

# Manual Plate Heat Exchangers

Type L / M / H

**multichannel**



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### Introduction

Multichannel Brazed Plate Heat Exchangers are available in four sizes, with the designations of 29 and 59

The plates are made of stainless steel, moulded into different kinds of fishbone patterns. Copper 99,9% is used as soldering material.

When assembling, every second plate is turned 180°, which creates two separate channels where the agents flow in opposite directions.

The connections are available threaded (G) or soldered (L)

### Fields of application

Our plate heat exchangers have a wide field of applications for both gaseous and fluid agents.

- Evaporator / condenser.
- Heat exchangers.
- District cooling and District heating.
- Economizer.
- Oil cooler and Desuperheater.
- Industrial processes.

All models can be furnished with a diffusion proof insulation of polyurethane foam.

This insulation is fixed and not removable. Agents being aggressive to copper or stainless steel must not be used in the heat exchangers, e.g. ammonium hydrate and water mixtures based on sodium chlorides.

### Manufacturer's label

Gives the following information:

**Model description:** (M-29-30-LG)

**M**= Kind of pattern

Design temperature TS in °C

**29**= Size

Design pressure PS in bar

**30**= Number of plates

Test pressure PT in bar

**LG**= Kind of connections

Volume in l, secondary/primary.

Manufacturing number.

Fluid group 1 or 2

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Below we have described all sizes with the above mentioned information, giving **minimum** and **maximum** values for each model/number of plates. We refer to the **manufacturer's label** and the stated values which should not be exceeded.

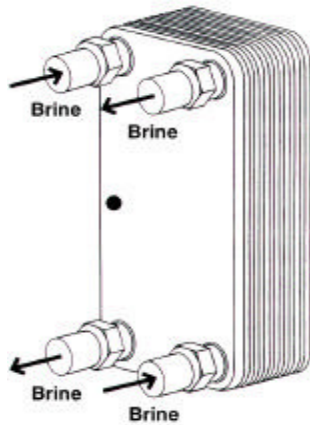
Model	Number of plates		Volume l, secondary		Volume l, primary	
	Min	Max	Min	Max	Min	Max
<b>29</b>	10	100	0,48	5,88	0,6	6,0
<b>59</b>	30	120	3,36	14,2	3,6	14,4

TS °C	PS, bar	PT, bar	PS,bar	PT, bar
	<b>29</b>	<b>29</b>	<b>59</b>	<b>59</b>
-195/90	-1/45	64	-1/40	58
-195/125	-1/43	62	-1/39	56
-195/225	-1/35	50	-1/32	46

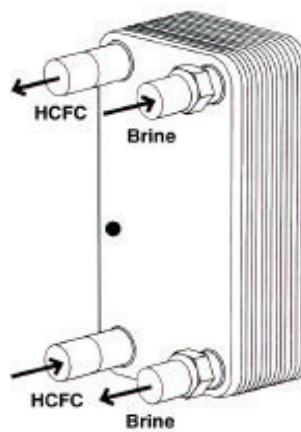
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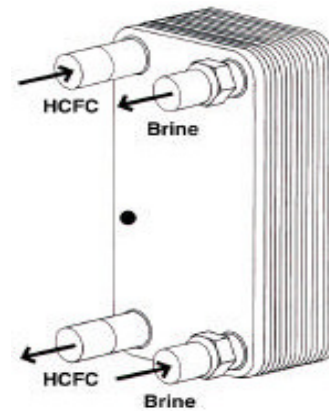
1



