



Plate Heat Exchanger

10 Loading Guidelines for Safe Transportation



We sincerely appreciate your handling the transportation of the Hisaka Plate Heat Exchanger.

The Hisaka Plate Heat Exchanger is a heavy item with a high center of gravity. Incorrect loading methods may lead to accidents such as tipping, falling, or cargo shifting. Please load carefully according to these guidelines and transport safely.

- This content may be changed without notice due to product specification changes, etc. Please refer to the latest version posted on our company website.
- Please distribute this document to your transportation contractors and warehouses to ensure safe transport of our products. Stay safe!!

Hisaka Plate Heat Exchanger

Loading Guidelines for Safe Transportation

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Introduction

<Worker Restrictions>

- Loading, securing, unloading, and handling of equipment must be performed by personnel who have received hazard avoidance training and safety education.
- Work at heights during securing and protection must be performed by personnel who fully understand the hazards involved and have received hazard avoidance training and safety education.

About This Manual

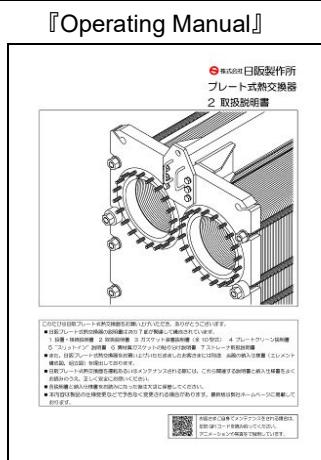
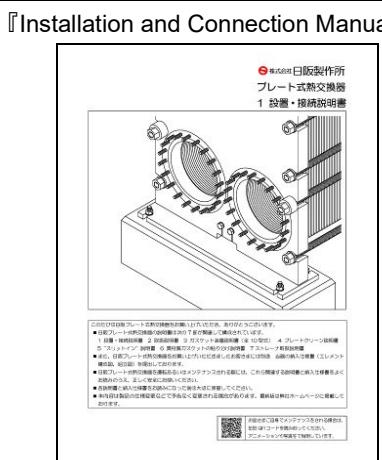
- Read this manual thoroughly to understand the safety precautions and functions of the equipment before handling it.
- This manual is intended for persons whose native language is the language in which it is written. If persons whose native language is not the language in which this manual is written handle the equipment, the customer must provide safety instruction to the workers.
- Modifying any part or all in this manual or using this manual for purposes other than its intended use, is prohibited.

<Disclaimer>

- We shall not be held liable for any accidents occurring during transportation after delivery at our factory, including overturning, falling, or cargo shifting.
- We shall not be liable for any damage or loss caused to products other than our own due to transportation in consolidated shipments, nor for any damage or loss caused to our products by products other than our own.

Related Publications

Two manuals for the Hisaka Plate Heat Exchanger are published. The electronic versions can be viewed on our company website.



<https://www.hisaka.co.in/phe/documents/documents04.html>

1. Transportation and Packaging

Plate heat exchangers are shipped in the packaging configurations shown in Figures 1-1 to 1-8 below.

