

TROPICALIZED WAREHOUSES

LOGISTIC
SOLUTIONS



WAREHOUSE UP TO A 10 MT SPAN



ASSEMBLY, USE AND MAINTENANCE MANUAL

MACHINERY IDENTIFICATION

structure	
model	
version	
serial number	
year of construction	
manufacturer	KOPRON S.p.A. via I° Maggio, s.n. 20064 Gorgonzola – Milan - Italy ☎ +39 02 92 152 751 📠 +39 02 92 152 923
customer	
destination	

LEGISLATIVE STANDARDS REGARDING THE STRUCTURE

The structure is made according to the following standards in force:

- Law 05/NOVEMBER/1971 N 1086 - Standard regulating the use of reinforced concrete, either normal or prestressed and with metal structure.
- D.M.LL.PP. 14/FEBRUARY/1992 - Technical standards regulating the works carried out in reinforced concrete and prestressed and for metal structure.
- D.M.LL.PP. 09/JANUARY/1996 - Technical standards for calculations, works and testing of the structures in reinforced concrete normal and prestressed and for metal structures.
- D.M.LL.PP. 16/JANUARY/1996- Technical standards regarding 'general criteria for safety checks on constructions and loads and overloads'.
- MINISTERIAL MEMORANDUM LL.PP. 04/JULY/1996 N 156AA.GG./STC - Instructions on how to apply the technical standards Istruzioni regarding 'general criteria for safety checks on constructions and loads and overloads' as mentioned above.
- CNR - UNI - 10011 JUNE 1988 - Steel Costruction - Instructions for calculation, construction, testing and maintenance.

In addition if required:

- D.M.LL.PP. 16/JANUARY/1996 - Technical standards for building in earthquake zones.
- LAW 02/FEBRUARY/1974 N 64 - Detailed provisions for building in earthquake zones.



Regulations for specific needs of the zone of construction issued by local authorities must be considered.

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**UNIT II IDENTIFICATION AND CONTROL
OF THE MATERIAL**

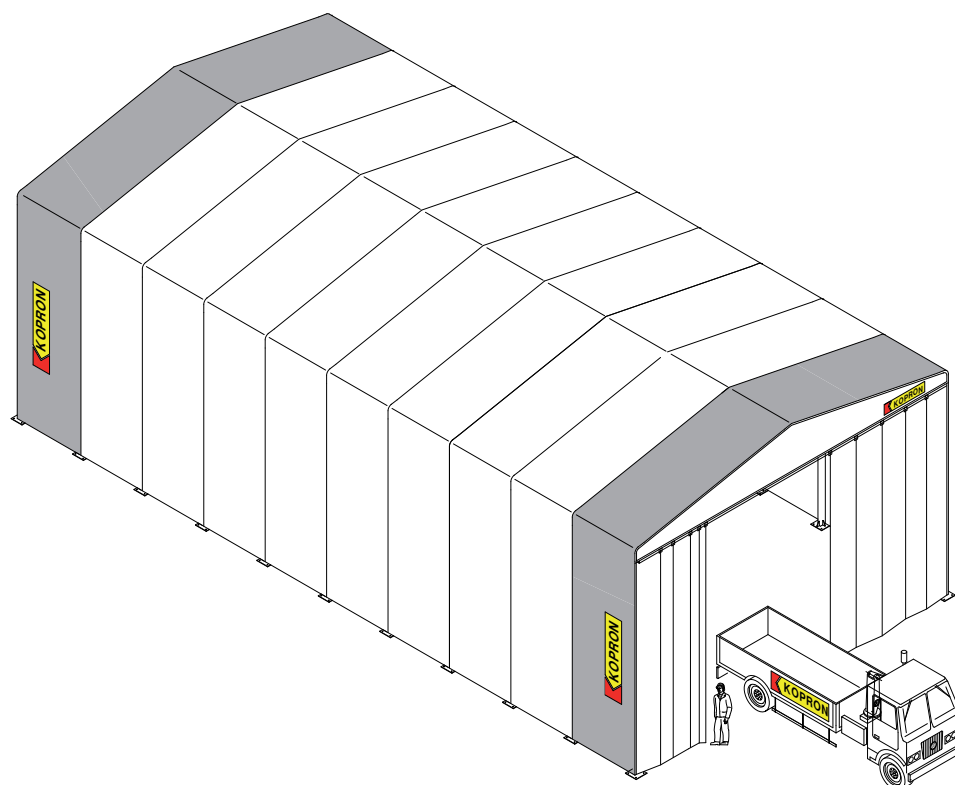
UNIT III VERIFICATION OF THE MASONRY WORK

UNIT IV INSTRUCTIONS

UNIT V ENVIRONMENT POLLUTION

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In case the tropicalized warehouse has special equipment, specific manuals will be provided in addition to this one. These manuals must be carefully read order to assure a correct and safe handling of the product.

All drawings and diagrams besides technical, mechanical and electrical characteristics described in this manual, can be modified at any time. The manual will be consequently updated as soon as possible.

Kopron S.p.A.

INTRODUCTION

This manual is a guide for installers, users and maintenance personnel and contains information on how to prevent accidents during the life cycle of the structure from installation to dismantling.

In case instructions are not clear or should particular problems arise and not mentioned herein, please apply to our service department.

Do not take personal initiatives in case instructions are not fully understood.

Buyer must assure that personnel involved in installation and operation reads this manual before installing and using the structure.

We suggest to keep a copy of this manual handy in a place where it can easily be consulted.

Legislative standards regarding the project and manufacturing of the structure are indicated at page 3.

Assembly and installation must be carried out by qualified personnel adequately equipped to operate in absolute safety condition.

A dedicated chapter on other risks will face the matter in detail.

Un apposito capitolo Rischi residui entrerà comunque più approfonditamente in merito a quanto sopra.

Preventive maintenance for solving anomalies must be planned according to standards which require only specialized personnel to carry out interventions.

Personnel handling the structure must have full knowledge on how to operate it, on improper use and on particular risks and protection measures. (see dedicated chapter on risks)

Safety requirements are met when regular maintenance is carried out on behalf of qualified personnel, duly trained and which operates according to instructions contained in this manual.

To have another copy of the manual you may contact our service department at the following address, specifying the serial number and year of construction of the product.

A marking plate is positioned on the front part of the framework which contains all the necessary data Kopron needs. (see Chap.1.3 Unit II)

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KOPRON S.p.A. have the right to update or improve the manual without affecting the validity of this version.

Some important points have been highlighted by using symbols explained on next page.

INTRODUCTION

SYMBOLS



DANGER - NOTICE

This sign indicates serious danger which must not be underestimated in order not to risk people's health and safety.



CAUTION

This sign indicates the requirement to be careful on how to move and act in order not to risk people's health and safety and cause economical damages



IMPORTANT

This sign indicates technical information and important regulations to pay attention to.



ECOLOGY

Remarks regarding ecology



PROHIBITION

If instructions contained in this manual are not strictly followed and original spare parts are not used, or in case ordinary maintenance or non authorized interventions are carried out Buyer will take his own responsibilities and guarantee will no longer be valid

Kopron S.p.A..

CHAPTER 1

DESCRIPTION

1.1 DESCRIPTION OF THE STRUCTURE

A tropicalized warehouse consists of metal profiles covered with a fabric, and is designed to cover areas for different purposes in compliance with standards regulating the use of this type of warehouse.

The carrying structure consists of square or rectangular cut tubes in hot dip galvanized steel, and can be installed in all areas even with particularly bad weather or near the sea. The hot dip galvanizing process allows the structure to resist against corrosion and keep mechanical and structural characteristics intact over time.

The structure is made of different parts assembled together either by bolting or electrowelding the joints. Both ways are all right to give the required stiffness to the structure.

1.2 IMPROPER USE

This kind of structure can be used for many purposes.

It is easy and quick to assemble, it can be used on working sites where you need to shelter machinery and equipment.

The structure must not be used for purposes different from the ones indicated.

In case Buyer needs to use the structure in a special way he will have to first inform Kopron S.p.A. who must authorize such a use and suggest actions to undertake.

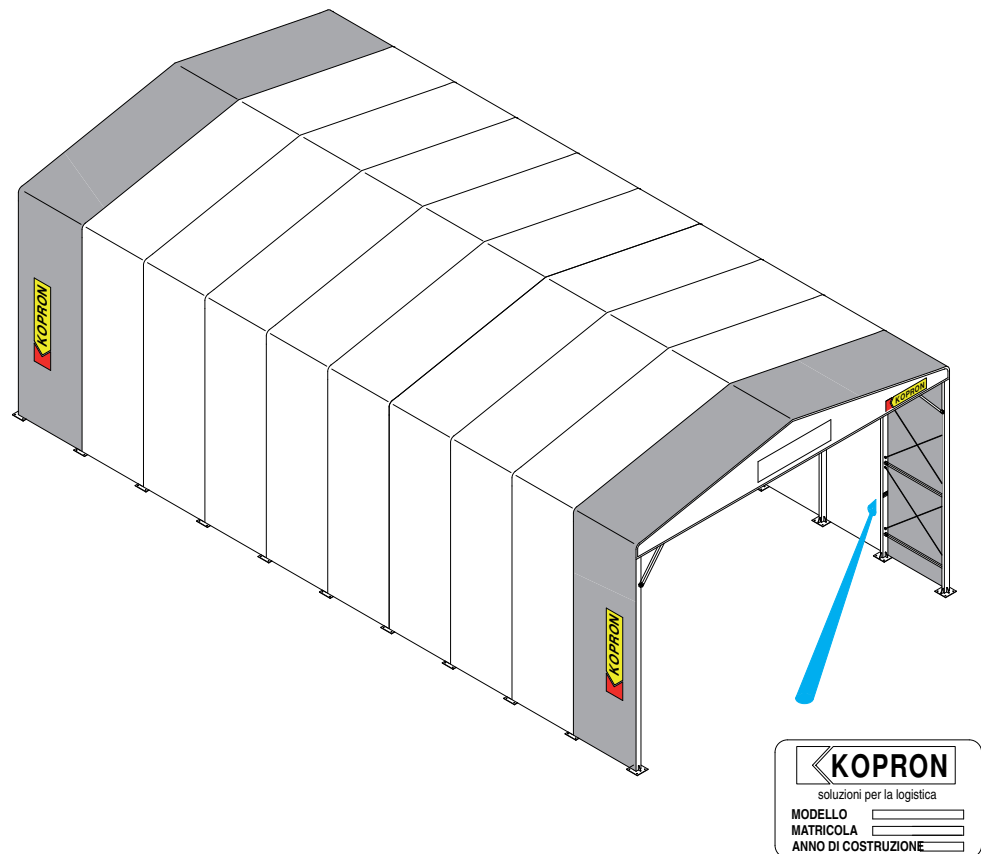
The place of installation is of utmost importance. Should the structure be disassembled and then assembled elsewhere it must be inspected and adjusted to comply with the new environment and climate.



In case of improper use guarantee will no longer apply and Buyer will take his own responsibilities for not having followed instructions contained in this manual.

1.3 EC IDENTIFICATION PLATE

Marking plate of the product is permanently placed near the second post on the right. The data in the marking plate must be legible, and kept cleaned. In case it gets damaged or becomes no longer legible, it must be replaced. For requesting another plate please mention the data contained in the Certificate of Conformity sent by registered mail to Customer.



CHAPTER 2

TECHNICAL DATA AND SIZES

2.1 DIFFERENT TYPES OF WAREHOUSES

Warehouses of this type are supplied with posts 10mt long and with n.3 different heights 5, 6 and 8,5mt.

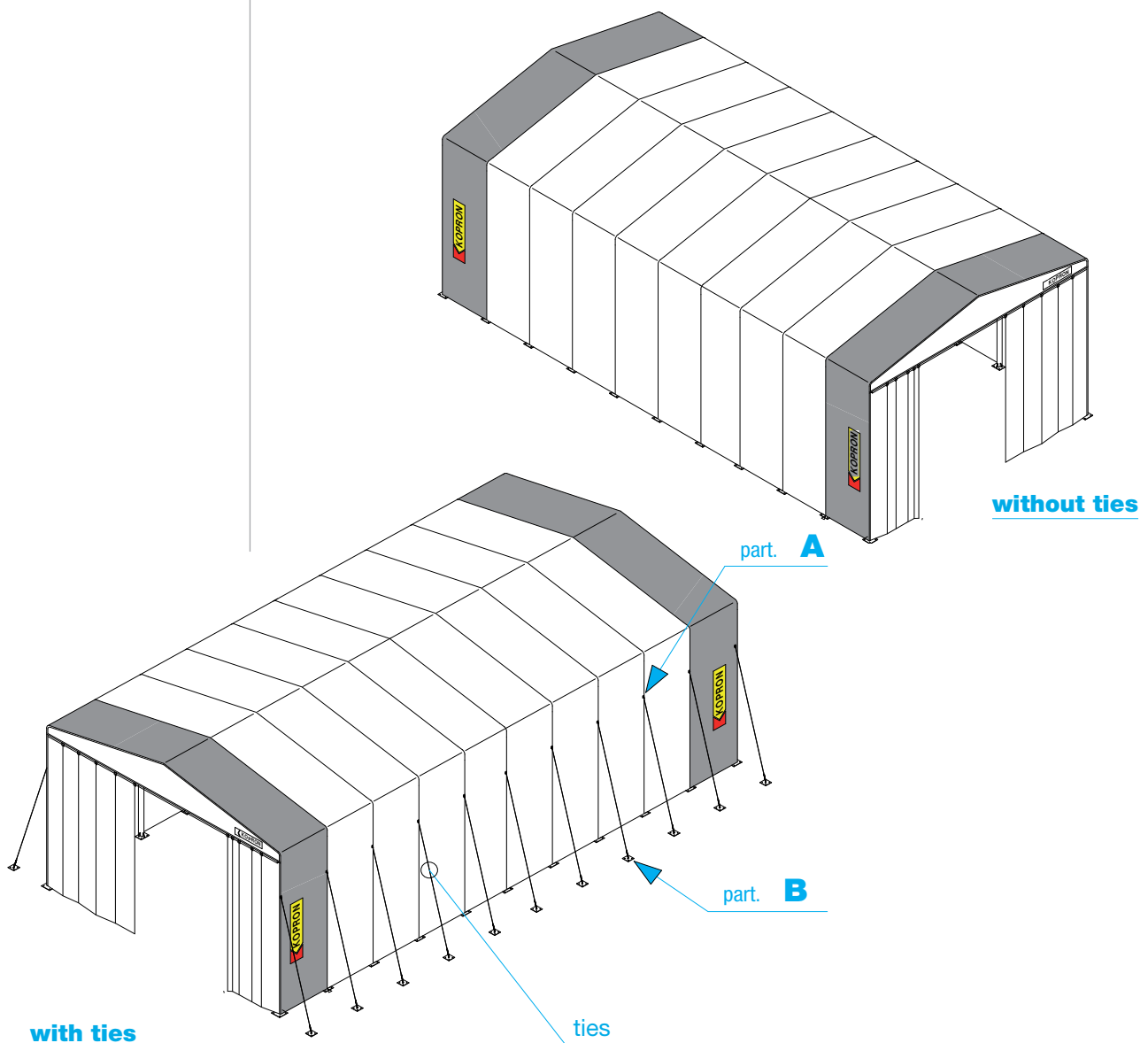
Length can be determined by Customer in multiple of 2 meters and the minimum length acceptable is of 6,08 mt which includes front and rear part duly tied with steel cables and with posts connected to one another with springs.

Warehouses with a height reaching 5/6 mt are supplied with or without ties according to wind pressure of the area of installation.

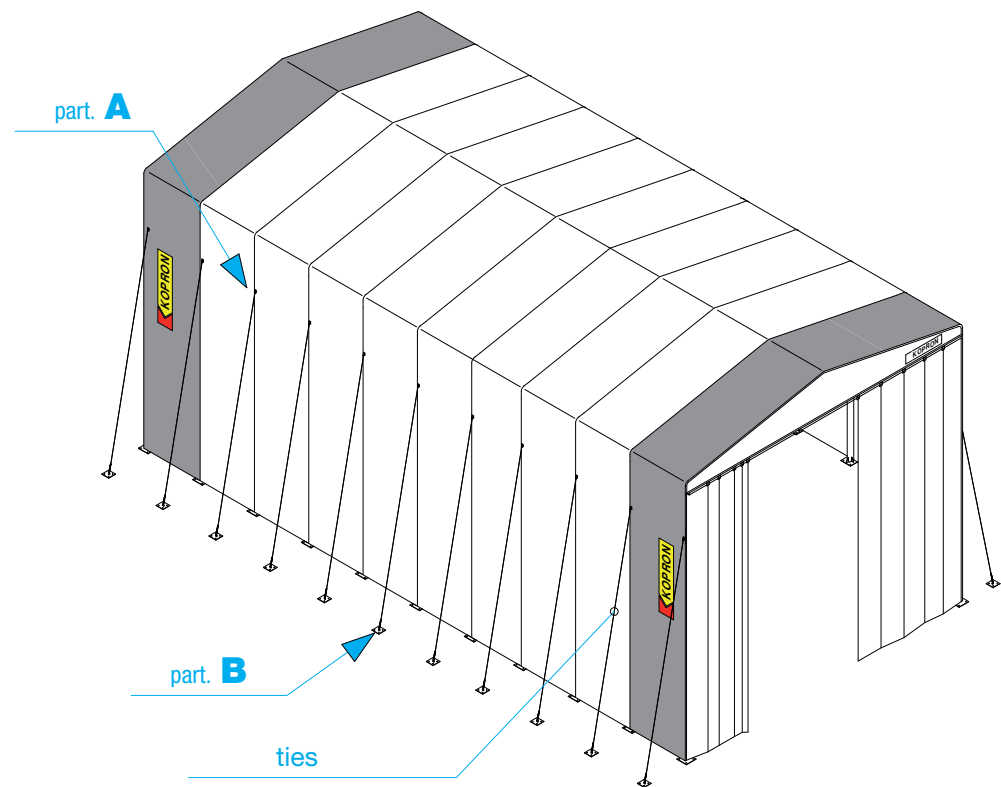
Warehouses 8,5 mt high are always supplied with ties, which must necessarily be assembled to assure the stability of the warehouse. The following drawings show the different types of warehouses



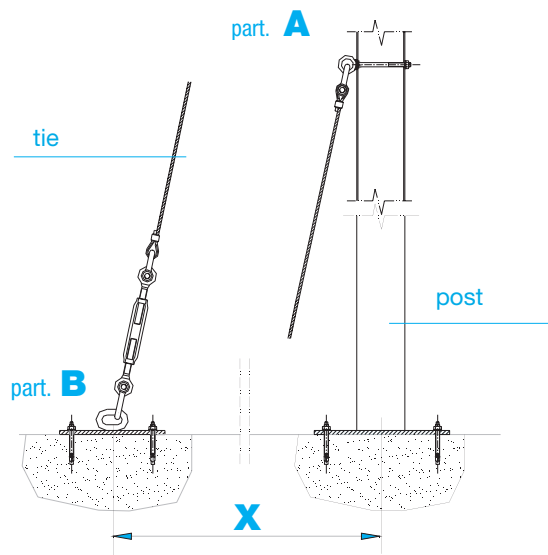
WAREHOUSE WITH HEIGHT 5 and 6 MT



WAREHOUSE WITH HEIGHT 8,5 MT (with ties)



The distance between ties changes according to the height of the warehouse.



Warehouse height	X
5 meters	1 meter
6 meters	1,20 meters
8,5 meters	1,50 meters

CHAPTER 1

IDENTIFICATION AND CONTROL OF THE MATERIAL

1.1 PREAMBLE

Warehouses must be delivered with steel tubes, junction plates and other components already with holes made before the hot dip galvanizing process. Supply includes bolts for either joining the structure together or anchoring it to the ground.

The arch of the carrying structure consists of n. 2 trusses plus a beam.

The covering consists of a special fabric. This manual has a chapter with instructions on how to assemble the fabric.

In case the front and rear part of the warehouse are equipped with particular closings or devices, specific enclosures in this manual describe the assembling.

It also contains the description on how to assemble sliding curtains, if any, in the front and rear part of the warehouse.

1.2 IDENTIFICATION AND CONTROL OF THE MATERIAL

Along with delivery, besides transport documents, you may also find:

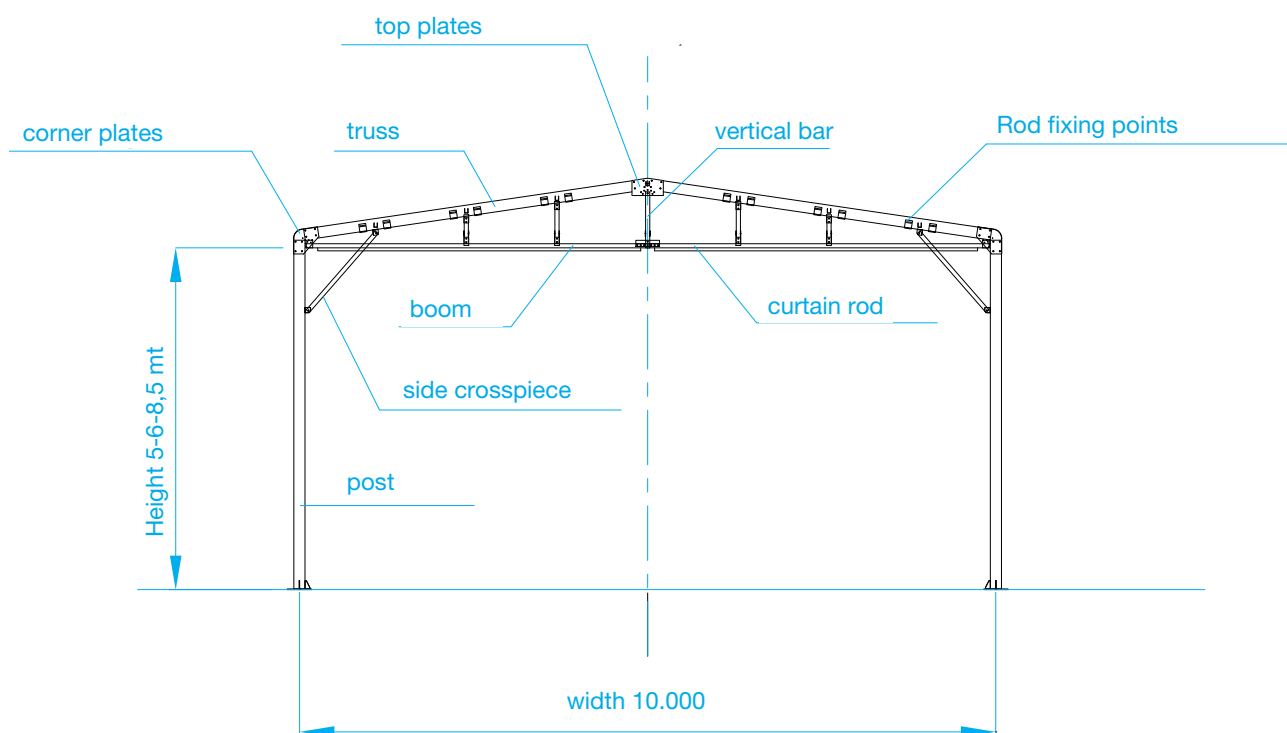


- packing list including the number of bolts necessary for assembly.
- data regarding the warehouse such as width, length, height ecc.
- drawings of the structure indicating whether it has ties.
- drawings of the fabric detailing the colour and the positioning of the writings.
- drawings of the sliding curtains for the front a rear part of the warehouse if any
- drawings on how to anchor the structure to the ground
- drawings for the correct positioning of the structure.
- specific manuals for special devices on the structure if any.

