

TUBULAR STEAM HEATER

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



Dimensions overview for type Ø133 - 60bar[g]

Tubular steam heaters 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 Steam Heaters manufactured by Wila A/S under the category "TSH" 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 steam to fluid heat transfer 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 outside surface roughness is $\leq 1,6\mu\text{m}$ and the internal tube side surface roughness is $\leq 0,8\mu\text{m}$. **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 Ø133x4 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). For (dangerous fluids) group I restrictions may apply.

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.

TSH-xx-133-40

TSH	Tubular Steam Heater	
xx	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 pressure up to 60 bar.	

TSH-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	Ø101.6 – Ø76.1 – Ø63.5	In accordance with ISO 2852-2

Shell side (S1 and S2) connections, both Ø129 and Ø209 are:

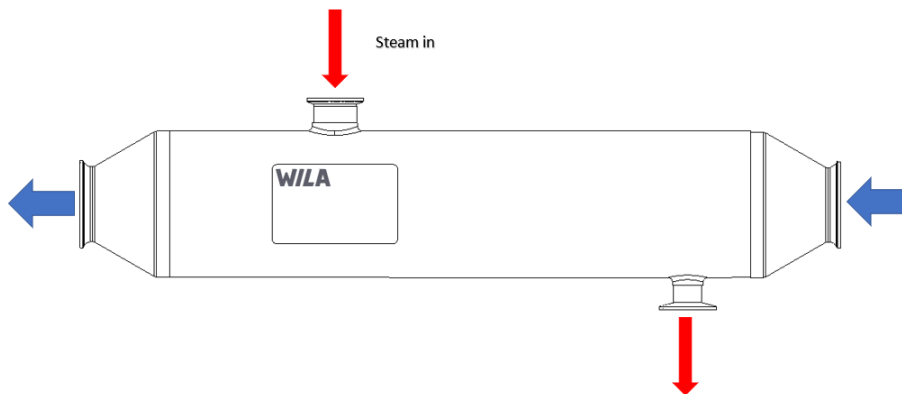
DN80 – DN65 – DN50 – DN40 – DN25	in accordance with DIN 32676-A
Ø76.1 – Ø63.5 – Ø51 – Ø38 – Ø25	in accordance with ISO 2852-2
DN80 (82) – DN65 (70) – DN50 (54) – DN40 (43) – DN25 (28) *	in accordance with DIN 2633 / EN 1092 Type 11

* Numbers in parentheses is numbers used in unit codes in following pages.

For both tube and shell sides other connections 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.



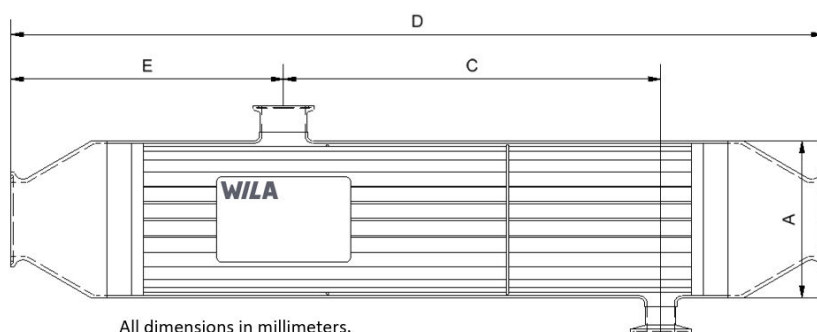
Service side limits

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:

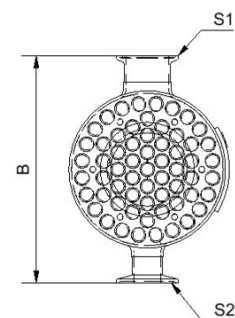
1. For heat exchanger size 1 m² these limits are respectively 10 bar[g] and 185°C
2. For heat exchanger size 2 m² these limits are respectively 8 bar[g] and 176°C
3. For heat exchanger size 3 m² these limits are respectively 6 bar[g] and 165°C

Note:

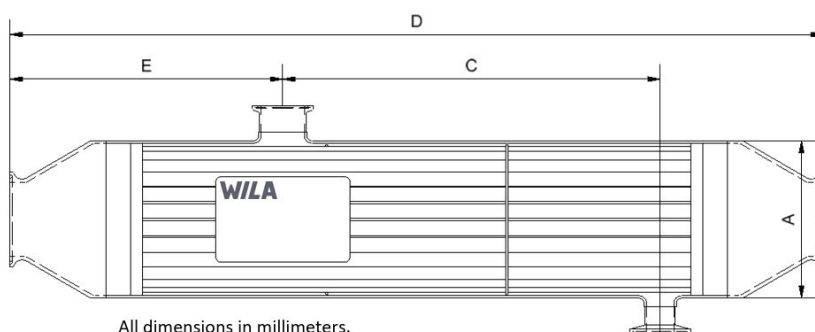
In the following group tables 'Tube bank' is data on the product tubes running paralell inside the shell.



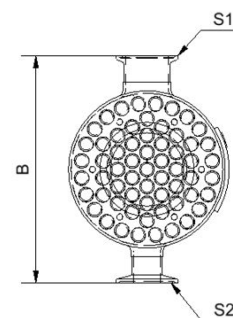
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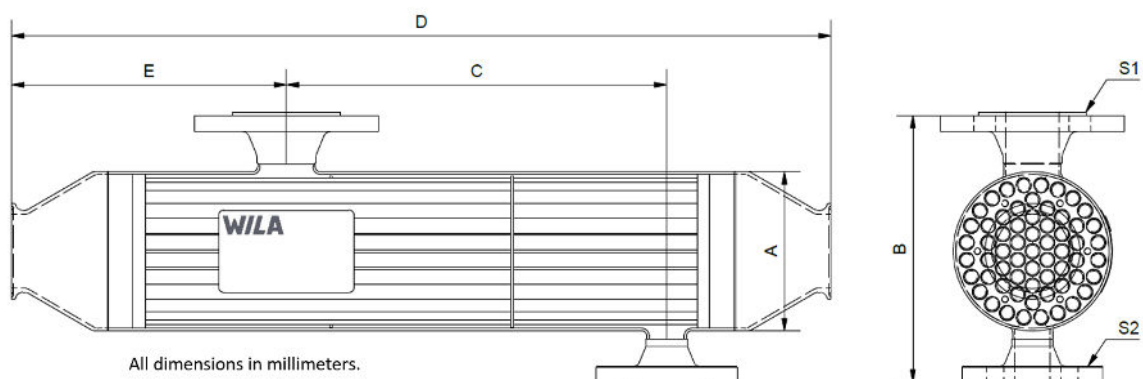
TSH-01-133-60 (section 1 of 2)		60 barg / 85°C		10 bar[g] / 185°C			Maximum pressure / temperature			
		Volume 4.5 liters		Volume 2.5 liters			316L Concentric		Dry weight 18 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-80	W-040933	DN100	Ø133	DN80	DN40	195	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-80	W-040934	Ø101.6	Ø133	DN80	DN40	195	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-80	W-040935	DN80	Ø133	DN80	DN40	195	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-80	W-040936	Ø76.1	Ø133	DN80	DN40	195	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-80	W-040937	DN65	Ø133	DN80	DN40	195	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-80	W-040938	Ø63.5	Ø133	DN80	DN40	195	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-76	W-040939	DN100	Ø133	Ø76.1	Ø38	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-76	W-040940	Ø101.6	Ø133	Ø76.1	Ø38	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-76	W-040941	DN80	Ø133	Ø76.1	Ø38	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-76	W-040942	Ø76.1	Ø133	Ø76.1	Ø38	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-76	W-040943	DN65	Ø133	Ø76.1	Ø38	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-76	W-040944	Ø63.5	Ø133	Ø76.1	Ø38	189	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-65	W-040945	DN100	Ø133	DN65	DN40	195	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-65	W-040946	Ø101.6	Ø133	DN65	DN40	195	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-65	W-040947	DN80	Ø133	DN65	DN40	195	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-65	W-040948	Ø76.1	Ø133	DN65	DN40	195	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-65	W-040949	DN65	Ø133	DN65	DN40	195	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-65	W-040950	Ø63.5	Ø133	DN65	DN40	195	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-63	W-040951	DN100	Ø133	Ø63.5	Ø38	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-63	W-040952	Ø101.6	Ø133	Ø63.5	Ø38	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-63	W-040953	DN80	Ø133	Ø63.5	Ø38	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-63	W-040954	Ø76.1	Ø133	Ø63.5	Ø38	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-63	W-040955	DN65	Ø133	Ø63.5	Ø38	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-63	W-040956	Ø63.5	Ø133	Ø63.5	Ø38	189	310	688	234	61 pc Ø12x1mm



