

# PLATE HEAT EXCHANGERS FOR MARINE APPLICATIONS





## There are times when the reliability of your equipment is crucial!

When conditions are tough, crew and equipment are really put to the test. The main engine oil cooler and central freshwater cooler simply have to work. There is no room for compromise when the sea is rough and the harbour far away.

That's why Tranter offers you the very best. Reliable, compact, and efficient plate heat exchangers that are easy to service and maintain. So, it's no wonder they can be found on board countless vessels all around the world – from luxury yachts to huge container vessels, supertankers and offshore rigs.

Tranter offers an extensive range of gasketed plate heat exchangers specially designed for marine applications. This, combined with our extensive experience and solid technical expertise within marine and industrial applications, makes us a reliable partner.

For many decades our plate heat exchangers have proved to be the perfect solution for various closed-circuit cooling systems at sea. They are also frequently found in other applications on board, such as tap-water production systems and HVAC systems.







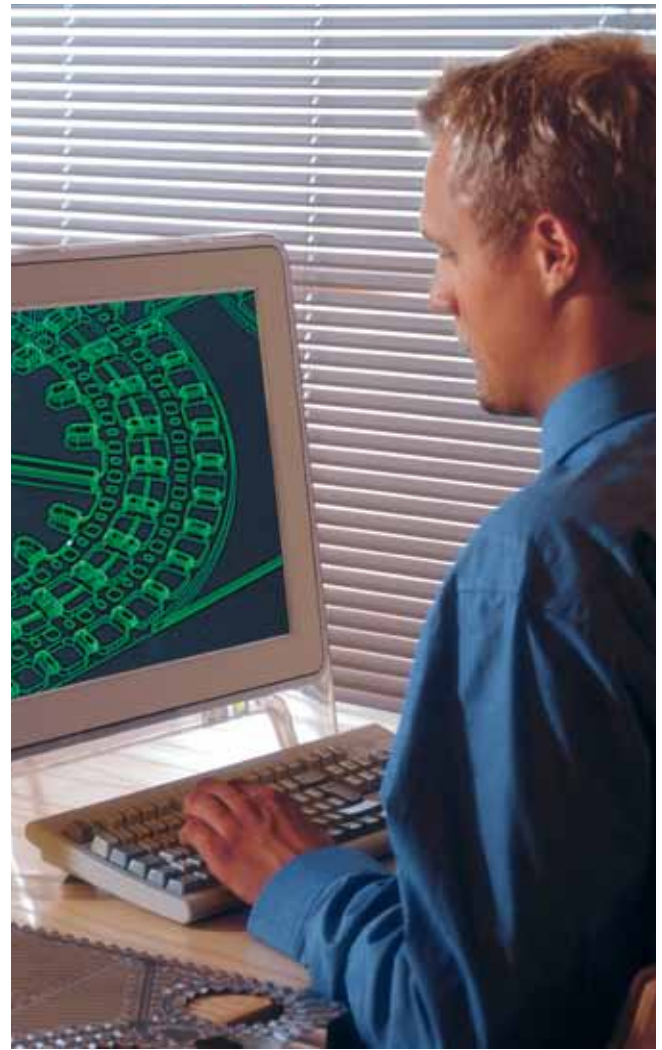
## Our experts will guide you to the right solution

Tranter is a global supplier of plate heat exchangers. We have extensive experience of heat transfer solutions for marine, off-shore, HVAC and industrial applications around the world. Our mission is to help you achieve the optimum solution with regard to performance efficiency, payback and energy conservation.

Our marine programme encompasses plate heat exchangers that fulfil any capacity requirement. Our patented Ultraflex design means that we can closely match precise heat exchanger requirements with just a few plate designs. Plates are provided in stainless steel, and titanium as standard, but are also available in other materials. We can also offer frames constructed from aluminium etc. when it is important to keep the weight low.

### Quality all the way

At Tranter we enlist cutting-edge technology in our manufacturing processes. Raw materials are subject to rigorous quality specifications. Exact measurements and metallurgical analyses are performed in accordance with our Total Quality Management System. Fully-automated plate presses ensure consistent high quality and plate uniformity time after time. After assembly each plate heat exchanger is tested, and the results are incorporated into a data bank. Before packing and shipping, we carry out a final check. Nothing is left to chance!







