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Thermex TSUZ Series
Buffer Storage Tanks for Heating & Cooling

Flowenergy
HEATING & VENTILATION SOLUTIONS

Thermex TSUZ Series Buffer Tanks

500L - 35,000L

Thermex TSUZ Series Buffer Storage Tanks are ideal for applications requiring large volume chilled water storage in heating or chilled water circuits.

They can be used with chillers and boilers which do not have water volumes of sufficient size in relation to the chiller or boiler. The insufficiently sized systems do not have enough buffer capacity for the system water causing poor temperature control, erratic system operation and excessive chiller or boiler cycling.

Thermex TSUZ Series Buffer Storage Tanks solves this problem by adding water volume to buffer the system and reduces the rate of change of the return water.

Chillers are designed to be useful in systems with a minimum water volume. The minimum water volume is based upon the chiller manufacturer's requirements. When chiller systems are properly sized, the chiller compressor will not short cycle. Without the proper amount of system water, the source temperature will be reached quickly and the compressor will shut off. Many chiller compressors can only start 3 times per hour. Insufficiently sized system problems can cause excessive compressor cycling, poor temperature control and erratic system operations.

Features

- When insulated, Thermex tanks comply to the BCA Section J insulation requirements
- Are suitable for indoor and outdoor situations
- Designed to AS1210 Unfired Pressure Vessels
- Low profile to facilitate installation in low roof plant-rooms
- Available in various materials and pressure ratings
- Standard designs in sizes from 500L to 35,000L
- Mild Steel Construction
- Inlet, Outlet, Drain and Vent Connections
- External Surface: Whip blast, PH Primer
- MAX Working Pressure 6 Bar

Product Quick Check

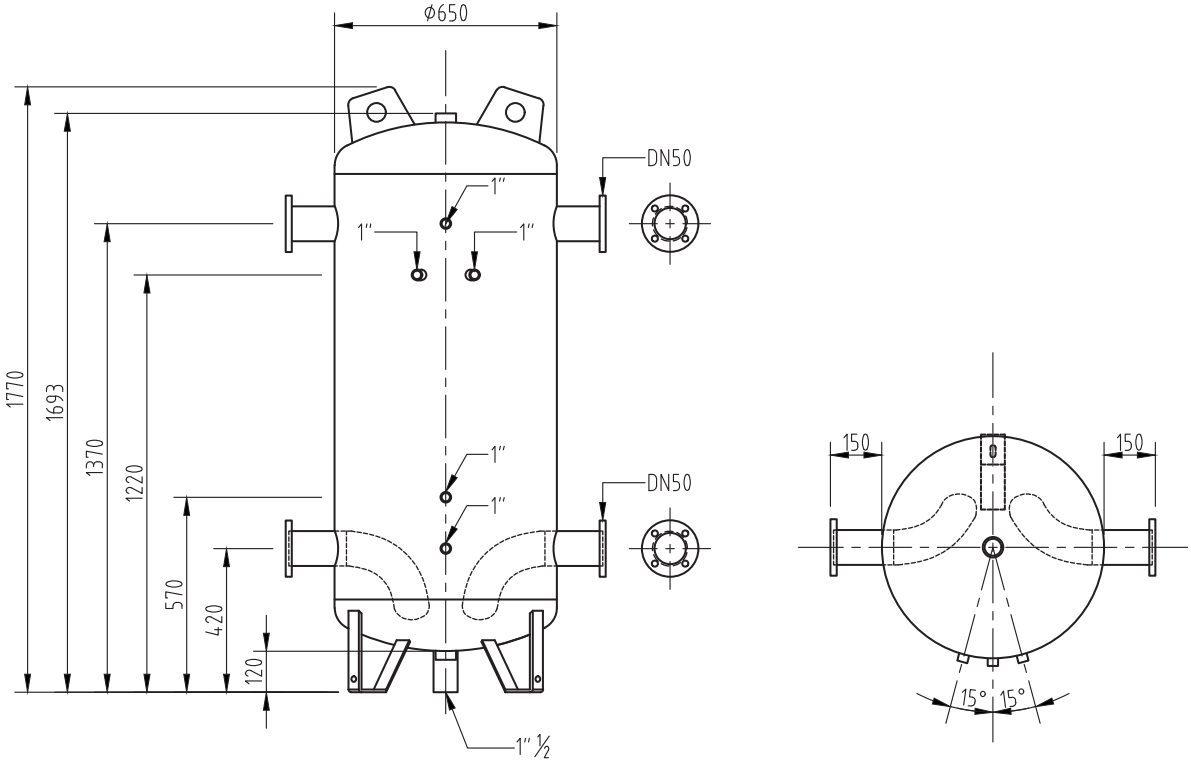
Product	**TSUZ Buffer Storage Tanks**	Outdoor Suitable	**Yes (when insulated and clad)**
Material	**Mild Steel**	Max Pressure	**6 Bar**
Range	**500-35,000L**	Building J Code 2019 Compliant	**Yes**
Suitable HVAC Systems	**Chilled or Heating**		