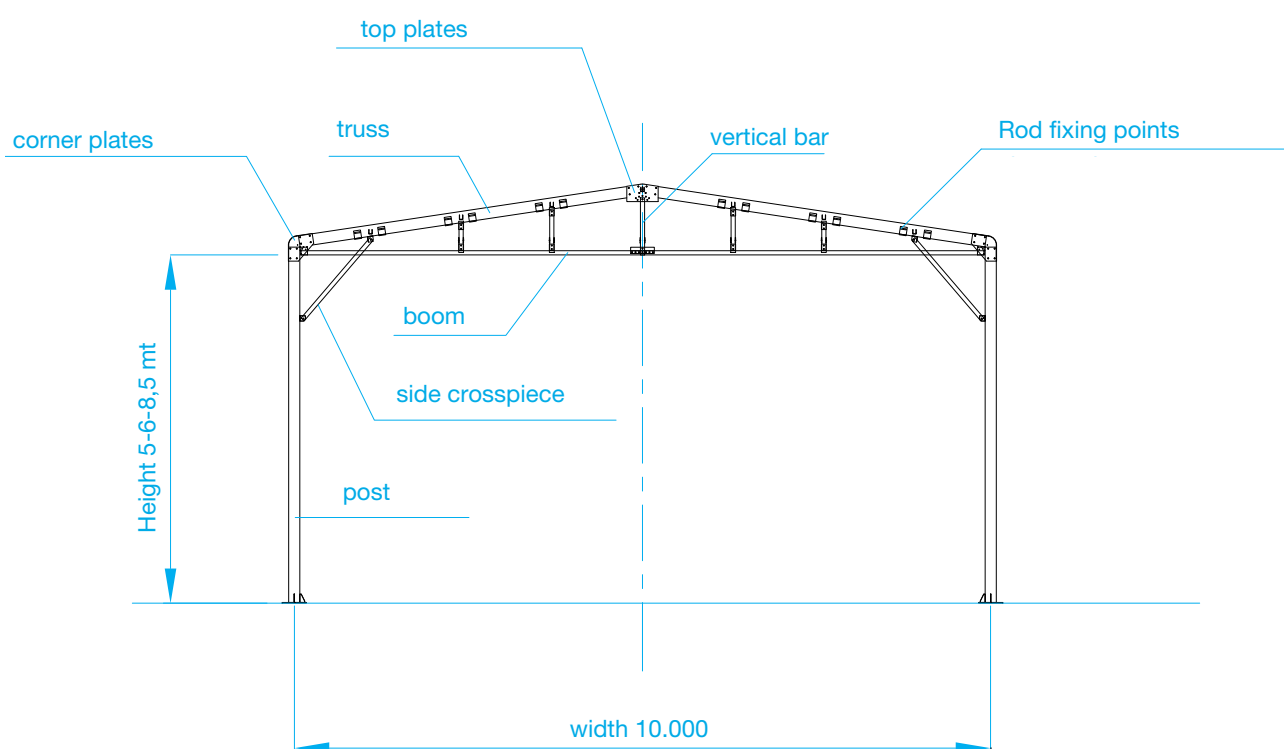


Upon receipt material must be inspected, in case of missing or damaged material, you must inform Kopron S.p.A. in writing, within seven days from receipt of material. Drawings can help you to identify the components.

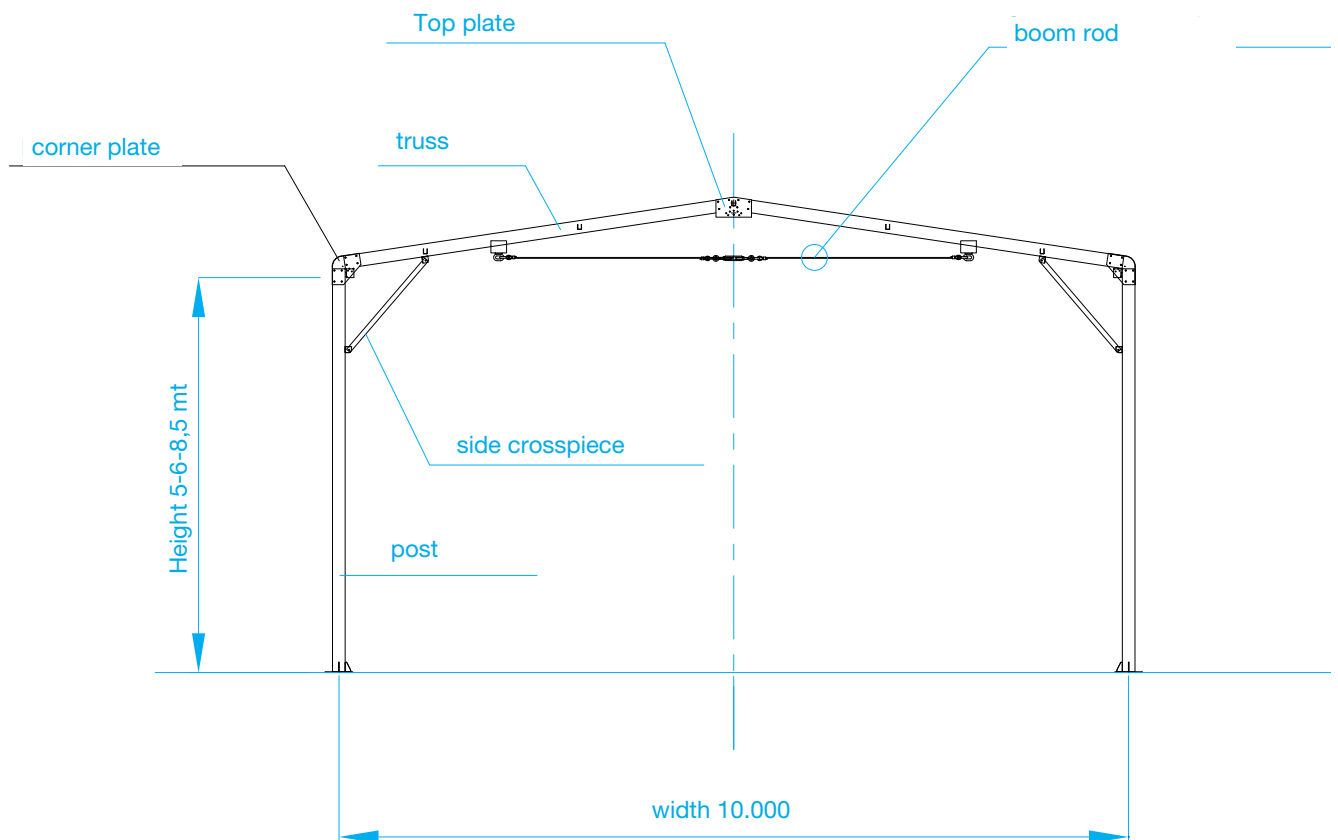
FRONT ARCH



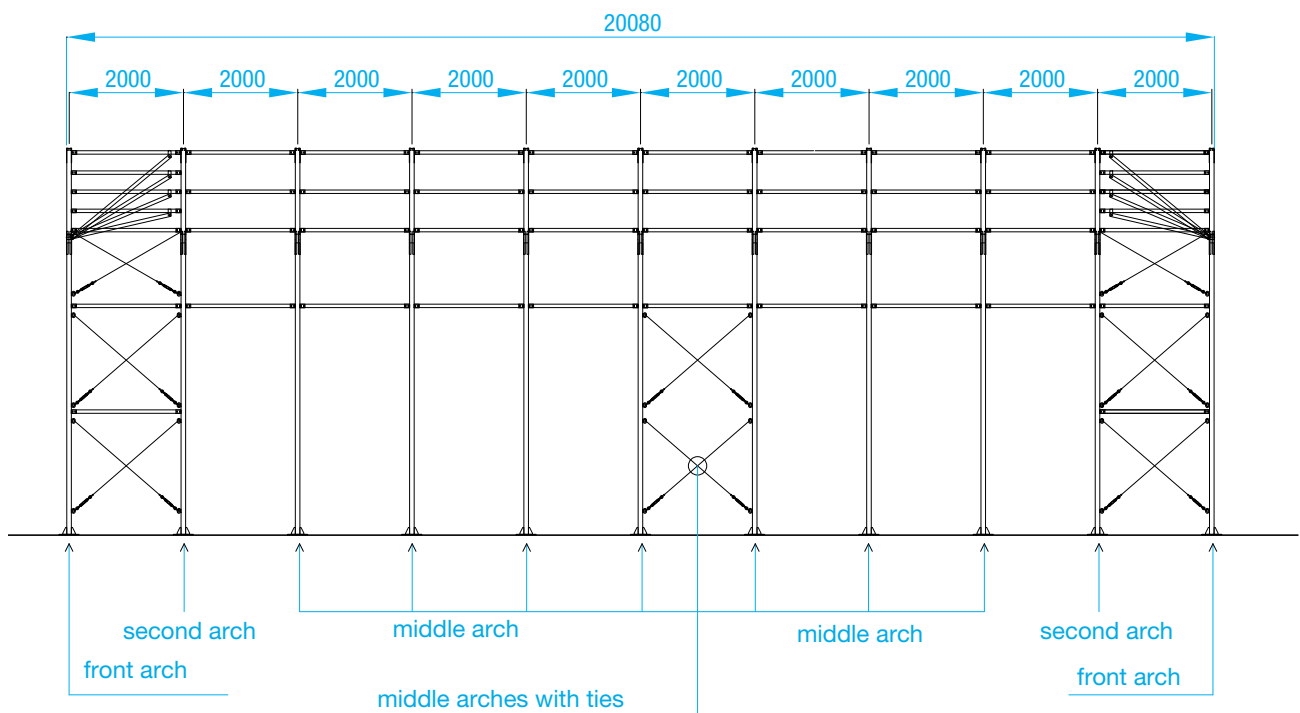
SECOND ARCH



MIDDLE ARCH

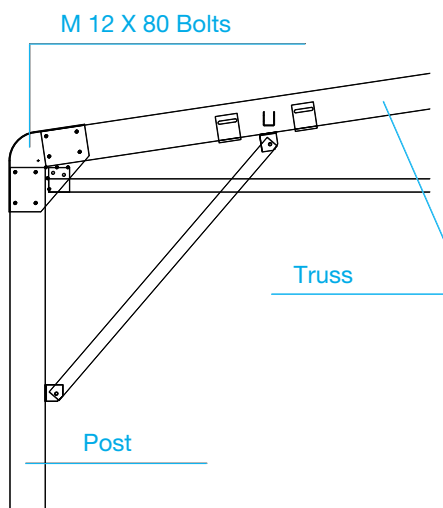


SIDE VIEW

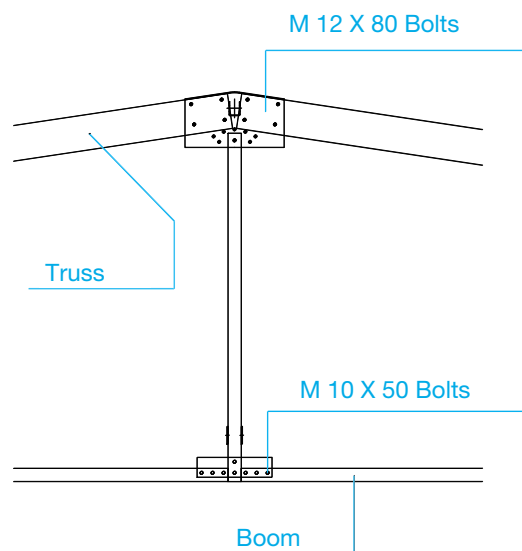


COMPONENT FIXING

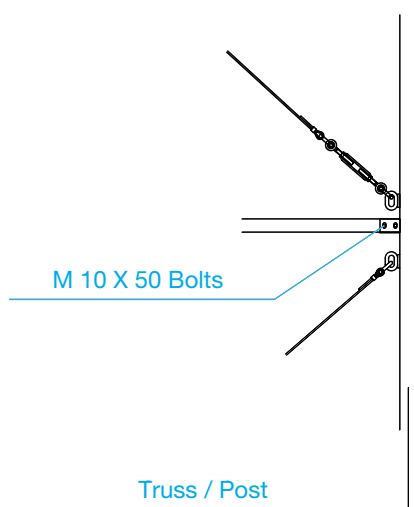
CORNER PLATES



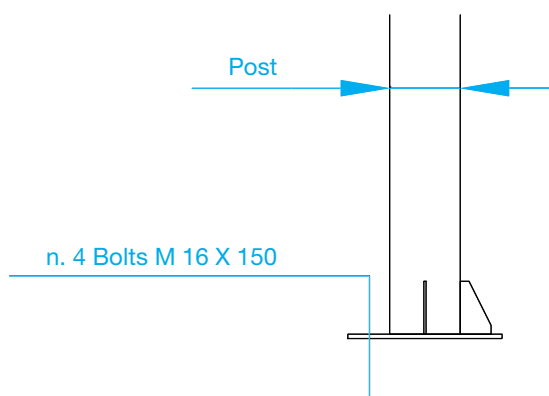
TOP PLATES



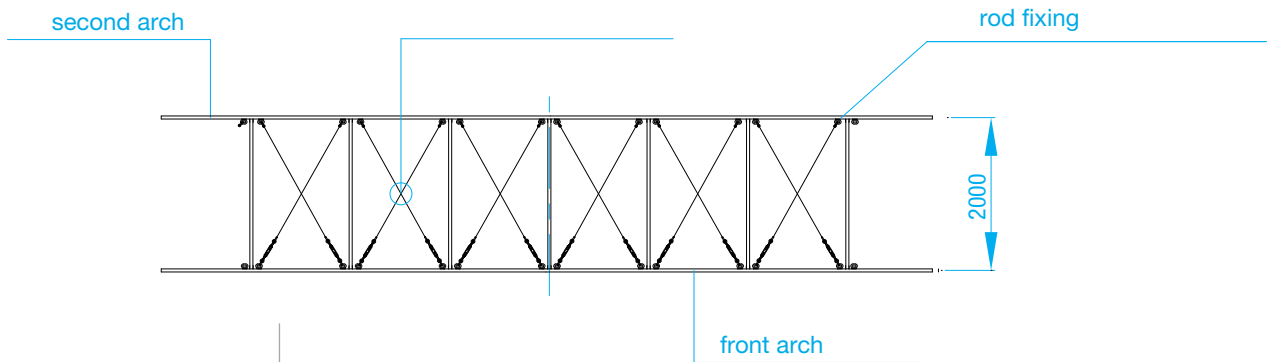
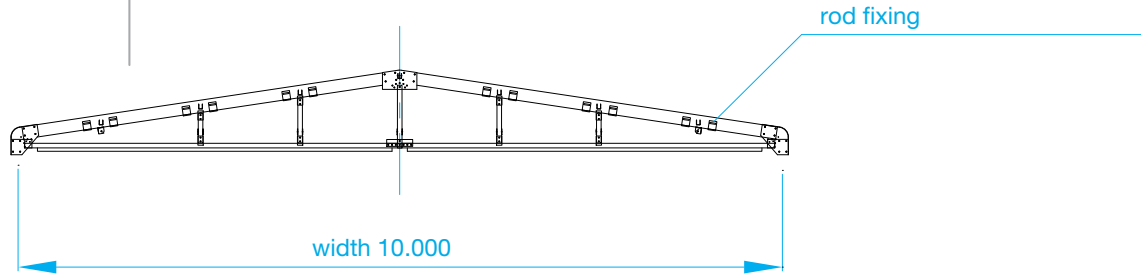
CROSSPIECE



