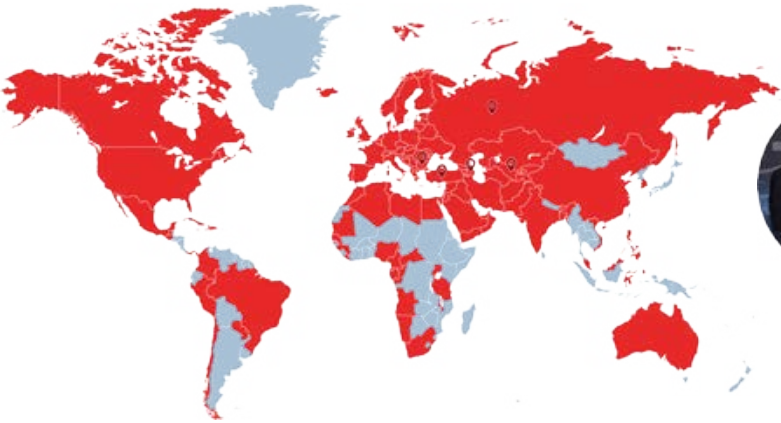
EKİN ENDÜSTRİYEL

Tubular Evaporator & Kondanser User Manuals

MIT

Your Satisfaction Is Our Priority; Globalization Is Our Goal!



The second company in Türkiye that exports to the most different countries in 2021 , According to ISIB (Türkiye HVAC-R)

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.

ISO 9001:2015 CE TSE TSEK EAC FDA ADR YERLİ ÜRETİM

PRODUCT RANGE

HEAT TRANSFER PRODUCTS

- Gasketed Plate Heat Exchangers
- Brazed Heat Exchangers
- Shell & Tube Heat Exchangers
- Evaporators and Condensers
- DC Fan Driven Oil Coolers
- Heat Coils
- Serpentines / 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
- Solar Collectors
- Chillers
- Cooling Towers

Contents

Tubular Evaporator

Thank you for choosing and ordering Ekin Endüstriyel products. Ekin Endüstriyel product that you will use or you are using, has been carefully designed and meticulously produced by our company in order to respond to your needs better and share your satisfaction for many years. Sharing your satisfaction, complaint, and ideas about Ekin Endüstriyel you are using will lead the way in the innovations of our company and increase our service and product quality to each and every one of us. It will enable us to carry it even higher in the working day.

Purpose of User Manual

The information in this booklet is a guide for installation, maintenance for user personnel. Read this book before installing or applying any Ekin Endüstriyel and use your product in accordance with the specified instructions.

Before the product is applied, the recommendations and rules should be checked according to the installation area and the material properties to be worked on, and it should be ensured that the correct product is used, which is suitable for the application subject and whose technical drawing has been checked.

Performance

It is recommended to pay attention to the following issues in order to get the best performance from the Ekin Endüstriyel product you will use and to avoid difficulties in use and maintenance:

- The product should be selected at suitable and correct operating temperatures.
- A product with suitable physical properties should be selected.
- A product that is suitable for the refrigerant and the properties of the fluid to be refrigerated, whose size and capacity data have been checked and approved, should be selected.
- The product must be kept under suitable conditions before assembly.
- Appropriate mounting type and connection hardware and installation size should be selected.
- The application method should be chosen correctly.
- Attention should be paid to the meticulousness of the application and the frequency of cleaning.
- Installation, maintenance and repair should be done by properly equipped, authorized and knowledgeable personnel.

Decrease in the performance of the product you are using or non-performance depends on one or more of the conditions listed below.

- When the heat exchanger starts to get dirty.
- Required plugs etc. during storage. protection elements remain on the product.
- The calculated operating conditions do not match the product design conditions.
- Gas entrapment in the product or air entrapment-air in the liquid line.
- Improperly applied piping or piping size.
- Excessive corrosion of heat exchanger internal parts.
- Vibrations that may occur in the assembly line
- Improper or incorrect application.

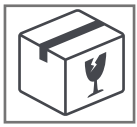
Delivery, Storage and Storage Conditions

Ekin Endüstriyel products are secured against problems that may occur during transportation. If the product will not be used quickly in the application area, it should be kept in its original package or box-case. The user assumes the integrity and responsibility of the product he/she buys.

Ekin Endüstriyel will not be responsible for deterioration, damage or malfunctions that may occur during the transportation or storage of the product purchased by the customer. Considering the delays due to repair or similar situations in the product needed due to incorrect storage, correct storage methods gain importance. The storage conditions suggested below are for the user's convenience and the user will decide for himself which is correct or necessary.

