

Pipes, Piles, and Accessories

ON-SITE RECOMMENDATIONS FOR SAFE HANDLING

Contents:

1. General
2. Reception of products and inspection
3. Unloading and moving
4. Storage
5. Handling of coated pipes
6. Installation

Principles of safe handling:

- The lifting and unloading plan shall be established before unloading.
- Always notify SSAB if you have special requirements for loading and unloading (including the information about lifting the machine in use).
- Always observe valid safety instructions and check the special requirements of the site before starting work.
- Use experienced/trained staff (according to local requirements).
- Always wear a helmet, safety gloves, safety shoes, safety glasses, and high-visibility protective clothing when handling steel pipe products.
- Do not exceed the allowed load of the lifting machine.
- Always check the conditions of the slings and hooks before starting the unloading.
- Make sure that the slings and hooks are properly and securely fastened.
- Do not go behind or under products during the lifting and moving.
- Note that the strapping around pipe bundles is under tension and may cause accidents when cut.
- Be careful with the handling of sharp edges and corners.
- Ensure that the unloading point is firm and even and sufficiently spacious.

SSAB is a Nordic and US-based steel company. SSAB offers value-added products and services developed in close cooperation with its customers to create a stronger, lighter, and more sustainable world. SSAB has employees in over 50 countries. SSAB has production facilities in Sweden, Finland, and the US. SSAB is listed on the NASDAQ OMX Nordic Exchange in Stockholm and has a secondary listing on the NASDAQ OMX in Helsinki. www.ssab.com.

1. General

The purpose of these instructions is to provide recommendations for the on-site handling of pipes and accessories. The recommendations are based on SSAB's views at the time of their preparation and may change from time to time if SSAB deems it necessary. One purpose of the recommendations is to prevent on-site damages, accidents, and injuries, but SSAB cannot guarantee that they will not occur even if the recommendations are followed, and assumes no responsibility for them.

The recommendations are not comprehensive and do not provide a comprehensive description of all points to be taken into consideration in the handling of pipes and accessories generally, or in individual cases. Safety practices described in laws and regulations and instructions generally applied in the sector always take precedence over these recommendations. Valid work safety guidelines must also be observed and followed, and required personal protection equipment must be used on the site.

2. Reception of products and inspection

Short definition of most common delivery term CIP ('Carriage and Insurance Paid'):

- The seller delivers the goods to the buyer, when he hands over the goods to the carrier named by him at the place of loading at the agreed time of delivery.
- The seller insures the goods on behalf of the buyer during transit.
- The buyer takes delivery of the goods when the seller hands them over to the carrier at the place of loading at the agreed time of delivery.
- The buyer bears the risk of loss of or damage to the goods after the delivery.

Inspect the products upon arrival and report any visible damage and nonconformance/discrepancies (type of damage, number of packages, etc). If possible, take photographs of the cargo and vehicle. Ask the driver to sign the document to confirm any shortcomings. Carry out the necessary steps to minimize the damage and to prevent further damage.

If the damage is visible or the delivery is late, please make a note in the CMR. Consignments must be inspected upon receiving the products to ensure written confirmation of the condition of the products at the time they are received.

Nonconformance/discrepancies must be documented in writing to ensure that a complaint can be lodged against the carrier. Notify SSAB's contact person or the seller immediately of the matter. Provide the contact person with the documents required and any photographs of the incident. Prompt reaction enables SSAB to quickly initiate the complaint process and inform the carrier. Instructions given by Sales can help to prevent further damage to the products, and, if necessary, replacement products can be dispatched as soon as possible.

Inspect the consignments immediately upon their arrival. If you notice any latent damage or discrepancy in the delivery volume, notify SSAB's contact person immediately. The hidden damages must be reported within seven days of delivery. If the claim is received later than seven days, the receiver must be able to prove the damage was caused during transport.

The receiver of the delivery designates an unloading point corresponding to the recommendations in advance or upon arrival of the delivery. To prevent damages, the shipment may only be opened at the designated unloading point. Proper access to the unloading point must be provided. The unloading point must allow for safe and effective unloading. The unloading point must be firm, even, and sufficiently spacious. Bottom and wood dunnage must be used according to recommendations.

3. Unloading and moving

A lifting and unloading plan with a risk analysis shall be made before unloading.

The weight and the length of the products must be taken into account in the selection of lifting equipment. Depending on the product, the weight is marked either on a pipe or the bundle tag (Figure 1). In the case of large diameter piles, the weight also includes the weight of the pile tip if it is a part of the section.

