DTS/DTT Series
Cooling Solutions Guide

The Pfannenberg Advantage -
Innovative, Efficient, Reliable

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

Indoor NEMA Type 12

2000–24000 Btu/h

	DTS 3021	DTS 3041	DTS 3141	DTS 3141 SL	DTS 3145	DTS 3241	DTS 3245	DTS 3341	DTS 3541	DTS 3641
Btu/h	900 - 1300	2000 - 3000	3000 - 4000	3000 - 5000	5000 - 7000	7000 - 8500	9000 - 12000	12000 - 14000	16000 - 18000	20000 - 24000
Available Volts	115 / 230	115 / 230	115 / 230 460 1Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø
Height (in)	15.5	20.2	29.3	36	36	47.6	53	59.1	59.1	65.6
Width (in)	7	10.9	15.6	12	12	15.6	16	15.9	19	19
Depth (in)	7.6	10.8	11.6	12	12	12.8	11.9	18.4	21	24.5

DTT Top Mounted Cooling Units

1200–14000 Btu/h

- **High reliability** using the best available components & design tools
- **Excellent security level** due to patented condensate management system - which prevents condensate from penetrating the enclosure
- **Perfect service-friendliness** and long maintenance intervals
- **Product variety:** multiple performance levels available
- **Environmental protection** thanks to energy efficiency and recyclability
- **Easy mounting:** quick release mounting frame & quick mount design

	DTT 6101	DTT 6201	DTT 6301	DTT 6401	DTT 6601	DTT 6801
Btu/h	1200 - 2000	2500 - 4000	4000 - 5500	5500 - 7000	7000 - 10000	12000 - 14000
Available Volts	115 / 230	115 / 230 400 / 460 1Ø	115 / 230 400 / 460 1Ø	115 / 230 400 / 460 3Ø	400 / 460 3Ø	400 / 460 3Ø
Height (in)	17	17	17	17	19.1	19.1
Width (in)	23.4	23.4	23.4	23.4	31.3	31.3
Depth (in)	15.6	15.6	19.5	19.5	22.6	22.6

Outdoor NEMA Type 3R/4

2000–24000 Btu/h

	DTS 3031	DTS 3061	DTS 3161	DTS 3161 SL	DTS 3165	DTS 3261	DTS 3265	DTS 3361	DTS 3561	DTS 3661
Btu/h	900 - 1300	2000 - 3000	3000 - 4000	3000 - 5000	5000 - 7000	7000 - 8500	9000 - 12000	12000 - 14000	16000 - 18000	20000 - 24000
Available Volts	115 / 230	115 / 230	115 / 230 460 1Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø
Height (in)	15.5	20.2	29.3	36	36	47.6	53	59.1	59.1	65.6
Width (in)	7	10.9	15.6	12	12	15.6	16	15.9	19	19
Depth (in)	7.6	10.8	11.6	12	12	12.8	11.9	18.4	21	24.5

Stainless Steel/ Washdown NEMA Type 4/4X

900–24000 Btu/h

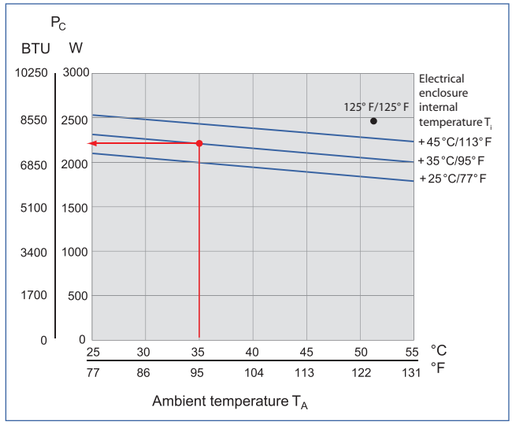
	DTS 3031SS	DTS 3081	DTS 3181	DTS 3181 SL	DTS 3185	DTS 3281	DTS 3285	DTS 3381	DTS 3581	DTS 3681
Btu/h	900 - 1300	2000 - 3000	3000 - 4000	3000 - 5000	5000 - 7000	7000 - 8500	9000 - 12000	12000 - 14000	16000 - 18000	20000 - 24000
Available Volts	115 / 230	115 / 230	115 / 230 460 1Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	115 / 230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø	230 400 / 460 3Ø
Height (in)	15.5	20.2	29.3	36	36	47.6	53	59.1	59.1	65.6
Width (in)	7	10.1	15.6	12	12	15.6	16	15.9	19	19
Depth (in)	7.6	10.8	11.6	12	12	12.8	11.9	18.4	21	24.5

The Pfannenberg Advantage - Cooling Units designed for maximum longevity and efficiency...

Cooling Based on ACTUAL Performance

Pfannenberg offers complete cooling capacity charts **based on actual performance**, which provides for more reliable data and proper sizing.

For years, competition units have been rated at maximum operating points (i.e. 125° F). These units must ALWAYS run at maximum capacity to achieve maximum efficiency, often at a temperature too hot to properly cool electronics. Running below maximum conditions results in a **20-30% reduction in cooling efficiency.**



The FACTS about Pfannenberg DTS 3000 Cooling Units...

