

WEATHERING EXTREME CONDITIONS

CATALOGUE 2013

HEAVY
DUTY

PRECISION
COOLING

INDUSTRIAL
COOLING



LORDAN

BEYOND THERMAL
ENGINEERING

OUR CORE VALUES

- **COOPERATE WITH OUR CUSTOMERS IN AREAS OF TECHNICAL AND BUSINESS INNOVATION** BY INTRODUCING CUSTOM-MADE SOLUTIONS TO COMPLEX HEATING, COOLING AND REFRIGERATION CHALLENGES.
- **ADD VALUE FOR OUR CUSTOMERS** THROUGH VENDOR MANAGED INVENTORY (VMI) SYSTEMS AND LOCAL PRESENCE THAT REACH THEIR MARKET DEMANDS.
- **INTRODUCE FLEXIBLE COIL DESIGNS AND COATINGS TO WITHSTAND ANY ENVIRONMENTAL EXTREME** FROM CORROSIVE ENVIRONMENTS AND EXTREME TEMPERATURES TO HEAVY VIBRATION AND DELICATE APPLICATIONS.
- **CULTIVATE A WORK ENVIRONMENT THAT SUPPORTS AND VALUES OUR EMPLOYEES' SKILLS AND TALENTS** WITHIN OUR DYNAMIC AND GROWING COMPANY.
- **COMMITMENT TO QUALITY IN THE MATERIAL WE USE AND INTERNATIONAL STANDARDS WE ABIDE BY** PROMISING HIGHLY DURABLE AND EFFICIENT PRODUCTS USING LIGHTWEIGHT MATERIALS.
- **RESPONSIBILITY TO THE ENVIRONMENT** THROUGH THE INTRODUCTION OF ECO-FRIENDLY RESOURCES INTO OUR DESIGNS AND INTEGRATION OF ENERGY SAVING TECHNIQUES TO LOWER OPERATING COSTS.



LORDAN
BEYOND THERMAL
ENGINEERING

COMPANY PROFILE



Since 1958 Lordan (A.C.S.) has been engineering and manufacturing high quality custom-made fin and tube heat exchangers for the HVAC&R markets with applications for commercial, industrial, telecommunications, and transportation industries.

Going beyond thermal engineering, Lordan is known internationally for its design flexibility and as a solver of complex heating, cooling and refrigeration challenges, whatever the scope. A global company, Lordan has a sophisticated logistics management system, as well as local representation in over four continents and a substantial customer base spread out all over the world.

Lordan's highly experienced engineering team thrives on innovative thinking and creative approaches in the design of heat transfer technologies, adapting technological applications to withstand severe environmental conditions.

Incorporated into every Lordan design are lightweight materials and eco-friendly resources best suited to your requirements, promising you significant energy savings, lower operating costs and a highly durable quality assured product.

Our coil designs and high quality coatings are built to **weather through any condition**, from corrosive environments and extreme temperatures to heavy vibration and delicate applications. Our core business areas include:

Heavy Duty Applications involving coils with high durability to undergo tough mechanical and environmental conditions required for transportation, energy industries, and the like.

Precision Cooling Applications relating to the production of efficient cooling within strict space and weight limitations to meet the demands of the high-tech and medical industries, sensitive machineries and close control products.

Industrial Cooling Applications to meet the needs of commercial, industrial and residential construction projects that include air-conditioning systems and air handling units (AHU).

Lordan's fully compliant production facilities have manufacturing capabilities that can deliver from single to large series production in its 12,000 square meter plant with a production capacity of over 2,000 different designs a year. We abide by the strictest international quality and environmental management standards and have been UL207 certified since 1999. Our production bases are located in Israel's Galilee region and in Whales (UK), with warehouses throughout the markets and regions we serve, namely Europe, the US, Australia and Asia.

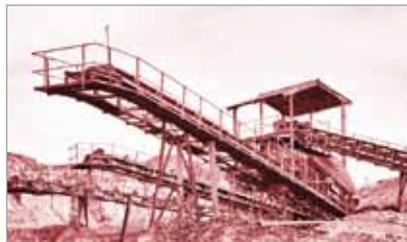
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HEAT EXCHANGE APPLICATION HEAVY DUTY



**HEAVY
DUTY**



Since 1958 Lordan has been specializing in developing heat exchange applications for transportation, military and energy industries that must withstand harsh mechanical and environmental conditions.

From the low temperatures in Antarctica to the sun baked and sand blasted Sahara desert, from tropical South America to the Coal Mines in Australia, our heat exchange designs and custom made coils for climate control systems are built to deliver maximum performance, value and reliability in the most extreme conditions.

These conditions can be highly contaminated and corrosive environments, demanding marine conditions, strong mechanical vibrations, arid, humid or freezing climates etc.

