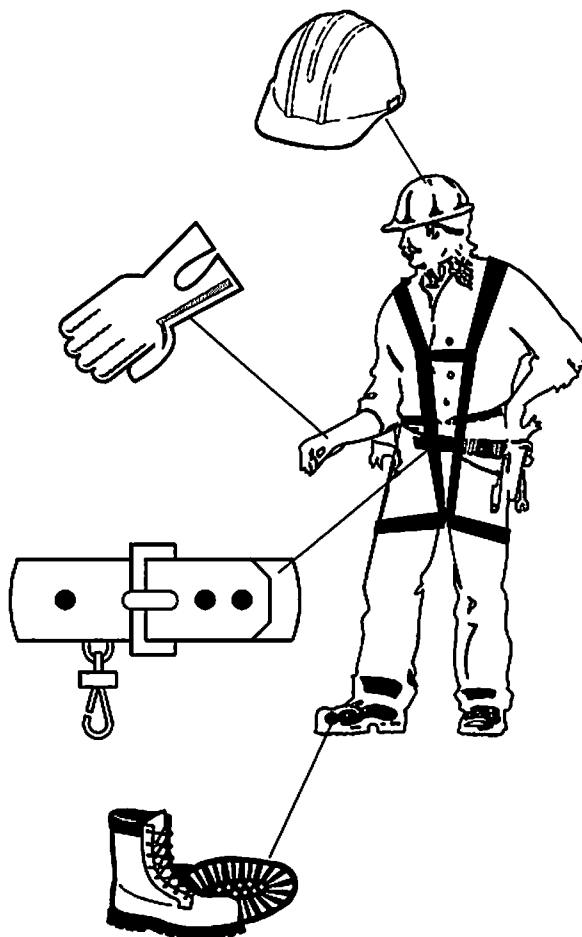
For the crane erection and dismantling at least three skilled technicians are needed: two responsible for the assembly by mobile crane, one for the co-ordination of the operations on the ground.

1.2

SAFETY PRECAUTIONS

The erector shall observe the following safety precautions before starting the erection or dismantling of the crane:

- A) he shall not work in inclement weather conditions;
- B) he shall work in perfect psychophysical conditions and check that the individual and personal accident prevention devices are available and serviceable;
- C) he shall wear a type approved safety helmet which is integral;
- D) he shall wear a type-approved safety belt which is integral;
- E) he shall wear accident-prevention shoes;
- F) he shall use tools equipped with electric insulation;
- G) should the components pre-assembled on the ground be wet or damp, he shall be careful when carrying out the erection of the crane by mobile crane;
- H) for the safety of people and equipment, the erector shall check that barriers are placed around the assembly and disassembly area and that there are no unauthorized people inside the working area.



1.3

JOB SITE PREPARATION AND REQUIREMENTS


Before starting work, the crane erector shall inspect the job site for proper arrangement. The people in charge of the job site preparation shall be advised about any default found, thus allowing them to remedy it.

Erection of the crane shall start after the erector has checked that:

- A) the maneuvering area of the crane is free from obstacles (trees, buildings, electric lines, telephonic lines, etc.);
- B) the curing time of the concrete bed, of the base and of the ballast is adequate;
- C) the ballasts and the calibrating weights meet the required specifications;
- D) the electric connections are adequate;
- E) the hoisting equipment made available at the job site is suitable for the work to be carried out;
- F) slings, chains or other proper lifting attachments being used meet the safety requirements.

MOBILE CRANE SPECIFICATIONS


The appropriate mobile crane for the crane tower erection shall be chosen according to:

- ⇒ the crane installation type ("**R**" - "**FP**" - "**T**")
- ⇒ the tower height
- ⇒ the crane model (slewing upper part)



For a correct choice refer, therefore, to **Chapters 4A** (Tower - Dimensions & Weights) and **5A** (Slewing Upper Part - Dimensions & Weights) of the crane operation manual, as well as to the recommended assembly procedure illustrated in the previous pages.



The erector shall inform the mobile crane operator of the exact weight of the parts to be lifted.

The mobile crane operator shall see that the load is well secured and balanced in the sling before it is lifted.

2

ERECTION

2.1 GROUND ASSEMBLY



Pay attention to the mounting holes of the elements to be assembled which shall be visually inspected for impurity and possible paint traces. Pins and mounting holes shall be properly greased before assembly.

All pins shall be secured by the proper spring split pins or pin lock plates.



All bolt-connections shall be free from paint on the connecting surfaces.

2.1.1 Assembling the tower sections (Installation "R")

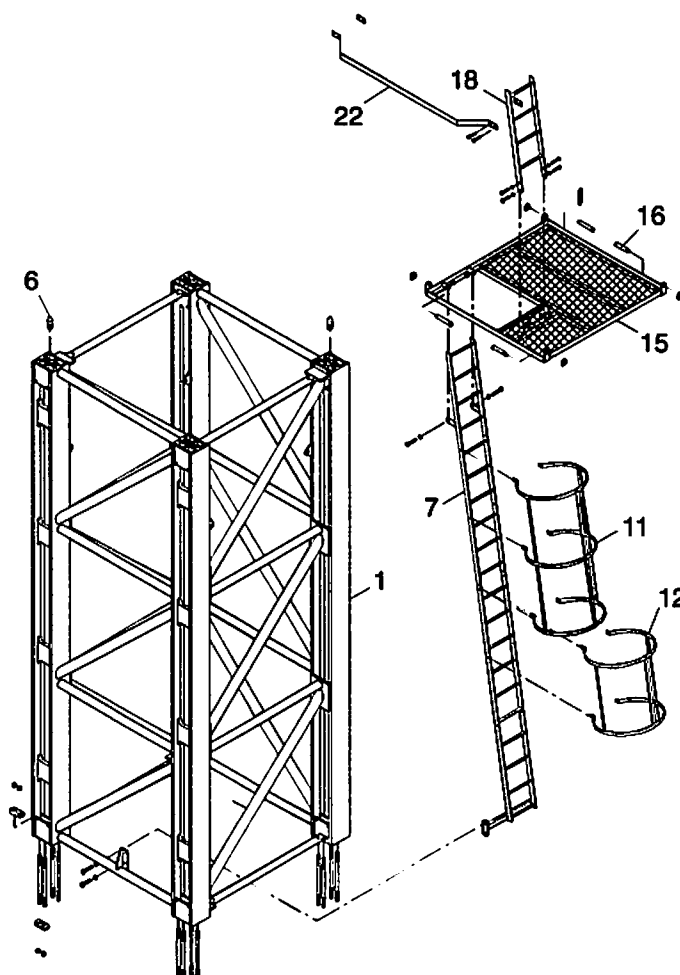
2.1.1.1 Assembling HD23 base tower section

Pin connect platform (15) on tower section (1) with "T" 25 × 60 pins (16).

Assemble ladders (18) and (7) and protections (11) and (12).

Secure ladders (18) and (7) with connecting element (22) (picture 2.1.1).

Insert M24 dowel (6).



Picture 2.1.1

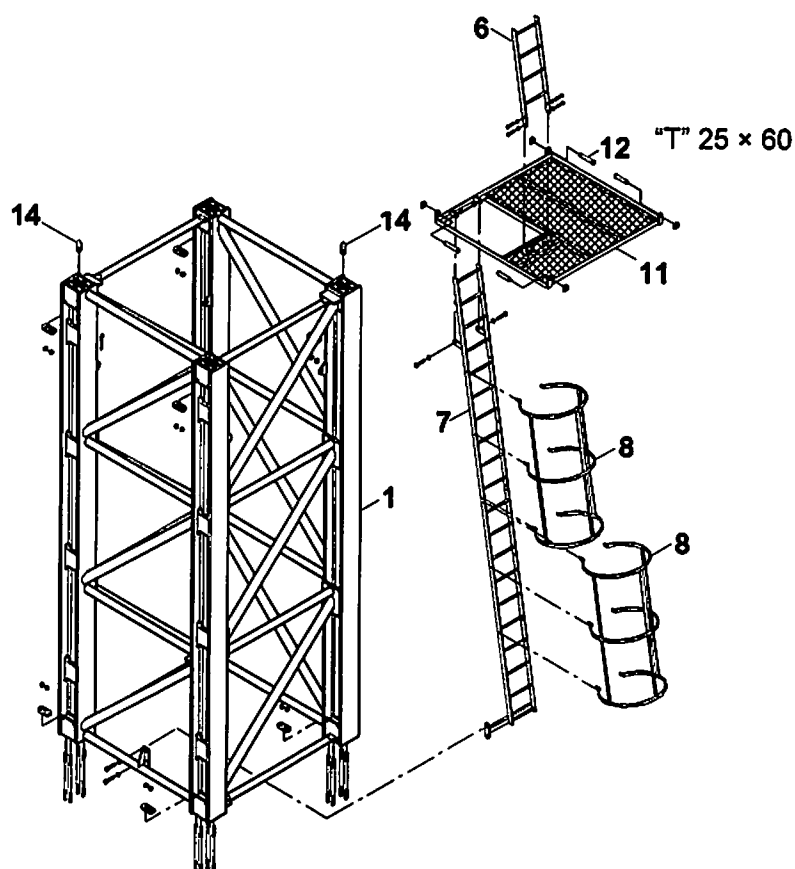
2.1.12 Assembling HD23 22.6 tower sections

Pin connect platform 22.6 (11) on tower section (1) with "T" 25 × 60 pins (12).

Assemble ladders (6) and (7) and protections (8) (picture 2.1.2).

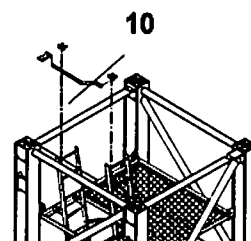
Secure ladders (6) and (7) with connecting element (10) (picture 2.1.3).

Insert M24 dowel (14).



Picture 2.1.2

Picture 2.1.3



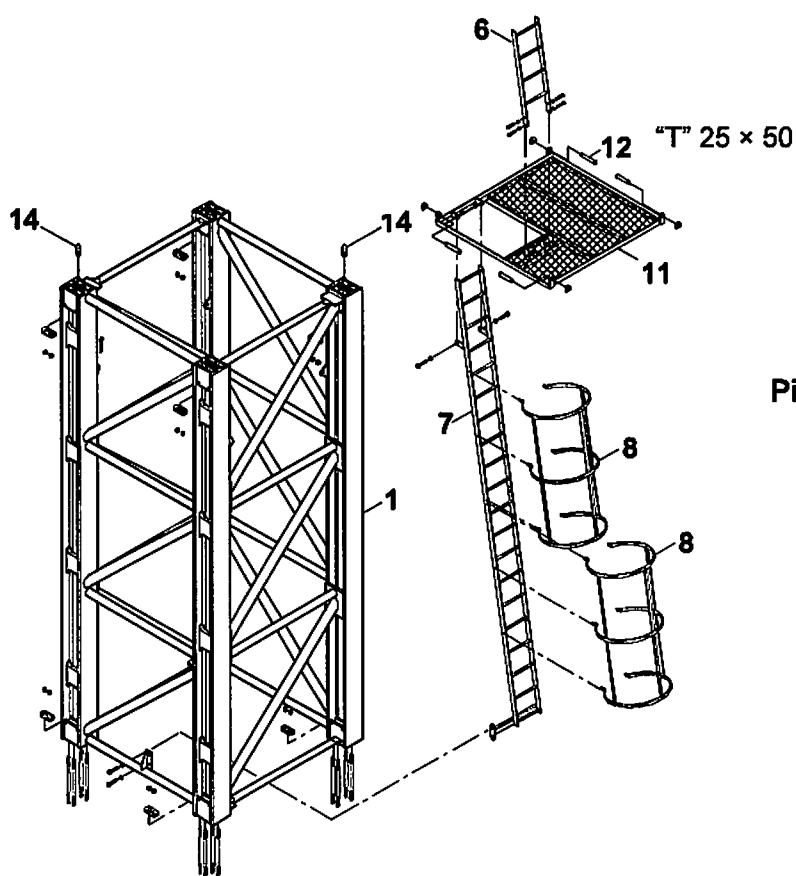
2.1.1.3 Assembling HD23 26.6 tower sections

Pin connect platform 26.6 (11) on tower section (1) with "T" 25 × 60 pins (12).