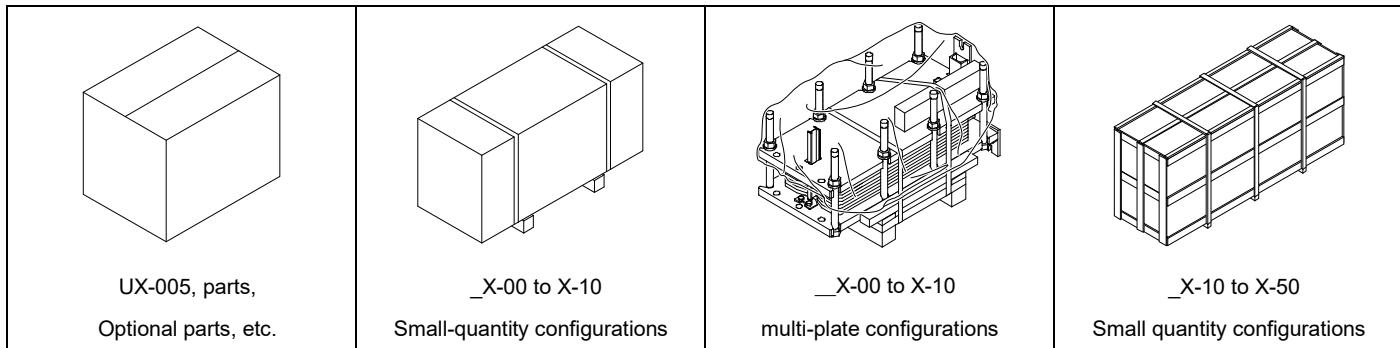


Figure 1-1

Cardboard Packaging

Figure 1-2

Corrugated cardboard
packaging with skids

Figure 1-3

Vinyl Packaging with Skid
multi-plate configurations

Figure 1-4

Wooden crate packaging
with skids

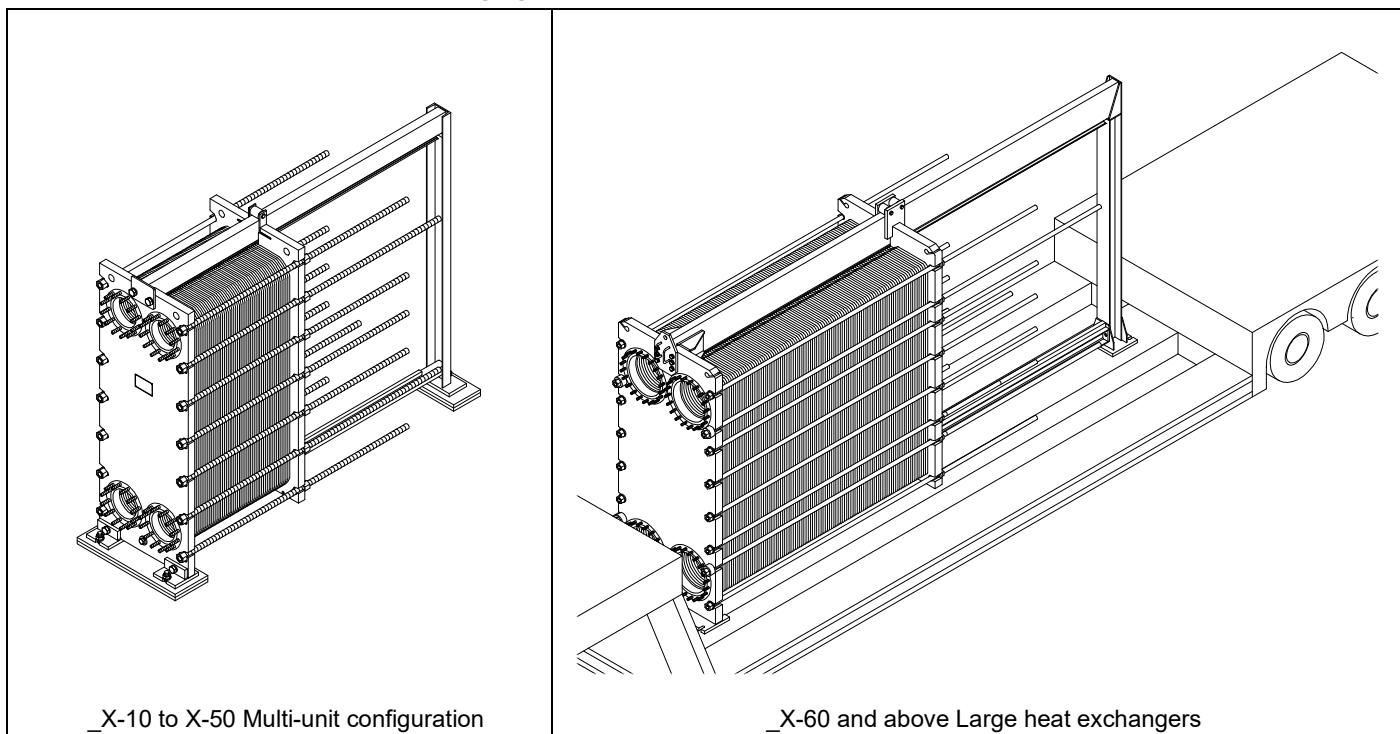


Figure 1-5 Bare delivery with skids

Figure 1-6 Bare delivery (※Covered with a tarpaulin during transport)

