



EKİN ENDÜSTRİYEL
Isıtma-Soğutma San. Tic. Ltd. Şti.

Instructions for MIT Plate
Heat Exchangers



Our Main Focus:

Heat Transfer Department

- Plate Heat Exchangers
- Tubular Heat Exchangers
- Accumulation Tanks
- Water Heater Tanks

Fluid Transfer Department

- Domestic Pumps
- Hygienic Pumps
- Process Pumps

Hygienic Flow Equipment Department

- Stainless steel connection equipments
- Tank equipments
- Hygienic process equipments



Sustainable Innovation, Quality Standardization And Dynamism

Ekin Industrial has entered Turkey's sector of imported heat plate exchange, with its customer focused vision and dynamic, Ekin has expanded into new and upcoming investments.

One of the main steps was gaining the identity of being a producer.

With the view of "Why Turkey shouldn't become a global strength in the manufacture of product and technology." Ekin Industrial has started the production of heat plate exchange with the brand of 'Made In Turkey.'

To change the perception of local produce in Turkey, we grew in the philosophy of quality, through initially adapting to ISO Quality Management System procedures, and completed the CE security and quality certification period, and has matched foreign standards like GOST.

MIT plated heat exchanges, has now become a solution to engineering problems in the national market as well as the foreign market, and has grown through an expansion of franchises.

Engineering Approachments, Integrated Solutions

Ekin Industrial, with investment in MIT plated heat exchanges, and their identity of producer and engineer vision, is aiming to solve problems in the sector. To meet these views, Ekin Industrial has expanded into the production of components, sales and after sales service by employing expert engineers.

The factors that guided Ekin Industrial to success are their exceptional customer service to the needs and wants of consumers, modern facilities, and becoming partners to projects that involve high-end technology.

Ekin endüstriyel is an expert company which has wide product range which includes plate heat exchangers, accumulator tanks, water heater tanks, installation materials and its service Group and submit competitive advantages to mechanical installation sector in Turkey and abroad



Certificate of Registration



KALİTE YÖNETİM SİSTEMİ

**EKİN ENDÜSTRİYEL ISITMA SOĞUTMA SAN. VE
TİC. LTD. ŞTİ.**

DES San. Sitesi 117 Sk. C24 Blok No:5 Dudullu, İstanbul, Türkiye

Kapsam:

Plakalı Eşanjör ve Soğutma Ekipmanları Üretimi

Yukarda belirtilmiş olan firma aşağıdaki standardın
gerekliliklerini karşılamıştır.

ISO 9001:2008

TQM : 0508

Sertifika Numarası

11 Haziran 2011

Yayın Tarihi

12 Haziran 2009

İlk Belgelendirme Kayıt Tarihi

11 Haziran 2012

Geçerlilik Süresi Bitimi



Signed on behalf of Global Network System Co., Ltd.

Global Network System Co., Ltd.

#712 Hyundai Princetel, 628-13 Deungchon-dong, Gangseo-gu, Seoul, Korea
www.gns-iso.co.kr

Accreditation by the Joint Accreditation System of Australia and New Zealand
www.jas-anz.com.au/register



Certificate of Registration



QUALITY MANAGEMENT SYSTEM

**EKİN ENDÜSTRİYEL ISITMA SOĞUTMA SAN. VE
TİC. LTD. ŞTİ.**

DES San. Sitesi 117 Sk. C24 Blok No:5 Dudullu, İstanbul, Turkey

Scope :

Production of Heat Exchangers with Plate and Cooling Equipment

This is to certify that the Quality Management System of the above mentioned company
meets the requirement of

ISO 9001:2008

TQM : 0508

Certificate Number

11 June 2011

Date of Last Issue

12 June 2009

Date of Initial Registration

11 June 2012

Date of Expiry



Signed on behalf of Global Network System Co., Ltd.

Global Network System Co., Ltd.

#712 Hyundai Princtel, 628-13 Deungchon-dong, Gangseo-gu, Seoul, Korea
www.gns-iso.co.kr

Accreditation by the Joint Accreditation System of Australia and New Zealand
www.jas-anz.com.au/register



TÜRK STANDARDLARI ENSTİTÜSÜ

TSE-HYB

HİZMET YETERLİLİK BELGESİ

Belge No : 14.20.34/HYB-11090
İlk Veriliş Tarihi : 06.05.2010
Son Geçerlilik Tar : 06.05.2011

Firmanın Adı : EKİN ENDÜSTRİYEL ISITMA SOĞUTMA SANAYİ VE TİCARET LTD ŞTİ.
Firmanın Adresi : Des san.sitesi 117.sok.c24 blok no.5 kat 1-2 Y.dudullu-ÜMRANIYE/ İSTANBUL
Hizmet Yeri Adres : Des san.sitesi 117.sok.c24 blok no.5 kat 1-2 Y.dudullu-ÜMRANIYE/ İSTANBUL
Sicil No : 568931

Verilen Hizmetin Kapsamı :

TS 12676 / ŞUBAT 2004 YETKİLİ SERVİSLER - KAZANLAR VE ISI DEĞİŞTİRİCİLER (EŞANJÖRLER)
İÇİN - KURALLAR STANDARDINA UYGUN
• EKİN ENDÜSTRİYEL ISITMA SOĞUTMA SANAYİ VE TİCARET LTD. ŞTİ. YETKİLİ SERVİS MIT,
MARKALI



Türk Standardları Enstitüsü Belgelendirme Mevzuatı uyarınca yapılan inceleme neticesinde firma işyerinin kapsamda belirtilen hizmetler için yeterli olduğu tespit edilerek iş bu belge verilmiştir.

