Parto ABGARDAN

The Ultimate Cooling System

FRP Cooling Towers
Open Circuit, Modular Type

Member

X Series
2016 Catalogue
1st Edition

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INTRODUCTORY

For more than 22 years Parto ABGARDAN has served thousands of customers for their need of Air-conditioning, Industrial Cooling & FRP products.

Our well equipped facilities & resourceful network, aside our well trained personnel have enabled us to simply provide our customers, the best products & services in the market.

Parto ABGARDAN serves the most complicated and precise industrial heat transfer processes as well as comforting residential and commercial air-conditioning projects. Thousands of our cooling towers are working nonstop at the moment to provide cooling for a hospital O.R., a classroom, an airport terminal, a petrochemical process or a line of steel production.

Our prime goal and objective is to meet the highest standards to fulfill our customers' most special requests. Years of experience ,huge spending on quality assurance and customer service, has empowered us to enhance our products , improve our services to its best and continuously expand our network of satisfied customers.
We in Parto ABGARDAN are trying our hardest everyday to make sure you get the best you deserve.

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SPECIAL FEATURES

Modularity option:

X- series cooling towers upon Customer's and duty's demand can be selected as single cells or Modular cells.

Stationary hot water distribution system:

Sets of nozzles provide an uniform water distribution all over fill media and there is no moving port to necessitate extra services.

Integrated cold water basin:

If a unit of multiple cells is in design consideration, an integrated FRP or concrete basin can collect cold water.

ADVANTAGES

You may buy a Parto ABGARDAN Cooling Tower to fulfill your heat transfer need, but it will provide you many advantages, way more than expected, and it will save you lots of money!

- Attractive Design & Color Choice
- Light Weight
- Energy Efficient
- Corrosion Free (Body, Structure & ...)
- No Heavy Lifting Equipment Needed for Installation
- Simplified Foundation, Piping & Wiring
- Quiet Operation
- Easy Access for Inspection & Service
- Long Lasting Quality & The Best Guarantees
- Permanent Technical Back up
- Professional Support & Services

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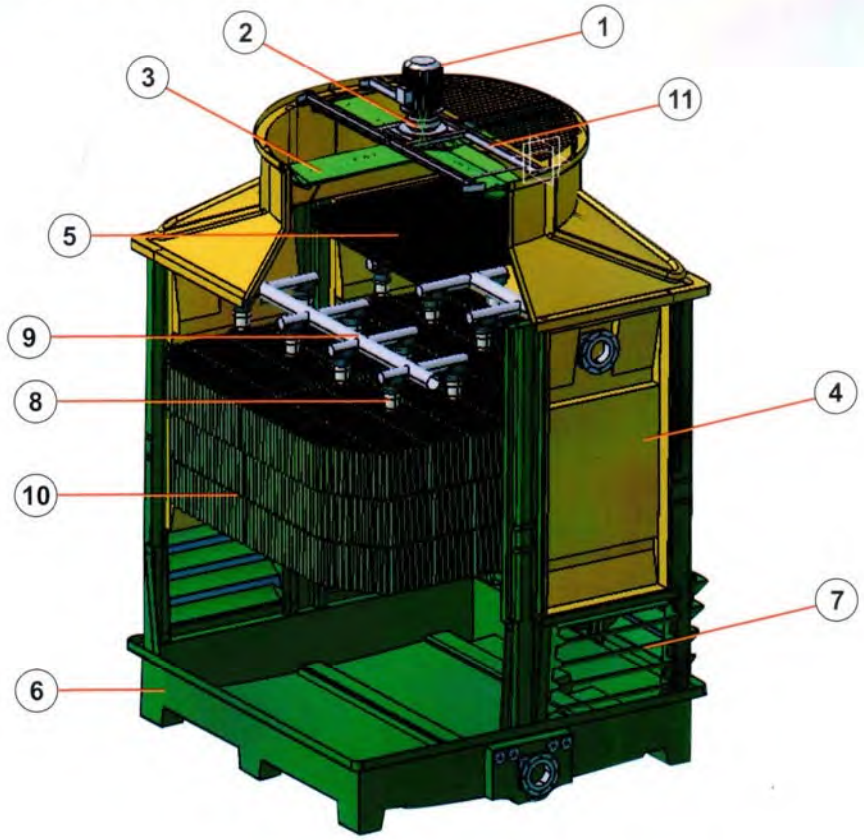
CONSTRUCTIONAL DETAIL

