TRUWATER®

TXS+ SERIES COOLING TOWER

MULTI-CELL 100-2600 HRT COOLING CAPACITY

Modular Design Crossflow Type

LOW NOISE • SUPER LOW NOISE • ENERGY SAVING SUPER LOW NOISE

ISO14001 CERTIFIED

ISO9001 CERTIFIED

COOLING TECHNOLOGY INSTITUTE CTI EST. 1950

Member

TXS+ Series is an induced draft cross-flow, film filled, FRP multi-cell rectangular cooling tower designed for the equipment cooling, industrial process cooling and air conditioning applications.

The TXS+ Series Cooling Tower is designed in accordance to CTI & JCI standards. Its design saves space, light weight, blends easily with architectural designs and offers low operating costs.

The thermal performance of TXS+ Series is backed by full written guarantee. Field performance test to CTI standards can be carried out and witnessed by the owners appointed inspection engineer to ensure the supplied cooling tower meets the thermal performance.

Truwater TXS+ Series Cooling Tower meets most design criteria in terms of economy, extra low noise and space saving.

Advantages

- **Space Saving & Light Weight**

Incorporating the high performance fill, the installation space and operating weight are greatly reduced.

- **Energy Saving**

The low speed, high efficiency fan and low pressure drop fill design optimize the energy consumption.

- **Low Noise level**

The noise level is lowered by the specifically designed low noise fan.

- **Proven Corrosion Protection**

Tower components are made of anti- corrosive material suitable for cooling water application.

- **Easy Hoisting or Crane Placement**

The tower can be preassembled in the factory for easy transport, lifting and site installation.

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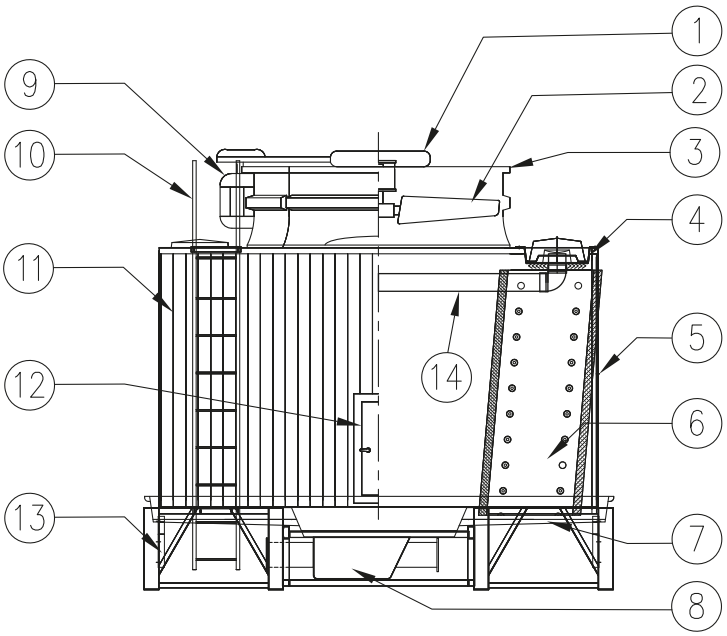
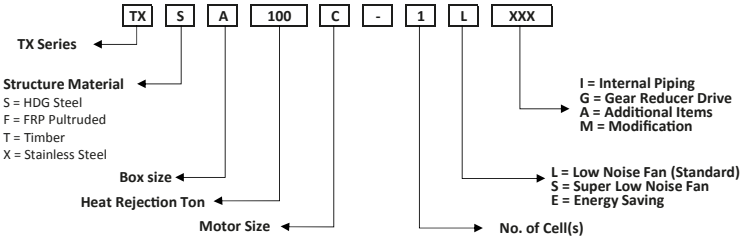
Features



