DT-DTX series

UNIT COOLER

engineering data
and specifications

SGS REFRIGERATION

EFFICIENT COIL DESIGN

Tubes are 3/4" OD staggered in the direction of airflow. Turbo-Spacers are located between tubes to provide nominal fin spacing and improve fin efficiency by turbulating the air flow. Available materials:

- Steel coils, including internal framing, are hot dip galvanized after assembly.
- Stainless steel tube/aluminum fins.
- Aluminum tube/fins.
- Copper tube/aluminum fins.
- Stainless, aluminum and copper tube coils are supplied for applications where weight is a consideration, electric defrost is needed or a halocarbon is being used.
- Copper tube coils cannot be used for ammonia applications.

FAN AND MOTOR

Fully guarded, 22" diameter, aluminum bladed propeller fans are direct driven at 1140 RPM by TEAO motors with internal overload protection for both single and three-phase service.

- Motors are factory wired to a NEMA 4X non-fused disconnect located on the casing covering the connections on the header end of the unit. All fan motors can be cycled with one contactor. External overload devices are not required.
- Fan guard conform to UL requirements and have a 10-15 mil fluidic bath coating of black vinyl PVC for corrosion resistance.
- An wash-down, inverter-ready motor is available for 230/3 and 460/3 power levels. A 1/2 hp motor will be used for units with both 1/3 hp and 1/2 hp fans.
- Units with 575/3/60 power will use the 1/2 hp motor for all unit sizes.

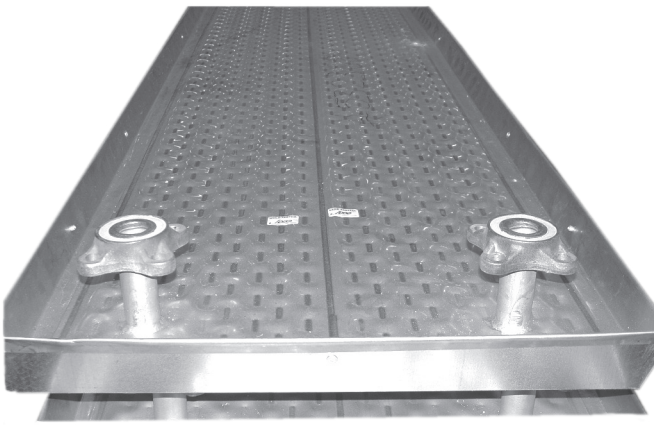
HOUSING

Corrosion resistant heavy-gauge mill galvanized steel is used for the outer casing.

- Fans are individually compartmented by continuous tube sheets for uniform air flow and to prevent reverse rotation in the event of motor failure.
- End covers are removable for easy access to TEV and pan to coil check valve.

DRAIN PAN

For applications with the room above freezing, the drain pan is aluminum with an optional closed cell insulation and mill galvanized cover.



The exclusive SGS stainless steel “coil-less waffle” design is provided for hot gas heated drain pan requirements. Hot gas pans are provided with closed cell insulation between the pan and mill galvanized cover. Drain pans are factory mounted.

AIR DEFROST

above 36°F room temperature

- Units should be selected at low face velocity (630 FPM or less) to prevent moisture carryover. For high humidity applications, consult Factory Rep for selection.
- Drain pan is aluminum for long life and corrosion protection. Pan with closed cell insulation between the pan and mill galvanized cover is optional.

HOT GAS DEFROST COIL ONLY
above 33°F room temperature

- Hot gas defrost for the coil with an unheated aluminum drain pan.
- Optional pan with closed cell insulation between the pan and mill galvanized cover is recommended.
- For steel, stainless steel and aluminum DX unit applications, hot gas defrost coils are supplied with a hot gas header which bypasses the capillaries for rapid defrost.

HOT GAS DEFROST UNIT
below 32°F room temperature

- The unique “waffle” (SGS exclusive) stainless steel drain pan allows for the fastest hot gas defrost available. The design assures maximum pan heat in a minimum time.
- Drain pan provided with closed cell insulation between the pan and mill galvanized cover.
- The hot gas outlet connection of the drain pan is connected to the coil with factory mounted interpiping including a check valve. The hot gas inlet connection has a gasket and flange shipped with the unit to connect with the hot gas supply piping.
- For steel, stainless steel and aluminum DX unit applications, hot gas defrost units are supplied with a hot gas header which bypasses the capillaries for rapid defrost.

