

Nihon Spindle

Leading Eco-Technology

JK Series

• ENERGY SAVING • SPACE SAVING



Open Circuit Induced Draft Crossflow Type Cooling Tower

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Nihon Spindle JK Series



Product Overview

- Open Circuit & Induced Draft
- Crossflow Technology & Maintenance Friendly
- Modular System & Multiple Cell Configuration
- Gravity Flow & Nozzle Free Water Distribution System
- High Efficiency Fills with Low Drift Technology and Adhesive-Free
- Energy Saving⁽¹⁾ line from as low as 0.014kW per m³/ hour
- Space Saving⁽²⁾ line from as low as 0.024m² per m³ / hour
- Thermal Performance Rating for single and multiple cell configurations in accordance to JIS B8609 standards by Japan Cooling Tower Institute (JCI)
- Design & Manufacturing Standards certified by Japan Cooling Tower Institute (JCI) in accordance to Japan Industrial Standards (JIS)



Notes (1) & (2): Data based on inlet temperature 37.0°C, outlet temperature 32.0°C and ambient wetbulb temperature 27.0°C as per JCI standard.



A Trusted Global Brand

Nihon Spindle is one of the many accomplished brands acquired by Sumitomo Heavy Industries Limited, which forms part of the largest Japanese keiretsu famously known as Sumitomo Group.

Founded in 1918, Nihon Spindle excelled in the field of cooling tower developments for over 50 years and we continue to lead a new field of eco-technologies as a pioneer in high efficiency cooling towers. In-house research & development programs conducted at multiple test facilities in Nihon Spindle plants across Asia Pacific has contributed to the successful creation of a new breed of cooling towers that consume less energy with minimal water losses, the ideal eco-friendly solution for our end user.

A Successful History

- 1918 Nihon Spindle Manufacturing was founded in Osaka (Japan) as a limited partnership, producing spindles and key components for textile machines
- 1961 Nihon Spindle Manufacturing commenced full production and distribution of cooling towers
- 1972 Nihon Spindle Manufacturing developed its first FRP Cold Water Basin
- 1980 Nihon Spindle Manufacturing developed Low Noise technology in accordance to JCI standards
- 1983 The first cooling tower sold in Malaysia through Sumitomo Corporation
- 1985 Nihon Spindle Manufacturing developed Super Low Noise technology in accordance to JCI standards
- 1986 Distribution and manufacturing rights for UN series cooling towers granted to Linear Group Malaysia
- 1995 Dalian Spindle Cooling Towers Co. Ltd established in Dalian, China
- 2007 NS Cooling Towers Sdn Bhd established by Nihon Spindle Manufacturing as its third worldwide manufacturing plant in August as the main support hub for Malaysia and other worldwide markets except China and Japan
- 2008 Nihon Spindle Manufacturing launched WA & KX series cooling towers, thermal performance rated and certified by CTI
- 2009 NS Cooling Towers Sdn Bhd renamed to Nihon Spindle Cooling Towers Sdn Bhd in November
- 2012 Nihon Spindle Manufacturing launched JS series cooling towers, a new line of cooling towers with improved energy efficiency
- 2013 Nihon Spindle Manufacturing launched KG series cooling towers with premium energy efficiency, thermal performance rated and certified by CTI
- 2014 Nihon Spindle Manufacturing launched JK series cooling towers with improved energy efficiency and thermal performance

Our Dedicated Team



With high-tech manufacturing plants at multiple locations across Asia Pacific, Nihon Spindle carefully deploys its team of expertise to ensure all manufacturing and quality standards are stringently adhered to at all times, both internally within Nihon



Spindle plants and externally through its approved vendors for each plant. The highly competent professionals of Nihon Spindle Japan have been specifically appointed to manage important areas including manufacturing and assembly



process, engineering and in-house R&D, material procurement, vendor audit, quality assurance and quality control. Working as a team with the local expertise of each plant, we are confidently proud of every Nihon Spindle product delivered worldwide.

Field Proven Quality & Reliability



Nihon Spindle products are certified by Japan Cooling Tower Institute (JCI) in accordance to Japanese Industrial Standards (JIS). These standards are strictly applied over a wide range of areas including product and component design, material selection and



manufacturing process, test procedure and methodology, lifecycle and maintenance protocol, water quality standards. Nihon Spindle employs a team of in-house auditors at each plant as part of its quality control to strictly audit each Nihon Spindle plant and



its corresponding approved vendors. Our in-house auditors shall ensure all components and supplies are manufactured to Japan Industrial Standards (JIS), subsequently ensuring a longer product lifespan and greater product reliability to our end users.

Research and Development Centre



As a testament to our long term commitment in the field of cooling tower development, Nihon Spindle contributes direct investment into each manufacturing plant across Asia Pacific. Our manufacturing plant in Malaysia include multiple test facilities that function as part of the quality control requirements, as well as to execute long term research and development programs for technological



innovations. Our facility includes the first Cooling Tower Thermal Performance Test Platform in Malaysia, designed and built by then CTI tester Mr. Terry Watt in 1996. This test platform combined with a dedicated test office covers a total floor space of 15,000 square feet with digital thermocouple sensors embedded at multiple locations along the piping system, complex array of variable



pumps and diesel boilers to simulate specific operating conditions and highly accurate data acquisition sensors such as in-line flow meters, motorized psychrometers and outdoor wind sensors. Other facilities built specifically for in-process quality controls include static fan balancing, dynamic fan balancing, multiple axis vibration test, motor test, basin leak tests etc.

Japan Cooling Tower Institute



The Japan Cooling Tower Institute (JCI) was established in 1963 for the purpose of improving the quality of cooling towers through vast research programs specifically in the field of technical and manufacturing aspects of cooling towers. The institute conveniently serves as a third party independent source to provide non-bias and up-to-date information to the public for over 5 decades.

Established over 50 years ago, the Japan Cooling Tower Institute produced numerous standards and test codes to ensure its participating members deliver the highest quality standards and product performance. Amongst the many publications released, the following standards and codes have been applied to cooling tower manufacturers.

Refrigeration Ton (RT) by the Japan Cooling Tower Institute (JCI)

RT is the standard unit of measurement associated with cooling tower capacity and is defined by the Japan Cooling Institute. 1RT is equivalent to specific heat rejection quantity necessary in order to reduce fluid temperature from 37°C to 32°C at a circulating fluid flowrate of 0.78 cubic meters per hour and ambient wet bulb temperature of 27°C. For more information, please visit <http://www.coolingtower.jp/>

Water Quality Standards by Japan Refrigeration and Air Conditioning Industry Association (JRAIA)

Water is one of the key elements present in all open circuit type cooling towers. This precious element flows through all intended heat transfer surfaces of a cooling tower. In other words, the construction and thermal efficiencies of a cooling tower can be affected in the presence of poor water quality.

The Japan Cooling Tower Institute identified the importance of good water quality and has specified the water quality standards by JRAIA to all its participating members.

For more information on JRAIA standards, please visit <http://www.jraia.or.jp/english/>

1964	Cooling Tower Terminology and Performance Standards for Cooling Towers for Air Conditioning
1966	Standards for Cooling Towers for Air Conditioning
1973	Sound Level Measurement Standards for Cooling Towers
1978	Sound Level Standards for Cooling Towers: Centrifugal Water Chillers-Low-Sound Type
1979	Sound Level Standards for Cooling Towers: Centrifugal Water Chillers-Ultra Low-Sound Type
1981	Seismic Resistance Design and Construction Standards
1984	Daily Checklist and Emergency Checklist for Cooling Towers
1989	Sound Level Standards for Cooling Towers: Double Effect Type Absorption Chillers-Low-Sound and Ultra Low-Sound Types
1991	Sound Level Standards for Cooling Towers: Centrifugal Water Chillers-Low-Sound and Ultra Low-Sound Types Revised Sound Level Standards for Cooling Towers: Double Effect Type Absorption Chillers-Low-Sound and Ultra Low-Sound Types
1994	Criteria and Testing of Corrosion Proof for Cooling Towers against Salty Air
2005	Basic Specifications for Vapor Plume Abatement Cooling Towers Cooling Tower Maintenance and Service Life
2008	Performance Tests for Mechanical Draft Cooling Towers: JIS B 8609
2010	Sound Level Standards for Closed Circuit Cooling Towers Revised Criteria of Corrosion Proof for Cooling Towers against Salty Air Thermal Performance Tests for Mechanical Draft Cooling Towers
2011	Revised Sound Level Standards for Open Circuit Cooling Towers Revised Sound Level Standards for Closed Circuit Cooling Towers

Standard Features



Crossflow Technology

Introduced in the 1960s, crossflow technology provided countless advantages over conventional counterflow technology. A void section inside crossflow cooling towers allow instant and tool-free access to the internals of each cooling tower. This feature enables periodic maintenance and inspection on critical components such as fills, drive system and piping array to be conducted safely with ease, reducing downtime and maintenance cost. A perforated maintenance walkway runs internally between each endwall, serving as a dry platform for technicians to conduct routine works safely with ease. A properly maintained cooling tower will consistently deliver higher thermal performances over a poorly maintained cooling tower. With over 50 years of research in the field of crossflow technology, Nihon Spindle successfully developed its largest single-cell capacity crossflow cooling tower, delivering over 1,500RT in accordance to JIS B8609 standards by Japan Cooling Tower Institute (JCI).