- When you receive the heat exchanger, detect any shipping errors that may occur against all protective measures. If there are any shipping errors detected, immediately inform Ekin Endüstriyel and the shipping company. Indicate this error on the invoice or waybill before accepting the product. Products whose labels have been removed, deformed or illegible are not covered by the warranty.
- Use equipments like crane, forklift, lever, lasso, chain, etc. while transporting your heat exchanger. Do not lift the product with body strength or hand. These high-weight products can cause permanent physical discomfort because of improper handling.
- Be careful during transport. Do not bump or drop the product. The copper tube bundle of your heat exchanger is sensitive to such conditions and may be damaged. Cracks and leaks may occur.

- If your heat exchanger is not stored properly, take immediate action against corrosion and abrasion.
- IThe heat exchangers are closed in such a way that they are not in constant contact with the air. In this way, the formation of rust or pollution on the inner surface is prevented. Make sure your heat exchanger is on the protection caps or plugs during storage.
- At the order stage, if the customer specifies the storage conditions, a special packaging is made for the customer and the products are stored in this way in the Ekin Endüstriyel factory before shipping.

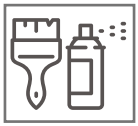


- Dirt, snow, moisture, dust and similar residues on the product packaging should be cleaned before storing indoors. Moisture that can accumulate in or on the product usually causes corrosion and rusting to begin already.
- Keep your Ekin Endüstriyel products as dry and hot as possible, in a humidity-free environment. Relative humidity of the product storage area is recommended as 40% and below. During the maintenance and assembly phase, the formation of air humidity in the product should be prevented.

- It is recommended to use a dehumidifier in the product storage area so that Ekin Endüstriyel products are not damaged by moisture.
- We recommend that you keep a record of the products in the storage area and apply the storage procedure. The following points should be recorded during the storage phase.

a. Storage date
b. Controller name and surname
c. Product card and product serial number
d. storage location
e. Product coating or paint condition
f. internal state
g. humidity condition
h. Environmental and product contamination status
I. Corrective measures taken

- Products are sent as painted by Ekin Endüstriyel as standard. Paint is a prolonging factor of the product life. However, it is not a complete protection element against external factors such as hitting, hitting and scratching. Periodic painting of the products during their lifetime will extend the life of the product against external influences.
- If there is a spill in the paint of the products or if there is corrosion that starts with the spill, it is recommended to contact Ekin Endüstriyel or paint the problem area with a suitable paint immediately. If there is corrosion in the area to be painted, first cleaning should be done with the help of a wire brush and then the paint should be repaired with the paint recommended by Ekin Endüstriyel. Detailed information about paint can be obtained from Ekin Endüstriyel. However, even if the defects that may occur in the paint are repaired, it does not guarantee the full protection of the product.

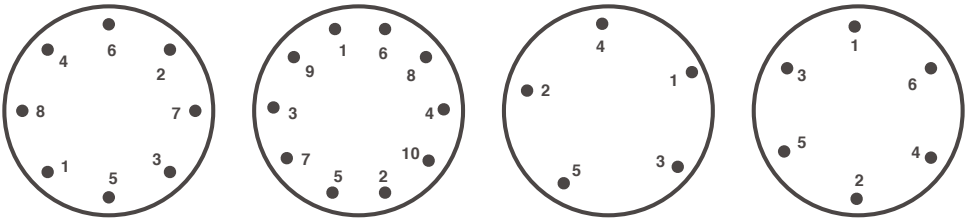


- It is the customer's responsibility to take precautions against all other problems that may occur due to storage conditions. All Ekin Endüstriyel products must be protected by all kinds of measures, not less than the 13 items mentioned above.
- The products you receive are not protected against natural disasters such as fire, flood or earthquake.
- Therefore, Ekin Endüstriyel does not guarantee its products against any errors that may occur in the storage area due to these or similar reasons.

Setup

- Ekin Endüstriyel recommends that the product you purchase be installed by an authorized and trained personnel who understands the system design, pressure, temperature ratios and temperature changes, iron, PVC and copper pipe installation.
- Before using the heat exchangers, discharge the test or safety gas inside. Although the products are delivered with vacuum as standard, they are also delivered with 6 bar nitrogen gas in line with the customer's request.
- Some of the heat exchangers fasteners are tightened, with screw locking compound and some without screw locking compound. In sealed connections, the gasket may leave itself over time. Against such cases, check the tightness of all screws of the product you purchased. Tighten the loose bolts to the appropriate torque values. Do the tightening in accordance with the circular tightening procedure. Bolt tightening procedure and bolt tightening torque values are given in the tables below.