ELECTRIC DEFROST

- Available models listed are limited to copper, aluminum, and stainless steel tubes.
- Tubular heaters are inserted through fin Turbo-Spacers and efficiently defrost the coil from the inside out.
- See Page 10 for heater kilowatts and amperage levels.

WATER DEFROST

- Supply water temperature not to exceed 65°F.
- Drain pan is aluminum without insulation.
- For six-row units only.
- See Page 7 for water flow rates required.

OPTIONS

- Optional long-throw adapters will provide air throw of 80-100'.
- Electric heat tape, 115/1 or 230/1, on the insulated drain pan cover.
- Hot gas, water, brine or electric reheat.
- Stainless steel housing..
- The coil fully dipped and dried with a corrosion resistant coating on units with aluminum fins only.
- Two speed motor (1/2 hp, three phase only).
- Wash-down, inverter ready motor (1/2 hp, three phase only).
- Epoxy coating on standard aluminum fins.
- Full width coverage drain pan
- Fully welded stainless steel drain pan
- Stainless steel fan guard
- 50% thicker aluminum fins
- Factory mounted TEV and LLSV for copper tube DX applications

DT-DTX (Draw-Through) Unit Coolers can be used in medium and low temperature holding coolers, freezers, shipping docks, carcass chill, assembly and process areas. These unit coolers are not to be used for applications requiring external static pressure by the fans.

BT-BTX (Blow-Through) Unit Coolers should be used in rooms above 20°F only. BT units are not recommended for carcass chill applications. These unit coolers are not to be used for applications requiring external static pressure by the fans.

Units should be located away from walls a distance equal to the unit height. Air discharge should be free of all obstructions. It is not necessary to locate units near walls of high palletized coolers or freezers. It is best to locate units so that an aisle is behind the unit to allow good return air circulation.

THERMOSTATIC EXPANSION VALVE (TEV)

TEV for DXA must be externally equalized and the discharge tube removed, except for DT1 and DTX1 models using a single circuit coil requiring a TEV with the discharge tube.

50 HERTZ APPLICATION

50 Hz applications result in a 17% reduction in fan motor speed. Fan pitch will be increased to compensate for 50 Hz derating. Unit capacity derate is not required.

FAN MOTOR DATA

Fan motor nameplate amps are total for the unit. Motors have internal over-heat protection and are wired in parallel and cycled with one contactor.

- NEC limits total parallel motor ampacity to 15.0 amps at 600 volts and 20.0 amps at 125 volts or less. Higher capacity models for 115 or 208-230/1/60 service can be provided when more than one parallel motor circuit is used.
- Ampacity will increase as room temperature is lowered (8% at 32°F; 18% at -10°F) due to the denser air.
  As the air temperature lowers TEAO motor capability increases at a faster rate than the imposed fan load.

RELATIVE SOUND RATINGS

Consult factory.

COIL CONNECTIONS

Ammonia connection sizes shown in coil connection data are adequate for the following design TD:

Consult factory for recirculated halocarbon, brine and heat reclaim inlet and outlet connections.

- Halocarbon distributors will be brass with copper leads.
- Stainless steel, aluminum and steel tube coils will have carbon steel connection stubs as standard.

Electric Defrost Data

Model	Rows	ED						EDL					
		Total Heaters	Number of Circuits Amps per Circuit			Total Heaters	Number of Circuits Amps per Circuit	Total Heaters	Number of Circuits Amps per Circuit			Total Heaters	Number of Circuits Amps per Circuit
		kW	230V/3	460V/3	575V/3	kW	380V/3	kW	230V/3	460V/3	575V/3	kW	380V/3
DT/BT 1	6	3..0	1 x 7.5	1 x 3.8	1 x 3.0	2.7	1 x 4.1	5.4	1 x 13.6	1 x 6.8	1 x 5.4	4.9	1 x 7.5
DT 1	8	4.5	1 x 11.3	1 x 5.6	1 x 4.5	4.1	1 x 6.2	6.9	1 x 17.3	1 x 8.7	1 x 6.9	6.3	1 x 9.5
DT/BT 2	6	6.0	1 x 15.1	1 x 7.5	1 x 6.0	5.5	1 x 8.3	10.4	1 x 26.2	1 x 13.1	1 x 10.5	9.5	1 x 14.4
DT 2	8	9.0	1 x 22.6	1 x 11.3	1 x 9.0	8.2	1 x 12.4	13.4	1 x 33.7	1 x 16.9	1 x 13.5	12.2	1 x 18.6
DT/BT 3	6	9.0	1 x 22.6	1 x 11.3	1 x 9.0	8.2	1 x 12.4	15.4	1 x 38.8	1 x 19.4	1 x 15.5	14.1	1 x 21.4
DT 3	8	13.5	1 x 33.9	1 x 16.9	1 x 13.6	12.3	1 x 18.7	19.9	1 x 33.9	1 x 25.0	1 x 20.0	18.1	1 x 27.6
									1 x 16.2				
DT/BT 4	6	12.0	1 x 30.1	1 x 15.1	1 x 12.0	10.9	1 x 16.6	20.5	1 x 25.7	1 x 25.7	1 x 20.5	18.6	1 x 28.3
DT 4	8	18.0	1 x 45.2	1 x 22.6	1 x 18.1	16.4	1 x 24.9	26.5	1 x 33.2	1 x 33.2	1 x 26.6	24.1	1 x 36.6
DT/BT 5	6	15.0	1 x 37.7	1 x 18.8	1 x 15.1	13.6	1 x 20.7	25.5	1 x 37.6	1 x 32.0	1 x 25.6	23.2	1 x 35.2
									1 x 26.3				
DT 5	8	22.5	1 x 33.9	1 x 28.2	1 x 22.6	20.5	1 x 31.1	33.0	1 x 33.9	1 x 41.4	1 x 33.1	30.0	1 x 45.6
			1 x 22.6						1 x 15.0				
DT/BT 6	6	18.0	1 x 45.2	1 x 22.6	1 x 18.1	16.4	1 x 24.9	30.5	1 x 38.3	1 x 38.3	1 x 30.6	27.8	1 x 42.2
DT 6	8	27.0	1 x 33.9	1 x 33.9	1 x 27.1	24.6	1 x 37.3	39.5	1 x 33.9	1 x 24.8	1 x 39.7	35.9	1 x 27.3
									1 x 31.4				
DTX/BTX 1	6	4.5	1 x 11.3	1 x 5.6	1 x 4.5	4.1	1 x 6.2	6.9	1 x 17.3	1 x 8.7	1 x 6.9	6.3	1 x 9.5
DTX 1	8	6.0	1 x 15.1	1 x 7.5	1 x 6.0	5.5	1 x 8.3	8.4	1 x 21.1	1 x 10.5	1 x 8.4	7.6	1 x 11.6
DTX/BTX 2	6	9.0	1 x 22.6	1 x 11.3	1 x 9.0	8.2	1 x 12.4	13.4	1 x 33.7	1 x 16.7	1 x 13.5	12.2	1 x 18.6
DTX 2	8	12.0	1 x 30.1	1 x 15.1	1 x 12.0	10.9	1 x 16.6	16.4	1 x 41.2	1 x 20.6	1 x 16.5	14.9	1 x 22.7
DTX/BTX 3	6	13.5	1 x 33.9	1 x 16.9	1 x 13.6	12.3	1 x 18.7	19.9	1 x 33.9	1 x 25.0	1 x 20.0	18.1	1 x 27.6
									1 x 16.2				
DTX 3	8	18.0	1 x 45.2	1 x 22.6	1 x 18.1	16.4	1 x 24.9	24.4	1 x 33.9	1 x 30.7	1 x 24.5	22.2	1 x 33.8
									1 x 27.5				
DTX/BTX 4	6	18.0	1 x 45.2	1 x 22.6	1 x 18.1	16.4	1 x 24.9	26.5	2 x 33.2	1 x 33.2	1 x 26.6	24.1	1 x 36.6
DTX 4	8	24.0	1 x 30.1	1 x 30.1	1 x 24.1	21.8	1 x 33.2	32.5	2 x 40.7	1 x 40.7	1 x 32.6	29.5	1 x 44.9
DTX/BTX 5	6	22.5	1 x 33.9	1 x 28.2	1 x 22.6	20.5	1 x 31.1	33.0	2 x 33.9	1 x 41.4	1 x 33.1	30.0	1 x 45.6
			1 x 22.6						1 x 15.1				
DTX 5	8	30.0	1 x 45.2	1 x 37.7	1 x 30.1	27.3	1 x 41.5	40.5	1 x 33.9	1 x 30.1	1 x 40.7	36.8	1 x 33.2
			1 x 30.1						1 x 26.3	1 x 20.7			1 x 22.8
									1 x 41.4				
DTX/BTX 6	6	27.0	2 x 33.9	1 x 33.9	1 x 27.1	24.6	1 x 37.3	39.5	2 x 33.9	2 x 24.8	1 x 39.7	.35:9	2 x 27.3
									1 x 31.4				
DTX 6	8	36.0	2 x 45.2	1 x 45.2	1 x 36.1	32.8	1 x 24.9	48.5	2 x 45.2	2 x 30.4	2 x 24.4	44.1	2 x 33.5
									1 x 31.4				

COILS

DT/DTX, BT/BTX Series propeller fan units are modular in design in one through six fans with two overall heights. Units are designed for medium and freezer temperatures above -40°F suction in capacities from 2 to 20 nominal tons.

Maximum heat transfer is achieved by staggering 3/4" OD tubes in the direction of air flow. Circuits are cross fed with vertical headers resulting in equal circuit loading for horizontal air flow coils. Coils are 6 and 8 rows deep with 3, 4 or 6 fins/inch, fin spacing achieved by Turbo-Spacers.

Each coil is tested underwater with 350 psig air, with all steel coils being tested before and after galvanizing.

MATERIAL OF CONSTRUCTION

- Hot dipped galvanized steel tube and fins.
- Aluminum tube and fins.
- Copper tube with aluminum fins.
- Stainless steel tubes and aluminum fins.

RATING DATA

Each coil is engineered for maximum efficiency for its specific design application.

- Ratings are based on sensible heat removal. Capacity listed is BTUH/°F TD sensible heat removal with the coil wet, dry or frosted. Ratings are valid for TDs 20°F or less. Wet coil heat transfer is more efficient than frosted resulting in higher ratings.
- Wet coil applications are for suction temperatures above 25°F. Selections should be limited to 630 FPM to prevent moisture carryover.
- Consult a sales representative for high humidity conditions for proper air velocity.

FAN MOTOR HEAT

Motor heat is not included in the ratings and is usually included in the load estimate.

Coolers 4,000 BTUH/hp

Freezers 4,400 BTUH/hp

TEMPERATURE DIFFERENCE

Temperature difference (TD) is the difference between return air temperature or room air and coil saturated refrigerant temperature. Rated capacity is multiplied by the TD to determine total sensible heat capacity in BTUH.

REFRIGERANT FEEDS

Recirculated coils have graduated liquid feed orifices to balance static head and reduce hot gas blow-by during defrost. Units operating with an overfeed system must provide liquid at 5 psi above saturated suction pressure and the liquid temperature within 10°F to 30°F of saturated suction temperature depending on the suction temperature. Liquid feed temperature and pressure must be specified to assure proper coil design. Consult factory for recirculated low temperature halocarbon applications.