Dimensional Data

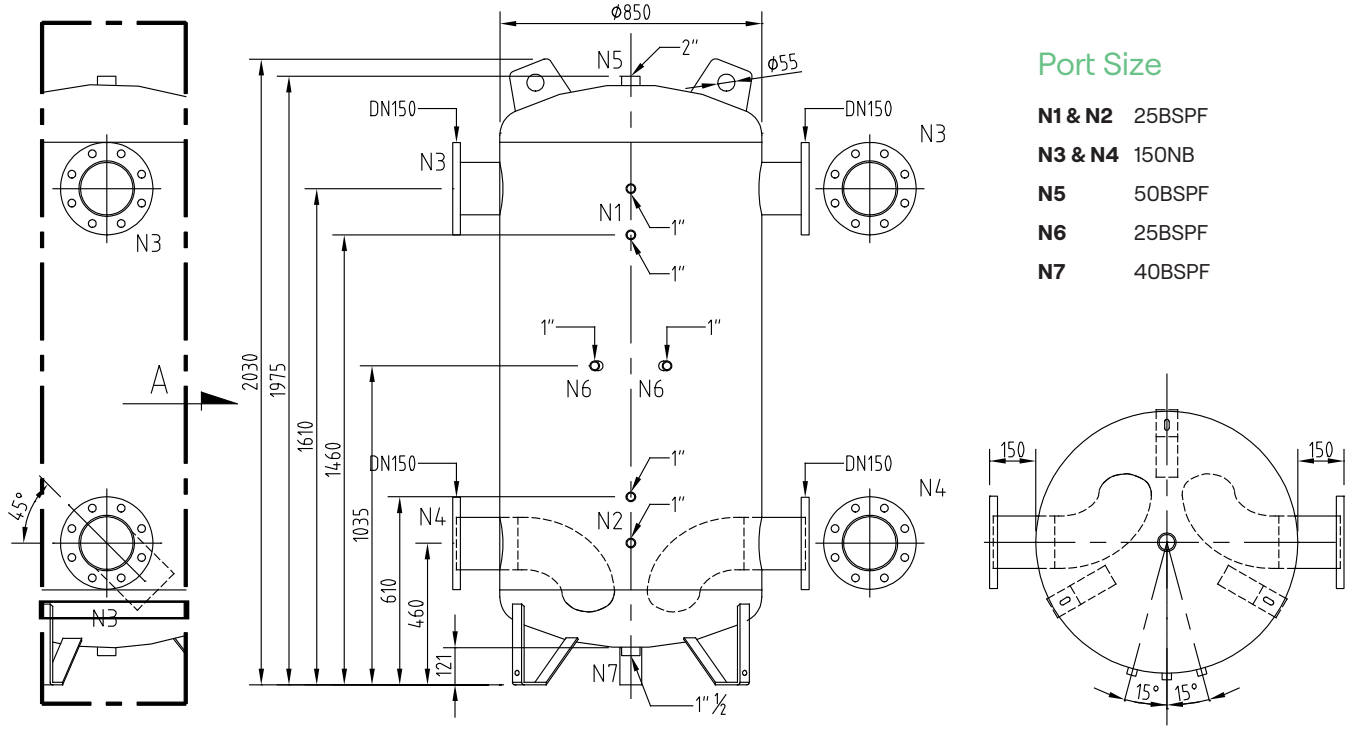
Model	Volume (L)	Height (mm)	Diameter (mm)	Flanged Connections
TSUZ00500L0650	500	1770	650	4 x 50mm
TSUZ01000L0850	1000	1975	850	4 x 150mm
TSUZ01500L1000	1500	2000	1000	4 x 150mm
TSUZ02000L1250	2000	1935	1250	4 x 200mm
TSUZ02500L1400	2500	1960	1400	4 x 200mm
TSUZ03000L1600	3000	1970	1600	4 x 200mm
TSUZ04000L1800	4000	2000	1800	4 x 200mm
TSUZ05000L1800	5000	2400	1800	4 x 200mm
TSUZ06000L2000	6000	2450	2000	4 x 200mm
TSUZ08000L2000	8000	3200	2000	4 x 200mm
TSUZ10000L2000	10000	3800	2000	4 x 200mm
TSUZ14000L2200	14000	3800	2200	4 x 250mm
TSUZ30000L2200	30000	8200	2200	4 x 250mm
TSUZ35000L2200	35000	9800	2200	4 x 250mm

