

Dry All

Full Range of HVAC&R Line Products



**TITANIUM TUBE HEAT EXCHANGERS
FOR SWIMMING POOLS**

Introduction

Dry All Titanium Tube Heat Exchangers are highly durable and efficient components used to transfer heat from a heat source to the pool water. Titanium is an ideal material for heat exchangers due to its resistance to corrosion, even in saltwater pools, and its ability to handle high temperatures and pressures. These heat exchangers are often used in conjunction with boilers, solar panels, or heat pumps to maintain a comfortable pool temperature.

Key Features

- 1. Corrosion Resistance:** Titanium's resistance to corrosion makes it ideal for use in saltwater and chlorinated pool systems, ensuring longevity and reliability.
- 2. High Efficiency:** Titanium heat exchangers offer excellent thermal conductivity, allowing for efficient heat transfer and energy savings.
- 3. Durability:** Titanium's strength and durability reduce the risk of damage and leaks, providing a long-lasting solution for pool heating.
- 4. Compatibility:** These heat exchangers can be used with various heat sources, including gas boilers, oil boilers, heat pumps, and solar panels.
- 5. Low Maintenance:** Due to their resistance to scaling and fouling, titanium heat exchangers require minimal maintenance, reducing operational costs.

Applications

- Residential and commercial swimming pools
- Spas and hot tubs
- Aquatic facilities
- Industrial applications requiring corrosion-resistant heat exchangers

Advantages

High Thermal Conductivity

Titanium heat exchangers provide efficient heat transfer, ensuring that the pool water is heated quickly and uniformly. This efficiency can lead to energy savings and reduced operational costs.

Longevity

The combination of corrosion resistance and durability means that titanium heat exchangers have a longer service life compared to those made from other materials. This results in a better return on investment over time.

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Safety

Titanium does not react with pool chemicals, ensuring the safety of pool users. It also minimizes the risk of chemical reactions that could damage the heat exchanger or the heating system.

Environmental Benefits

By providing efficient heat transfer and reducing energy consumption, titanium heat exchangers contribute to a lower carbon footprint. Their long lifespan also means fewer replacements and less waste.

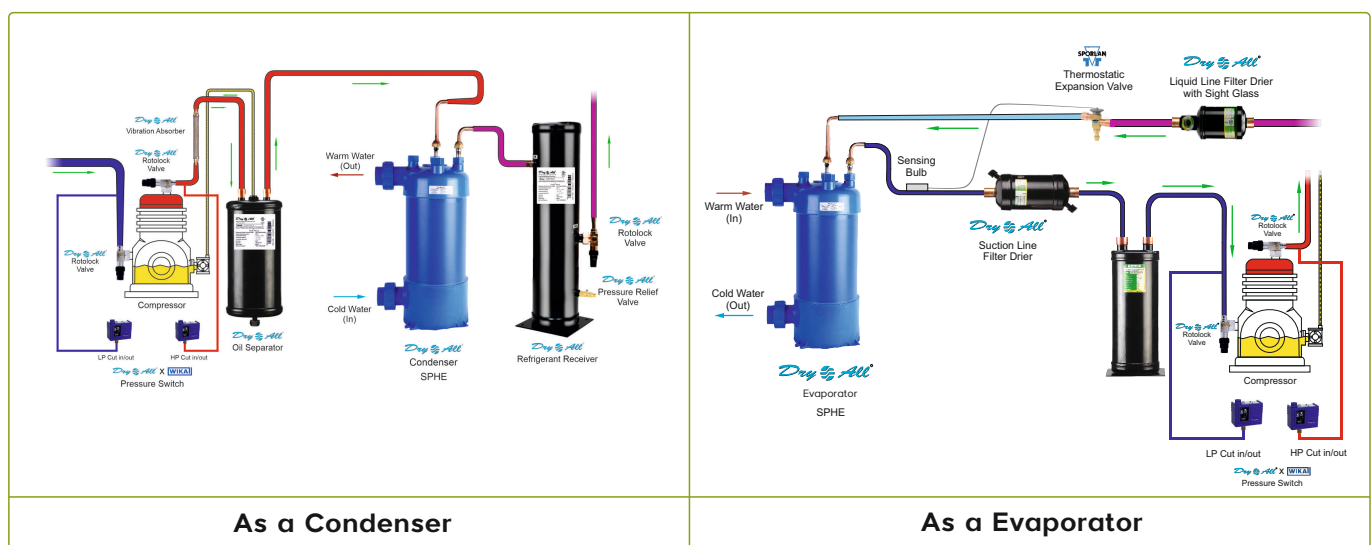
Reliability

The superior properties of titanium ensure consistent performance, providing reliable pool heating and peace of mind for pool owners.

Working Principle

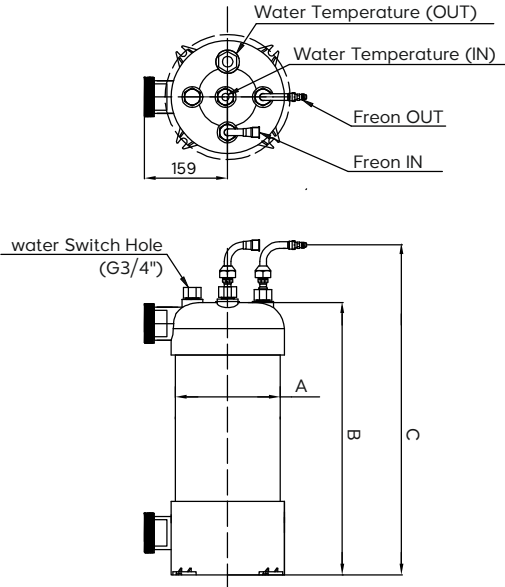
- The hot, high-pressure refrigerant gas enters the heat exchanger from the compressor.
- The pool water is pumped through the heat exchanger in a counter-flow or cross-flow manner relative to the refrigerant. As the refrigerant gas flows through the heat exchanger, it transfers its heat to the pool water via conduction through the walls of the heat exchanger.
- The now-heated pool water exits the heat exchanger and is circulated back into the pool, raising its temperature.
- After transferring its heat, the refrigerant condenses back into a liquid and returns to the evaporator to absorb more heat, continuing the cycle.