# Keep cool for smooth and reliable operation

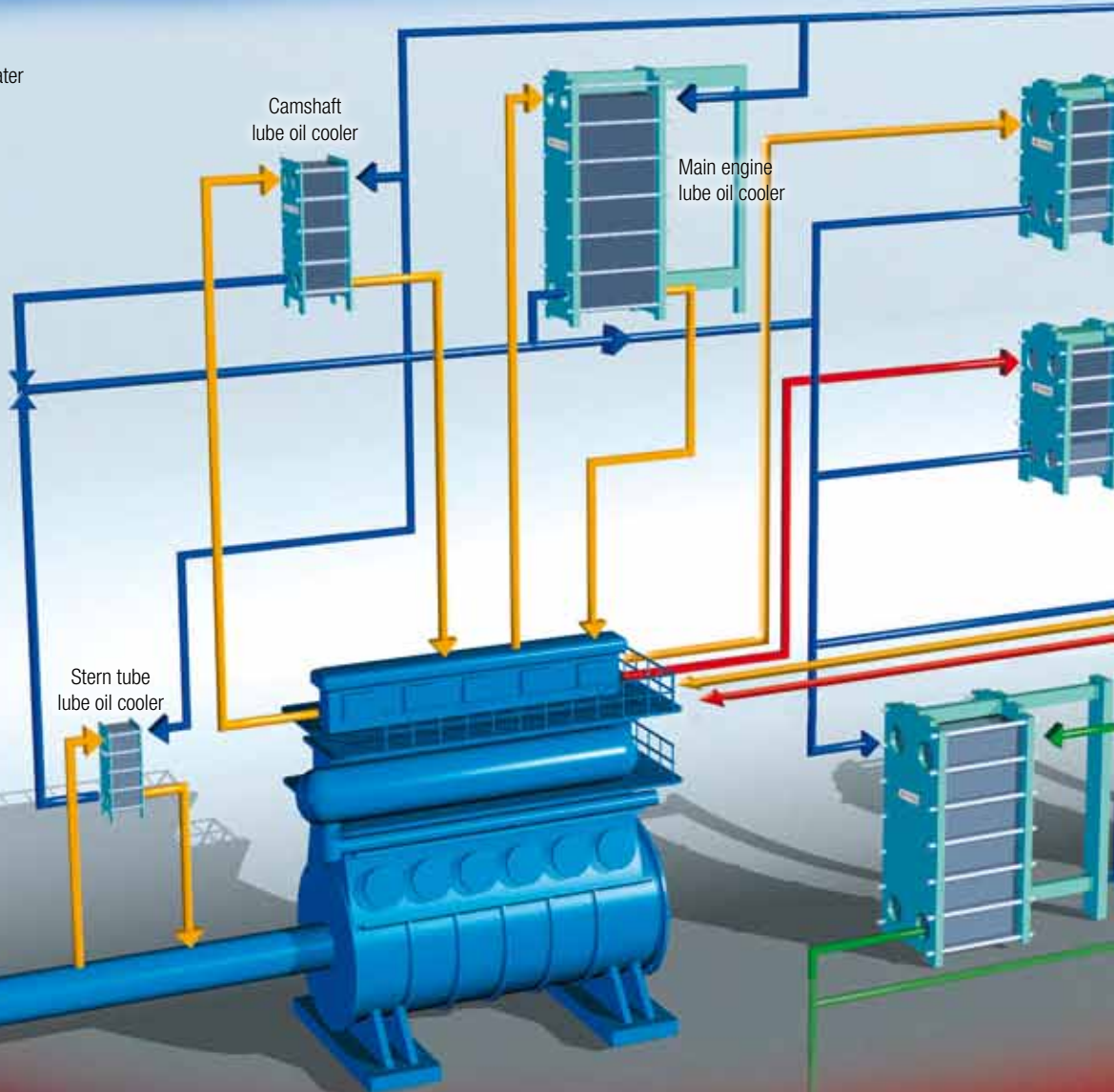
## Central cooling systems

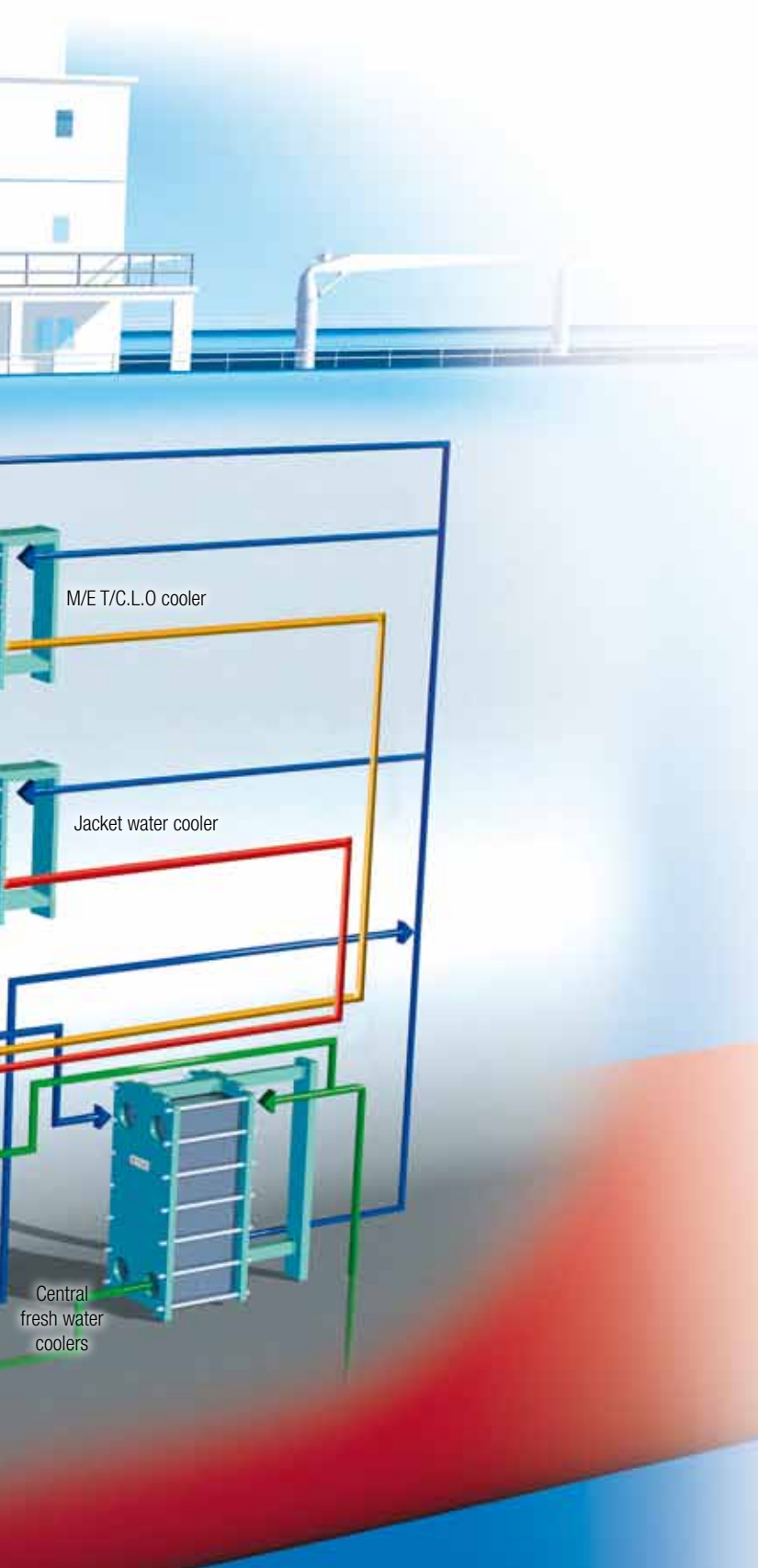
A central cooling system consists of central coolers that use sea water to cool a secondary circuit with fresh water. This circuit passes through a battery of other coolers, such as lubrication oil cooler, jacket water cooler, turbo-charging air cooler etc.

Using fresh water in the secondary circuit, minimizes corrosion, scaling and redundancy in machines and equipment and ensures smooth operation. At the same time the cost for repair and replacement will be kept to a minimum.



