

TUBULAR HEAT EXCHANGER

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



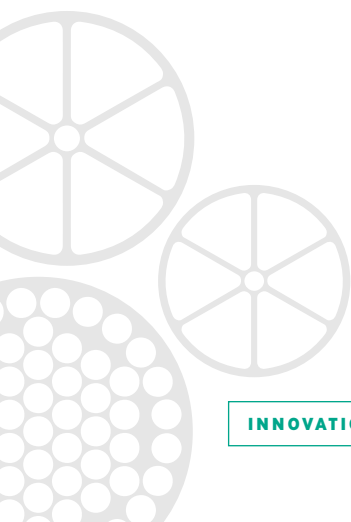
Dimensions overview for type Ø133 - 60 bar[g]

Tubular heat exchangers 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.



Content

Introduction	3
Regulations and Directives	3
Documentation	3
Group specifications.....	4
Connections	5
Steam pressure limits	5
THEXA-.5-133-60	6
THEXA-01-133-60.....	7
THEXA-02-133-60	8
THEXA-03-133-60	9



Introduction

This overview is for Tubular Heat Exchangers manufactured by Wila A/S under the category "THEXA" 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 $\varnothing 133 \times 4$ 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 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.

THEXA-xx-133-60

THEXA **T**ubular **H**eat **E**xchanger with eccentric product side reducer with **3A** certificate
 xx .5, 01, 02, 03 Indicates the heat transfer surface area in m².
 133 Ø133 Indicates the heat exchanger shell diameter in mm.
 60 The heat exchanger is designed for pressures up to 60 bar

THEXA-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	
Ø133 mm	DN100 - DN80	In accordance with DIN 32676-A
Ø133 mm	4" (Ø101.6) - 3" (Ø76.1)	In accordance with ISO 2852-2

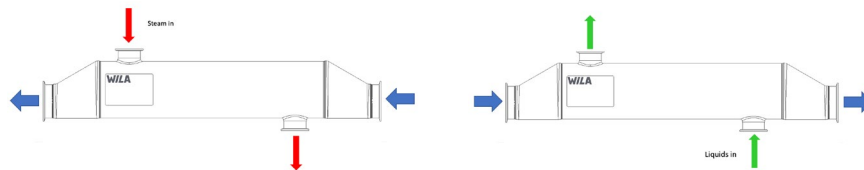
Shell side (S1 and S2) connections:

DN50 - DN40	in accordance with DIN 32676-A
2" (Ø51) - 1.5" (Ø38)	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 steam connections the outlet should always be at the lowest point. For liquids, the outlet should be at the highest point to ensure complete removal of air in the chamber.



Service side limits

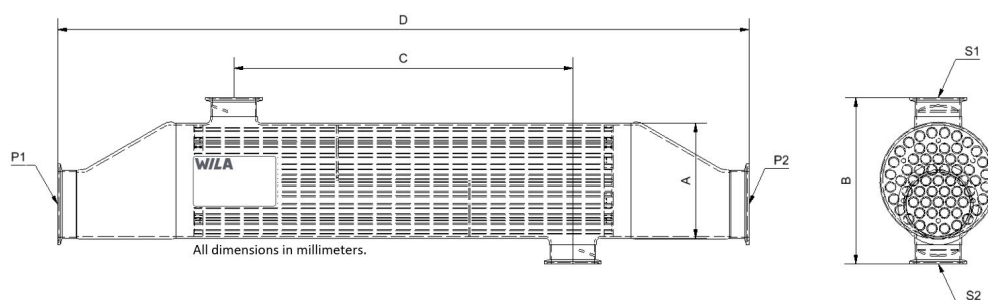
The heat exchanger's shell side maximum pressure and temperature limits are based on the maximum allowed steam pressure, which varies with the size of the heat exchanger:

1. For heat exchanger sizes 0.5m² and 1 m² these limits are respectively 10 bar[g] and 185°C
2. For heat exchanger size 2 m² these limits are respectively 8 bar[g] and 176°C
3. For heat exchanger size 3 m² these limits are respectively 6 bar[g] and 165°C
4. For heat exchanger sizes 4 m² and 6 m² these limits are respectively 3 bar[g] and 144°C
5. For heat exchanger size 8 m² these limits are respectively 2.3 bar[g] and 136°C

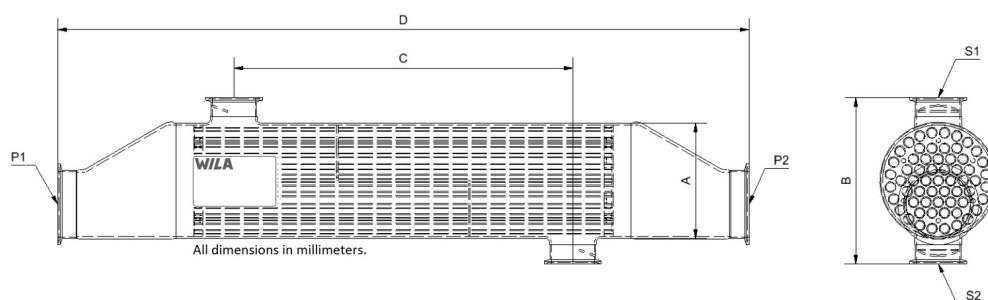
For pressure and temperature limits for other fluids than steam, see "Heat exchangers – pressure and temperature relations" document.