Technical Drawings

500L - TSUZ00500L0650



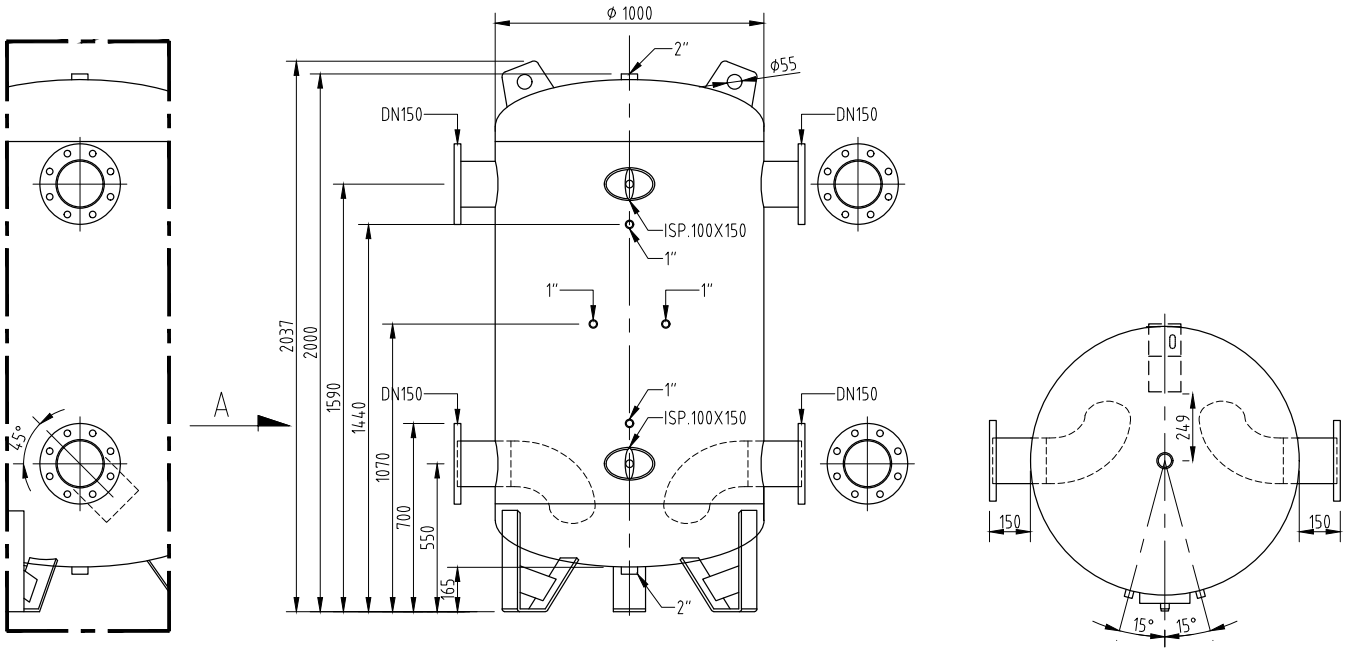
1000L - TSUZ01000L0850



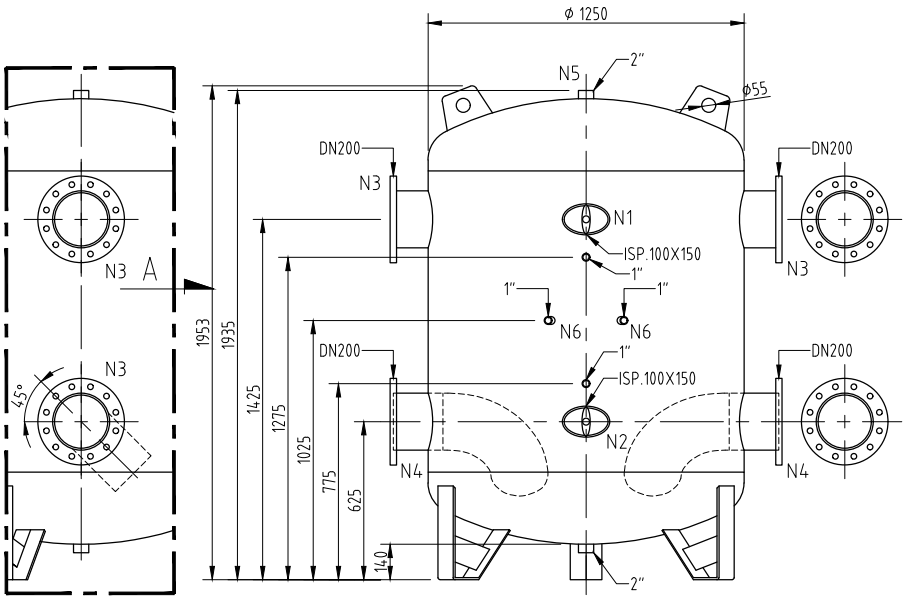
Port Size

N1 & N2	25BSPF
N3 & N4	150NB
N5	50BSPF
N6	25BSPF
N7	40BSPF

1500L - TSUZ01500L1000