Assemble ladders (6) and (7) and protections (8) (picture 2.1.4).

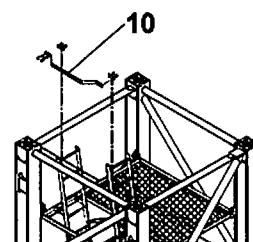
Secure ladders (6) and (7) with connecting element (10) (picture 2.1.5).

Insert M24 dowel (14).



Picture 2.1.4

Picture 2.1.5



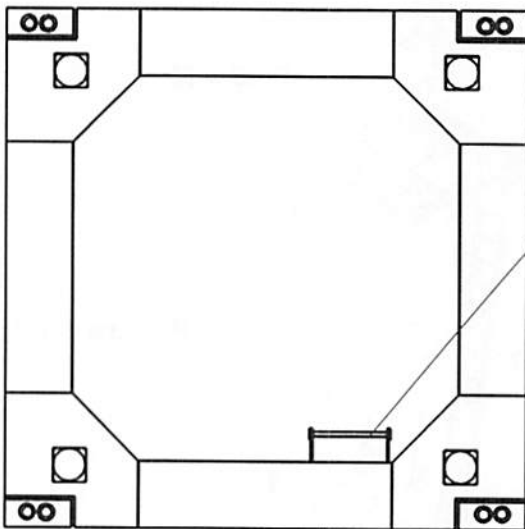
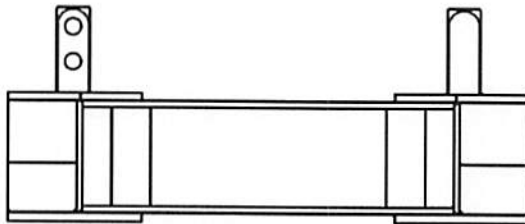
2.1.1.4 Assembling "TT HD23-HA20" mast section adapter

Sling and ground-assemble the mast section adapter (picture 2.1.6) on the top HD23 22.6/26.6 tower section with the special high strength bolts M45 L=608 (HD23 22.6) or L=645 (HD23 26.6), nuts M45 and joint plates.

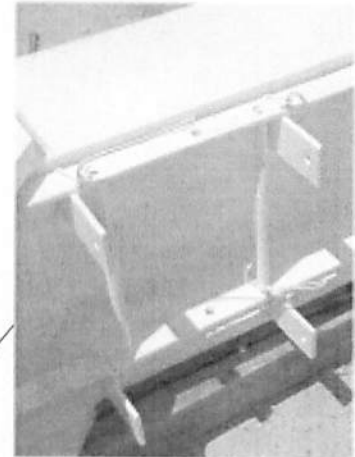


Attention to the position of the ladder supports on the mast section adapter, which shall be on the same side of HD23 22.6/26.6 tower erection lugs.

Position now the ladder and secure it with screws M12×40.