- Sea water
- High temp. fresh water
- Fresh water
- Lube oil





*Central fresh water coolers*



*Main engine lube oil cooler*



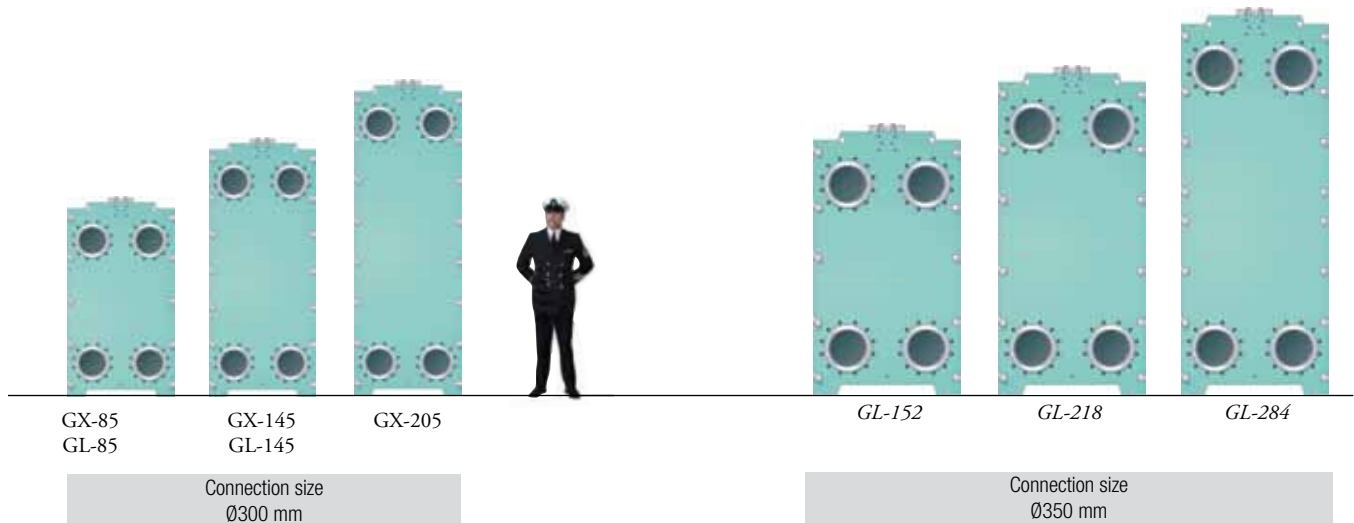
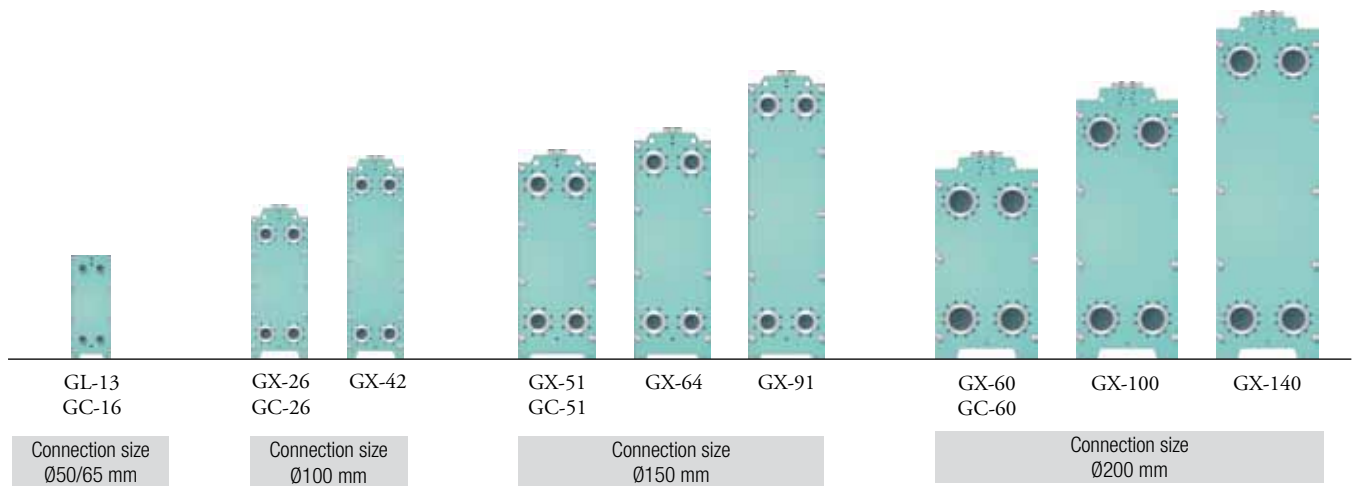
*Jacket water cooler*



