

TUBULAR LIQUID COOLER

DETAILED OVERVIEW FOR TYPE 'TLCX'
HIGH PRESSURE - 60 BAR



Dimensions overview for type Ø133 - 60 bar[g]

Tubular Liquid coolers are highly used in the food and beverage industry and in connection with many applications such as CIP units. In the food and beverage industry tubular heat exchangers are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. A tubular heat exchanger may also be used to heat or cool products prior to filling, drying, concentration or other processes.

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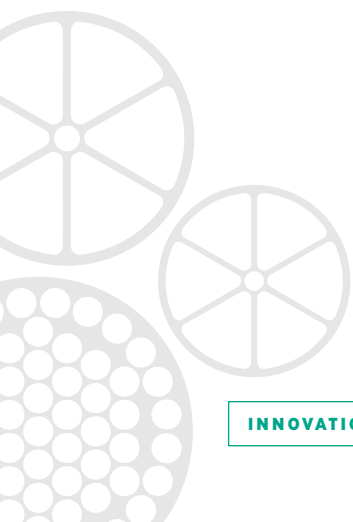
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Introduction

This overview is for Tubular Liquid Coolers manufactured by Wila A/S under the category "TLCX" hereinafter referred to as "Heat Exchanger". A Tubular Heat Exchanger is by design, two Pressure chambers in a combined housing.

The inner chamber consists of both ends and the insides of all tubes in the tube bundle, hereinafter referred to as "Tube side" or "Product side".

The outer pressure chamber consists of the outside of the tube bundle, and the inside of the exchangers outer shell, hereinafter referred to as "Shell side" or "Service side".

The Heat Exchanger is intended for a fluid to fluid heat transfer, **either** cooling or heating and is made from EN.1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The tube side is suitable for food stuff fluids, such as dairy products and juices. The entire inside surface roughness is $\leq 0.8 \mu\text{m}$ and the outside surface roughness is $\leq 1.6 \mu\text{m}$. **All fluid media in use with the Heat exchanger, must be compatible with EN.1.4404 (AISI 316L) Stainless Steel.**

The 60 BAR (870 PSI), maximum product side pressure, heat exchanger design is based on a $\varnothing 133 \times 4 \text{mm}$ shell. Other sizes and pressure ratings are also available.

Regulations and Directives

The heat exchanger is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The Heat Exchanger is only designed for fluid group 2 (non-dangerous fluids).

Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. Pressure test certificate
4. User Manual

As Supplement the following can be provided:

5. 3.1 material certificates according to EN 10204
6. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

TLCX-xx-133-60

TLCX	Tubular Liquid Cooler with eccentric product side reducer.	
xx	.5, 01, 02, 03*	Indicates the heat transfer surface area in m ² .
133	Ø133*	Indicates the heat exchanger shell diameter in mm.
60	The heat exchanger is designed for pressures up to 60 bar	

* Other versions are available

TLCX-xx-xxx-yyy-zz

xx	See above	
xxx	See above	
yyy	See below	Indicates tube side clamp ferrule connection.
zz	See below	Indicates shell side clamp ferrule connection.

Tube side (P1 and P2) connections are:

Shell size's	Tube side connection size's	
Ø133mm	DN100 – DN80 – DN65	in accordance with DIN 32676-A
Ø133mm	4" (Ø101.6) – 3" (Ø76.1) – 2.5" (Ø63.5)	In accordance with ISO 2852-2

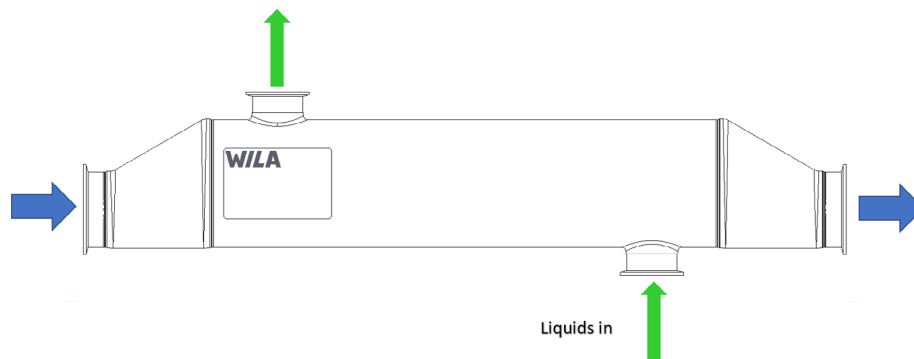
Shell side (S1 and S2) connections:

DN20 – DN25 – DN40 – DN50 – DN65	in accordance with DIN 32676-A
3/4" (Ø20) – 1" (Ø25) – 1.5" (Ø38) – 2" (Ø51) – 2.5" (Ø63.5)	in accordance with ISO 2852-2

For both tube and shell sides other connection types and sizes are available.