06/05/2010

Mehmet HÜSREV

İSTANBUL HİZMET BELGELENDİRME MÜDÜRÜ



TSE Kalite Kampusu TSE HİZMET BELGELENDİRME MÜDÜRLÜĞÜ ÇAYIROVA TREN İSTASYONU YANI
BAYRAMOĞLU -GEBZE / KOCAELİ Telefon:0262 653 07 52-20 HAT Faks:0262 653 08 49

	<p>TECHNICKÁ INŠPEKCIA, a.s.</p> <p>SLOVENSKÁ REPUBLIKA</p>	
<p>CERTIFICATE C € 1354</p>		
<p>Technická inspekcia, a. s. notified body: 1354, based on the inspection results of full quality assurance system</p>		
<p>confirms, that</p>		
<p>EKIN ENDÜSTRİYEL Isıtma - Soğutma San. Tic. Ltd. Şti, Yeni Çamlıca Mahallesi Yedpa Ticaret Merkezi D Caddesi No. 35, Ümraniye - İstanbul, Türkiye</p>		
<p>has implemented and applies full quality assurance system (module H) according to Governmental Ordinance of Slovak Republic No. 576/2002 Coll. amended with Governmental Ordinance of Slovak Republic No. 329/2003 Coll. (Directive no. 97/23/EC)</p>		
<p>Scope of equipment: Plate heat exchangers for non dangerous fluids (acc. to the annex to the certificate)</p>		
<p>The fulfillment of requirements of Governmental Ordinance of Slovak Republic No. 576/2002 Coll. amended with Governmental Ordinance of Slovak Republic No. 329/2003 Coll. (Directive No. 97/23/EC) are proved by the</p>		
<p>Inspection certificate: 1397/3/2008</p>		
<p>Certificate is valid until February 15th, 2013</p>		
<p>Registration number: 1397/3/2008</p>		
<p>Bratislava, March 17th, 2008</p>		
		<p>On behalf on Technická inspekcia, a.s.</p>  <p>Ing. Dušan Konický General Director</p>
<p>068495</p>		

**СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ**



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС ТРАН50.В13224

Срок действия с 26.09.2008

по 25.09.2011

7993313

ОРГАН ПО СЕРТИФИКАЦИИ рег. № РОСС RU.0001.11АН50
ОС АВТНОМНАЯ НЕКОММЕРЧЕСКАЯ ОРГАНИЗАЦИЯ СЕРТИФИКАЦИИ ПРОДУКЦИИ
"АКАДЕММАШ"
РФ, 115404, г.Москва, 11-я Радная, 2, оф. 213, тел. (495) 775-76-60, факс (495) 775-76-60,
www.akadem mash.ru, e-mail: info@akadem mash.ru

ПРОДУКЦИЯ Теплообменники т.м. "MIT Plate Heat Exchanger" моделей: 514,
504, 502
ТУ 5281-005-48363367-2002
Серийный выпуск

КОД ОК 005 (ОКП):
36 1259

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.1.003-83; ГОСТ 12.1.012-2004; ГОСТ 12.2.003-91; ГОСТ 15518-87 (разд. 7)

КОД ТН ВЭД России:
8419 50 000 0

ИЗГОТОВИТЕЛЬ " Ekin Endustriyel Ltd. Sti. "
Yeni Camlica Mah. Saricicek Cad. No: 8 Umraniye / ISTANBUL, Турция

СЕРТИФИКАТ ВЫДАН " Ekin Endustriyel Ltd. Sti. "
Yeni Camlica Mah. Saricicek Cad. No: 8 Umraniye / ISTANBUL, Турция, тел. (+90 216) 444 35 46, факс (+90 216) 660 13 08

НА ОСНОВАНИИ протокола сертификационных испытаний № 398-103 от 26.09.2008 г. ООО
"Независимый Испытательный Центр", рег. № РОСС RU.0001.21ХТ14 от 24.05.2006, адрес: 452680, Россия,
Республика Башкортостан, г. Нефтекамск, ул. Магистральная, 19; сертификата системы менеджмента
качества ISO 9001:2000 № 3429 от 10.11.2007 г., выданного "ICS Registrars"

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Место нанесения знака соответствия: знак соответствия по
ГОСТ Р 50460-92 наносится на корпус изделия и (или) в эксплуатационную документацию
Схема сертификации 3.



Руководитель органа

Эксперт

И.Л. Еникеев

инициалы, фамилия

А.Н. Лукьянов

инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации



Plate Heat Exchangers

Instructions Book



Instruction Book

1. Construction and function

1.1 Construction	10
1.2 Function	10

2. Mounting Instructions

2.1 Lifting Instructions	11
2.2 Space Required	11
2.3 Pipe Connections	12
2.4 Correct Pipe Connections	12
2.5 Pressure Pulsations	13
2.6 Permitted Pressure	13
2.7 Excess Pressure Protector	13
2.8 Liquid Hammering	13
2.9 Shielding	13
2.10 Insulation	13

3. Start Up and Operation

3.1 Clamping Bolt Checking	14
3.2 Start Up	14
3.3 Start Up With New EPDM Gaskets	14
3.4 Stopping and Start Up Again	14
3.5 Leakage During Start Up	14
3.6 Venting	14
3.7 Operating	14
3.8 Rapid Cooling	14
3.9 Sedimentation Inside of PHE	14
3.10 Out Operation Longtime	14