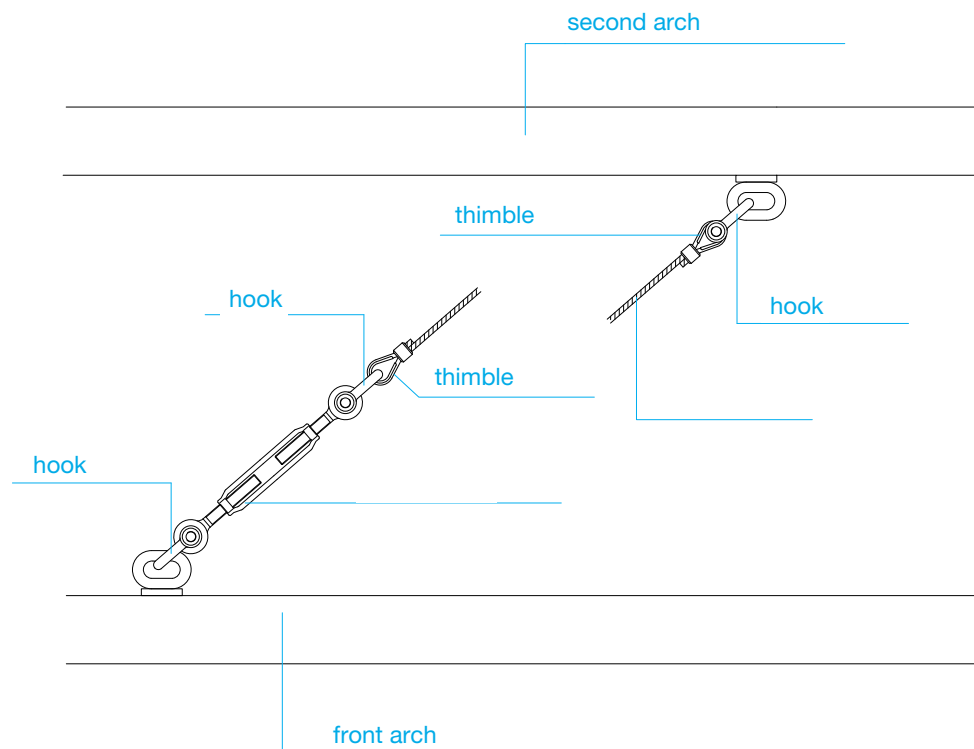
FIXING PLATES



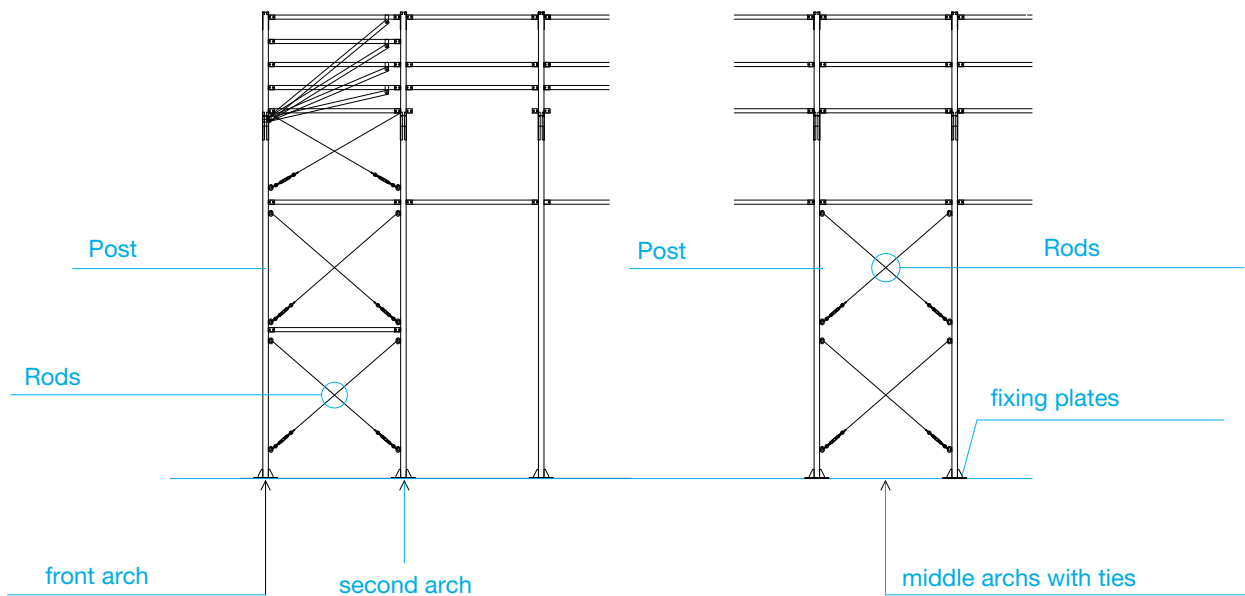
FRONT ARCH TRUSS



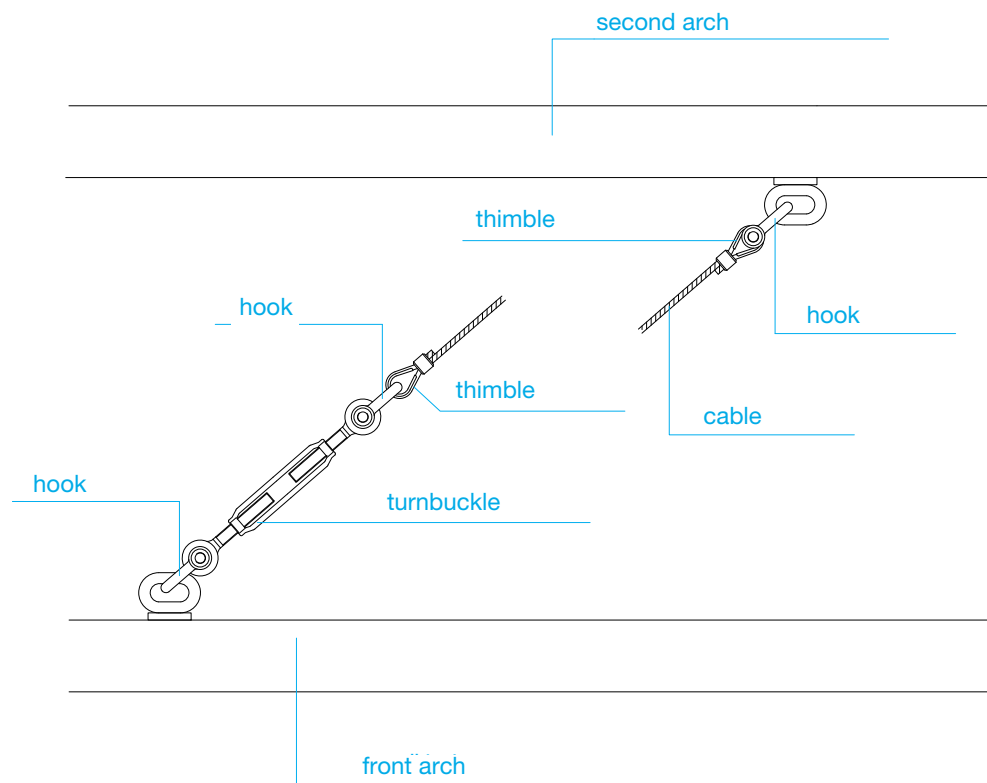
ASSEMBLY IN DETAIL OF THE ELECTRIC CABLES OF THE TRUSS



POST RODS

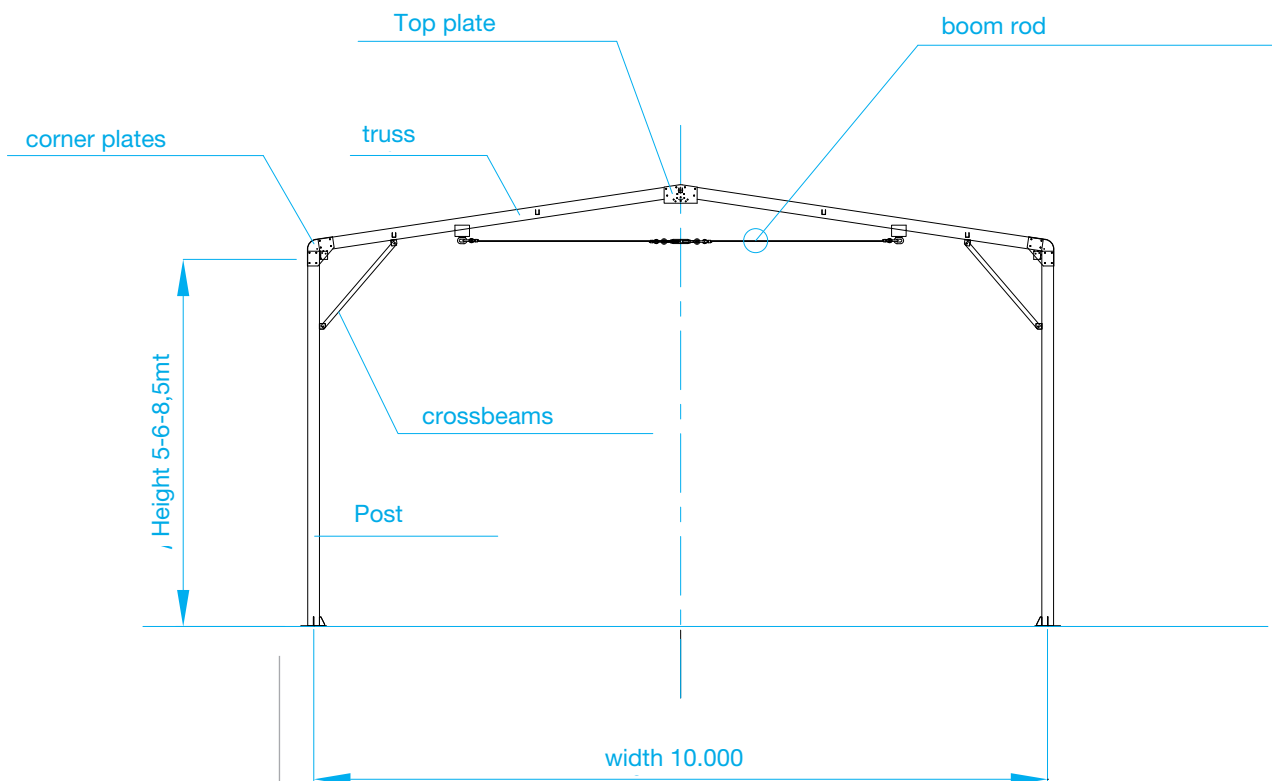


CABLE ASSEMBLY - DETAILS

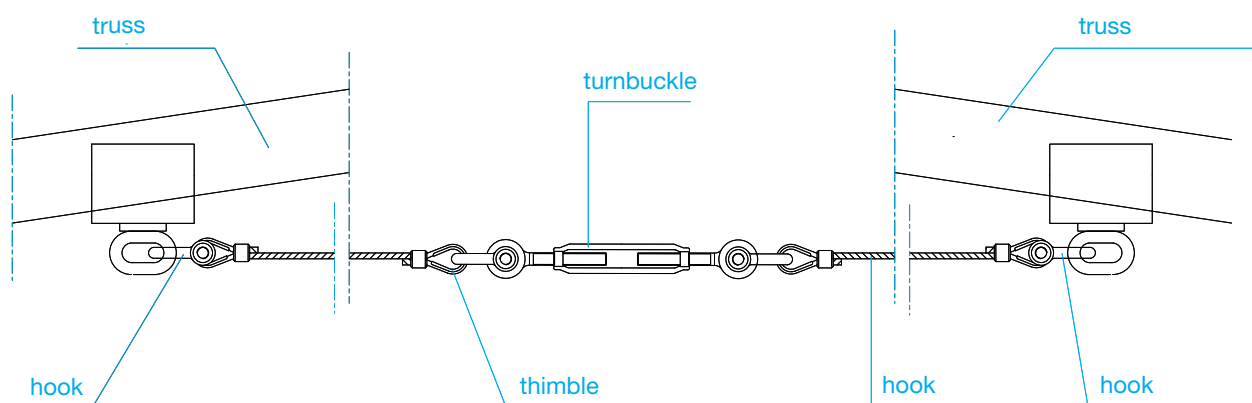


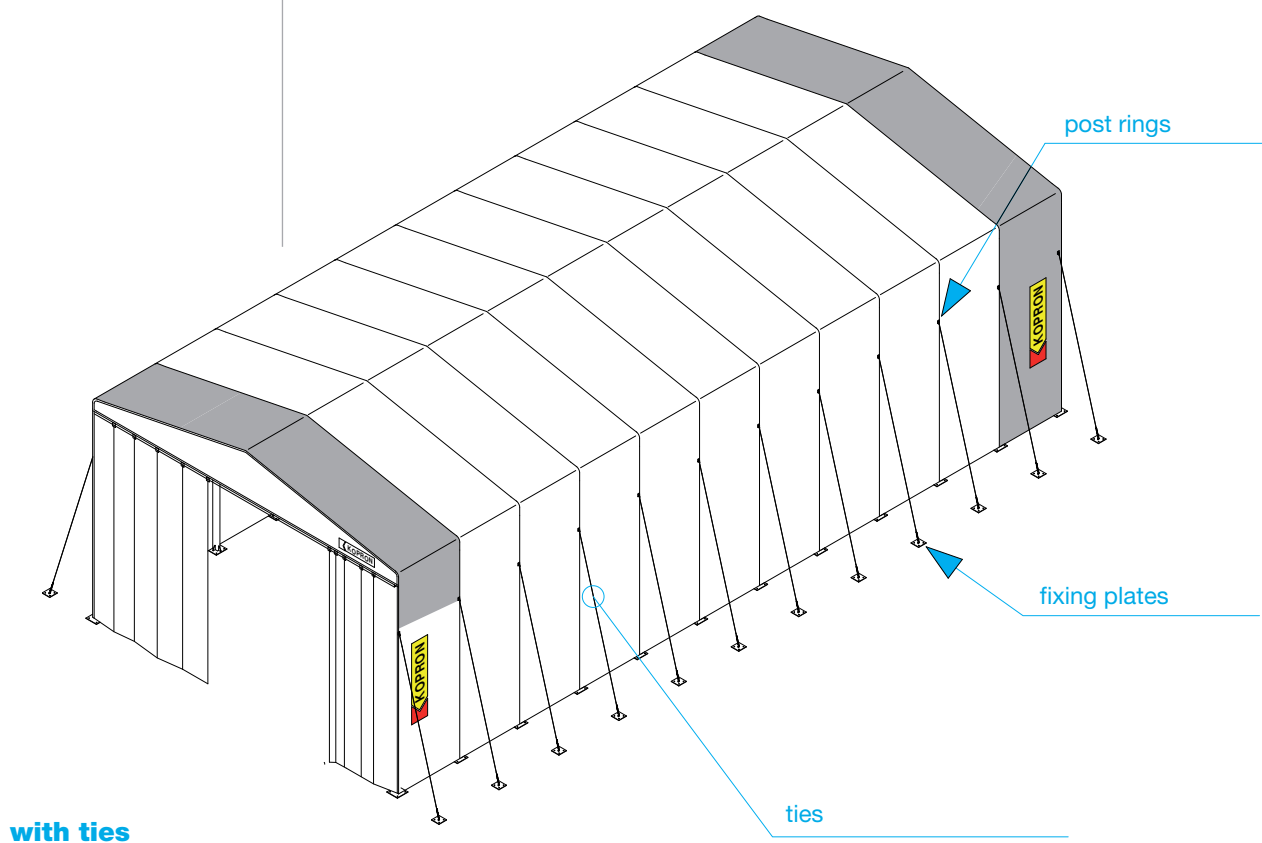
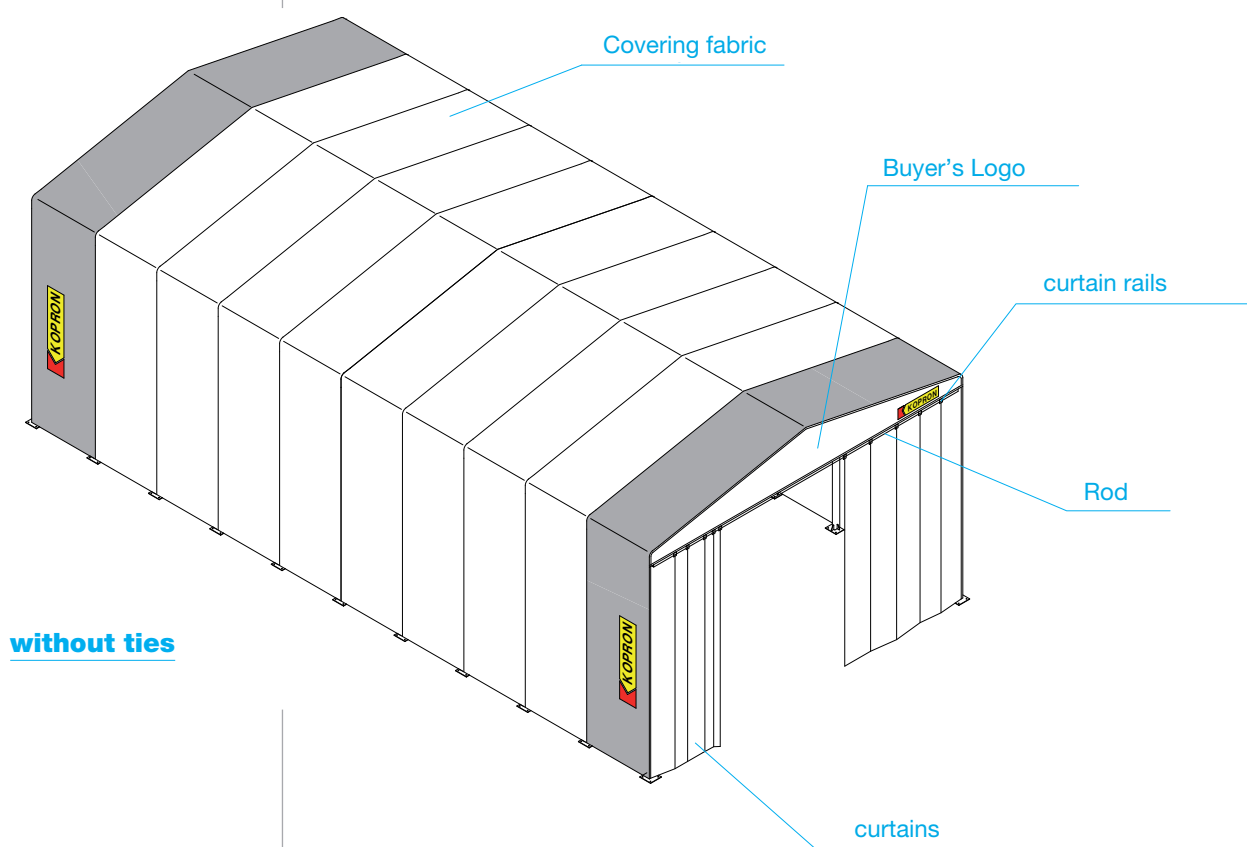
Assembly in detail of the rods on the middle arches

MIDDLE ARCH



BOOM ROD IN DETAIL



ASSEMBLED WAREHOUSE

CHAPTER 1

MASONRY WORK

1.1 MASONRY WORK

Before starting assembly make sure masonry work for the positioning and anchoring the warehouse has been done correctly.

You can refer to the drawing which is supplied along with the material, See Unit II, Chapter 1.2. 'Identification and control of the material'.

The following must be checked:

- the size of the laying surface,
- the sides of the laying surface which must be parallel, you can check by measuring the two diagonals which must be equal,
- the laying surface which must be perfectly levelled. This can be verified with a laser level.
- The dimensions of the structures in concrete eventually made for anchoring the warehouse with fixing plates.
- If there are any obstacles preventing a correct assembly,
- If there is enough space for the plates for anchoring the ties.

?

Should any faults be found before starting assembly, you must contact Kopron S.p.A



In order to avoid danger of fire, electric shocks or explosions make sure that bolts do not encounter electric wires, gas or water pipes.

Eventually you can use proper devices to detect hidden wires.

Masonry work must be organized by Customer who will engage professionals who know exactly the loads at the bottom of the structure and the characteristics of the ground.



However for any doubt or information, do not hesitate to contact Service Dpt in Kopron indicating the model, the serial number, year of construction, these data can be found on the label (see Unit I Chapt. 1.3)

CHAPTER 1

INSTRUCTIONS FOR TRANSPORT

1.1 GENERAL INDICATIONS



The handling of the warehouse, must be assigned to trained personnel such as crane and sling operators.

Safety measures must be undertaken to guarantee the stability of lifting machines and their loads.

The slinging of the material must be properly done in order to prevent the material to slide or fall.

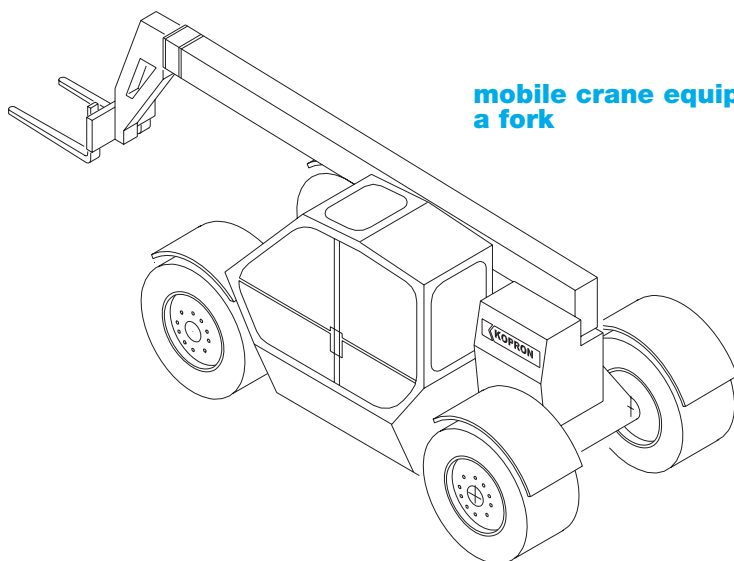
Should the operator be unable to control the way during handling of goods another person must be put beside and give a hand.

A necessary condition for lifting material is the perfect balancing of the goods.

Since the warehouse is handled without packing, lifting and moving must be very carefully carried out.

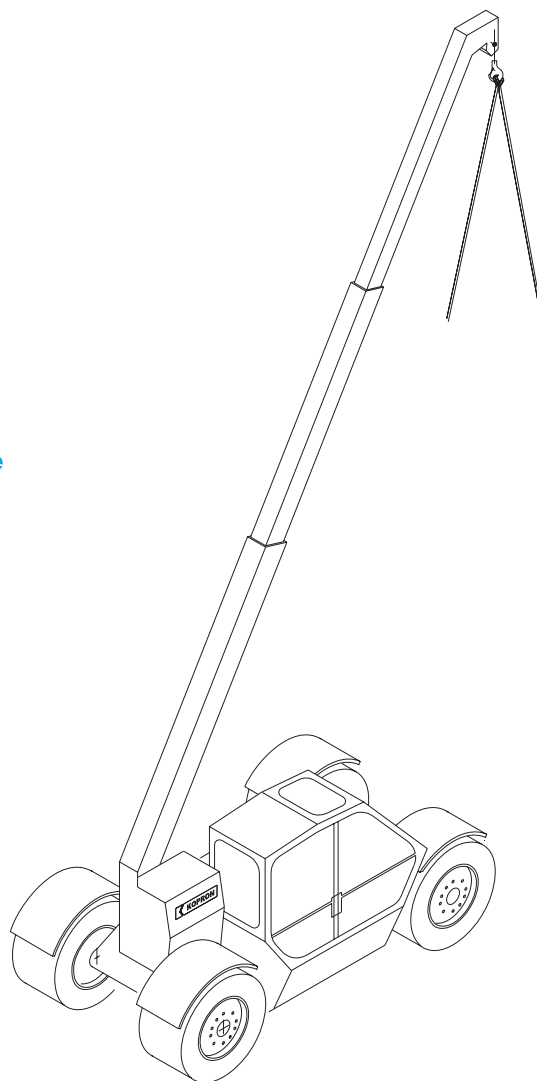


For safety reasons, all lifting machinery must be suitable to the weights and bulks to carry. A mobile crane provided with fork can be used. As an alternative also a lorry with stretching crane can be employed for warehouses 5/6 meters tall.

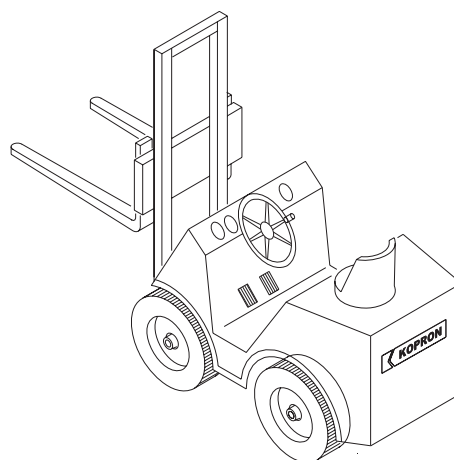


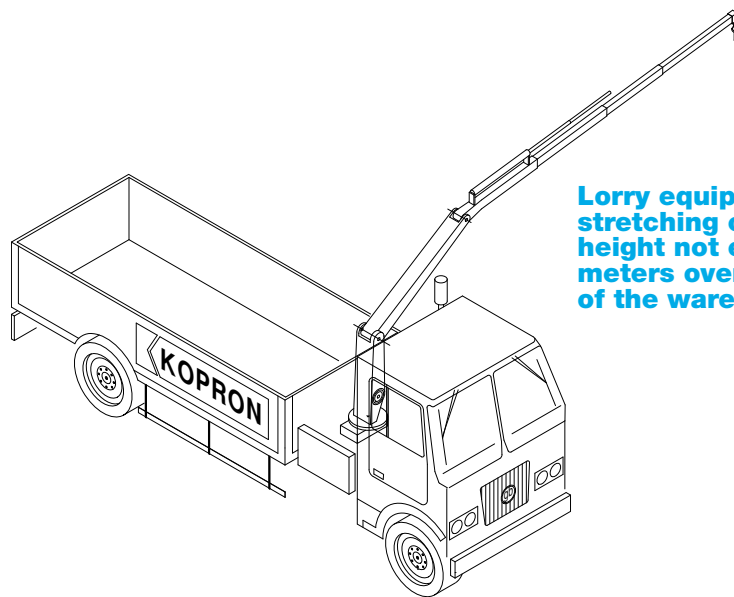
mobile crane equipped with a fork

A mobile crane with a rotating hook with a height which will not exceed three meters above the warehouse to assemble.



Forklift to use with utmost care when lifting and moving long parts (trusses, booms, posts, etc.)





Lorry equipped with a stretching crane with a height not exceeding three meters over the max height of the warehouse.

1.2 HANDLING INSTRUCTIONS



Handling must be carried out only by specialized operators in mobile cranes.
Before using the crane, verify the efficiency of the brakes and end travel devices.
Avoid swinging the goods.
Provide evacuating personnel in case the goods must be moved over the heads.
Do not leave the crane with suspended goods.
Use a ladder to reach the slings and loosen them.

1.3 INSTRUCTIONS ON HOW TO LIFT THE STRUCTURE



Lifting machinery allowed : bridge cranes or mobile cranes.
Personnel requested : crane and sling operators.
Important note: when using forklifts to move long structural parts such as posts, booms and trusses you must use utmost care.
Use a grab with straps at least 3 meters long.
Material must be perfectly balanced before being lifted.

CHAPTER 2

INSTALLATION AND ASSEMBLY

2.1 BEFORE STARTING

Delivery of the material shall always be accompanied by an envelope containing specific drawings and instructions on how to assemble the warehouse.

The envelope contains in detail:



- Bill of material complete with the number of bolts necessary for assembly.
- Data of the warehouse: length, width, height, etc...
- Drawings indicating whether the structure is provided with ties.
- Drawings of the covering fabric indicating colour and positioning of the writings.
- Drawings on sides or front and rear openings if any.
- Drawings for fixing the warehouse to ground.
- Drawing for the correct positioning of the structure.



The bill of material containing the list of bolts for assembly is important since it also indicates their positioning.

The envelope can contain both information regarding the positioning of the warehouse and commercial agreements between Kopron S.p.A. and customer.

Please do not proceed with assembly without having previewed the contents of the envelope. In case of doubts please contact Kopron's technicians.



The assembly of the structure must be carried out by **qualified and skilled personnel**.

Personnel must be informed in advance on the job to be done and have the expertise to perform it. It must also be informed on the risks, on safety measures to be undertaken and on necessary tools to use.



For safety reasons, the assembly of the structure must be assembled in days without strong wind.

2.2 WAREHOUSE ASSEMBLY

Lay the arches on the floor on wooden bars making sure to fasten the bolts only when the arch is perfectly straight, levelled and width is perfectly within the distance of the tracks.

Instructions for assembly along with length and diameter of the bolts to use are indicated in the drawings at page 16 of this manual. The drawings show for each single part to assemble the exact diameter and length of the bolts to use and it is of utmost importance to keep to such instructions in order to avoid waste of time.

The structure to assemble is in hot galvanized steel therefore when assembling all operations which could scratch off the coating must be avoided, such as welding, drilling or special grinding.



In case the protective coating is damaged this could cause corrosion.

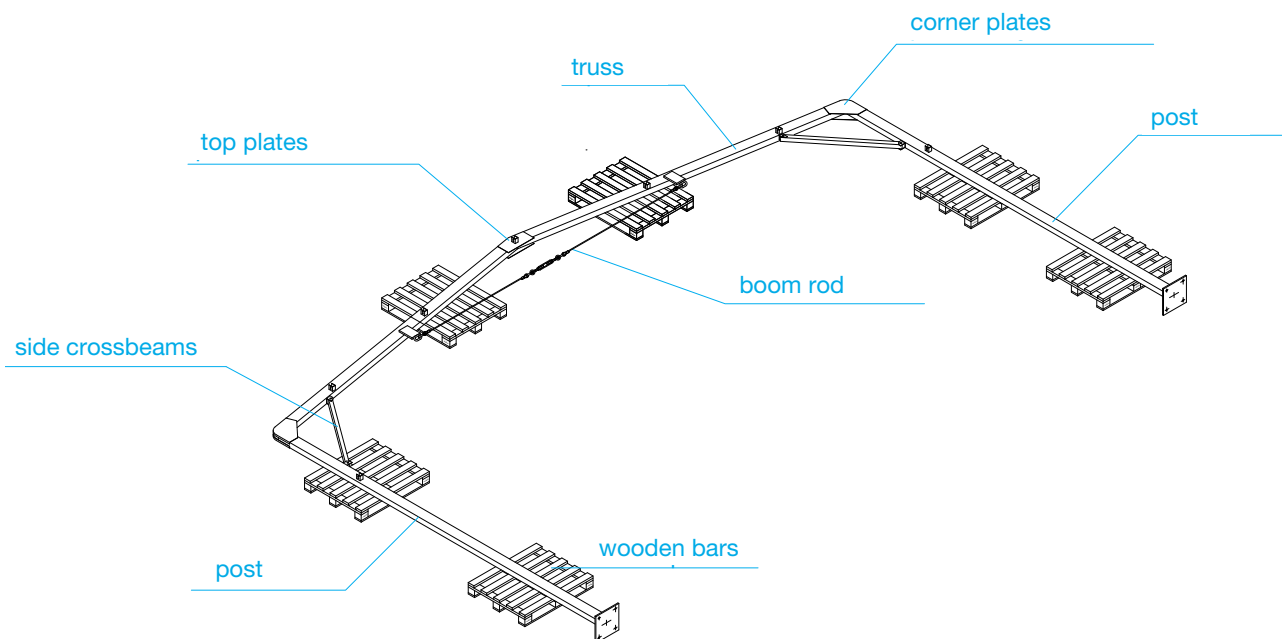
Should the warehouse have ties, assemble on the posts fixing rings of the cables see part A at page 11.



All structural cables of the arches must first fixed to ground and left loose, they will be pulled once the structure is assembled to ground.



Cables must be assembled as indicated in drawings at page 16,17,18. Keep strictly to the mentioned drawings and take care of the positioning of the thimbles on the cable hooks.

