

EURO HEAT – manufacturer of plate heat exchangers

OPERATION MANUAL

- TR 100 , TR 200 , S 200 , S 300 , S 400 –



EURO HEAT

P H E

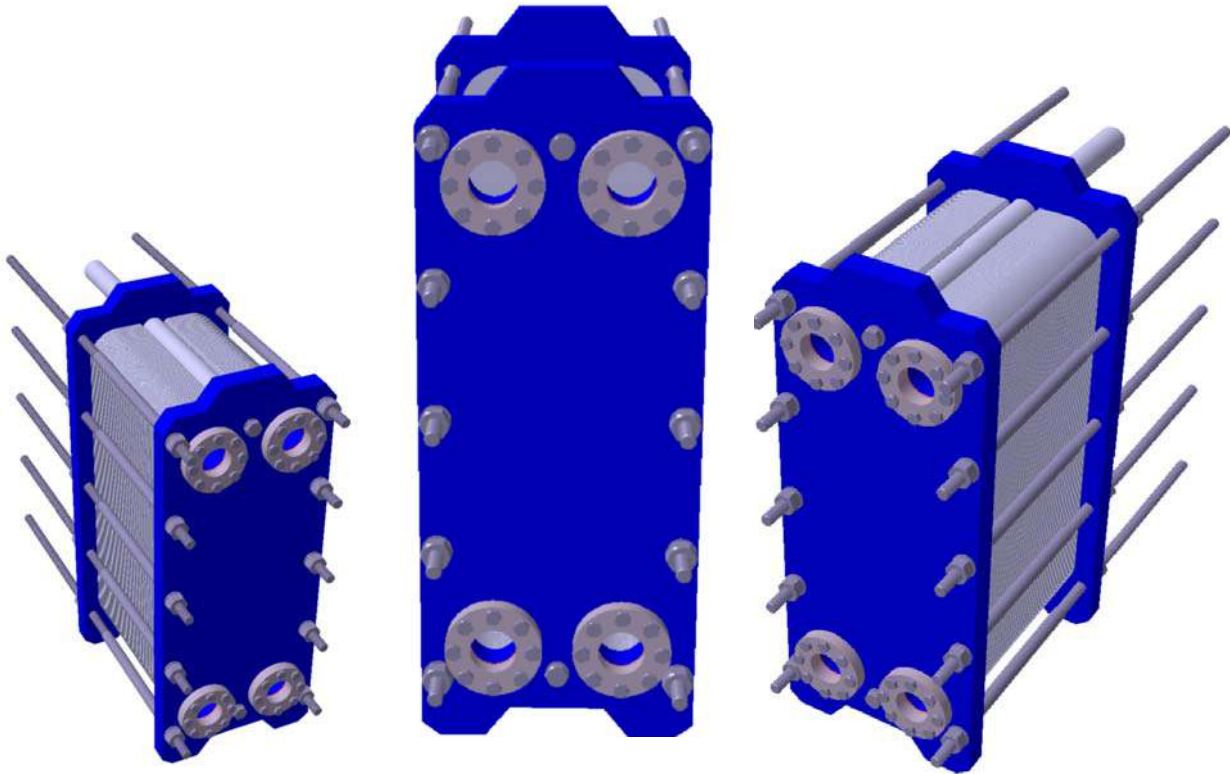


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1.0 GENERAL

MANUFACTURER INFORMATION



EURO HEAT
P H E

- MANUFACTURER OF PLEAT HEAT EXCHANGERS

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1.1 USER INFORMATION

Information in this manual refer to the standard products of EURO HEAT PHE.

Please always follow the indications given in this manual.

Only authorized and qualified personal is allowed to perform tasks of setting up, putting into operation and maintenance of brazed heat exchanger.

Users are obliged to fulfill requirements of all national (international) regulations and standards regarding the equipment under pressure, storage and transportation of hazardous liquids and gases (if such are use in the heat exchanger).