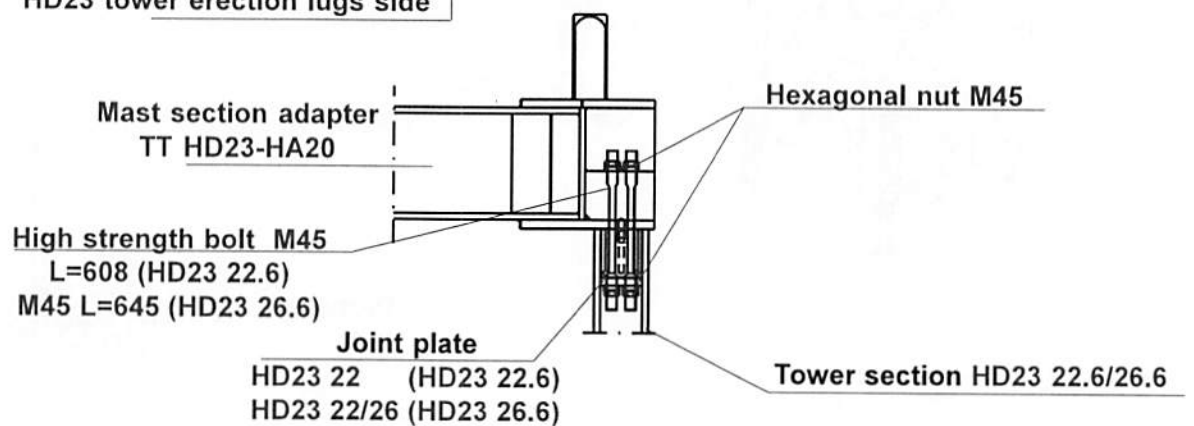


HD23 tower erection lugs side



Mast section adapter ladder supports

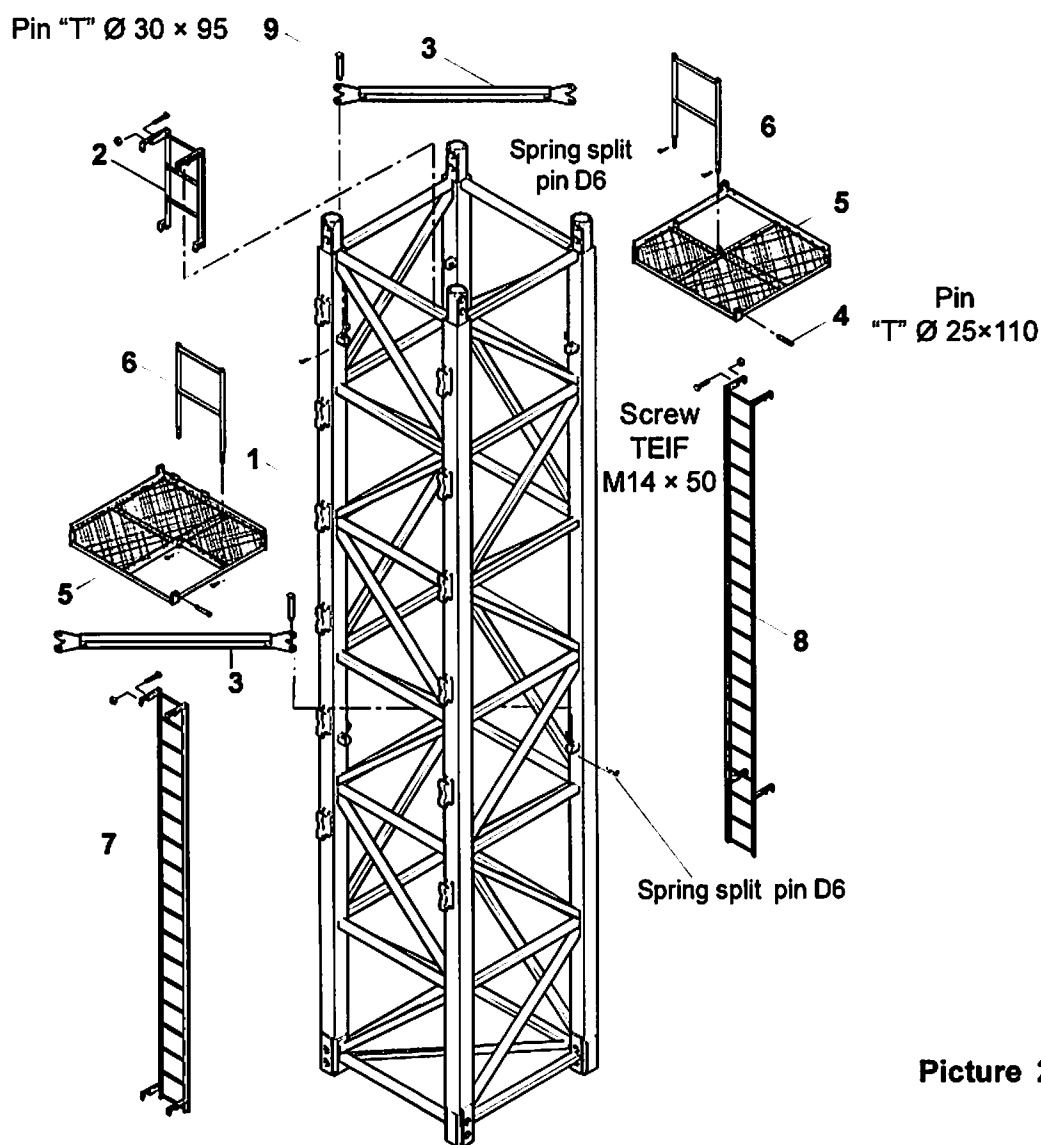
Picture 2.1.6



Mast section adapter TT HD23-HA20

2.1.1.5 Assembling "HA20 18.10B" tower section

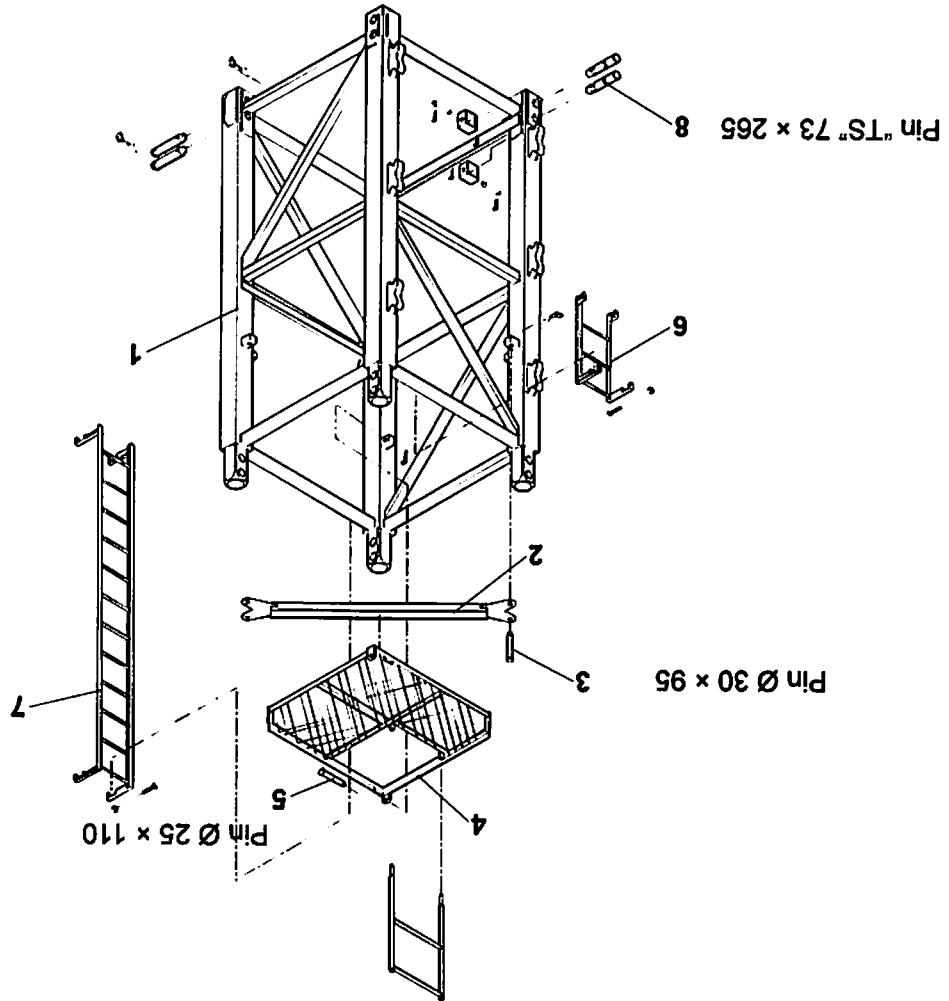
Place antitorsion diagonal (3) on tower section (1) and secure it with pins "T" Ø30×95 (9).
 Connect platforms (5) to the tower section with pins "T" Ø25×110 (4).
 Position ladders (2), (6), (7) and (8) securing them with screws TEIF M14×50 (picture 2.1.7).