It must be ensured that no permanent deformations or other handling damage is caused to the pipes in their handling. Every bundle must be checked for damages when moved. The general principle is that unnecessary cutting open of pipe bundles must be avoided before their installation. Special attention must be paid to the condition of the ends (bevels) and threads of the piles. For example, the protective covers of threaded pile ends should not be removed before their installation.



3.1. Before unloading

Snow and ice must be taken into account or, when possible, removed to prevent hazardous situations. Pipes or accessories must not be thrown or rolled onto the ground. During unloading, pipes and accessories are lifted by a crane side by side onto even ground or on supports beside the vehicle. Pipes must be lowered carefully onto the bottom or wood dunnage in a horizontal position. Accessories can also be delivered on pallets.

A whole pipe bundle must not be lifted by applying the lifting force to a single pipe. Pipes longer than 20 meters must not be lifted from the ends. In two-point lifting of a homogenous pipe, the right position of the lifting gear is a quarter of the pipe's length from the pipe end. The equilibrium point has been marked in large diameter pipes. In the case of piles with rock shoes, the correct position of the lifting points is symmetrically on both sides of the equilibrium point. The distance between the lifting points must be at least half of the pipe's length.

Maximum quantity of $D \geq 406.4$ mm pipes on a truck (weight excluded) are shown in Table at the end of the document.

3.2. General lifting principles:

- No one is allowed under the load during the unloading, and sufficient distance from the load must be maintained.
- The weight of the load to be lifted shall not exceed the permitted load of the machine, the auxiliary lifting device, and lifting accessories (e.g., slings and chains).

- Warn others in the area before lifting commences.
- The lifting area must be restricted, and the entrance to it must be blocked.
- Lift evenly without jerking.
- Ensure that the load stays clear of obstacles during its lifting and transfer.
- The driver must have the necessary qualification and a license to operate a crane.
- Take weather conditions and related risks into consideration in the lifting situation.
- Ice- and snow-covered pipes and pipe bundles are extremely slippery and require special caution in their handling.
- Extra planning is required when mixed diameters of pipes are unloaded.

3.3. Use of a forklift

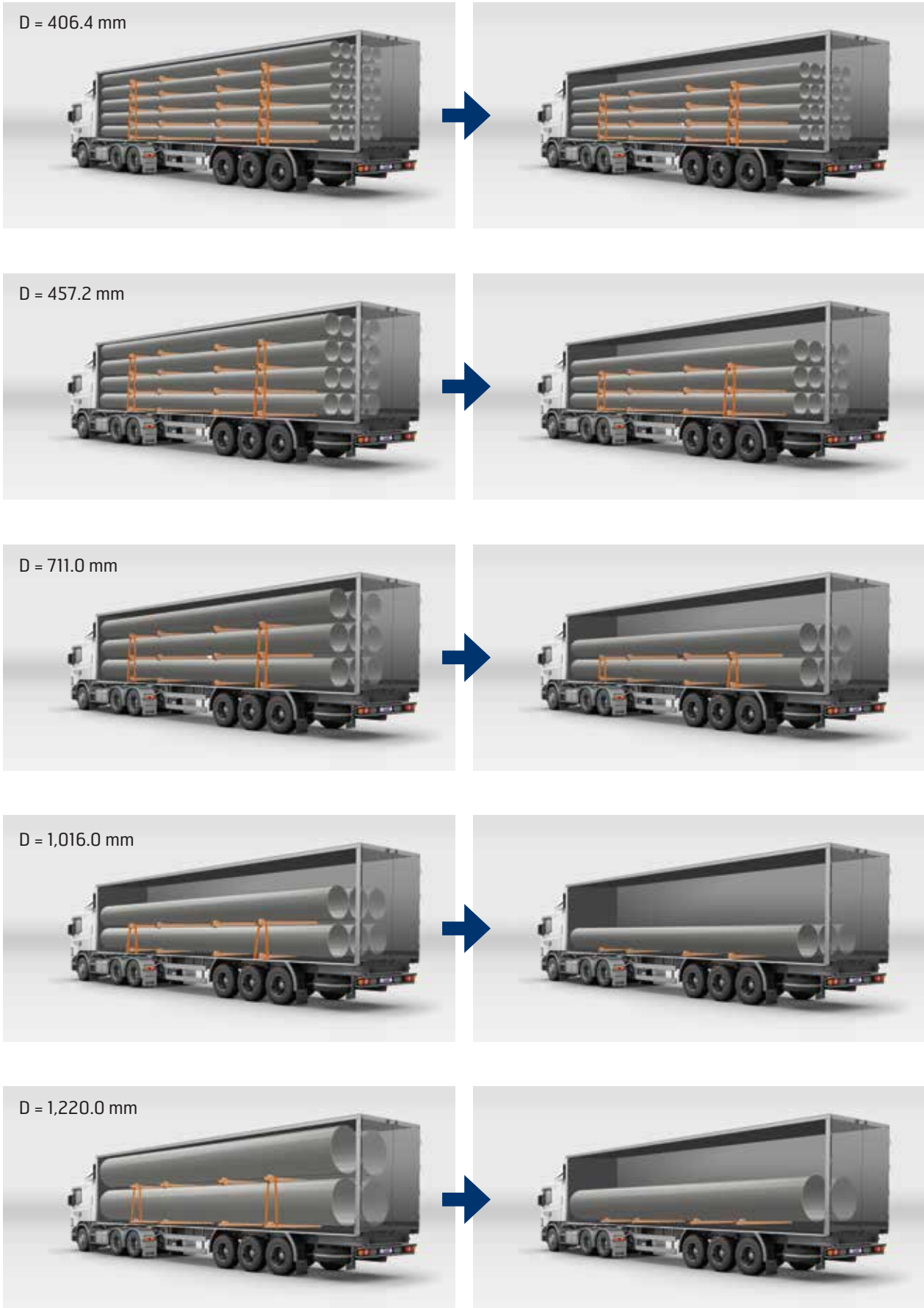
The forks of the forklift are inserted under the pipe bundle, pipe, or pallet of accessories so that the products are balanced. When moving and lifting loose pipes with a forklift, the risk of pipes rolling must be prevented. On an uneven route, the driving speed must be adjusted so that the pipes or the pallet of accessories cannot move on the fork. Pushing pipe products with the forklift is forbidden.