2



3



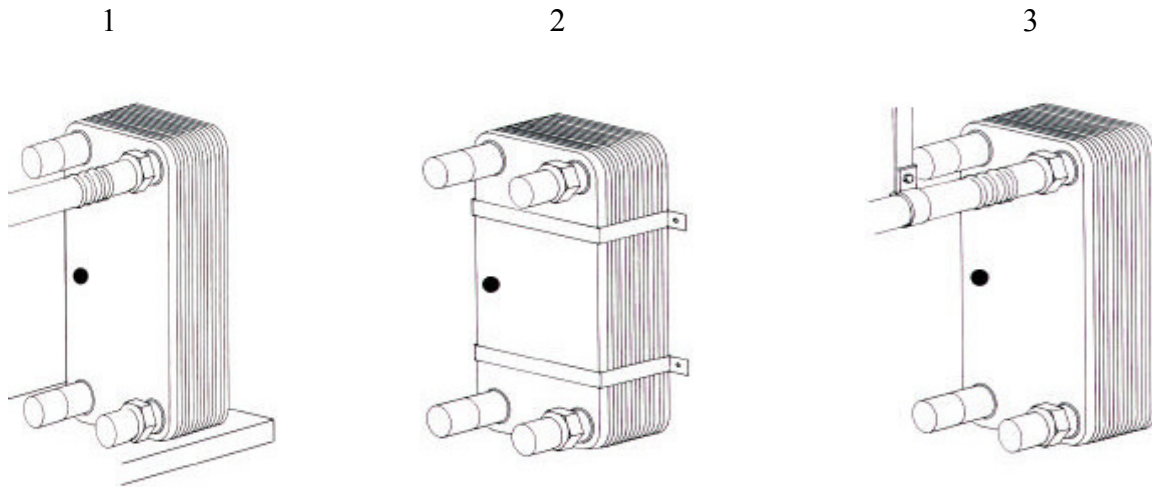
### Installation

The plate heat exchanger should be installed with the green dot on left side (check drawing). The flows should be counter-current. The primary side is marked with a green dot. The channels of the primary side are surrounded on both sides by the channels of the secondary side. In direct systems the refrigerants should always be connected to the primary side. In single-phase version, the medium with the highest temp should be connected to the primary side.

1. Counter-current. Optional connection.
2. Evaporator, Refrigerants
3. Condenser, Refrigerants

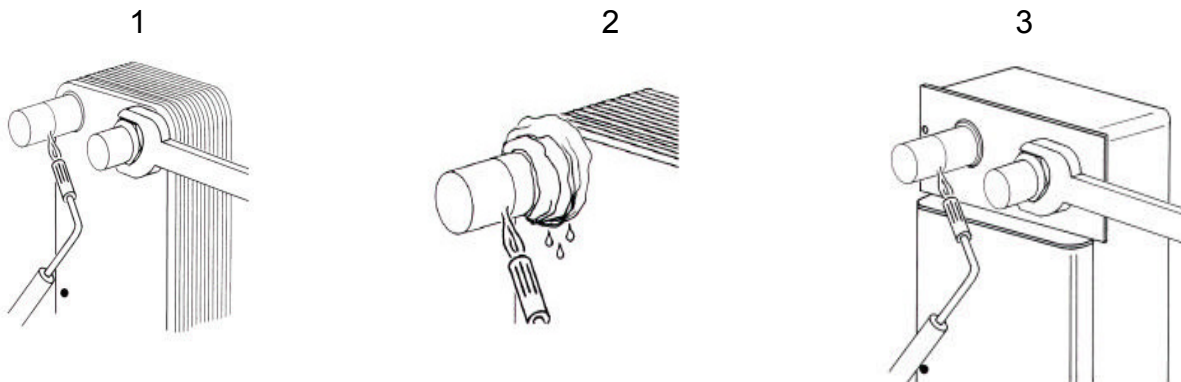
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### Mounting/Assembly

Always install the plate heat exchanger vertically. For model 19 with a maximum of 40 plates and model 29 with a maximum of 30 plates the installation can be executed directly on the pipes. Bigger heat exchangers should be mounted on a foundation (1), attached by binding clips (2) or attached by bolts, if included. Always use flexible hoses or compensators (3) if there is a risk for vibrations, shock waves or mechanical strains.



### Connections

Use nitrogen in case of soldering. Carefully clean the surfaces that should be soldered. Push the pipe into the connection and solder with a 40-55% silver at a maximum of 700°C. Do not point the flame against the top plate of the exchanger (1). Tie a wet rag around the connection to protect the exchanger against too intense heat (2). Insulated exchangers are protected by aluminium plates (3). Threaded connections are mounted after the exchanger has been fastened/fixated. Then connect the pipe system with female unions.

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**Do not exceed maximum allowable loads**

Model	Mounting		Operation	
	Torque Nm	Bending Nm	Torque Nm	Bending Nm
29	150	60	90	40
59	350	160	200	100

### Cleaning

Protect the exchanger from getting clogged by installing a filter before the heat exchanger. When the performance is decreasing, it is time to clean the exchanger. When the deposit contains fat, the exchanger should be cleaned with a cleaning liquid and water. When the deposit is stronger, use a detergent which is not aggressive to copper, 5% phosphoric acid or 5% oxalic acid. For optimal cleaning, the cleaning solution flow rate should be 1,5 times the normal flow. Always rinse the exchanger afterwards, with clean water.