Connections

Always follow your fitting supplier guidelines and local legislations. SSH clamping rings (or similar) are recommended. For liquids, the outlet should be at the highest point to ensure complete removal of air in the chamber.



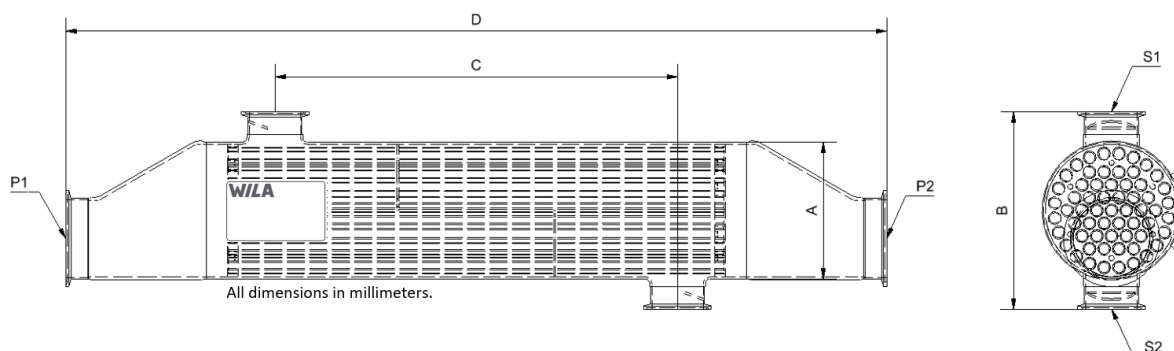
Shell side workflow

The liquid cooler shell side recommended workflow limits are based on the most optimal placement of our baffle plates in the tube bundle, which varies with the size of the liquid cooler:

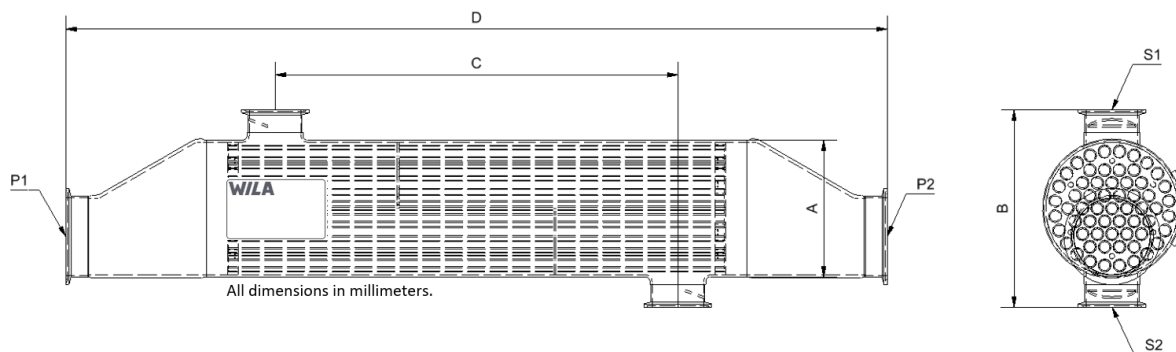
- For liquid cooler size 0.5m² the recommended maximum shell side workflow is 3 m³/h
- For liquid cooler size 1 m² the recommended maximum shell side workflow is 3 m³/h
- For liquid cooler size 2 m² the recommended maximum shell side workflow is 7 m³/h
- For liquid cooler size 3 m² the recommended maximum shell side workflow is 12 m³/h

Note:

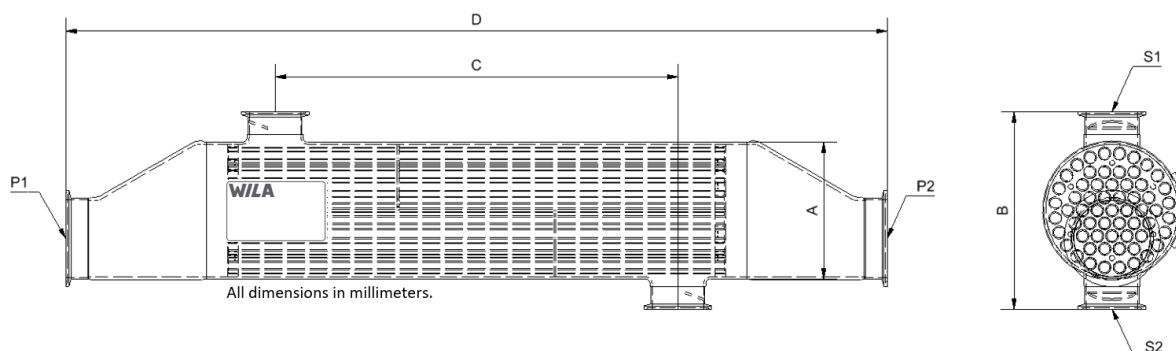
In the following group tables 'Tube bank' is data on the product tubes running paralell inside the shell.