No	Description	Material / Specification
1	V-Belt and Pulley System	FRP Pulley Cover
2	Fan Assembly	Aluminium Alloy
3	Fan Stack	FRP
4	Hot Water Distribution Box	FRP
5	Hot Water Basin	FRP
6	High Performance Film Fill Pack and Drift Eliminator	PVC
7	Cold Water Basin Floor	FRP
8	Suction Sump	FRP
9	Motor	Weather Proof TEFC type
10	Ladder	HDG Steel
11	Casing / Louver	FRP
12	Inspection Door	FRP
13	Cold Water Basin Frame	HDG Steel
14	Internal Piping	Optional



RECOMMENDED UNIT LAYOUT

It is advisable to select and design the best layout or location to avoid air recirculation. Recirculation occurs when some of the hot moist discharge air leaving the cooling tower flows back into the fresh air inlet.
The following guidelines will provide the best location or layout which will minimize recirculation, maximize fresh air flow and allow adequate maintenance accessibility.

A. SINGLE UNIT INSTALLATIONS

The best place for TXS+ Series Cooling Tower is in an open space. However, when this is not possible, correct layout guidelines must be followed to provide satisfactory installation.

Ensure that the top of the cooling tower is higher than any adjacent walls, buildings or other structures.
Figure 1(a) abd 1(b) are examples of incorrect installation. These conditions can be corrected by elevating the unit on structural steel/concrete plinths so that the top is higher that the wall as shown in Figure 1(c).

INCORRECT : Wind effect with top of unit lower than top of wall

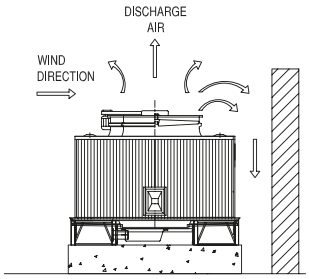


FIGURE: 1(a)

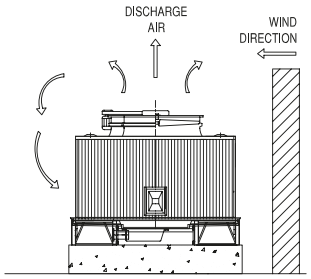


FIGURE: 1(b)

CORRECT : Installation elevated so that top of unit is higher than top of wall

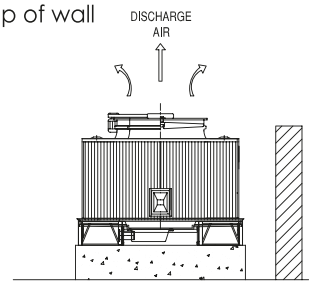


FIGURE: 1(c)

When a cooling tower is located near a wall, consideration must be given to the clearance distance between the air inlets of the tower and the wall structure(s). See Figure 2, Recommended Dimensions D1 and D2.

THe minimum dimensions, D1 and D2, as shown in Table 1 must be maintained to ensure that the unit is provided adequate air flow. In some installation, consideration must also be given to access to the unit for maintenance. Room must be provided for piping, removals of access panels, etc.

Sometimes other pieces of equipment such as pumps, filters, piping etc are placed in front of the air inlets. These obstructions should not be located any closer than the minimum dimensions in Table 1.

FIGURE 2 : Installation next to a wall.

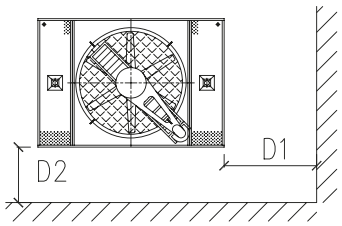


TABLE 1

Tower Model	Minimum Dimension (mm)	
TXS+	D1 (At Louver Side)	D2 (At Panel Side)
100X-1L, 125X/Y-1, 150A/Y-1, 175A/B-1, 200A/B-1	1500	1500
225A/B-1, 250B/C-1, 280B/C-1, 320B/C-1, 350B/C-1, 400D-1	2000	1500
400C-1, 450C/D-1, 500D/E-1, 550D/E-1, 600E/F-1, 650E/F-1	2500	1500

TABLE 2

Tower Model TXS+	End Wall Width, W mm	Minimum Dimension, mm D3 (End-to-End)
All models	All sizes	1000
Tower Model TXS+	**Louver Length, L mm**	**Minimum Dimension, mm D4 (Side-by-Side)**
200X-2 to 800D-2	Below 4500	3000
800C-2 to 1300E-2 675B-3 to 840B-3	Below 7000	3500
960C-2 to 1350E-2 700A-3 to 800A/B-3	Below 10000	5000
1500D-3 to1950E/F-3 1280B/C-4 to 2600E/F-4	Below 14000	6000

The minimum dimensions are as listed in Table 2

B. MULTIPLE UNIT INSTALLATIONS

When more than one cooling tower is installed at the same location, recirculation becomes a bigger problem.