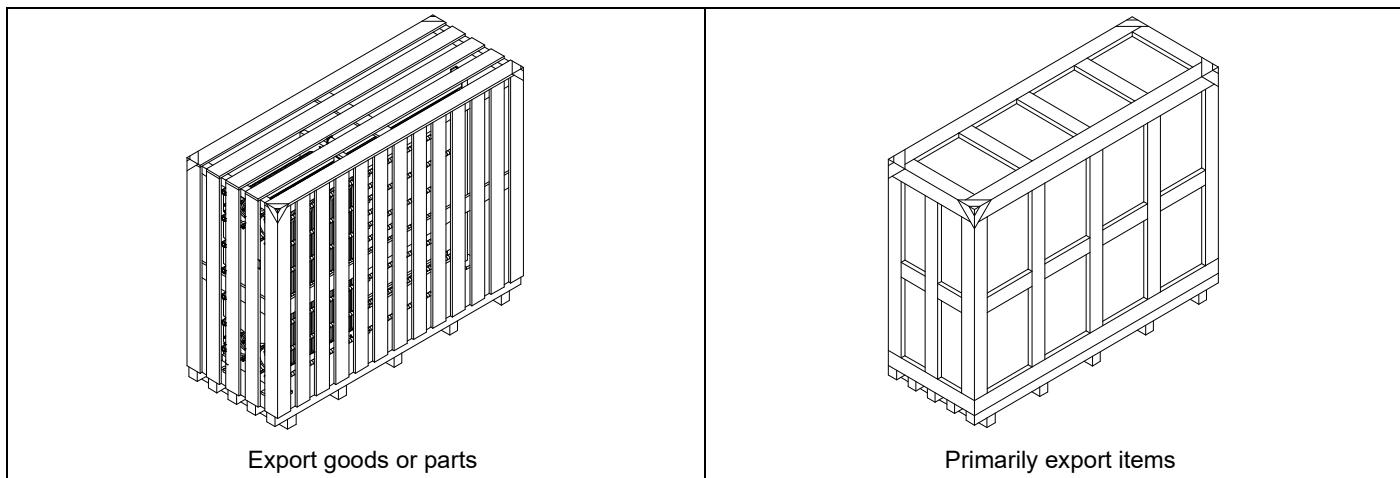


Figure 1-7 Wooden crate packaging

(openwork wooden crate)

Figure 1-8 Wooden Crate Packaging

(Solid Wooden Box)

2 Loading Guidelines for Safe Transportation

Before shipping, please read the following instructions carefully and load and secure the Hisaka Plate Heat Exchanger correctly.

Please contact our company if you have any questions.

2-1 Confirming the Stability of the Cargo

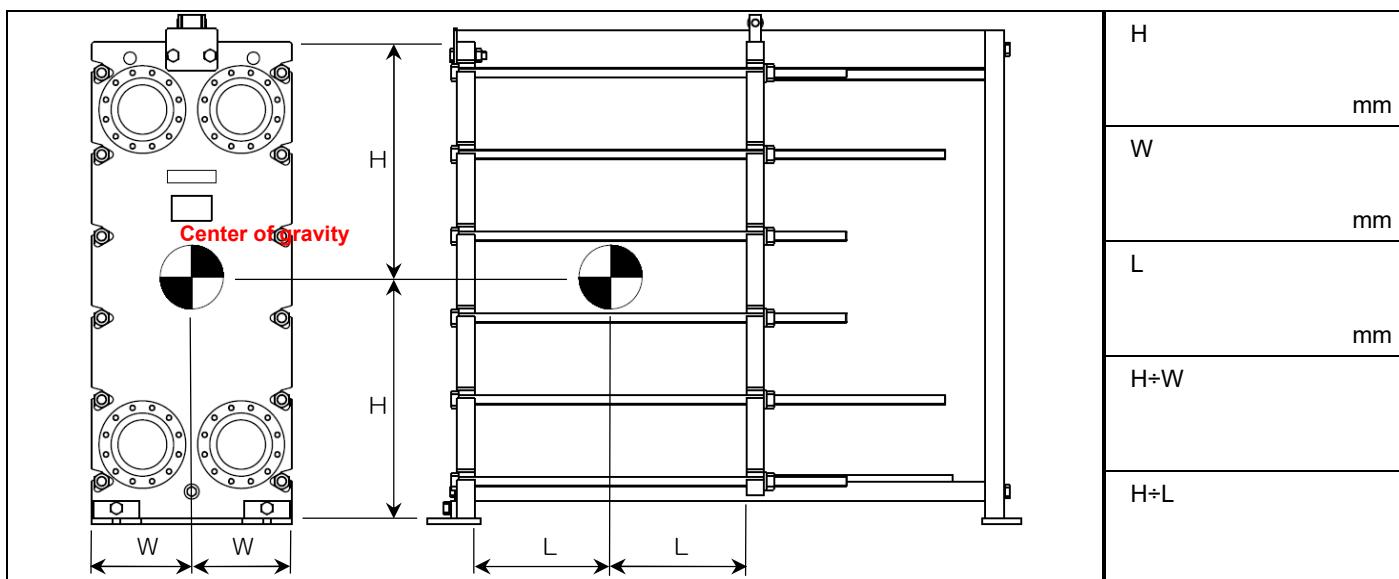
Plate heat exchangers are heavy items with a high center of gravity. To prevent tipping or falling, first confirm whether the cargo is stable.