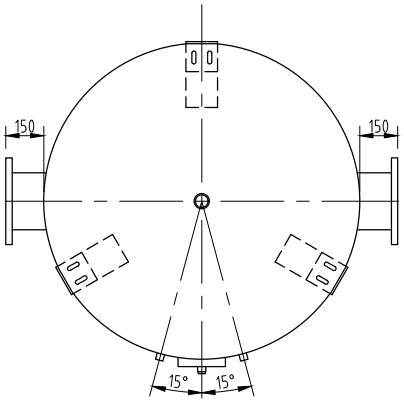


2000L - TSUZ02000L1250

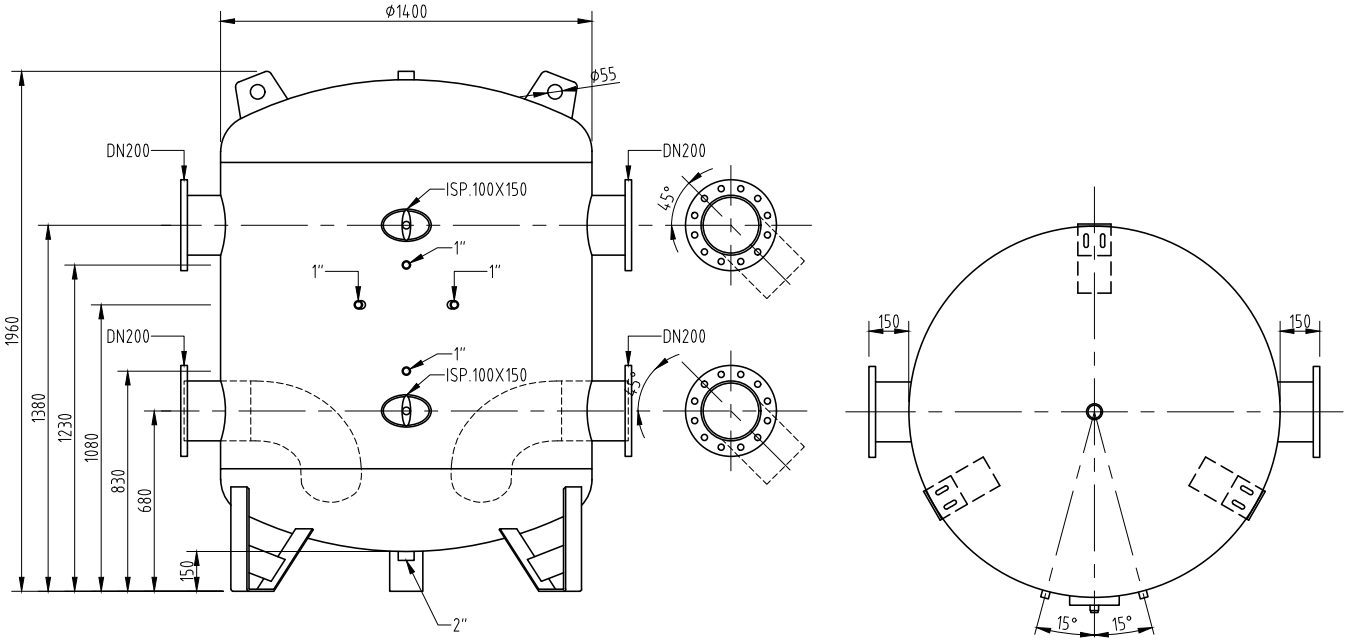


Port Size

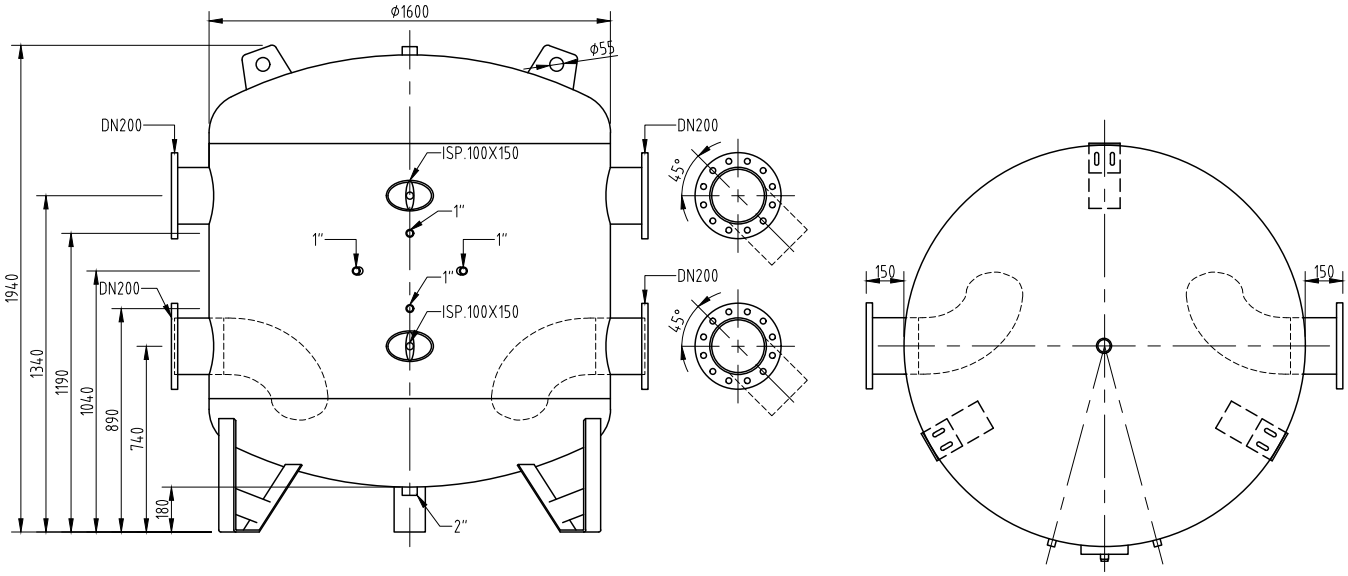
N1 & N2	125x180 (Inspection)
N3 & N4	200NB
N5	50BSPF
N6	25BSPF
N7	50BSPF