- **RT** - Recirculated top feed is recommended for air, water, or electric defrost. Refrigerant oil flows downhill to the suction header. This application is not recommended for hot gas defrost units.
- **RB** - Recirculated bottom feed is recommended for hot gas defrost applications or very high TDs. Hot gas condensate and oil flow downhill, back-flowing through the liquid feed orifices which restrict gas blow-by. Condensate is relieved through the liquid header. Defrost condensate relief devices must be located below the liquid connection. Float drainer should be used in series piped units only (standard configuration); unrelieved vapor will prevent complete and proper defrost cycles.
- **DX** - Direct expansion coils are circuited to have a minimum pressure drop and maintain refrigerant velocity for oil return. Direct expansion coils employ distributors and capillaries to feed each circuit. TEVs must be externally equalized and, on ammonia applications, the discharge tubes must be removed. If a unit does not have a distributor, do not remove the TEV discharge tube. Ammonia EEV applications are recommended for suction temperatures below 0°F or with TD selections less than 12°F. If sub-cooled liquid is used, it must be specified to assure proper coil circuiting.
- **FL** - Flooded coils are circuited to minimize internal losses while maintaining minimum surge drum operating level. When closed coupled, the liquid level in the drum should be four inches or more above the coil. Flooded coil ratings are the same as recirculated ratings.
- **B** - Coils can be circuited for water or brine (single-phase) refrigerants. Factory engineering is required for proper unit selection. Provide required capacity, brine type, brine concentration, room temperature, entering brine temperature and gpm for selection.

REHEAT

Hot Gas/Brine/Water Reheat:

- When used with a six row coil, the cooling coil is the first four rows and the reheat is the last two rows. Contact factory for cooling capacity.
- When used with an eight row coil, the cooling coil is the first six rows and the reheat is the last two rows. The cooling capacity is similar to a standard six row coil with a similar face velocity.
- Eight total row units can be DT-DTX only. Six total row units can be DT-DTX or BT-BTX.

Electric Reheat:

- A heater assembly is mounted between the coil face and the fan.
- Assembly includes a build-in overheat thermostat.
- One 4.65 kW heater per fan section
- Heater is factory wired to a terminal block on the header end casing
- Can only be used with a six row DT-DTX unit.

DRAIN PAN COVER HEATING

- In rooms that cannot have humidity condensate dripping from the drain pan cover a heat tape is available to warm the cover.
- The electric heat tape is affixed to the inside of the pan cover with the tail out the side of the pan.
- 115/1 and 230/1 voltages.
- When ordered amp draw is shown on unit drawing.

Fan Motor Data – DT-DTX BT-BTX							
Fan Motor Nameplate Total Full Load Amps							
Number of Fans	hp	115/1	208/1 230/1	208/3 230/3	460/3	380/3	575/3
1	1/3	4.00	2.00	1.10	0.55	0.60	
1	1/2	5.20	3.05/2.60	1.96	0.98	1.10	0.76
2	1/3	8.00	4.00	2.20	1.10	1.20	
2	1/2	10.40	6.10/5.20	3.92	1.96	2.20	1.52
3	1/3	12.00	6.00	3.30	1.65	1.80	
3	1/2		9.15/7.80	5.88	2.94	3.30	2.28
4	1/3		8.00	4.40	2.20	2.40	
4	1/2			7.84	3.92	4.40	3.04
5	1/3		10.00	5.50	2.75	3.00	
5	1/2			9.80	4.90	5.50	3.80
6	1/3			6.60	3.30	3.60	
6	1/2			11.76	5.88	6.60	4.56

Reheat Heater Total Full Load Amps					
Heater Quantity	kW	208/3 230/3	460/3	380/3	575/3
1	4.65	11.67	5.84	7.06	4.67
2	9.30	23.35	11.67	14.13	9.34
3	13.95	35.02	17.51	21.19	14.01
4	18.60	46.69	23.35	28.26	18.68
5	23.25	58.36	29.18	35.32	23.35
6	27.90	70.04	35.02	42.39	28.01

DT - DTX WATER DEFROST DATA 6 Row Units

Water defrost must be arranged so that all water pipes are free draining after a defrost cycle in rooms below +32°F. Water flow requirements using 65°F water for draw-thru or blow-thru are as follows:

Water Defrost		
Number of Fans	gpm	Connection Number - Size FPT
1	8	1 x 1"
2	15	1 x 1"
3	23	1 x 1"
4	32	2 x 1"
5	39	2 x 1"
6	48	2 x 1"

ORDERING INFORMATION - PLEASE SPECIFY

- Quantity and complete model number
- SST-Saturated Suction Temperature
- Room temperature
- Fan motor voltage
- Heater voltage (if applies)
- Control voltage (if applies)
- Options and accessories
- Maximum and minimum temperatures feeding the expansion device for direct expansion applications.
- Maximum and minimum condensing temperatures of the liquid feeding the expansion device for direct expansion applications
- Manufacturing commences with order approval