The unloading of large diameter pipes is started from the top, and the wooden dunnage is removed in the same order. The pile pipes are lifted upward in a horizontally aligned position. To secure the load during unloading, lifting slings shall be fastened to the uppermost wooden dunnage level-by-level on both sides of the load (Figure 2).

Figure 1. Example of a bundle tag



Figure 2. To secure the load when unloading pipes $D \geq 406.4$ mm lifting slings shall be fastened to the uppermost wooden dunnage level-by-level on both sides of the load. See also Table 2.



3.4. Use of lifting slings

Only approved, new lifting slings suitable for the purpose may be used in lifting. The weight of the bundle to be lifted must be taken into consideration in the selection of lifting slings. Figures 3, 4, and 5 illustrate the use of lifting slings when pile pipes are loaded unevenly to enable easier unloading with slings. This method of loading must be checked against national restrictions, and, if allowed, it shall be in-

formed and agreed upon when ordering. All lifting slings shall be equally loaded without jerking during lifting. The pipes must not be allowed to bend to prevent deformation in lifting.

Where necessary, three or more lifting slings must be used. An intermediate boom (see Figure 4) can be used as a lifting accessory. The slings must be vertically aligned, which must be taken into account in the length of the used intermediate boom.

Figure 3. Lifting with slings

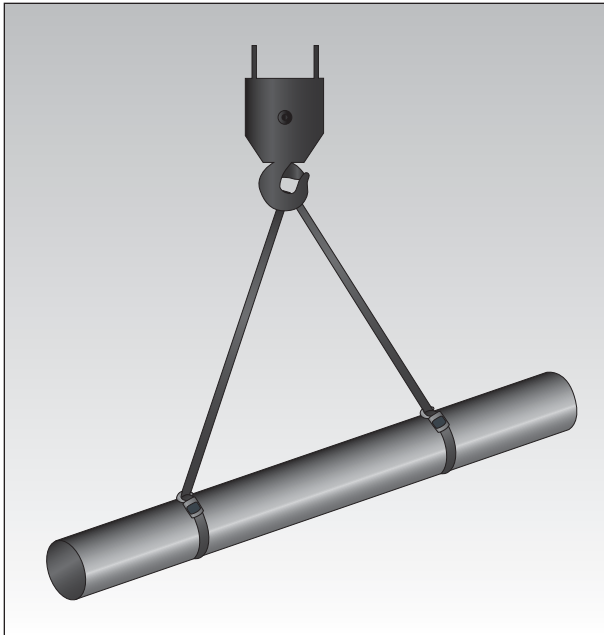


Figure 4. Use of an intermediate boom when lifting with slings

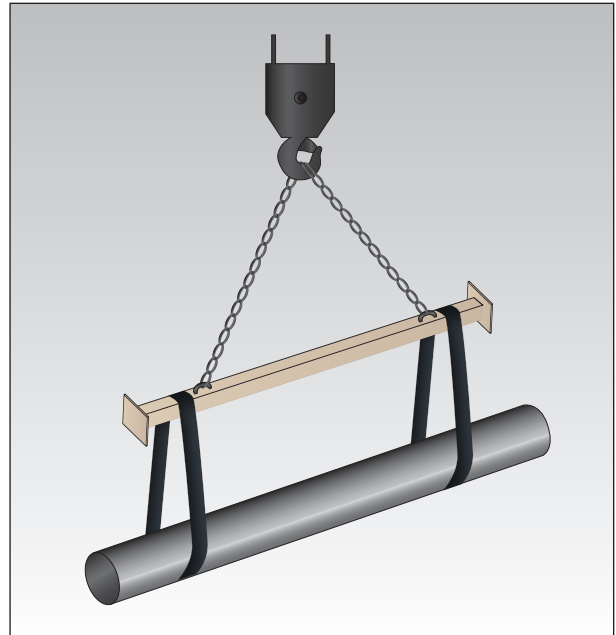
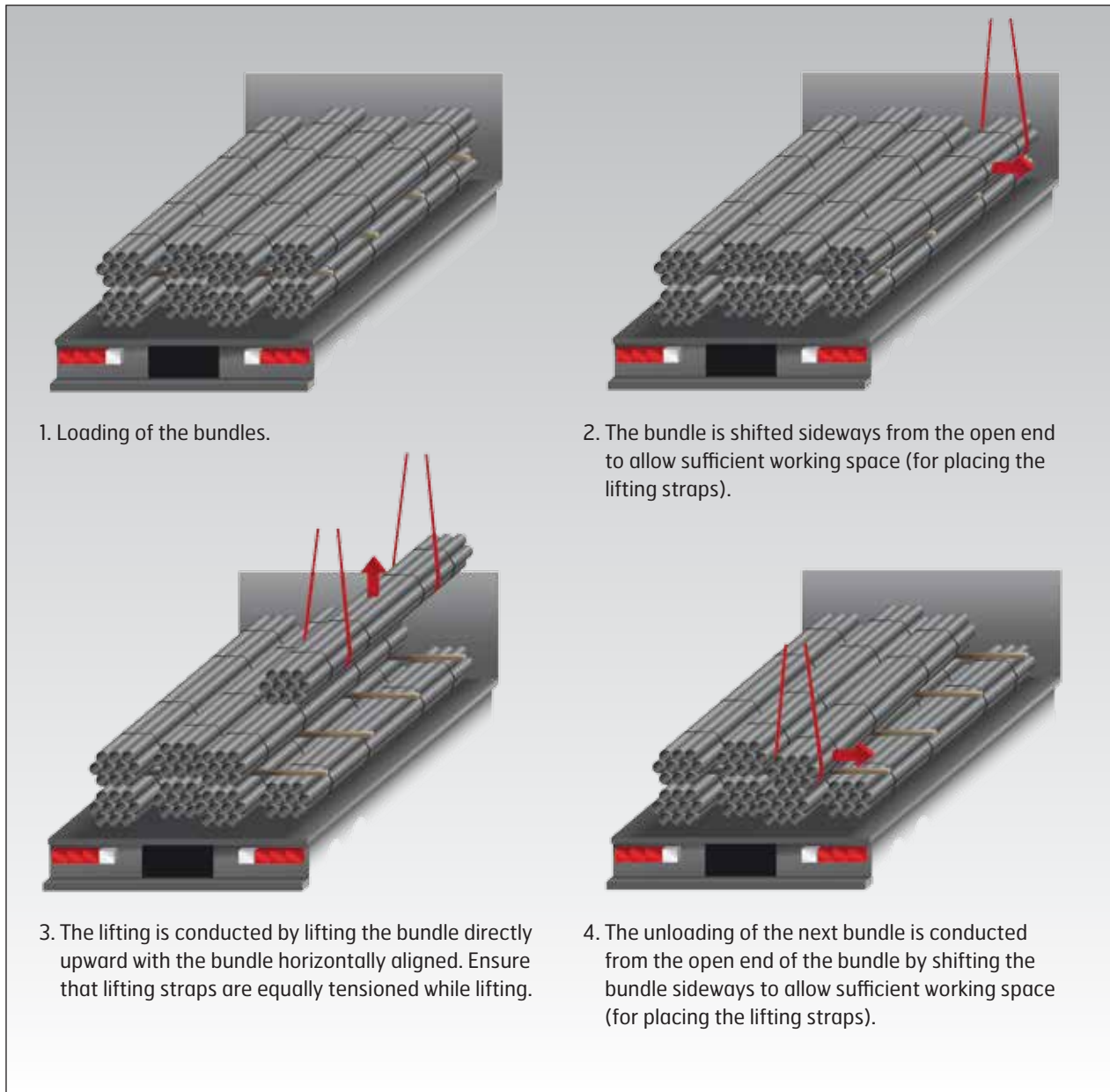