Bolt Tightening Procedure



TIGHTENING TORQUE REQUIRED FOR METRIC BOLT		
Bolt Size	Pitch (mm)	Tightening Torque (Nm)
M5	0,8	6
M6	1	10,5
M8	1,25	25,3
M10	1,5	50,8
M12	1,75	86,9
M14	2	139
M16	2	213
M18	2,5	293
M20	2,5	416

*Torque values are given according to 8.8 quality steel bolt types used in the products. Do not use the same values for other qualities. Bolts and nuts should be mounted with lightly lubricated.

- The heat exchangers you will use are not suitable for taking load on. The maximum permissible weight on it must not exceed 400 kg. However, if there is a compressor etc. to be assembled on the product, the customer should request Ekin Endüstriyel for product correction to weigh these weights.
- Some hand tools you may need during installation are; wrenches, pipe wrenches, teflon tapes or other sealing products suitable for pipe connection, torque wrench, various pliers, metal shims, wire brushes and gaskets of various sizes.
- It is recommended to install bypass lines and valves in both circuits of the heat exchangers during the installation phase. In this way, the cleaning, control and repair of the products are simplified.
- It is recommended to take cautionary measures and draw attention with explanations during installation, maintenance or cleaning.
- It is important to apply heat and pressure measuring elements to both circuits of the heat exchanger, close to the product, and to ensure that they operate within the recommended temperature and pressure values. Ekin Endüstriyel is not responsible for products that are not used within the limits.
- Use gas and water fittings in the dimensions recommended for the product and specified in the technical drawings and catalogues.

- Use counter flanges and gaskets suitable for product flanges.
- There must be a vent valve on the installation where the product is mounted. It is mandatory to use a safety valve in the pressure vessel heat exchangers you will use.
- Fix the product in the usage area by using sufficient amount of supports and fasteners. Thus, you provide protection by preventing installation or flow voltages and vibrations. Make sure the connecting screws are fully tightened. It is recommended that the connection joints be at least one size larger than the bolt diameter in order to easily meet each other. This facilitates the centering of the joints.
- It is recommended to use suitable liquid level indicators, liquid flow control elements, discharge valves, temperature control elements, pressure sensors and alarms and similar warning elements.
- Sight glass or flow control alarms should be used for all fluids in gas or liquid phase to avoid any flow-related problems. Thus, the missing or excess status of the flow is monitored. Overflow etc. situations are not encountered.
- Determine correctly with which fluids the product you have installed will work. Corrosive effects of water in copper tube heat exchangers in systems where water works will shorten the life of the product. It is recommended to use protective chemicals or water under the right conditions. Conditions related to water are specified in the following sections.
- Safety valve at appropriate values should be used as a precaution against an explosion that will occur due to the pressure created by the compressor, pump or other equipment in the heat exchanger. Do not connect the discharge line to a closed circuit. This makes it difficult to empty the product when necessary.
- During installation, foreign materials, screws, nuts, wrenches, drill bits, etc. are not allowed into the product. Make sure that the items do not fall or be forgotten inside. Check this by hand and eye before closing the ports. Such substances cause permanent damage to the heat transfer pipes. Ekin Endüstriyel does not accept responsibility for malfunctions caused by such situations.

On-site Installation

- If the product you will use is in the storage area before installation, check it first for any errors. Make sure that the product is free of dirt or debris, sharp or piercing parts. Check the paint of the product and any damage. The parts that may remain in the product can damage both the product and the facility as the flow starts after assembly.
- If the product you will use is bought from a company or a dealer, not from the warehouse, check the product for any errors that may occur during transportation and then use it. If the product has been damaged in transit and the damage is evident, inspect the damage and check the protection caps and packaging. If there is a deep injury to the product, it is recommended to immediately report the situation to the shipping company and Ekin Endüstriyel and not to use the product.

- During the installation, check that the connecting elements and the connecting pipes are mounted without difficulty. Consult Ekin Endüstriyel personnel if there is any difficulty.
- Before connecting your heat exchanger to the pipeline, inspect the line for all foreign matter. Before starting the assembly move all wood, plastic, the packing pieces etc. away from the product. Do not keep liquid fluid inside before assembly. Do not leave the product containing liquid fluid in an open area, against the risk of freezing.