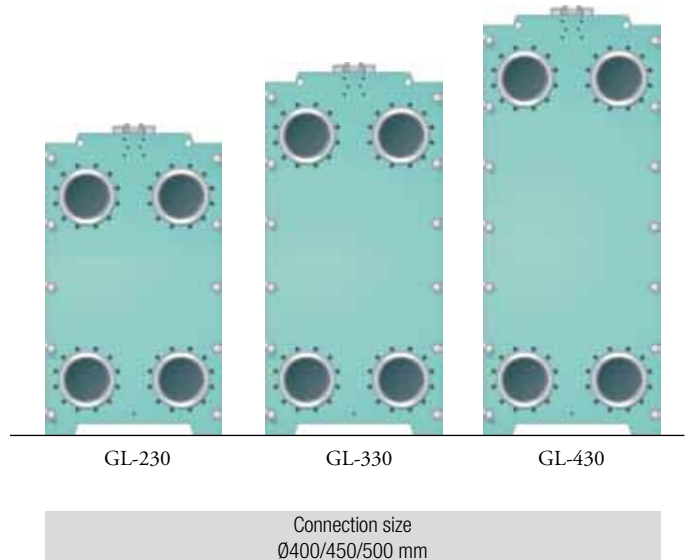
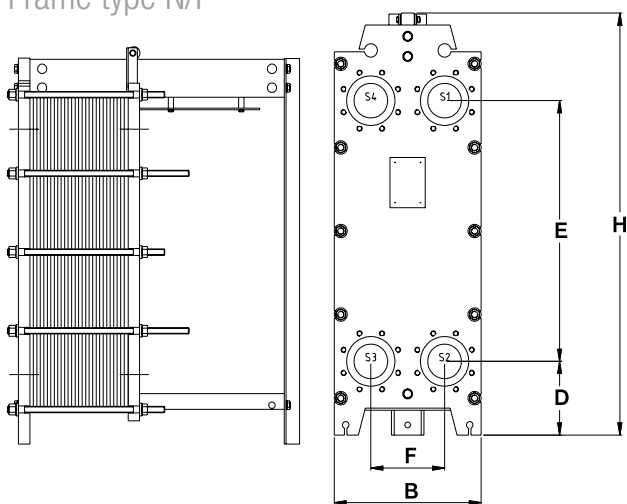
*Stern tube lube oil cooler*



# Marine plate heat exchangers



## Frame type N/P







Type	Connection mm	B mm	F mm	H mm	D mm	E mm
GL-13 GC-16	50/65	320	135	832	140	592
GX-26 N GC-26 N	100	450	226	1166	220	779
GX-42 N	100	450	226	1585	220	1189
GX-51 N GC-51 N	150	585	300	1730	300	1143
GX-64 P	150	626	285	1910	300	1320
GX-91 P	150	626	285	2390	300	1800
GX-60 P GC-60 P	200	825	420	1700	350	910
GX-100 P	200	825	420	2280	350	1490
GX-140 P	200	825	420	2860	350	2070
GL-85 P GX-85 P	300	1060	570	1985	360	1140
GL-145 P GX-145 P	300	1060	570	2565	360	1720
GX-205 P	300	1060	570	3215	360	2300
GL-230 N	450	1510	700	3172	450	2090
GL-330 N	450	1510	700	3782	450	2700
GL-430 N	450	1510	700	4392	450	3310