A stable cargo is defined as a product (cargo) where the height of its center of gravity is less than 2.0 times the distance from the edge of the product (as shown in the figure below) to its center of gravity.

When transporting unstable cargo exceeding 2.0 times, either attach wide skids under the product or increase the number of lashing points to 1.5 times or more.

-

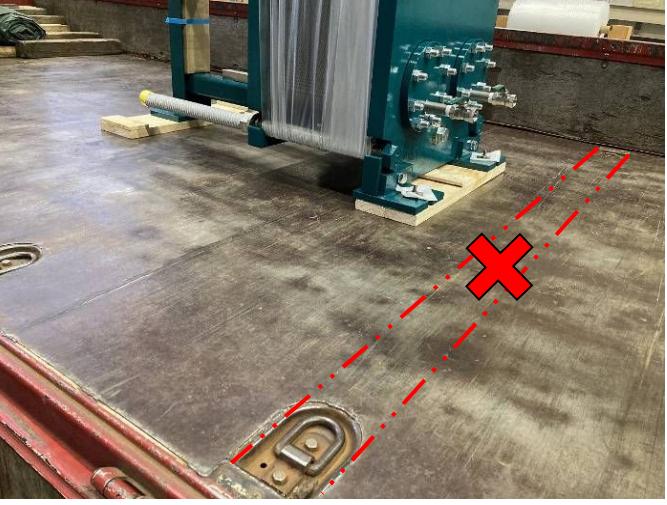
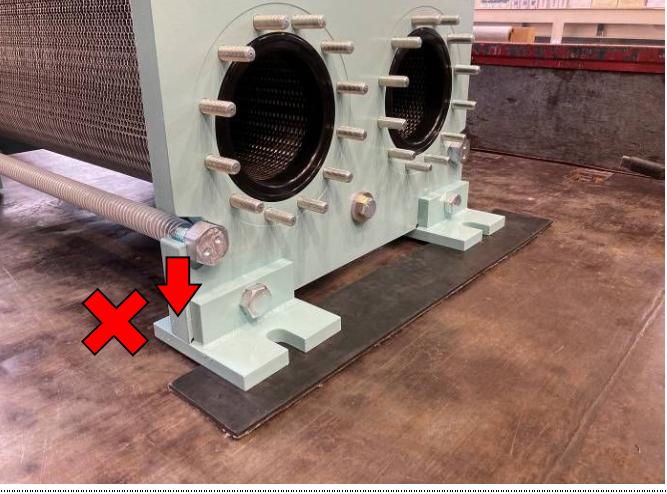
$$\begin{aligned} H \div W < 2.0 & \quad \text{is stable cargo} \\ H \div L < 2.0 \end{aligned}$$

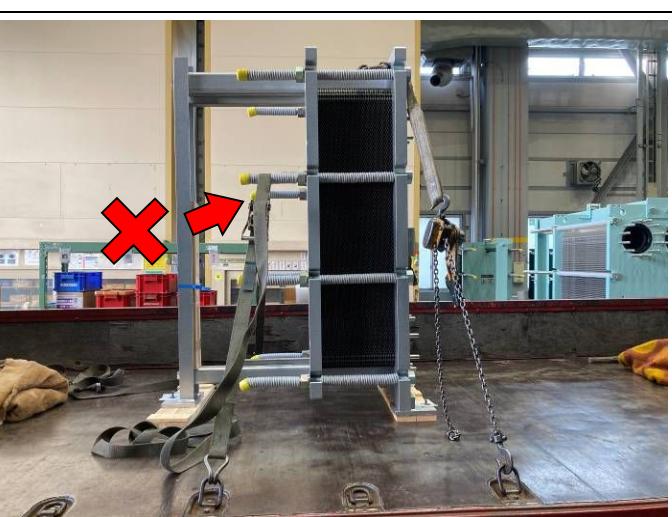


2-2 Preparing Clamping Tools

When securing plate heat exchangers, prepare the following equipment.