High Efficiency Fills and Low Drift Technology

Fills are essentially the beating heart of all cooling towers with evaporative cooling technology. Nihon Spindle is proud to be one of the few manufacturers worldwide that has ventured into the engineering of fill technology since 1960s. Our vast experience through decades of research in fill engineering enabled the creation of high efficiency fills with maximum thermal performance. Our latest fill technology incorporates unique studs to interlock fill sheets without adhesives, simplifying field works and improved fill cleaning for extended lifecycle and consistent reliability. In addition, the integration of drift eliminators onto Nihon Spindle fill technology ensure minimal water drift loss to prevent legionella's disease and enhanced water conservation. Technological features above have been developed by Nihon Spindle R&D team in part to exercise its social responsibility for a healthier and greener future.



Gravity Flow Water Distribution System

Our unique distribution system is designed to evenly deliver hot water by natural gravity flow across the fill section without nozzle sprays or grommets. The elimination of nozzle sprays and grommets ensure choke-free water flow at all times, while the absence of nozzle sprays allow for water flow by natural gravity or zero energy flow without additional pumping requirements. In addition, the absence of nozzle sprays and grommets completely eliminates any replacement cost of such parts. Nihon Spindle distribution system is a proprietary technology designed specifically for the use with Nihon Spindle fills. Nihon Spindle gravity flow distribution systems have been field proven successfully since 1960s with continuous refinement over the years through technological advancement and complex engineering secrets of Nihon Spindle R&D team.

Standard Features

Heavy Duty Framework



Robust structures provide excellent support to all areas and additionally strengthened at critical areas, i.e. cold water basin, mechanical skid, fill section, distribution basin etc. All structures are hot dipped zinc galvanized for superior rust protection and longevity.

Energy Efficient Axial Fans



Fans with lightweight aluminum alloy airfoil blades and adjustable pitch are housed inside fan cylinders to increase fan efficiency, reduce shaft power and maximize containment protection. Fan cylinders are constructed from UV retardant fiberglass reinforced polyester (FRP) for rust proof and longevity.

Maintenance Walkway



Perforated to eliminate water patches and promote non-skid surface. Walkway is elevated above basin water level to provide safe platform for maintenance and inspection works. Entire assembly is hot dipped zinc galvanized for superior rust protection and longevity.

Oversized Access Door



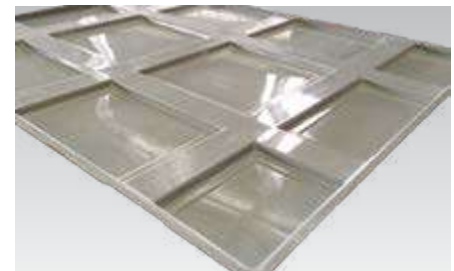
Opening area exceeding 1,200mm by 530mm for safer egress and ingress, each door is securely hinged onto a door frame. Door and door frame constructed from UV retardant fiberglass reinforced polyester (FRP).

Rigid Mechanical Skid



Mechanical skid is equipped with a 3-axis adjustable motor base to facilitate and simplify belt tension and pulley alignment services. Entire assembly is hot dipped zinc galvanized for superior rust protection and longevity.

FRP Casing Panels



Constructed from UV retardant fiberglass reinforced polyester (FRP), panels are chemically inert and rust proof for longevity. Corrugated panels are provided as standard and molded panels are available as option.

Fan Bearing Assembly



Cast iron enclosure provides maximum protection to the drive shaft, another critical component of the drive system. Cast iron enclosure is hot dipped zinc galvanized for superior rust protection and longevity. Lubrication line constructed from copper tubes extend from fan bearing assembly to adjacent column, reachable by hand to simplify lubrication service for all fan bearings.

Sloping Cold Water Basin



Designed with a natural gradient that slopes towards the center of the cold water basin, promoting natural water flow towards the center of the cold water basin for simplified cleaning services. Constructed from UV retardant fiberglass reinforced polyester (FRP) for rust proof and longevity, supported from beneath with hot dipped zinc galvanized structural framework.

Outlet Sump



Water depth increased at outlet area prevents entrapment of air pockets in the piping system, significantly reduces air locks in the pumps. Equipped with a side-stream horizontal outlet, this eliminates the need for an elbow pipe, simplifies piping connection works and overall field costs. All models except JKMx-C3xxx and JKMx-D3xxx include this as a standard feature.

Optional Features

Rust Protection



For installations that require additional protection against corrosion, epoxy powder coating can be applied onto the standard hot dipped galvanized steel (HDGS) parts as a secondary protection. Other optional materials include stainless steel 304 and 316 grades.

Vibration Switch



Design specifically to safeguard the drive system of each cooling tower. In the event of excessive vibrations detected at the motor or fan unit, this option automatically disrupts the power supply to the motor unit and prevents consequential damages to the tower.

Extended Discharge Hood



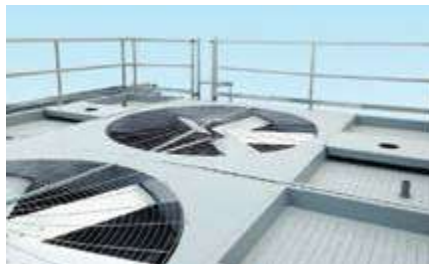
An efficient and cost effective way to divert discharge air wherever necessary. Constructed entirely of UV retardant Fibreglass Reinforced Polyester (FRP), this option is designed specifically for Nihon Spindle fan cylinders. Available at multiple heights, straight or elbow type.

Vibration Isolator



Installed at specific points of the cooling tower base, this option provides an effective way to isolate vibrations generated from the cooling tower. Available at various deflection rates and color coded to the rated load.

Safety Railing Set



Complete with hand & knee railings, toe guards along the upper perimeter and ladder cage, this option provides a safer workspace at high elevation of each cooling tower top deck.

Distribution Basin Cover



Constructed of UV retardant Fibreglass Reinforced Polyester (FRP), this option protects the distribution basins against harmful UV rays. The tool-free and removable covers can withstand up to a maximum load of 180kg/m².

Motor Efficiency



Totally Enclosed Air Over (TEAO) motors are designed specifically for in-stream operations, utilises discharge air to cool the motor and mounted inside cooling tower for noise and vibration reduction. Available in IE2 (High Efficiency) & IE3 (Premium Efficiency), rated to IEC 60034-30 & NEMA standards, custom voltage, frequency and ingress protection class.

Mechanical Gear Drive



Right angle speed reduction gears are recommended for cooling towers subject to extended operational hours. This option provides enhanced reliability and minimal downtime, rated in accordance with American Gear Manufacturers Association (AGMA) and Cooling Technology Institute (CTI) Standards.

Multi Cell Configuration



Our cooling towers are designed specifically for modular connectivity. Single cell towers can be easily joint to supply multi-cell capacities, minimizing overall footprint. Multi-cell towers are equipped with a continuous walkway from 1 end to the other. Options available for multi-cell towers include common or individual type basin, half or full height internal partitions.

Selection Table

Inlet Water Temperature ° F	95.0	97.0	100.0	95.0	97.0	100.0	100.0	105.0	105.0
Outlet Water Temperature ° F	85.0	87.0	90.0	85.0	87.0	90.0	90.0	95.0	90.0
Wet Bulb Temperature° F	78.0			81.5			85.0		
Model Name ⁽¹⁾	Circulating Water Flowrate, USGPM								
JKMN-C3CL1	576	723	952	*	526	757	540	976	*
JKMN-C3DL1	643	806	1,062	*	587	845	603	1,089	481
JKMN-C3EL1	721	903	1,189	470	657	946	675	1,219	538
JKMN-C3FL1	819	1,026	1,336	535	747	1,075	767	1,336	612
JKMN-C3GL1	907	1,136	1,336	592	827	1,191	850	1,336	678
JKMN-C3HL1	974	1,220	1,336	636	888	1,278	912	1,336	728
JKMN-D3DL1	721	903	1,189	*	657	946	675	1,219	538
JKMN-D3EL1	805	1,008	1,329	526	734	1,057	754	1,362	601
JKMN-D3FL1	917	1,149	1,486	599	837	1,204	860	1,486	686
JKMN-D3GL1	1,019	1,277	1,486	666	930	1,338	955	1,486	762
JKMN-D3HL1	1,096	1,374	1,486	716	1,000	1,440	1,027	1,486	819
JKMN-D3JL1	1,163	1,458	1,486	760	1,060	1,486	1,090	1,486	869
JKMN-E3EL1	917	1,149	1,515	599	837	1,204	860	1,553	686
JKMN-E3FL1	1,040	1,304	1,718	679	949	1,366	975	1,755	777
JKMN-E3GL1	1,159	1,453	1,755	757	1,057	1,523	1,086	1,755	867
JKMN-E3HL1	1,247	1,564	1,755	815	1,137	1,638	1,169	1,755	932
JKMN-E3JL1	1,314	1,647	1,755	858	1,198	1,726	1,231	1,755	982
JKMN-E3KL1	1,472	1,755	1,755	962	1,343	1,755	1,380	1,755	1,100
JKMN-E4DL1	897	1,127	1,490	582	817	1,182	840	1,528	667
JKMN-E4EL1	985	1,238	1,636	639	897	1,298	922	1,678	732
JKMN-E4FL1	1,111	1,396	1,755	720	1,011	1,464	1,040	1,755	826
JKMN-E4GL1	1,233	1,550	1,755	800	1,123	1,625	1,154	1,755	917
JKMN-E4HL1	1,324	1,665	1,755	859	1,206	1,746	1,240	1,755	985
JKMN-G3EL1	1,047	1,312	1,729	*	955	1,375	982	1,773	783
JKMN-G3FL1	1,191	1,493	1,967	778	1,086	1,564	1,116	2,017	890
JKMN-G3GL1	1,318	1,652	2,115	861	1,202	1,731	1,235	2,115	985
JKMN-G3HL1	1,416	1,775	2,115	925	1,291	1,860	1,327	2,115	1,058
JKMN-G3JL1	1,507	1,890	2,115	985	1,375	1,980	1,413	2,115	1,126
JKMN-G3KL1	1,680	2,106	2,115	1,096	1,532	2,115	1,574	2,115	1,255
JKMN-G4FL1	1,275	1,603	2,115	827	1,161	1,681	1,194	2,115	949
JKMN-G4GL1	1,429	1,797	2,115	927	1,302	1,884	1,338	2,115	1,063
JKMN-G4HL1	1,514	1,903	2,115	982	1,378	1,995	1,417	2,115	1,125
JKMN-G4JL1	1,619	2,035	2,115	1,050	1,474	2,115	1,515	2,115	1,204
JKMN-G4KL1	1,783	2,115	2,115	1,156	1,624	2,115	1,669	2,115	1,326
JKLN-E3DL1	903	1,138	1,507	*	*	1,197	*	1,553	*
JKLN-E3EL1	983	1,240	1,641	*	*	1,303	925	1,691	*
JKLN-E3FL1	1,108	1,398	1,850	*	1,010	1,470	1,042	1,906	*
JKLN-E3GL1	1,217	1,534	2,030	*	1,109	1,613	1,144	2,092	908
JKLN-E3HL1	1,311	1,653	2,188	*	1,195	1,738	1,232	2,254	979
JKLN-E3JL1	1,381	1,741	2,304	*	1,258	1,830	1,298	2,374	1,030
JKLN-E3KL1	1,537	1,939	2,566	989	1,401	2,038	1,445	2,644	1,147
JKLN-G3DL1	*	1,319	1,745	*	*	1,387	*	1,799	*
JKLN-G3EL1	1,136	1,433	1,897	*	*	1,507	*	1,954	*
JKLN-G3FL1	1,272	1,605	2,124	*	1,160	1,687	1,196	2,188	*
JKLN-G3GL1	1,398	1,763	2,333	*	1,274	1,854	1,314	2,404	*
JKLN-G3HL1	1,506	1,899	2,513	*	1,373	1,997	1,416	2,590	1,124
JKLN-G3JL1	1,583	1,996	2,641	*	1,443	2,099	1,488	2,722	1,181
JKLN-G3KL1	1,764	2,225	2,944	1,134	1,608	2,339	1,659	3,034	1,317