With the installations of two cooling towers, they should be placed end to end with the narrows ends adjacent as shown in Figure 3. Another method is to locate the units side-by-side with the longer sides parallel to each other as shown in Figure 4. In either configuration, the distance between the units must provide adequate airflow as well as room for piping to the unit and access for maintenance.

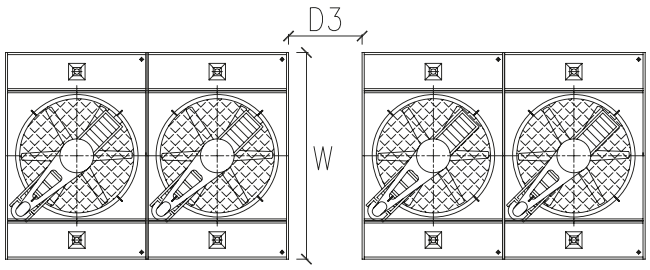


FIGURE 3: MULTIPLE UNITS PLACED END TO END

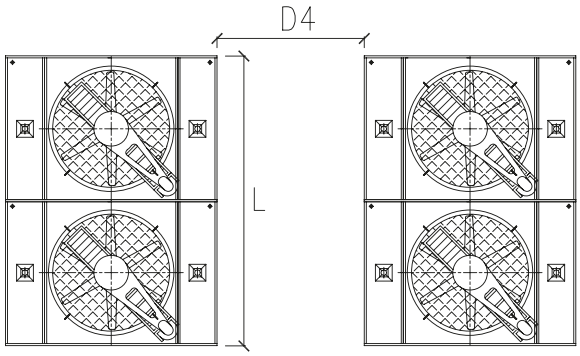


FIGURE 4: MULTIPLE UNITS PLACED SIDE-BY-SIDE

SPECIAL ENCLOSURE INSTALLATION

1) Solid Wall Enclosures or Wells

Figure 5 shown a cooling tower is installed in a well. When considering a multiple-cell unit located in a well, the D5 and D6 dimensions, found in Table 3, must be used as absolute minimums.

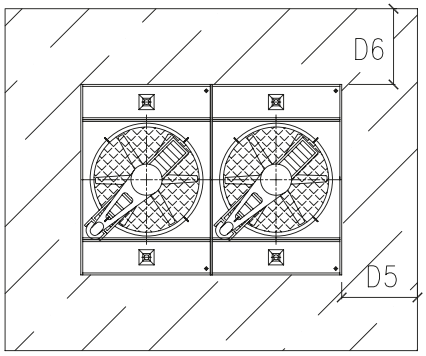


FIGURE 4: MULTIPLE UNITS PLACED SIDE-BY-SIDE

The unit should be oriented so that the air flow uniformly to the air inlets on all louver sides of the unit. The air disharge of the unit must be level with or higher than surrounding walls.

TABLE 3

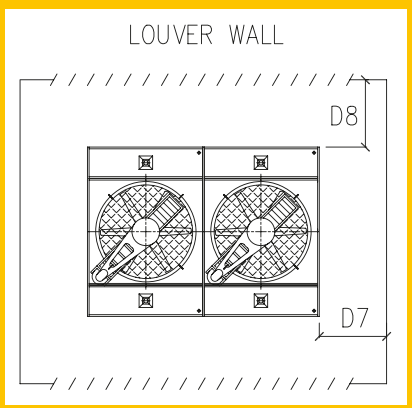
Tower Model TXS+	End Wall Width, W mm	Minimum Dimension, mm D5 (End Wall Panel Side)
All models	All sizes	1000
Tower Model TXS+	**Louver Length, L mm**	**Minimum Dimension, mm D6 (Louver Side to Solid wall)**
200X-2 to 800D-2	Below 4500	3500
800C-2 to 1200F-2 675B-3 to 1200D-3	Below 7000	4000
1200C-3 to 1500E-3 900B-4 to 1120B-4	Below 10000	6000
1500E-3 to 1800F-3 1600C-4 to 2600E-4	Below 14000	6000