Explanations and instructions that must be met in order to avoid damage to the system and injuries of working personel are marked with red triangles



Explanations and instructions that must be met to ensure the correct and undisturbed work of heat exchangers are marked with yellow triangle



If you need to make any modifications to the installation that heat exchanger is associated with, do it according to this guide. In case that the guide notes are not related to specific modifications or if explanation is not enough, contact the manufacturer, EURO HEAT PHE, before the starting any modifications.


1.2 APLICATION OF GASKET HEAT EXCHANGERS

EURO HEAT brazed heat exchanger are designed to meet specific requirements (operating temperature, operating pressure, volumetric flow) set by the customer. Exchanger are made in accordance with the European standard EC-PED 97/23.

In the case of any changes in the operating conditions that deviate from the conditions specified when ordering heat exchanger, it is necessary to contact EURO HEAT and get written approval that heat exchanger can be used in the changed working conditions.

1.3 IDENTIFICATION / NAME PLATE

Each heat exchanger from EURO HEAT is supplied with the identification tablet positioned on front of the exchanger. On the tablet are basic information about heat exchanger. Take care that tablet is always accessible and that data on tablet can always be read.

	PROIZVODNJA PLOCASTIH IZMENJIVACA I PASTERIZATORA KRAGUJEVAC, ATINSKA 101, 034 345 055 www.euroheatphe.com – office@euroheat.co.rs
Type	<input type="text"/>
Serial no.	<input type="text"/>
Year of manufactory	<input type="text"/>
Capacity	<input type="text"/>
Primary temperature	<input type="text"/>
Secondary temperature	<input type="text"/>
Working pressure	<input type="text"/>
Testing pressure	<input type="text"/>

1.4 BASIC SAFETY INSTRUCTIONS



Plate heat exchanger are devices that operates under relatively high pressure and therefore must set up, putt into operation and maintained by qualified personal.

National and international regulations (eg the European standard EC PED 97/23/EG) that are related to the pressure equipment, transport and use of hazardous liquids and gases as well as regulations concerning safety must be respected.

Do not take any modifications or reparations of the heat exchanger when the heat exchanger is under pressure and the temperature of the heat exchanger is not under 40°C.

If the working temperature of heat exchanger exceeds 90° C it is necessary to provide some sort of protection (not supplied with the heat exchanger), so that contact with the hot surface can be avoided and possible injuries of working staff prevented.

Due to the existence of high pressure it is recomented to use a safety valves (not supplied with the heat exchanger) so that heat exchanger can be protected from unplanned increase of working pressure.