Picture 2.1.7

2.1.1.6 Assembling "HA20 18.4" stower sections

Place antitorison diagonal (2) on tower section (1) and secure it with pins $\varnothing 30 \times 95$ (3). Connect platform (4) to the tower section with pins "T" $\varnothing 25 \times 110$ (5). Position ladders (6) and (7). Connect the tower sections with pins "TS" 73×265 (8) (picture 2.1.8)



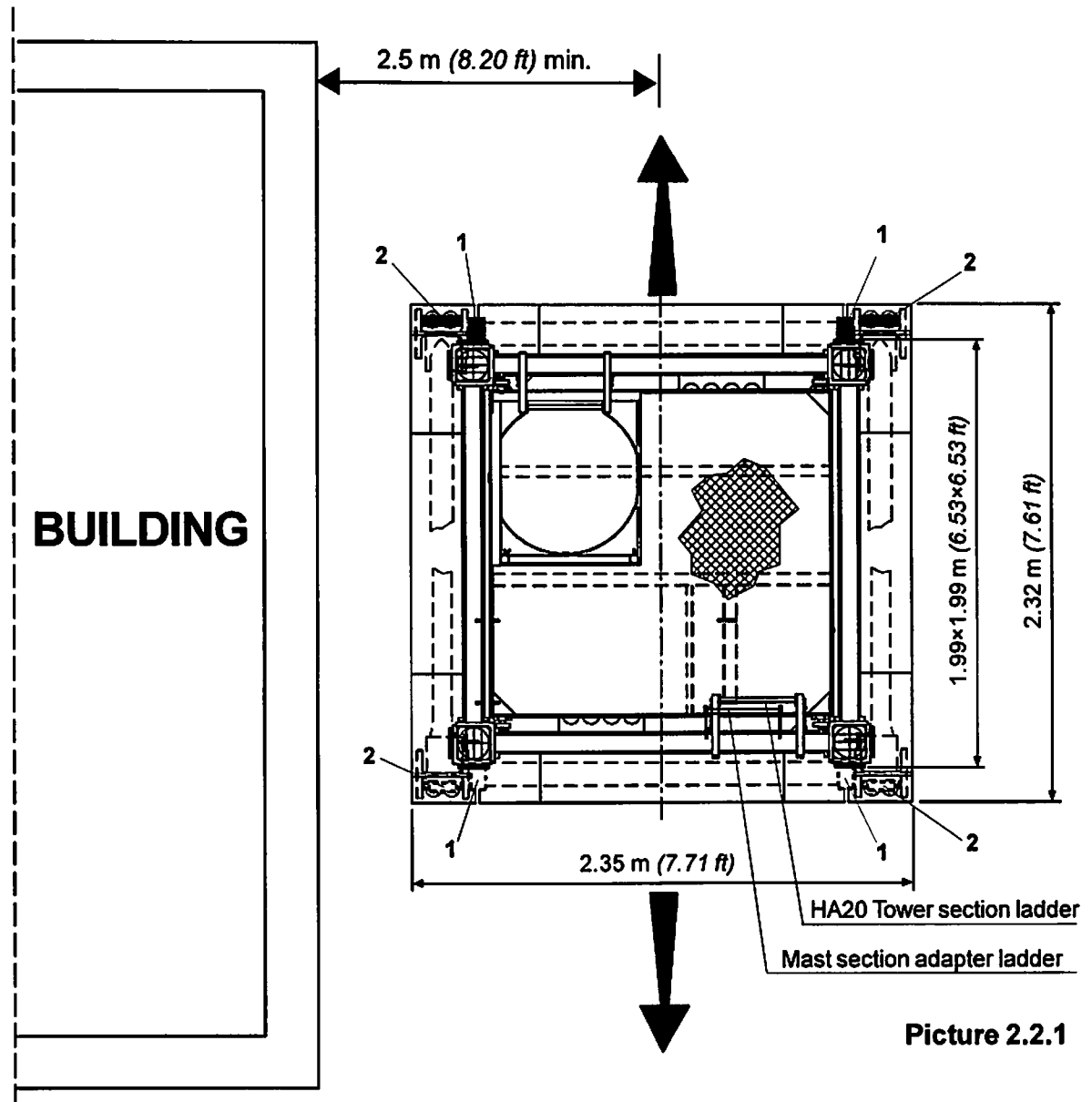
Picture 2.1.8

2.2 ERECTION BY MOBILE CRANE

IMPORTANT ADVICE FOR ERECTION BY TOP CLIMBING SYSTEM



When top climbing (raising the tower by telescoping section), make sure that HA20 tower lugs (1) and HD tower lugs (2) are positioned as shown in picture 2.2.1. making sure that the ladder on the mast section adapter is in line with the ladder of the first HA20 tower section.



All bolt-connections shall be free from paint on the connecting surfaces.



As regards the tightening of HD23 high strength bolts and HA20 pins connecting the tower elements, refer to paragraph 2.2.1.4 and 2.2.1.7 respectively.



During this phase the erection personnel shall strictly observe the provisions stated in the 92/58/EEC standards as for signalling and safety on the job site. Therefore, he shall keep continuous visual contact with the crane operator.

2.2.1 Assembling the tower

2.2.1.1 Assembling HD23 stower (Installation "R")

Assemble all tower sections which were preassembled on the ground; position platforms, ladders and tower erection lugs in the same direction.



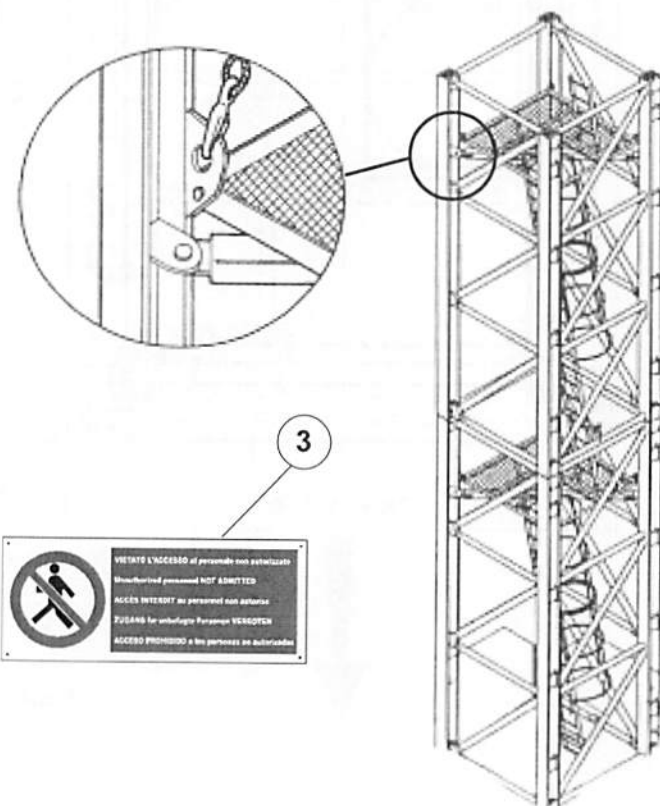
Connect HD23 26.6 base tower section straight to the expendable foundation anchors (see **Chapter 3D- "Site preparation: Tower installation R"** of the crane operating manual).