* Refer to the manufacturer

Selection Table

Inlet Water Temperature ° F	95.0	97.0	100.0	95.0	97.0	100.0	100.0	105.0	105.0
Outlet Water Temperature ° F	85.0	87.0	90.0	85.0	87.0	90.0	90.0	95.0	90.0
Wet Bulb Temperature ° F	78.0			81.5			85.0		
Model Name ⁽¹⁾	Circulating Water Flowrate, USGPM								
JKLN-G4FL1	1,586	1,986	2,609	*	1,452	2,087	1,497	2,690	1,201
JKLN-G4GL1	1,737	2,175	2,857	1,137	1,590	2,285	1,640	2,945	1,316
JKLN-G4HL1	1,864	2,334	3,065	1,219	1,705	2,451	1,759	3,160	1,411
JKLN-G4JL1	1,972	2,470	3,244	1,291	1,805	2,595	1,862	3,288	1,494
JKLN-G4KL1	2,190	2,742	3,288	1,433	2,004	2,881	2,067	3,288	1,659
JKLN-G4LL1	2,313	2,896	3,288	1,513	2,117	3,043	2,183	3,288	1,752
JKLN-G4ML1	2,436	3,050	3,288	1,594	2,229	3,204	2,299	3,288	1,845
JKLN-G4NL1	2,576	3,226	3,288	1,686	2,358	3,288	2,431	3,288	1,951
JKLN-G5FL1	1,782	2,278	3,040	1,092	1,615	2,405	1,674	3,151	1,301
JKLN-G5GL1	1,960	2,506	3,288	1,202	1,776	2,646	1,841	3,288	1,431
JKLN-G5HL1	2,080	2,660	3,288	1,276	1,885	2,809	1,954	3,288	1,519
JKLN-G5JL1	2,180	2,787	3,288	1,337	1,976	2,943	2,048	3,288	1,591
JKLN-G5KL1	2,400	3,068	3,288	1,471	2,175	3,240	2,254	3,288	1,752
JKLN-G5LL1	2,564	3,279	3,288	1,572	2,324	3,288	2,409	3,288	1,872
JKLN-G5ML1	2,678	3,288	3,288	1,642	2,427	3,288	2,516	3,288	1,955
JKLN-G5NL1	2,829	3,288	3,288	1,735	2,564	3,288	2,658	3,288	2,065
JKLN-J3GL1	1,572	1,983	2,624	*	1,433	2,085	1,478	2,704	*
JKLN-J3HL1	1,673	2,110	2,793	*	1,525	2,219	1,573	2,878	*
JKLN-J3JL1	1,775	2,238	2,962	*	1,617	2,353	1,668	3,052	1,324
JKLN-J3KL1	1,970	2,484	3,287	1,266	1,795	2,612	1,852	3,388	1,470
JKLN-J3LL1	2,113	2,664	3,526	1,358	1,926	2,801	1,986	3,634	1,577
JKLN-J4EL1	1,583	1,982	2,603	*	1,448	2,082	1,494	2,684	*
JKLN-J4FL1	1,737	2,175	2,857	*	1,590	2,285	1,640	2,945	1,316
JKLN-J4GL1	1,892	2,369	3,111	*	1,731	2,488	1,785	3,207	1,433
JKLN-J4HL1	2,011	2,518	3,308	1,316	1,840	2,645	1,898	3,410	1,523
JKLN-J4JL1	2,113	2,646	3,475	1,382	1,933	2,779	1,994	3,582	1,600
JKLN-J4KL1	2,320	2,905	3,816	1,518	2,123	3,052	2,190	3,847	1,757
JKLN-J4LL1	2,460	3,081	3,847	1,610	2,252	3,236	2,322	3,847	1,863
JKLN-J4ML1	2,745	3,437	3,847	1,796	2,512	3,611	2,591	3,847	2,079
JKLN-J4NL1	2,941	3,683	3,847	1,925	2,692	3,847	2,776	3,847	2,228
JKLN-J5FL1	1,960	2,506	3,345	*	1,776	2,646	1,841	3,466	1,431
JKLN-J5GL1	2,111	2,699	3,603	1,295	1,913	2,850	1,983	3,734	1,541
JKLN-J5HL1	2,245	2,870	3,831	1,377	2,035	3,031	2,109	3,847	1,639
JKLN-J5JL1	2,338	2,989	3,847	1,434	2,119	3,156	2,196	3,847	1,707
JKLN-J5KL1	2,564	3,279	3,847	1,572	2,324	3,462	2,409	3,847	1,872
JKLN-J5LL1	2,698	3,450	3,847	1,655	2,446	3,643	2,535	3,847	1,970
JKLN-J5ML1	3,042	3,847	3,847	1,865	2,757	3,847	2,858	3,847	2,221
JKLN-J5NL1	3,206	3,847	3,847	1,966	2,906	3,847	3,012	3,847	2,341
JKLN-N4GL1	2,215	2,773	3,643	1,449	2,027	2,913	2,090	3,755	1,677
JKLN-N4HL1	2,369	2,966	3,897	1,550	2,168	3,116	2,236	4,017	1,794
JKLN-N4JL1	2,503	3,134	4,116	1,637	2,290	3,292	2,362	4,243	1,895
JKLN-N4KL1	2,766	3,463	4,406	1,810	2,531	3,638	2,610	4,406	2,095
JKLN-N4LL1	2,970	3,718	4,406	1,943	2,717	3,906	2,803	4,406	2,249
JKLN-N4ML1	3,138	3,929	4,406	2,053	2,872	4,128	2,962	4,406	2,377
JKLN-N4NL1	3,384	4,237	4,406	2,214	3,096	4,406	3,194	4,406	2,563
JKLN-N4PL1	3,759	4,406	4,406	2,460	3,440	4,406	3,548	4,406	2,847
JKLN-N5FL1	2,303	2,945	3,931	*	2,088	3,110	2,164	4,074	1,682
JKLN-N5GL1	2,509	3,208	4,282	1,539	2,274	3,388	2,358	4,406	1,832
JKLN-N5HL1	2,657	3,397	4,406	1,629	2,408	3,588	2,496	4,406	1,940
JKLN-N5JL1	2,819	3,603	4,406	1,728	2,555	3,805	2,648	4,406	2,058
JKLN-N5KL1	3,103	3,968	4,406	1,903	2,813	4,190	2,916	4,406	2,266
JKLN-N5LL1	3,299	4,218	4,406	2,023	2,990	4,406	3,099	4,406	2,409
JKLN-N5ML1	3,526	4,406	4,406	2,162	3,196	4,406	3,312	4,406	2,574
JKLN-N5NL1	3,756	4,406	4,406	2,303	3,404	4,406	3,529	4,406	2,742
JKLN-N5PL1	4,037	4,406	4,406	2,476	3,659	4,406	3,793	4,406	2,948