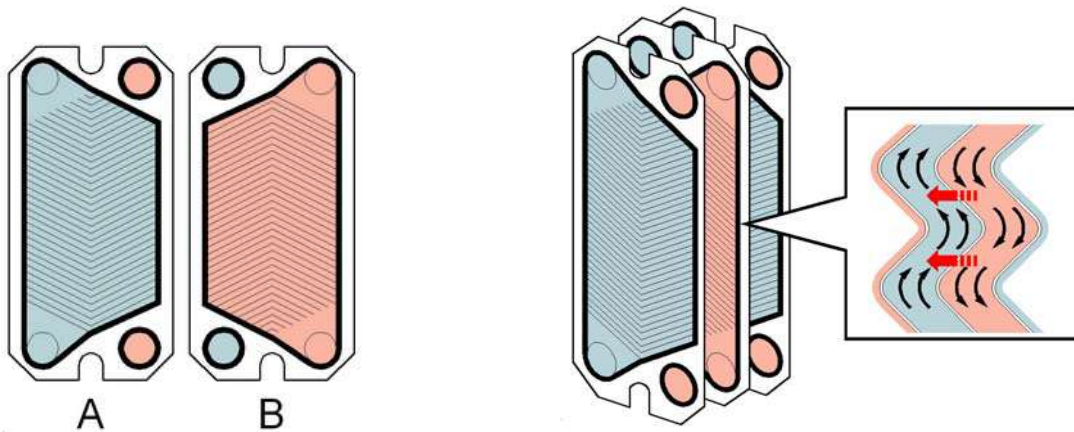
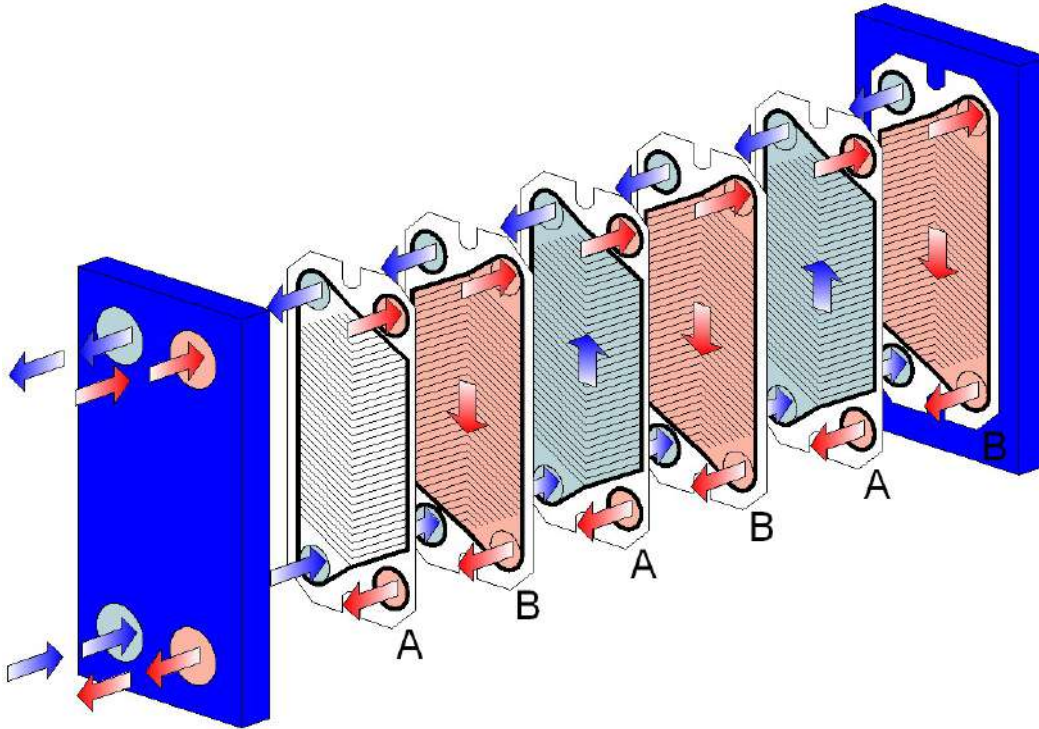
2.0 HOW DOES GASKET HEAT EXCHANGER WORK

Plate heat exchanger consists of a number of embossed metal plates with openings for the passage of two fluid between which heat transfer is performed.

Internal plates are placed between the front and rear frame plate and tighten using tightening bolts. Internal plates are embossed in such way to increase the area of heat transfer and also encourage turbulent flow of the working fluids. Embossenemt of internal plates also protects

plates from possible deformations that can hapen due to pressure differences of hot and cold side of heat exchanger.

Between internal plates are gaskets wich serve to seal channels and direct working fluids in alternate channels. Gaskets are constructed in such way so that in case of gasket failure and leakage of working fluid there is no possibility of mixing fluids.