4. Probable Faults

4.1 Capacity Gradients	15
4.2 Leakage	15
4.3 Non Visible Leakage	15

5. Cleaning

5.1 Impurity of Plate	16
5.2 Detergents	16
5.3 Cleaning in Place	16
5.4 Manual Cleaning	17
5.4.1 Disassembling of Heat Exchanger	17
5.4.2 Cleaning	17
5.4.3 Assembling	18
5.4.4 Clamping	18

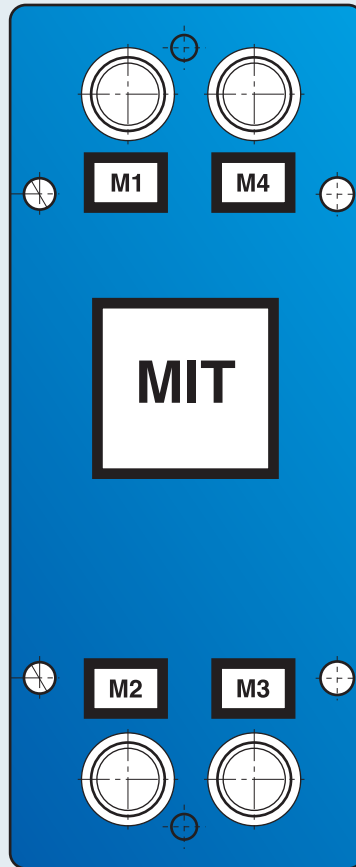
6. Replacement of Plate and Gasket

6.1 Marking	19
6.2 Mounting Plates	19
6.3 Replacement of Gaskets	19
6.3.1 Removal of Old Gaskets	20
6.3.2 Non Glued Paraclip Gaskets	20

7. Spare Part

7.1 Ordering Procedure	21
7.2 Gaskets	21
7.3 Plates	21

MIT Plate Heat Exchanger Connection Schema



HEATING SYSTEM

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

COOLING SYSTEM

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

1. Construction and Function

1.1 Construction

A plate heat exchanger consists of an edge clamped frame within which a number of cold pressed plates are compressed.

These are made with special corrugations which ensures turbulent flow and high heat transfer coefficients.

1.2 Fonksiyon

After clamping of the plate pack, the plates - which are fitted with gaskets - ensure, an effective seal between fluids and atmosphere. In addition, intermixing of the fluids is eliminated by a double gasket seal around the inlet ports. Every second plate is turned through 180 degrees. This means that the double gasket seal occurs around every second inlet to the channels between the plates.

The plate pack now forms a series of paralel flow channels in which the fluids flow in a counter current regime.