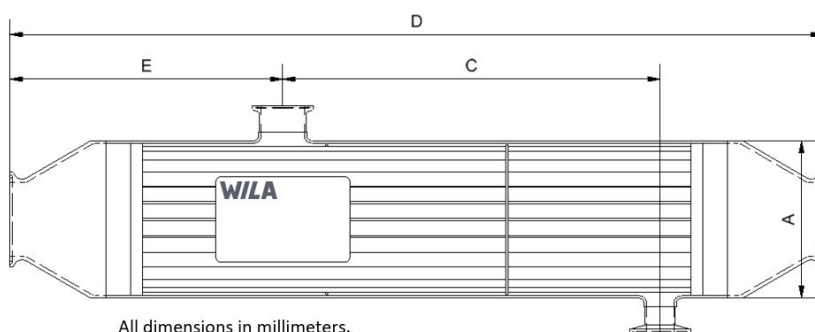
All dimensions in millimeters.



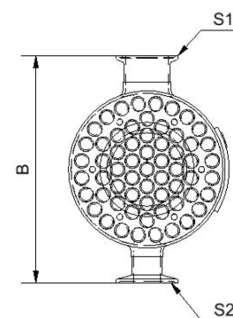
TSH-01-133-60 (section 2 of 2)		60 barg / 85°C		10 bar[g] / 185°C			Maximum pressure / temperature			
		Volume 4.5 liters		Volume 2.5 liters			316L Concentric		Dry weight 18 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-50	W-040957	DN100	Ø133	DN50	DN25	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-50	W-040958	Ø101.6	Ø133	DN50	DN25	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-50	W-040959	DN80	Ø133	DN50	DN25	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-50	W-040960	Ø76.1	Ø133	DN50	DN25	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-50	W-040961	DN65	Ø133	DN50	DN25	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-50	W-040962	Ø63.5	Ø133	DN50	DN25	189	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-51	W-040963	DN100	Ø133	Ø51	Ø25	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-51	W-040964	Ø101.6	Ø133	Ø51	Ø25	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-51	W-040965	DN80	Ø133	Ø51	Ø25	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-51	W-040966	Ø76.1	Ø133	Ø51	Ø25	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-51	W-040967	DN65	Ø133	Ø51	Ø25	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-51	W-040968	DN65	Ø133	Ø51	Ø25	189	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-40	W-040969	DN100	Ø133	DN40	DN25	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-40	W-040970	Ø101.6	Ø133	DN40	DN25	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-40	W-040971	DN80	Ø133	DN40	DN25	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-40	W-040972	Ø76.1	Ø133	DN40	DN25	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-40	W-040973	DN65	Ø133	DN40	DN25	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-40	W-040974	DN65	Ø133	DN40	DN25	189	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-38	W-040975	DN100	Ø133	Ø38	Ø25	189	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-38	W-040976	Ø101.6	Ø133	Ø38	Ø25	189	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-38	W-040977	DN80	Ø133	Ø38	Ø25	189	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-38	W-040978	Ø76.1	Ø133	Ø38	Ø25	189	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-38	W-040979	DN65	Ø133	Ø38	Ø25	189	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-38	W-040980	Ø63.5	Ø133	Ø38	Ø25	189	310	688	234	61 pc Ø12x1mm