Application

- Before applying Ekin Endüstriyel products, make sure that the installation is clean. Make sure and check that the necessary filters are installed. If there is a buffer tank, make sure that there is no residue or dirt in this tank.
- Make sure the valves are open before operating the product.
- Perform the activating of the product gradually.
- After the heat exchanger is completely filled with fluid, you can close the supply valves.
- Make sure that the gasket connections are applied correctly. Errors in gasket connections may cause leaks during application.
- It is dangerous to use the product outside of the allowable pressure, temperature limits and recommended fluids. Do not use the products you bought outside the limits specified on the product label.
- Take necessary precautions to prevent damages that may occur inside the heat exchanger due to Water Hammer.
- Store and discharge the fluids in the product when you do not operate the product or in long-term closed positions or strengthen your product with chemical supplements that will provide resistance against freezing and corrosion.
- Use frost inhibitor chemicals in products that are operated below the freezing temperatures of the fluids used. Antifreeze against the risk of freezing in water-cooled products or a similar antifreeze usage table for water against the risk of freezing is given below. The table below is an example and for correct applications, it is necessary to act in accordance with the terms of use of the antifreeze manufacturers. Check the freezing temperatures of the antifreeze solution with the necessary measuring instruments to ensure that the correct amount of antifreeze has been applied.

Freezing Temperature	1,2 Propylene Glycol % by Weight	Water % by Weight
-10 °C	18	82
-15 °C	25	75
-20 °C	32	68
-25 °C	37	63
-30 °C	41	59

- After any application, ensure that there is no external or flow-induced vibration inside the product. Vibrations in the heat exchanger will cause problems inside the product and shorten its service life.
- Flow amount and flow rates will not be above or below the recommended limits for the product. Flow conditions outside the limits cause vibration in the product and in this case, problems may be encountered in the pipe bundle in a short time. With the vibration, the pipe bundle will break, tear and crack, and damage will occur by rubbing against each other.
- Follow the procedures to be applied in the new heat exchanger of heat exchangers that will not be operated for a long time to protect it from external influences like freezing, corrosion, etc. Take antifreeze and anti-corrosion measures.
- If the product is to be disabled for a short time, the water in the product should be drained and the interior surfaces should be dried with dry air.
- If the application specified in the 12th article cannot be done, by providing water flow at certain periods during the day, biological pollution, corrosion, etc. to be caused by stable water will be eliminated.

- Fluid flows must be adjusted against thermal shocks during all opening and closing operations. Activation and closing operations should not be performed at flow values outside the application temperatures.
- In order not to be affected by thermal stresses in the product, it should be ensured with the help of a bypass that the fluids reach the mutual equilibrium temperature. Great attention should be paid to sudden flow stop and restart situations in insulated products. Severe thermal shocks may occur in products that remain at high temperatures for a long time.

Usage Water Conditions

In Ekin Endüstriyel Shell&Tube heat exchangers, it is recommended to comply with the following conditions in order to minimize the physical and corrosion effects caused by the domestic water. The pH level, alkalinity value, hardness of the water, the amount of ions in it and the temperature in circulation are effective in corrosion and limestone formation in heat exchangers and other installation components. Recommended water properties for cooling systems are listed below. Failures that may occur as a result of not complying with the specified water conditions are **"NOT EVALUATED WITHIN THE SCOPE OF WARRANTY".**

- Ammonium ions (NH4+) in water are very harmful for copper. These ions are one of the most important factors that negatively affect the working life of copper pipes. There should be absolutely no ammonium ions (NH4+) in the water.
- Chlorine ions (Cl-) cause small holes to form on the surfaces of copper pipes due to corrosion. Chlorine ions in the water should be below <10mg/l.
- Sulfate ions (SO^4-2) cause corrosion and small holes on copper pipe surfaces. The amount of Sulfate ions (SO -2) in the water should be below <30mg/l.
- Fluorine (F-) ions in water cause acid formation and corrosion. Its amount in water should be below <0.1mg/l.
- The iron (Fe+2 and Fe+3) ions in the water combine with the dissolved oxygen in the water, causing rust and installation sludge formation. For this reason, there should be no iron ions in the water. If the amount of dissolved oxygen in the water is below <5mg/l, the amount of dissolved iron in the water should also be below <5mg/l.
- Silicon dissolved in water has the danger of forming acid and corrosion. Its amount in water should be < 1 mg/l.
- Total Water Hardness should be TH>0.5 mmol/l. It is recommended that the Total Water Hardness be between 1 mmol/l and 2,5 mmol/l. The formation of some deposits on the inner or outer surfaces of the copper pipe will limit corrosion in the copper pipes. However, high water hardness will lead to excessive limestone formation inside the copper pipes, preventing water passage and heat transfer. It is recommended that the Total Alkalimetric Titer (TAC) of the water be below <100.
- Conditions that will change the state of oxygen in the water abruptly should be avoided. It is harmful to be saturated with excess oxygen as well as deoxygenated with a nitrogen gas etc. These irregularities in the amount of oxygen in the water encourage the formation of copper oxide (Cu^2O) and the increase in the amount of particles.
- The high electrical resistivity of water reduces the tendency of corrosion in the system. For this reason, it is recommended that the electrical resistivity of water be >30 Ohm.m. Electrical conductivity of water should be < 20 ÷ 60 mS/m.
- The ideal pH Value of the water at 20÷25 ^{o}C should be between 7<pH<8.