ASSEMBLY OF THE MIDDLE ARCHES

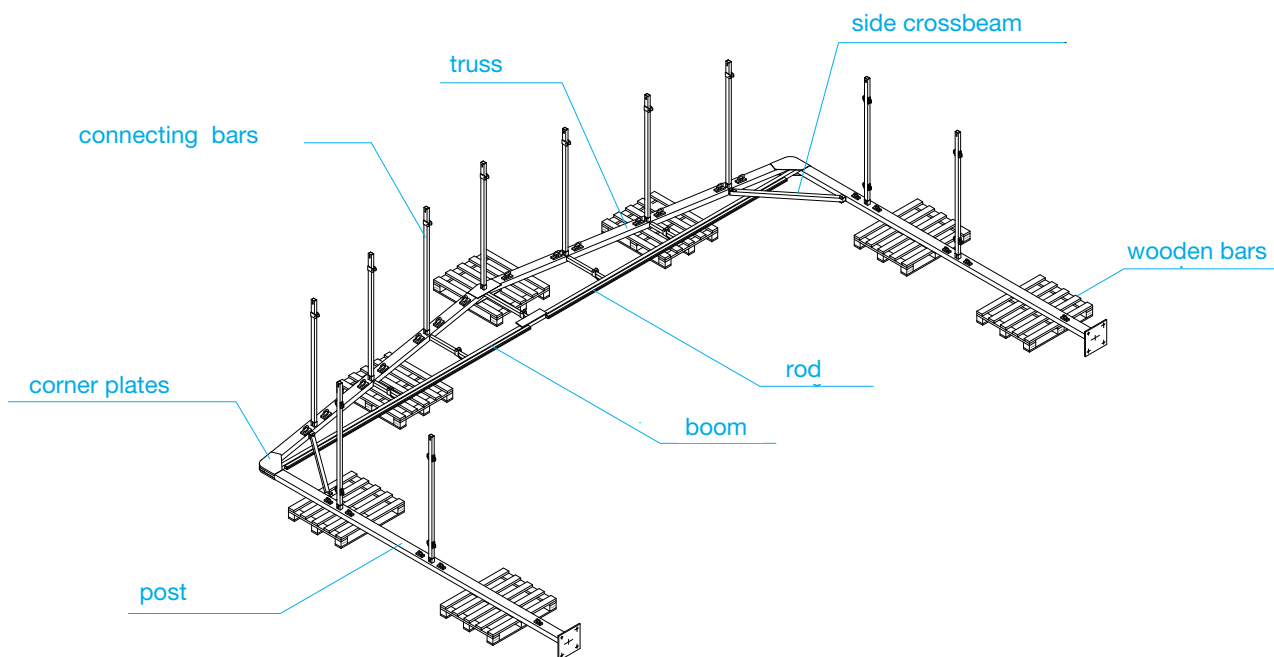


The front arch joined to the second arch make the front and rear part of the warehouse which will be assembled as shown in the drawings.

Start assembling the front arch by laying in on wooden bars, making sure to fasten the bolts only when the arch is perfectly straight, levelled and width is perfectly within the distance of the tracks.

Make sure that the curtain rod is correctly positioned to enable the sliding of the curtains. This can be guaranteed by screwing the boom to the corner plates in front of the side crossbeams.

ASSEMBLY OF THE FRONT DOUBLE ARCH

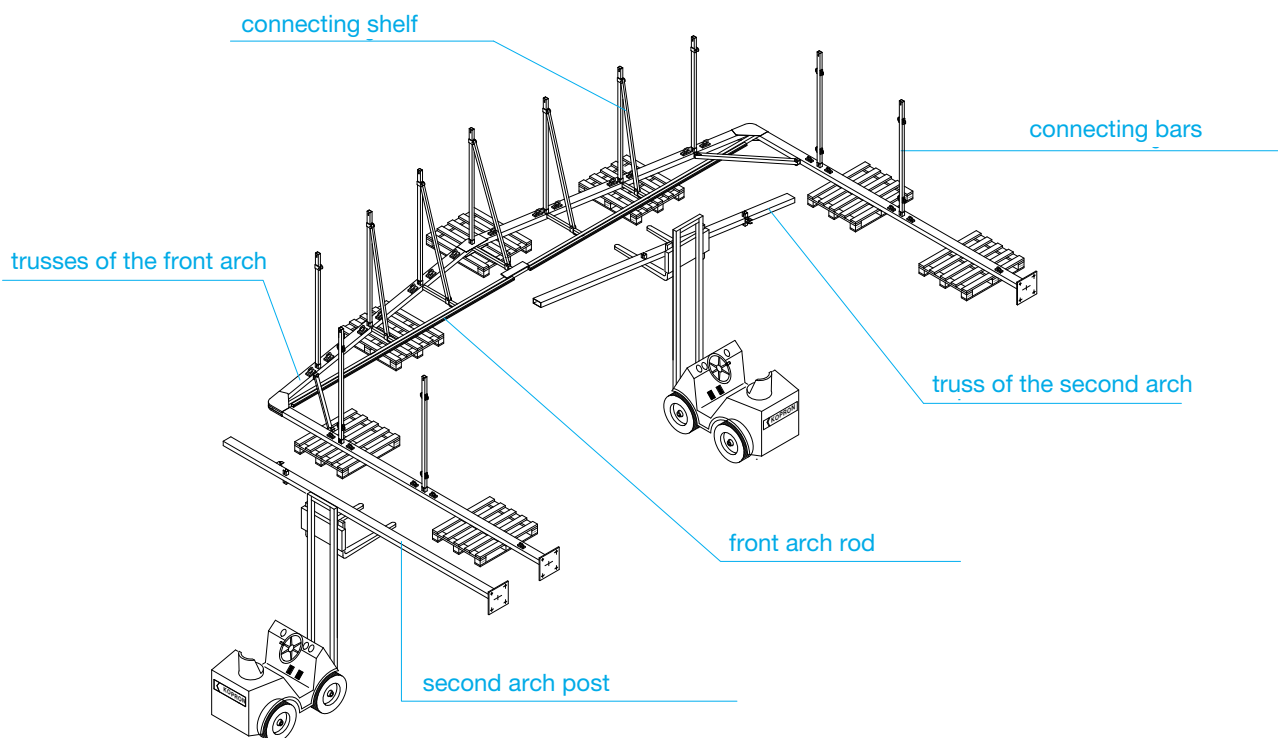


Carry on by assembling the trusses and posts of the second arch on the connecting bars with the aid of either a forklift or of a mobile crane.

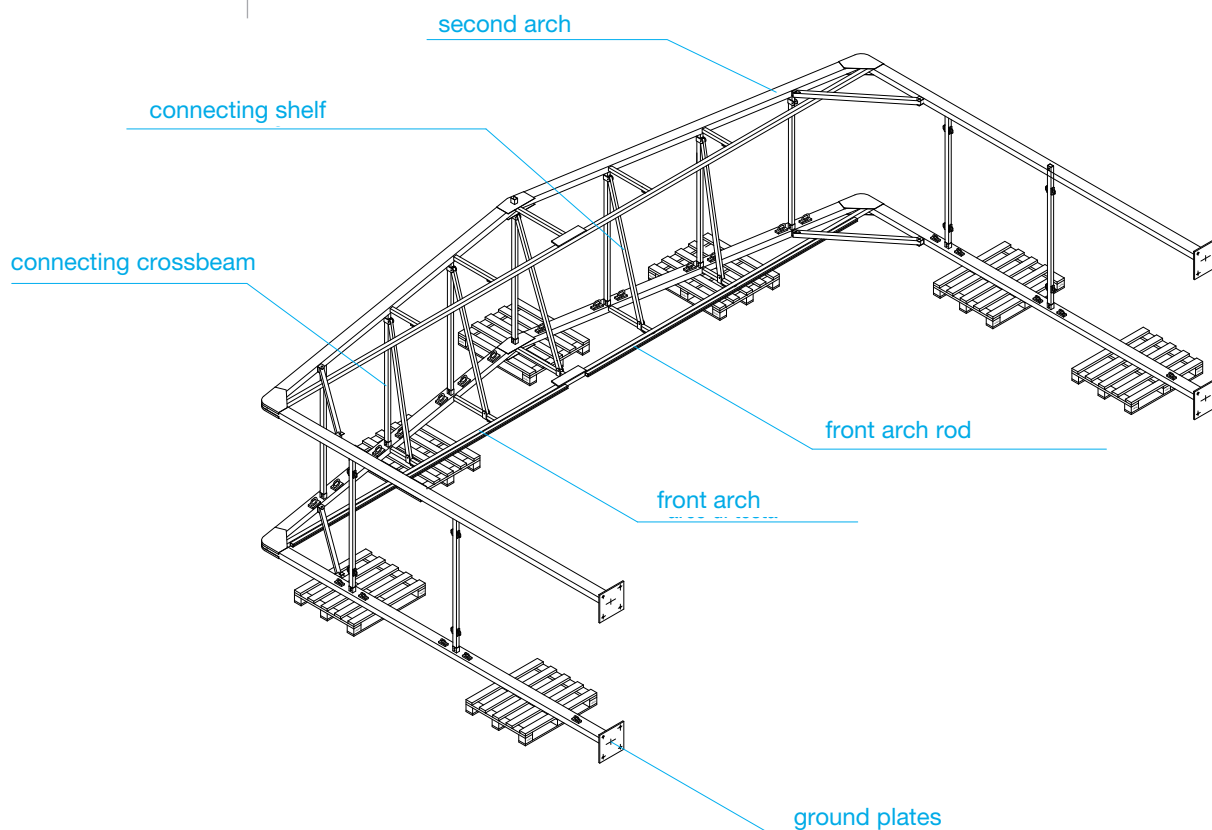
Fasten the bolts when you are sure that the joining of the arches has been carried out correctly.

To check if the ground plates are parallel you can measure the diagonals which must be equal.

ASSEMBLY OF THE SECOND TRUSS OF THE FRONT ARCH



ASSEMBLED FRONT DOUBLE ARCH





Lift and position the double front arch slinging it with a 4 strap grab as indicated in the drawing here below. ⑦

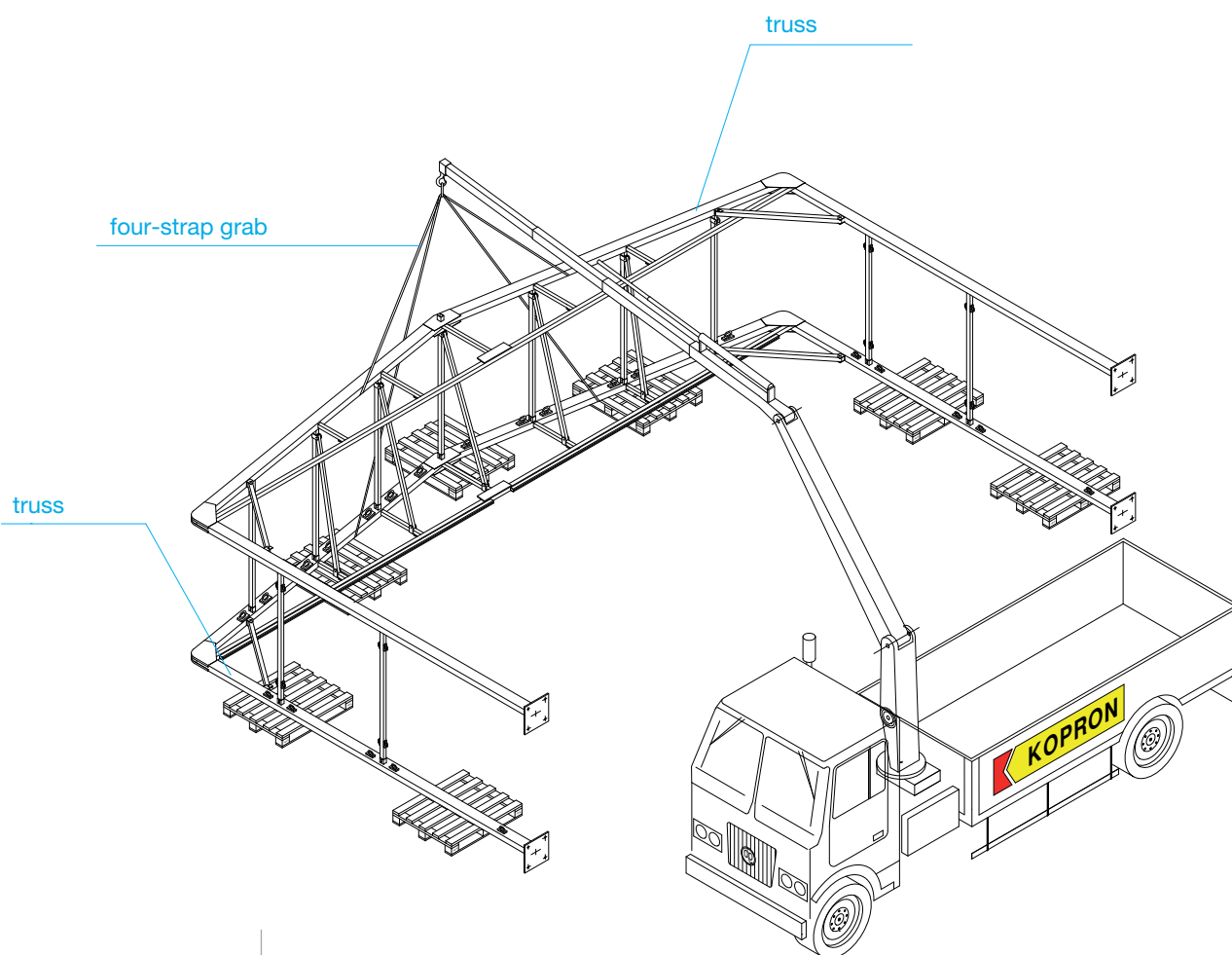
The positioning of the double arch is indicated in the drawing given along with documents delivered with material as per Chapt. 1.2.

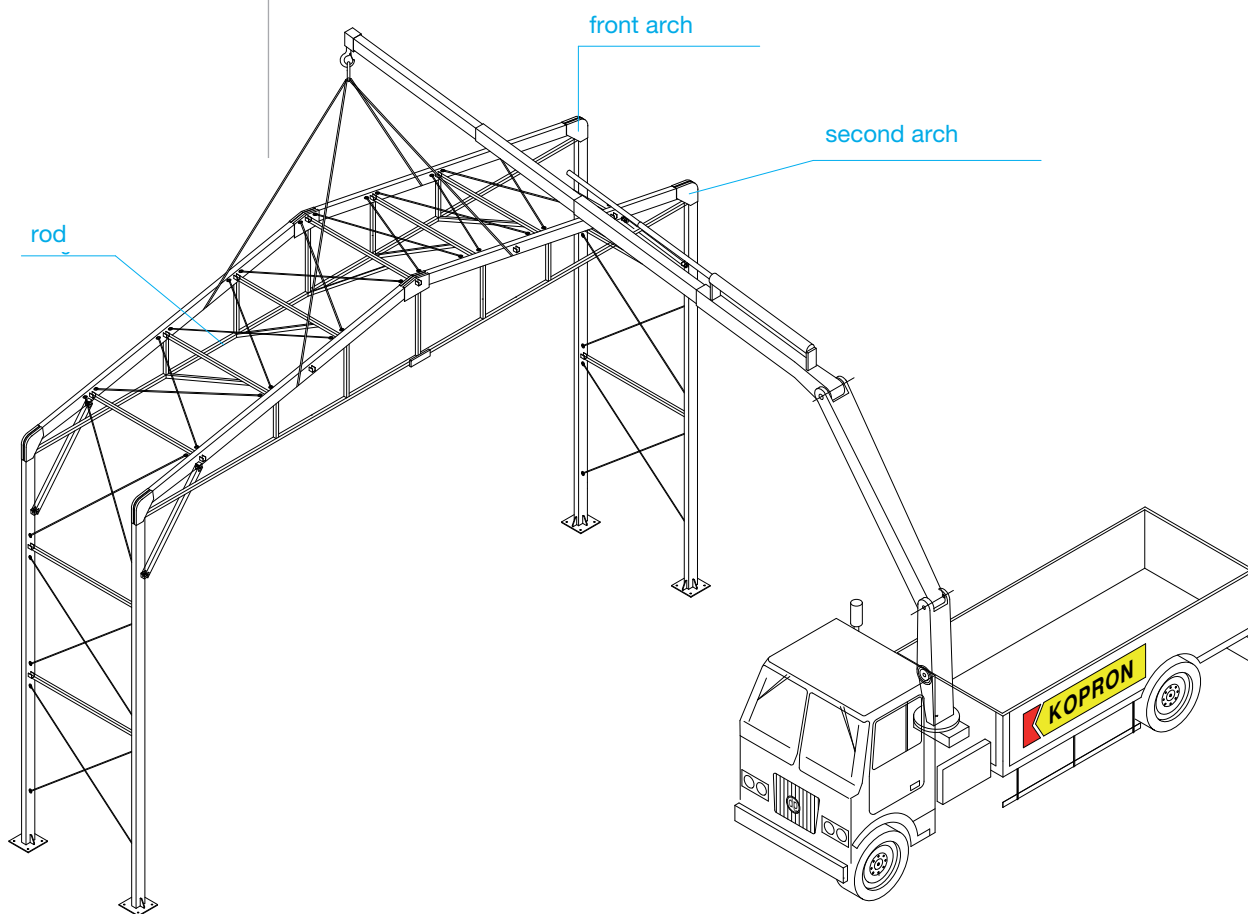
The lifting of the arches is a delicate operation and must be carried out with care.

The straps must be placed beyond the second connecting crossbeam in order to allow a better distribution of the weight of the trusses.

The length of the straps must enable the lifting hook to operate at a height over the truss of at least 3 meters.

LIFTING OF THE FRONT DOUBLE ARCH



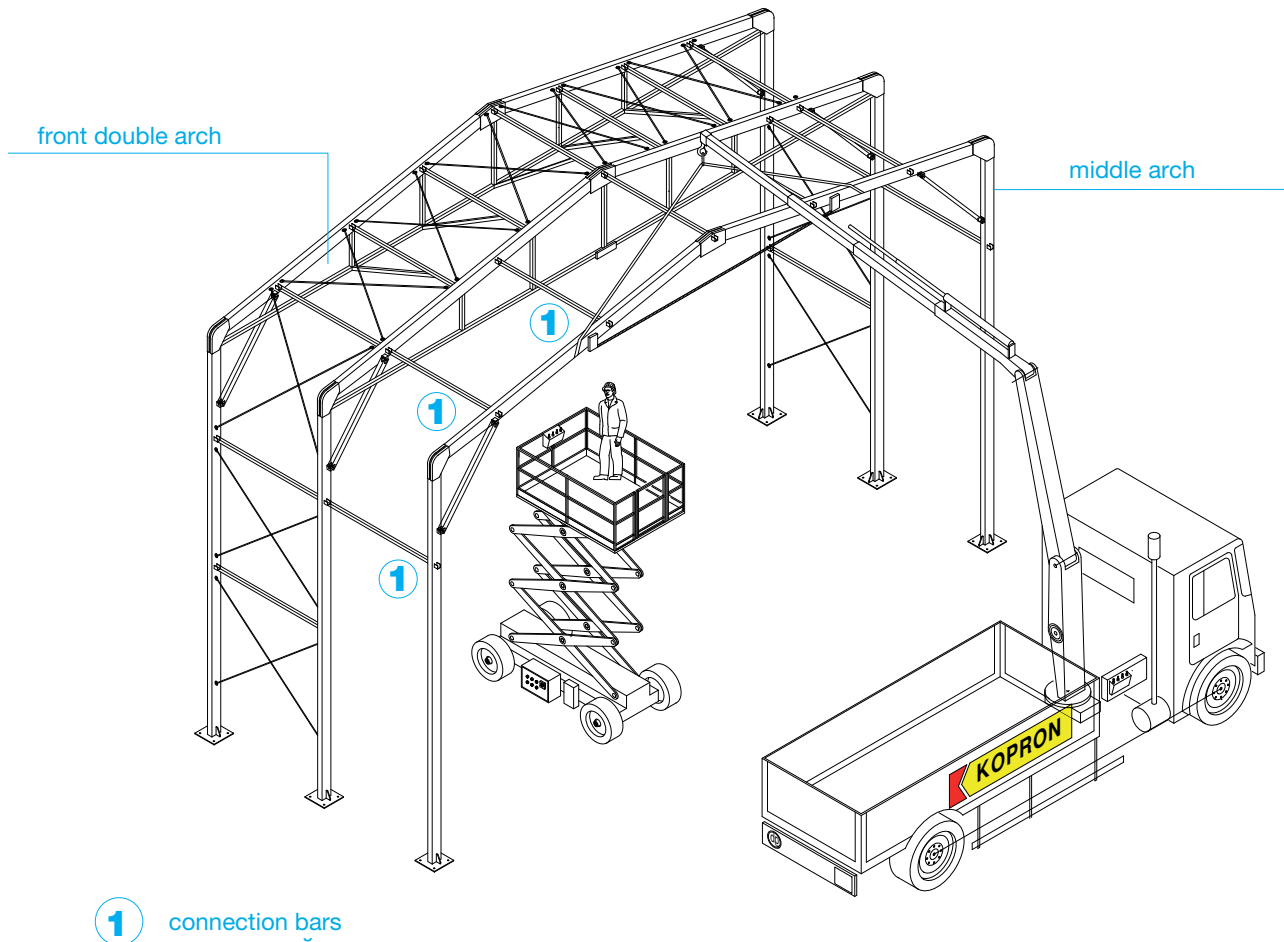
LIFTING OF THE FRONT DOUBLE ARCH

Assemble middle arches by first lifting them with a grab and then proceed according to instructions given for the double front arch.

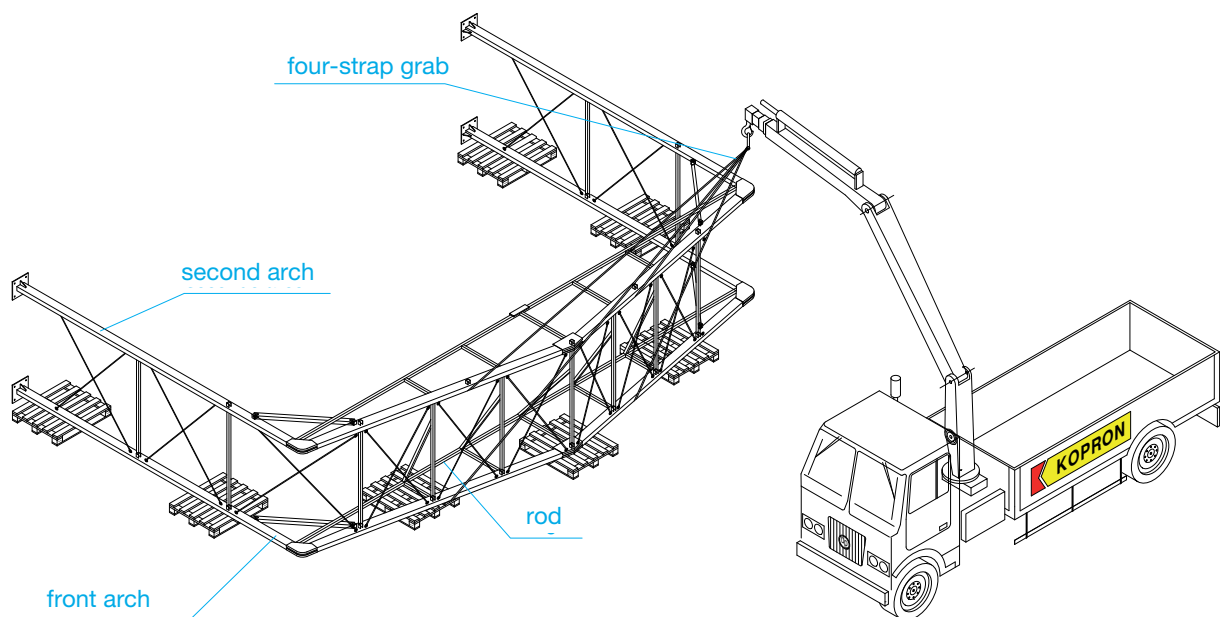
Once the structure has been lifted up and positioned as per drawing, start fixing it to the front arch with the connecting bars 1.

During fixing of the middle arch to the front arch, this must always be hooked to the lifting truck. Take slings off only when you are 100% sure of the stability of the structure.

Assembly must be carried out in days without strong wind.

LIFTING AND ASSEMBLY OF THE MIDDLE ARCHES

In order to avoid interference between the crane arm and part of the warehouse already assembled, the final front arch must be assembled opposite the first and hooked according to following drawing.

LIFTING OF THE DOUBLE FINAL ARCH

INSTRUCTIONS

Finish the assembly of the warehouse by joining the rear arch as shown in bottom drawing. For lifting the arche follow instructions given for the front arch. Once it has been lifted and positioned provide fixing it to the rest of the structure through connecting bars 1.

The rear arch during fixing must always be hooked to lifting truck.