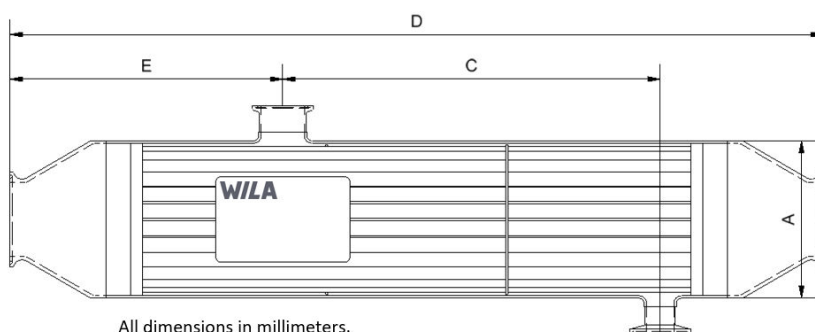
TSH-01-133-60-F		60 barg / 85°C		10 bar[g] / 185°C			Maximum pressure / temperature			
		Volume 4.5 liters		Volume 2.5 liters			316L Concentric		Dry weight 18 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-82F	W-041077	DN100	Ø133	DN80	DN40	232	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-82F	W-041078	Ø101.6	Ø133	DN80	DN40	232	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-82F	W-041079	DN80	Ø133	DN80	DN40	232	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-82F	W-041080	Ø76.1	Ø133	DN80	DN40	232	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-82F	W-041081	DN65	Ø133	DN80	DN40	232	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-82F	W-041082	Ø63.5	Ø133	DN80	DN40	232	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-70F	W-041083	DN100	Ø133	DN65	DN40	227	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-70F	W-041084	Ø101.6	Ø133	DN65	DN40	227	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-70F	W-041085	DN80	Ø133	DN65	DN40	227	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-70F	W-041086	Ø76.1	Ø133	DN65	DN40	227	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-70F	W-041087	DN65	Ø133	DN65	DN40	227	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-70F	W-041088	Ø63.5	Ø133	DN65	DN40	227	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-54F	W-041089	DN100	Ø133	DN50	DN25	224	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-54F	W-041090	Ø101.6	Ø133	DN50	DN25	224	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-54F	W-041091	DN80	Ø133	DN50	DN25	224	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-54F	W-041092	Ø76.1	Ø133	DN50	DN25	224	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-54F	W-041093	DN65	Ø133	DN50	DN25	224	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-54F	W-041094	Ø63.5	Ø133	DN50	DN25	224	310	688	234	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-01-133-100-43F	W-041095	DN100	Ø133	DN40	DN25	221	310	624	202	61 pc Ø12x1mm
TSH-01-133-101-43F	W-041096	Ø101.6	Ø133	DN40	DN25	221	310	640	210	61 pc Ø12x1mm
TSH-01-133-080-43F	W-041097	DN80	Ø133	DN40	DN25	221	310	650	215	61 pc Ø12x1mm
TSH-01-133-076-43F	W-041098	Ø76.1	Ø133	DN40	DN25	221	310	686	233	61 pc Ø12x1mm
TSH-01-133-065-43F	W-041099	DN65	Ø133	DN40	DN25	221	310	670	225	61 pc Ø12x1mm
TSH-01-133-063-43F	W-041100	Ø63.5	Ø133	DN40	DN25	221	310	688	234	61 pc Ø12x1mm



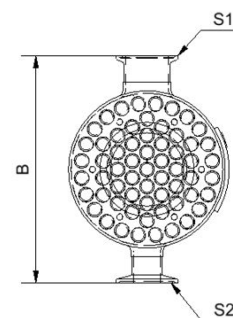
All dimensions in millimeters.



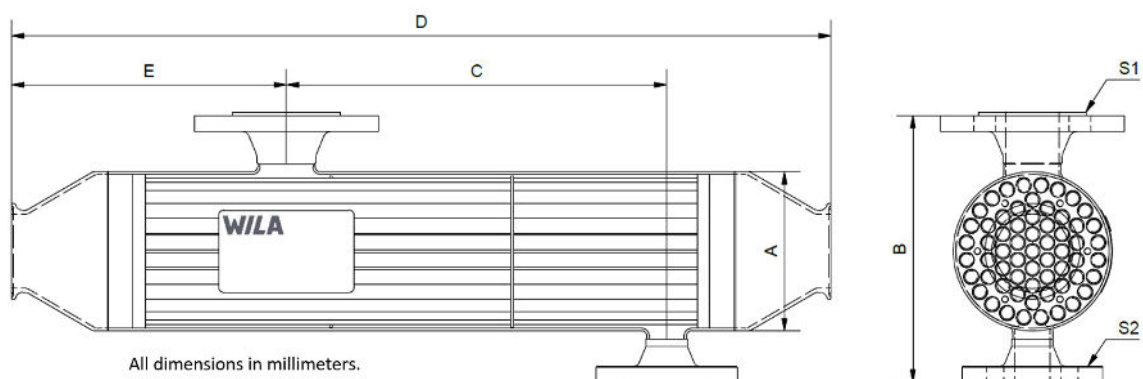
TSH-02-133-60 (section 1 of 2)		60 barg / 85°C		8 bar[g] / 176°C			Maximum pressure / temperature			
		Volume 6.5 liters		Volume 5 liters			316L Concentric		Dry weight 33 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-80	W-040981	DN100	Ø133	DN80	DN40	195	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-80	W-040982	Ø101.6	Ø133	DN80	DN40	195	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-80	W-040983	DN80	Ø133	DN80	DN40	195	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-80	W-040984	Ø76.1	Ø133	DN80	DN40	195	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-80	W-040985	DN65	Ø133	DN80	DN40	195	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-80	W-040986	Ø63.5	Ø133	DN80	DN40	195	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-76	W-040987	DN100	Ø133	Ø76.1	Ø38	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-76	W-040988	Ø101.6	Ø133	Ø76.1	Ø38	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-76	W-040989	DN80	Ø133	Ø76.1	Ø38	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-76	W-040990	Ø76.1	Ø133	Ø76.1	Ø38	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-76	W-040991	DN65	Ø133	Ø76.1	Ø38	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-76	W-040992	Ø63.5	Ø133	Ø76.1	Ø38	189	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-65	W-040993	DN100	Ø133	DN65	DN40	195	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-65	W-040994	Ø101.6	Ø133	DN65	DN40	195	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-65	W-040995	DN80	Ø133	DN65	DN40	195	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-65	W-040996	Ø76.1	Ø133	DN65	DN40	195	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-65	W-040997	DN65	Ø133	DN65	DN40	195	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-65	W-040998	Ø63.5	Ø133	DN65	DN40	195	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-63	W-040999	DN100	Ø133	Ø63.5	Ø38	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-63	W-041000	Ø101.6	Ø133	Ø63.5	Ø38	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-63	W-041001	DN80	Ø133	Ø63.5	Ø38	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-63	W-041002	Ø76.1	Ø133	Ø63.5	Ø38	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-63	W-041003	DN65	Ø133	Ø63.5	Ø38	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-63	W-041004	Ø63.5	Ø133	Ø63.5	Ø38	189	655	1178	374	61 pc Ø12x1mm