Sample Analysis Chart

Parameter	Unit	Analysis Method	Limit Values
pH	-	SM 4500 H+ B / Electrochemical Method	7<pH<8
Alkalinite	mg/l	SM 2320 B / Titration Method	100
Ammonium	mg/l	SM 4500 NH3 B / SM 4500 NH3 C Distillation Method / Titrimetric Method	Absent
Iron (Fe)	mg/l	EPA 200.7 / ICP OES Method	<5
Fluoride	mg/l	SM 4500 F- B / SM 4500 F- D Distillation Method / Spectrophotometric Method	<0,1
Conductivity	µS/cm	SM 2510 B / Laboratory Method	20<…<60
Chloride	mg/l	SM 4500 Cl- B / Iodometric Method I	<10
Oxygen Saturation	mg/l	SM 4500 O C / Luminescence Electrode Method	-
Silicon (Si)	mg/l	EPA 200.7 / ICP OES Method	<1
Sulphate	mg/l	SM 4500 SO -2 E / Turbidimetric Method	<30
Total Hardness	mg/l	SM 2340 C / ETDA Titrimetric Method	>0,5

Care

- Periodically clean your heat exchangers against contamination in accordance with their special conditions. Dirt coating or sludge formed on the heat transfer pipes adversely affect the efficiency of the heat exchanger. Noticeable changes in pressure losses or operating pressures are noticeable. Periodic cleaning is required in order not to complicate the maintenance and cleaning conditions of your heat exchanger products. Otherwise, blockages and heavy limestones etc. substances will form and it will not be possible to clean them.
- Neglecting the cleaning of the heat exchangers will cause bursts in the pipes. As a result, there will be a possibility of going to the blanking method in the heat transfer pipes. This will cause serious losses in the capacity efficiency of the product. In blanked pipes, leakages from blanking plugs may occur over time due to thermal stresses of different materials.
- To clean the inside of the heat transfer pipes, open the covers of the heat exchanger and clean the insides of the pipes with a cleaning stick brush. In addition, the cleaning of the inside of the pipes can be done by using chemicals that do not harm the pipe. For this, consult the manufacturer and get information about suitable chemicals.
- If your heat exchanger is equipped with a “victim metal-adhesive” anode rod or plate, check this part during maintenance and replace it with a new one recommended by the manufacturer.
- Remove the tube bundle from the body tube to inspect and clean the outside of the tube bundle. In this way, your heat exchanger is ready for cleaning and control.
- Be careful when removing the tube bundle of the heat exchanger. Ensure that the tubing bundle is not damaged during removal. Also, determine if the product has been serviced by unknown persons during and after the removal process.
- When removing the pipe bundle, do not transfer the load to a single pipe or several pipes in the pipe bundle. During this process, take support from the chuck plate to which the pipe bundle is attached and use the loading equipment by connecting it here. If you are going to suspend the pipe bundle with a lasso, do not suspend it from the heat transfer pipes, but from the mirror sheet and guiding curtains.