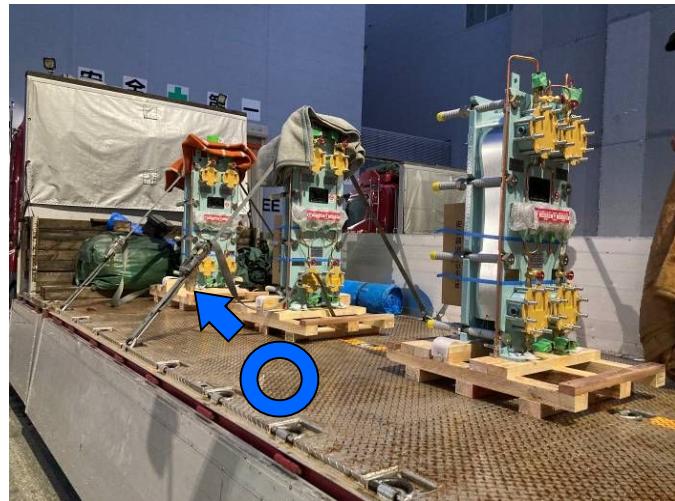
■Lifting Equipment	Lever block, hitch puller, etc.
■Lifting Equipment	Nylon slings, wire ropes, shackles, etc.
■Cushioning Materials	Blankets, Soft Urethane, Rubber Sheets, etc.
■Anti-slip	Rubber sheets, rubber blocks, etc.

Correct GOOD	Incorrect NG
	
<p>Place the heat exchanger base plate so it rests on the truck bed beams</p>	<p>The heat exchanger base plate is not resting on the truck bed beams</p>
	
<p>Place it forward of the truck's rear wheels</p>	<p>Do not place it behind the rear wheels of the truck</p>
	
<p>If both the heat exchanger and cargo bed are metal, Place a rubber sheet directly beneath the S-frame</p>	<p>If the rubber sheet is placed at a position away from directly under the S-frame, It will cause the base plate to deform</p>

Correct GOOD	Incorrect NG
 <p>Pass through the base of the S-frame and guide bar support</p>	 <p>Do not pass through the center of the upper guide bar</p>
 <p>Pass through the S-frame suspension hole and the base of the guide bar support</p>	 <p>Tightening the bolts will cause deformation</p>
 <p>For the S-frame side subject to heavy loads, Use a lever block</p>	 <p>For the S-frame side subject to heavy loads, Do not use lashing belts</p>

If the product's center of gravity height exceeds twice the distance from the product's edge to its center of gravity, qualifying it as unstable cargo, either attach a wide skid under the product, or increase the number of lashing points by at least 1.5 times as described in sections 2-5 and 2-6.

Correct **GOOD**



Small heat exchangers remain stable with a single fastener.

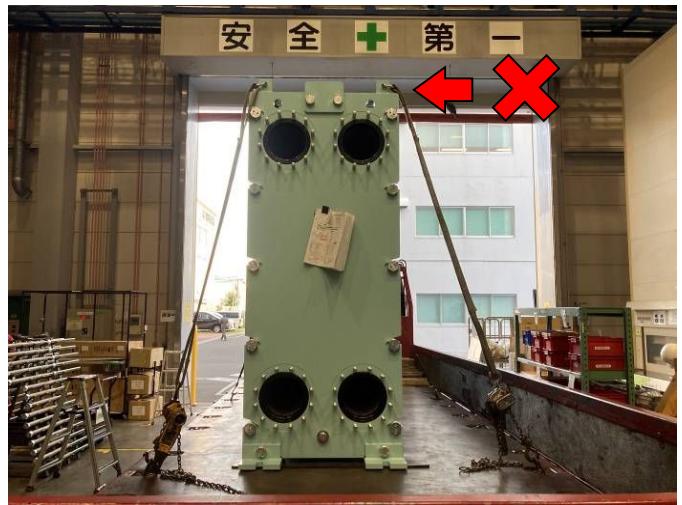
Incorrect **NG**



Medium and large heat exchangers are unstable with single-point mounting. Please secure with multiple fasteners.