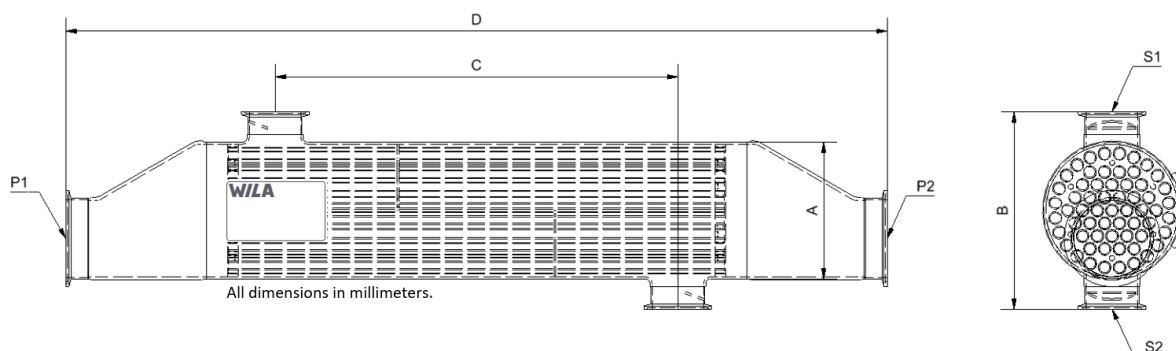
TLCX-.5-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 4.5 liters		Volume 1 liters		316L Eccentric	Dry weight 11 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-.5-133-100-25	W-038349	DN100	Ø133	Ø25	186	160	560	61 pc Ø12x1mm
TLCX-.5-133-101-25	W-038350	Ø101.6	Ø133	Ø25	186	160	547	61 pc Ø12x1mm
TLCX-.5-133-080-25	W-038351	DN80	Ø133	Ø25	186	160	560	61 pc Ø12x1mm
TLCX-.5-133-076-25	W-038352	Ø76.1	Ø133	Ø25	186	160	547	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-.5-133-100-21	W-038353	DN100	Ø133	Ø21.3	179	160	560	61 pc Ø12x1mm
TLCX-.5-133-101-21	W-038354	Ø101.6	Ø133	Ø21.3	179	160	547	61 pc Ø12x1mm
TLCX-.5-133-080-21	W-038355	DN80	Ø133	Ø21.3	179	160	560	61 pc Ø12x1mm
TLCX-.5-133-076-21	W-038356	Ø76.1	Ø133	Ø21.3	179	160	547	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-.5-133-100-26	W-038357	DN100	Ø133	DN25	186	160	560	61 pc Ø12x1mm
TLCX-.5-133-101-26	W-038358	Ø101.6	Ø133	DN25	186	160	547	61 pc Ø12x1mm
TLCX-.5-133-080-26	W-038359	DN80	Ø133	DN25	186	160	560	61 pc Ø12x1mm
TLCX-.5-133-076-26	W-038360	Ø76.1	Ø133	DN25	186	160	547	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-.5-133-100-20	W-038361	DN100	Ø133	DN20	179	160	560	61 pc Ø12x1mm
TLCX-.5-133-101-20	W-038362	Ø101.6	Ø133	DN20	179	160	547	61 pc Ø12x1mm
TLCX-.5-133-080-20	W-038363	DN80	Ø133	DN20	179	160	560	61 pc Ø12x1mm
TLCX-.5-133-076-20	W-038364	Ø76.1	Ø133	DN20	179	160	547	61 pc Ø12x1mm