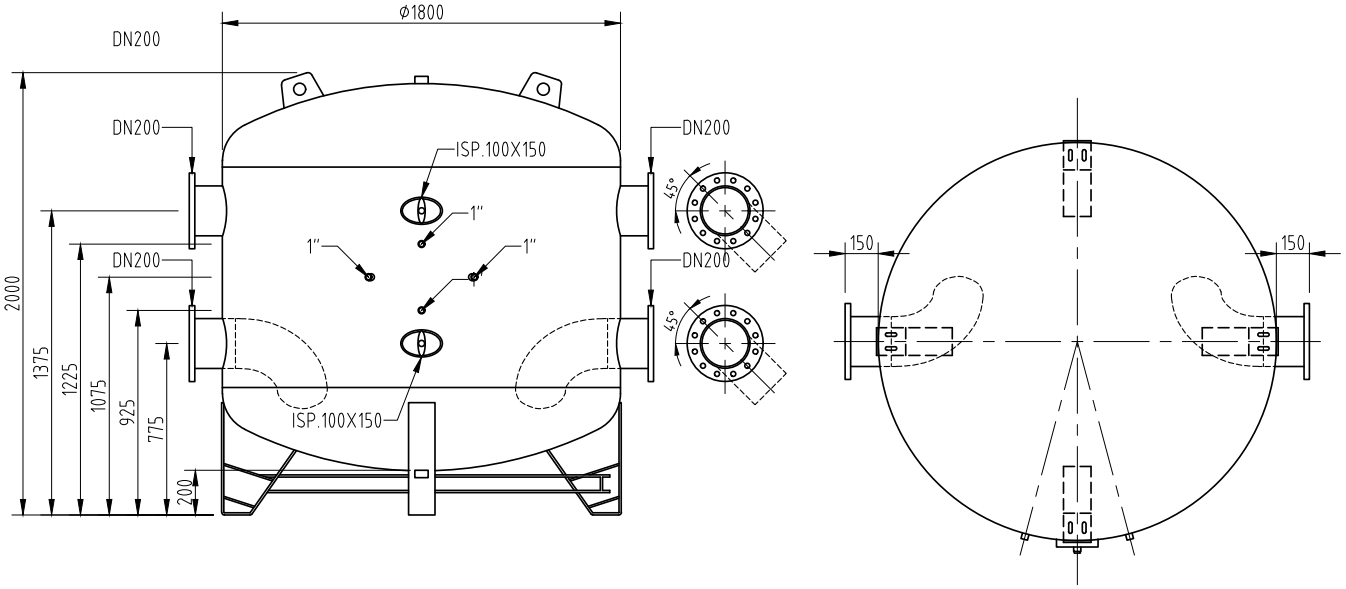
2500L - TSUZ02500L1400



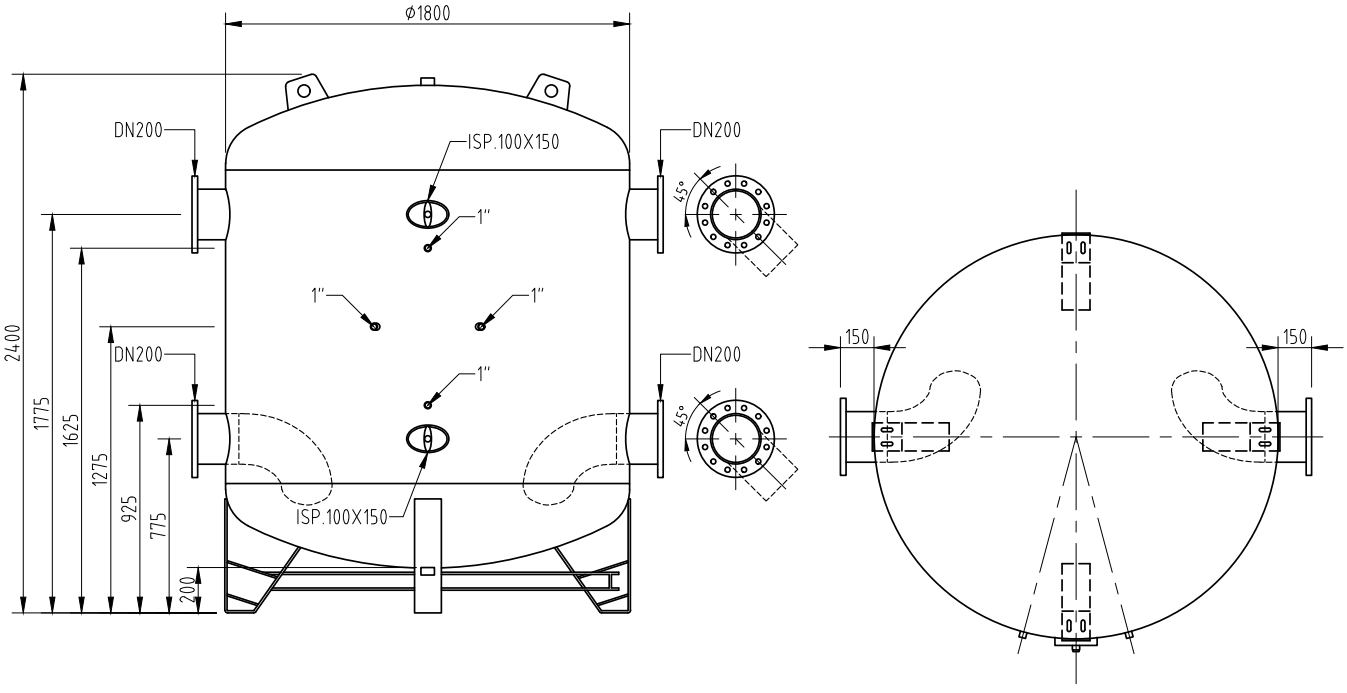
3000L - TSUZ03000L1600



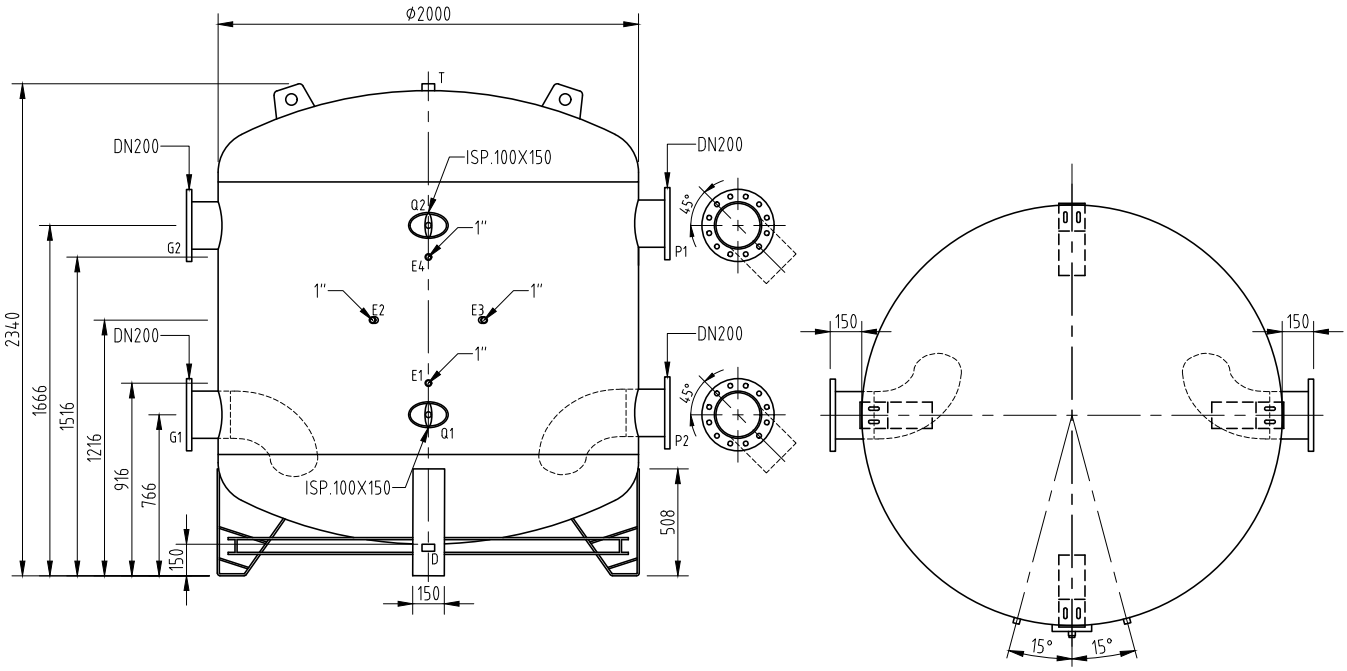
4000L - TSUZ04000L1800



5000L - TSUZ05000L1800

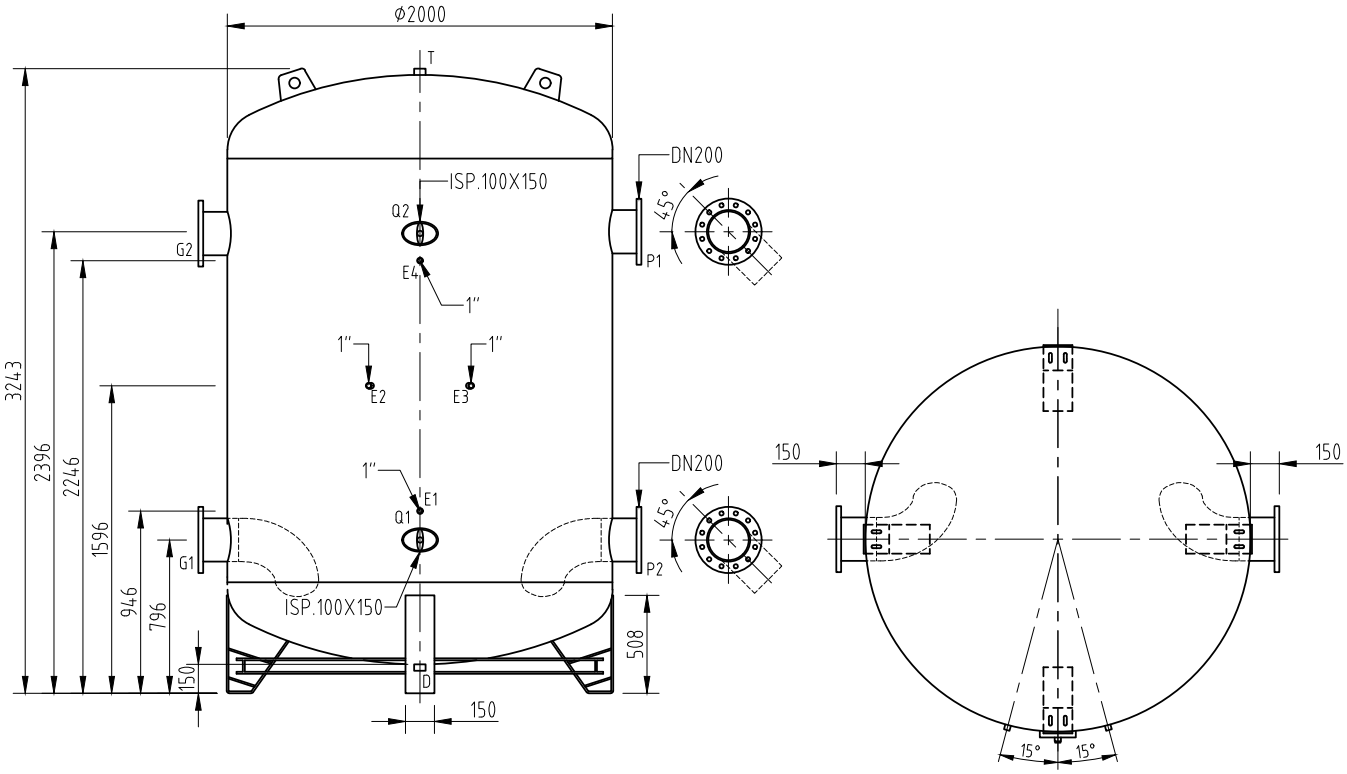


6000L - TSUZ06000L2000



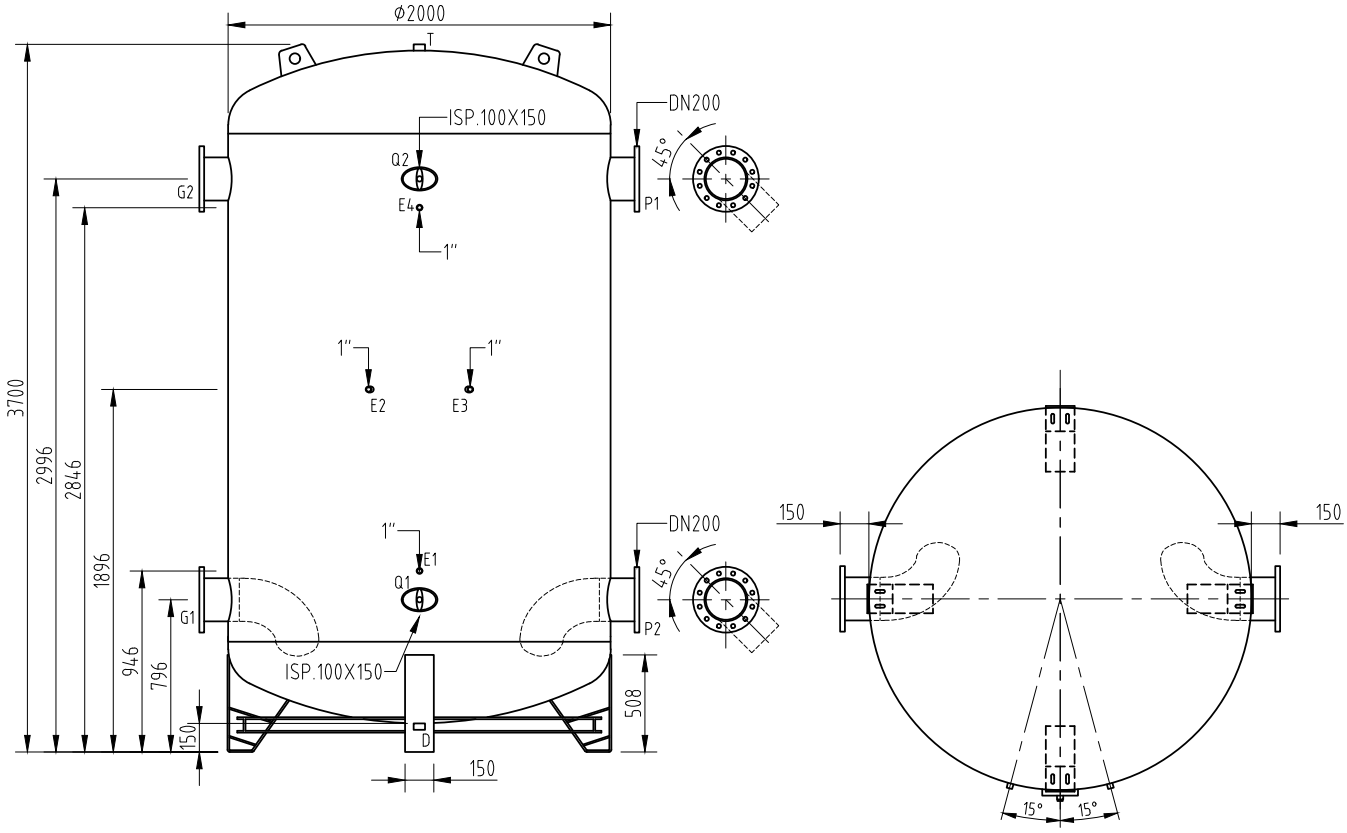
D Drain
E1, 2, 3 Probe / Thermometer