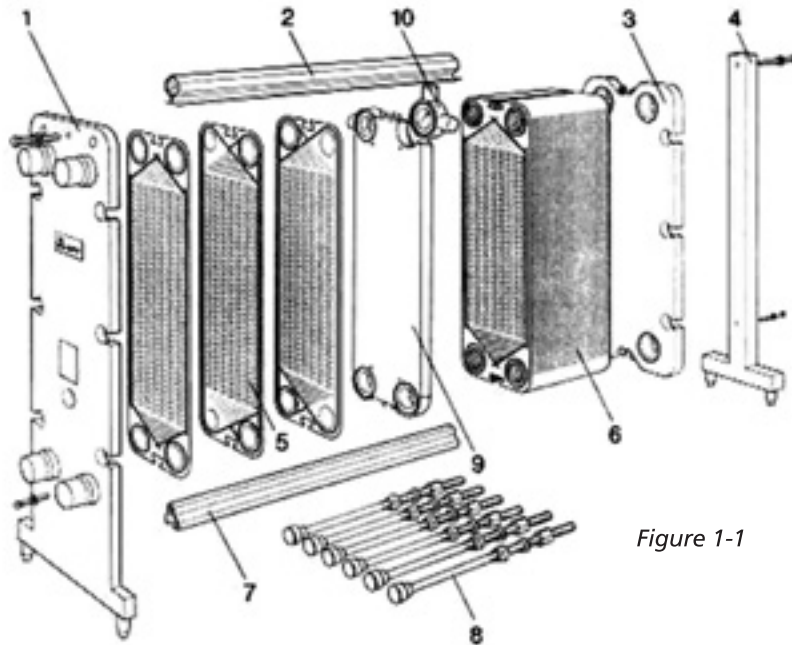


Figure 1-1

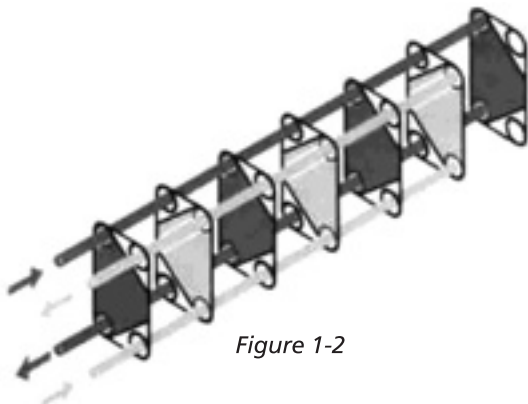


Figure 1-2



Figure 1-3



Figure 1-4

2. Mounting Instruction

2.1 Lifting Instruction

Lifting By Using Lifting Holes

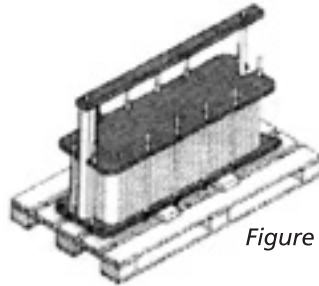


Figure 2-1

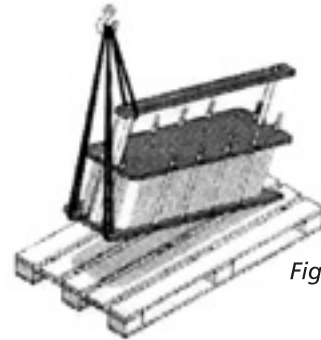


Figure 2-2

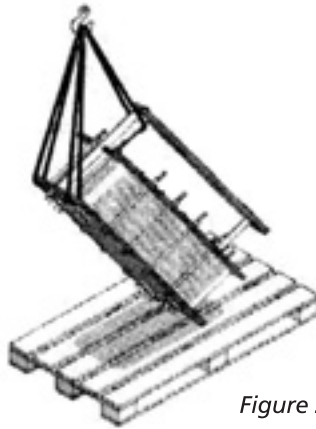


Figure 2-3

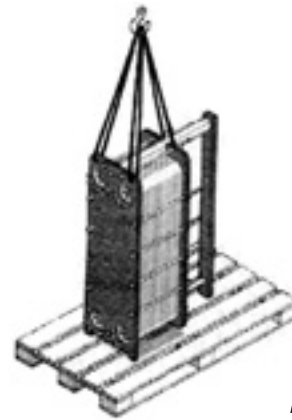


Figure 2-4

Lifting By Unusing Lifting Holes



Figure 2-5

2.2 Space Required

On at least one side of the plate heat exchanger there must be sufficient space to unhook the plates from the top bar by a slight tilt away from the vertical. At the same time it must be possible to tighten or remove the tie bolts and inspect the plate heat exchanger. It must be possible to take off the spray screen or insulating jacket, if any, without having necessarily to remove the connecting pipes. This must be considered when installing the unit. All engagements

are carried in a straight pipe section without thermometer, manometer or draw off taps at a distance of 100 mm from the unit (more in case of increased insulating thickness). The distance to finish-insulated pipes should be 100 mm from the insulating jacket/ spray screen. The follower must be free to move along the full length of the top bar. See dimensions for exactly your plate heat exchanger at the back of this manual.

2.3 Pipe Connections

The plate heat exchanger must be connected up according to the enclosed assembly drawing.

Threaded connections should be mounted with unions or flanges with plane tightening to facilitate removal - alternatively with conical tightening connected to bends.

Flanged connections must be removable. Fig.12 shows a correctly connected unit. If necessary, a suitable filter should be installed on the fluid inlet.

Insulating valves are also recommended on all connections. Thermometers, pressure gauges etc. should be used as required for monitoring the plate heat exchanger performance.

2.4. Correct Pipe Mounting

To prevent undue strain on the plate heat exchanger frame, all pipes must be unloaded by suitable pipe holders. The pipe joints on the follower (FOLL.) 1 and 2 must be removable in order to enable the plate heat exchanger to be opened for cleaning and inspection. For re-tightening of the plate pack, the pipes onto the follower and any connector grids must be flexible. This can be achieved by the use of expansion joints.

During opening, it must be possible to move the follower 3, without hindrance, along the full length of the top bar. For CIP (cleaning in place), without opening, piping material and layout must be chosen accordingly.

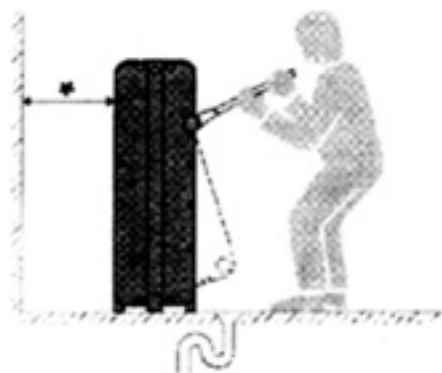


Figure 2-6

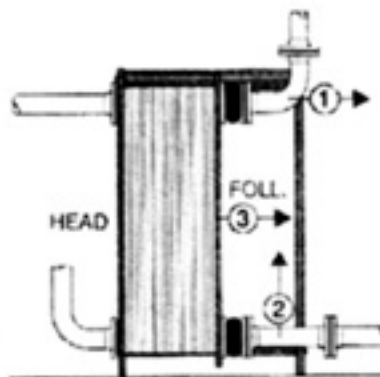


Figure 2-7

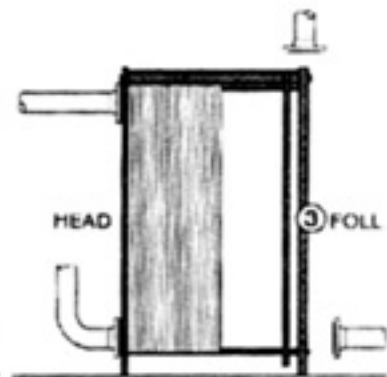


Figure 2-8

2.5 Pressure pulsations

Piston pumps, gear pumps, dosing devices etc. must not be able to transfer pressure pulsations /vibrations to the plate heat exchanger as this may cause fatigue fracture in the plates.

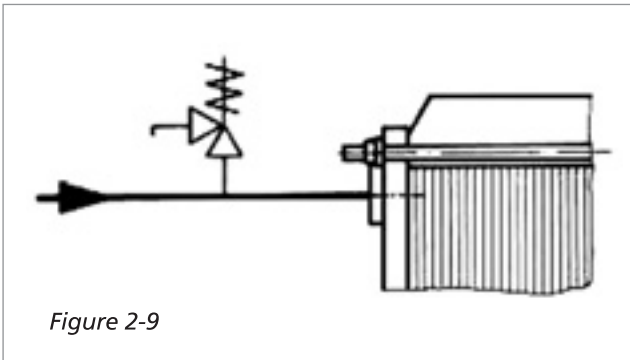
2.6 Permtted Pressure

Working, and testing pressures are given on the machine plate.

