

TUBULAR LIQUID COOLER

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



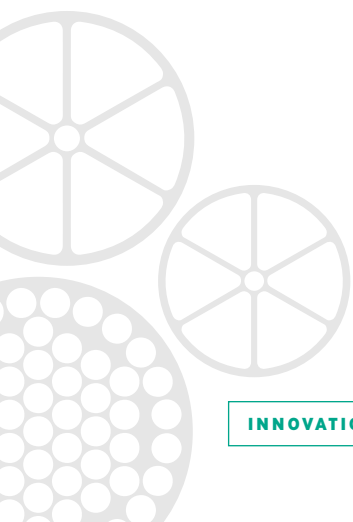
Dimensions overview for type Ø133 - 60 bar[g]

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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Introduction

This overview is for Tubular Liquid Coolers manufactured by Wila A/S under the category "TLCXA" 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).
- 3-A Sanitary Standards 00-01 / 12-08

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 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.

TLCXA-xx-133-60

TLCXA	Tubular Liquid Cooler with eccentric product side reducer with 3A certificate.	
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

TLCXA-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	in accordance with DIN 32676-A
Ø133mm	4" (Ø101.6) – 3" (Ø76.1)	In accordance with ISO 2852-2

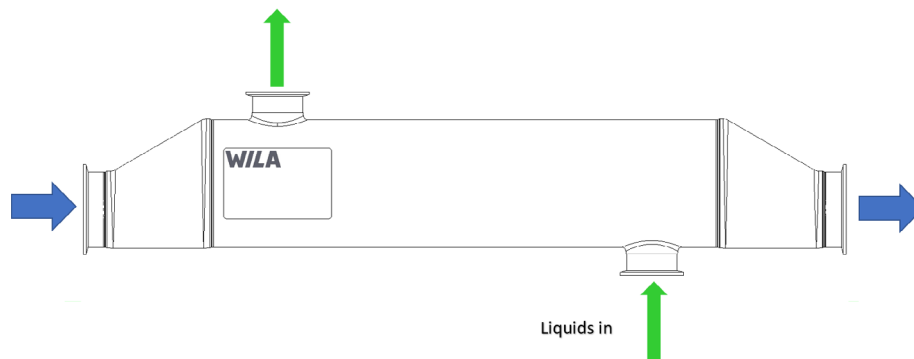
Shell side (S1 and S2) connections:

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.



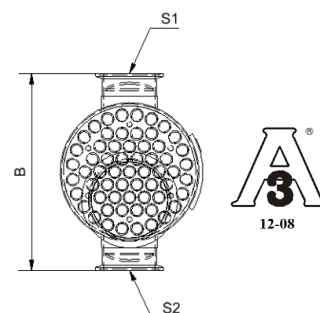
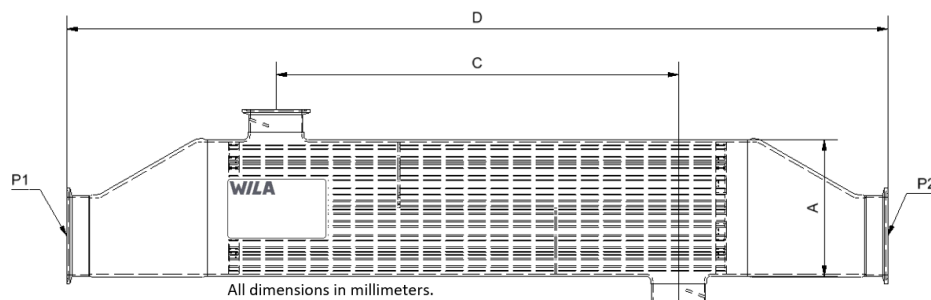
Shell side workflow

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:

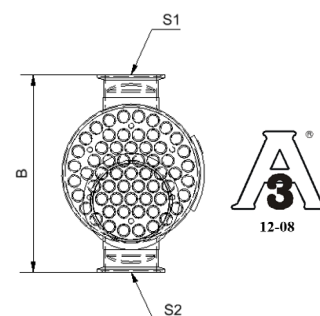
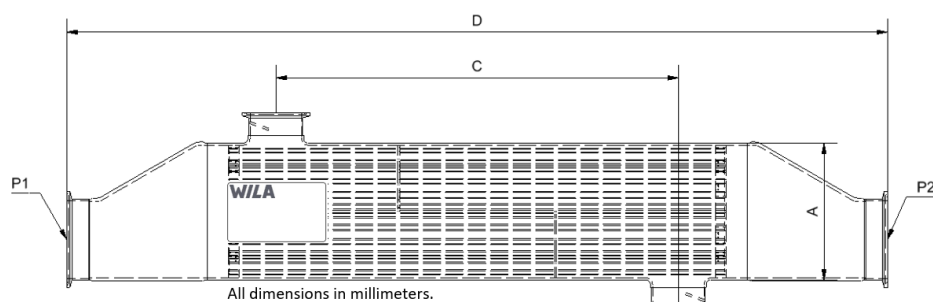
- For liquid cooler size 0.5m² the recommended maximum shell side workflow is 3 m³/h
- For liquid cooler size 1 m² the recommended maximum shell side workflow is 3 m³/h
- For liquid cooler size 2 m² the recommended maximum shell side workflow is 7 m³/h
- For liquid cooler size 3 m² the recommended maximum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

Note:

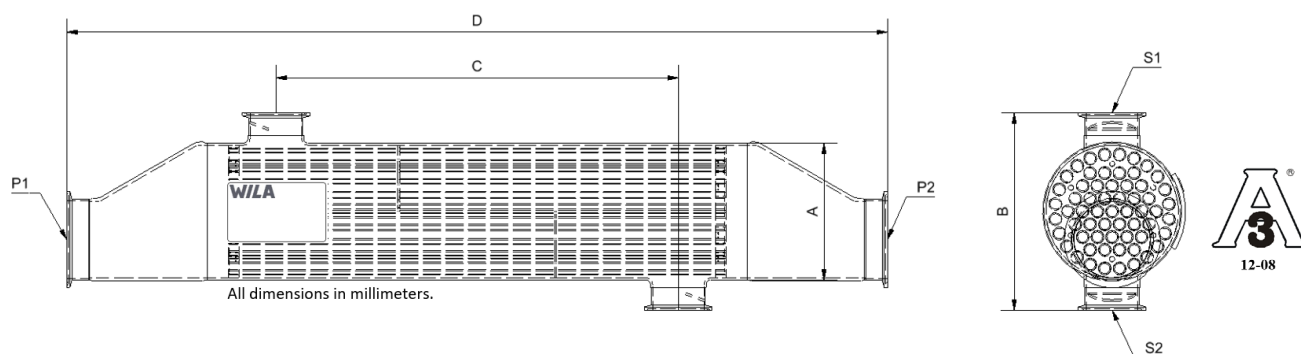
In the following group tables 'Tube bank' is data on the product tubes running paralell inside the shell.