* Refer to the manufacturer

Technical Specification

Model ⁽¹⁾	Drift Loss	Overall Dimension			Fan		Weight		Piping Connection				
		Width	Length	Height	Diameter	Motor	Dry	Operating	Inlet	Outlet	Drain	Overflow	Make-up ⁽²⁾
		(mm)	(mm)	(mm)	(mm)	(kW)	(kg)	(kg)	(size x qty)	(size x qty)	(size x qty)	(size x qty)	(size x qty)
JKMN-C3CL1	less than 0.005% of circulating water flowrate	2,350	4,320	3,545	1,980	3.7	1,800	4,420	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-C3DL1		2,350	4,320	3,545	1,980	5.5	1,800	4,430	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-C3EL1		2,350	4,320	3,545	1,980	7.5	1,840	4,490	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-C3FL1		2,350	4,320	3,545	1,980	11.0	1,840	4,500	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-C3GL1		2,350	4,320	3,545	1,980	15.0	1,870	4,550	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-C3HL1		2,350	4,320	3,545	1,980	18.5	1,910	4,590	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3DL1		2,600	4,540	3,545	2,220	5.5	1,920	4,940	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3EL1		2,600	4,540	3,545	2,220	7.5	1,960	4,990	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3FL1		2,600	4,540	3,545	2,220	11.0	1,970	5,020	125A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3GL1		2,600	4,540	3,545	2,220	15.0	2,040	5,100	150A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3HL1		2,600	4,540	3,545	2,220	18.5	2,080	5,150	150A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-D3JL1		2,600	4,540	3,545	2,220	22.0	2,100	5,180	150A x 2	200A x 1	50A x 1	80A x 1	40A x 2
JKMN-E3EL1		3,050	4,770	3,545	2,475	7.5	2,310	6,180	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E3FL1		3,050	4,770	3,545	2,475	11.0	2,320	6,200	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E3GL1		3,050	4,770	3,545	2,475	15.0	2,370	6,270	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E3HL1		3,050	4,770	3,545	2,475	18.5	2,430	6,340	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E3JL1		3,050	4,770	3,545	2,475	22.0	2,440	6,360	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E3KL1		3,050	4,770	3,545	2,475	30.0	2,510	6,430	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E4DL1		3,050	4,770	4,560	2,475	5.5	2,780	7,010	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E4EL1		3,050	4,770	4,560	2,475	7.5	2,830	7,070	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E4FL1		3,050	4,770	4,560	2,475	11.0	2,840	7,100	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E4GL1		3,050	4,770	4,560	2,475	15.0	2,890	7,160	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-E4HL1		3,050	4,770	4,560	2,475	18.5	2,950	7,230	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3EL1		3,650	5,070	3,545	2,775	7.5	2,710	7,460	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3FL1		3,650	5,070	3,545	2,775	11.0	2,720	7,500	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3GL1		3,650	5,070	3,545	2,775	15.0	2,780	7,580	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3HL1		3,650	5,070	3,545	2,775	18.5	2,820	7,630	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3JL1		3,650	5,070	3,545	2,775	22.0	2,840	7,660	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G3KL1		3,650	5,070	3,545	2,775	30.0	2,910	7,730	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G4FL1		3,650	5,070	4,560	2,775	11.0	3,300	8,520	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G4GL1		3,650	5,070	4,560	2,775	15.0	3,340	8,580	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G4HL1		3,650	5,070	4,560	2,775	18.5	3,390	8,660	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G4JL1		3,650	5,070	4,560	2,775	22.0	3,410	8,680	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKMN-G4KL1		3,650	5,070	4,560	2,775	30.0	3,480	8,750	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3DL1		3,050	5,730	3,342	2,475	5.5	2,760	7,560	150A x 2	200A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3EL1		3,050	5,730	3,342	2,475	7.5	2,800	7,620	150A x 2	200A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3FL1		3,050	5,730	3,342	2,475	11.0	2,820	7,660	150A x 2	200A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3GL1		3,050	5,730	3,342	2,475	15.0	2,890	7,740	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3HL1		3,050	5,730	3,342	2,475	18.5	2,920	7,800	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3JL1		3,050	5,730	3,342	2,475	22.0	2,940	7,820	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-E3KL1		3,050	5,730	3,342	2,475	30.0	3,010	7,910	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3DL1		3,650	6,340	3,342	2,775	5.5	3,190	9,090	150A x 2	200A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3EL1		3,650	6,340	3,342	2,775	7.5	3,240	9,150	150A x 2	200A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3FL1		3,650	6,340	3,342	2,775	11.0	3,260	9,190	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3GL1		3,650	6,340	3,342	2,775	15.0	3,330	9,280	150A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3HL1		3,650	6,340	3,342	2,775	18.5	3,370	9,340	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3JL1		3,650	6,340	3,342	2,775	22.0	3,380	9,360	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G3KL1		3,650	6,340	3,342	2,775	30.0	3,460	9,470	200A x 2	250A x 1	80A x 1	80A x 1	40A x 2
JKLN-G4FL1	3,650	6,340	4,560	3,048	11.0	4,230	10,970	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2	
JKLN-G4GL1	3,650	6,340	4,560	3,048	15.0	4,280	11,050	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2	
JKLN-G4HL1	3,650	6,340	4,560	3,048	18.5	4,330	11,110	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2	
JKLN-G4JL1	3,650	6,340	4,560	3,048	22.0	4,350	11,150	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2	
JKLN-G4KL1	3,650	6,340	4,560	3,048	30.0	4,450	11,290	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2	

Note (1): Single cell listed, multiple cell configuration available but not listed

Note (2): Connection consists of automatic and manual make-up pipes

Technical Specification

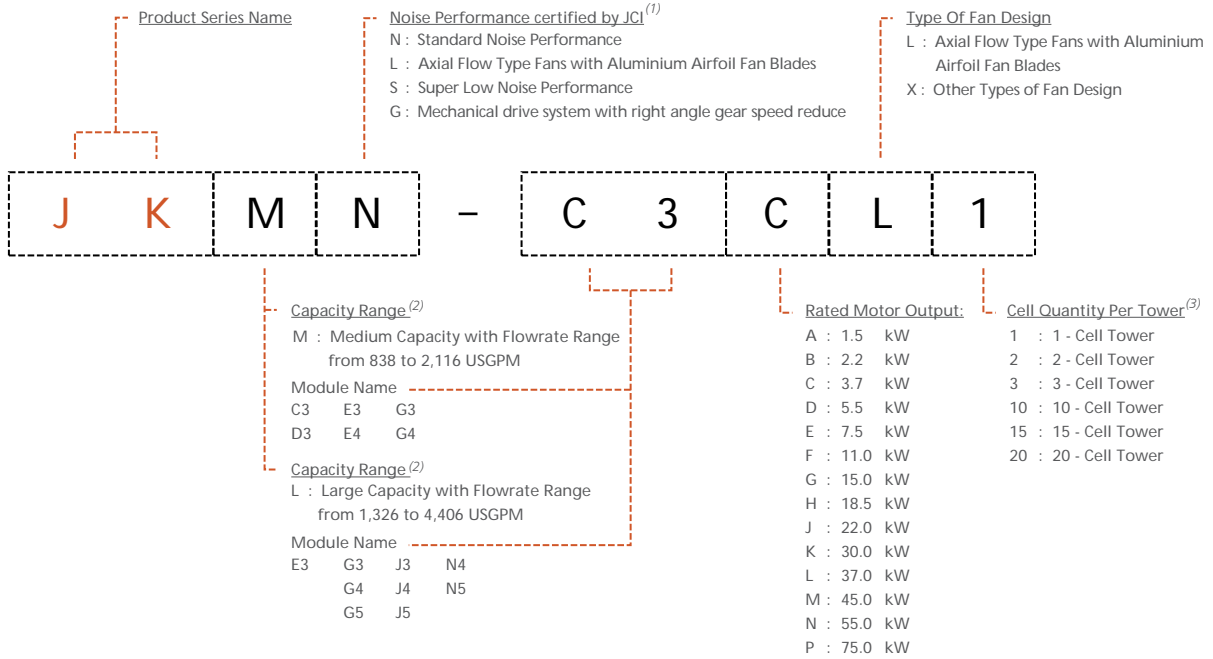
Model ⁽¹⁾	Drift Loss	Overall Dimension			Fan		Weight		Piping Connection				
		Width	Length	Height	Diameter	Motor	Dry	Operating	Inlet	Outlet	Drain	Overflow	Make-up ⁽²⁾
		(mm)	(mm)	(mm)	(mm)	(kW)	(kg)	(kg)	(size x qty)	(size x qty)	(size x qty)	(size x qty)	(size x qty)
JKLN-G4LL1	less than 0.005% of circulating water flowrate	3,650	6,340	4,560	3,048	37.0	4,550	11,420	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G4ML1		3,650	6,340	4,560	3,048	45.0	4,730	11,620	250A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G4NL1		3,650	6,340	4,560	3,048	55.0	4,840	11,760	250A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5FL1		3,650	6,340	5,370	3,048	11.0	4,680	11,960	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5GL1		3,650	6,340	5,370	3,048	15.0	4,720	12,030	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5HL1		3,650	6,340	5,370	3,048	18.5	4,770	12,090	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5JL1		3,650	6,340	5,370	3,048	22.0	4,790	12,120	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5KL1		3,650	6,340	5,370	3,048	30.0	4,890	12,260	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5LL1		3,650	6,340	5,370	3,048	37.0	5,000	12,380	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5ML1		3,650	6,340	5,370	3,048	45.0	5,180	12,600	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-G5NL1		3,650	6,340	5,370	3,048	55.0	5,270	12,710	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J3GL1		4,250	6,670	3,342	3,048	15.0	3,810	10,940	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2
JKLN-J3HL1		4,250	6,670	3,342	3,048	18.5	3,860	10,990	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2
JKLN-J3JL1		4,250	6,670	3,342	3,048	22.0	3,880	11,030	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2
JKLN-J3KL1		4,250	6,670	3,342	3,048	30.0	3,990	11,180	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J3LL1		4,250	6,670	3,342	3,048	37.0	4,080	11,300	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4EL1		4,250	6,670	4,560	3,048	7.5	4,750	12,320	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4FL1		4,250	6,670	4,560	3,048	11.0	4,810	12,400	200A x 2	250A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4GL1		4,250	6,670	4,560	3,048	15.0	4,860	12,480	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4HL1		4,250	6,670	4,560	3,048	18.5	4,910	12,540	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4JL1		4,250	6,670	4,560	3,048	22.0	4,930	12,580	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4KL1		4,250	6,670	4,560	3,048	30.0	5,030	12,710	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4LL1		4,250	6,670	4,560	3,048	37.0	5,120	12,830	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4ML1		4,250	6,670	4,560	3,353	45.0	5,350	13,120	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J4NL1		4,250	6,670	4,560	3,353	55.0	5,440	13,250	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5FL1		4,250	6,670	5,370	3,048	11.0	5,350	14,020	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5GL1		4,250	6,670	5,370	3,048	15.0	5,390	14,070	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5HL1		4,250	6,670	5,370	3,048	18.5	5,430	14,130	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5JL1		4,250	6,670	5,370	3,048	22.0	5,450	14,160	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5KL1		4,250	6,670	5,370	3,048	30.0	5,560	14,300	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5LL1		4,250	6,670	5,370	3,048	37.0	5,660	14,420	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5ML1		4,250	6,670	5,370	3,353	45.0	5,870	14,700	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-J5NL1		4,250	6,670	5,370	3,353	55.0	5,940	14,790	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4GL1		4,850	7,330	4,560	3,962	15.0	5,650	15,330	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4HL1		4,850	7,330	4,560	3,962	18.5	5,690	15,390	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4JL1		4,850	7,330	4,560	3,962	22.0	5,720	15,440	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4KL1		4,850	7,330	4,560	3,962	30.0	5,820	15,590	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4LL1		4,850	7,330	4,560	3,962	37.0	5,920	15,720	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4ML1		4,850	7,330	4,560	3,962	45.0	6,080	15,930	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4NL1		4,850	7,330	4,560	3,962	55.0	6,190	16,070	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N4PL1		4,850	7,330	4,560	3,962	75.0	6,460	16,410	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N5FL1		4,850	7,330	5,370	3,962	11.0	6,200	16,580	200A x 2	300A x 1	80A x 1	80A x 1	50A x 2
JKLN-N5GL1		4,850	7,330	5,370	3,962	15.0	6,270	16,680	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N5HL1		4,850	7,330	5,370	3,962	18.5	6,310	16,740	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N5JL1		4,850	7,330	5,370	3,962	22.0	6,340	16,780	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2
JKLN-N5KL1	4,850	7,330	5,370	3,962	30.0	6,430	16,920	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2	
JKLN-N5LL1	4,850	7,330	5,370	3,962	37.0	6,520	17,050	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2	
JKLN-N5ML1	4,850	7,330	5,370	3,962	45.0	6,690	17,260	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2	
JKLN-N5NL1	4,850	7,330	5,370	3,962	55.0	6,800	17,400	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2	
JKLN-N5PL1	4,850	7,330	5,370	3,962	75.0	7,070	17,740	250A x 2	350A x 1	80A x 1	80A x 1	50A x 2	