WORKING PRESSURE = the highest pressure to which the plate heat exchanger may be subjected during operation!

TESTING PRESSURE = the pressure at which the plate heat exchanger may be tested!

Pressure testing is made as a differential pressure i.e. warm and cold side separately. For plate heat exchangers with several sections, the stated working, testing, and differential pressures only apply if all sections are pressurised. If each section operates at different pressures, or one of the sections is not under pressure, leaks may occur in the lower pressure section.



The maximum permissible difference in pressure between two sections separated by a connector grid or a separating plate is in general 6 kp/cm². If the two sections are not equal in size, the permissible difference is reduced. The maximum difference in pressure depends on the number of plates in the other section/s.

2.7 Excess Pressure Protector

Excess pressure protector must always be mounted, if the plant is likely to develop a higher pressure than that stated on the machine plate. This condition may arise during pump start up, expansion or valve change-over etc.

2.8 Liquid Hammering

The plate heat exchanger is sensitive to liquid hammering. This can occur during regulation, change-over, pump start-up etc., In order to avoid this situation, the use of throttling of air-operated valves, damping relays in electrical control gear, automatic pump start with closed valves etc. is recommended.

2.9 Shielding

The plate pack must be shielded, when:

- possible splashes may cause damage
- corrosive media are being used
- the working temperature may cause scalding
- required by the local authorities

2.10 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.



3. Start Up and Operation

3.1. Clamping Bolt Checking

Before the initial start-up check that the clamped plate pack dimensions is as specified on the machine plate on the plate heat exchanger.

3.2. Start Up

Sudden surges and drops in pressure and temperature must be avoided, as these may damage the plates and gaskets thereby causing leakage. Pumps should be started against closed valves which can then be gradually opened until the desired flow rate is achieved.

In a plate heat exchanger using steam as the heating media, the cold fluid should be introduced to plate heat exchanger before the steam is turned on. the potential damage possible due to the incorrect start up increases proportionally with increased liquid flows and the length of connecting pipework!

3.3. Start Up With New EPDM Gaskets

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.

3.4. Stopping 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 degree per minutes

3.5. 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.

3.6. 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!

3.7. 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!

3.8. Rapid Cooling

Rapid cooling of system should be avoided. cooling and pressure should be dropped together.

3.9. 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.

3.10. Out Operation Longtime

If the plate heat exchanger is out of operation for a long time, it is advisable to empty it, separate the plates, and clean the unit. Clamp the plate heat exchanger lightly together, and leave it covered in order to protect the gaskets against dirt and the effect of light!

4. Probable Faults

4.1. Capacity Gradients

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.

4.2. Leakage

- If the pressure is too high, Reduce the pressure to the correct working pressure, which can be found on the machine plate.
- If Insufficient tightening occurs, Tighten up the plate heat exchanger. however, not below the minimum dimensions and never, when the plate heat exchanger is under pressure or over 40°C.
- If Fouled or deformed plates Inelastic or deformed gaskets occurs, Separate the plate heat exchanger and check if the plates are deformed or fouled. Check that the gaskets are elastic and nondeformed, and that the faces of the joints are clean. Replace deformed plates and gaskets, Before assembling, clean all plates and gaskets very carefully .Assemble the plate heat exchanger and start it up again.

Note!!! Even tiny impurities such as sand grains may cause leakage.

- If leakage occurs even after tightening of the plate heat exchanger to minimum dimension, Separate the plate heat exchanger. Clean the plates very carefully Replace the gaskets. Assemble the plate heat exchanger and start it up again.

- If leakage occurs through drain holes of the gaskets, reason could be defective gasket pr badly corroded plate then Separate the plate heat exchanger, Replace defective plates and gaskets, if Any, Assemble the plate heat exchanger and start it up again.

4.3. 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:

- Remove one of the lower pipe connections.
- Then put the opposite side under pressure.
- If the medium continues to run out of the lower pipe connections - after the pressure has stabilised
- one or several plates are leaking.
- Close down the plate heat exchanger.
- Separate the plate heat exchanger and check the plates very carefully.
- Check suspected plates with a dye penetrant.
- Check defective plates and gaskets, see ordering

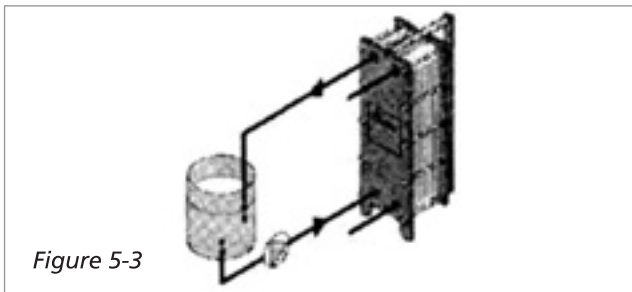
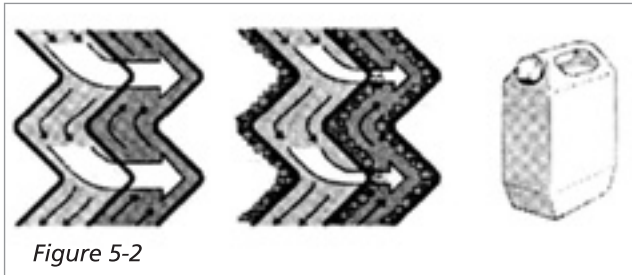
Procedure.