- Do not carry the pipe bundle using equipment such as hooks . Such equipment can damage the tubing bundle. After removing the pipe bundle from the body, place it on a suitable pedestal.
- A metal bearing plate can also be assisted while removing the pipe bundle. In this way, the tube bundle, which is wrapped in a thin metal plate, can be easily removed without any damage.
- If the heat exchanger has been left in the maintenance area for a long time without any action, before removing the pipe bundle from the body, hit the body with small blows with a hammer. In this way, the jams of the tube bundle inside the body are eliminated and the tube bundle is left free, ready to be removed.
- In order to protect the bent parts of the pipe bundle, appropriate casing sheet should be applied here.
- When you take the U-tube bundles out, place this tube bundle on a V-shaped wooden stand. Thus, the pipe bundle is rested on wooden legs against the damages it may cause on the ground.
- Do not drag the pipe bundle anywhere. As a result, support plates, baffles and heat transfer pipes can be easily damaged.
- Some methods for cleaning the body pipe or heat transfer pipes in heat exchangers are as follows.
  1. The body pipes can be cleaned with hot water and additionally with non-abrasive cleaning chemicals. With the brush, this cleaning can be accelerated and strengthened. With this method, mud and dirt can be easily removed from the body pipe.
  2. If there is a salty formation, it can be easily cleaned with clean water.
  3. It can be easily cleaned with some special cleaning chemicals. However, for suitable cleaning products, information should be obtained and consulted from Ekin Endüstriyel or the cleaning products company authorized by Ekin Endüstriyel.
- During washing in some types of heat exchangers, there may be deformations in the ends of the tube bundles or the finned tube structures. In this type of heat exchangers, cleaning should be done more carefully and without damaging the fin structures. If necessary, chemical cleaners should be used for cleaning these products, and high-pressure spray cleaning methods should be avoided. If necessary, Ekin Endüstriyel should be consulted.
- If the layer to be cleaned is thick and cannot be cleaned chemically, start applying mechanical methods. Expose the body pipe to impact with the help of a hammer from inside and outside. If you also need to use a chisel, make sure it is not too sharp or pointed. Take extra care to avoid any damage to the tube bundle or body.
- Do not attempt to clean the tubes by steaming them. The thermal stresses that will occur in this way may cause breaks, cracks and leaks at the pipe connections or joints.
- Use the following methods to locate damaged or burst pipes:
  1. Remove the cover of the heat exchanger and re-fix the tube bundle to the body connection.
  2. Pressurize the body of the heat exchanger preferably with water or a similar non-flammable liquid.
  3. Check all joints, welds, faceplate pipe joints for leaks.
- After a heat exchanger has been disassembled and dispersed, new gaskets should definitely be used in the recovery phase.
- Used gaskets are not crushed again and lose their sealing feature.
- It is recommended to use new and original bolts, if possible, after disassembly and assembly operations.

Warnings

Never open or loosen the covers and connections while your heat exchanger is under pressure or pressurized. Do not weld or do similar operations on it and do not pierce it with a drill or any other piercing object. These physical practices may result in an explosion, resulting in injury or loss of life. Use equipment for transportation purposes when transporting your heat exchanger. Do not lower or raise by hand or body power.

Wear protective glasses, helmet, gloves and appropriate clothing while performing maintenance. Do not work on the product without wearing work shoes. If these precautions are not taken, injuries and injuries may occur. Ekin Endüstriyel is not responsible for such situations.

Avoid direct contact with the fluids circulating inside your heat exchanger. Fluids in the product can be harmful to health. For products with circulating gas, make sure that the gas is evacuated or stored in a safe area before handling the product. If the fluids are liquid, do not work on the product without examining the safety procedures of the fluid circulating in it. Ekin Endüstriyel is not responsible for any problems that may arise from faulty applications.

When servicing your heat exchanger, metal fragments and cleaning materials and residues may appear in the cleaned product. Take precautions to avoid them. Wear safety glasses to protect your eyes from chemicals. Use gas mask when necessary.

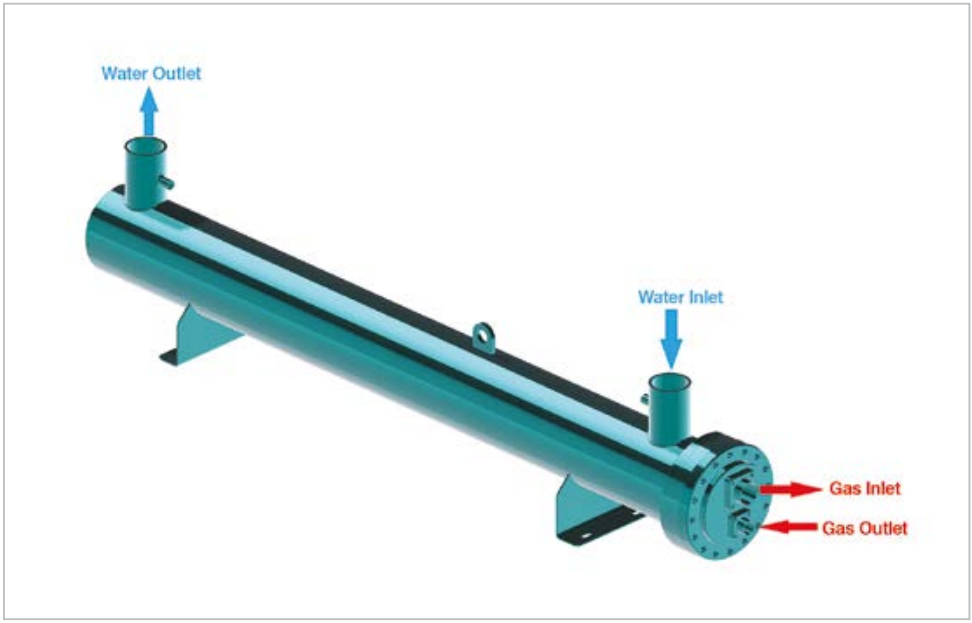
Do not spray compressed air into the heat exchanger when working with flammable fluids or similar cleaning solutions.