Place "NO ENTRY" safety sign (3) on HD23 bottom mast section (picture 2.2.2).

As regards assembly of electrical box support frame (1) and electrical box (2) refer to **Chapter 4C - "Tower: Electrical equipment location"** of the crane operating manual.



The tower sections are equipped with eyebolts for lifting: use them to raise one tower section at a time exclusively (picture 2.2.2).



HD23 22.6 tower section

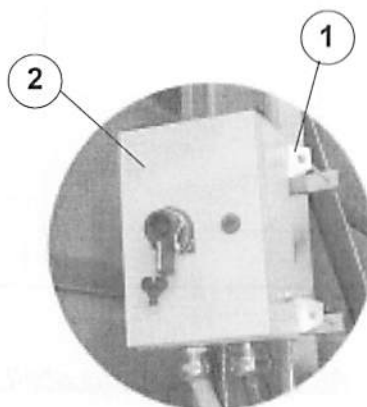
(4823 kg / 10630 lbs)

⇒ total no. 2 eyebolts placed on the opposite stanchions

HD23 26.6 tower section

(6473 kg / 14,270 lbs)

⇒ total no. 2 eyebolts placed on the four stanchions (in any case all four stanchions must be used at all times).



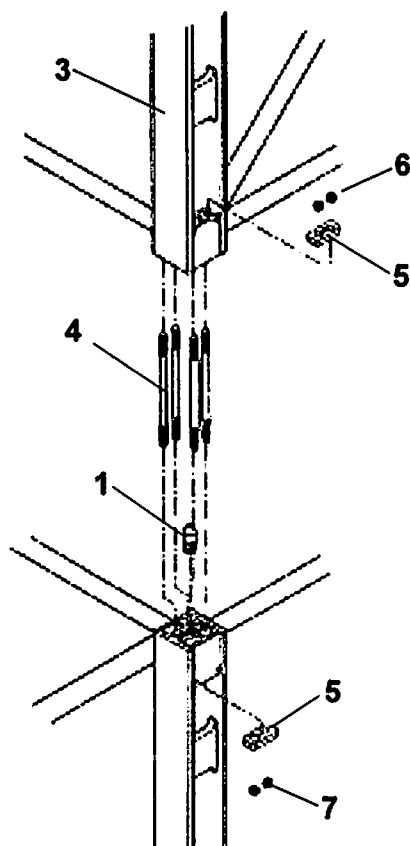
Picture 2.2.2

22.12 Connecting HD23 22.6/26.6 tower elements

Check that the threaded slot of the dowel is clean and that the connecting surfaces are also clean and free from paint, sandblasting or protective coat.

Position M24 dowel (1) on tower section (2) as per picture 2.2.3, unless already in place.

Lay tower section (3) on tower section (2) place high strength bolts (4) and secure them with joint plates (5), hexagonal nuts (6) and square nuts (7).



Picture 2.2.3

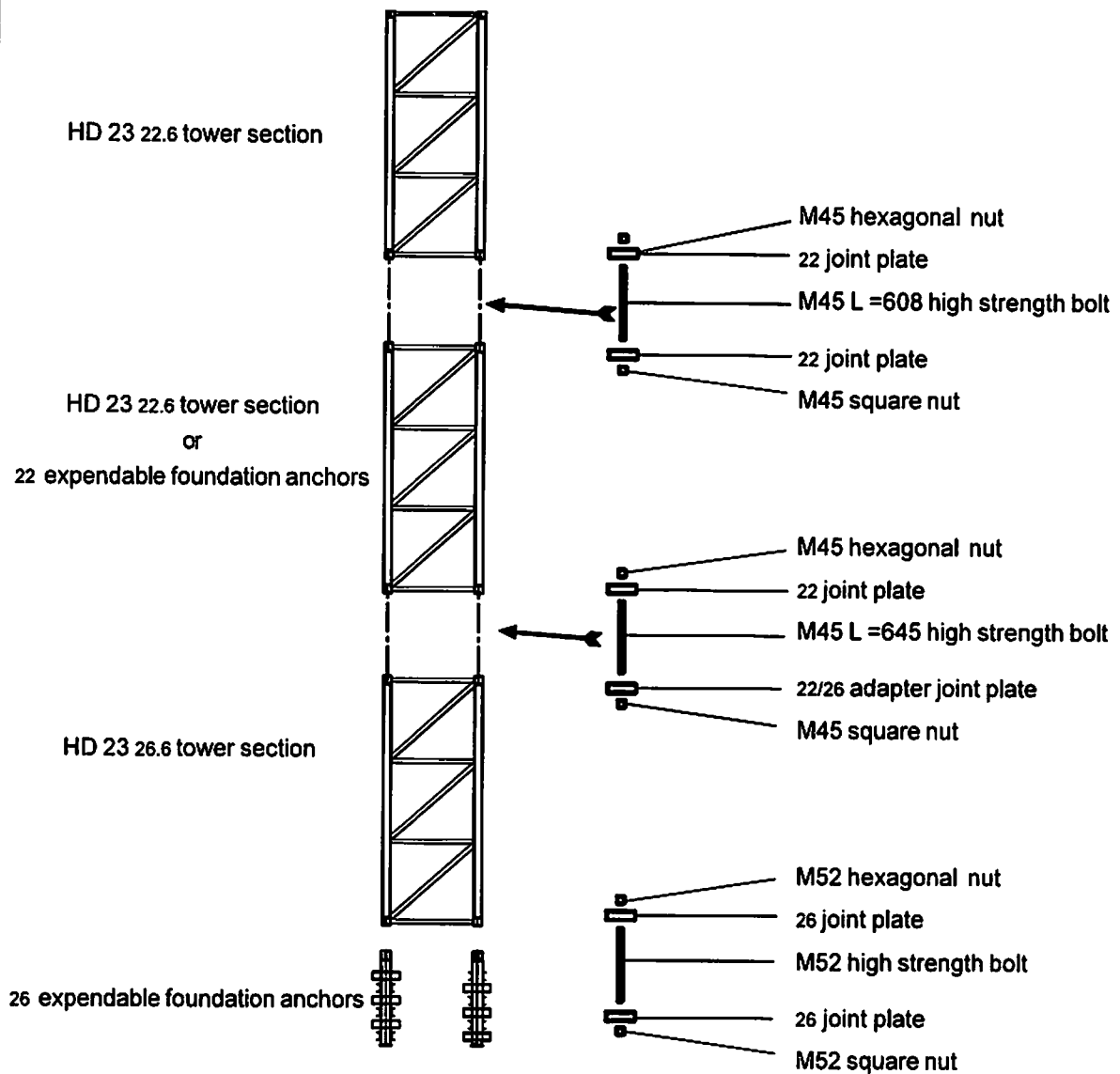
22.13 Tensioning high strength bolts connecting HD23 tower