- Before assembling, clean all plates and gaskets
- Assemble the plate heat exchanger and check to find more defective plates, if any, by putting one side under pressure.
- Start up again.

5. Cleaning

5.1. Impurity of Plate

The capacities and resistance to corrosion of plate heat exchangers depend on the plate pack being kept clean. Fouling on the plates can be removed manually or by CIP (cleaning in place).



5.2. Detergents

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. Mobisol 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 litre 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 litre 62% HNO₃ per 100 litres water. Nitric acid has an important constructive effect on the passivating film of stainless steel.

5.3. Cleaning in Place

A circulation system, in which a suitable detergent can be circulated is established. If the product to be flushed out has a high viscosity, the circulating quantity must be big enough to reach a sufficient speed for flushing out the product. If the product pump is volumetric, it may be necessary to insert a pump for the detergent parallel to the former. It is assumed that the fouling on the plates are soluble in a detergent which does not attack plates and gaskets.

Example of CIP-cleaning:

- Drain off product residues and cooling and heating media.
- Rinse with cold or lukewarm water.
- Circulate with warm cleaning fluid solution.
- Rinse with warm water. Rinse with warm water with softener added to it.
- Rinse with cold or lukewarm water.

Cleaning can also be effected without circulation by pouring a cleaning fluid solution into the system.

After some time of standing, wash out the detergent with clean water.

5.4. Manual Cleaning

5.4.1. Disassembling of Heat Exchanger

Before opening the plate heat exchanger, it must be cooled down to below 40°C (104°F), and it must not be pressurised! Cooling must not exceed 10°C per minute. The pressure drop must not exceed 10 bar per minute.

On completion of the procedure, separate the frame by keeping two, perhaps four diagonally placed tie bolts clamped. Dismount the rest of the tie bolts.

5.4.2. Cleaning

Clean the plates with a soft brush and a suitable detergent (section 5.4). In case of thick layers of scale or organic materials, the plates must be put in a bath of detergent (section 5.5). NOTE.. Never use steel brush, metal scraper or the like.

A high-pressure cleaner can be used with care - however, never with sand or other abrasives added.

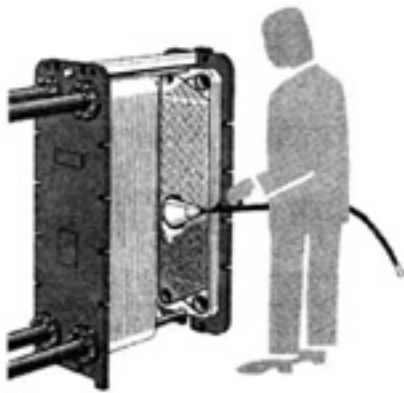


Figure 5-4

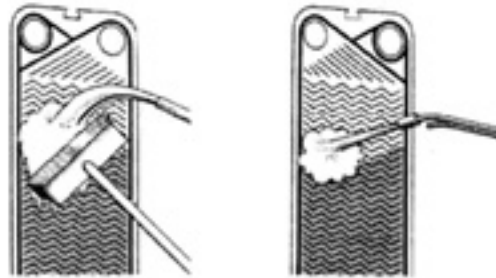


Figure 5-5

5.4.3. Assembling

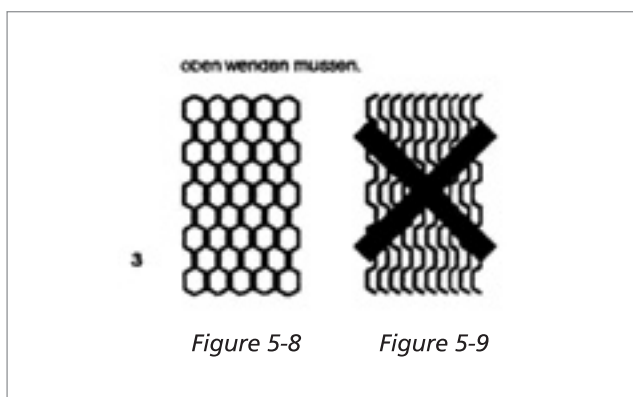
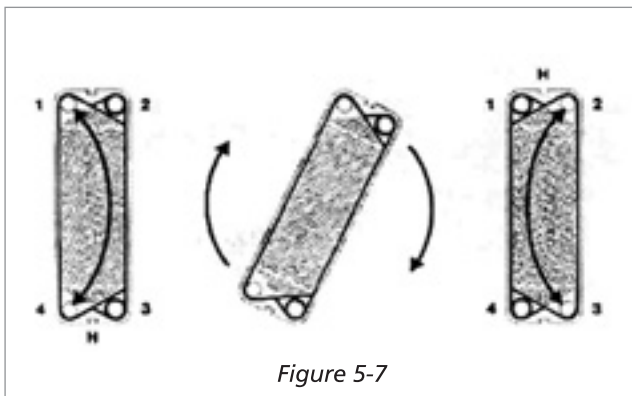
Controlling of plates and gaskets

Every each one of plates and gaskets must be controled 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 plates have been dismantled, they must be correctly inserted. Every second plate is turned through 180 degrees. (scheme 5-7) This means that the double gasket seal occurs around every second inlet to the channels between the plates. The plates of multipass heat exchangers have serial number. If plates are mounted correctly they will have honeycomb appearance. (scheme 5-8)

If One plate or more than one plate is mounted uncorrectly, appearance will be like (scheme 5-9).