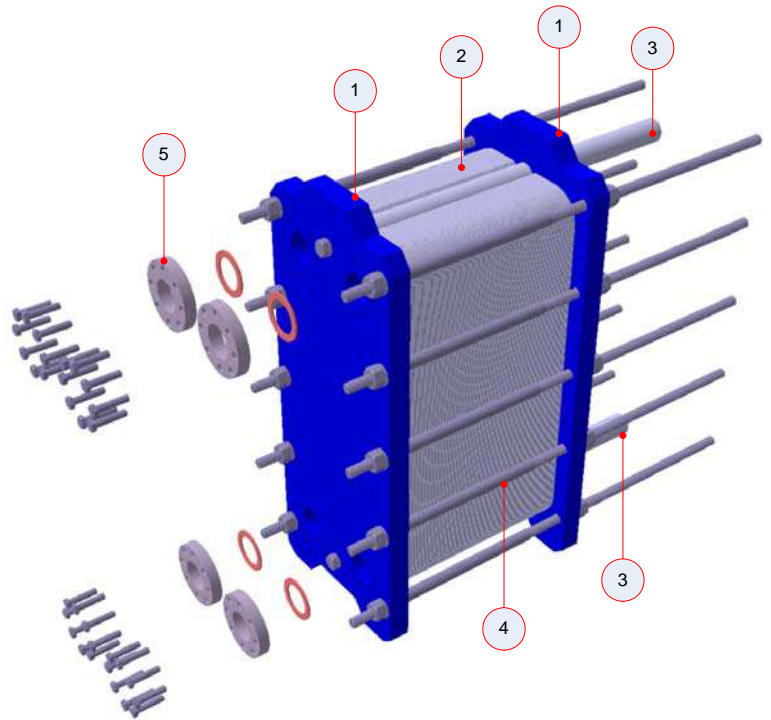


"A plate" is a plate hanging with the chevron pointing downwards

"B plate" is a plate hanging with the chevron pointing upwards

3.0 DESIGN – MAIN COMPONENTS

1	FRAME PLATE
2	INTERNAL PLATES
3	GUIDE BAR
4	TIGHTENING BOLT
5	FLANGE



4.0 TRANSPORT, HANDLING AND INSTALATION

4.1 TRANSPORT

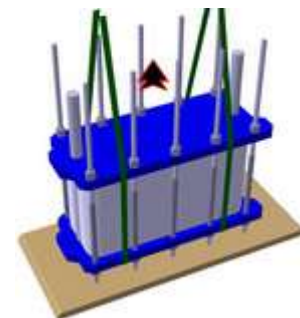
Heat exchanger types TR 100, TR 200, S 200, S 300 and S 400 are usually transported positioned on the front side of the set pallet (as shown in Figure 2). During the unloading, moving and lifting up of heat exchanger pay attention to security measures.

4.2 UNLOADING AND RAISING OF HEAT EXCHANGER

1 set two wooden beams on floor



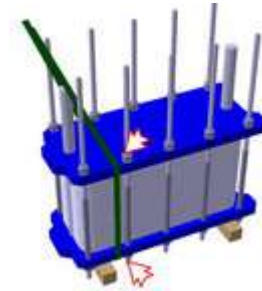
2 lift the heat exchanger off pallet using e.g. straps.



3 place the heat exchanger on the timber beams.



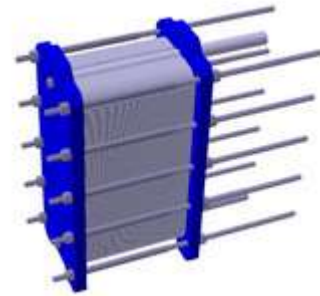
4 set the lifting straps around tightening bolts from the front side



5 lift the heat exchanger off the timber beams.



6 lower the heat exchanger to horizontal position and place it on the floor.

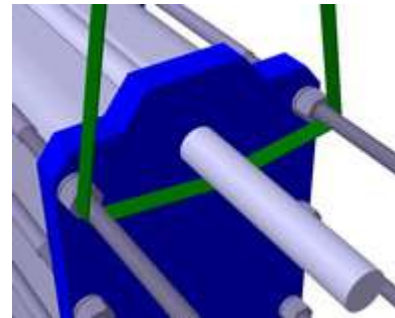
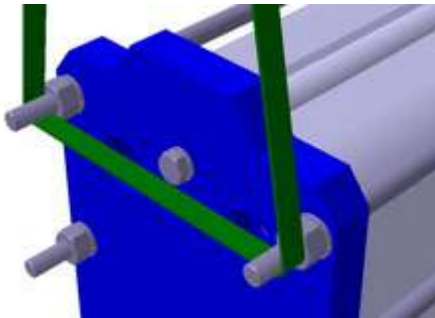


4.3 LIFTING OF HEAT EXCHANGER



Never use the ports or flanges when you lifting up heat exchanger

Straps should be used when lifting. Place straps according to picture.