High Ambient Performance

The DTS 3000 Series was designed utilizing high temperature compressors and larger condensers to best perform in outdoor applications which require a maximum ambient temperature of 131° F - such as roadside, rooftop or desert locations. The indoor NEMA Type 12 units can also handle maximum rating and can be mounted near high temperature equipment such as industrial ovens, furnaces and boilers. High ambient options are also available to 140° F.

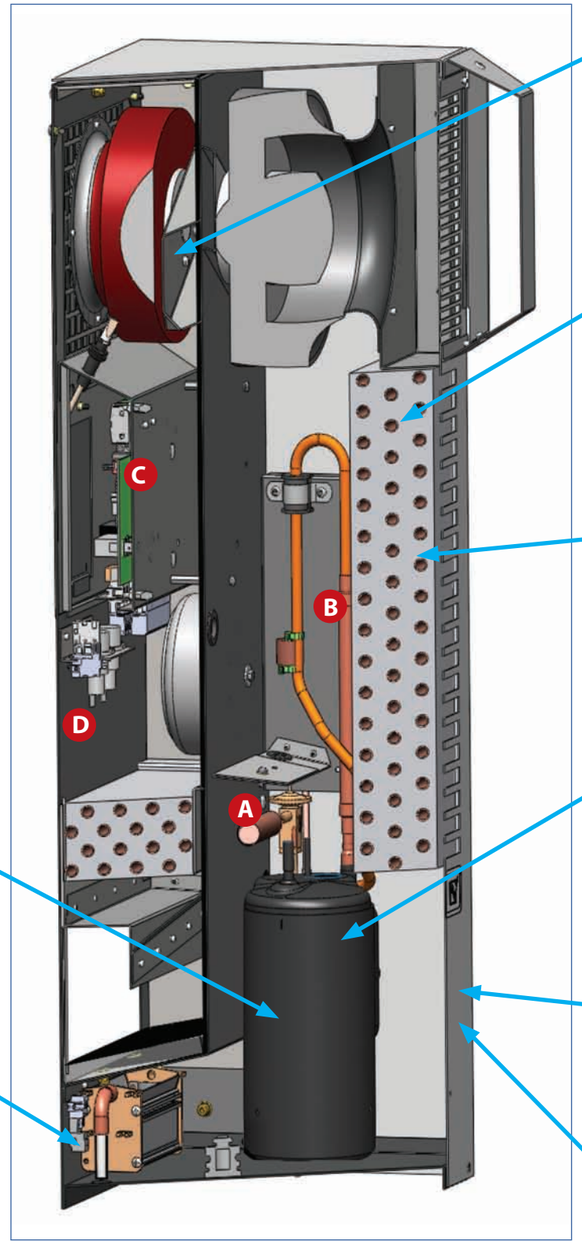
Environmentally Friendly

For the past 5 years, Pfannenberg has used compressors for HFC-free R134a refrigerant, not R22 refrigerant - which is not considered environmentally safe. Due to upcoming tougher environmental standards on industry, this refrigerant cannot be used after 2010 on new machines. Upgrading existing R22 designs will be costly and difficult because R134a compressors are typically larger in size.

Active Condensate Water Management

Passive condensate management relies on the refrigeration discharge line that has high temperature gas flowing through the pipe to evaporate the moisture collected in the condensate tray. When the refrigeration cycle is off, the moisture is not being removed.

Active Condensate Management utilizes a PTC (positive temperature co-efficient) heating element. These elements need very little mounting space and feature a high power density. After the water has been removed from the condensate tray, the element reduces its power consumption automatically. The control of heating element is independent from the refrigeration control.



Specially Designed Backward Curve Impeller Fan

A backward curved impeller fan uses one large bearing, unlike a typical blower which has two smaller bearings. The larger bearing and sealed motor provide a **fan service life of over 55,000+ hours** in harsh industrial environments versus a typical blower life expectancy of only 20-30,000 hours. The backward curve design creates a natural right angle for a long internal air path instead of forcing the air path from a blower or allowing a short air path that can create short cycling on the inner circuit .

Coated Condenser Pipes Provide Cost-Effective Solution

Most condenser coils are coated because they're located in a harsh natural (saltwater) or manufacturing (chemicals) environment. Corroded uncoated condenser coils lead to a rapid loss in capacity, reduced efficiency, and increased energy consumption. Unit longevity can be a serious problem in harsh environments: uncoated coils in harsh situations have been known to fail in less than a year. A coil properly coated with a quality corrosion protection system can withstand harsh environments, providing long-term and cost-effective service.