Louvered Wall Enclosures

TXS+ Series Cooling Tower can also be installed in enclosures with louvered or slotted walls and an open top (Figure 6) with this type of enclosure, the air flow patterns will be a mixture of the oen type and well installation. The inlet air will be drawn frm the top as well as through the louvers or slots.

When considering a multiple-cell unit located in a louvered wall enclosures, the D7 and D8 dimensions, foud in Table 4, must be used as absolute minimums.

FIGURE 6: LOUVERED WALL ENCLOSURE



Tower Model TXS+	End Wall Length, L mm	Minimum Dimension, mm D7 (End Wall Panel Side)
All models	All sizes	1000
Tower Model TXS+	**Louver Width, W mm**	**Minimum Dimension, mm D8 (Louver Side to Louvered wall)**
All models	All sizes	2500

TXS+ SERIES CROSSFLOW COOLING TOWER SPECIFICATION

1.0 GENERAL

The cooling tower shall be induced-draft, crossflow, rectangular, film filled, FRP Cooling Tower. Cooling tower shall be Truwater TXS+ Series or approved equivalent.

2.0 CAPACITY

Cooling Tower shall be capable of providing the thermal performance scheduled.

3.0 PERFORMANCE WARRANTY

The cooling tower manufacturer shall guarantee that the tower supplied will meet the specified performance conditions when the tower is installed according to plans

4.0 CONSTRUCTION

The cooling tower main frame structure shall be hot dip galvanized steel (HDG). The casing shall be made of FRP.

5.0 MECHANICAL EQUIPMENT

5.1 Fan(s) shall be propeller-type, incorporating heavy-duty blades of aluminium alloy. Blades shall be individually adjustable. Fan blades shall be factory balanced and assembled. Pitch angle should be variable to allow flexibility.

5.2 The V-belts shall be of rubber with fabric impregnated able to withstand the adverse ambient conditions of 50°C and 100% R.H. The pulley shall be cast iron with the grooves of standard dimensions. The entire V-belt & pulley set must be fully enclosed in a FRP molded case to protect the v-belts from in contact with the humid discharge air.

5.3 Motor(s) shall be TEFC, weatherproof sq. caged induction type suitable for 3ph/50Hz/380V or 3ph/50Hz/415V power supply and with 1450 rpm. Motor shall be installed outside the discharge air stream.

FRP Casing

HDG Steel Structure

Mechanical Equipment

Hot Water Basin

6.0 INFILL

6.1 Infill shall be Vacuum-formed film-type, rigid, corrugated PVC sheets. The hanging infill shall be resistant to rot, fungi, bacteria and organic/inorganic acids and alkali as commonly found in cooling towers. The design shall meet 0.005% drift loss of the circulation water flow.

7.0 HOT WATER DISTRIBUTION SYSTEM

The hot water distribution shall be of open gravity type basin. It shall be made of FRP material. It shall be light weight and non-corrosive to maintain stable water sprinkling effect.

8.0 COLD WATER BASIN

The cold water basin shall be of FRP and supported on HDG steel framework. The basin shall be designed with sufficient water capacity to avoid air entrainment in the otlet during operating conditions. The basin shall be equipped with suction strainer, make-up ball valve, overflow and drain. For multiple tower arrangement, equalizing pipes between basins shall be provided to maintain the same level of water in each basin.

9.0 ACCESS AND SAFETY

Ladder shall be provided for inspection & maintenance purposes. HDG steel fan guard shall be provided over each fan cylinder.

TCT/B/003

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