Practical information

- The evaporator should be used in horizontal position.
- The air inside the product must be evacuated during water filling.
- Make sure that the pressure drop and application conditions are in accordance with the catalogue values.
- Do not stop the water flow before the refrigerant in the evaporator is discharged.
- If you are not going to use the evaporator, fill the product completely with antifreeze fluid so that there is no air in it, or completely empty it by making sure that it is dry.
- Check the chemical properties of the water circulating in the evaporator regularly. Unsuitable water conditions will damage the evaporator.
- When you experience a capacity decrease, you can reverse the system for a short time for cleaning purposes.
- Keep the evaporator away from vibrations and sources of vibration.
- Avoid foreign particles in the water.
- Use antifreeze solution below 0 °C.
- Avoid pump cavitation and air build-up in the system.
- Do not operate refrigerated fluids near freezing temperatures.
- Do not exceed the allowable water flow rates.
- Make the water installation to the equivalent size specified in the evaporator model. Other applications may cause unbalanced flows inside the evaporator. Evaporator may be damaged.

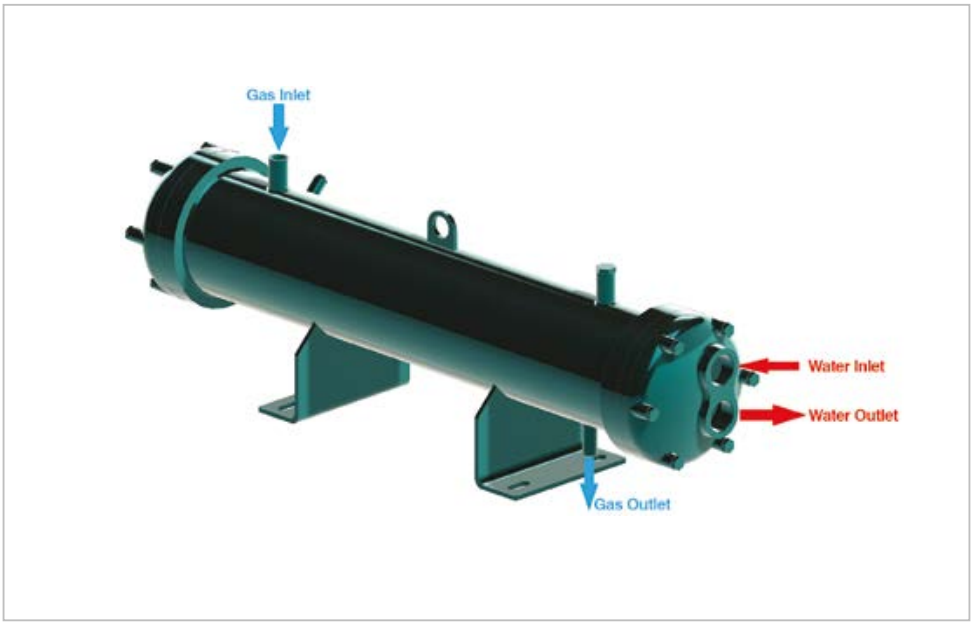
Considerations for MIT Tubular Evaporator Installation and Maintenance

- All air in the evaporator must be evacuated during water filling.
- For no discharge during filling
- Care must be taken to ensure that the water discharge valve at the evaporator outlet is closed.
- In cases where the evaporator will not be used for a long time, all the water in the evaporator should be emptied.
- If necessary, controlled glycol solutions should be used periodically and contact with air should be avoided.
- The evaporator should not be exposed to excessive vibrations.
- Foreign parts should be prevented from entering the water circuit.
- No water should enter the gas circuit of the evaporator.
- Fluids that are compatible with the material of the evaporator should be used and should not be operated at temperatures close to the freezing point.