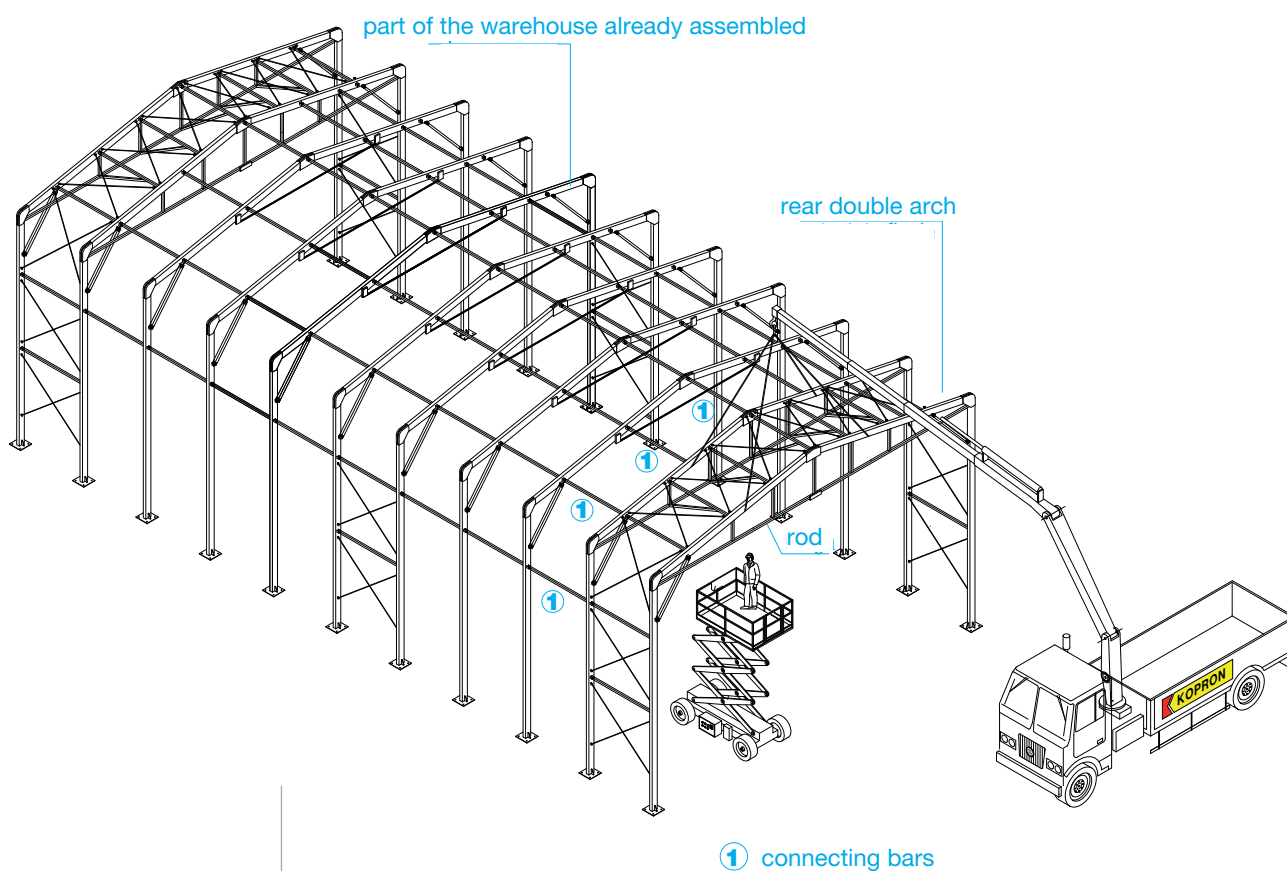
Take slings off only when you are 100% sure of the stability of the structure.

?

Assembly must be carried out in days without strong wind.



LIFTING AND ASSEMBLY OF THE REAR ARCH



2.3 ANCHORING THE STRUCTURE



After assembly the structure must be anchored to ground after which the cables must be pulled.



Cables have already been assembled to ground and left loose before anchoring the structure.



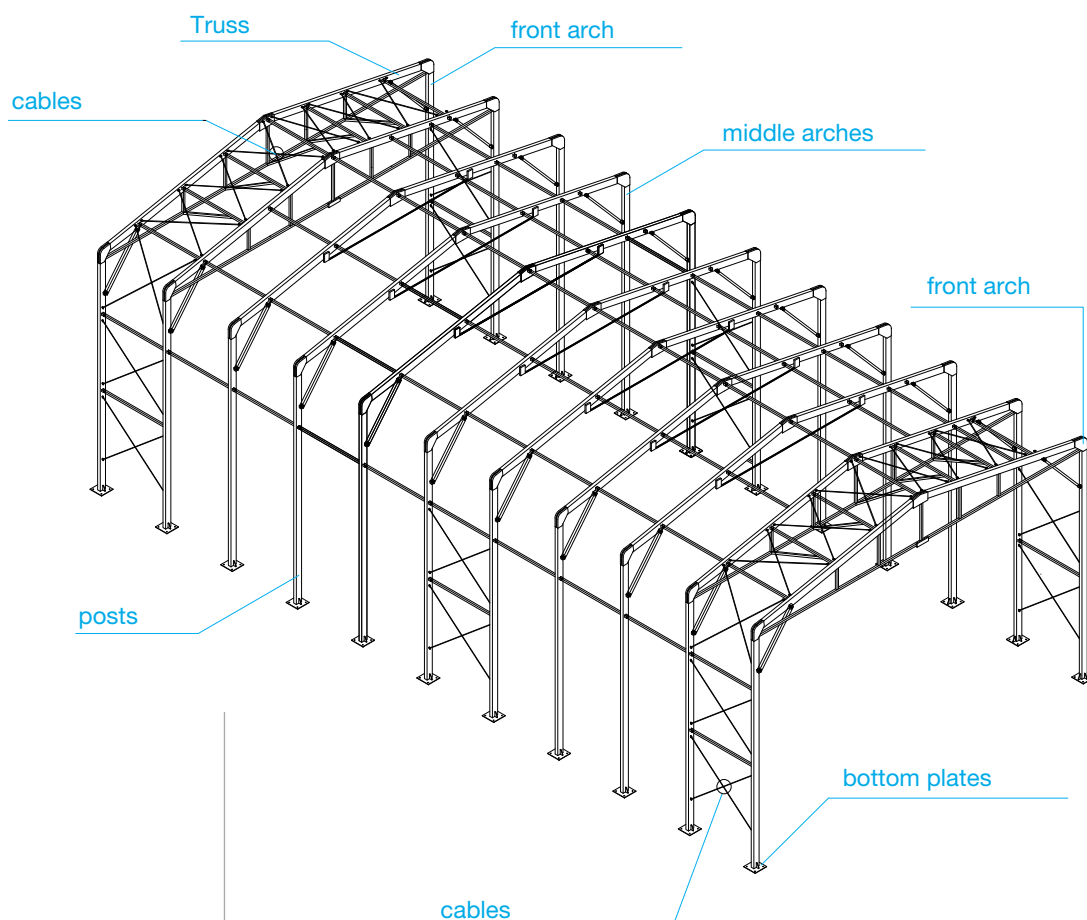
The fixing of the warehouse to ground is to be done very carefully in order not to compromise the aesthetics.

Before fixing the bottom plates the following actions must be done:

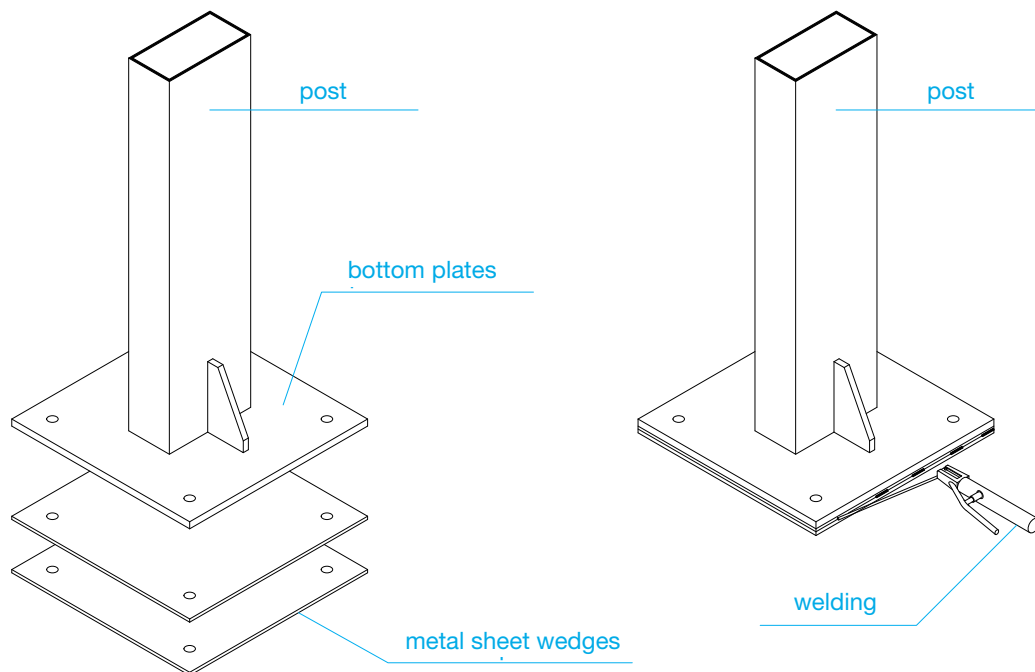
- Correct instructions on how to fix the warehouse is indicated in the drawings provided along with the other documents (See Unit II Chapt. 1.2)
- Clean the floor from dirt and rubble which can interfere with the correct positioning of the bottom plates.
- Make sure that bottom plates are perfectly levelled to the ground otherwise they must be shimmed with metal sheet wedges which shall be welded to the plates.
- Verify the square up of the structure by measuring the diagonals which must be equal.

Bolt the plates as indicated in the enclosed drawings:

ASSEMBLED STRUCTURE TO BE ANCHORED



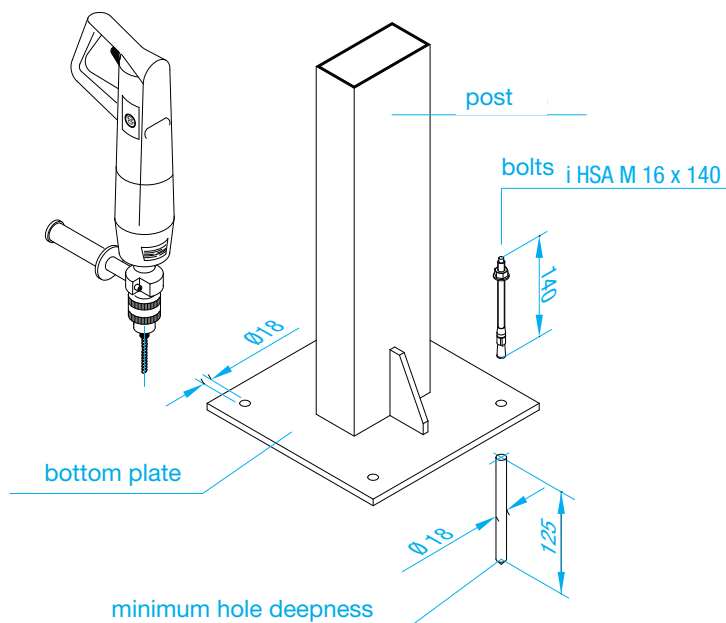
To shim the bottom plates follow the drawing. In case you use more than one metal sheet wedges these must be welded together.



Before drilling the plates make sure not to interfere with electric wires or gas and water pipes.

Special devices can be used to detect hidden wires.

Use a Ø 16 mm drill bit, make a hole at least 125 mm deep and clean the hole before inserting the bolt.



When you fasten the bolts on the bottom plates make sure the post is perfectly vertical with the aid of a spirit level.

2.4 FIXING PLATES FOR TIES

In case the warehouse has ties provide fixing with bolts the anchoring plates of the ties.

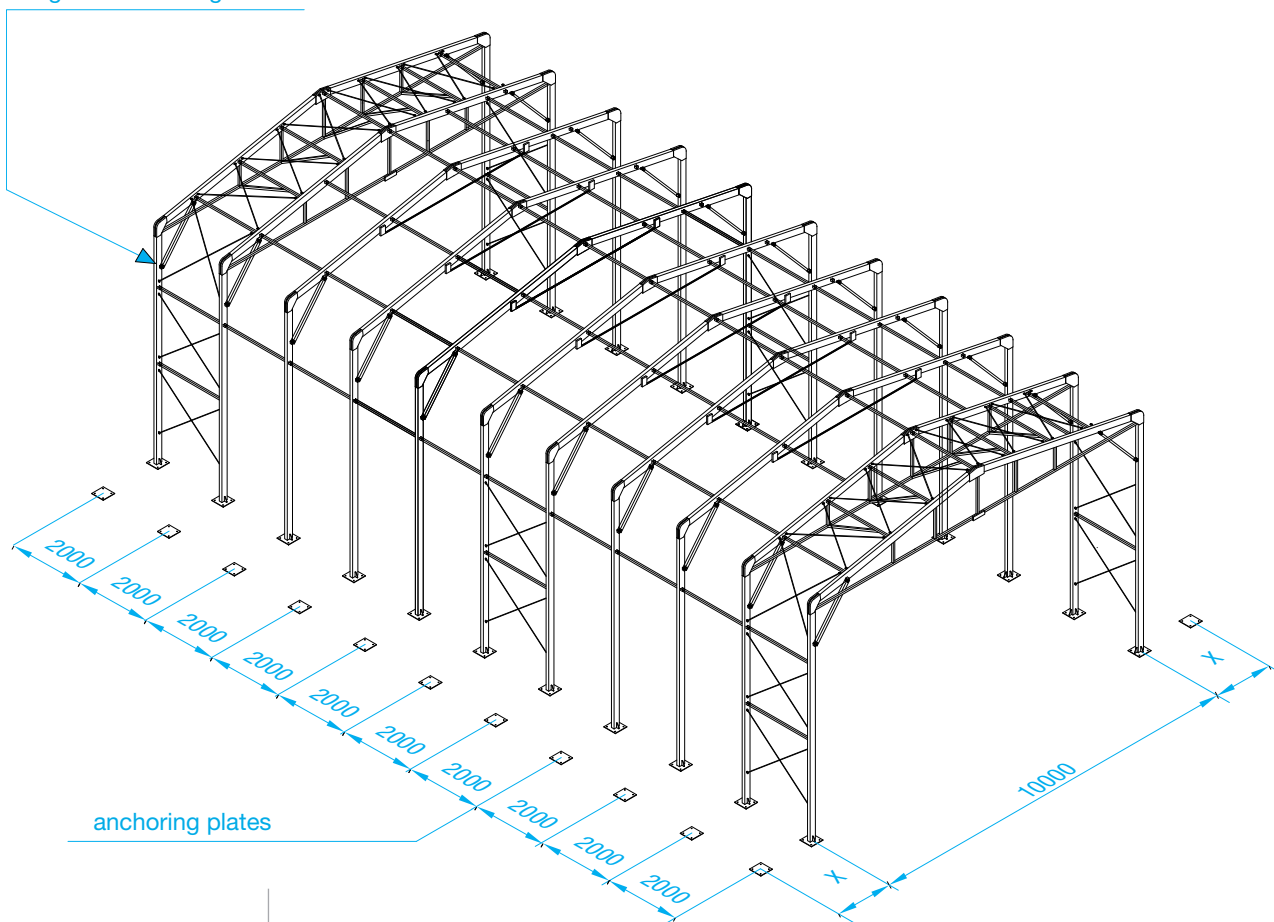
This must be done before assembling the fabric, so once the covering of the warehouse has been carried out it can be quickly put in safety.



The covering must be carried out in days without strong wind.

The positioning of the plates is shown in the drawing hereunder, make sure the rings of the plates are perfectly lined up with the rings positioned on the posts

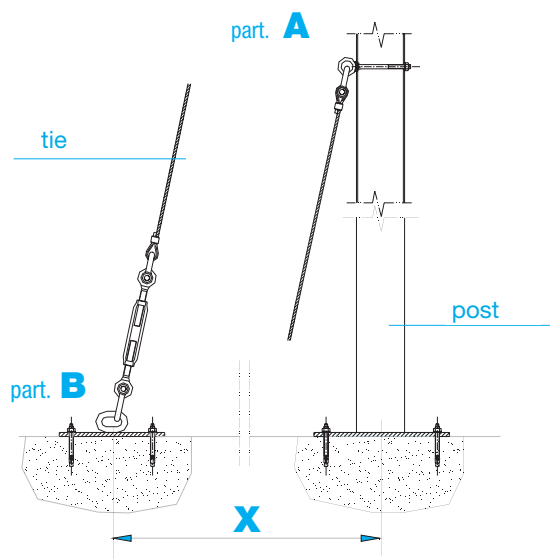
rings for anchoring the cables



anchoring plates



The rings of plates B must be perfectly lined up with the rings of posts A where the ties will be fastened.

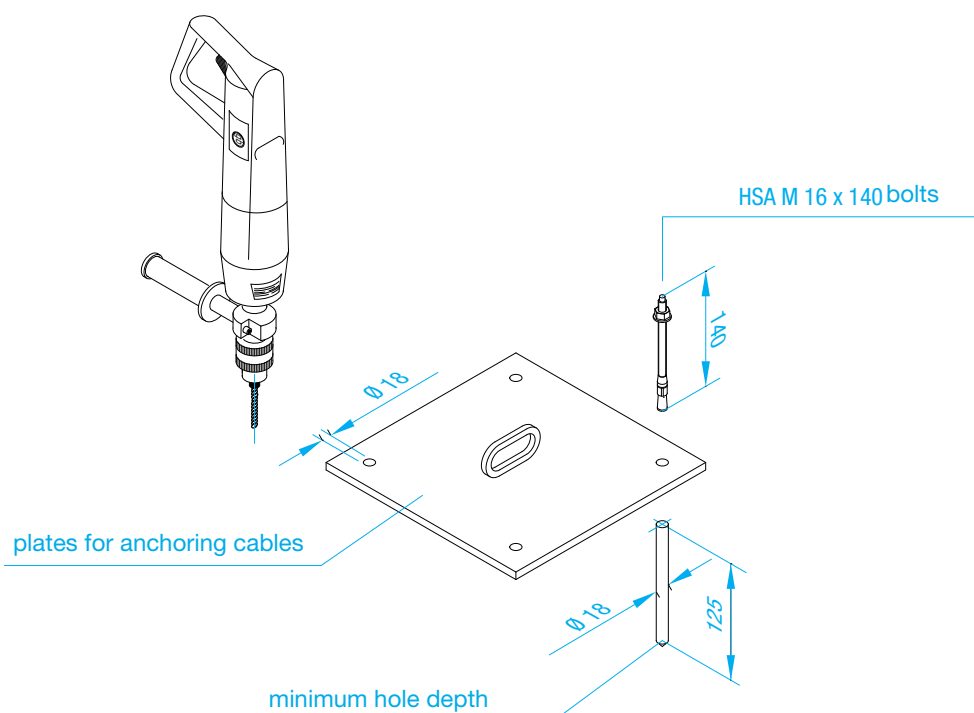


Warehouse heightl	X
5 meters	1 meter
6 meters	1,20 meter
8,5 meters	1,50 meter



Before making holes for bolting the plates, make sure not to interfere with electric wires and gas and water pipes.
Eventuallu use proper devices to detect hidden wires

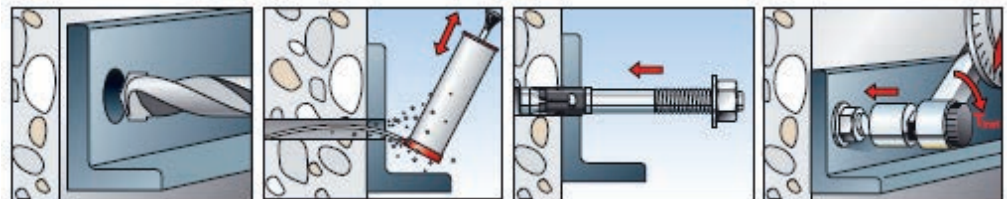
Use a Ø 16 mm drill bit, make a hole at least 125 mm deep and clean the hole before inserting the bolt.



2.5 NOTES ON THE DOWELS TO BE USED

Dowel HILTI type HSA M 16 x 140. Article: 00255854

Anchoring size (M)	M16
Anchoring length	120 mm
Certifications	ETA, Fire (IBMB and Warrington)
Basic material	concrete block (solid, intact)
Environment conditions	Indoors, dry conditions
Type of anchoring	Mechanical
Functioning principle	Torque controlled expansion
Type of fixing	Through-fastening, Pre-setting
Material	Carbon steel
Coating	Carbon steel zinc plated to min. 5 m
Identific. length mark	I
Minimum penetration depth -empty brick	84 mm
Actual laying depth	84 mm
Max diam. passing hole	18 mm
Total length	140 mm
Drill bit size	16 mm
Hole depth	115 mm
Couple requested	100 Nm
Insertion size	24 mm
Key size	24 mm
Diam. thread (M)	M16

ASSEMBLY

Drill hole with drill bit Ø 16, depth of the hole 110 mm.
Make sure the hole is clean before inserting the dowel.

* Dowels can be purchased at local suppliers, but must obviously have same technical characteristics.

2.6 ASSEMBLY OF THE COVERING FABRIC

After having duly anchored the structure and pulled the ties as described in unit IV Chapt. 2.3, you can start assembling the fabric over the warehouse. This operation must not be carried out for safety reasons in days of strong wind.

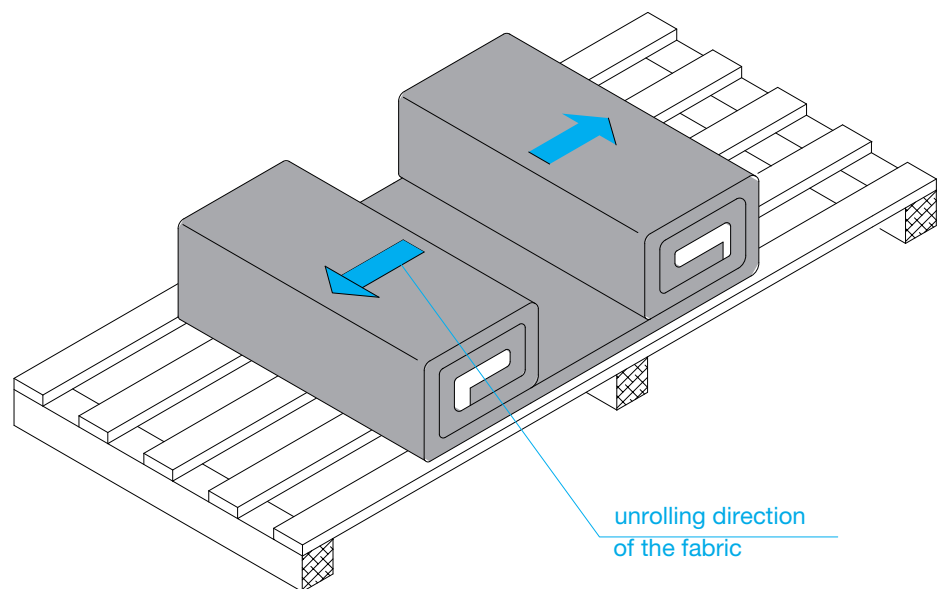


Along with the documents given with the supply of material (see Unit II Chapt. 1.2) you may find the drawing on how to assemble the fabric. This drawing contains the position of maximum height of the structure, the length of the slopes and sides plus the correct positioning of belts and lables.