	X-Series	50	1400
1	Motor	3ph / 50Hz / 380V / IP55	
2	Fan Drive	Gear Box / Belt Driven	
3	Fan Blade	Air Foil	
4	Casing	FRP	
5	Eliminator	PVC / PP*	
6	Basin	FRP	
7	Louver	FRP	
8	Water Distribution	Nozzle Sets	
9	Internal Piping	High Pressure PVC	
10	Fill Media	Film / Splash* - PVC / PP*	
11	Frame Assembly	H.D.G Steel/FRP*	
12	Hardware	H.D.G Steel/SS Steel*	

*Optional and may incure extra charges



TOWERS' SPECIFICATION

Modle	Motor Power [KW]	Fan Dia. [M]	Dimensions [M]			Weight [KG]		Inlet/Outlet Flanges [INCH]		Pipe Connection [INCH]		
			L	W	H			In	Out	Float Valve	Over Flow	Drain
X-50	1.5	1.2	1.7	1.7	3.8	450	1100	4	4	3/4	2 1/2	1 1/2
X-60	1.5	1.2	1.7	1.7	3.8	500	1200	4	4	3/4	2 1/2	1 1/2
X-80	1.5	1.2	1.7	1.7	3.8	550	1250	4	4	3/4	2 1/2	1 1/2
X-100	2.2	1.8	2.8	2.8	4.6	1500	2300	2 x 4	5	3/4	2 1/2	1 1/2
X-125	4	1.8	2.8	2.8	4.6	1600	2400	2 x 4	5	3/4	2 1/2	1 1/2
X-150	4	1.8	2.8	2.8	4.6	1800	2600	2 x 4	5	3/4	2 1/2	1 1/2
X-200	4	1.8	2.8	2.8	4.6	2000	2800	2 x 4	6	3/4	2 1/2	1 1/2
X-250	5.5	1.8	2.8	2.8	4.6	2100	2900	2 x 4	6	3/4	2 1/2	1 1/2
X-300	5.5	2.4	3.9	3.9	5	2250	3100	3 x 4	8	3/4	2 1/2	1 1/2
X-350	7.5	2.4	3.9	3.9	5	2450	3300	3 x 4	8	3/4	2 1/2	1 1/2
X-400	7.5	2.4	3.9	3.9	5	2500	3350	3 x 4	8	3/4	2 1/2	1 1/2
X-450	11	2.4	3.9	3.9	5	2700	3550	3 x 4	8	3/4	2 1/2	1 1/2
X-500	7.5	3.3	5.1	5.1	5.5	4000	10000	2 x 5	10	1 1/2	2 1/2	1 1/2
X-550	11	3.3	5.1	5.1	5.5	4500	11500	2 x 5	10	1 1/2	4	1 1/2
X-600	11	3.3	6.2	6.2	6	4000	15000	2 x 6	10	1 1/2	4	1 1/2
X-700	15	3.3	6.2	6.2	6	5000	16000	2 x 6	10	2	4	1 1/2
X-800	15	4.2	6.2	6.2	6.4	5300	16300	2 x 6	12	2	4	1 1/2
X-1000	18.5	4.2	6.2	6.2	6.4	5500	16500	2 x 6	12	2	4	1 1/2
X-1200	22	4.2	6.2	6.2	6.4	6500	17500	2 x 6	12	2	4	1 1/2
X-1400	30	4.2	6.2	6.2	6.4	7000	18000	2 x 6	12	2	4	1 1/2

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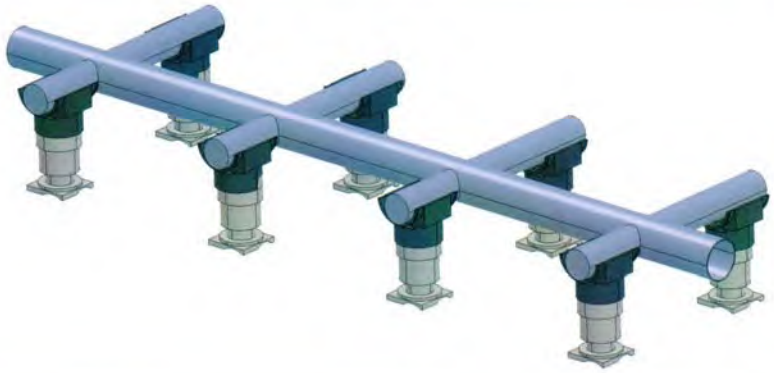
AIR & WATER SYSTEMS

Water Distribution System

Parto ABGARDAN's X Series employ stationary water distribution system to spray water flow over Fill media. This system includes:

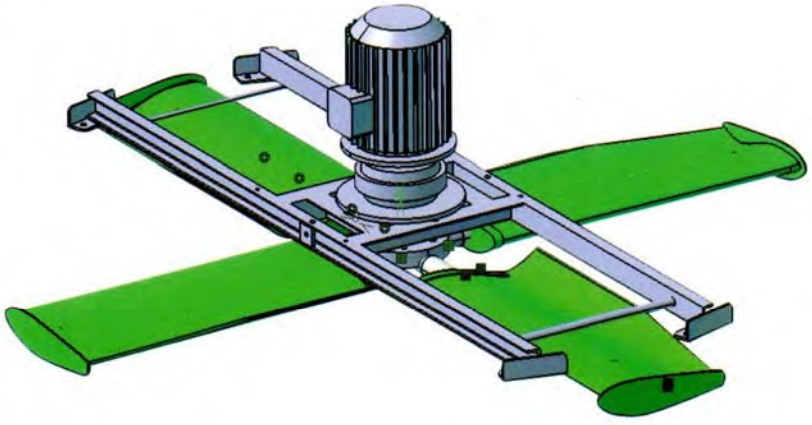
- A set of internal piping
- A network of nozzles
- Drift eliminators

water flow enters to internal main header which feeds branches and nozzles evenly. Nozzles spray water on Fill media and heat exchange takes place between air and water.



Air moving system

All X Series are induced draught type so they have utilized by an axial propeller fan at discharge. These fans are very light weight and designed to work quiet and efficient because their "Air Foil" shapes allow them to produce more airflow in lower speed. Blade's adjustable pitch angle feature enables these fans to be adjusted for cooling towers best performance. In all models an electromotor provides driving force for the fan, via a belt & pulley speed reducer or planetary gear box.



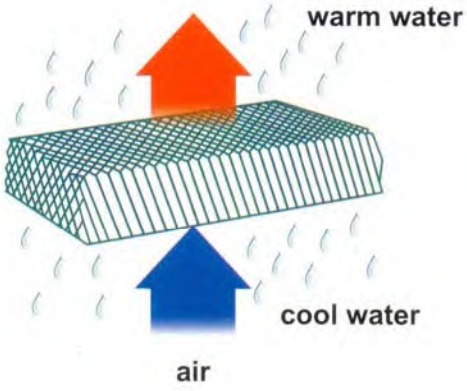
CASING & FILL MEDIA

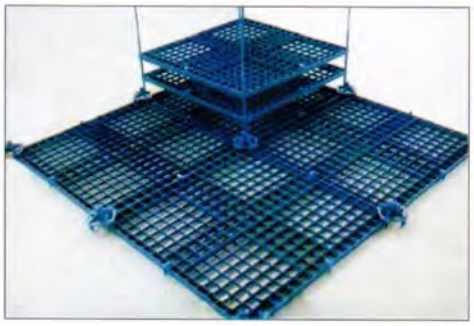
Casing or Body

The body and cold water basin of Parto ABGARDAN's cooling towers are made of composite material called FRP (Fiberglass Reinforced Polyester). This composite has excellent chemical and mechanical properties. It is corrosion free and stabilized against sun lights ultra violet radiation.
FRP has no effect on circulating water's chemical balance. This material also is not an environment for algae to live or grow. Composites used in casing and cold water basin's production are self colored (not painted). Body parts are designed and manufactured from high quality materials so they will last for 30 years.

Packing or Fill Media

In all kind of wet cooling towers, performance mainly depends on evaporation. Fill media or so called "Packing", is where air and water mix and evaporation takes place. Maximizing evaporation means maximizing tower capability. Parto ABGARDAN cooling towers are utilized by the last generation of film type PVC honey comb fill media. This packing transforms the water flow to a very thin layer of water with maximum surface so air and water can exchange heat. Also the PVC films have wavy shape and textured surface to reduce speed of water flow and it allows more time for heat exchange.
These fills are easy to install, easy to clean and withstand descaler wash. If water flow is being treated properly, the packing will last for 10 to 15 years.
If cooling tower is going to work in a harsh water condition and inferior water may cause blockage ,high quality PP splash Fill is recommended





TOWER SELECTION

To select a Parto ABGARDAN cooling tower for your project you may go through the following steps or you can always contact our sales office asking for a professional selection.