Clamping

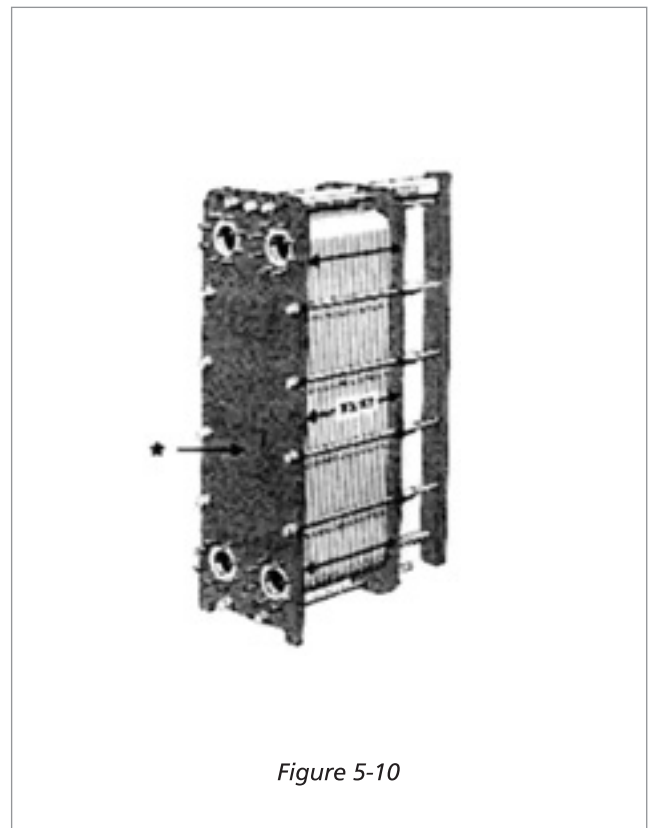
The maximum and minimum dimension for clamping is stated on the machine plate, which is placed on the head.

The plate heat exchanger must be clamped to dimension between max. and min. dimension. The final clamping to minimum dimension is recommended after approx. one month's operation - alternatively, immediately after installing new plate heat exchangers/new gaskets.

New gaskets in EPDM quality are clamped step-wise the first time:

1. Minimum dimension +15% - 2 hours' interval or more.
2. Minimum dimension +7.5% - 12 hours' interval or more.
3. A dimension between max. and min. dimension as stated on the machine plate, alternatively min. dimension.

The head and the follower must be exactly parallel. Therefore, clamping must be measured at the top, in the middle, and the bottom on both sides.



6. Replacement of Plate and Gasket

6.1. Marking

The plates are marked with material codes and reference number plus codes for non-glue gasket, if any, and also have the letter M (Scheme 6-1).

Looking towards the gasket side, the plate is designated a right plate when the M is upwards and a left plate when the M is downward.

Left plates have inlet and outlet via corner holes 1 and 4, respectively

Right plates have inlet and outlet via corner holes 2 and 3, respectively.

6.2. Mounting Plates

Before inserting a spare plate in the plate pack, it must be checked that the spare plate is identical with the defective plate - the same corner holes open, and the mark M must face right. A defective 4-hole plate can be removed from the plate pack without inserting a spare plate, if the adjoining 4-hole plate is also removed. The new number of plates will then be $S-2$. This changes the clamping measure of the plate pack to M1 which will be:

$$\frac{M1}{S} = M (S-2)$$

M = The original clamping dimension stated on the machine plate.

S = The original number of plates in the plate pack.

The transmission area of the plate heat exchanger is reduced in relation to the original number of plates. At the same time, the pressure drop will increase. More transmission area is able to possible with addition plates.

6.3. replacement of gaskets

You should carefully note how the old gaskets are assembled before removing them! The first plate after the head and the connector grid must have a gasket in all grooves.

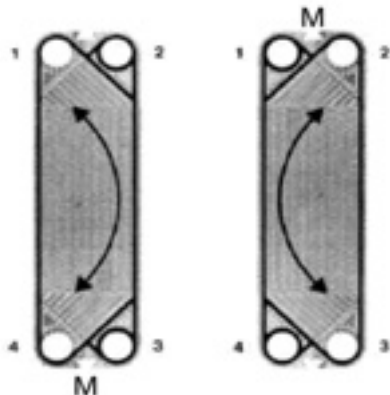
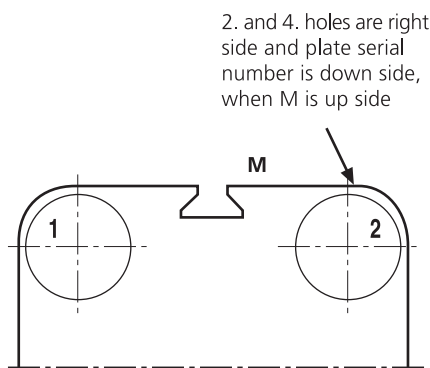


Figure 6-1

6.3.1. Removal of Old Gaskets

PLIOBOND glued gaskets can be loosened by heating in water at 100°C (212°F). The plates are cleaned, and coatings, if any, are removed.

Cleaning

New gaskets and the gasket grooves of the plates are cleaned with a cloth moistened with degreasing agent. The gluing surfaces must be absolutely clean without finger prints etc.

As degreasing agent use what is stated on the enclosed diagram.

Alternatively, use:

TRICHLOROETHYLENE, CHLOROTHENE, VG, ACETONE, METHYL ETHYL KETONE or ETHYL ACETATE.

It is important that all the degreasing agent has evaporated, before the glue is applied. This will normally take approx. 15 min. At 20°C (68°F). It is advisable to clean the gluing surfaces of the gaskets with finegrain sandpaper instead of degreasing agent.