Product Installed in Refrigeration System



TITANIUM TUBE HEAT EXCHANGERS

Image & Drawing

IMAGE	DIMENSIONAL DATA
	

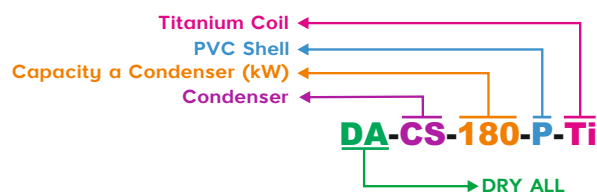
Models Available

S/N	Model	Heating Capacity (kW)	Cooling Capacity (kW)	PVC Shell Dimension		Total Length C	Titanium Twisted Tubing Dia. x Thickness x Length (mm)	Refrigerant Tube IN/OUT mm	Water IN/OUT mm	Flow Rate m³/hr for Heating
				A	B					
1	DA-CS180PTi	18	10	200	530	630	16 x 0.6 x 9800	φ16/φ12.7mm	φ48.3 Quick Coupler	7.5
2	DA-CS270PTi	27	15	200	530	636	16 x 0.6 x 16000	φ16/φ12.7mm	φ48.3 Quick Coupler	11
3	DA-CS350PTi	35	19	200	560	666	16 x 0.55 x 19000	φ19/φ12.7mm	φ50 Quick Coupler	15
4	DA-CS450PTi	45	25	200	630	736	16 x 0.55 x 21000	φ19/φ12.7mm	φ50 Quick Coupler	20
5	DA-CS540PTi	54	30	250	560	665	25 x 0.55 x 19000	φ25/φ19mm	φ63 Quick Coupler	25

Note:

1. Heating capacity is measured under DB/WB at 20°C/ 15°C, with R410A refrigerant ,Condensing Temperature 40°C, inlet water temperature 26°C, outlet water temperature 28°C.
2. Cooling Capacity is measured under DB/WB at 35°C/ 24°C with R410A refrigerant, Evaporating Temperature 3°C and inlet water temp. is 24°C, outlet water temp. is 19°C.
3. All above mentioned model are not suitable for brine solutions for example sulfuric Acid.

Nomenclature



Technical Parameters

Parameter	Refrigerant Side	Secondary Side
Max. Pressure	45 Bar	4 Bar
Temp. Range	-50°C to 150°C	-10°C to 45°C
Refrigerant Type	R22, R134a, R404a, R407C, R410A, R600a	Sea Water , Plating Solutions , Anfreeze, Swimming Pool Water, Ground Water
Remarks	1. Please Purge Air from water system , and ensure work pressure should not exceed the max. pressure. 2. Please Keep the water clean, suggest to install filter and clean the system regularly. 3. Please drain off the water when machine stopped during the cold season to avoid freezing.	

Selection Parameters

Heat Exchanger Capacity

- kW Rating: The heat exchanger should have a capacity that matches or exceeds the heating requirements of the pool. This is typically measured in kilowatts (kW).

Flow Rates

- Pool Water Flow Rate: The heat exchanger should support the flow rate of the pool's pump system, typically measured in liters per minute (LPM).

Pressure Drop

- Pool Water Side: Check the pressure drop on the pool water side to ensure it doesn't exceed the pool pump's capacity.

Temperature Range

- Inlet and Outlet Temperatures: The heat exchanger should be capable of handling the expected temperature ranges of both the pool water and the refrigerant.
- Delta T: Calculate the temperature difference (Delta T) between the inlet and outlet to ensure efficient heat transfer.

Water Side Flow Switch for Titanium Pool Heat Exchanger (Optional)



A Water side flow switch is an important safety and operational component for a Dry All Titanium heat exchanger used in swimming pool systems. It ensures that the heat exchanger only operates when there is adequate water flow, preventing damage due to overheating or lack of water circulation.

Purpose and Benefits

- 1. Protection:** Prevents the heat exchanger from operating without water flow, which can cause overheating and damage.
- 2. Efficiency:** Ensures the heat exchanger operates only when necessary, optimizing energy use.
- 3. Safety:** Reduces the risk of accidents caused by overheating or pressure buildup.

Technical Parameters

Sr. No.	Parameter	Value
1	Media Type	Liquid
2	Flow rate	30L/min
3	Body Material	Plastic
4	Max Operating Temp	-40°C to +80°C
5	Start up Volume	0.7L/min
6	Operate Volume	30L/min
7	Connect Size	G3/4" - 14
8	Contact Form	NO
9	Max Switch Voltage	300V
10	Max Switch Current	0.5A
11	Max Contact Rating	50W

Conclusion:

In conclusion, Dry All Swimming Pool Heat Exchangers with Titanium Barrels represent a pinnacle in pool heating technology. With a diverse range of features aimed at efficiency, durability, and safety, these heat exchangers are the perfect choice for heating swimming pools of different sizes and complementing heat pump systems. The incorporation of innovative components and the use of high-quality materials ensure a reliable, efficient, and long-lasting solution for all your pool heating needs.

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