Model Key

DT D S 3 750 –RB A –HGS –HGR –RH –EF

Unit Type
DT - DTX Draw Through
BT - BTX Blow Through

Tube O.D.
C - 5/8"
D - 3/4"

Coil Material
S - Steel Tube/Fin
A - Aluminum Tube/Fin
C - Copper Tube/Aluminum Fin
B - Stainless Steel Tube/Aluminum Fin

Number of Fans
1 - 6

Capacity
Per 0.1F TD

Refrigerant Feed
DX - Direct Expansion
RT - Recirculated Top
RB - Recirculated Bottom
FL - Flooded
B - Brine/Glycol
C - Chilled Water
CB - Control Pressure Receiver with Headers
CD - Control Pressure Receiver with Distributor

Refrigerant
A - Ammonia
B - Brine/Glycol
P - R507
S - R404A
V - R22
W - Chilled Water

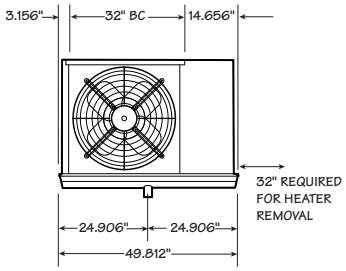
Type of Defrost
A - Air Defrost Unit
IA - Air Defrost Unit with Insulated DP
ED - Electric Defrost Only*
IED - Electric Defrost Coil only with Insulated DP
EDL - Electric Defrost Unit*
HGC - Hot Gas Coil Only
IHGC - Hot Gas Coil Only with Insulated DP
HGP - Hot Gas Unit with Waffle Style DP with PRL Interpiping
HGS - Hot Gas Unit with Waffle Style DP with SRS Interpiping
HTP - Hot Gas Unit with Tube Style DP with PRL Interpiping
HTS - Hot Gas Unit with Tube Style DP with SRS Interpiping
WD - Water Defrost**

Reheat
HGR - Hot Gas
ERH - Electric

Coil Connection Hand
LH - Left Hand
RH - Right Hand

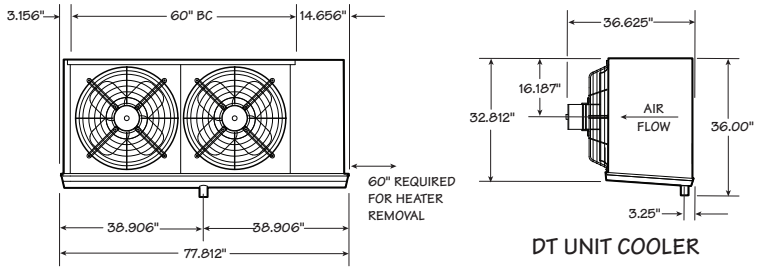
Coating†
EF - Epoxy Electro-Fin
HC - Heresite
GF - Gold Epoxy Precoated Fins

*Copper, aluminum and stainless steel tube coils only.
PRL – Parallel
SRS – Series
**6 row units only

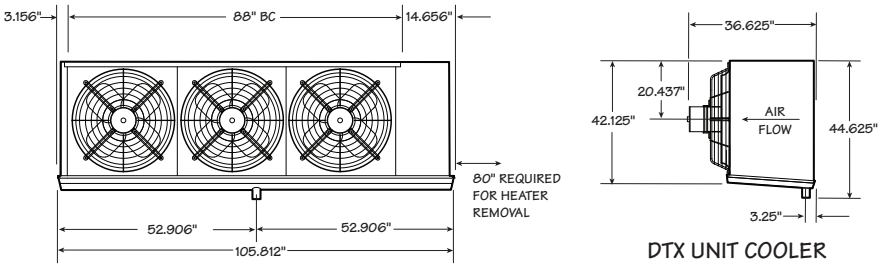


For preliminary layout only, do not use for construction.