**Channel plate materials**

AISI 304

AISI 316

Titanium

**Max working pressure**

N 10 bar

P 16 bar

S 25 bar

**Gaskets**

NBR

EPDM

FKM

Viton®

**Max working temperature**

NBR 140°C

EPDM 160°C

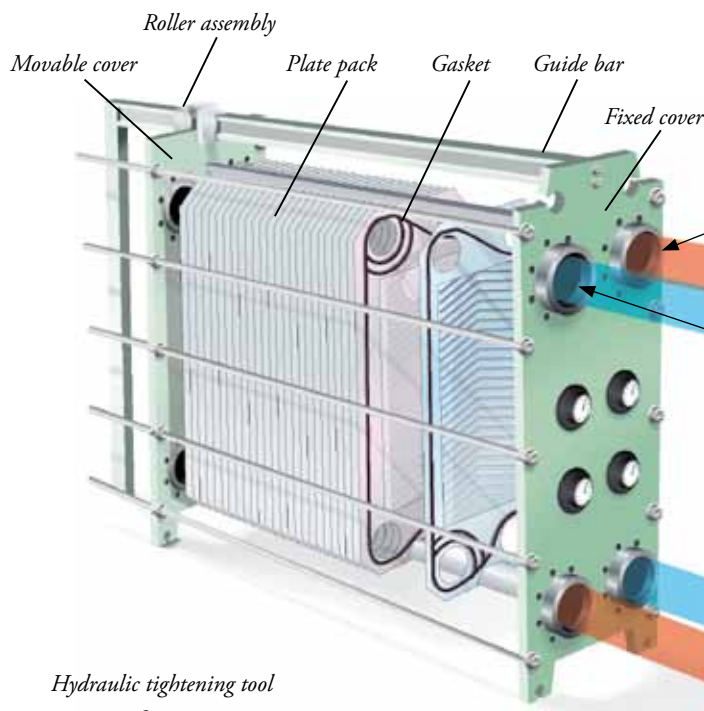
FKM 180°C

**Approvals**

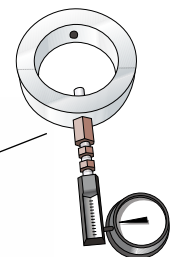
ABS, GL, LRS, NK, BV, DNV, RINA,

KR, CCS, RS

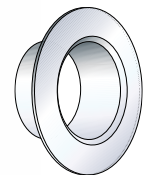
*CIP – Cleaning-in-Place*



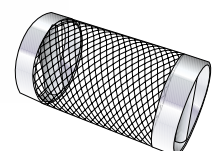
*Instrument flanges*



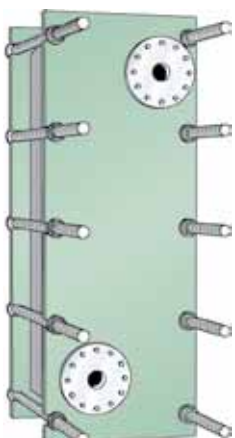
*Liners*



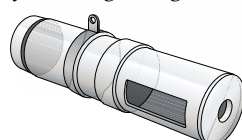
*Strainers*



*Back flush*



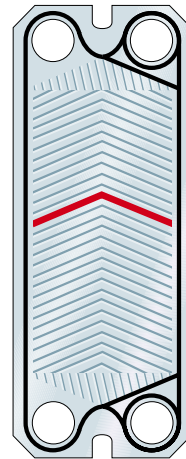
*Hydraulic tightening tool*



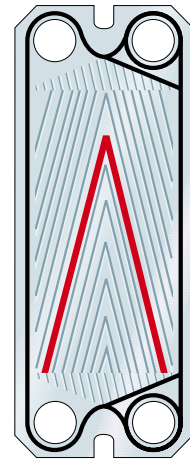


### Conventional plates (GC)

The corrugated plates have a gasket along the periphery. There are also gaskets around two of the four ports, which means that only one of the two fluids has access to the heating surface. The next plate has gaskets around the other two ports. Thus a channel system is created where two fluids pass through every other channel respectively. Leakage between the two fluids is not possible thanks to double gaskets around the ports. The pressure drop and heat transfer are dependent on factors such as the arrow angle of the plate pattern. An obtuse arrow angle (high-theta plate) means high resistance and a high thermal driving force. An acute angle (low-theta plate) means a low pressure drop but a lower thermal driving force.



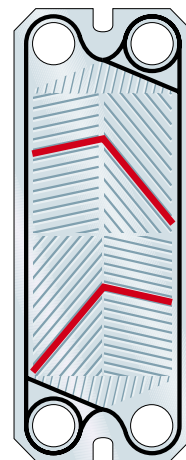
High-theta plate



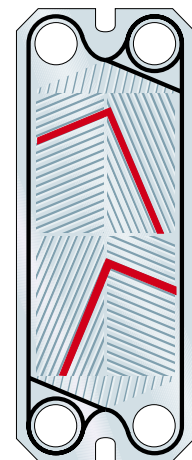
Low-theta plate

### Ultraflex plates (GX)

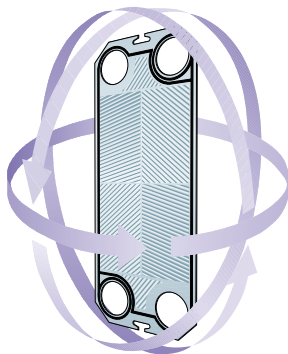
Our unique, patented Ultraflex plate design features two angles for each plate size. The plates are available with a herringbone pattern with either an acute or obtuse angle, making it possible to achieve six combinations of channels. An obtuse angle (high-theta plate) gives high resistance, and an acute angle (low-theta plate) a low pressure drop. This allows our heat exchangers to be optimized for the characteristics of each individual application. If you have different flow rates in the primary and secondary circuits, your plate heat exchangers can be designed with asymmetrical channels for maximum heat transfer efficiency and economy.