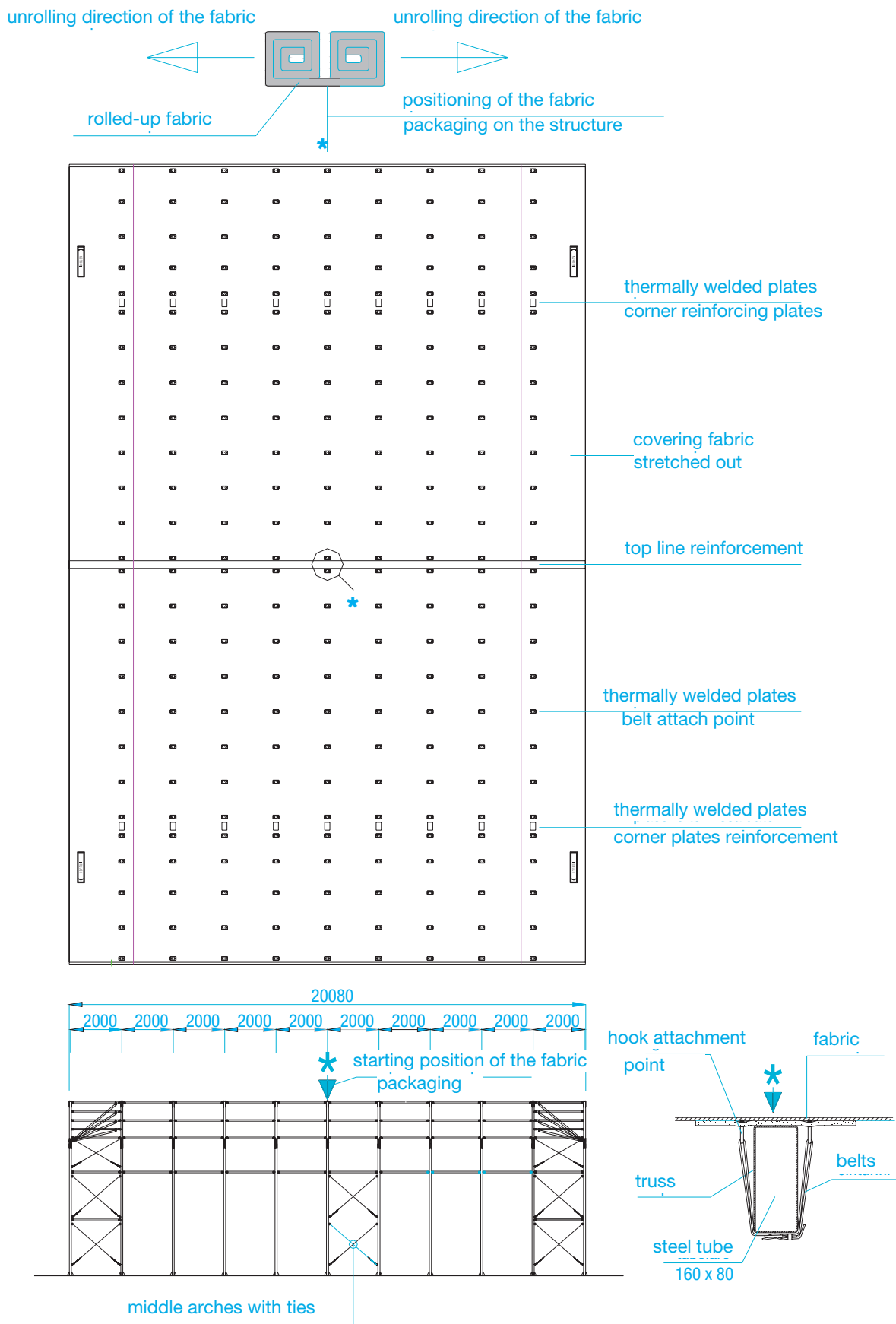
You must position the fabric package on the structure, making sure that the highest point of both the fabric and the structure match perfectly, as shown in drawing at page 39.

This will enable an even covering of the fabric all around the sides and pitches of the warehouse, and the correct positioning of the belts and reinforcing profiles. Along with the goods there is a drawing showing how to unroll the fabric correctly once it is positioned on the structure.

PACKAGE CONTAINING THE FABRIC

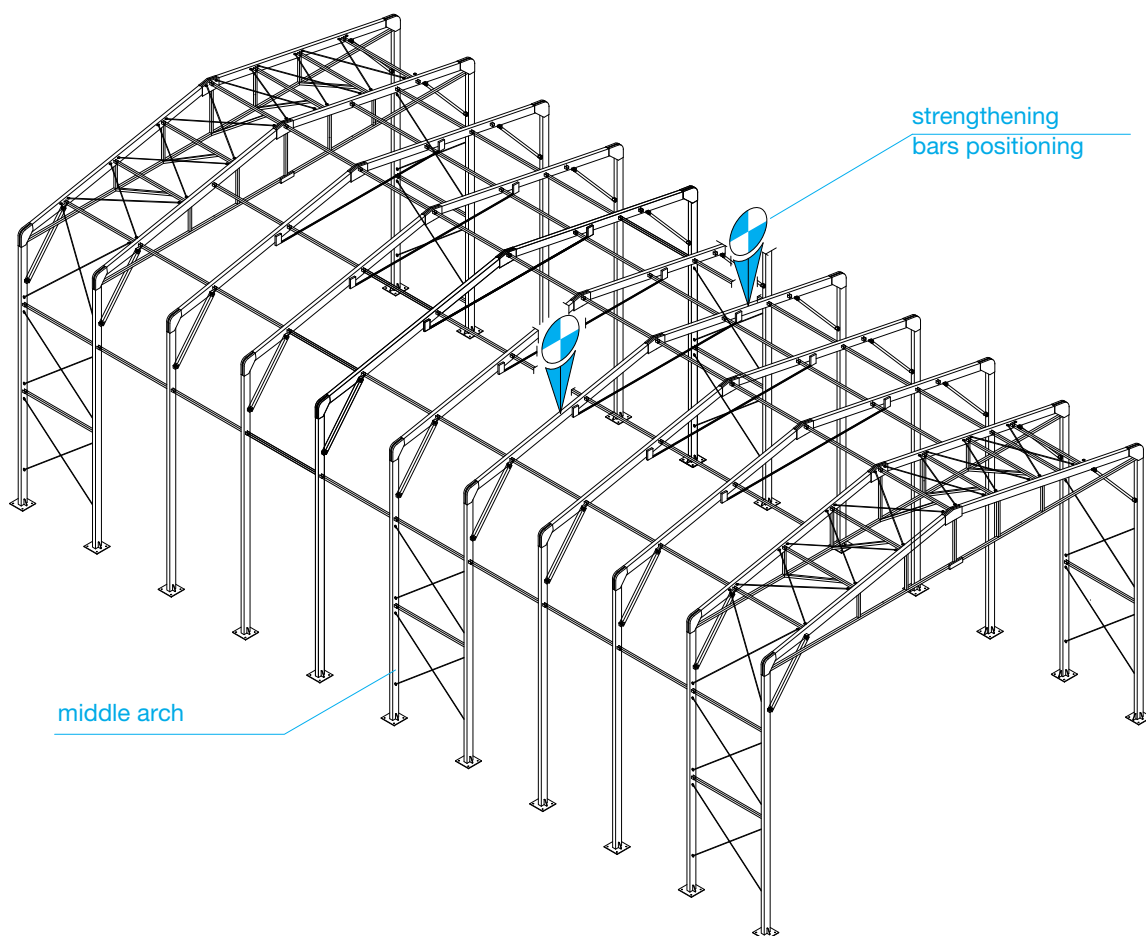
The following drawings show how to properly unroll and position the fabric.

Example for drawing showing how to position the fabric.

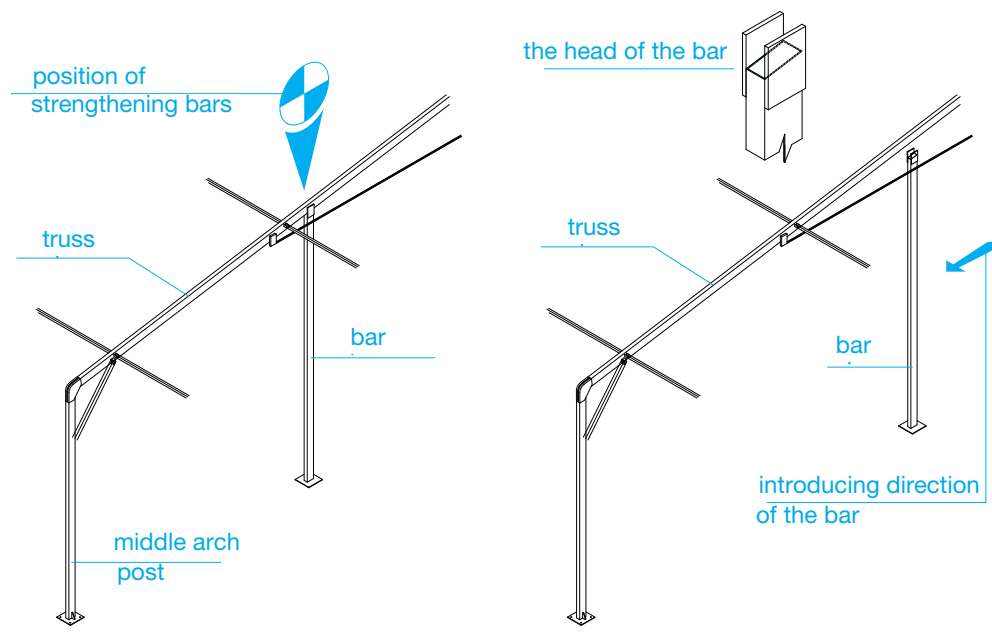


First thing to do is positioning the strengthening bars on the structure where the fabric is first to be laid.

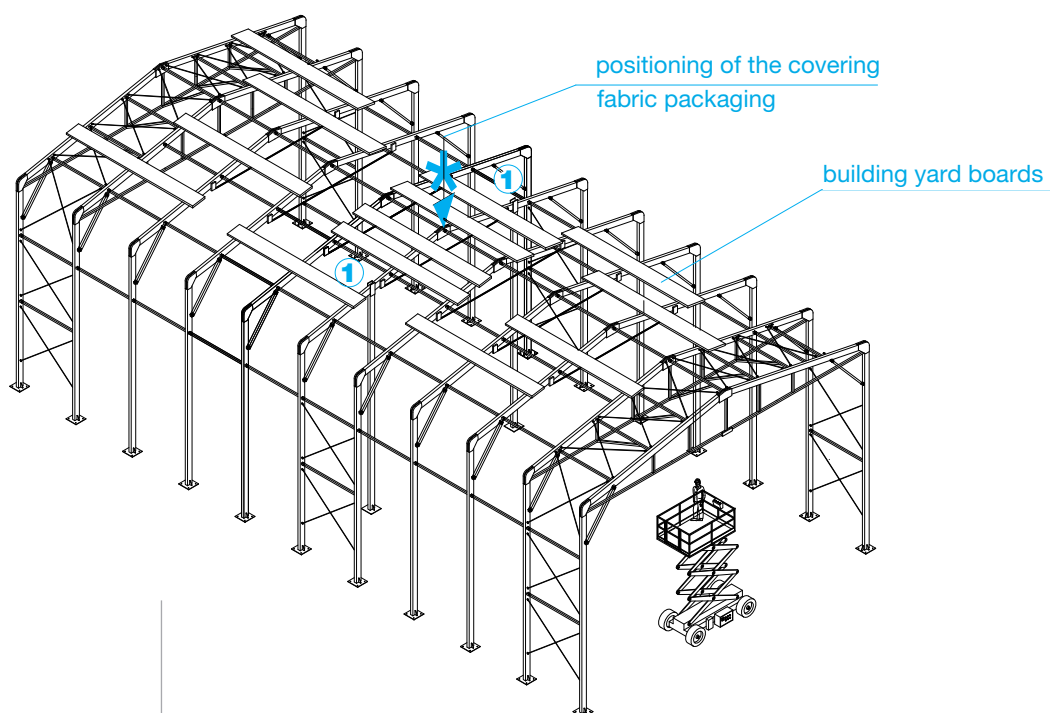
This operation must always be done otherwise the structure could collapse.



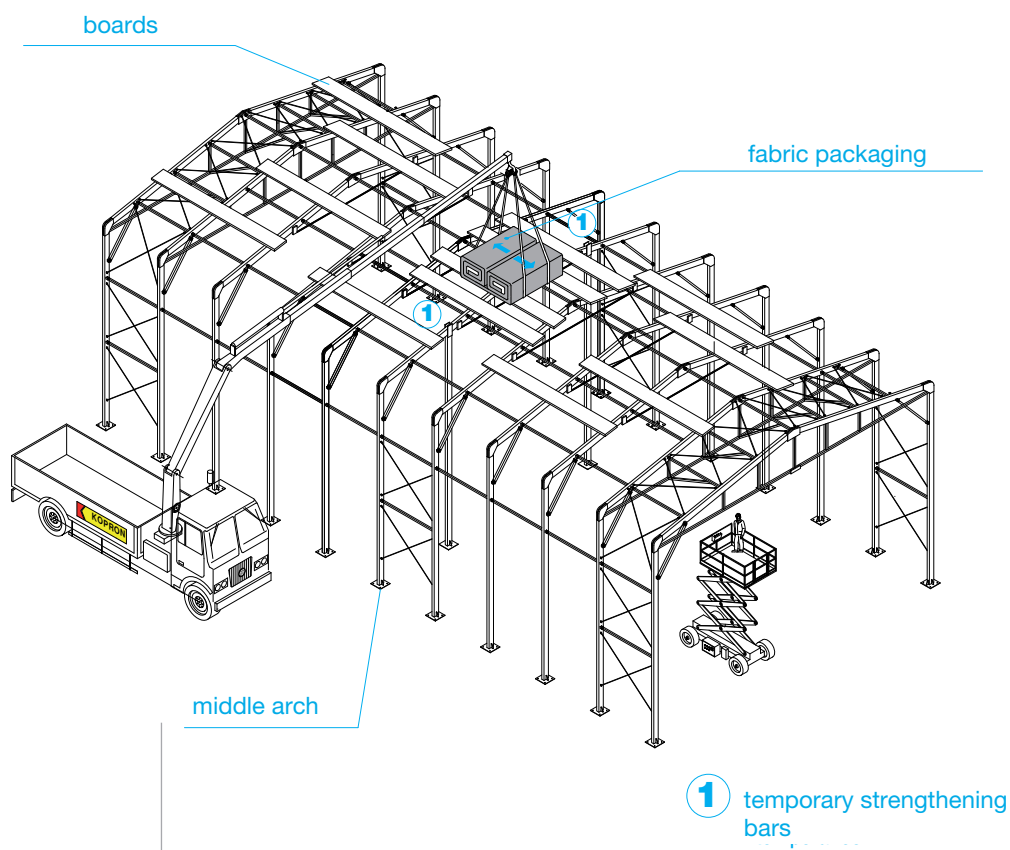
Strengthening bars are assembled without bolts and are simply introduced under the structure.



Place on top of the structure building yard boards as indicated in the drawing adding a few more over the place where the fabric packaging will be positioned.

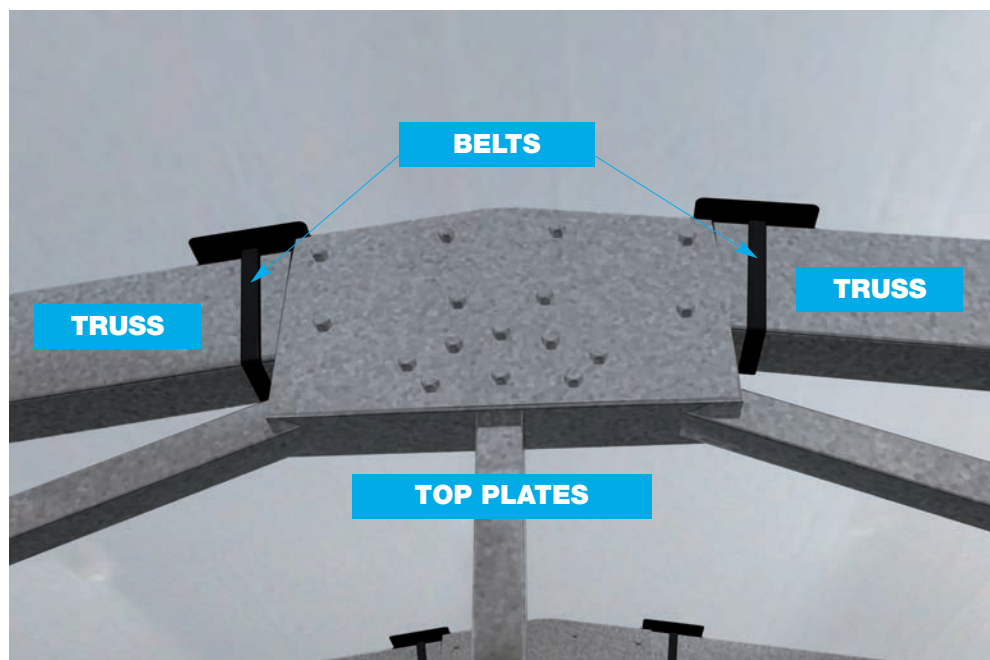


Position the fabric packaging upon the exact point of the structure with the aid of a mobile crane

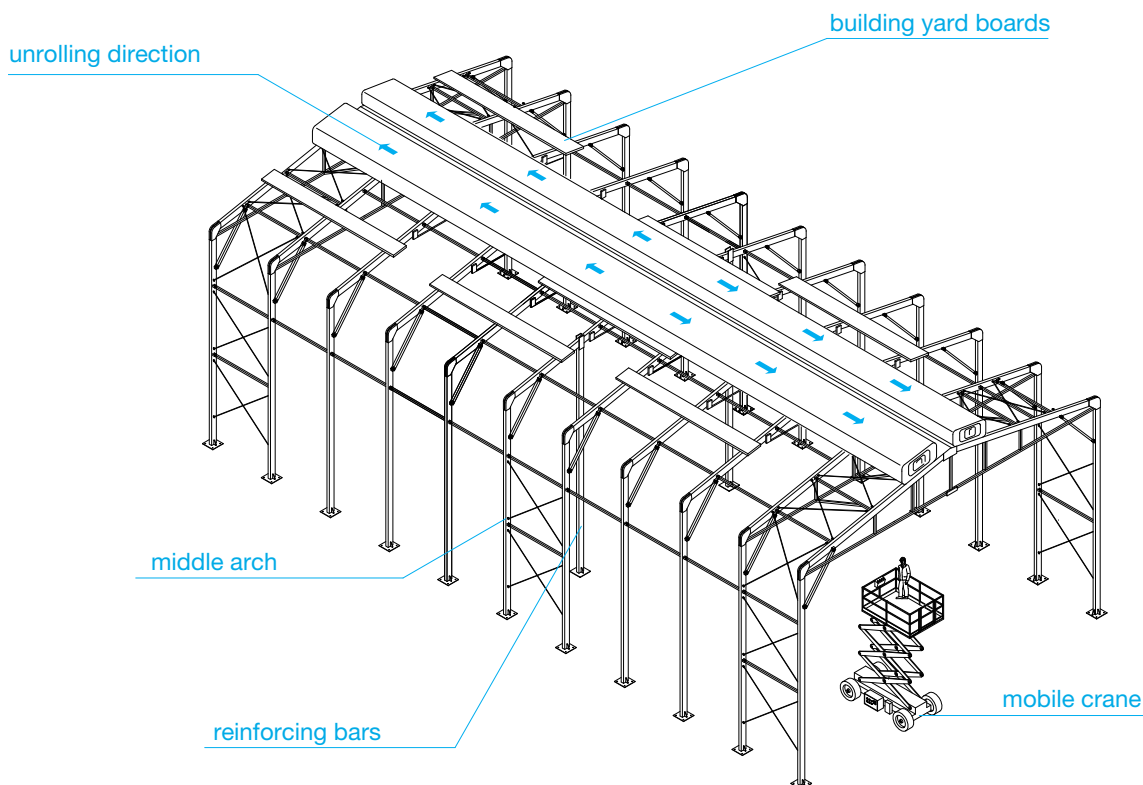


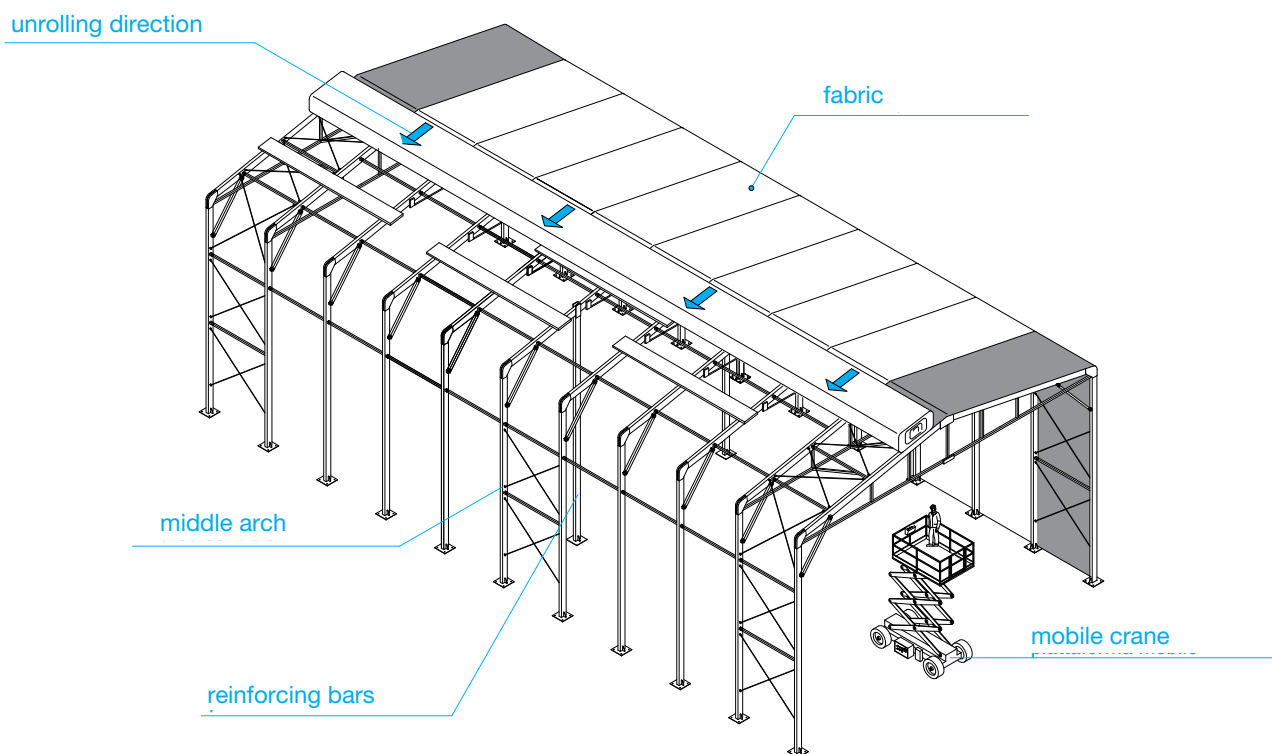


The exact position can be determined by looking at the fabric from the inside of the structure and by verifying whether the hooks of middle arch belts are correctly positioned on the trusses and at the same distance from the top plates.



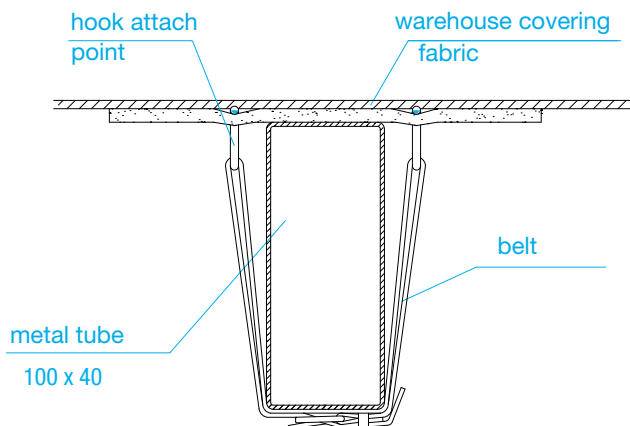
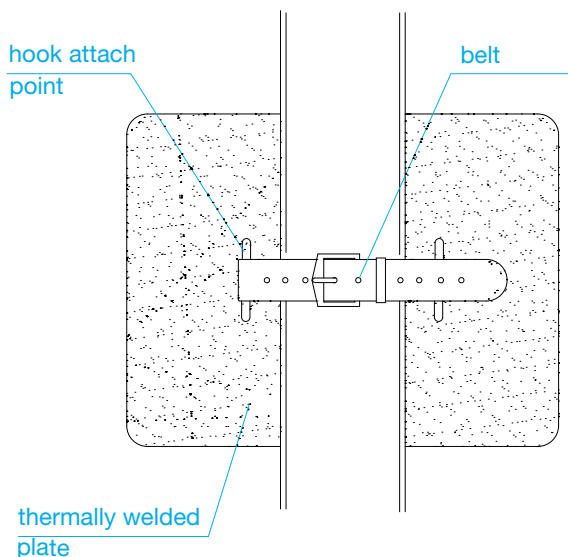
Once the fabric package is positioned on the structure, unroll the fabric towards the front and rear part on the building yard boards and with the aid of a mobile crane. While the fabric is unrolled tie the belts over the top plates (as per above photo)





After having stretched the fabric and verified if the sides are equally covered, tie the belts starting from the above the trusses downwards along the sides.