4.4 INSALLATION - REQUIREMENTS

FREE SPACE

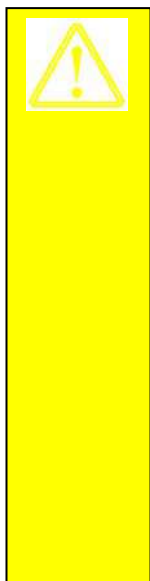
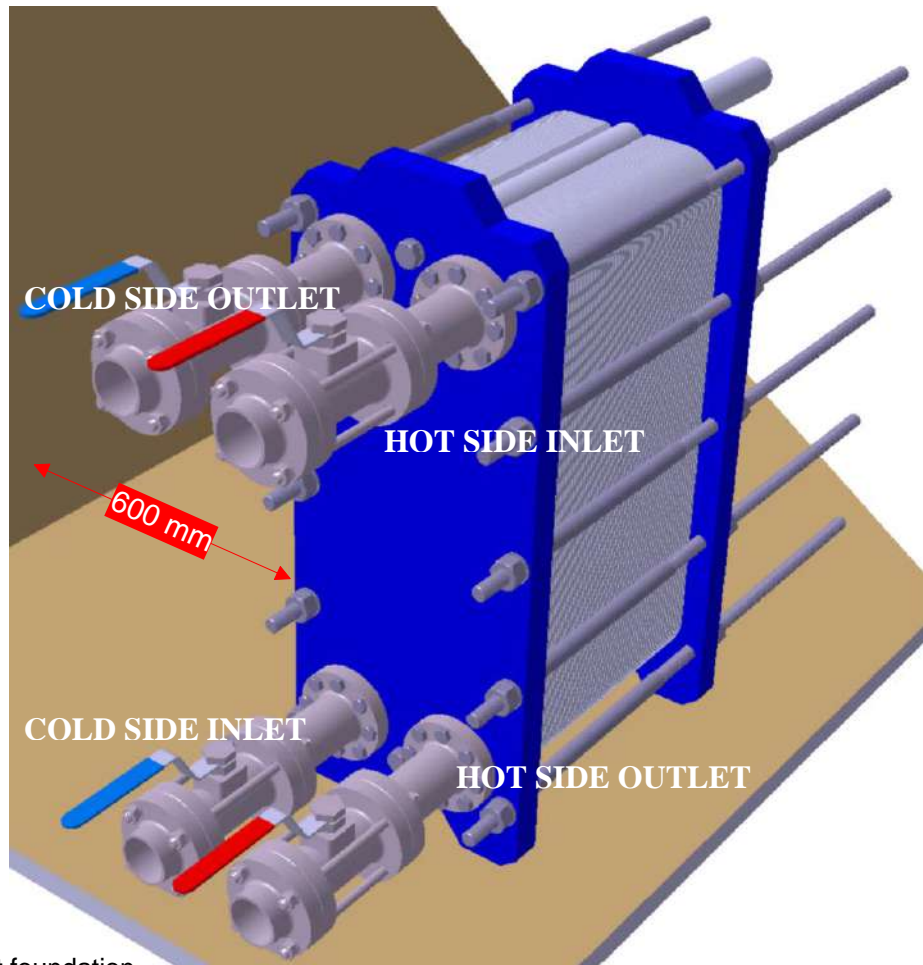
It is necessary to leave a minimum of 600 mm free space between exchanger and walls to allow access to the heat exchanger for purpose of regular control and maintenance service as well as possible interventions.