G1 From Plant
G2 To Plant
P1 From Energy Source
P2 To Energy Source
Q1-Q2 Inspection Hole
T Vent

8000L - TSUZ08000L2000



D Drain
E1, 2, 3 Probe / Thermometer
G1 From Plant
G2 To Plant
P1 From Energy Source
P2 To Energy Source
Q1-Q2 Inspection Hole
T Vent

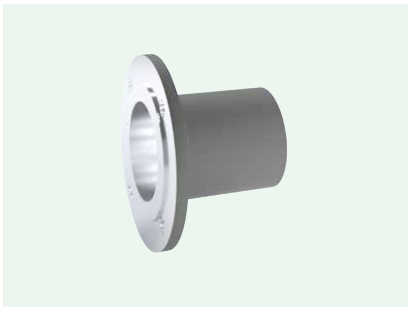
10000L - TSUZ10000L2000



D	Drain	**G1**	From Plant	**P1**	From Energy Source	**Q1-Q2**	Inspection Hole
E1, 2, 3	Probe / Thermometer	**G2**	To Plant	**P2**	To Energy Source	**T**	Vent

Note: Drawings for tanks above 10,000L are available on request.

Available Options



Flanged Nozzles

For connecting pipeline continuations. You are free to choose the number and position of the flanged nozzles.