- Add 1" to vertical dimension for insulation
- BC (bolt hole center/hanger)
- Add 5" to overall unit height for water defrost
- Hanger holes are 5/8" diameter for 1/2" diameter threaded rod
- DT-DTX right-hand units shown
- BT-BTX left-hand units shown
- LTA adds 5" to the total width (DT-DTX only)

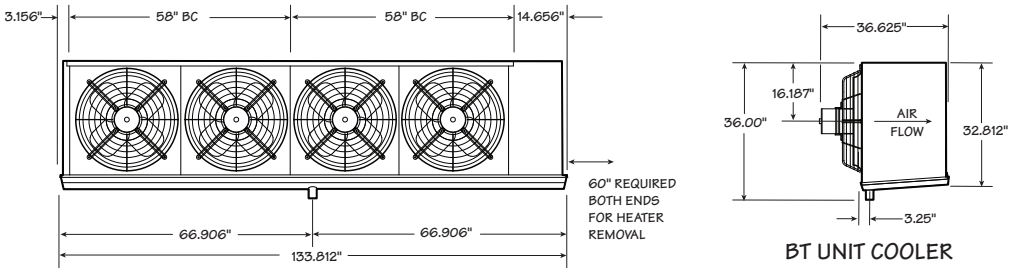


DT UNIT COOLER

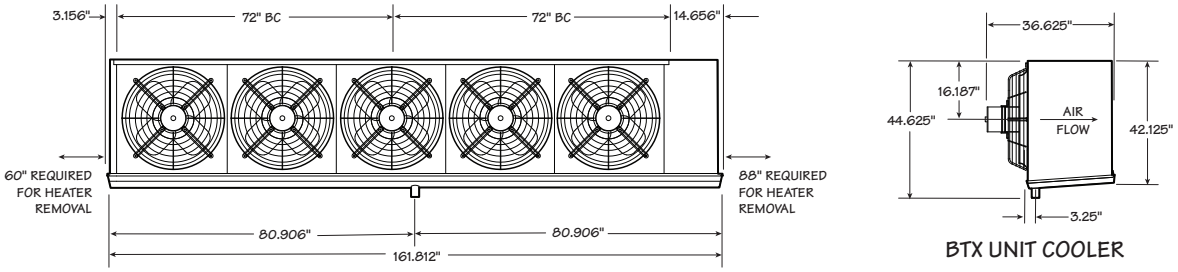


DTX UNIT COOLER

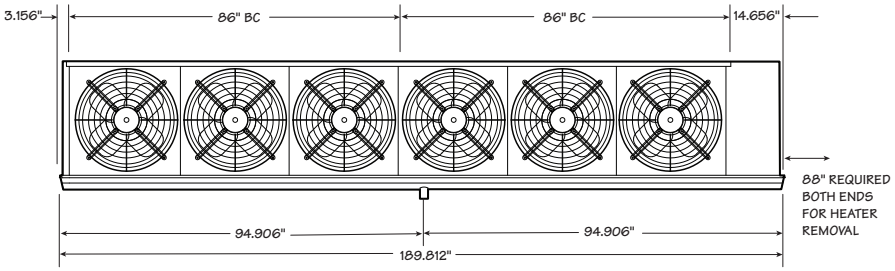
DT		
Model	TR	CFM
DT*1	1.5-2.5	3270-4420
DT*2	3.1-5.1	6540-8160
DT*3	4.8-7.6	9800-13250
DT*4	6.4-10.2	13050-17700
DT*5	7.7-12.7	16350-22100
DTX		
Model	TR	CFM
DTX*1	2.1-3.5	4300-5500
DTX*2	4.1-6.9	8600-11000
DTX*3	6.2-10.3	12900-16500
DTX*4	8.3-13.8	17200-22000
DTX*5	10.3-17.3	21500-27500
DTX*6	12.4-20.6	25800-33000



BT UNIT COOLER



BTX UNIT COOLER



DT-DTX unit cooler

ENGINEERING DATA

SPX COOLING TECH, LLC
827 WEST PROGRESS DRIVE
DIXON, IL 61021 USA
815 284 2700 | spxcooling@spx.com
spxcooling.com

SGS-DT-TECH-23 | ISSUED 07/2023

SPX TECHNOLOGIES