Note (1): Single cell listed, multiple cell configuration available but not listed

Note (2): Connection consists of automatic and manual make-up pipes

Tower Information

Definition of Model Name



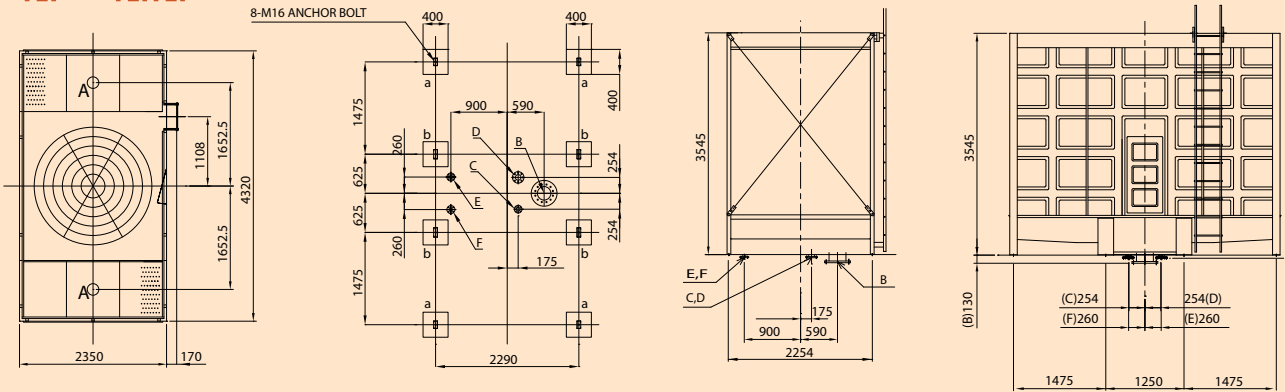
Note (1): Japan Cooling Tower Institute (JCI).

Note (2): Data based on inlet temperature 37.0°C, outlet temperature 32.0°C and ambient wetbulb temperature 27.0°C as per Japan Cooling Tower Institute (JCI) standard.

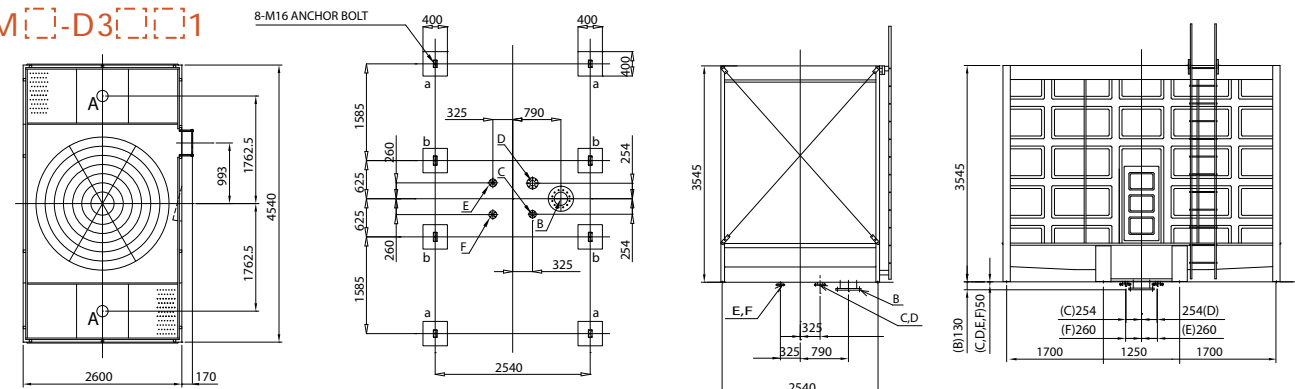
Note (3): Multi-cell configuration for crossflow type cooling towers do not require thermal derating as air-intake ratio is directly proportionate to number of cells.
In other words, no limitations to number of cells per tower.

Dimensions & Layout

JKM-C3-CL1

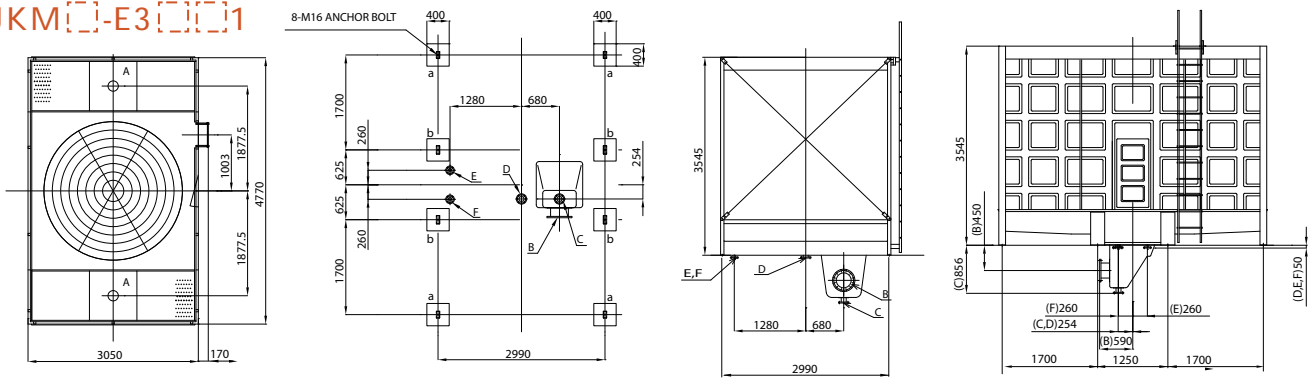


JKM-D3-CL1

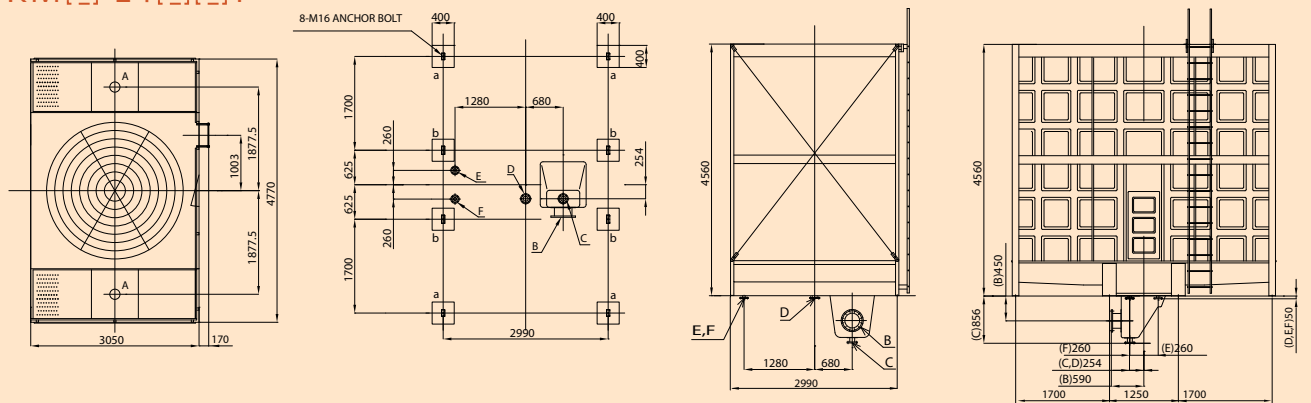


Dimensions & Layout

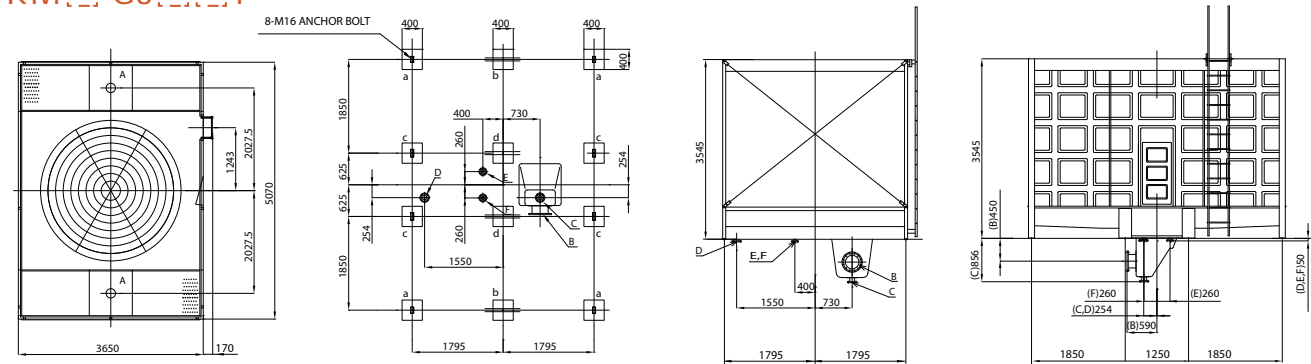
JKM-E3



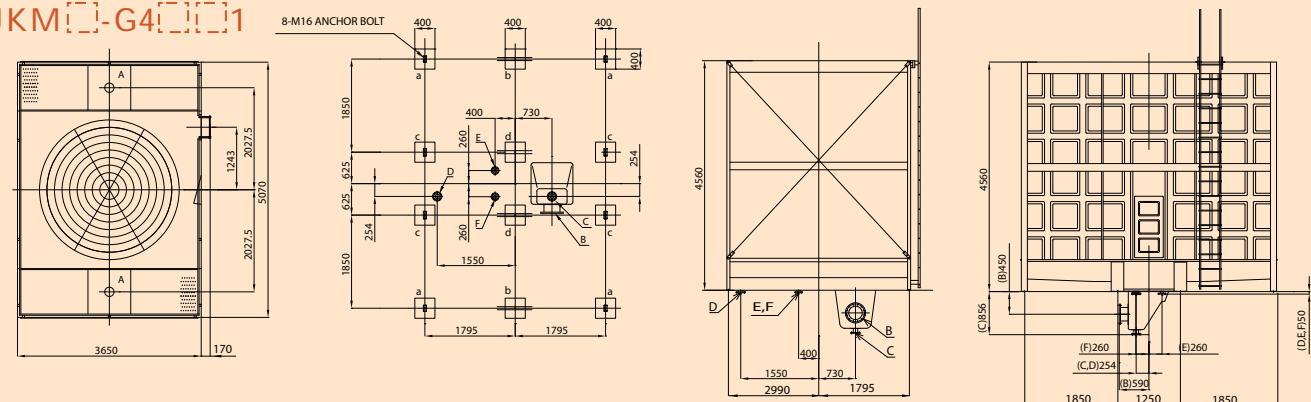
JKM-E4



JKM-G3

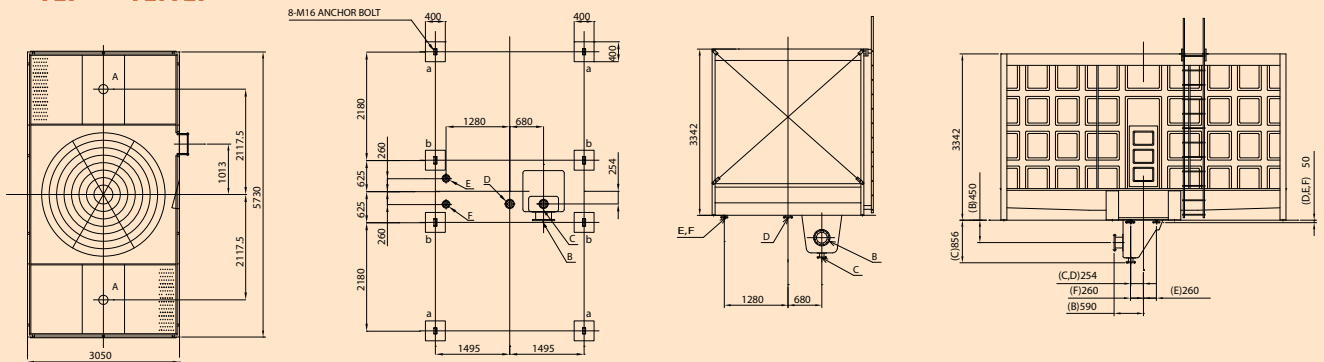


JKM-G4

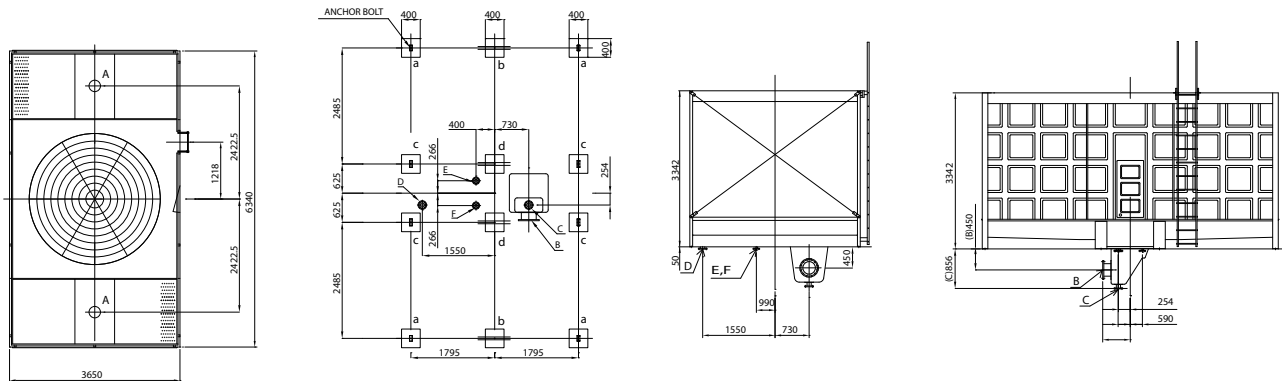


Dimensions & Layout

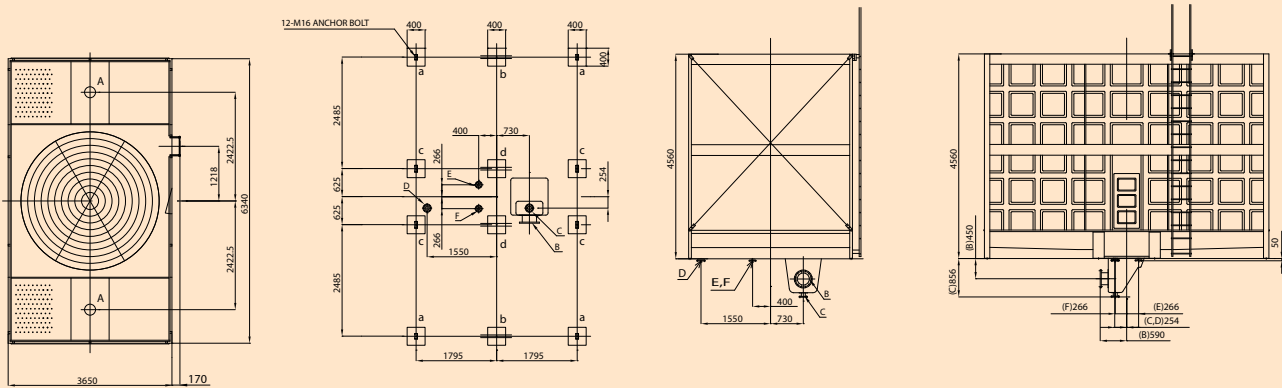
JKL-E3-1



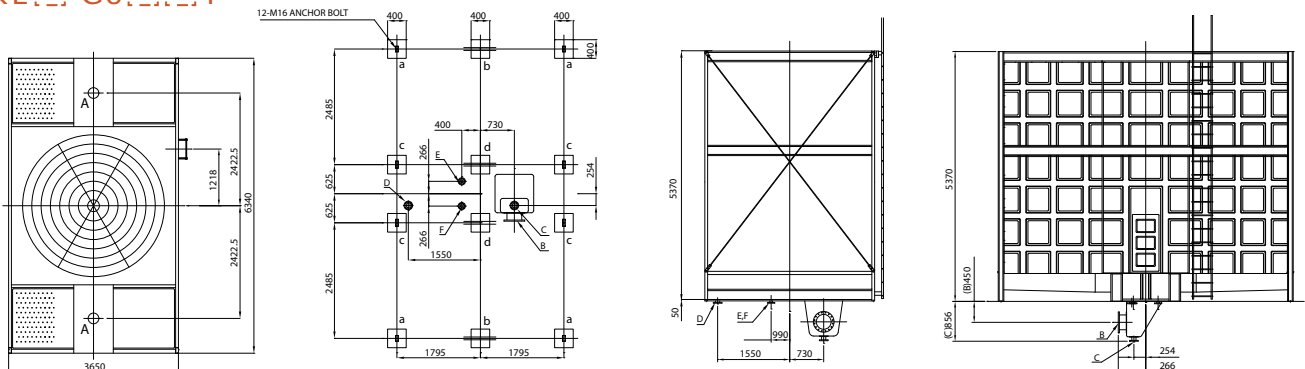
JKL-G3-1



JKL-G4-1

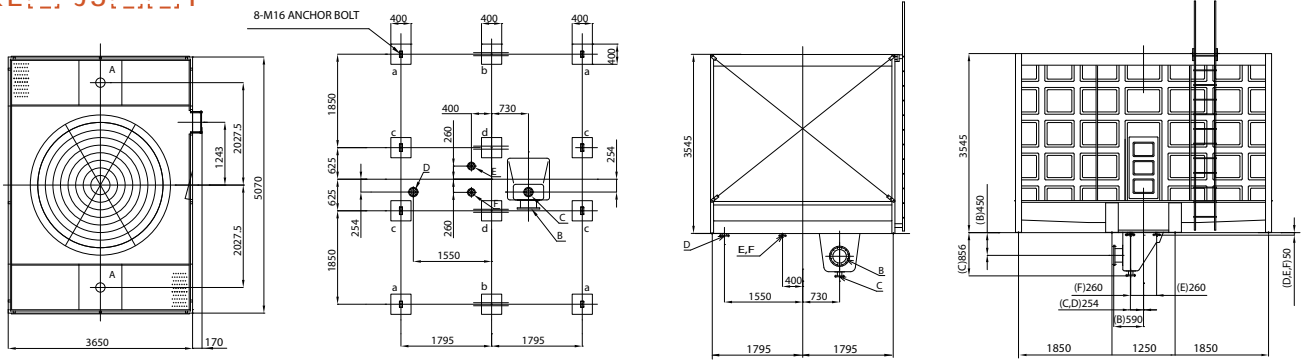


JKL-G5-1

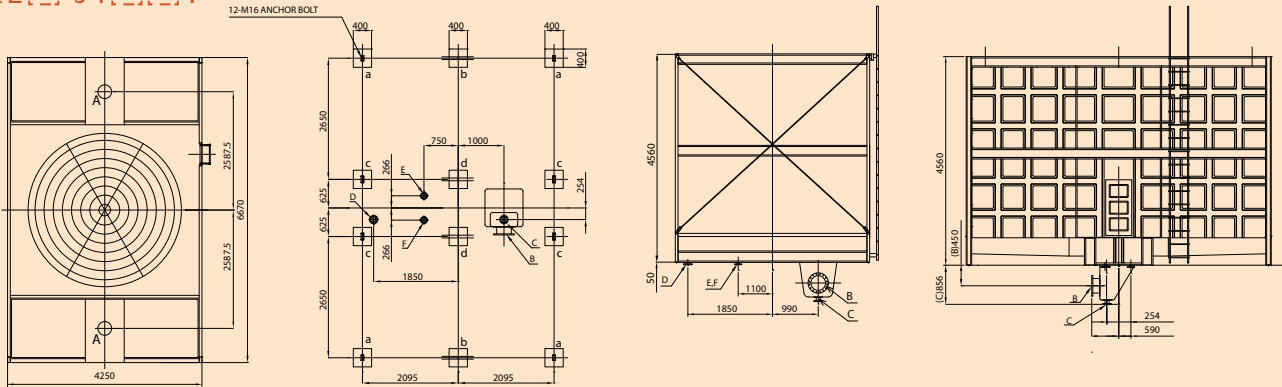


Dimensions & Layout

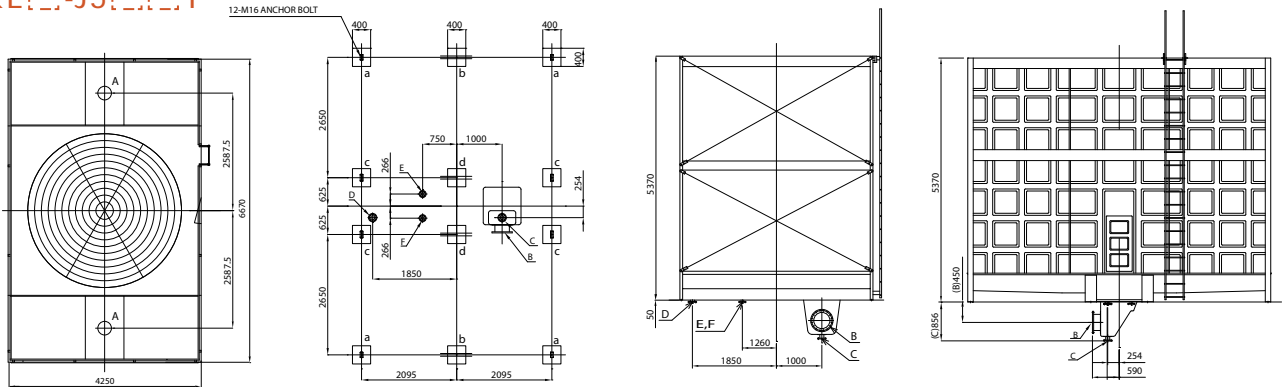
JKL-J3-1



JKL-J4-1

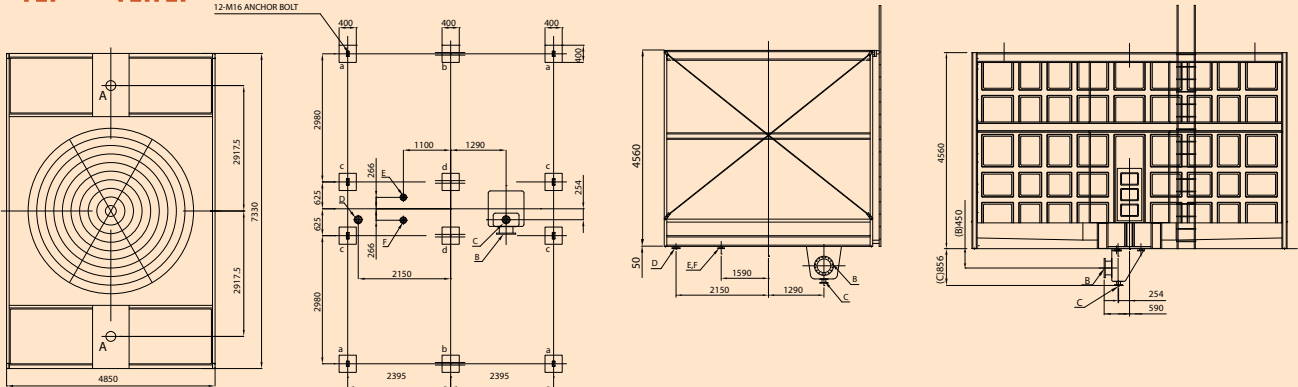


JKL-J5-1

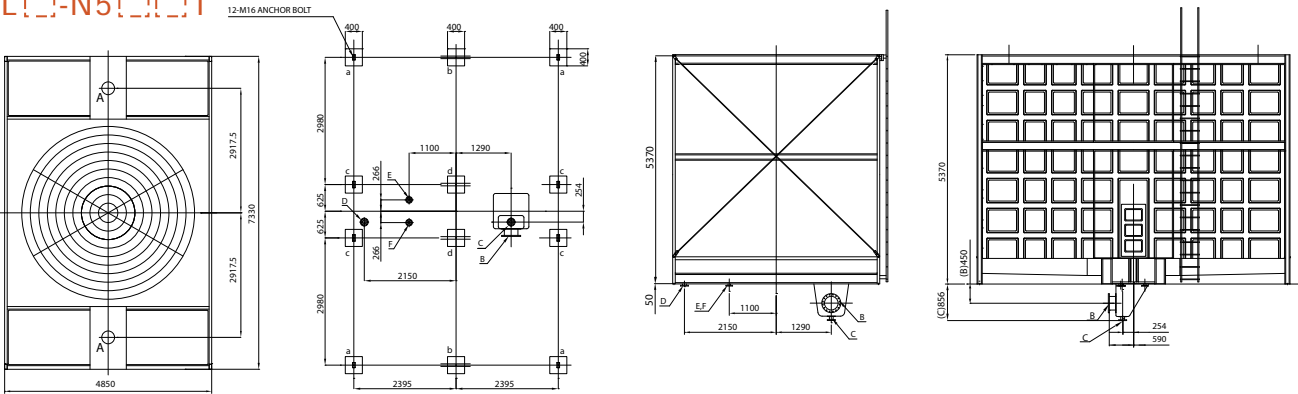


Dimensions & Layout

JKL-N4



JKL-N5



Installation Guideline

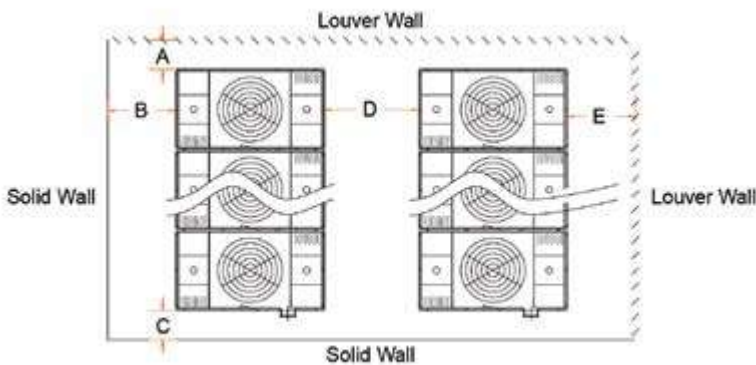


Figure 1 (not to scale)

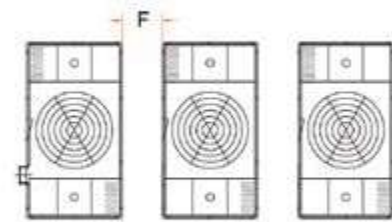


Figure 2 (not to scale)

Unit Configuration	Figure 1					Figure 2		
	Tower Endwall to Building Louver Wall	Tower Air Inlet to Building Solid Wall	Tower Endwall to Building Solid Wall	Tower Air Inlet to Tower Air Inlet	Tower Air Inlet to Building Louver Wall			Tower Endwall to Tower Endwall
	Distance A	Distance B	Distance C	Distance D	Distance E based on louver openings of			Distance F
					90%	70%	50%	
1 Cell	1.2 Meter	1.6 Meter	1.2 Meter	3.2 Meter	1.2 Meter	1.2 Meter	1.3 Meter	1.2 Meter
2 Cells	1.2 Meter	2.5 Meter	1.2 Meter	5.0 Meter	1.2 Meter	1.3 Meter	1.9 Meter	1.2 Meter
3 Cells	1.2 Meter	3.0 Meter	1.2 Meter	6.0 Meter	1.2 Meter	1.6 Meter	2.3 Meter	1.2 Meter
4 Cells	1.2 Meter	3.3 Meter	1.2 Meter	6.6 Meter	1.2 Meter	1.8 Meter	2.6 Meter	1.2 Meter
5 Cells	1.2 Meter	3.5 Meter	1.2 Meter	7.0 Meter	1.2 Meter	1.9 Meter	2.7 Meter	1.2 Meter
6 Cells	1.2 Meter	3.5 Meter	1.2 Meter	7.0 Meter	1.2 Meter	1.9 Meter	2.7 Meter	1.2 Meter

Engineering Specification

Operating Conditions

Each cooling tower is manufactured to cool _____ liters per second of circulating water (flowrate) from _____ °C entering water temperature (hot water) to _____ °C leaving water temperature (cold water) at _____ °C entering ambient wet bulb temperature. The cooling towers are guaranteed to perform under the specified conditions and its thermal performance shall be rated in accordance to JIS B8609 standards by Japan Cooling Tower Institute (JCI).

Structure

The cooling tower structure shall be constructed from hot dipped zinc galvanized steel (HDGS). Galvanizing process shall be carried out in accordance to ISO1461:1999 standards. The cooling tower casing shall be constructed from FRP (UV-retardant Fiberglass Reinforced Polyester).

Cold Water Basin

The cold water basin shall be constructed in multiple sections and made entirely from UV retardant Fibreglass Reinforced Polyester (FRP). Each cold water basin shall be made of FRP and equipped with a drain outlet for ease of cleaning.

Drive System

The drive system shall comprise of pulleys and V-belts. V-belts shall be fabric-impregnated and tensioned according to manufacturer recommendations.

Fills

Constructed entirely from UV-treated polyvinyl chloride (UPVC) and thermo-vacuum formed with intricate patterns shall facilitate for an even spread of water over the heat transfer surface with cross flow induced draft of air. Drift eliminators and air inlet louvers shall be an integral part of the film type fills. Fills shall be suspended from upper tubular structures and held together by interlocking studs without adhesives.

Mechanical Skid

The mechanical skid shall be constructed of hot dipped zinc galvanized steel (HDGS) and bolted directly onto the inner vertical structures of the cooling tower. Hot dipped zinc galvanized steel (HDGS) fan guard shall be installed above the fan cylinder for added protection to the fan unit.

Motor

The fan motor(s) shall be constructed in a totally enclosed, air over (TEAO) enclosure capable of withstanding up to IP55 and Class F insulation, specifically designed for cooling tower service. The motor shall be located beneath the fan cylinder inside the cooling tower for minimal impact on external noise and vibrations. The motor(s) shall be mounted inside the discharge air stream for effective cooling as required for TEAO enclosed motors.

Water Distribution System

The hot water distribution shall be of open gravity flow and basin shall be constructed from UV retardant Fiberglass Reinforced Polyester (FRP) without spray nozzles or grommets. Complex arrays of distribution holes shall evenly sprinkle water through natural gravity flow. U-channel bars shall be installed beneath each basin to facilitate the scattering effects of water evenly onto the fill section.

Fan Section

Fans shall be axial flow type with aerofoil aluminum fan blades designed to provide the necessary airflow for heat transfer. Fan blades shall be assembled, balanced and pitched. The fan shall operate inside the fan cylinder, which provides a streamlined air entry and minimum tip clearance for maximum fan efficiency.

Access

Access door constructed of UV retardant Fiberglass Reinforced Polyester (FRP) shall facilitate instant and tool-free entry into the inner sections of the cooling tower for inspection and maintenance works. A maintenance walkway constructed of hot dipped zinc galvanized steel (HDGS) shall be installed above the cold water basin and water level, this walkway shall span between end walls inside the cooling tower. External access ladder constructed of hot dipped zinc galvanized steel (HDGS) shall be installed on the cooling tower exterior to facilitate direct access to the top deck section.

Specifications & Data are accurate at the time of publication, verification should be made at the time of purchase
The MANUFACTURER reserves full rights for all amendments without prior notice

SAFETY PRECAUTIONS MUST BE PRACTICED AT ALL TIMES TO AVOID ACCIDENTS & DAMAGES

Operation, Maintenance and Repair of this equipment must only be executed by qualified personnel

WARRANTY: refer to Certificate of Warranty for complete details



WARRANTY

Certificate of Warranty

Warranties: Seller warrants that the equipment products sold under this contract shall be free of defects in material and workmanship for a period of a twelve (12) months from the date of equipment startup or eighteen (18) months from the date of shipment, or whichever occurs first. Replacement parts provided by seller under its original equipment warranty obligations are warranted against defects in material and workmanship for a period of twelve (12) months from the date of shipment or until expiration of their original warranty, or whichever is the first to occur. Parts purchased after expiration are warranted against defects in material and workmanship for a period of twelve (12) months from dates of shipment. Written notice of any defects shall be given to Seller immediately upon discovery by Buyer, and shall fully describe the claim defect. Defective parts shall be repaired or replace F.O.B. point of shipment, not provided that inspection by Seller verifies the claimed defect (s). This shall be the Buyer's exclusive remedy.



This warranty does not cover the cost of removing, shipping or reinstalling the equipment. Repairs made without the prior written approval of Seller shall be void all warranties covering material and workmanship. Any descriptions of the product (s) in the contract are for the sole purpose of identification and do not constitute a warranty. In the interest of product improvement, Seller reserves the right to change specification and product design without incurring any liability therefore. The foregoing express warranties or those set forth elsewhere on this document are the only warranties of Seller applicable to the product (s) sold under contract. Seller's warranties do not apply to defects in product (s) for which payment in full has not been received by Seller, and said warranties do not cover normal wear and tear or the erosion, corrosion and / or deterioration of the product (s) from unusual causes. No warranties by Seller shall apply to accessories manufactured by others, in as much as they warranted separately by their respective manufacturers, except as stated above. Buyers assumes liability for and shall bear the costs of compliance with all laws, regulation, codes, standards or ordinances applicable to the location, operation and maintenance of the product (s) and air-conditioning system duct intakes, etc. no representative or agent of Seller is authorized to enlarge upon the express warranties of seller.

Liability / Indemnification: Seller shall not be liable for any damages caused by delay in delivery of the products. Buyer shall not hold harmless and indemnify against Seller from and against all liability, claim losses, damages and expenses (including attorney's fees) for personal injury and property damage arising out of Buyer's improper unloading, handling or use of the product subject to this order, and for Buyer's infringement of another's property rights. The Seller maximum liability from any causes whatsoever, whether in breach of contract, tort (including negligence), strict liability, or otherwise, shall not exceed the contract price. Neither Buyer or Seller shall in any event be liable to the other, whether such liability arises out of breach of contract, tort (including negligence) strict liability or any other cause or form of action, for any consequential, special, indirect or incidental damages, including but not limited to loss of actual or anticipated profits or loss of use arising out of this contract, other than such damages resulting from the willful misconduct of Buyer or Seller.

Past Project Portfolio



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*Wisma Mulia
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*Hospital Selayang
Selangor, Malaysia*




*Intel Technology
Penang, Malaysia*



*Park View Hotel,
Muara, Brunei*



 Cooling tower manufacturing facilities for Nihon Spindle group

Notes

A large rectangular area with a dashed border, intended for handwritten notes.

96th Anniversary
Since 1918

Nihon Spindle

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