Wide Condenser Fin Spacing for Higher Performance

Wider condenser fin spacing optimizes the balance between higher performance and clog-free operation. Wider fin spacing allows for larger particles to pass through the condenser while maintaining overall capacity. Narrow fin spacing typically requires a filter to keep the condenser free of debris thus reducing the airflow and the overall capacity. **Many applications can go filter-less creating a more maintenance-free solution.**

Hermetically Sealed for Longer Service Intervals

NO GASKETED VALVES

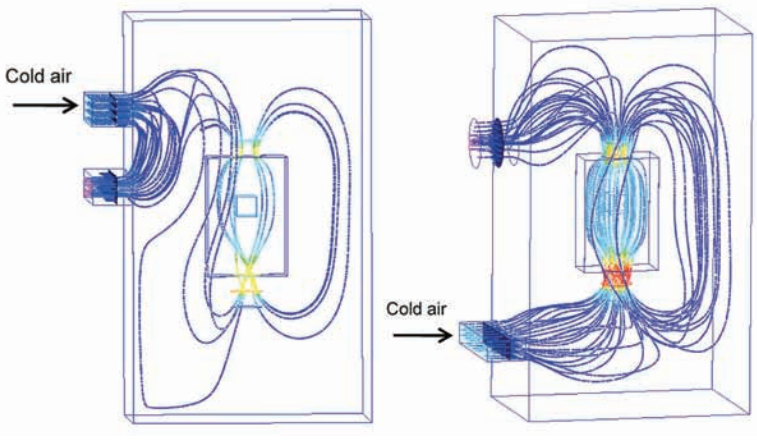
Pfannenberg uses **hermetically sealed** compressors. Units that use gasketed valves for "easy" re-charging need to be recharged because of the presence of the valve itself. If they are not re-charged every 2 - 3 years, the unit will not run at 100% capacity. In large industrial plants, it is very common for approximately 60% of the cooling units to be running at reduced capacity due to the loss of refrigerant with most maintenance personnel being unaware of the danger to their electronics.

Designs for Food and Beverage Applications

Pfannenberg's DTS 3000 Series NEMA Type 4/4X models have covers made from 304, #3 polish Stainless Steel with a vertical grain for industrial and food grade applications. Non-polish finishes can attract dust and other non-desirable contaminants. The lower carbon 'variants' (316L) are also available for most designs and are considered more corrosive resistant vs. 304 stainless steel.

Rugged Metal Covers Provide Added Protection

In industrial applications, decorative plastic grills do not always withstand the rigors of the environment and show more wear and tear than metal covers. Metal covers not only create a more rugged unit, but can also be painted easier to match the design of the overall machine.



Competitor Air Flow Pfannenberg Air Flow

Internal Airflow Paths Designed to Support Natural Convection & Eliminate Hot Spots

As the diagram shows, Pfannenberg's approach to internal airflow paths supports both natural convection and provides cool air where needed - below key electronic components. Natural convection states that hot air rises, creating a natural airflow inside the enclosure. All of our Cooling Units pull hot air from the top of the enclosure and with the longest distance possible, pump the cool air to the bottom of the enclosure, helping eliminate "hot spots" inside the cabinet.

An Investment in Reliability and Performance...

A Expansion Valves for Full Temperature Range Performance

The Thermostatic Expansion Valve is an automatic flow control that operates in response to a change in the temperature of the refrigerant vapor leaving the evaporator. **Expansion valves allow cooling units to perform over the full temperature range of the industrial applications.**

Low cost units in the market utilize Capillary Tubes, which are a fixed lengths of small diameter tubing installed between the condenser and the evaporator, to act as the flow control. A capillary tube is ideally suited to smaller refrigeration units which have a relatively constant load, which is **not the case** with industrial cooling units that see different loads and fluctuating ambient temperatures.

B High Pressure Switches Protect Against Thermal Overload

High Pressure Switches prevent the system from operating at unsafe condensing pressures. This helps the compressor from operating at higher design pressures, increasing the operating life of the compressor by preventing thermal overload trips at the compressor, which can be as high as 165°C . The high pressure switch causes the fault circuit to open so that anyone monitoring the system is aware of a clogged condenser, filter or failed external fan. This feature is required for CE rated industrial cooling units.

C Safeguarded Inner Circuit Controller Location

Our electronic controllers are placed on the inner circuit and are protected in the same cool and dry area as the electronics being protecting inside the enclosure. Controllers which are located on the external circuit are exposed to high ambient temperatures, dust and moisture.

D 3 Phase 460V vs. Single Phase 115V

Three-phase power can be more efficient than single-phase power in certain applications. Three-phase motors, for example, are much more powerful (or efficient) than their single-phase counterparts. A three-phase circuit combines three single-phase circuits (each 120 degrees out of sync with the other) so in the same one second period there are three "pulses" or three times the work! At the same time, a control transformer can be eliminated or reduced in size to reduce the overall cost of the system for the customer. Voltage range ± 10% for international installations. All of our three-phase units include a control transformer to protect the control board and fans from transients from dirty plant power and can be easily wired for 400V, 50Hz or 460V, 60Hz (+/- 10%) for worldwide installations with the same model.

p/n 875000008 4/2012

Pfannenberg Incorporated
68 Ward Road
Lancaster, New York 14086

Phone: 716-685-6866
Fax: 716-681-1521
info@pfannenbergusa.com

www.pfannenbergusa.com

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY