

 EKİN ENDÜSTRİYEL

Plate Heat Exchanger
User Manual



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The first condition of innovation is to question. Sustainable innovation is to never stop questioning.

For us, the journey of innovation started with a question: “Why not produce value-added technology in Türkiye?”. The first turning point in this long journey was the birth of the MIT (Made In Türkiye) brand. The founding vision of MIT, which enabled us to become Türkiye’s first domestic manufacturer in the field of “Plate Heat Exchanger”, was not to be a domestic “alternative”, but to create a quality brand that could compete in the global market.

By working for this goal, we have been entitled to receive many international quality certificates such as ISO, TSE, CE, GOST... for our products and processes over many years. For us, questioning the current situation was a natural result of our desire to exceed ourselves.

New Generation Engineering

With our engineering approach that focuses on the process, not the problem, we do not only specialise in one product, but also consider the entire ecosystem of that product. Therefore, we provide an end-to-end application by producing all other components that will form a system as well as the plate heat exchanger. For this, we focus on the continuous development of the necessary engineer staff. With our business development, pre-sales, sales and after-sales services provided by our expert engineers, we produce not only products but also “solutions”.

At the point we have reached; we offer complementary services with our internationally approved plate heat exchangers, components such as accumulation tanks, boilers, industrial pumps and installation materials that turn these heat exchangers into a system. With our team of more than 100 expert engineers, we continue to develop as a solution partner for projects requiring high technology in more than 60 countries.



HEAT TRANSFER PRODUCTS

- Gasketed Plate Heat Exchangers
- Brazed Heat Exchangers
- Shell & Tube Heat Exchangers
- Evaporators and Condensers
- DC Fan Driven Oil Coolers
- Heat Coils
- Serpentine / Radiators / Economizers

PRESSURE VESSELS

- Water Heater Tanks
- Water Storage Tanks
- Buffer Tanks
- Expansion Tanks / Automatic Pump Controlled Expansion System
- Stainless Steel Tanks
- Balance Tanks / Dirt Separators / Air Separators / Air Tubes
- Steam Separators
- Pressured Air Tanks
- Neutralization Units

INDUSTRIAL AND FOOD GRADE SYSTEMS

- Heat Stations
- Industrial Process Systems
- Dosing Systems
- Substations
- Thermoregulators
- Pasteurizers
- CIP and Hygienic Process Systems
- Hygienic Storage and Process Tanks / Reactors
- Homogenizers
- Turn-key Projects

FLUID TRANSFER PRODUCTS

- Lobe Pumps
- Hygienic Centrifugal Pumps
- Twin Screw Pumps
- Gear Pumps
- Magnetic Drive Pumps / Thermoplastic Pumps
- Dosing Pumps
- Air Operated Double Diaphragm Pumps (AODD)
- Drum Pumps
- Monopumps
- Peristaltic (Hose) Pumps
- Centrifugal Blowers
- Roots Blowers
- Turbo Blowers

FLOW CONTROL UNITS

- Butterfly Valves
- Ball Valves
- Globe Valves
- Knife Gate Valves
- Actuators
- Check Valves and Strainers
- Pneumatic Piston Valves

ENERGY SYSTEMS

- Domestic and Industrial Boilers
- Steam Generators
- Chillers
- Cooling Towers

PRODUCT RANGE



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MIT Plate Heat Exchanger Connection Schema

Standard Heat Exchangers



Heating System

- M1** : Heater Fluid Inlet
- M2** : Heater Fluid Outlet
- M3** : Heated Fluid Inlet
- M4** : Heated Fluid Outlet

Multipass Heat Exchangers



Cooling System

- M1** : Cooled Fluid Inlet
- M2** : Cooled Fluid Outlet
- M3** : Cooler Fluid Inlet
- M4** : Cooler Fluid Outlet

Construction and Function

Construction

A plate heat exchanger, as seen in Figure 1-1, front and rear body, (1 and 3) gasketed plates, (5) upper and lower carrier rods (2 and 6) fixed with studs (7) or in some cases the last support element It is formed by connecting with (4).

There are gasketed plates designed as a result of calculations made according to the demand between the front and rear body. The plates are fixed to the body with the help of studs.

Function

The fluid transfers its energy to the other fluid by being directed through the seals with the counter flow principle without mixing with each other through the sealed plates. Plate composition is designed as single or multiple pass according to need. The basic flow diagram is shown in Figure 1.2. An efficient sealing is achieved when the plate bundle, which consists of mounting plates and gaskets, is compressed.

(Fig. 1.3).

Figure 1.3 shows the section from the plate bundle. The mixing of fluids is prevented by the double sealing system in the inlet and transition areas (Figure 1.4).

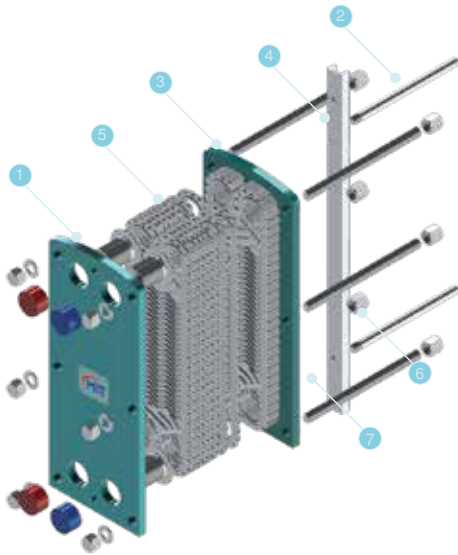


Figure 1.1

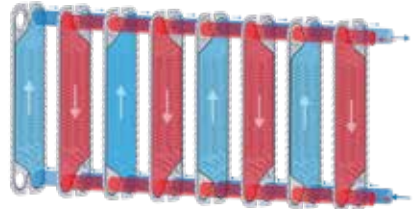


Figure 1.2



Figure 1.3



Figure 1.4

Mounting Instruction

Lifting Instruction

Lifting By Using Lifting Holes

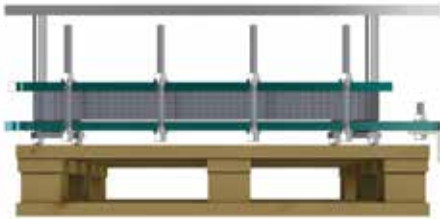


Figure 2.1

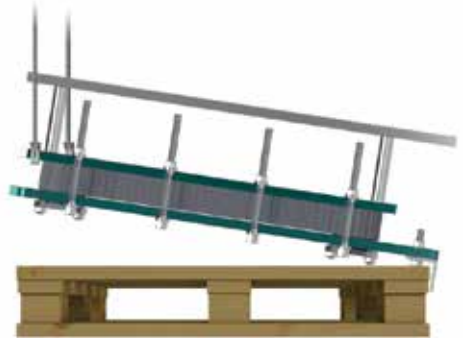


Figure 2.2

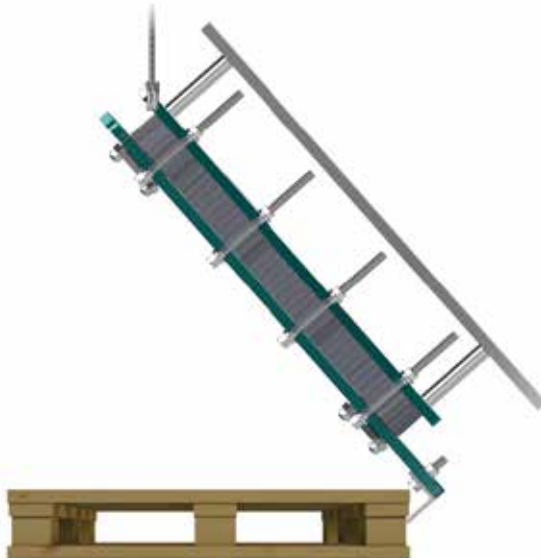


Figure 2.3

Lifting By Unusing Lifting Holes



Figure 2.4

Space Required

The plate heat exchanger should be placed by paying attention to the following issues for assembly and inspections that may be required.

Body Coating

The coating or insulation layer on the heat exchanger should be applied in such a way that it can be removed without removing the connections. Insulation manometer, thermometer, etc. of the connection lines coming out of the unit. other devices must be connected after 100 mm distance. In thick insulation, this distance can be increased even more.

Disassembly and Assembly

Enough space should be left for the plates to be easily removed from the upper carrier bar, for inspection and for tightening the plate bundle of the heat exchanger.

- The distance of its opening from the wall or another object should be suitable for operations such as removal, inspection, removal of the insulation jacket or enclosure (Figure 2.5).

Drainage

The ideal drainage is the one placed closest to the heat exchanger. If the flow cannot be evacuated directly, a dropper can be placed under the heat exchanger unit. If necessary, a level-controlled discharge design system can be made.

Pipe Connections

Plate heat exchanger must be mounted according to the labels specified on the connection ports. Filtering the fluid inlets is useful for monitoring the efficiency of the heat exchanger, such as thermometers and manometers. It is important that the plates and gaskets are not damaged during the welding processes during the heat exchanger connections.

Correct Pipe Mounting

In case the connection ports are on the rear body (follower), pipes and elbows (1) and (2) (Figure 2.6) should be mounted along the upper carrier bar in accordance with the disassembly for cleaning and inspection of the system (Figure 2.7). The rear body (3) must be movable in order to recompress the plate bundle. For this purpose, a compensator can be applied. Pipelines should be supported with suitable hangers and weights on the plate heat exchanger should be prevented. Pipeline and materials should be selected for CIP (cleaning-in-place) system, suitable for cleaning without disassembly.



Figure 2.5

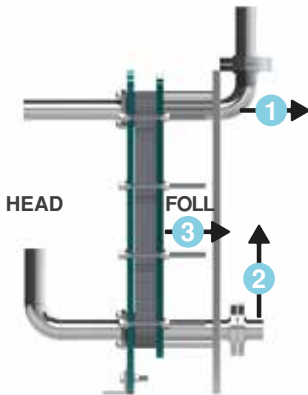


Figure 2.6

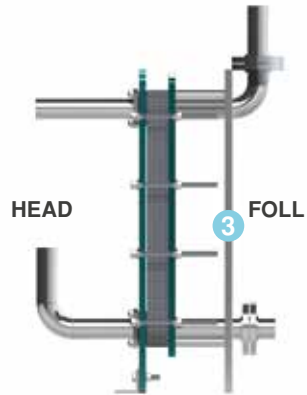


Figure 2.7

Pressure Strains

Pumps, compressors, etc. to be used to turn the fluid in the heat exchanger. Forced flow equipment must not cause vibrations and pressure stresses.

When mounting the heat exchanger, a compensator should be used, and the heat exchanger connection and body equipment should be protected from vibration. Such factors can cause metal fatigue on the heat exchanger plates and damage the heat exchanger. Exchanger problems arising from vibration are the responsibility of the user.

Allowable Pressure

Plate heat exchanger working and testing pressures are shown on the label located on the front body.

Safety Valve Usage

In case of a pressure higher than the value shown on the heat exchanger label in the system, a safety valve should be applied in both circuits as shown in Figure 2.8. This requirement arises during the initial commissioning of the pumps, during expansion or reversing of the valves. Failure to use a safety valve causes the heat exchanger to be out of warranty.

Pressure Impacts

Plate heat exchangers are very sensitive to pressure surges or surge shocks. This problem occurs when the pumps are put into operation for the first time or when the flow changes direction. This situation can be prevented with the valve with automatic flow rate adjustment, it is recommended to run the automatic pump when the valve is in the closed position.

Coating of the Heat Exchanger

In the following cases, the plate bundle should be protected (Figure 2.9).

- To prevent heat loss at very low and very high temperatures,
- In case of using corrosive fluids,
- If the operating temperature causes boiling,
- At the request of the authorities.
- MIT provides outer coating for all heat exchanger types.

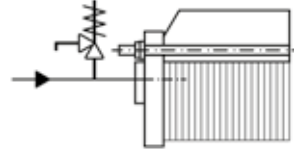


Figure 2.8

Insulation

If heat insulation is required, insulation jacket is able to use. This jacket surfaces completely on heat exchanger. It is able to set up without needed of pipelines removing. During storage or after assembly, corrosion may occur in the heat exchanger due to storage or working conditions. In such cases, the responsibility belongs to user.



Figure 2.9

Start-Up and Operation

Clamping Bolt Checking

Check the specified tightening measure before the first start-up. The correct tightening size is indicated on the heat exchanger label.

Start-Up

Sudden changes in pressure and temperature should be avoided. Damage to plates and gaskets can cause leakage. Pumps should be run against closed valves, regulating valves should be opened gradually. In steam applications, steam should be given to the system last. This application should be taken into account in the first start-up of all types of plate heat exchangers. Initial commissioning measures should be taken against pressure increase during operation.



The initial start-up of plate heat exchangers with new EPDM gaskets must be effected by increasing the temperature slowly, max. 25 °C (77 °F) per hour.

Shut Down and Start-Up Again

During stopping and starting up, the situations below should be considered. Pressure drops and pressure increases should not be more than 10 bar per minutes. Temperature drops and increases should not be more than 10 °C per minutes

Leakage During Start-Up

During the initial start-up, minor leaks may occur until the plates and gaskets have reached their design working temperature and all sections are correctly pressurised.

Venting

When correct working temperature and working pressure have been reached, the system must be vented. The air in the plate heat exchanger is driven out by the liquid flow, provided that the capacity is as stated in the diagram. Air in a plate heat exchanger reduces the heat transmission and increases the pressure drop, thus increasing the risk of corrosion.

Operating

During operation, temperatures and pressure drops must be regularly checked. Increased pressure drop and/or failing temperatures indicate that there are coatings on the plates. The plate heat exchanger now needs cleaning. During operation, the same precautions against rises of pressure must be observed as during start-up.

Rapid Cooling

Rapid cooling of system should be avoided. Cooling and pressure should be dropped together. (Ref: clauses 3.3 and 3.4).

Sedimentation Inside of PHE

Sedimentation (limestone, fouling etc.) reduce heat transfer and increase pressure drop. Under the pressure fluid in cooling side able to leakage. Meanwhile grit, welding burs and similar particles are able to damage gaskets.

Out Operation Longtime

If for any reason the heat exchanger is shut down and out of use for an extended period of time, take the precautions in the “Indoor Storage” section on this page. However, the following operations should be performed before storage.

- Check the measurement of the plate package (dimension between front body and rear body, dimension A).
- Drain the liquid on both sides of the heat exchanger.
- Considering the liquid type, the heat exchanger should be rinsed and then dried.
- If the piping system is not connected, the connection must be closed. Use a plastic or plywood cover for the connection.
- Cover the plate package with a non-transparent plastic sheet.

Commissioning After Long Downtime

If the heat exchanger has been out of service for more than one year, the risk of leakage increases when starting up. To avoid this problem, it is recommended to rest so that the sealing rubber regains most of its elasticity.

- If the heat exchanger is not in place, follow the instructions in “Installation” on page 11.
- Pay attention to the measurement between the front body and the rear body (A dimension).
- Remove the feet attached to the rear body.
- Loosen the clamping bolts. Open the heat exchanger until dimension A is 1.25.
- Leave the heat exchanger for 24-48 hours, the longer you leave it, the better it is for the gaskets to loosen.
- Ekin Endüstriyel recommends a hydraulic test. Fluid, usually water, must enter the gaps to prevent sudden shocks to the heat exchanger. It is recommended that you test the Design Pressure. See PHE drawing.

Storage

Storage in Packing Box

If it is known in advance that the heat exchanger will be stored after delivery, inform Ekin Endüstriyel when ordering to ensure that the heat exchanger is properly prepared for storage before packaging.

Indoor Storage

- Store in a room at a temperature between 15 and 20 °C (60–70 °F) and a humidity of up to 70%. For outdoor storage, read “Outdoor storage” on this page.
- To avoid damage to the seals, there should be no ozone generating equipment such as electric motors or welding equipment in the room.
- To avoid damage to the seals, do not store organic solvents or acids in the room, and avoid direct sunlight, intense heat radiation or ultraviolet radiation.
- The tightening bolts must be well coated with a thin layer of grease.



Outdoor Storage

If you need to store your heat exchanger outdoors, follow all the precautions in the “Indoor Storage” section and the precautions given below.

The stored heat exchanger should be visually checked every three months. The packaging must be returned to its original state when closing. Controls should be as follows;

- Lubrication of tightening bolts.
- Metal port covers.
- Protection of plate pack and gaskets.
- Packaging

Probable Faults

Capacity Gradients

In case the heat transfer efficiency decreases or the pressure loss increases, the heat exchanger should be disassembled and the plates should be cleaned. Then it should be compressed according to the size specified on the label.

Leakage

- Check the working pressure of the plate heat exchanger, if the pressure is high, bring it to the correct working pressure immediately.
- The distance between the two bodies (from the inside) should not be below the minimum tightening value specified on the label. Compression of the plates should never be done while the heat exchanger is under pressure. After compression, attention should be paid to the parallelism of the front and rear body.
- Open the plates of the heat exchanger for contamination and deformation control. Check the flexibility of the gaskets, whether they are deformed and the cleanliness of the surfaces.
- Before placing the plate bundle, clean all plates and gaskets with sand etc. that may cause leakage. Clean from small particles such as.
- If there is leakage after cleaning the plate bundle and tightening it to the minimum size, it is recommended to replace the gaskets.
- Leakage may be from the safety channel of the gaskets. This may be due to incorrect placement of the gaskets or deformation of the plates.

Non Visible Leakage

If holes occur in plates, corrosion or fatigue fracture, fluids get mixed. A suspected leakage can be localised in the following way:

- One of the lower pipe connections is disconnected and the fluid is discharged. Pressure is given to the fluid from the other circuit.
- If fluid comes from the disconnected connection circuit, one or more of the plates are faulty.

The steps to be followed after this stage are as follows;

- Disassemble the entire plate assembly, carefully check each plate. Examine the plates that may be problematic with the help of penetrant dye. Holes in the plate are usually caused by stresses and corrosion in the metal structure.
- The solution to the problem is only possible by removing holes or cracked plates from the plate bundle.
- After the defective plate or plates are removed, the plates are brought together and tightened according to the tightening measure to be determined again..



For the tightening dimensions, please contact with our company.

Cleaning

Impurity of Plate

The preservation of capacity and corrosion resistance in the plate heat exchanger depend on keeping the plates clean. The pollution seen in Figure 5.1 can be cleaned without disassembling the heat exchanger, by chemical cycle or by removing the plates one by one.

Chemicals

The definition of a suitable detergent is brief and to the point. Coatings on the plates must be removed without damaging plates and gaskets. It is important not to decompose the passivating (protective) film of stainless steel-the film contributes to preserving the resistance of the steel to corrosion. Do not use chlorine-containing agents such as hydrochloric acid (HCl).

Examples: Oil and fats are removed with a water emulsifying oil solvent, e. g. mobilol 778 or Castrol Solvex Ice 1130, organic and greasy coatings are removed with sodium hydroxide (NaOH) max. concentration 1.5% - max. temperature 85 °C (185 °F). 1.5% concentration corresponds to 3.75 liter 30% NaOH per 100 litre water. Furrings and scale deposits are removed with nitric acid (HNO₃) - max. concentration 1.5% - max. temperature 65 °C (149 °F). 1.5% concentration corresponds to 1.75 liter 62% HNO₃ per 100 liters water. Nitric acid has an important constructive effect on the passivating film of stainless steel.

Cleaning in Place (CIP)

In order for CIP cleaning to be carried out, the contamination on the plates must be removable and cleanable with cleaning liquid. As seen in Figure 5.2, a closed circuit system is required. The amount of cleaning liquid should be at least as much as the amount circulating in the heat exchanger. If the product viscosity is high, the cleaning fluid should be 20-30% more.

Steps to follow during cleaning:

1. The fluids in the heat exchanger are discharged.
2. Pre-wash with cold or warm water.
3. The cleaning solution is circulated through the system.
4. Washed with hot water.
5. Final wash with cold or lukewarm water.

Cleaning can be applied without circulation with special fluids as described in item 5.1. The chemical process is repeated until the cleaning is complete. Sometimes it may be necessary to renew the cleaning fluid. After cleaning, the heat exchanger must be rinsed under pressure with clean water.

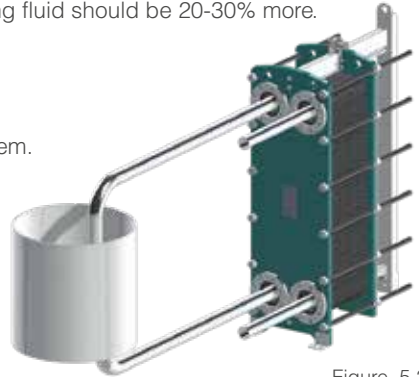


Figure 5.2

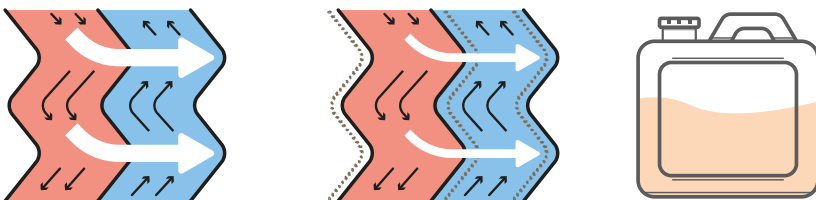


Figure 5.1

Manual Cleaning

Disassembling of Heat Exchanger

Before the plate heat exchanger is disassembled, its pressure must be taken off and the temperature must be lowered below 40 °C against the risk of burning for safety. The temperature drop should not be more than 10 °C per minute, and the pressure drop should not be more than 10 bar per minute gradually (more than 1 bar in an average of 6 seconds). When removing the heat exchanger, two or four of the studs should be left diagonally so that the body remains parallel. The rest must be dismantled. After the last remaining studs are removed in a balanced way, the front and rear body is separated from the plate bundle.

Cleaning

After the plate heat exchanger is disassembled, each plate is washed with a brush (if possible, with a rotating brush assembly) with high pressure water or a soft brush with water (Figures 5.3 and 5.4). Sand or other abrasives should not be used if a high pressure washer is available. After cleaning, the plates should be rinsed with clean water. Especially during the cleaning of the inner parts of the plates and their gaskets, dirt should be carefully controlled and pollution should be prevented. If residues and organic materials adhere to the plate, the plates should be removed from the heat exchanger and the gaskets should be removed. The plates should then be laid in the cleaning bath.

Maintenance

- The all metallic parts should be sent for recycling of material.
- The all wear parts, which are not oil and metallic, should be produced in accordance with local regulations.

Seperating

At the end of usage, the equipment will be recycled according to the relevant local regulations. Any hazardous residues from the process liquid, as well as It should be cared. If in doubt or in the absence of local regulations, please contact with Ekin Endüstriyel. **444 35 46 (EKİN)**



For easy installation in multi-pass heat exchangers, the numbering of plates during dismantling is highly recommended. When the dirt adhering to the plates is removed, wash, rinse and dry the plates. Insert new gaskets. If you have any problems with cleaning, please contact your local MIT distributor.



Figure 5.3

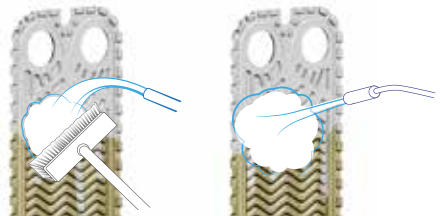


Figure 5.4

Assembling

Every each one of plates and gaskets must be contoled against fails and foulings. All plates and gaskets must be clean for mounting, plates and gaskets which contacted oil, must be degreased. Any small particle is able to cause leakage. Every gaskets must be cleaned and glued carefully, paraclip gaskets must remove during cleaning.

Plate Procedure

If the plate bundle has been removed from the body, it must be repositioned in its original position. While arranging the plates; After the first plate, the next plate is rotated 180 degrees to ensure the correct flow direction and the same process is applied for each plate from this time on (Figure 6.2). When the plates are installed correctly, they will look like a honeycomb (Figure 6.3). If the plates are installed incorrectly, it will be as seen in Figure 6.4.

Clamping

The maximum and minimum tightening intervals are shown on the label on the heat exchanger. During the tightening process, the front and rear bodies should be in parallel position. The distance between the two bodies should be measured on both sides, at the top, middle and bottom. The maximum allowable deviation is 1% of the width of the front and rear body (Fig. 6.1).

For Example: If the distance between front body and rear body is 400 mm; $400 \times (1/100) = 4 \text{ mm}$
 Minimum level tightening is recommended after one month's work. Alternatively it can be tightened after heat exchanger installation.

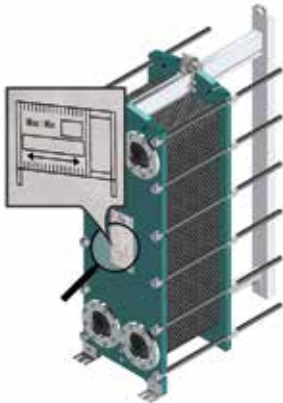


Figure 6.1

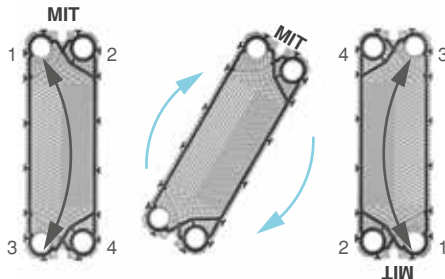


Figure 6.2

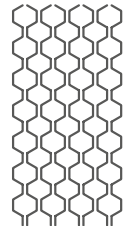


Figure 6.3



Figure 6.4

Spare Parts

Spare Parts Order Process

When ordering spare parts, the heat exchanger type and serial number should be stated. You can access this information from the label on the front body of the plate heat exchanger. In case the label cannot be reached, the model name and image as seen in Figure 7.1 for plate detection; For gasket detection, it is sufficient to inform the gasket model name and color code as seen in Figure 7.2.

Gasket Colors

NBR (Nitrile)	EPDM	VITON
Yellow	Grey	White



Figure 7.1



Figure 7.2

General Terms Of Use and Important Warnings

- Our products are guaranteed for 2 years against material and manufacturing defects. The warranty period starts with the delivery of the product to the user. Consumables and parts worn out in normal use (Gasket, shaft seal, stator, rotor, diaphragm, membrane, resistor, springs, electrical circuit elements, etc.) are not covered by the warranty. Warranty conditions are void if the product is used outside of the specified operating conditions.
- Failures caused by the product's installation, commissioning and use contrary to the items in the user's manual are not covered by the warranty. Ekin Industrial sends the user manuals with the product. It also publishes it on its website. In cases where the user manual does not reach the Buyer, the product should not be commissioned and must be requested in writing from Ekin Industrial. Otherwise, it is accepted that you are aware of the installation, maintenance and usage conditions, that you have this competence and that you have taken responsibility for all problems that may arise, and Ekin Industrial is not responsible for any problems that may arise.
- Periodic maintenance and repairs should be done using original parts supplied by Ekin Industrial or authorized services. Otherwise, the Warranty Terms are void.
- When procuring the product, the type of the product, the type of fluid used, pressure, temperature, density, etc. All information must be given completely and accurately. Otherwise, our company is not responsible for the problems that may occur.
- Problems, blockages and contaminations caused by the quality of the fluid used in our products or the installation are not covered by the warranty. Damages that may occur as a result of corrosion, cavitation, vibration, water hammer and freezing are not covered by the warranty.
- The reason for the damages that may occur due to the absence or malfunction of the armatures in the system or the non-use of the safety armatures (safety valve, thermostat, pressure sensor, temperature sensor, etc.) cannot be determined later and is not covered by the insurance. Our company is not responsible for material and moral accidents and losses that may occur.
- Any products and accessories that we trade or use in our products that are not our own production are not under the guarantee of Ekin Industrial. The warranty of these products and the responsibility of the damages that may occur are under the commitment of the manufacturers of the products.
- Our company is not responsible for process, production or real estate losses that may arise from our products. Claims for compensation will not be accepted unless the damage caused by us is the result of willful or gross negligence. The compensation amount for the damages that may occur, the delay penalty or any penalty that may arise for any reason cannot exceed the invoice amount.
- After receiving the products, the buyer; For obvious defects, the period of direct or indirect control, inspection and notification is 2 business days, for hidden defects, the period of direct or indirect control, inspection and notification is 8 business days. Products that are not notified in writing by the buyer within this period are deemed to have been accepted..
- Except for assembly and usage errors, we have the right and obligation to improve in the event of a manufacturer's defect and the product's lack of guaranteed features. We also have the right to choose to replace the product with a new one. However, the buyer has no right to demand a new one. In case of no improvement, repair or new delivery, the buyer may request the termination of the contract or a refund of the product price.
- The system designer and user are responsible for the selection of the appropriate product, its suitability for specific applications, its safe and trouble-free installation, operation and maintenance. Otherwise, we are not responsible for any damage or work accidents that may occur.
- Our company is only responsible for making the products to be delivered carefully ready for shipment. Since our company does not provide engineering services, product selection should be made after the application details, suitability of the material to the system and product features are technically evaluated by the buyer. Improper selection, installation or misuse of products may result in property damage or injury. Our company does not accept responsibility for product selection.
- If the buyer is a merchant or public law legal entity, all legal disputes will be resolved by the court over which we have jurisdiction. Anadolu Adliyesi / Turkey is exclusively authorized and competent authority in all disputes arising from joint legal relations. In case of dispute, Istanbul Anatolian courthouse courts and enforcement offices are authorized.



Notes

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CERTIFICATE OF WARRANTY

The Document's Confirmation Date and Number:

The usage of this document has been authorized by T. C. Sanayi Bakanlığı, İl Müdürlüğü in accordance with the Law No: 4077 on the Protection of Consumers and the Communiqué on the Implementation of the Guarantee Certificate put into effect based on this Law.

WARRANTY CONDITIONS

1. Warranty period starts from the delivery date of the goods.
2. In case of malfunction of the products within the warranty period, the time spent in the repair is added to the warranty period. The repair period of the goods is maximum 30 working days. This period starts from the date of notification to the service station of the defect goods. In the absence of service station; this period starts from the date of notification to the seller, dealer, agent, representative, importer or manufacturer of the goods.
3. In case of malfunction of the goods within the warranty period due to material, workmanship or assembly defects, the goods will be repaired at no cost and no additional cost will be asked from buyer under the name of changed part price or any other name.
4. Defects caused by the use of the product contrary to the items in the user manual are out of the warranty.
5. For the problems that may arise regarding the Warranty Certificate can be applied to the Sanayi ve Ticaret Bakanlığı Tüketicinin ve Rekabetin Korunması Genel Müdürlüğü.
6. The manufacturer may request that the product be sent to its own production facility at its own discretion. The shipping cost to be spent by the customer belongs to the manufacturer if it is evaluated within the scope of warranty as a result of the examination made on the product. If the defect is not evaluated under the warranty, all costs incurred will be invoiced to the customer.
7. The manufacturer is not responsible for any damages and losses that may occur in the cargo or warehouse during the shipment of the product.
8. The manufacturer accepts no liability for the damage caused by the following reasons:
 - Failure to comply with temperature, pressure or other conditions specified in the technical specifications.
 - Incorrect applications and normal abrasion conditions.
 - Damages that may occur from sudden opening and closing of the fluid valves.
 - Damages caused by the usage of non-original spare parts.
 - Damages that may occur during shipping.
 - Damages that may arise from corrosion.
 - Blockages caused by the fluid passed through inside the product.
 - Damages that may arise from condensate discharge in products which are used in steam applications.
 - Damages that may occur by the blockages caused by the solid materials which can block the products.
 - Damages that may occur as a result of incorrect interventions by the un-authorized services.
 - Damages that may be caused by the lack of fixtures or not working properly.
 - Accidents and problems that may occur in the system if the safety fixtures (safety valve, thermostat, pressure sensors, temperature sensors etc.) are not used are not considered under warranty. The manufacturer is not responsible for any of the pecuniary and non-pecuniary damages that may occur.
9. Manufacturer is not responsible for secondary damages, loss of production and accidents whether it is under warranty or not.
10. All of the above items have been specified in our offer and order confirmations and you have been informed that they supersede the contract. Commissioning of the product means acceptance of the contract.

For the product that was sold to LTD. ŞTİ./A. Ş / Legal Entity on/...../20.... with stated model, brand and serial number, all kinds of manufacturing and material defects are covered by the warranty of our company for 2 (two) years.

SELLER

DEALER

END USER

Brand : _____

Product Type : _____

Product Code : _____

Serial No : _____

Product No : _____

Please keep this certificate!

NOTE: User mistakes are not covered by warranty.
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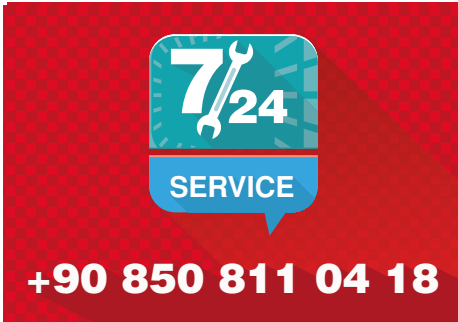
Professional System Solution Center

You can get answers to the problems you experience with your pumps, heat exchangers and system from our MIT professional system solution center. You can also benefit from our 7/24 uninterrupted service with our solution center consisting of our expert engineers.

- Domestic hot water installations.
- Central and district heating systems.
- Milk, yogurt, heating, cooling and pasteurization systems.
- Industrial cooling and heating systems.
- Oil cooling systems.
- Energy recovery systems.
- Pool heating systems.
- Steam installations.



It is vital for your system to be designed and implemented correctly in the first installation in order to be able to operate at the desired capacity, smoothness and long life. For this reason, you can get first-hand the technical support you need during the installation phase of your system and the problems that may arise in the business; You can reach us **24 hours +90 (216) 232 24 12 in 7 days.**



7/24
SERVICE
+90 850 811 04 18

We would like to reiterate that we will be happy to share our knowledge accumulated over many years with our valued customers in order for your system to work correctly and performance.

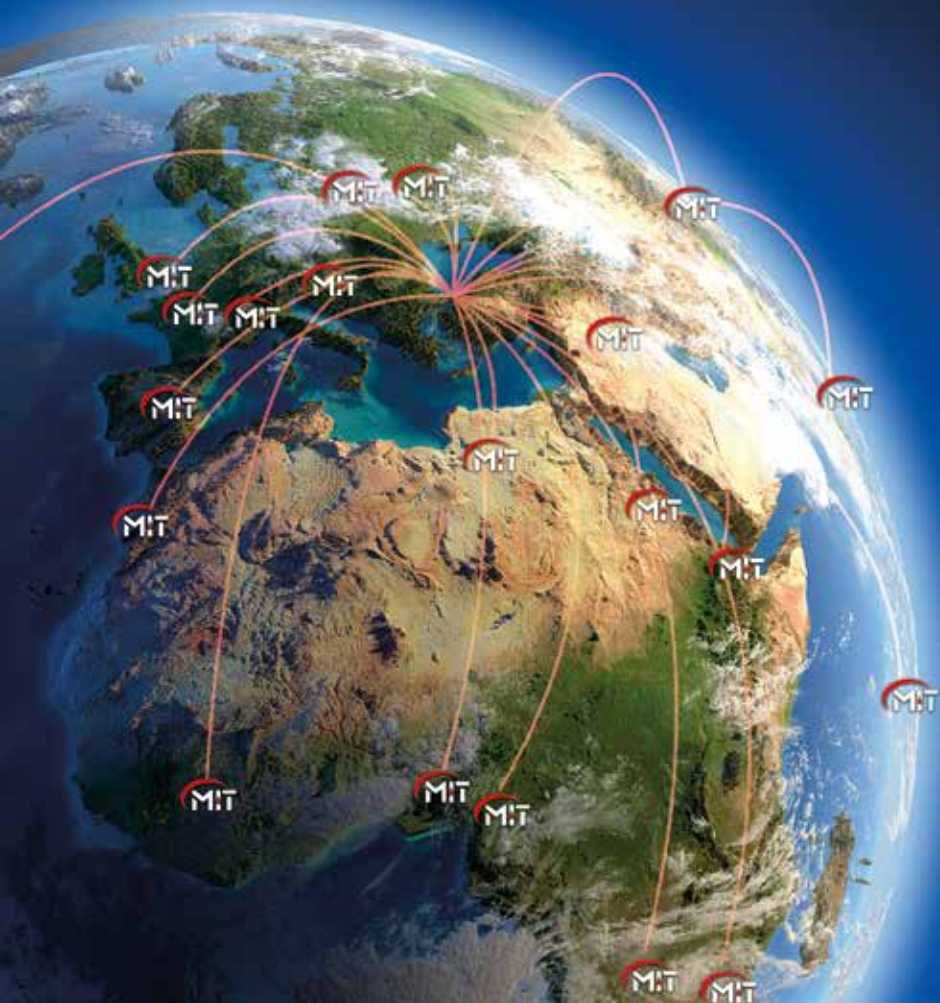
Ekin will continue to be the best solution partner for you in all applications with all kinds of heating and cooling applications.



Producer; reserves the right to change the product features, technical dimensions and information and installation diagrams specified in this catalog without notice. No specified information can be copied and used without the permission of the manufacturer. In no way can the manufacturer be held responsible by giving examples of technical information and diagrams. In case of need, we request you to request a special technical drawing for your project for exact dimensions.



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Dudullu Organize Sanayi Bölgesi - Des Sanayi Sitesi
107. Sk. B14 Blok No: 2 Ümraniye / İstanbul / Türkiye
Phone: +90 216 232 24 12 **Fax:** +90 216 660 13 08
info@ekinendustriyel.com - www.ekinendustriyel.com

+90 216
444 EKİN
3546