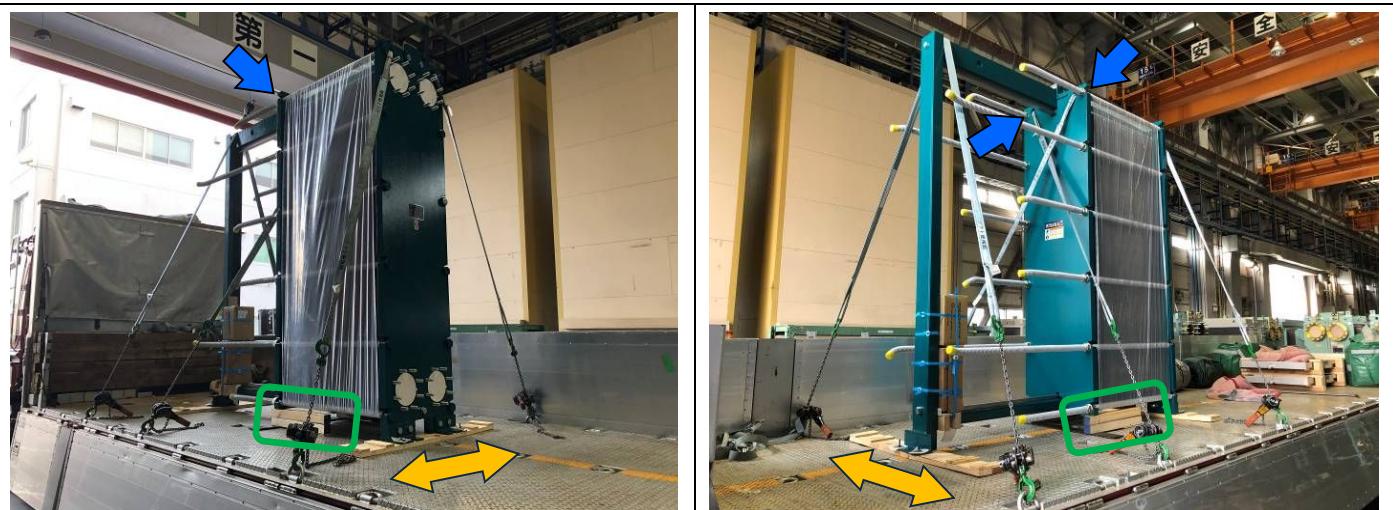
Secure using the frame's lifting holes.



Do not secure using weak eye plates

If the product's center of gravity height exceeds twice the distance from the product's edge to its center of gravity, making it an unstable cargo, attach wide skids underneath the product, or Refer to Sections 2-5 and 2-6 and increase the number of securing points by at least 1.5 times.

2-5 Securing Unstable Cargo (Example)



When the product's center of gravity height exceeds twice the distance from the product's edge to its center of gravity, a wide skid is installed.

Also secure the E-frame.

When securing the E-frame, it is also necessary to secure the lower part of the frame.

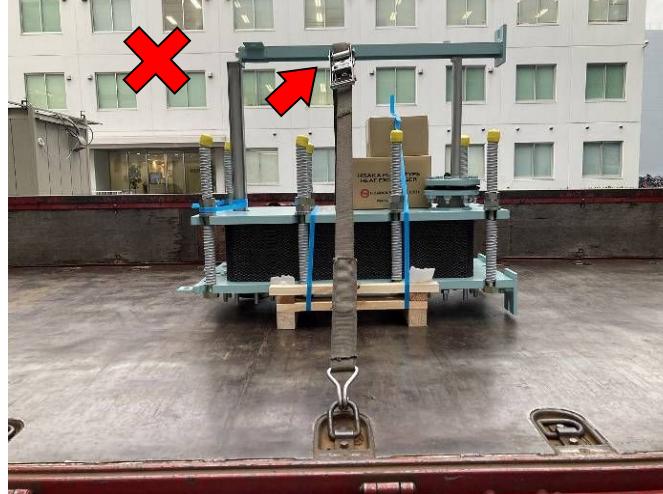
2-6 Precautions for Trailer Transport



Transportation by trailer subjects plate heat exchangers to significant centrifugal forces.
so even if the cargo is not classified as unstable, additional securing points are required.

Securing the lower part of the E-frame is also necessary.