Gluing

PLIOBOND 25, which is a nitrile rubber glue on solvent basis (25% solids), is applied with a brush in a thin layer on the backs of the gaskets. The gaskets are put to dry in a clean and dust free place! The gasket grooves of the plates are now coated with a thin layer of glue, and the gaskets are cemented into the grooves. The insertion of gaskets starts at both ends of the plate - and continues with the straight sections along the edges.

The gluing process is most easily effected by laying the gaskets and the plates on a table - as the gaskets are cemented into the grooves of the plates, the plates should be stacked. The plates with the gaskets are now suspended in the frame which is clamped lightly, for rubber gaskets e.g. to the minimum dimension indicated on the machine plate plus 0.2 mm per plate.

The plate heat exchanger is heated to 90-100°C (194-212°F) by means of water or steam -the temperature must be kept for 1½ - 2 hours! The liquid pressure must be kept as low as possible. On plate heat exchangers for food, pipe branches which are not connected to water / steam must be kept free, in order to permit glue vapours to escape! If there is no possibility of heating the plate heat exchanger, it must stand at a place as warm as possible with dismantled connections.

The drying time will at 20°C (68°F) be approx. 48 hours. At e.g. 40°C (104°F), the drying time is reduced to approx. 24 hours.

6.3.2. non glued paraclip gaskets

PARACLIP is a non-glue gasket designed as a conventional gasket. It is designed with a special clip-on feature which locks it into recesses in the gasket groove on the plate. When replacing PARACLIP gaskets, the old gasket is removed completely. Before fitting the new PARACLIP gasket, check that the plate gasket groove is clean and free from residual rubber, particularly in the clip-on pockets. New gaskets can be fitted without using tools.

7. Spare Part

7.1. Ordering Procedure

When ordering plates, please state the serial numbers of the plates and the type and serial number of the plate heat exchanger. The type and serial number of the plate heat exchanger can be taken from the machine plate!

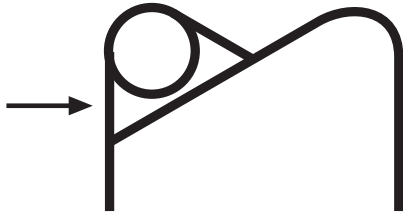
7.2. Gaskets

Ordering such as any complete set of gaskets

Good Code:

- quality of gasket and colour shall be indicated.
- code number of gaske should be indicated close its colour sign

NBR (Nitrile)	EPDM	FPM	CR (Chloroprene)
Mavi	Gri	Mor	Yeşil
Blue or none	Grey	Violet	Green



7.3.plates

Plates can be supply gasketed. Before inserting a spare plate in the plate pack, it must be checked that the spare plate is identical with the defective plate - the same corner holes must open. In case of Mutipass plates, serial number stamped on the plate.

When ordering plates, space plates or in case of multipass units, plates serial number must be stated.

The reasons of corrosion, aging, breakings all plate must be replaced.

Order example of a complete set of plate:

1 complete set of plates with glued on gaskets - plate heat exchanger type - serial number 66447.

Good code:

Codes of plates good are indicated on plates.

AISI 304	A
AISI 316	B
TITANIUM	T
HASTELLOY C 276	Z
AVESTA 254 SMO	Y

Professional System Solution Center

You can take assistance about problems you have from MIT Plate Heat Exchanger Solution Center. Our solution center having qualified mechanical engineers will be happy to help you.

These are some of the subjects that we can happily help you;

Steam installations

- Utility hot water installations
- Central and local heating systems
- Milk, yogurt, airan heating, cooling and pasteurization
- Industrial heating and cooling systems
- Oil cooling installations
- Energy recycle systems
- Pool heating systems

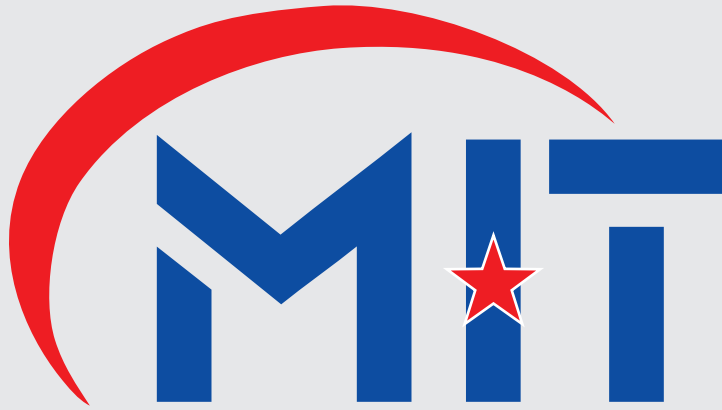


0216 444 35 46

In Plate Heat Exchanger systems, it is vital to setup the system correctly to get the desired capacity. That is why, when you setup your system you can take needed assistance from first hand just using a phone **(+90 216 444 35 46)** for 7 days and 24 hours.

To make your system and heat exchangers work correct and full performance, we want to share the information we've had through the long years. It really is a big happiness for us.

We want to emphasize that again and again. Ekin Endüstriyel will continue being the best solution partner in every place where heat exchanger is used.



You are in exact point where quality,
experience and technology meet

Our Quality Certificates





Ekin Endüstriyel Isıtma-Soğutma San. Tic. Ltd. Şti.

DES San. Sit. 117. Sok. C24 Blok No:5

Y.Dudullu / Ümraniye / İstanbul / Turkey

Phone: +90 216 444 35 46

Fax : +90 216 660 13 08

E-mail: info@mit-phe.com - info@ekinendustriyel.com

Web : www.mit-phe.com - www.ekinendustriyel.com