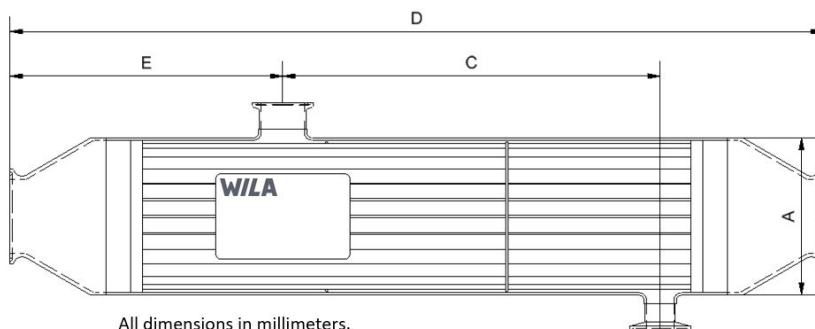
All dimensions in millimeters.



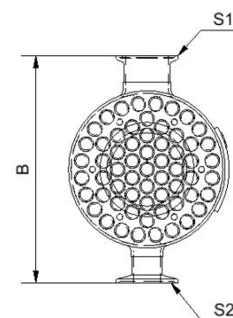
TSH-02-133-60 (section 2 of 2)		60 barg / 85°C		8 bar[g] / 176°C			Maximum pressure / temperature			
		Volume 6.5 liters		Volume 5 liters			316L Concentric		Dry weight 33 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-50	W-041005	DN100	Ø133	DN50	DN25	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-50	W-041006	Ø101.6	Ø133	DN50	DN25	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-50	W-041007	DN80	Ø133	DN50	DN25	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-50	W-041008	Ø76.1	Ø133	DN50	DN25	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-50	W-041009	DN65	Ø133	DN50	DN25	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-50	W-041010	Ø63.5	Ø133	DN50	DN25	189	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-51	W-041011	DN100	Ø133	Ø51	Ø25	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-51	W-041012	Ø101.6	Ø133	Ø51	Ø25	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-51	W-041013	DN80	Ø133	Ø51	Ø25	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-51	W-041014	Ø76.1	Ø133	Ø51	Ø25	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-51	W-041015	DN65	Ø133	Ø51	Ø25	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-51	W-041016	Ø63.5	Ø133	Ø51	Ø25	189	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-40	W-041017	DN100	Ø133	DN40	DN25	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-40	W-041018	Ø101.6	Ø133	DN40	DN25	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-40	W-041019	DN80	Ø133	DN40	DN25	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-40	W-041020	Ø76.1	Ø133	DN40	DN25	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-40	W-041021	DN65	Ø133	DN40	DN25	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-40	W-041022	Ø63.5	Ø133	DN40	DN25	189	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-38	W-041023	DN100	Ø133	Ø38	Ø25	189	655	1114	343	61 pc Ø12x1mm
TSH-02-133-101-38	W-041024	Ø101.6	Ø133	Ø38	Ø25	189	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-38	W-041025	DN80	Ø133	Ø38	Ø25	189	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-38	W-041026	Ø76.1	Ø133	Ø38	Ø25	189	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-38	W-041027	DN65	Ø133	Ø38	Ø25	189	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-38	W-041028	Ø63.5	Ø133	Ø38	Ø25	189	655	1178	374	61 pc Ø12x1mm