SHUT-OFF VALVE

Shoot-off must be on the hot and coold side of the heat exchanger, in order to make maintenance and servicing of the exchanger possible.

FOUNDATION

Install heat exchanger on a flat foundation.



- ❖ Before connecting heat exchanger to the pipeline check that there is no a foreign object in side of it.
- ❖ When connecting the pipe system make sure the pipes do not subject the plate heat exchanger to stress or strain.
- ❖ To avoid water hammer, do not use fastclosing valves.



- ❖ Safety valves should be installed according to current pressure vessel regulations.
- ❖ If heat exchanger surface temperature is expected to be hot or cold, the heat exchanger should be isolated.
- ❖ For each model, design pressures and temperatures are marked on the identification plate. Those must not be exceeded.

5.0 START-UP, OPERATION AND SHUTTING DOWN

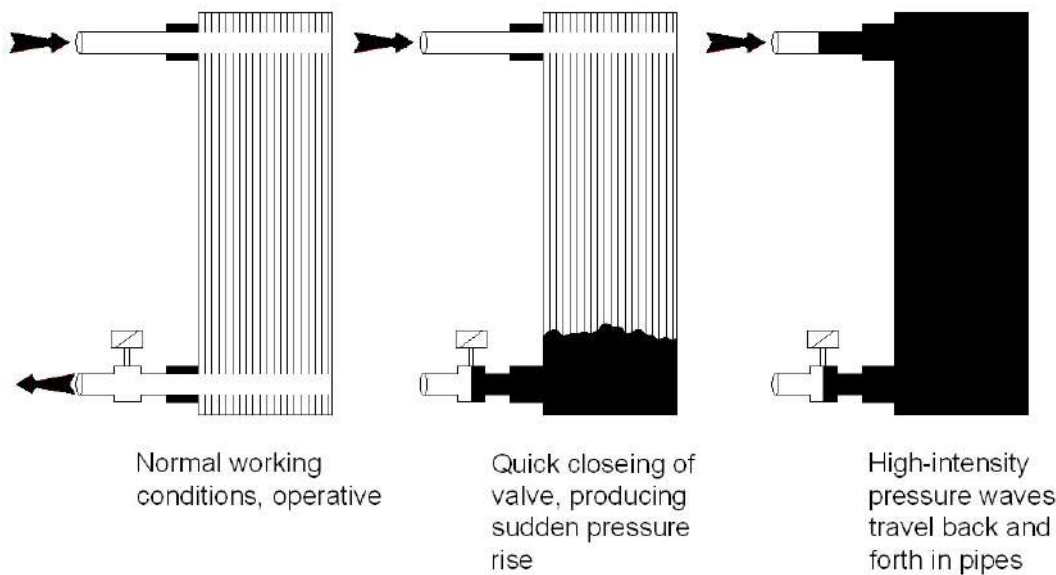
5.1 STARTING UP



If several pumps are included in the system, make sure you know which one should be opened first.