Refer to the special booklet **"HD23 high strength bolts tightening: operating procedure"** delivered with the crane.

22.1.4 HD23 high strength bolts

The schemes shown in picture 2.2.4 describe the type of bolts to be used for the connection of the tower sections.



Picture 2.2.4

2.2.1.5 Assembling "TT HD23-HA20" mast section adapter

Position HD23 22.6/26.6 top mast section with the mast section adapter already in place (see para. 2.1.1.4).

2.2.1.6 Assembling HA20 tower sections

On assembling HD23 22.6/26.6 tower sections as indicated at para. 2.2.1.1, position HA20 tower sections (pre-assembled on the ground) securing them with pins "TS" Ø73×265, tubular bushes and pins "CS" Ø18×130 (fig. 2.2.6) keeping to the mast configuration shown in **Chapter 3D** of the crane operation manual.

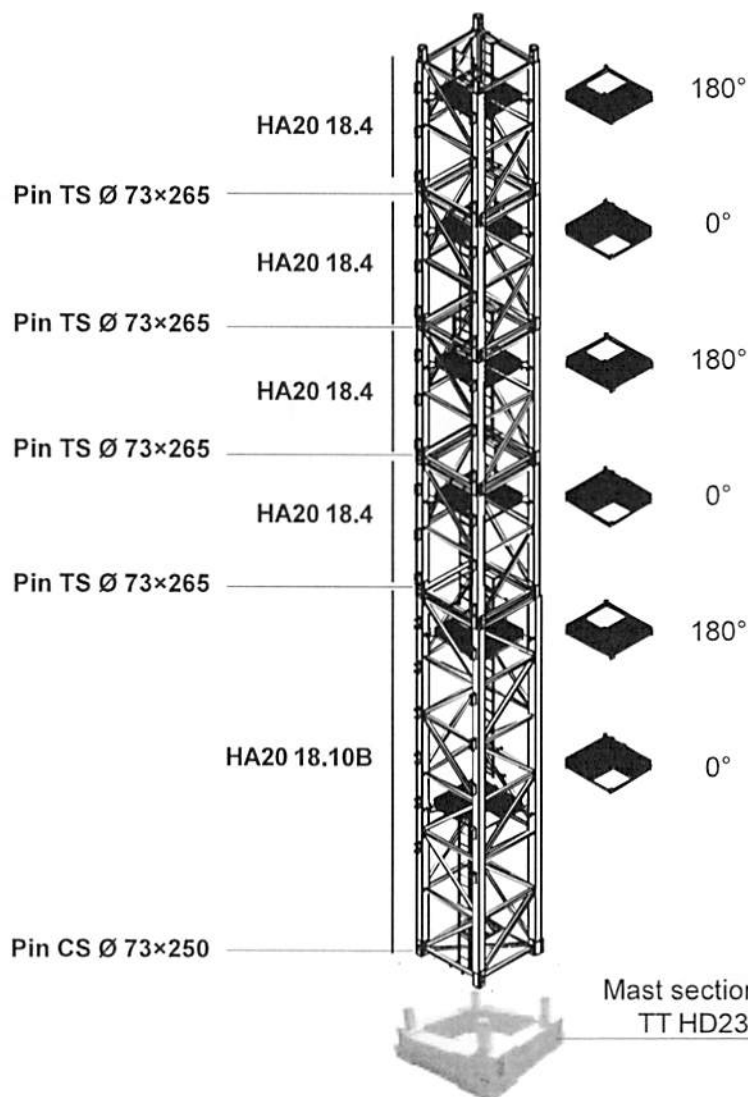


Attention to the ladder of the first tower section, which shall be on the same side of the mast section adapter ladder, and to the rest platforms, ladders and ladder support crossbeams, which shall be turned 180° one about the other (fig. 2.2.5).



The tower assembly lugs, instead, shall be positioned all in the same direction.