Note:

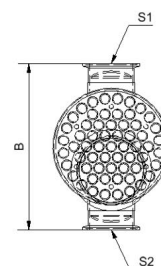
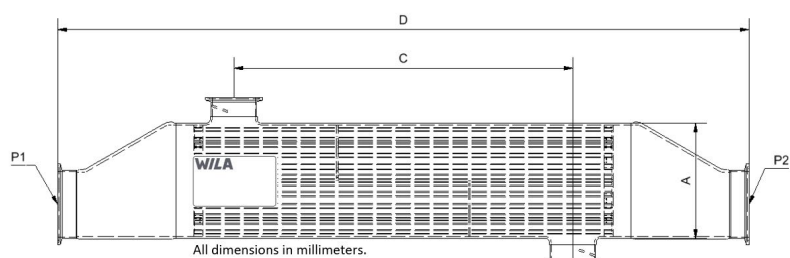
In the following group tables 'Tube bank' is data on the product tubes running paralell inside the shell.



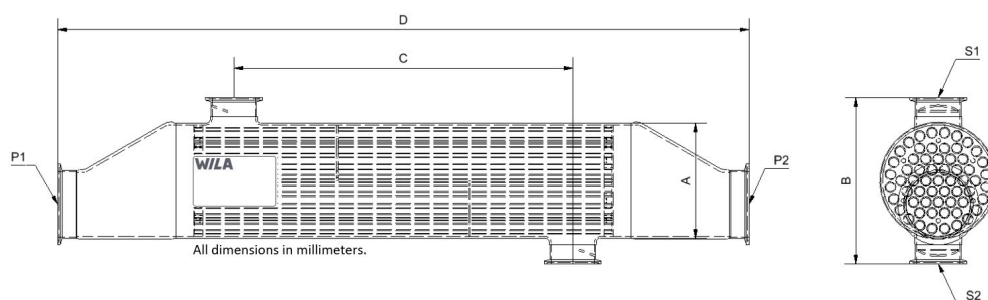
THEXA-.5-133-60		40 barg / 85°C		10 bar[g] / 185°C		Maximum pressure / Maximum temperature		
		Volume 4.5 liters		Volume 1 liters		316L Eccentric	Dry weight 9 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-.5-133-100-51	W-035512	DN100	Ø133	Ø51	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-101-51	W-035513	Ø101.6	Ø133	Ø51	190	130	545	61 pc Ø12x1mm
THEXA-.5-133-080-51	W-035514	DN80	Ø133	Ø51	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-076-51	W-035515	Ø76.1	Ø133	Ø51	190	130	545	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-.5-133-100-38	W-035516	DN100	Ø133	Ø38	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-101-38	W-035517	Ø101.6	Ø133	Ø38	190	130	545	61 pc Ø12x1mm
THEXA-.5-133-080-38	W-035518	DN80	Ø133	Ø38	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-076-38	W-035519	Ø76.1	Ø133	Ø38	190	130	545	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-.5-133-100-50	W-035520	DN100	Ø133	DN50	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-101-50	W-035521	Ø101.6	Ø133	DN50	190	130	545	61 pc Ø12x1mm
THEXA-.5-133-080-50	W-035522	DN80	Ø133	DN50	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-076-50	W-035523	Ø76.1	Ø133	DN50	190	130	545	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-.5-133-100-40	W-035524	DN100	Ø133	DN40	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-101-40	W-035525	Ø101.6	Ø133	DN40	190	130	545	61 pc Ø12x1mm
THEXA-.5-133-080-40	W-035526	DN80	Ø133	DN40	190	130	558	61 pc Ø12x1mm
THEXA-.5-133-076-40	W-035527	Ø76.1	Ø133	DN40	190	130	545	61 pc Ø12x1mm



THEXA-01-133-60		40 barg / 85°C		10 bar[g] / 185°C		Maximum pressure / Maximum temperature		
		Volume 6 liters		Volume 2.5 liters		316L Eccentric	Dry weight 15 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-01-133-100-51	W-035532	DN100	Ø133	Ø51	190	380	808	61 pc Ø12x1mm
THEXA-01-133-101-51	W-035533	Ø101.6	Ø133	Ø51	190	380	795	61 pc Ø12x1mm
THEXA-01-133-080-51	W-035534	DN80	Ø133	Ø51	190	380	808	61 pc Ø12x1mm
THEXA-01-133-076-51	W-035535	Ø76.1	Ø133	Ø51	190	380	795	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-01-133-100-38	W-035536	DN100	Ø133	Ø38	190	380	808	61 pc Ø12x1mm
THEXA-01-133-101-38	W-035537	Ø101.6	Ø133	Ø38	190	380	795	61 pc Ø12x1mm
THEXA-01-133-080-38	W-035538	DN80	Ø133	Ø38	190	380	808	61 pc Ø12x1mm
THEXA-01-133-076-38	W-035539	Ø76.1	Ø133	Ø38	190	380	795	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-01-133-100-50	W-035540	DN100	Ø133	DN50	190	380	808	61 pc Ø12x1mm
THEXA-01-133-101-50	W-035541	Ø101.6	Ø133	DN50	190	380	795	61 pc Ø12x1mm
THEXA-01-133-080-50	W-035542	DN80	Ø133	DN50	190	380	808	61 pc Ø12x1mm
THEXA-01-133-076-50	W-035543	Ø76.1	Ø133	DN50	190	380	795	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-01-133-100-40	W-035544	DN100	Ø133	DN40	190	380	808	61 pc Ø12x1mm
THEXA-01-133-101-40	W-035545	Ø101.6	Ø133	DN40	190	380	795	61 pc Ø12x1mm
THEXA-01-133-080-40	W-035546	DN80	Ø133	DN40	190	380	808	61 pc Ø12x1mm
THEXA-01-133-076-40	W-035547	Ø76.1	Ø133	DN40	190	380	795	61 pc Ø12x1mm



THEXA-02-133-60		40 barg / 85°C		8 bar[g] / 176°C		Maximum pressure / Maximum temperature		
		Volume 8.5 liters		Volume 5 liters		316L Eccentric	Dry weight 26 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-02-133-100-51	W-035552	DN100	Ø133	Ø51	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-101-51	W-035553	Ø101.6	Ø133	Ø51	190	870	1255	61 pc Ø12x1mm
THEXA-02-133-080-51	W-035554	DN80	Ø133	Ø51	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-076-51	W-035555	Ø76.1	Ø133	Ø51	190	870	1255	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-02-133-100-38	W-035556	DN100	Ø133	Ø38	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-101-38	W-035557	Ø101.6	Ø133	Ø38	190	870	1255	61 pc Ø12x1mm
THEXA-02-133-080-38	W-035558	DN80	Ø133	Ø38	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-076-38	W-035559	Ø76.1	Ø133	Ø38	190	870	1255	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-02-133-100-50	W-035560	DN100	Ø133	DN50	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-101-50	W-035561	Ø101.6	Ø133	DN50	190	870	1255	61 pc Ø12x1mm
THEXA-02-133-080-50	W-035562	DN80	Ø133	DN50	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-076-50	W-035563	Ø76.1	Ø133	DN50	190	870	1255	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-02-133-100-40	W-035564	DN100	Ø133	DN40	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-101-40	W-035565	Ø101.6	Ø133	DN40	190	870	1255	61 pc Ø12x1mm
THEXA-02-133-080-40	W-035566	DN80	Ø133	DN40	190	870	1268	61 pc Ø12x1mm
THEXA-02-133-076-40	W-035567	Ø76.1	Ø133	DN40	190	870	1255	61 pc Ø12x1mm



THEXA-03-133-60		40 barg / 85°C		6 bar[g] / 165°C		Maximum pressure / Maximum temperature		
		Volume 10 liters		Volume 7.5 liters		316L Eccentric	Dry weight 38 kg	
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-03-133-100-51	W-035572	DN100	Ø133	Ø51	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-101-51	W-035573	Ø101.6	Ø133	Ø51	190	1360	1775	61 pc Ø12x1mm
THEXA-03-133-080-51	W-035574	DN80	Ø133	Ø51	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-076-51	W-035575	Ø76.1	Ø133	Ø51	190	1360	1775	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-03-133-100-38	W-035576	DN100	Ø133	Ø38	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-101-38	W-035577	Ø101.6	Ø133	Ø38	190	1360	1775	61 pc Ø12x1mm
THEXA-03-133-080-38	W-035578	DN80	Ø133	Ø38	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-076-38	W-035579	Ø76.1	Ø133	Ø38	190	1360	1775	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-03-133-100-50	W-035580	DN100	Ø133	DN50	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-101-50	W-035581	Ø101.6	Ø133	DN50	190	1360	1775	61 pc Ø12x1mm
THEXA-03-133-080-50	W-035582	DN80	Ø133	DN50	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-076-50	W-035583	Ø76.1	Ø133	DN50	190	1360	1775	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1/S2	B	C	D	Tube bank
THEXA-03-133-100-40	W-035584	DN100	Ø133	DN40	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-101-40	W-035585	Ø101.6	Ø133	DN40	190	1360	1775	61 pc Ø12x1mm
THEXA-03-133-080-40	W-035586	DN80	Ø133	DN40	190	1360	1788	61 pc Ø12x1mm
THEXA-03-133-076-40	W-035587	Ø76.1	Ø133	DN40	190	1360	1775	61 pc Ø12x1mm