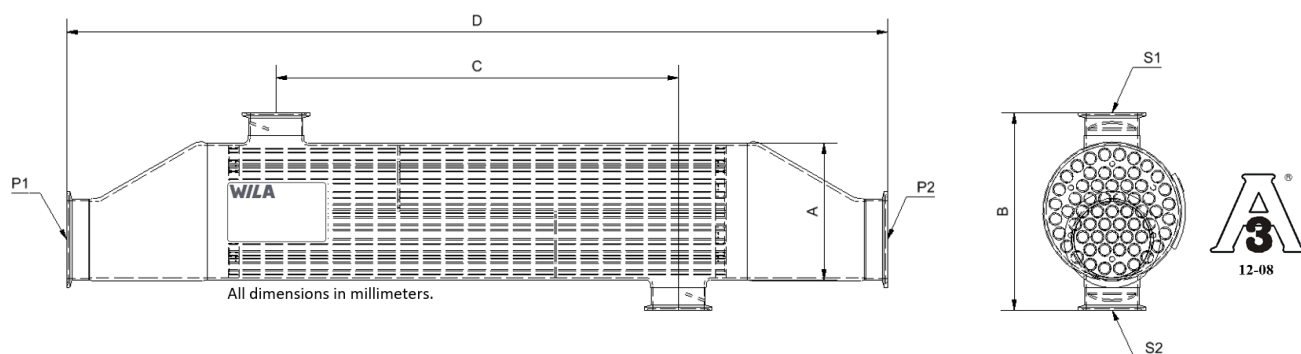
TLCXA-.5-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 4.5 liters		Volume 1 liters		316L Eccentric	Dry weight 11 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-.5-133-100-25	W-038550	DN100	Ø133	Ø25	186	160	560	61 pc Ø12x1mm
TLCXA-.5-133-101-25	W-038551	Ø101.6	Ø133	Ø25	186	160	547	61 pc Ø12x1mm
TLCXA-.5-133-080-25	W-038552	DN80	Ø133	Ø25	186	160	560	61 pc Ø12x1mm
TLCXA-.5-133-076-25	W-038553	Ø76.1	Ø133	Ø25	186	160	547	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-.5-133-100-21	W-038554	DN100	Ø133	Ø21.3	179	160	560	61 pc Ø12x1mm
TLCXA-.5-133-101-21	W-038555	Ø101.6	Ø133	Ø21.3	179	160	547	61 pc Ø12x1mm
TLCXA-.5-133-080-21	W-038556	DN80	Ø133	Ø21.3	179	160	560	61 pc Ø12x1mm
TLCXA-.5-133-076-21	W-038557	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
TLCXA-.5-133-100-26	W-038558	DN100	Ø133	DN25	186	160	560	61 pc Ø12x1mm
TLCXA-.5-133-101-26	W-038559	Ø101.6	Ø133	DN25	186	160	547	61 pc Ø12x1mm
TLCXA-.5-133-080-26	W-038560	DN80	Ø133	DN25	186	160	560	61 pc Ø12x1mm
TLCXA-.5-133-076-26	W-038561	Ø76.1	Ø133	DN25	186	160	547	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-.5-133-100-20	W-038562	DN100	Ø133	DN20	179	160	560	61 pc Ø12x1mm
TLCXA-.5-133-101-20	W-038563	Ø101.6	Ø133	DN20	179	160	547	61 pc Ø12x1mm
TLCXA-.5-133-080-20	W-038564	DN80	Ø133	DN20	179	160	560	61 pc Ø12x1mm
TLCXA-.5-133-076-20	W-038565	Ø76.1	Ø133	DN20	179	160	547	61 pc Ø12x1mm



TLCXA-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
TLCXA-01-133-100-25	W-038568	DN100	Ø133	Ø25	186	408	810	61 pc Ø12x1mm
TLCXA-01-133-101-25	W-038569	Ø101.6	Ø133	Ø25	186	408	797	61 pc Ø12x1mm
TLCXA-01-133-080-25	W-038570	DN80	Ø133	Ø25	186	408	810	61 pc Ø12x1mm
TLCXA-01-133-076-25	W-038571	Ø76.1	Ø133	Ø25	186	408	797	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-01-133-100-21	W-038572	DN100	Ø133	Ø21.3	179	408	810	61 pc Ø12x1mm
TLCXA-01-133-101-21	W-038573	Ø101.6	Ø133	Ø21.3	179	408	797	61 pc Ø12x1mm
TLCXA-01-133-080-21	W-038574	DN80	Ø133	Ø21.3	179	408	810	61 pc Ø12x1mm
TLCXA-01-133-076-21	W-038575	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
TLCXA-01-133-100-26	W-038576	DN100	Ø133	DN25	186	408	810	61 pc Ø12x1mm
TLCXA-01-133-101-26	W-038577	Ø101.6	Ø133	DN25	186	408	797	61 pc Ø12x1mm
TLCXA-01-133-080-26	W-038578	DN80	Ø133	DN25	186	408	810	61 pc Ø12x1mm
TLCXA-01-133-076-26	W-038579	Ø76.1	Ø133	DN25	186	408	797	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-01-133-100-20	W-038580	DN100	Ø133	DN20	179	408	810	61 pc Ø12x1mm
TLCXA-01-133-101-20	W-038581	Ø101.6	Ø133	DN20	179	408	797	61 pc Ø12x1mm
TLCXA-01-133-080-20	W-038582	DN80	Ø133	DN20	179	408	810	61 pc Ø12x1mm
TLCXA-01-133-076-20	W-038583	Ø76.1	Ø133	DN20	179	408	797	61 pc Ø12x1mm