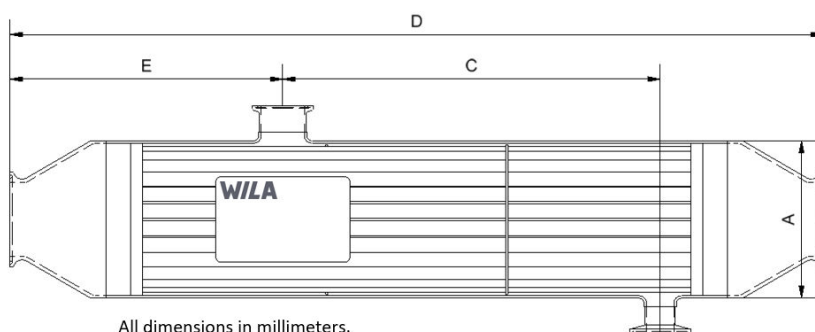
TSH-02-133-60-F		60 barg / 85°C		8 bar[g] / 176°C			Maximum pressure / temperature			
		Volume 6.5 liters		Volume 5 liters			316L Concentric		Dry weight 33 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-82F	W-041101	DN100	Ø133	DN80	DN40	232	655	1114	342	61 pc Ø12x1mm
TSH-02-133-101-82F	W-041102	Ø101.6	Ø133	DN80	DN40	232	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-82F	W-041103	DN80	Ø133	DN80	DN40	232	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-82F	W-041104	Ø76.1	Ø133	DN80	DN40	232	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-82F	W-041105	DN65	Ø133	DN80	DN40	232	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-82F	W-041106	Ø63.5	Ø133	DN80	DN40	232	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-70F	W-041107	DN100	Ø133	DN65	DN40	227	655	1114	342	61 pc Ø12x1mm
TSH-02-133-101-70F	W-041108	Ø101.6	Ø133	DN65	DN40	227	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-70F	W-041109	DN80	Ø133	DN65	DN40	227	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-70F	W-041110	Ø76.1	Ø133	DN65	DN40	227	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-70F	W-041111	DN65	Ø133	DN65	DN40	227	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-70F	W-041112	Ø63.5	Ø133	DN65	DN40	227	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-54F	W-041113	DN100	Ø133	DN50	DN25	224	655	1114	342	61 pc Ø12x1mm
TSH-02-133-101-54F	W-041114	Ø101.6	Ø133	DN50	DN25	224	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-54F	W-041115	DN80	Ø133	DN50	DN25	224	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-54F	W-041116	Ø76.1	Ø133	DN50	DN25	224	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-54F	W-041117	DN65	Ø133	DN50	DN25	224	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-54F	W-041118	Ø63.5	Ø133	DN50	DN25	224	655	1178	374	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-02-133-100-43F	W-041119	DN100	Ø133	DN40	DN25	221	655	1114	342	61 pc Ø12x1mm
TSH-02-133-101-43F	W-041120	Ø101.6	Ø133	DN40	DN25	221	655	1130	350	61 pc Ø12x1mm
TSH-02-133-080-43F	W-041121	DN80	Ø133	DN40	DN25	221	655	1140	355	61 pc Ø12x1mm
TSH-02-133-076-43F	W-041122	Ø76.1	Ø133	DN40	DN25	221	655	1176	373	61 pc Ø12x1mm
TSH-02-133-065-43F	W-041123	DN65	Ø133	DN40	DN25	221	655	1160	365	61 pc Ø12x1mm
TSH-02-133-063-43F	W-041124	Ø63.5	Ø133	DN40	DN25	221	655	1178	374	61 pc Ø12x1mm



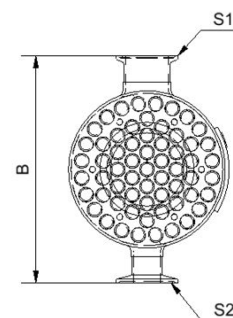
All dimensions in millimeters.



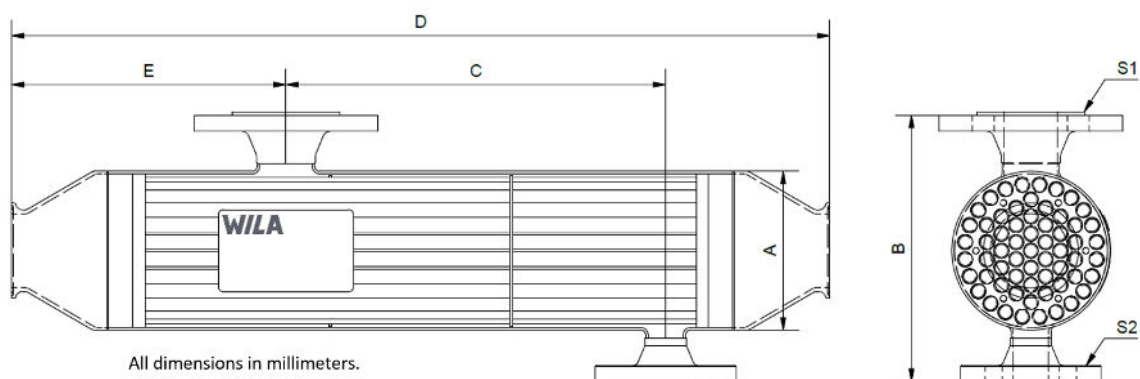
TSH-03-133-60 (section 1 of 2)		60 barg / 85°C		6 bar[g] / 165°C			Maximum pressure / temperature			
		Volume 9 liters		Volume 7.5 liters			316L Concentric		Dry weight 48 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-80	W-041029	DN100	Ø133	DN80	DN40	195	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-80	W-041030	Ø101.6	Ø133	DN80	DN40	195	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-80	W-041031	DN80	Ø133	DN80	DN40	195	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-80	W-041032	Ø76.1	Ø133	DN80	DN40	195	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-80	W-041033	DN65	Ø133	DN80	DN40	195	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-80	W-041034	Ø63.5	Ø133	DN80	DN40	195	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-76	W-041035	DN100	Ø133	Ø76.1	Ø38	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-76	W-041036	Ø101.6	Ø133	Ø76.1	Ø38	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-76	W-041037	DN80	Ø133	Ø76.1	Ø38	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-76	W-041038	Ø76.1	Ø133	Ø76.1	Ø38	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-76	W-041039	DN65	Ø133	Ø76.1	Ø38	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-76	W-041040	Ø63.5	Ø133	Ø76.1	Ø38	189	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-65	W-041041	DN100	Ø133	DN65	DN40	195	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-65	W-041042	Ø101.6	Ø133	DN65	DN40	195	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-65	W-041043	DN80	Ø133	DN65	DN40	195	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-65	W-041044	Ø76.1	Ø133	DN65	DN40	195	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-65	W-041045	DN65	Ø133	DN65	DN40	195	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-65	W-041046	Ø63.5	Ø133	DN65	DN40	195	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-63	W-041047	DN100	Ø133	Ø63.5	Ø38	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-63	W-041048	Ø101.6	Ø133	Ø63.5	Ø38	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-63	W-041049	DN80	Ø133	Ø63.5	Ø38	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-63	W-041050	Ø76.1	Ø133	Ø63.5	Ø38	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-63	W-041051	DN65	Ø133	Ø63.5	Ø38	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-63	W-041052	Ø63.5	Ø133	Ø63.5	Ø38	189	1020	1668	499	61 pc Ø12x1mm



All dimensions in millimeters.



TSH-03-133-60 (section 2 of 2)		60 barg / 85°C		6 bar[g] / 165°C			Maximum pressure / temperature			
		Volume 9 liters		Volume 7.5 liters			316L Concentric		Dry weight 48 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-50	W-041053	DN100	Ø133	DN50	DN25	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-50	W-041054	Ø101.6	Ø133	DN50	DN25	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-50	W-041055	DN80	Ø133	DN50	DN25	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-50	W-041056	Ø76.1	Ø133	DN50	DN25	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-50	W-041057	DN65	Ø133	DN50	DN25	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-50	W-041058	Ø63.5	Ø133	DN50	DN25	189	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-51	W-041059	DN100	Ø133	Ø51	Ø25	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-51	W-041060	Ø101.6	Ø133	Ø51	Ø25	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-51	W-041061	DN80	Ø133	Ø51	Ø25	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-51	W-041062	Ø76.1	Ø133	Ø51	Ø25	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-51	W-041063	DN65	Ø133	Ø51	Ø25	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-51	W-041064	Ø63.5	Ø133	Ø51	Ø25	189	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-40	W-041065	DN100	Ø133	DN40	DN25	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-40	W-041066	Ø101.6	Ø133	DN40	DN25	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-40	W-041067	DN80	Ø133	DN40	DN25	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-40	W-041068	Ø76.1	Ø133	DN40	DN25	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-40	W-041069	DN65	Ø133	DN40	DN25	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-40	W-041070	Ø63.5	Ø133	DN40	DN25	189	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-38	W-041071	DN100	Ø133	Ø38	Ø25	189	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-38	W-041072	Ø101.6	Ø133	Ø38	Ø25	189	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-38	W-041073	DN80	Ø133	Ø38	Ø25	189	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-38	W-041074	Ø76.1	Ø133	Ø38	Ø25	189	1020	1666	498	61 pc Ø12x1mm
TSH-03-133-065-38	W-041075	DN65	Ø133	Ø38	Ø25	189	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-38	W-041076	Ø63.5	Ø133	Ø38	Ø25	189	1020	1668	499	61 pc Ø12x1mm



TSH-03-133-40-F		40 barg / 85°C		6 bar[g] / 165°C			Maximum pressure / temperature			
		Volume 9 liters		Volume 7.5 liters			316L Concentric		Dry weight 48 kg	
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-82F	W-041125	DN100	Ø133	DN80	DN40	232	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-82F	W-041126	Ø101.6	Ø133	DN80	DN40	232	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-82F	W-041127	DN80	Ø133	DN80	DN40	232	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-82F	W-041128	Ø76.1	Ø133	DN80	DN40	232	1020	1716	548	61 pc Ø12x1mm
TSH-03-133-065-82F	W-041129	DN65	Ø133	DN80	DN40	232	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-82F	W-041130	Ø63.5	Ø133	DN80	DN40	232	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-70F	W-041131	DN100	Ø133	DN65	DN40	227	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-70F	W-041132	Ø101.6	Ø133	DN65	DN40	227	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-70F	W-041133	DN80	Ø133	DN65	DN40	227	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-70F	W-041134	Ø76.1	Ø133	DN65	DN40	227	1020	1716	548	61 pc Ø12x1mm
TSH-03-133-065-70F	W-041135	DN65	Ø133	DN65	DN40	227	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-70F	W-041136	Ø63.5	Ø133	DN65	DN40	227	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-54F	W-041137	DN100	Ø133	DN50	DN25	224	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-54F	W-041138	Ø101.6	Ø133	DN50	DN25	224	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-54F	W-041139	DN80	Ø133	DN50	DN25	224	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-54F	W-041140	Ø76.1	Ø133	DN50	DN25	224	1020	1716	548	61 pc Ø12x1mm
TSH-03-133-065-54F	W-041141	DN65	Ø133	DN50	DN25	224	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-54F	W-041142	Ø63.5	Ø133	DN50	DN25	224	1020	1668	499	61 pc Ø12x1mm
Stock number	Drawing number	P1/P2	A	S1	S2	B	C	D	E	Tube bank
TSH-03-133-100-43F	W-041143	DN100	Ø133	DN40	DN25	221	1020	1604	467	61 pc Ø12x1mm
TSH-03-133-101-43F	W-041144	Ø101.6	Ø133	DN40	DN25	221	1020	1620	475	61 pc Ø12x1mm
TSH-03-133-080-43F	W-041145	DN80	Ø133	DN40	DN25	221	1020	1630	480	61 pc Ø12x1mm
TSH-03-133-076-43F	W-041146	Ø76.1	Ø133	DN40	DN25	221	1020	1716	548	61 pc Ø12x1mm
TSH-03-133-065-43F	W-041147	DN65	Ø133	DN40	DN25	221	1020	1650	490	61 pc Ø12x1mm
TSH-03-133-063-43F	W-041148	Ø63.5	Ø133	DN40	DN25	221	1020	1668	499	61 pc Ø12x1mm