Figure 5. Use of lifting slings during unloading when pile pipes are loaded unevenly. This method of loading must be checked against national restrictions, and, if allowed, it shall be informed and agreed upon when ordering.



When lifting ice- or snow-covered piles and pile bundles, the position of the lifting slings must be considered on a case-by-case basis on the site to avoid sling slippage. Where necessary, and especially in the case of long pipes, an intermediate boom must be used.

Things to be considered when unloading large diameter pipes: The rising of wood dunnage and the rolling of pipes must be prevented by fastening at least the outermost dunnage with a load strap to the hooks on the truck body (see Figure 2).

Notice! Please inform, when ordering, if one of the following unloading methods is used to ensure that a correct truck type is selected to enable safe unloading.

3.5. Use of lifting chains

When lifting with chains or a steel wire, it must be ensured that the inclination of the chains or wire does not exceed 30° (see Figure 6).

An intermediate boom (see Figure 8) can be used as a lifting accessory. The length of the intermediate boom (the distance between the attachment points of the steel chains) can be derived from the table below (Table 1) based on the length of the pipe to be lifted and the length of the steel chain.

Figure 6. Lifting with hooks



Figure 7. Lifting with slings

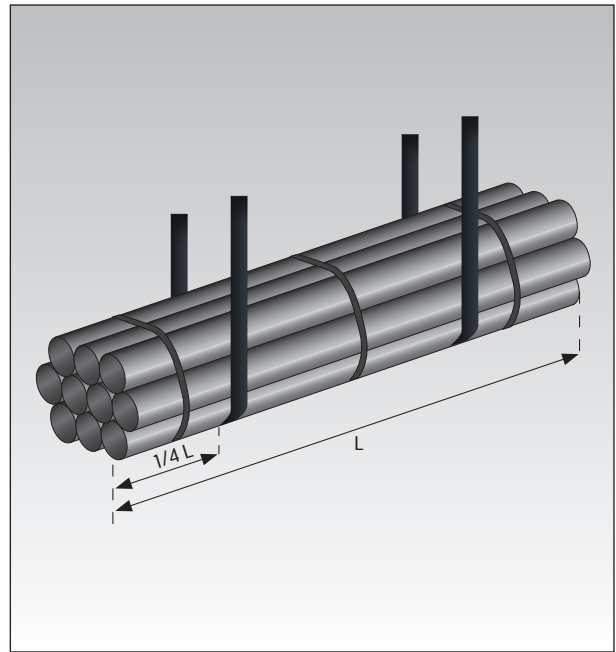
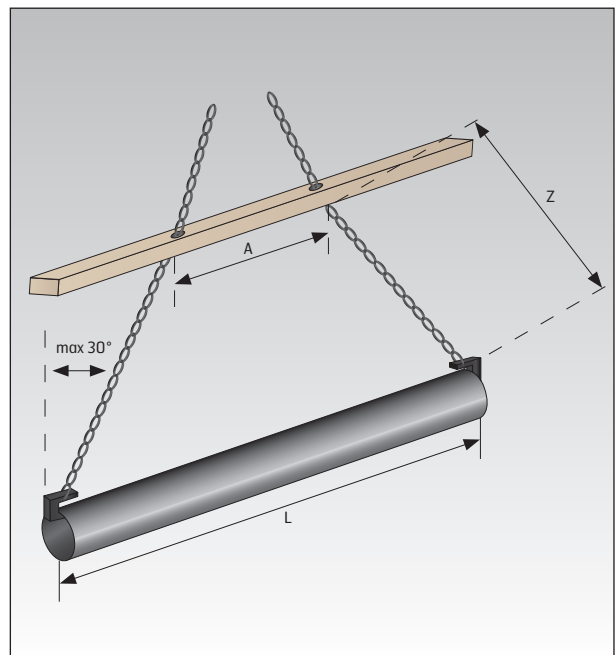