BELT FASTENING



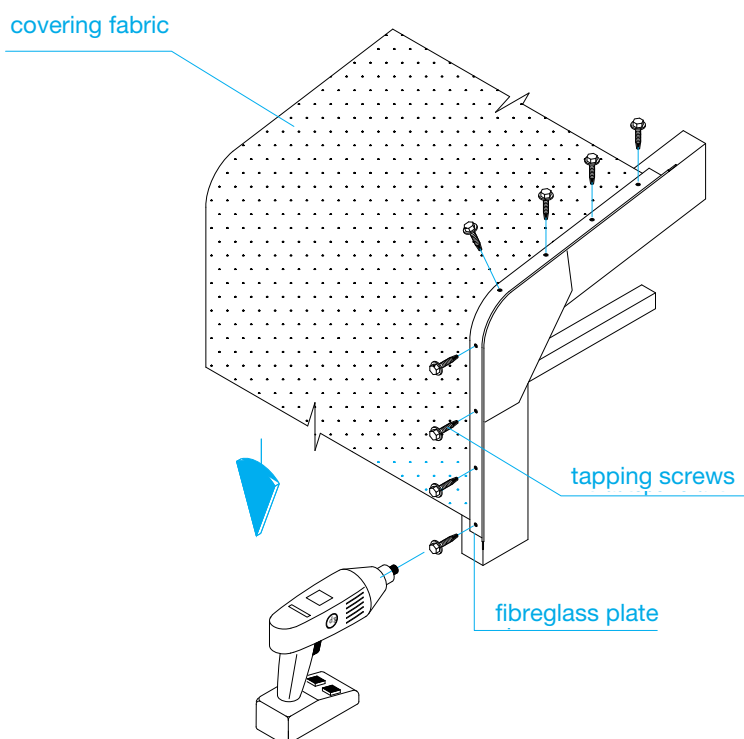
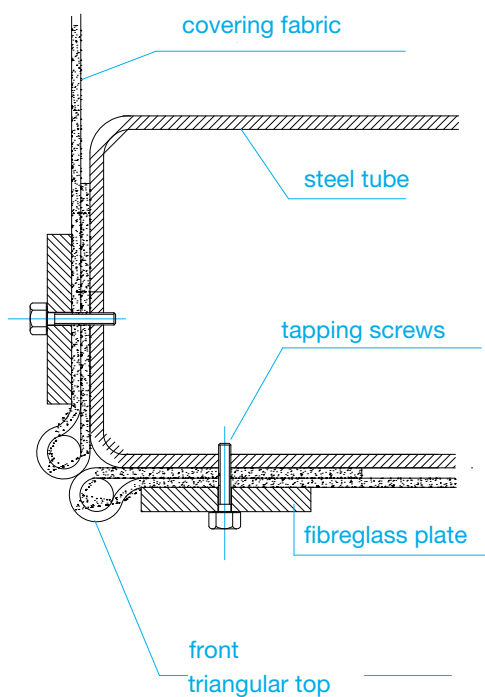
Fix the external edge of the curtain to the bars with a fibreglass plate and tapping screws, which are delivered along with material and positioned at a distance of 250 millimeters from one another. Follow the drawing

2



When fixing the fabric make sure to start from above and unroll downwards along the sides in order to keep the fabric well stretched.

FIXING OF THE EXTERNAL EDGE OF THE COVERING FABRIC

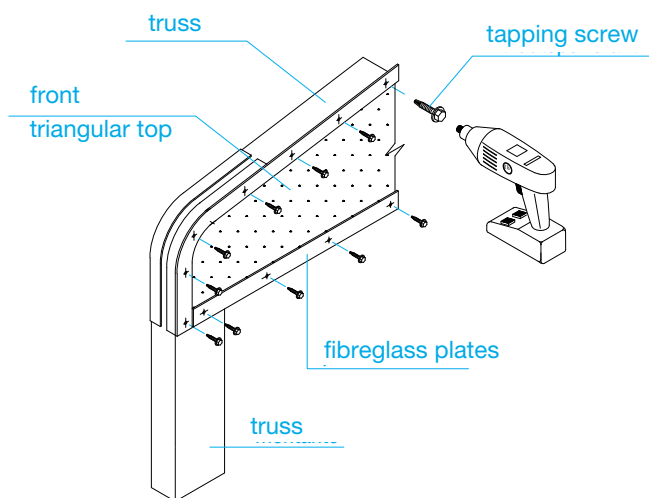
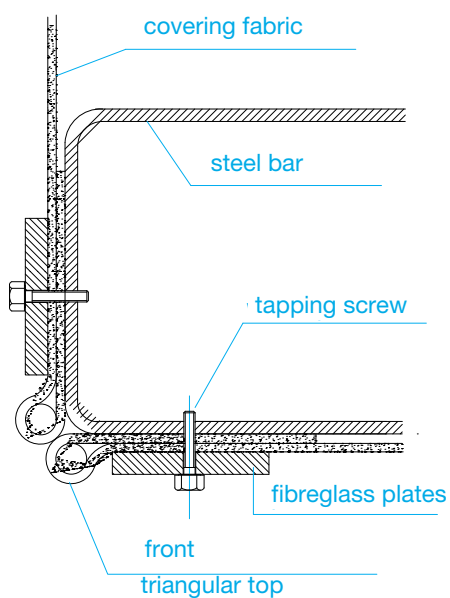
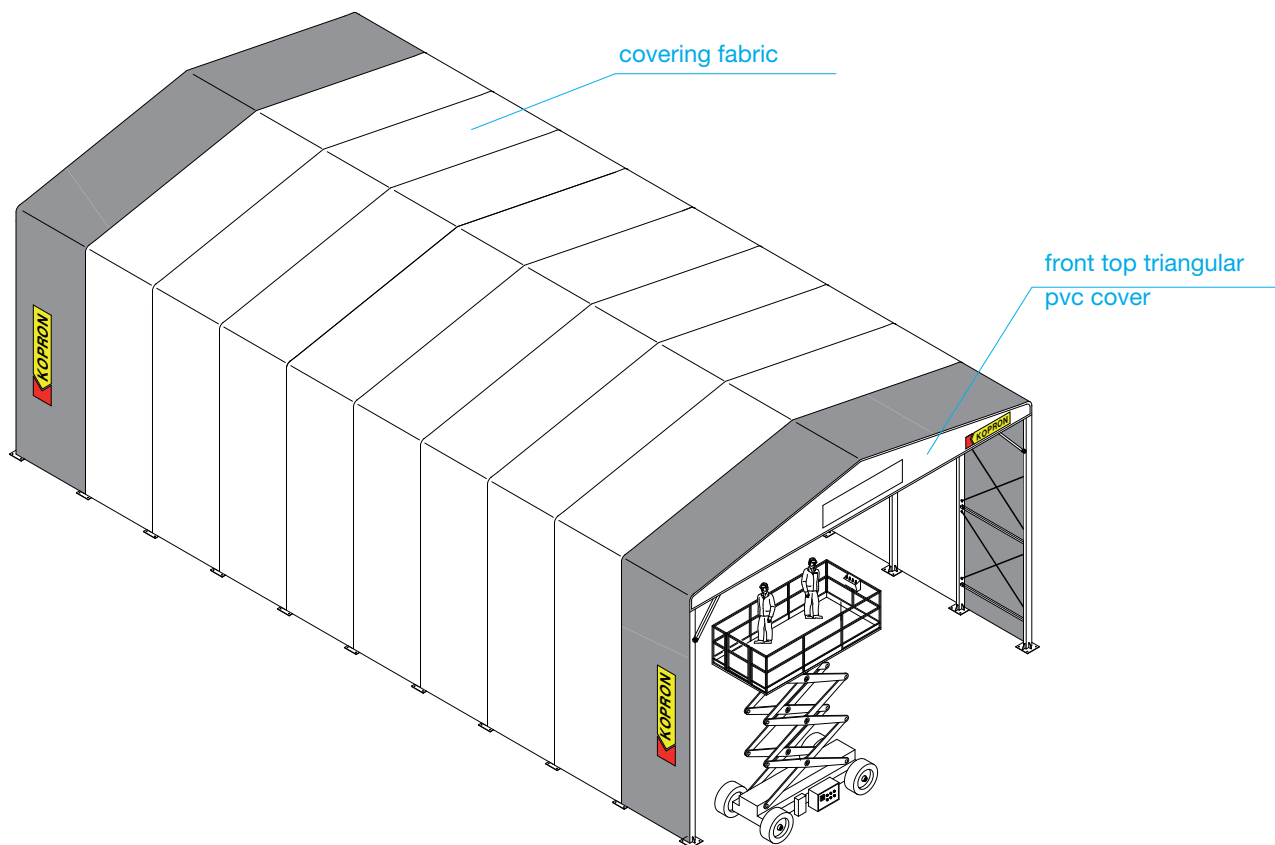


Assemble the front top triangular pvc cover with the fibreglass plates and tapping screws, which are delivered along with material and positioned at a distance of 250 millimeters from one another. Follow the drawing.



When fixing the fabric make sure to start from above and unroll downwards along the sides in order to keep the fabric well stretched.

FRONT TOP TRIANGULAR PVC COVER FIXING



2.7 TIE ASSEMBLY

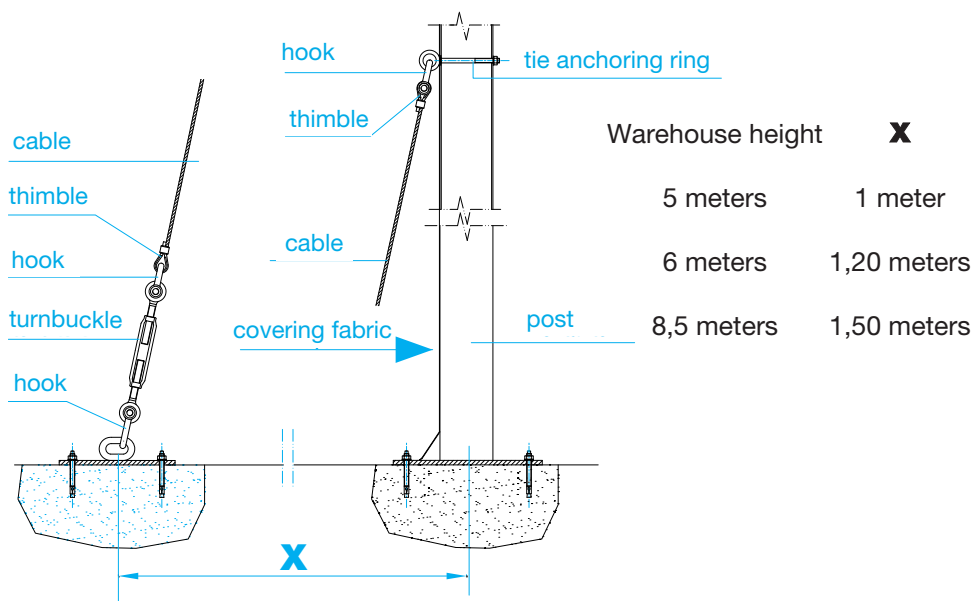


Once covering fabric has been assemble the warehouse must be made stable with ties which must be promptly assembled.

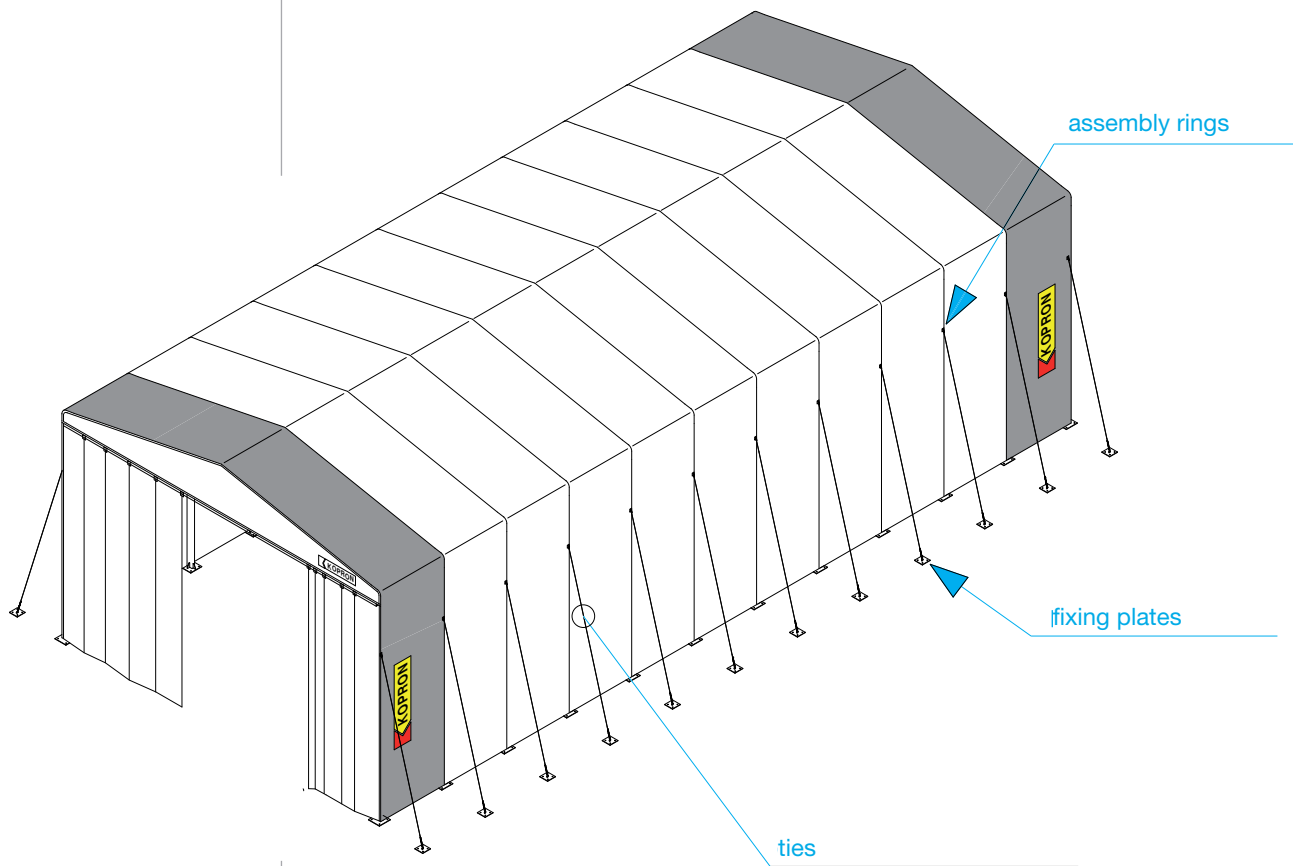
For safety reasons the warehouse cannont be left with ties.

Keep strictly to drawing when assembling the ties, with special attention to the positioning of the thimbles and cable hooks

The distance between the fixing plates of the ties and posts depend on the height of the structure.

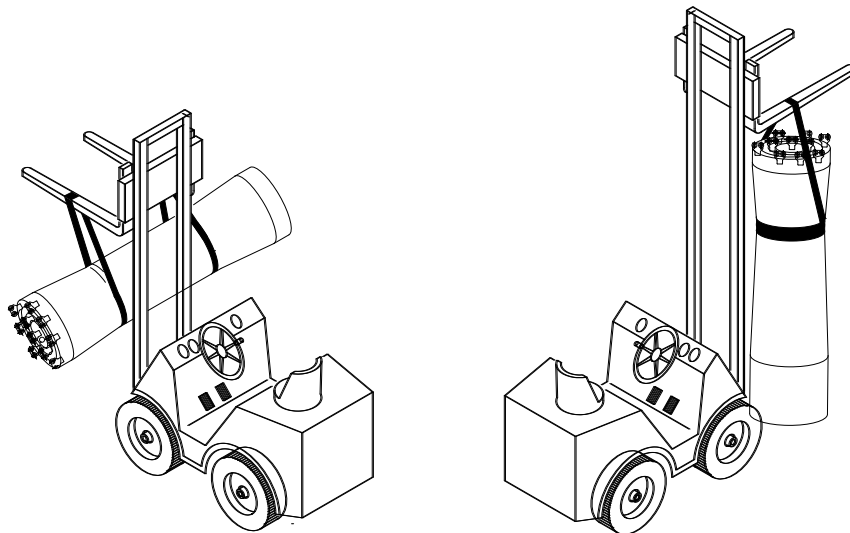


Ties must be carefully stretched for each arch, alternating the pulling of the two cables which block the arch.

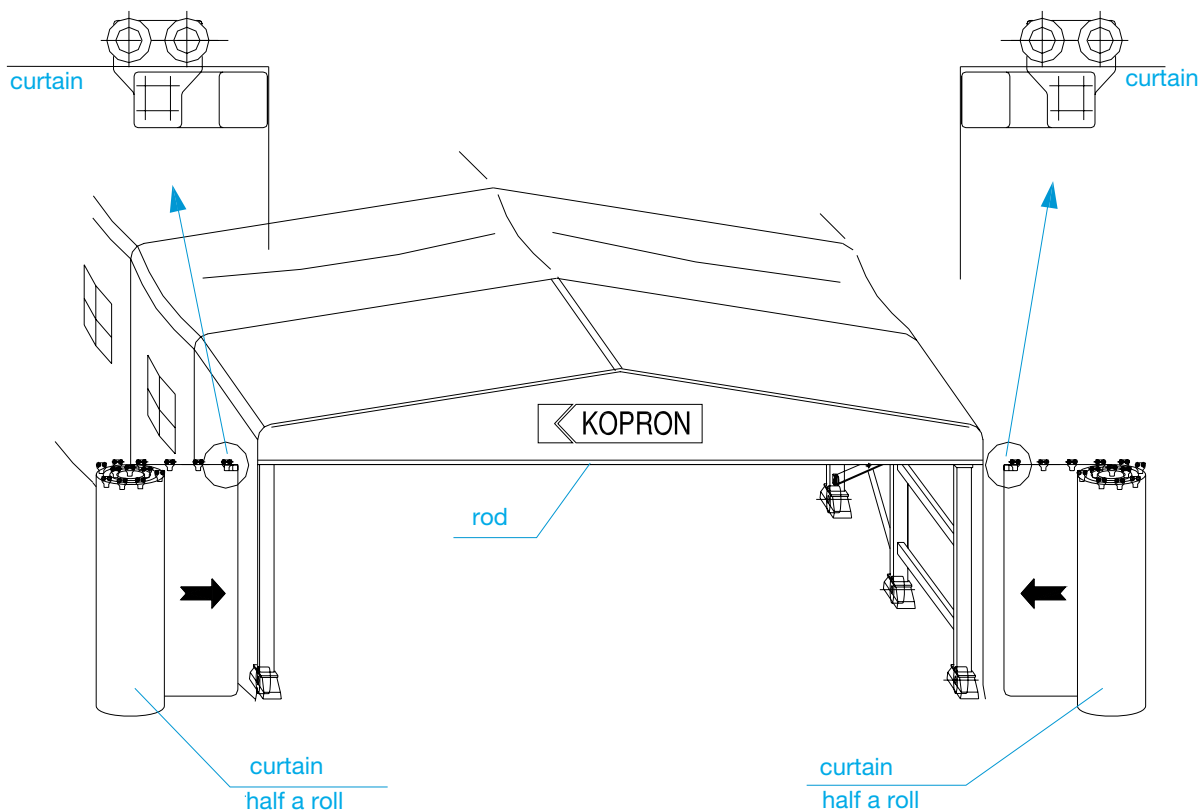
ASSEMBLY WAREHOUSE WITH TIES

2.8 ASSEMBLY OF THE CLOSING CURTAINS

Curtains are delivered rolled up, each roll consists of half a curtain, first thing to do is to partially unroll to identify the ends.

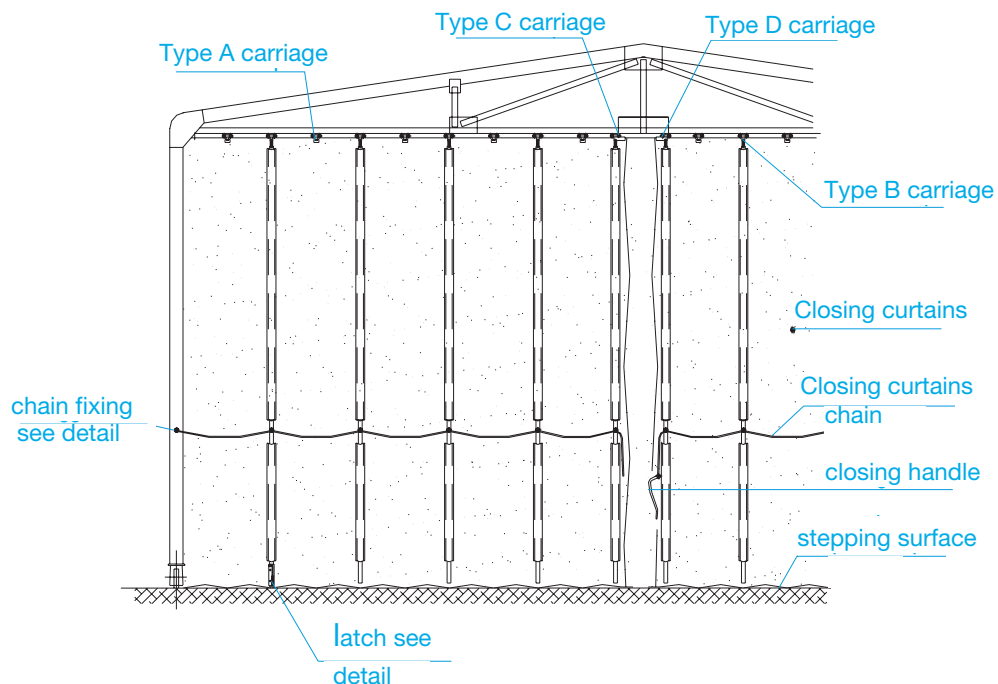
CURTAIN HANDLING

Once the end with carriages has been identified, start sliding them along the track.