TLCXA-02-133-60		60 barg / 85°C		16 bar[g] / 95°C		Maximum pressure / temperature		
		Volume 8.5 liters		Volume 5 liters		316L Eccentric	Dry weight 34 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-02-133-100-51	W-038586	DN100	Ø133	Ø51	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-101-51	W-038587	Ø101.6	Ø133	Ø51	186	886	1287	61 pc Ø12x1mm
TLCXA-02-133-080-51	W-038588	DN80	Ø133	Ø51	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-076-51	W-038589	Ø76.1	Ø133	Ø51	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-02-133-100-38	W-038590	DN100	Ø133	Ø38	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-101-38	W-038591	Ø101.6	Ø133	Ø38	186	886	1287	61 pc Ø12x1mm
TLCXA-02-133-080-38	W-038592	DN80	Ø133	Ø38	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-076-38	W-038593	Ø76.1	Ø133	Ø38	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-02-133-100-50	W-038594	DN100	Ø133	DN50	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-101-50	W-038595	Ø101.6	Ø133	DN50	186	886	1287	61 pc Ø12x1mm
TLCXA-02-133-080-50	W-038596	DN80	Ø133	DN50	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-076-50	W-038597	Ø76.1	Ø133	DN50	186	886	1287	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-02-133-100-40	W-038598	DN100	Ø133	DN40	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-101-40	W-038599	Ø101.6	Ø133	DN40	186	886	1287	61 pc Ø12x1mm
TLCXA-02-133-080-40	W-038600	DN80	Ø133	DN40	186	886	1300	61 pc Ø12x1mm
TLCXA-02-133-076-40	W-038601	Ø76.1	Ø133	DN40	186	886	1287	61 pc Ø12x1mm



TLCXA-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
TLCXA-03-133-100-63	W-038606	DN100	Ø133	Ø63.5	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-63	W-038607	Ø101.6	Ø133	Ø63.5	186	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-63	W-038608	DN80	Ø133	Ø63.5	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-63	W-038609	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
TLCXA-03-133-100-51	W-038610	DN100	Ø133	Ø51	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-51	W-038611	Ø101.6	Ø133	Ø51	186	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-51	W-038612	DN80	Ø133	Ø51	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-51	W-038613	Ø76.1	Ø133	Ø51	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-03-133-100-38	W-038614	DN100	Ø133	Ø38	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-38	W-038615	Ø101.6	Ø133	Ø38	186	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-38	W-038616	DN80	Ø133	Ø38	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-38	W-038617	Ø76.1	Ø133	Ø38	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-03-133-100-65	W-038618	DN100	Ø133	DN65	199	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-65	W-038619	Ø101.6	Ø133	DN65	199	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-65	W-038620	DN80	Ø133	DN65	199	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-65	W-038621	Ø76.1	Ø133	DN65	199	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-03-133-100-50	W-038622	DN100	Ø133	DN50	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-50	W-038623	Ø101.6	Ø133	DN50	186	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-50	W-038624	DN80	Ø133	DN50	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-50	W-038625	Ø76.1	Ø133	DN50	186	1360	1777	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
TLCXA-03-133-100-50	W-038626	DN100	Ø133	DN40	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-101-50	W-038627	Ø101.6	Ø133	DN40	186	1360	1777	61 pc Ø12x1mm
TLCXA-03-133-080-50	W-038628	DN80	Ø133	DN40	186	1360	1790	61 pc Ø12x1mm
TLCXA-03-133-076-50	W-038629	Ø76.1	Ø133	DN40	186	1360	1777	61 pc Ø12x1mm