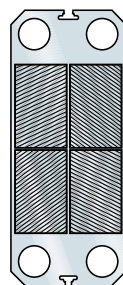
High-theta plate



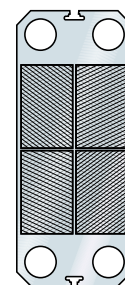
Low-theta plate



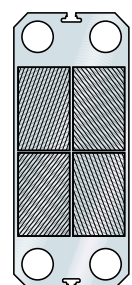
*Our unique Ultraflex design allows the two plates to be turned and rotated, giving six combinations of high- and low-theta plate pairs, matching the performance parameters of your application.*



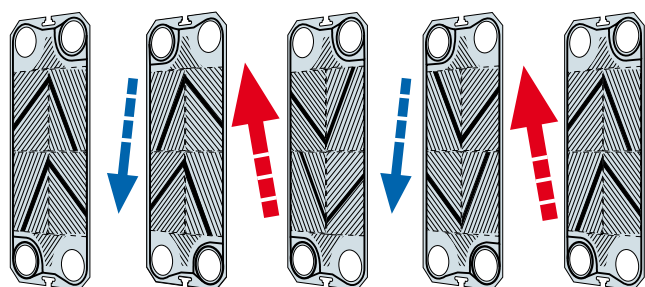
HS=  
High-theta,  
same direction



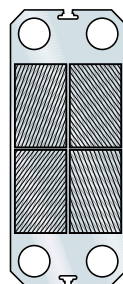
HD=  
High-theta,  
different directions



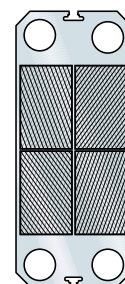
MS=  
Medium-theta,  
same direction



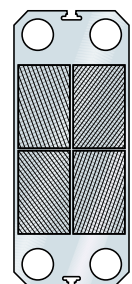
*Ultraflex allows asymmetrical designs, with each circuit individually optimized for heat transfer.*



LS=  
Low-theta,  
same direction



LD=  
Low-theta,  
different directions



MD=  
Medium-theta,  
different directions





## No unnecessary ballast

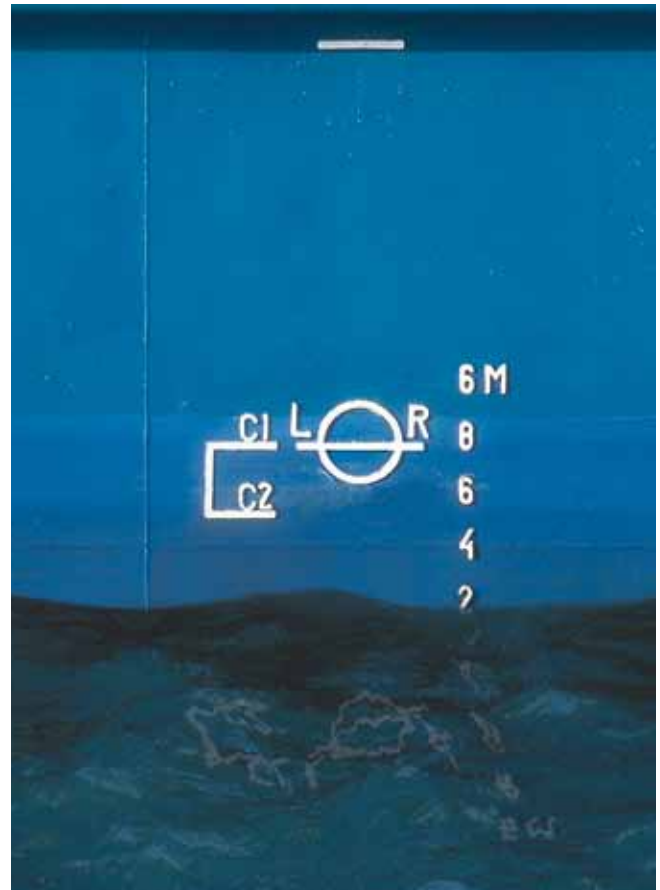
Why fill up your engine room with heavy, bulky equipment, when efficiency and economy are vital factors?

A plate heat exchanger from Tranter is only about 1/3 of the size and 1/6 of the weight of a shell-&-tube exchanger of comparable performance. Even if it may seem reasonable to invest in a tube exchanger, this would have a much higher life cycle cost than a plate heat exchanger.

One reason is that the heat transfer properties of a plate heat exchanger are 3 to 5 times higher. Another is the close temperature approach which is as low as 1°C. Efficiency pays off!