Table 1. Distance A (m) between attachment points of steel chains in the intermediate boom

| L (m) | Z (m) | | | | | |
|-------|-------|----|----|----|----|----|
| | 2 | 4 | 6 | 8 | 10 | 12 |
| 6 | 4 | 2 | - | - | - | |
| 8 | 6 | 4 | 2 | - | - | |
| 10 | 8 | 6 | 4 | 2 | - | |
| 12 | 10 | 8 | 6 | 4 | 2 | |
| 14 | 12 | 10 | 8 | 6 | 4 | 2 |
| 16 | 14 | 12 | 10 | 8 | 6 | 4 |
| 18 | 16 | 14 | 12 | 10 | 8 | 6 |
| 20 | 18 | 16 | 14 | 12 | 10 | 8 |

Figure 8. Use of an intermediate boom in lifting with chains



4. Storage

On-site storage and transporting should be planned in advance to secure safety as well as to minimize lifting and transportation. It is recommended to locate the storage area away from commonly used routes, in a restricted area, and the entrance to the storage area should be blocked. Walking on pile bundles is not permitted in any situation (Figure 9). Products shall be stored and handled on the site so that they are not damaged.

It is recommended to store the products on firm and even ground on wooden base bottom wood dunnage (see Figure 10). The bottom wood dunnage must be placed at even intervals, and the outermost boards shall be located about 500 mm from pipe ends. The bottom wood dunnage boards must be at least 100 mm wide and of equal thickness. With pile lengths of less than 12 meters, at least two bottom wood dunnage boards must be used while pile lengths exceeding 12 meters require at least four boards. The height/width ratio of bottom wood dunnage must be sufficient to prevent pile bundles from tipping over.

Stacking loose pipes or pipe bundles in several tiers is not recommended. If they are stacked in tiers, they have to be supported by wood dunnage. Wood dunnage boards must be at least 100 mm wide and of equal thickness, and as long as the stacked tier is wide. The vertical thickness of the wood dunnage must allow the insertion of lifting slings or the forks of the forklift between the bundles without damaging the product. Upper wood dunnage boards must be aligned with the lower wood dunnage boards and the bottom wood dunnage boards. The broader side of a wood dunnage board must come against the bundle. Depending on the pipe length and weight, two to six wood dunnage boards are needed. Pipe lengths 12 meters or longer always require four to six wood dunnage boards. In the case of heavy pipe products, wood dunnage boards are used in pairs. When storing large diameter pipes, wedges must be used with the bottom and wood dunnage to prevent the rolling of piles.

Utmost care should be taken in cutting open a pipe bundle. The rolling of pipes has to be prevented by supporting the pipe bundle, for example, by a forklift. To avoid hazardous situations, people must stay behind the support. It is recommended to cut the middle straps first. Then the straps at the ends of the bundle can be cut while standing at each end, which prevents pipes from rolling onto the cutter.

5. Handling of coated piles

Special care must be taken in the handling and storage of coated pipes to avoid damaging the coatings and pipes. The pipes must be handled so that they do not suffer mechanical damage. Pipes or pipe bundles must not be lowered on an uneven or dirty surface. Bottom and wood dunnage must be free of bark or other things that can damage the product (e.g., nails, nail heads, knots, etc.). To prevent damage to the coating, coated pipes must not be lifted by chains or wires. When lifting with hooks, it must be ensured that their contact surfaces are Teflon, rubber, or some other soft material. When lifting with slings, at least 100 mm wide rubber-coated or nylon webbing slings must be used. If coated pipes are lifted with a forklift, it is recommended to cover the lifting forks with rubber mats. The forks are inserted under the bundle so that they do not damage the bundle to be lifted or the adjacent bundle, if the bundles are stored side by side.

6. Installation

Work safety must be ensured at all the stages of pipe installation. Possible special requirements for the work safety of the installation site are established prior to starting the installation. Pipes and their accessories are to be inspected once more before installation. The pre-installation inspection ensures that the pipes have not been damaged during handling or storage on the site. For installation instructions, see the design and installation manual for SSAB steel piles or SSAB water mains.