2-7 Other Securing Guidelines

Correct GOOD	Correct NG
	
<p>『Horizontally laid heat exchanger』</p> <p>Secure from the center of the heat exchanger body</p>	<p>『Horizontally laid heat exchanger』</p> <p>Do not lash weak guide bar supports</p>
	
<p>『Drain tray』 and other wooden frame components</p> <p>Secure from above the wooden frame</p>	<p>『Drain tray』 Other wooden frame components</p> <p>Do not lash the parts themselves as they may deform</p>

2-8 Post-loading check

The next page is the 'Loading and Securing Checklist'.

When loading and securing our products, please record the check results on this sheet and send it to us via fax or email along with photographic evidence.

Loading/Check Date	Year	Month	Day	【Contact Information】 Fax: +81-72-966-9619 or e-mail: phe_loadrec@hisaka.co.jp
Implementing Plant or Warehouse Name				
Your Company Name				 HISAKA Plate Heat Exchanger Loading and Lashing Check Sheet
Name of Responsible Person				

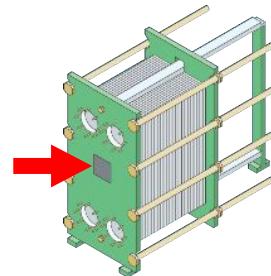
We sincerely appreciate your handling the transportation of the Hisaka Plate Heat Exchanger.

To document proper loading and securement, please send this form and photographic records to our company.

While we do not guarantee safe transport, this documentation will serve as evidence in the unlikely event of an issue. We kindly request your cooperation in submitting it.

■ Cargo Information Record (If not written, please photograph and attach the equipment nameplate. ...Photo ③)

Serial Number	Engraved on the equipment nameplate
Model	Engraved on the equipment nameplate



■ Loading and Securing Check

Check Items	Check Items
	<ul style="list-style-type: none"> • Does the cargo weight exceed the truck's maximum load capacity?
	<ul style="list-style-type: none"> • If the cargo bed is wooden, did you place the S-frame on top of the beams? Double-check visually!! • If the cargo bed is metal, did you place anti-slip mats under the S-frame? (If skids are attached to the bottom of the heat exchanger, anti-slip material is not required.)
	<ul style="list-style-type: none"> • Is the cargo loaded symmetrically on both sides? Double-check visually!!
	<ul style="list-style-type: none"> • Was cushioning material used between items when securing? Has the cargo been damaged? Double-check visually!!
	<ul style="list-style-type: none"> • Is the lashing tension sufficient? Is it loose? Touch and check again!!
◎	<ul style="list-style-type: none"> • Finally, cover the cargo with protective sheeting before shipping.

■ Documents to be sent to our company via FAX or e-mail

Checklist	Check Items	Example
	<ul style="list-style-type: none"> • This document: "Plate Heat Exchanger Loading and Securing Confirmation Checklist" 	Copy of this page
Photo 1	<ul style="list-style-type: none"> ➢ Photo showing S-frames placed on beams when the truck bed is wooden ➢ Photo of anti-slip mats placed under the S-frame when the cargo bed is metal 	
Photo 2	Please take photos of the cushioning material and the secured state.	
Photo 3	If cargo information is not recorded, please photograph the nameplate.	

Thank you very much for your cooperation. We kindly ask that you continue to transport our products safely.

Confirm the packaging and weight of the plate heat exchanger. Refer to Figures 5-1 to 5-5 below. Use appropriate handling equipment with the correct load capacity, such as a forklift or crane, for unloading. When moving horizontally, use chill rollers or similar equipment to ensure safe handling.

For the machine's weight and dimensions, refer to the 'Assembly Drawing' or the 'Nameplate'.

If you have any questions, please provide us with the "Serial Number" and "Model Number" for a response.

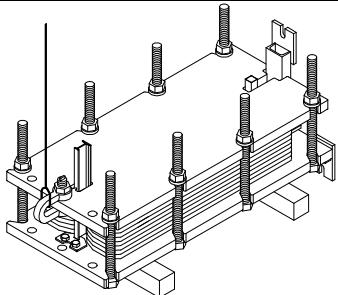


Figure 5-1 Unloading - Single Point Lift (Small)

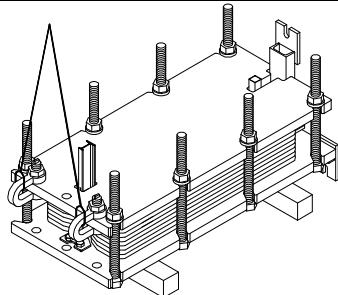


Figure 5-2 Unloading - Two-Point Lift (Small/Medium)

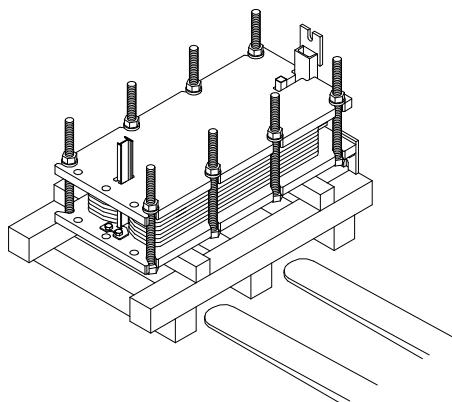


Figure 5-3 Using a Forklift (Small/Medium)

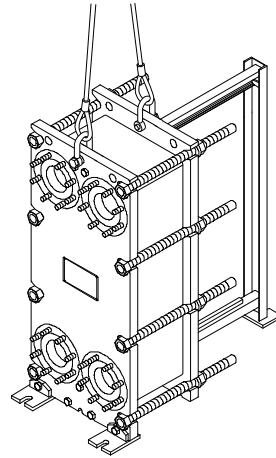


Figure 5-4 Using a Crane - Two-Point Lifting (Small/Medium)

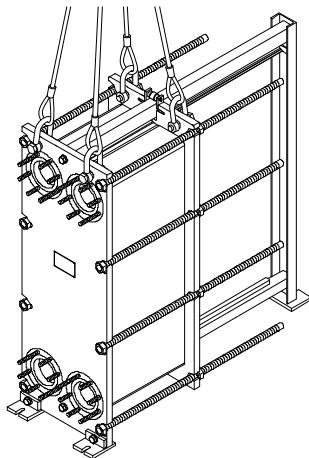


Figure 5-5 Using a crane - 4-point lift (medium/large)

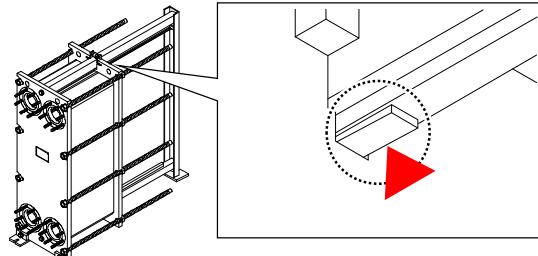


Figure 5-6 Cotter (Wedge)

To prevent the E-frame from lifting when hoisting large heat exchangers, cotter pins are installed as shown in the figure above.

When disassembling the heat exchanger, the cotter becomes an obstacle when moving the E-frame. Therefore, remove it during maintenance and store it carefully.

[Caution] A small amount of residual water from pre-shipment testing remains inside the plate heat exchanger.

Be aware that residual water may leak from the nozzle section during lifting.

[Note] Please dispose of any unwanted wooden crates, cardboard boxes, plastic sheeting, and other packaging materials as industrial waste in accordance with national, prefectural, and municipal regulations at your own expense.

4 Contact

- Contact Information for Phone or Fax Inquiries

HISAKA WORKS, LTD., Heat Exchanger Div., Sales Department *4-1

Konoike Plant (Customer Service): 2-1-48, Higashi-Konoike-cho, Higashi-osaka City, Osaka 578-0973 Japan	Tel :+81-72-966-9601	
	Fax :+81-72-966-8923	
Tokyo Branch office: 1-19-8, Kyobashi, Chuo-ku, Tokyo 104-0031 Japan	Tel :+81-3-5250-0760	
	Fax :+81-3-3562-2760	Japan locations

*4-1. Other Japan locations can be referred 2D code.

URL : https://www.hisaka.co.jp/english/company_info/access.html

Global Network

Overseas locations can be referred 2D code.	
URL : https://www.hisaka.co.jp/english/company_info/access_world.html	Overseas locations

[Note]

- When inquiring, please provide the "Serial Number" and "Model Number" indicated on the nameplate.



HISAKA WORKS, LTD. HEAT EXCHANGER DIVISION

Hisaka Works, Ltd., Heat Exchanger Division acquires both ISO9001 and ISO14001 certification.

HE-ME0044R00