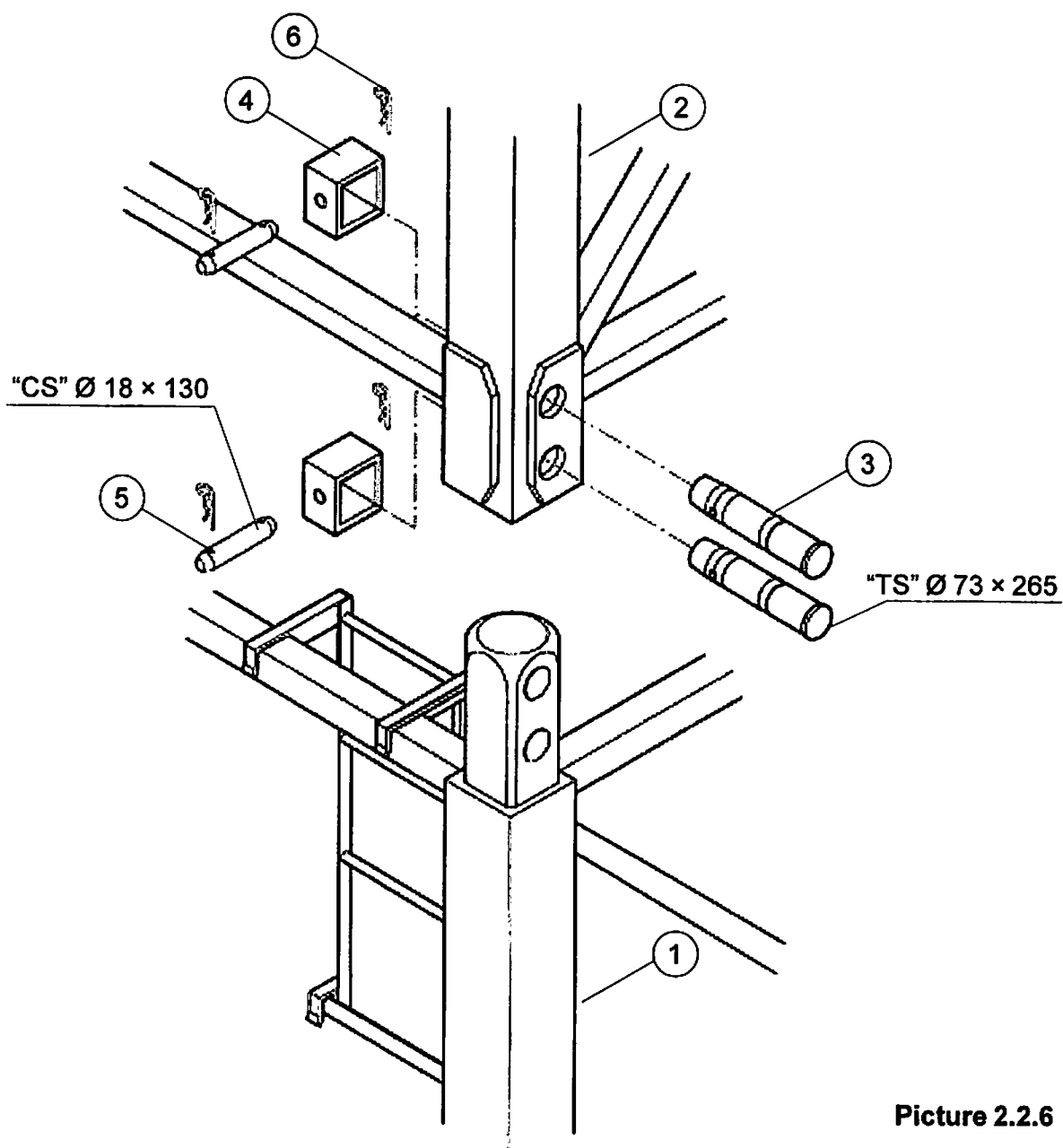
When assembling the slewing unit on the the top mast section, attention to the position of the special access opening in the lower slewing ring support, which shall fit the last assembled ladder.



Picture 2.2.5

2.2.1.7 Pin-connecting "HA20" tower sections

Position tower section (1) on tower section (2) and connect them with "TS" Ø 73 × 265 pins (3). Secure "TS" pins with tubular bushes (4) and pins (5) (picture 2.2.6).



Picture 2.2.6

Note



The pin head shall be on the outer side of the tower to avoid any interference with the top climbing equipment.

3

DISMANTLING

3.1

REQUIREMENTS FOR DISMANTLING



- A) Establish an area inside the job site in which all the components of the tower shall be stored. It is advisable to keep all the parts off the ground.
- B) Verify that the tower is still structurally sound to carry out the disassembly in a safe manner.
- C) Ensure that there are no electric cables, overhead or ground systems which could interfere with the disassembly maneuvers.
- D) The person responsible for the job site shall check that there are no people within the crane disassembly area.

Put barriers where feasible.

- E) Check that the hoisting devices supplied by the Customer meet the job specific criteria.

The appropriate mobile crane for the crane tower erection shall be chosen according to:

- ⇒ the crane installation type ("R" - "FP" - "T")
- ⇒ the tower height
- ⇒ the crane model (slewing upper part)

*For a correct choice refer, therefore, to **Chapters 4A** (Tower - Dimensions & Weights) and **5A** (Slewing Upper Part - Dimensions & Weights) of the crane operation manual, as well as to the recommended assembly procedure illustrated in the previous pages.*

The erector shall inspect the conditions of the ropes, chains and slings which are to be used for hoisting the crane components.

The erector shall inform the mobile crane operator of the exact weight of the parts that are to be hoisted.



The mobile crane operator is fully responsible, instead, for the slinging and hoisting of the loads.

- F) During the slinging phases, before removing the bolt-connections of the various crane components, verify that the center of gravity of the part to be lifted and the attaching point of the cable coincide.

3.2

DISMANTLING THE TOWER

3.2.1

Dismantling H20 tower

- A) Sling with four shackles the top tower section.
- B) Disassemble the ladder components.
- C) Remove the connecting pins.
- D) Lower the tower section to the ground and place it in a horizontal position.
- E) Proceed according to the same disassembly sequence for the remaining tower sections.

3.2.2 Dismantling HD23 tower

- A) Sling the upper tower section with the tower section adapter already preassembled.
- B) Disassemble the ladder components.
- C) Remove the tower section high strength bolts.
- D) Lower the upper tower section to the ground and place it in a horizontal position.
- E) Proceed according to the same disassembly sequence for the remaining tower sections.
- F) Remove the electrical box and its frame from the bottom mast section.

3.3 CRANE STORAGE

Properly grease all the mounting holes and bolts.

Protect the unpainted parts (close to the bolt-connections).

Protect all the electrical parts (motors included) against bad weather conditions by covering them with rainproof sheets.