Figure 9. Do not walk on pile bundles

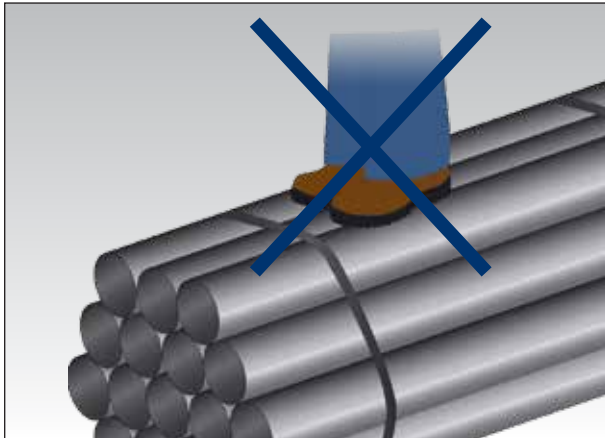


Figure 10. Use of bottom and intermediate dunnage

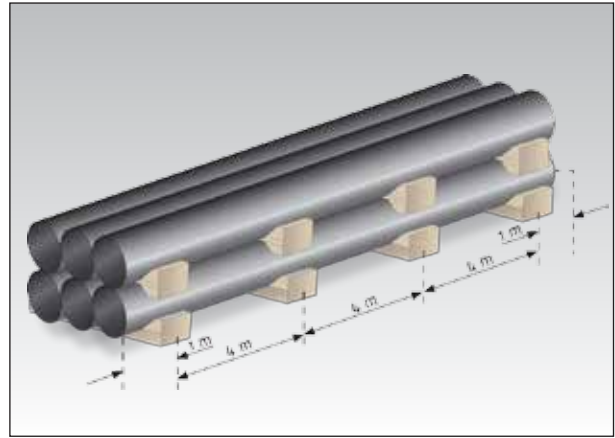


Table 2. Maximum quantity of $D \geq 406.4$ mm pipes on a truck (weight excluded)

| Wood, mm | Wood, pcs. | Diameter | Pipes per level | Levels | Width | Height |
|----------|------------|----------|-----------------|--------|-------|--------|
| 100 | 5 | 406.4 | 5 | 5 | 2,032 | 2,532 |
| 100 | 5 | 457 | 5 | 4 | 2,285 | 2,328 |
| 100 | 4 | 508 | 4 | 4 | 2,032 | 2,432 |
| 100 | 4 | 559 | 4 | 4 | 2,236 | 2,636 |
| 100 | 4 | 610 | 4 | 3 | 2,440 | 2,230 |
| 100 | 3 | 660 | 3 | 3 | 1,980 | 2,280 |
| 100 | 3 | 711 | 3 | 3 | 2,133 | 2,433 |
| 100 | 3 | 813 | 3 | 2 | 2,439 | 1,926 |
| 100 | 2 | 864 | 2 | 2 | 1,728 | 1,928 |
| 100 | 2 | 914 | 2 | 2 | 1,828 | 2,028 |
| 100 | 2 | 1,016 | 2 | 2 | 2,032 | 2,232 |
| 100 | 2 | 1,220 | 2 | 2 | 2,440 | 2,640 |

SSAB is a Nordic and US-based steel company. SSAB offers value-added products and services developed in close cooperation with its customers to create a stronger, lighter, and more sustainable world. SSAB has employees in over 50 countries. SSAB has production facilities in Sweden, Finland, and the US. SSAB is listed on the NASDAQ OMX Nordic Exchange in Stockholm and has a secondary listing on the NASDAQ OMX in Helsinki. www.ssab.com

The accuracy of this instruction sheet has been inspected with the utmost care. However, we do not assume responsibility for any mistakes or direct or indirect damages due to incorrect application of the information. The right to make changes is reserved.

Copyright © 2018 SSAB. All rights reserved. SSAB and SSAB brand names are registered trademarks of SSAB.

SSAB
Harvialantie 420
FI-13300 Hämeenlinna, Finland

Tel.: +358 20 5911

www.ssab.com/infra

The SSAB logo consists of the letters 'SSAB' in a bold, blue, sans-serif font. The 'S' and 'A' are connected, and the 'B' has a distinctive shape with a vertical bar on its right side.