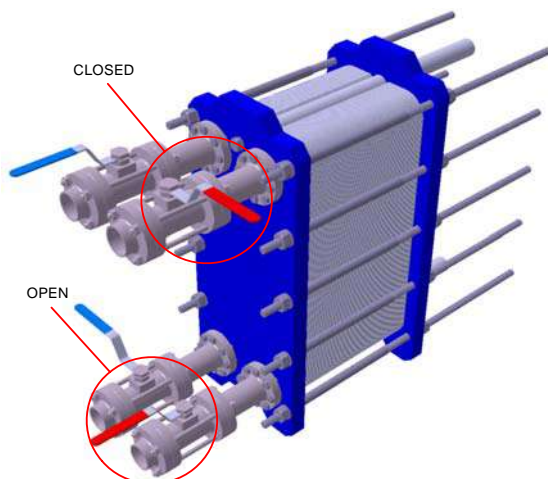


Setting the flow should be done slowly to avoid the risk of the occurrence of **water hammer**. Sudden changes in velocity of noncompressible fluid (like water) can cause the appearance of water hammer, the occurrence of which could seriously damage the pipes, valves, heat exchanger and other system components. The most common cause of water hammer is quick closing of the valves. Sudden interruptions of fluid flow leads to a multiple increase in pressure in relation to the normal operating pressure. Wave of very high pressure moves through the pipes back and forth between the closure and relief points. At a relief point of the system velocities pressure wave can reach speeds approximate to the speed of sound.



Shock wave created in this way can create significant damage because it causes alternately expands and contracts of pipe lines. In gasket heat exchanger, water hammer can cause popup of gaskets and large deformations of internal plates, which will result in leakage of working fluid. An air chamber or water hammer arrestor can avoid or eliminate these problems. Valves with controlled closing time can also be used to avoid danger of water hammer.

- 1 check that the valve is closed between the pump and the unit controlling the system flowrate.

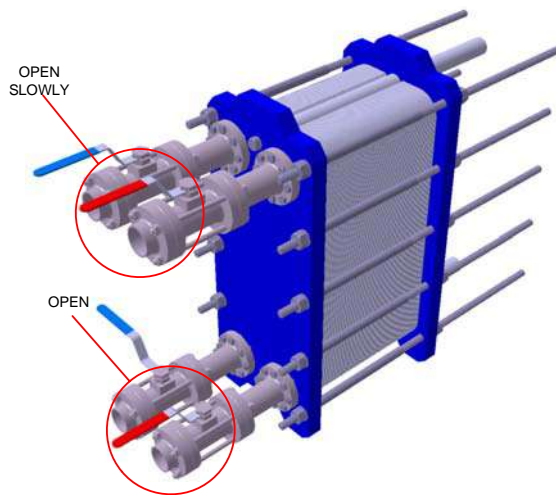


- 2 check if air valve (not supplied with the exchanger) is fully open.

- 3 open air valve and start the pump

4 slowly open shut-off valve

5 When all air is out, close the valve



6 repeat steps from 1 to 5 on cold side of heat exchanger

5.2 OPERATION



Adjustments of flowrates should be made slowly in order to protect the system against sudden and extreme variations of temperature and pressure.

During operation, check that

- 1 media temperatures and pressures are within the limits stated on the identification tablet
- 2 no leakages appear due to faulty tightening of the plate pack or to defective or damaged gaskets
- 3 the bolts are kept clean and greased.

If there are any problems contact person who has set and putting in the heat exchanger in the heat exchanger to contact the person that installed heat exchanger or directly manufacturer exchanger „EURO HEAT“.

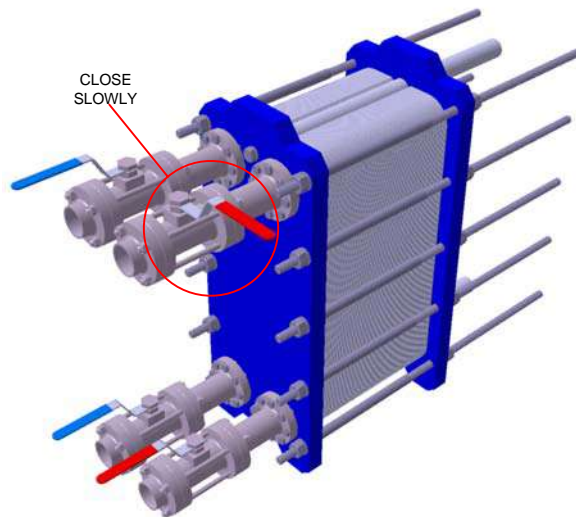
5.3 SHUTTING DOWN



If several pumps are included in the system, make sure you know which one should be stopped first.

① stop the pump

② slowly close shut-off valve



③ repeat steps from ① to ② on cold side of heat exchanger