### **A plate heat exchanger offers many advantages compared with conventional shell-and-tube exchangers**

- Up to 50% more efficient
- Up to 90% more compact
- 3-5 times higher k-values
- Unique turbulent flow design
- Closer temperature approach – as low as 1°C
- Far less material needed– less use of exotic alloys or titanium





## Improve thermal systems efficiency and reliability



*Shell & plate heat exchanger and prime surface heat exchanger banks.*

### Plate heat exchangers save energy, space and weight

Tranter shell & plate heat exchanger and prime surface heat exchanger banks are both designed for optimum efficiency in compact packages. Shell & plate exchangers consistently outperform shell & tube deck heaters, while heat exchanger banks make pipe coil obsolete for bulk cargo heating banks and box coolers.

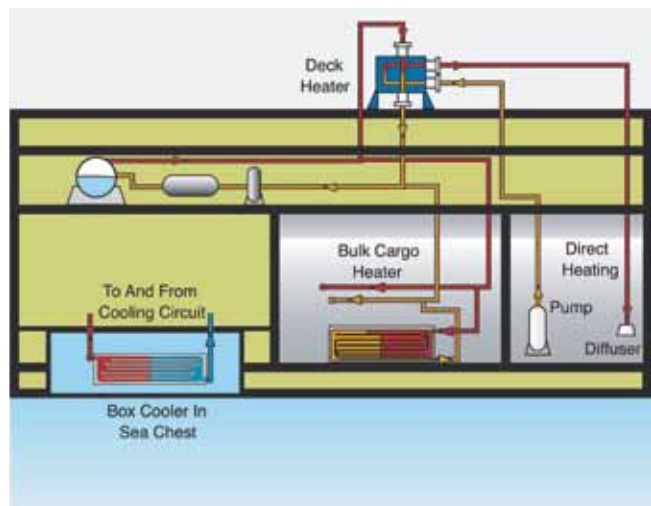
#### **Both products offer:**

- Much smaller footprints
- Lighter weight
- Easier installation
- Removable heat exchange surfaces for effective cleaning
- Faster heating or cooling with less energy fluid
- Turbulent flow for better scaling resistance, greater reliability
- Less steel, lower purchase price, shorter lead time and less expensive delivery

Topside and below, take advantage of all the benefits plate heat exchangers provide. Contact us today for details on

these and other strategies to improve your offshore thermal systems. Let us put the efficiency and reliability of plate heat exchangers to work for you!

Plate heat exchangers on-board optimise your thermal system efficiency with less - for less.







## Service and maintenance made easy

With regular service and maintenance you keep control of your heat exchanger's condition so that you can maintain optimum performance.

With a Tranter service program you get a grip on things before they become a problem. Every program is tailor-made to your specific requirements and can include anything from regular inspection to full annual overhaul.

Tranter provides safe, fast and customised service for all your plate heat exchangers, no matter the brand.



*Dirty plates effect heat transfer and reduce the overall performance.*

*These are the conditions in which you could find your plate heat exchanger without regular maintenance.*



### A global service network

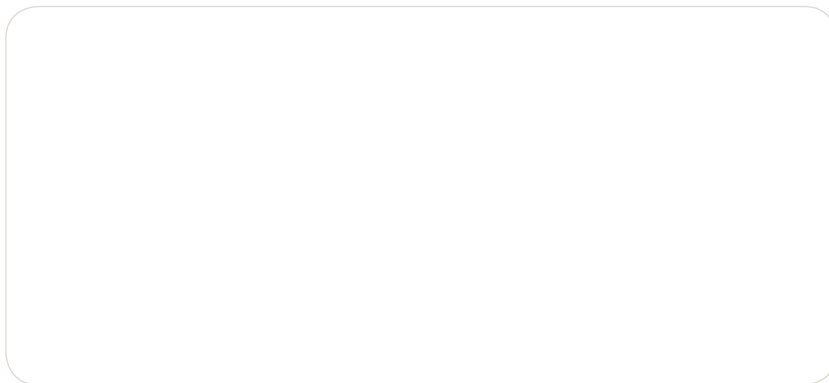
Our service network of representatives and engineers in Europe, Asia, Australia, Middle East, North & South America will back you up with support and services. They can also train your staff in handling day-to-day maintenance themselves.

**Contact us for more information.**



At the forefront of heat exchanger technology for more than 70 years

Tranter top quality, high-performance, proprietary products are on the job in demanding industrial and commercial installations around the world. Backed by our comprehensive experience and worldwide presence, Tranter offers you exceptional system performance, applications assistance and local service. Tranter is close to its customers, with subsidiary companies, agents, distributors and representatives located worldwide. Contact us for a qualified discussion of your needs.



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