Step 1) Collect the necessary data
a) quantity of circulating water flow (Q)
b) water temp. leaving your system (entering cooling tower) or "hot water temp." (Th)
c) water temp. your system needs to work properly or "cold water temp." (Tc)
d) ambient wet bulb temp. (Twb)

- If your cooling tower is serving a chiller unit, you may get necessary data from chiller's manufacturer
- If you have other machinery or devices to cool down ask manufacturer to provide the data
- If you need a cooling tower to supply cold water for a process, seek engineering consultation for data calculation
- If you have an existing system you may measure the above data yourself
- For design wet bulb temp. (Twb) which is a climate characteristic, you may find data in meteorological references or through experienced engineering consultants

Important notice: Always make sure Twb < Tc and If Th > 55°C, contact Parto ABGARDAN sales office.

Step 2) Do the calculations
Determine Twb and ΔT (= Th - Tc)

Step 3) Select your cooling tower:
e) use quick reference
If your data matches with quick reference table, use Twb and ΔT to find the model that covers your circulating water flow (Q) in the quick reference table
f) send your data to our sales office and let them do it for you professionally

Since we preserve the right of modifications to improve our products without any prior notice and also the fact that selection of a proper model may involve other consideration such as piping, installation or any other engineering limitations and considerations, we strongly suggest you to confirm your selection result with our sales dept. otherwise it will produce no obligation for Parto ABGARDAN whatsoever.

QUICK REFRENCE

ΔT	~10.5 °F	~5.5 °C	~18 °F	10 °C
Tc / Th	85 / 95	~29.5 /35	85 / 103	~29.5 /~39.5
W.B. Temp.	72 (~22)	75 (~24)	72 (~22)	75 (~24)
X-50	42	35	29	25
X-60	45	38	32	28
X-80	50	43	36	31
X-100	119	100	83	71
X-125	141	118	99	84
X-150	149	126	107	92
X-200	152	130	111	97
X-250	167	142	122	106
X-300	259	217	182	155
X-350	303	256	217	187
X-400	310	264	226	197
X-450	347	296	253	220
X-500	439	367	307	262
X-550	529	451	387	337
X-600	577	482	402	344
X-700	683	577	488	421
X-800	769	652	553	478
X-1000	818	693	588	507
X-1200	878	750	643	560
X-1400	963	822	704	613

* Water flows in M^3/HR

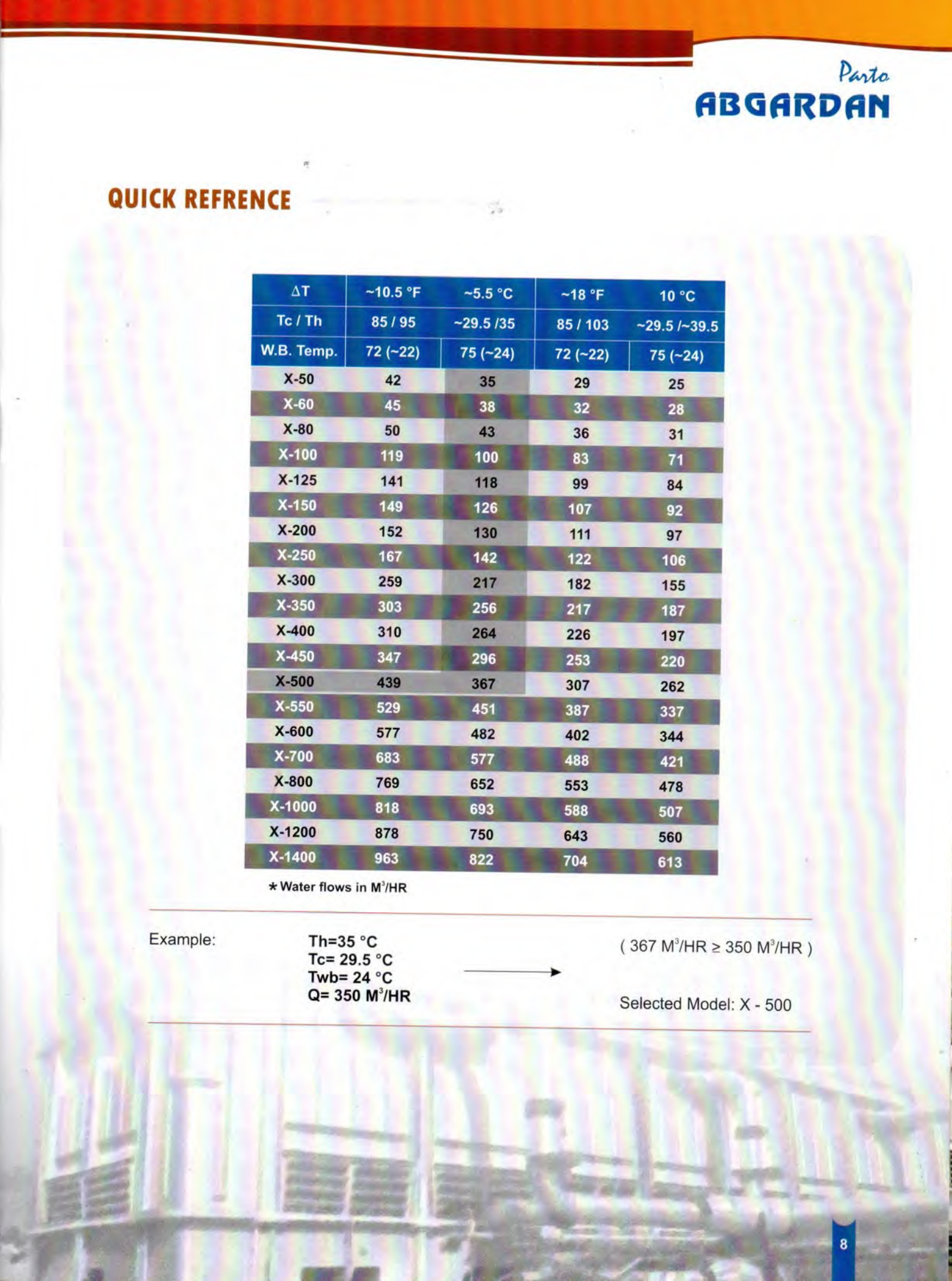
Example:

Th=35 °C
Tc= 29.5 °C
Twb= 24 °C
Q= 350 M^3/HR

→

(367 $M^3/HR \geq 350\ M^3/HR$)

Selected Model: X - 500



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PREPARE YOUR FOUNDATION

To install your Parto ABGARDAN cooling tower you need to build a foundation. If you have selected a model, you need foundation's dimensions to make sure it will fit your location. To construct tower's foundation (by steel or concrete), you must contact Parto ABGARDAN to receive as built drawings. Parto ABGARDAN will provide you simple, light weight and inexpensive foundation drawings. Please take the followings in consideration:

- The location itself should be free of any obstacle preventing thermal performance of cooling tower.
- The location should be safe, free of pipelines or other devices and have a proper drain.
- If two or more cooling tower(s) will be installed and work together they should be leveled.
- 1m, all around cooling tower(s) should be considered for services.
- All Collectors, Risers and Connecting pipes 12" and higher should not be supported by cooling tower's foundation.
- The foundation level should be minimum 500mm above floor level. If it will be above 1m, a 1m wide service deck with handrail should be considered all around the cooling tower(s).

CONNECT YOUR PIPING

Your cooling tower will serve your system via your piping. It is important to properly set up and connect your piping to your cooling tower(s). Parto ABGARDAN's cooling towers designed to provide easy and inexpensive pipe connections. It's easy to connect your cooling tower to the pipelines; here are some guidelines to do so:

- All connecting pipes should be supported separately. Non of pipes and valves should be supported by cooling tower's flanges
- Before connecting pipelines to cooling tower, you should make sure they are clean and there is no object to block the water flow
- If two or more similar cooling towers will be in service, make sure piping set up will supplies them with the same flow and head
- All connecting pipes to every single cooling tower have to have a proper On/Off valve close to cooling tower flanges (except over flow)
- Cooling tower's basin should be always designed above all connecting pipelines
- We strongly recommend use of expansion joints wherever a 4" or higher pipeline connects to cooling tower
- In case cooling tower's basin designed to be discharged only by gravity, it has to be noted in advanced (for outlet flange size change)
- Ask our sales engineers for detail drawings of pipe connections to your cooling tower(s)

AFTER SALES SERVICES

Parto ABGARDAN offers a wide range of services for its customers. End users of cooling towers can enjoy our expertise after sales program. This program includes:

- Guaranties and Warranties that come with contract
- Supply of high quality original parts
- Repairs and services by trained and experienced servicemen
- Technical support of our cooling tower experts
- Nationwide network of agents and service centers
- Services available every day, even holidays
- Annual commissioning and start up (upon request)
- Performance upgrade upon request (availability limited)
- Extended modification and improvement plan

As our sole agent,"Tochal Tahvieh Iranian Co" (established 2007) is ready to take on your request for parts services and maintenance 24/7.
professional and experienced team of "Tochal Tahvieh Iranian co" will be at your service till earn satisfaction of Parto ABGARDAN's Customers and end users.

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