Bends

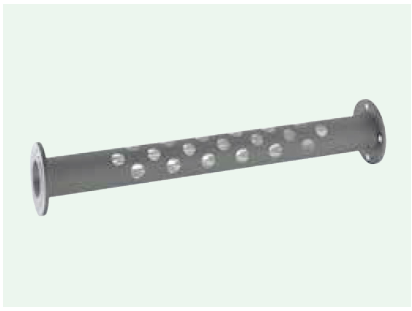
Increase the optimal utilisation of the height of a tank and avoid unused dead spaces.

Hand Holes

Necessary service openings for small tanks. (100 x 150 mm)

Man Holes

Necessary service openings for large tanks. (320 x 420 mm)



Sparge Pipes

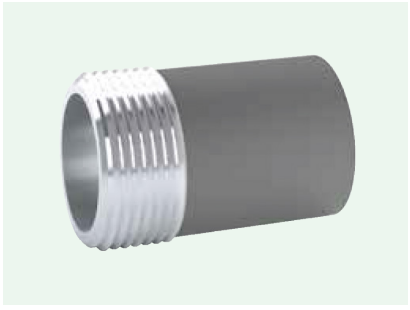
Conduct the main volume flow without generating turbulence in the vessel.

Diffuser Bends

Reduce the inflow and outflow speeds of the fluid in the tank.

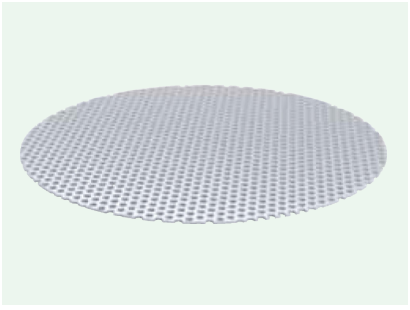
Bushings

Used to connect measuring instruments such as thermometers and pressure gauges.



Threaded Nozzles

For connecting pipeline continuations with a threaded transition. You are free to choose the number and position of the flanged nozzles.



Perforated/Stratifying Sheets

Enable necessary stratification within a tank

Sizing of a Buffer Storage Tank

The necessary volume for a buffer storage tank can be calculated based on a few parameters. The only factors needed here are the thermal output (heating or cooling output), the storage time and the temperature difference between the feed and return. This information is entered into the following formula:

$$V_{st} = \frac{P \times t}{c \times \Delta T}$$

V_{st} = Storage volume in m^3

P = Heating/cooling rating in kW

t = Storage time in h

c = Heat capacity of the carrier fluid, in this case 1.163 kWh/(m^3 × K)

ΔT = Temperature difference in K

Example: The minimum rating of a water chiller of 50 kW at a temperature difference of 5 kelvin between feed and return is intended to be stored for a period of 20 minutes (cycle frequency).

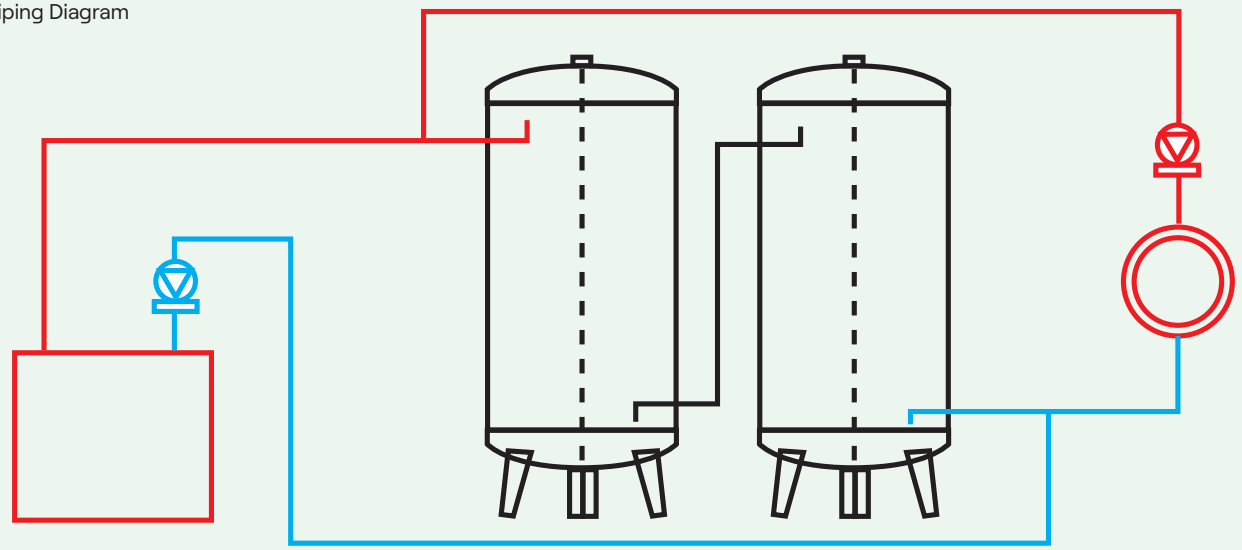
$$V_{st} = \frac{P \times t}{c \times \Delta T}$$

$$V_{st} = \frac{50\ \text{kW} \times 1/3\ \text{h}}{1.163\ \text{kWh/(m}^3 \times \text{K)} \times 5\ \text{K}}$$

$$V_{st} = 2.87\ \text{m}^3$$

Therefore, the storage volume required here is 2.87 m^3, or 2,870 litres.

Buffer Storage Tank
Piping Diagram



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