TLCX-01-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 6 liters		Volume 2.5 liters		316L Eccentric	Dry weight 19 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-01-133-100-25	W-038365	DN100	Ø133	Ø25	186	408	810	61 pc Ø12x1mm
TLCX-01-133-101-25	W-038366	Ø101.6	Ø133	Ø25	186	408	797	61 pc Ø12x1mm
TLCX-01-133-080-25	W-038367	DN80	Ø133	Ø25	186	408	810	61 pc Ø12x1mm
TLCX-01-133-076-25	W-038368	Ø76.1	Ø133	Ø25	186	408	797	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-01-133-100-21	W-038369	DN100	Ø133	Ø21.3	179	408	810	61 pc Ø12x1mm
TLCX-01-133-101-21	W-038370	Ø101.6	Ø133	Ø21.3	179	408	797	61 pc Ø12x1mm
TLCX-01-133-080-21	W-038371	DN80	Ø133	Ø21.3	179	408	810	61 pc Ø12x1mm
TLCX-01-133-076-21	W-038372	Ø76.1	Ø133	Ø21.3	179	408	797	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-01-133-100-26	W-038373	DN100	Ø133	DN25	186	408	810	61 pc Ø12x1mm
TLCX-01-133-101-26	W-038374	Ø101.6	Ø133	DN25	186	408	797	61 pc Ø12x1mm
TLCX-01-133-080-26	W-038375	DN80	Ø133	DN25	186	408	810	61 pc Ø12x1mm
TLCX-01-133-076-26	W-038376	Ø76.1	Ø133	DN25	186	408	797	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-01-133-100-20	W-038377	DN100	Ø133	DN20	179	408	810	61 pc Ø12x1mm
TLCX-01-133-101-20	W-038378	Ø101.6	Ø133	DN20	179	408	797	61 pc Ø12x1mm
TLCX-01-133-080-20	W-038379	DN80	Ø133	DN20	179	408	810	61 pc Ø12x1mm
TLCX-01-133-076-20	W-038380	Ø76.1	Ø133	DN20	179	408	797	61 pc Ø12x1mm



TLCX-02-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 2.5 liters		Volume 5 liters		316L Eccentric	Dry weight 34 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-02-133-100-51	W-038381	DN100	Ø133	Ø51	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-101-51	W-038382	Ø101.6	Ø133	Ø51	186	886	1287	61 pc Ø12x1mm
TLCX-02-133-080-51	W-038383	DN80	Ø133	Ø51	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-076-51	W-038384	Ø76.1	Ø133	Ø51	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-02-133-100-38	W-038385	DN100	Ø133	Ø38	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-101-38	W-038386	Ø101.6	Ø133	Ø38	186	886	1287	61 pc Ø12x1mm
TLCX-02-133-080-38	W-038387	DN80	Ø133	Ø38	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-076-38	W-038388	Ø76.1	Ø133	Ø38	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-02-133-100-50	W-038389	DN100	Ø133	DN50	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-101-50	W-038390	Ø101.6	Ø133	DN50	186	886	1287	61 pc Ø12x1mm
TLCX-02-133-080-50	W-038391	DN80	Ø133	DN50	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-076-50	W-038392	Ø76.1	Ø133	DN50	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-02-133-100-40	W-038393	DN100	Ø133	DN40	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-101-40	W-038394	Ø101.6	Ø133	DN40	186	886	1287	61 pc Ø12x1mm
TLCX-02-133-080-40	W-038395	DN80	Ø133	DN40	186	886	1300	61 pc Ø12x1mm
TLCX-02-133-076-40	W-038396	Ø76.1	Ø133	DN40	186	886	1287	61 pc Ø12x1mm



TLCX-03-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 10 liters		Volume 7.5 liters		316L Eccentric	Dry weight 49 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-63	W-038397	DN100	Ø133	Ø63.5	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-63	W-038398	Ø101.6	Ø133	Ø63.5	186	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-63	W-038399	DN80	Ø133	Ø63.5	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-63	W-038400	Ø76.1	Ø133	Ø63.5	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-51	W-038401	DN100	Ø133	Ø51	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-51	W-038402	Ø101.6	Ø133	Ø51	186	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-51	W-038403	DN80	Ø133	Ø51	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-51	W-038404	Ø76.1	Ø133	Ø51	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-38	W-038405	DN100	Ø133	Ø38	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-38	W-038406	Ø101.6	Ø133	Ø38	186	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-38	W-038407	DN80	Ø133	Ø38	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-38	W-038408	Ø76.1	Ø133	Ø38	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-65	W-038409	DN100	Ø133	DN65	199	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-65	W-038410	Ø101.6	Ø133	DN65	199	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-65	W-038411	DN80	Ø133	DN65	199	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-65	W-038412	Ø76.1	Ø133	DN65	199	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-50	W-038413	DN100	Ø133	DN50	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-50	W-038414	Ø101.6	Ø133	DN50	186	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-50	W-038415	DN80	Ø133	DN50	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-50	W-038416	Ø76.1	Ø133	DN50	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCX-03-133-100-40	W-038417	DN100	Ø133	DN40	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-101-40	W-038418	Ø101.6	Ø133	DN40	186	1360	1777	61 pc Ø12x1mm
TLCX-03-133-080-40	W-038419	DN80	Ø133	DN40	186	1360	1790	61 pc Ø12x1mm
TLCX-03-133-076-40	W-038420	Ø76.1	Ø133	DN40	186	1360	1777	61 pc Ø12x1mm