SLIDE THE CARRIAGES ALONG THE ROD

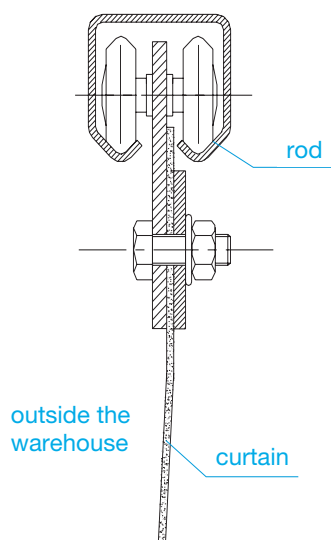
ASSEMBLY OF THE CURTAIN

(view from the inside)

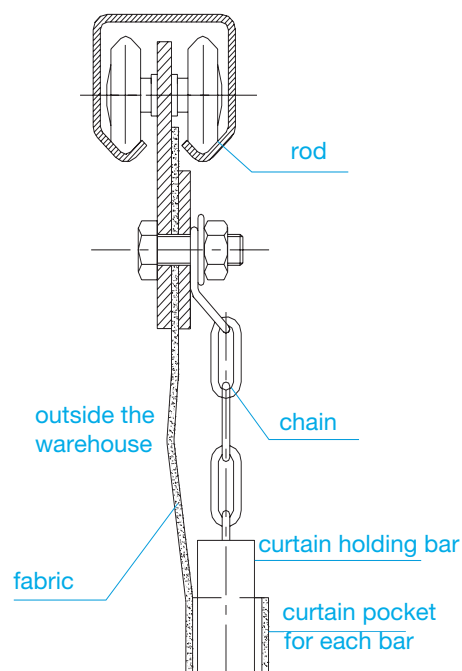


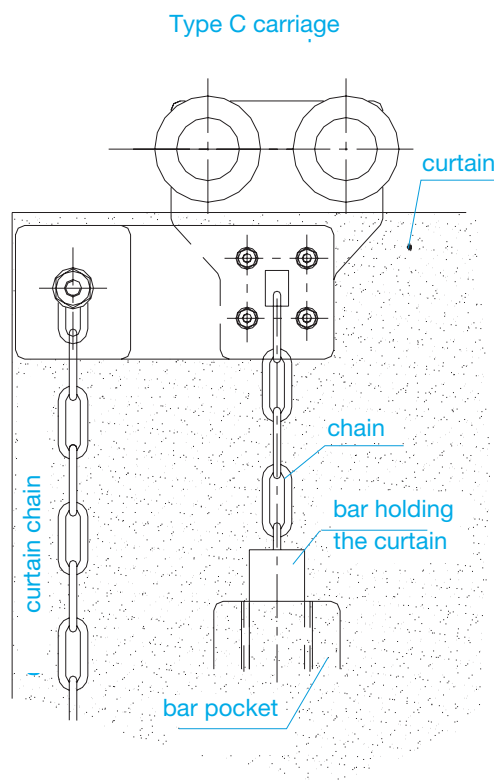
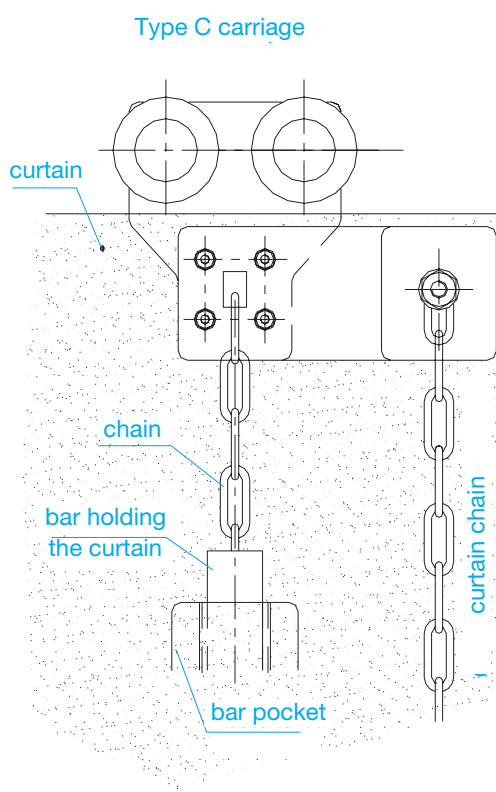
In order to avoid mistakes during assembly, make sure the bars holding the curtains are turning towards inside the warehouse.

Type A carriage curtain support



Type B carriage curtain support + bar holding the curtain



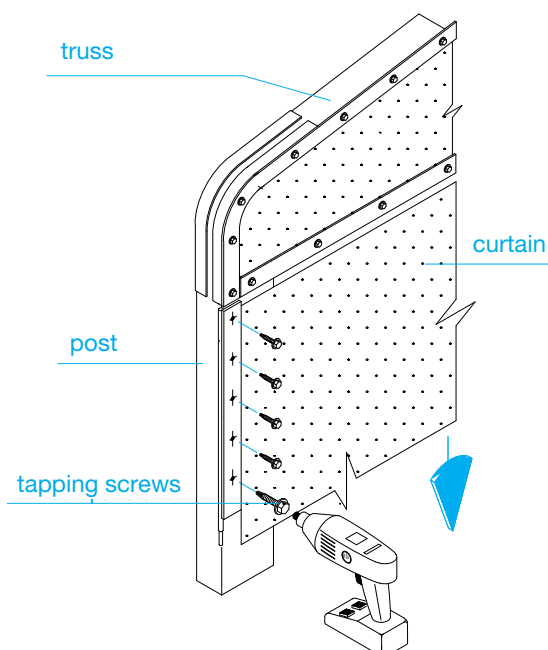
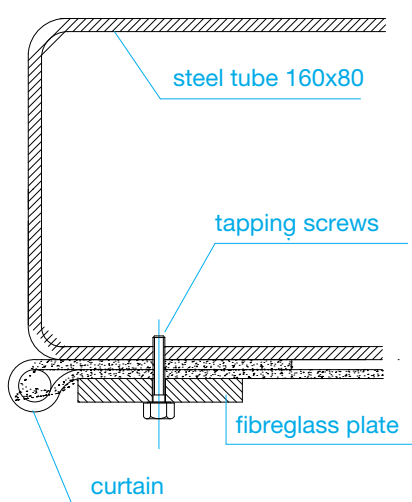


Once the two half curtains have been assembled shut them towards the centre, then fix the external edge of the curtain to the bars with a fibreglass plate and tapping screws to be positioned every 250 millimeters.



When fixing the fabric make sure to start from above and unroll downwards along the sides in order to keep the fabric well stretched.

FIXING OF THE EXTERNAL EDGE OF THE COVERING FABRIC

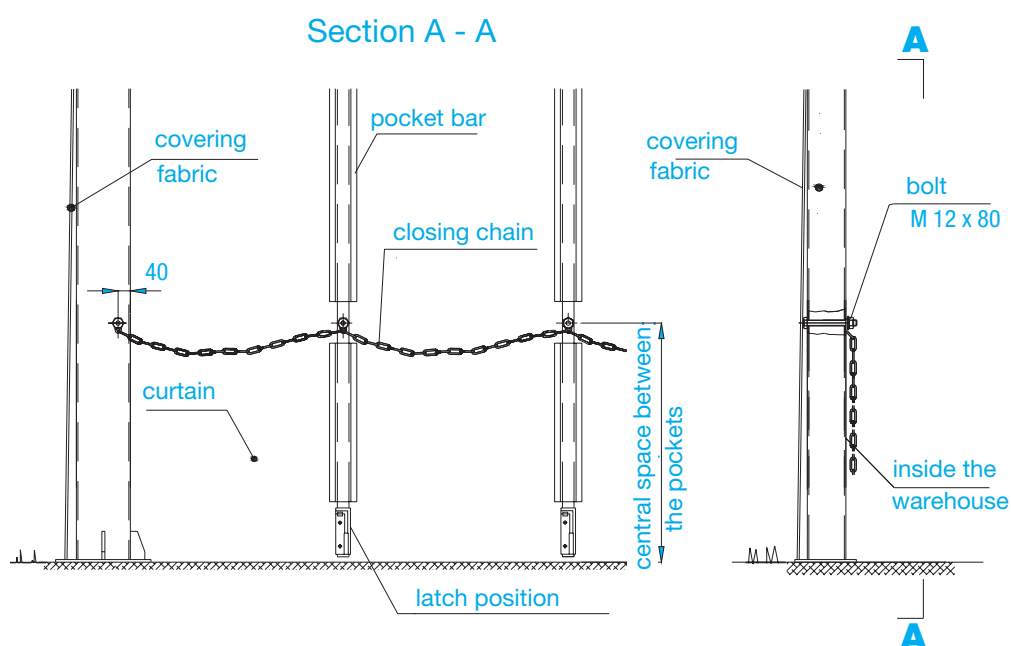


Lock the ends of the rod to avoid the carriages to escape.
With the two half curtains on carry on assembling the closings which can be of different types as follows:

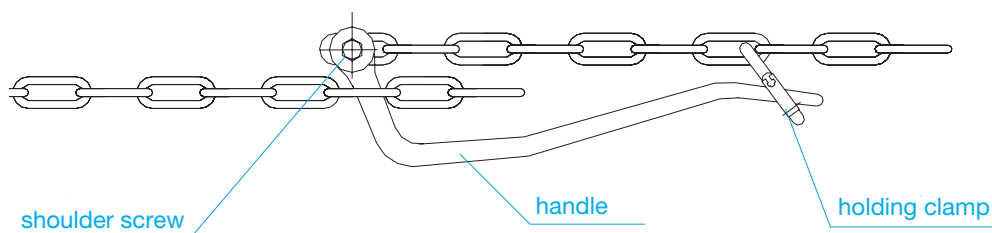
CLOSING WITH CHAIN

Fix one end of the chain to the right post making a hole and using a bolt M 12.
Stretch the chain and fix it with bolts to the curtain bars on the right.
Repeat the operation for the left side.
At one end of the chain assemble the locking handle.

ASSEMBLY OF CHAIN AND LOCK IN DETAIL



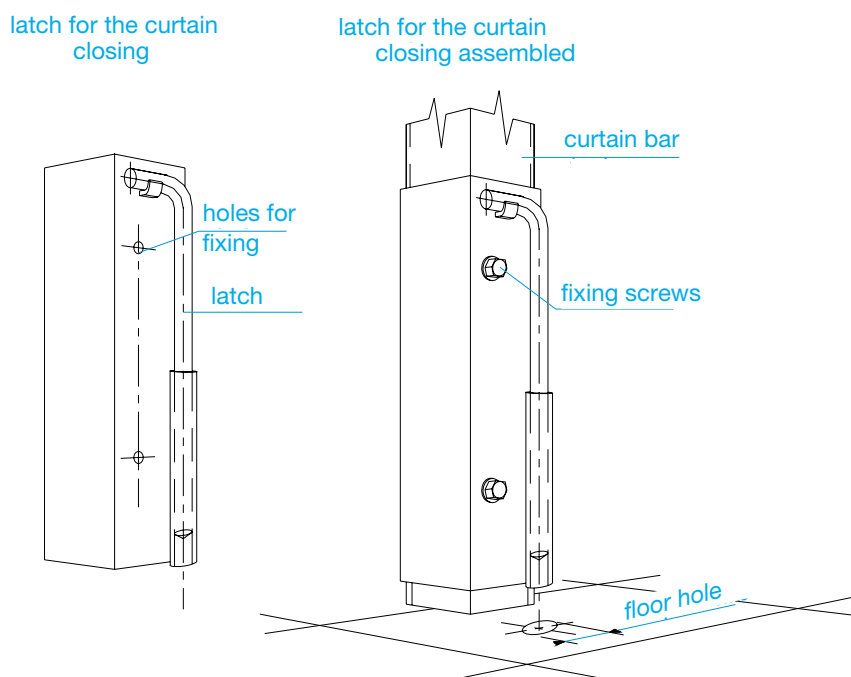
CHAIN PULLING HANDLE



LATCH CLOSING

For each bar holding the curtain you may have a latch to be assembled by fastening two bolts.

With the half curtain closed towards the center, mark the holes of the latches on the floor then drill.



2.9 LIST OF TOOLS TO BE USED

In order to carry out installation with ease and in safety the following tools and equipment may be used:



- Aerial platform
- Plumb line, wire for tracing, pencils, laser level, level and ruler of about 2 m
- Laser level
- Drill complete with steel inserts.
- Churn drill complete with inserts for reinforced concrete.
- Grinder
- Saw for metal with set of blades.
- Clamps
- Control panel and sockets suitable for construction sites, complete with general switch, thermal magnetic switch and differential set at 30 mA.
- Extension wires with sockets and plugs, for single phase supply 220 V and three phase 380 V.
- Fixed ladder 2.5 m long with adding elements to reach a total extension of 9 meters.
- Mobile trestle
- Tool box with keys, screwdrivers, pliers, hammers, etc...
- Electrician bag complete with tester and ampere meter
- Portable welding machines for electrodes diameter 3mm
- Safety tools, safety belts, goggles, helmets, protection gloves against cuts and scratches, safety shoes, opto-isolators.
- First aid box
- Cabling must be provided by Buyer



Tools must be all according to EC safety standards.

**2.10 ENVIRONMENT CONDITIONS**

For safety reasons the warehouse must be assembled in days without strong wind.

CHAPTER 3

HANDLING OF THE STRUCTURE



3.1 INSTRUCTIONS ON MAINTENANCE AND CORRECT USE

Strictly keep to the following instructions for a correct maintenance and use of the retractable structure.

- In case of wind, if there are front curtains, these must be carefully shut from the inside with the chain well tightened. The locks must be fitted into the ground and the curtains well hooked to one another.
In case personnel is not present (at night or during weekends), the front curtains must be closed.
- In case of strong wind, or snow weighing on the structure you must check the fixing plates are well anchored to ground.
- Belts must be checked periodically. These belts besides fixing the fabric to the steel parts are of utmost importance for keeping the trusses firm and still. In case of damages the belts must be immediately replaced.
For safety reasons we suggest to replace the belts completely every two years.
- In case the fabric is damaged and rips you must immediately provide repair through vulcanization preventing further tearing.
- La structure has been calculated according to the standards regulating this type of warehouses to prevent sinking due to wind pressure and snow load.
Buyer must take care of maintenance, and check periodically posts, chains, trusses and ties if they carry any damages.
In case of damaged parts these must be immediately replaced. Make sure that posts and booms always keep straight and aligned, especially if subject to particular loads.

- Warehouse cables are of utmost importance and must be constantly under control. They must always be correctly tensioned.
- The covering fabric must always be well stretched over the structure in order to avoid sagging and retain of water. As time goes by the fabric deteriorates due to many factors which can loosen the fabric and create problems as already mentioned. In this case fabric must be replaced.
Cleaning of the fabric can be simply carried out with soap and water, which guarantees the integrity of the fabric.
- If the warehouse is anchored with ties, in case of strong wind make sure they are well fixed to ground and dowels are well fastened.
Ties must constantly be inspected to check tensioning.

According to standards regarding Safety, the tools to be used must be:

- a) Correctly installed according the manufacturer's instructions.
- b) Used correctly.
- c) Go regularly through maintenance



In case of improper use of the product the guarantee will no longer be valid and Customer will be liable for any damage caused to people or things.

3.2 FIRE PREVENTION

The warehouse does not necessarily have to be built in an area with particular fire prevention measures.

In case of fire at the interior lighting system you must use proper products to extinguish it.

CHAPTER 4

MAINTENANCE AND REPAIR

4.1 PLANNED INSPECTIONS

Weekly frequency

- Inspection of the fixing belts. In case of damages they must be immediately replaced. For safety reasons we suggest complete replacement every two years.
- In case the fabric is damaged and rips you must immediately provide repair through vulcanization preventing further tearing.
- All cables must always be well tensioned.
- If cables and ties seem to be loose provide pulling them again.

Monthly frequency

- The covering fabric must always be well stretched over the structure in order to avoid sagging and retain of water. As time goes by the fabric deteriorates due to many factors which can loosen the fabric and create problems as already mentioned. In this case fabric must be replaced.
Cleaning of the fabric can be simply carried out with soap and water, which guarantees the integrity of the fabric.
- Check the fixing plates of the post which must be well anchored to ground and dowels well fastened.
- Check posts, booms, trusses which must not be damaged, otherwise they must be immediately replaced. Make sure posts are straight and aligned to guarantee stability of the structure.
- Check the edges of the covering fabric, of the triangular front part and of the curtains which must be intact.
- If the warehouse is anchored with ties, in case of strong wind make sure they are well fixed to ground and dowels are well fastened.
Ties must constantly be inspected and well pulled.

4.2 PREVENTIVE MAINTENANCE**Quarterly frequency**

- Fastening of the fixing plates of the posts.
- Cable tensioning
- Fastening of the fixing belts of the covering fabric.
- Maintenance of curtain carriages and inside cleaning of the sliding rod (do not lubricate)
- Maintenance and lubrication of the closing latches.
- Maintenance of the front and rear curtains.
- Dowel fastening of the fixing plates of the ties.
- Tensioning of the ties.

Yearly frequency

- Check and fasten all the bolts and nuts of the warehouse.
- Lubricate parts of the warehouse subject to oxidation.

Biennial frequency

- The belts fixing the fabric to the structure operate on plates welded to the fabric. Breaking strength of the belts is 350 kg and must be checked weekly, and immediately replaced in case of damages. Every two years they must be totally replaced.



These warehouses do not require particular cleaning intervention, besides the fabric which can be cleaned with water and soap. Interventions on anomalies must be carried out, by qualified personnel. Keep to what is specified in Chapt. 5.3 'Notes on maintenance'.

4.3 NOTES ON TOOLS TO BE USED

Normal workshop tools can be used to carry out maintenance and repair operations. No special tools are required.



For all operations to be carried out at a certain height use safety stairs, trestles, aerial platforms and safety belts.

CHAPTER 5

INSTRUCTIONS ON SAFETY

5.1 NOTES ON MAINTENANCE



Preventive maintenance must be carried out by skilled and qualified personnel, which must know the instructions contained in this manual.
Notes regarding preventive maintenance are described in the following page.

In case the warehouse has interior lighting, maintenance on electric system must be carried out with general switch on OFF position and blocked with a lock.

No particular dangerous situations exist in case of mechanical maintenance.
For operations to be carried out at a certain height use either an aerial platform or a trestle to position near the working spot.☒



The operator must be equipped with all the safety devices according to Standards and undertake actions which guarantee his safety.

Before starting maintenance, working area must be delimited by a ribbon and keep people away from the area.

5.2 OTHER RISKS

Main operation	Transport
Secondary operation	Lifting and handling.
Danger connected	Mechanical danger due to either the shape of the structure or to operations carried out.
Other risks	The operators can get bruised or fractured. Squeeze hand or feet. Manual handling of bulky or heavy material
Prevention	Personal protection wear, gloves, safety shoes, helmets.. Qualified personnel. Use of oversized lifting machines. Operating instructions
Main operation	Assembly
Secondary operation	Lifting and handling
Danger connected	Mechanical danger due to component handling. Pericoli dovuti alle operazioni in quota e da attuarsi in situazioni disagiati
Other risks	Bruises, fractures, falls, cuts and abrasions
Prevention	Personal protection wear, gloves, safety shoes, helmets, goggles, protection mask for welding and grinding operations. Safety ladder, aerial platforms, scaffolds, safety slings for operation from a height for working at a height. Limit the working area with a ribbon Qualified personnel Follow safety measures established by the Company purchasing the product. Follow specific instructions on operations. Use lifting machinery according to standards.

INSTRUCTIONS

Main operation	Maintenance and repair
Secondary operation	Lifting equipment
Danger connected	Mechanical danger due to movements of the equipment, and electric danger due to the electric connection. Danger due to connections which are carried out under difficult conditions or in lifted positions. Fall of material
Other risks	Bruises, fractures, falls, dropping material.
Prevention	Personal protection wear, gloves, safety shoes, helmets, goggles, protection mask for welding and grinding operations. Against electric shocks the electric panel must be connected to a proper supply line provided with general switch, thermal magnetic switch and differential set at 30 mA. All units must be connected to the ground collector with a three-phase voltage cable. Appropriate tools. Building yard delimited with a ribbon. Safety ladder, aerial platforms, scaffolds, slings for working at heights.. Qualified personnel. Follow specific instructions on maintenance operations

CHAPTER 1**ENVIRONMENT CONDITIONS**

**1.1 DISMANTELLING AND DISPOSAL**

Disconnect the warehouse from all the energy sources of the building.

Divide material to dispose according to type

The material used is mainly the following:

- Steel for the structure
- Plastic
- Electric components.
- Electric cables



All material must be disposed according to local regulations

**1.2 REMOVING WASTE MATERIAL**

Any exceeding material from assembly can be disposed along with normal waste material.

CHAPTER 1

SPARE PARTS

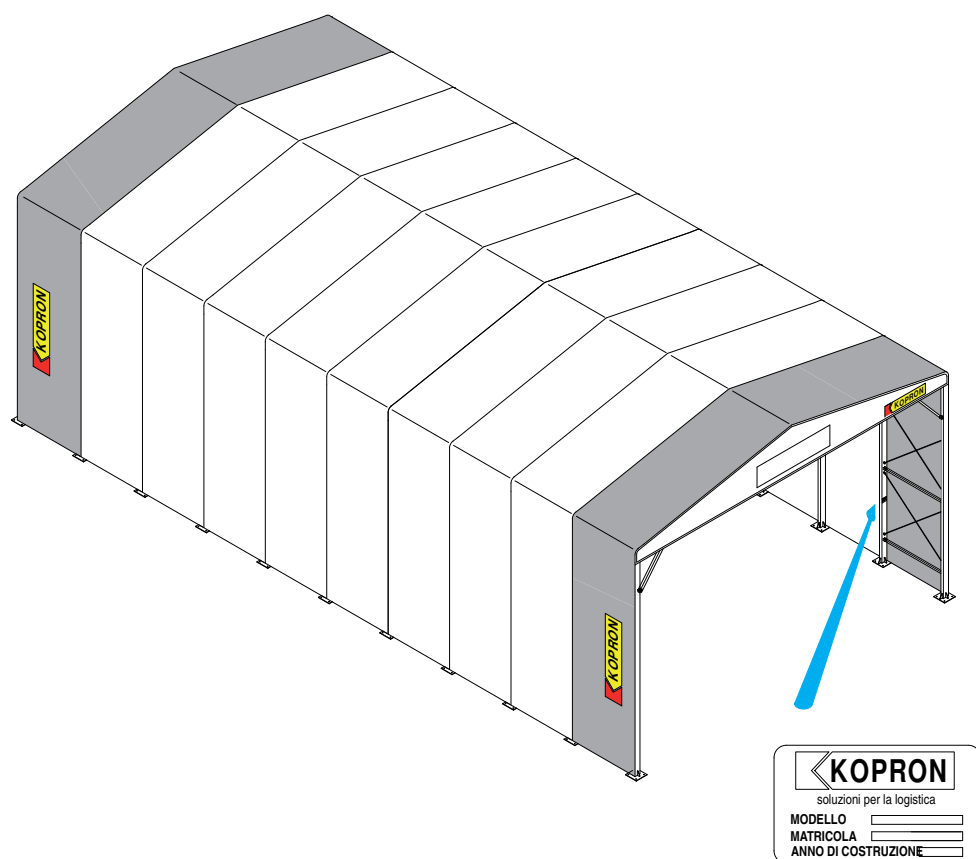
1.1 SPARE PARTS

Orders for spare parts must always carry the model, serial number, year of construction of the warehouse. These data are usually on the label (as per unit I Chapt.1.3)



In case non original parts are used, this will be classified as an improper use and guarantee will no longer be valid.

WAREHOUSE MARKING PLATE



CHAPTER 1

SERVICE AND GUARANTEE

1.1 GUARANTEE

1 - Kopron S.p.A. grant a guarantee period of 12 months from delivery date except for electric and electronic parts for which there is no guarantee, these components used for production have their own guarantee, established by the relevant suppliers, which as well does not exceed 12 months from delivery.

2 - Kopron S.p.A. undertake to remove any defect due to error in design or material/production faults occurring within the terms mentioned at point 1.

3 - For each faulty part, Buyer must give Kopron written notice within eight days. Buyer will be charged with transport costs and risks plus eventual customs expenses for faulty parts as well as for the supply of parts repaired or sent for replacement.

4 - Upon request of Buyer service under guarantee can be carried out locally where the dock leveller has been assembled, in this case intervention plus expenses for travel, food and lodging will be charged to customer.

5 - Guarantee is valid only in case equipment has been correctly used according to instructions contained in the Use and Maintenance manual.
Guarantee will not cover faults caused by Buyer in case of maintenance or interventions not authorized by Kopron S.p.A. in writing, or due to wear and tear.
Guarantee will not cover any damages caused directly or indirectly by tools, or due to missing production.

6 - Material subject to normal wear and tear is not under guarantee.

7 - The duration of the guarantee does not exclude the obligation on behalf of Customer to stock up with spare parts as suggested by Kopron S.p.A. in due time.

8 - The obligations implied in the guarantee have nothing to do with the economical conditions agreed upon and do not authorize interruptions or changes in payment modalities.

9 - Guarantee covers only the mechanical functioning of the equipment, therefore Kopron S.p.A. will not be responsible for personal Customer expectations regarding quality or quantity of the product.

Should instructions contained in this manual not be followed strictly, or if negligence occur during maintenance, or repairs not be carried out properly, or should on original spare parts be used, this will be considered improper and will imply Buyer to take his own responsibilities plus the loss of guarantee.

Kopron S.p.A



LOOKING AHEAD



Quality Management System
UNI EN ISO 9001:2008 Certified
Factory Production Control
UNI EN ISO 1090
Applicable standard
UNI EN 13241-1
UNI EN 16005
UNI EN 1398
UNI EN 3834-2

CERTIFICAZIONI CERTIFICATIONS

Kopron attraverso le certificazioni di qualità offre un'ulteriore garanzia sull'efficacia e l'efficienza dei propri prodotti.

Through certifications Kopron offer a further guarantee on efficiency and quality of their products.



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