Considerations for MIT Tubular Condenser Installation and Maintenance

- The inlets and outlets are shipped with plugs to prevent any substance from entering the condenser before assembly. Moisture or any harmful compound that may enter the body part may encounter the condensed gas in the heat exchanger and cause problems.
- Before assembling the condenser, remove all the plugs and do not leave with the plugs removed.
- Although it is recommended not to use the condenser outside the pressure and temperature values specified in the design conditions, there is a safety pressure valve against pressure loading outside the working pressure.
- First, activate the cooling water
- All air in the condenser must be evacuated during the filling of water.
- Afterwards, switch on the refrigerant gas to be condensed slowly.
- Heat exchangers should be cleaned regularly. An increase in pressure drop and a decrease in performance usually indicate cleaning time.
- Removable covers allow mechanical cleaning of the pipes.
- If the condenser will not be used for a long time, the water in the condenser must be completely emptied.
- The condenser should not be exposed to excessive vibrations.
- Avoid irregular flow in your system as vibration will reduce the operating life of the equipment by causing material fatigue.
- Avoid using composite gaskets in assembly as they can be fragile and therefore sealing.



Notes

EKIN ENDUSTRIYEL

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 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 cause 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 cause by the usage of non-original spare parts.
   - Damages that may occur during shipping.
   - Damages that may arise from corrosion.
   - Blockages cause 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 cause 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 supersedes 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 : _____

NOTE: User mistakes are not covered by warranty.
www.ekinendustriyel.com

Please keep this certificate!

Notes

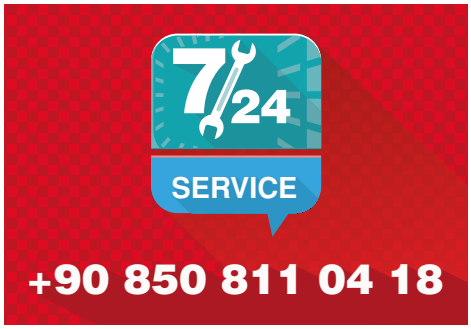
Notes

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.**



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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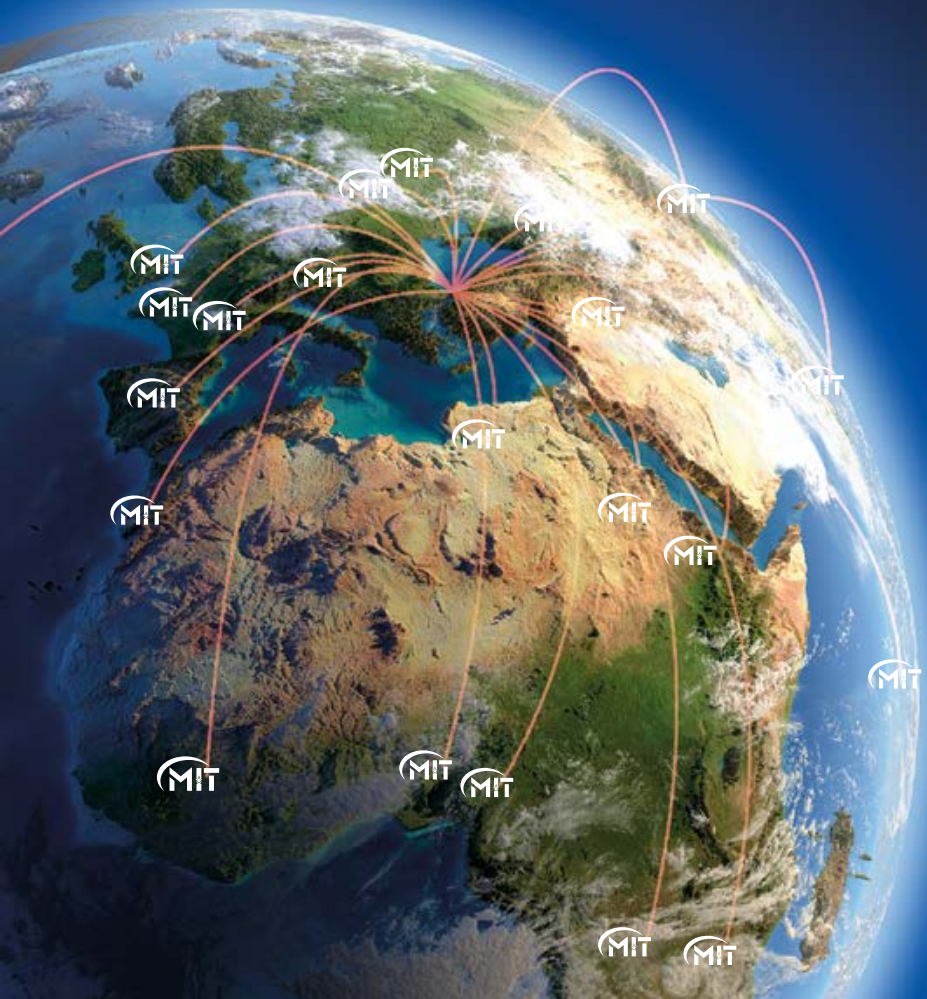

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