Lordan assigns highly experienced engineers to your project, who will work with your team to identify specific needs. The Lordan team is guaranteed to come up with creative approaches utilizing eco-friendly, lightweight or especially strong materials, specialized coatings and features such as slanted coils to fit specific areas, and a variety of fin surfaces (patterns and shapes).

The following shows some of the applications where our dedicated design and specialized manufacturing capabilities have successfully met unique coil requirements:

Transportation Market

- Trains
- Buses and Coaches
- Trucks
- Ambulances
- Freight Trucks
- Refrigerated Containers
- Heavy-Duty Vehicles
- Military Vehicles
- Off-Road Vehicles

Military Market

- Land Combat
- Transportation Vehicles
- Field Hospitals
- Mobile Technical Shelters

Energy Industry

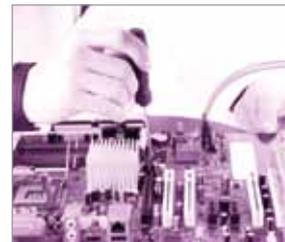
- Oil and Gas Rigs
- Mining Equipment

Marine Equipment

- Ships
- Submarines
- Off-Shore Oil and Gas Rigs
- General Marine Environment

HEAT EXCHANGE APPLICATION PRECISION COOLING

PRECISION
COOLING



Lordan specializes in designing precision cooling coils for systems meant to strictly regulate ambient conditions within a very narrow working range. Our coils can produce highly accurate cooling for high density server environments that accommodate sensitive electronics.

Over the years, we have worked on hundreds of projects around the world requiring precision cooling applications for electronic components and for high sensible, tight tolerance control environments in the medical industry and data centers.

Our exclusive Triple Seven (Triple 7) advanced coil pattern is suited for medical applications such as MRI machines, laser technologies and other sensitive heat generating equipment. Triple 7 is among the smallest diameter tube coil available on the market today, delivering superior output and reduced refrigerants charge.

In our dynamic work environment, our experienced engineers work with your development teams to meet the design requirements of your new technology. We thrive on developing cooling solutions to meet the continuously changing cooling requirements of the high-tech industry.

Our precision cooling coils are designed to provide the precise temperature and humidity set point required for the following high sensible applications:

Equipment

- Electronic and Computer Components
- Laser
- MRI
- CAT Scans
- Medical Equipment
- Military Sensitive Technology

Facilities

- Data Centers
- Telecommunication Switching Stations
- ISP Facilities (Internet Service Providers)
- Computer Rooms
- Clean Rooms
- Laboratories
- Medical Operating Theatres

HEAT EXCHANGE APPLICATION INDUSTRIAL COOLING



Lordan offers custom-made solutions to meet the many different heat-exchange applications requirements – from indoor climate control solutions of large scale construction projects such as commercial and public facilities, residential complexes and office buildings, to industrial cooling processes and equipment cooling applications.

Having worked on massive skyscraper construction projects in Europe and the US, as well as airports and shopping malls, hotels and hospitals, we understand that every large scale construction project is different and has its own unique requirements. This is why we dedicate a large team of experienced engineers to plan, design and support clients throughout the life of the project, during the installation phase, and beyond.

We offer a large selection of coil patterns to meet the diverse heat exchange requirements of large scale projects, and have significantly cut lead times with our Vendor Management Inventory (VMI) system that allows you to pull inventory from our distribution centers closest to you.

Our specialty is in the design and manufacturing of advanced heat exchangers for chillers with our exclusive Triple Seven (Triple7) technology that delivers superior output and reduced refrigerant charge. We also manufacture custom made giant coils best suited to air-conditioning exceptionally large public areas.

Lordan's design and manufacturing capabilities can meet project applications for:

Indoor Climate Control

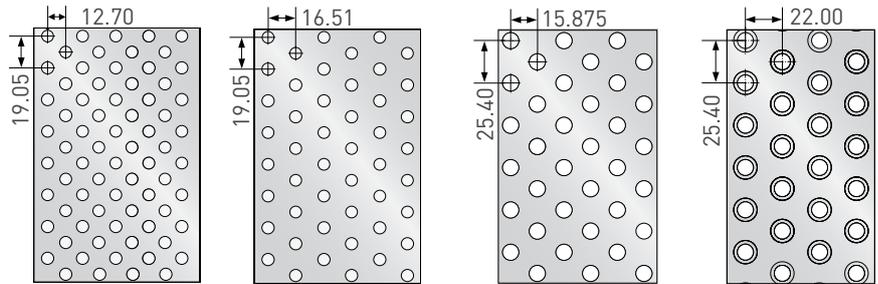
- Residential Complexes and Office Buildings
- Commercial and Public Facilities
- Chilled Beams
- HVAC Chillers
- Large Water Coils
- Air Curtains
- Air Handling Units (AHU)

Industrial Equipment & Processes

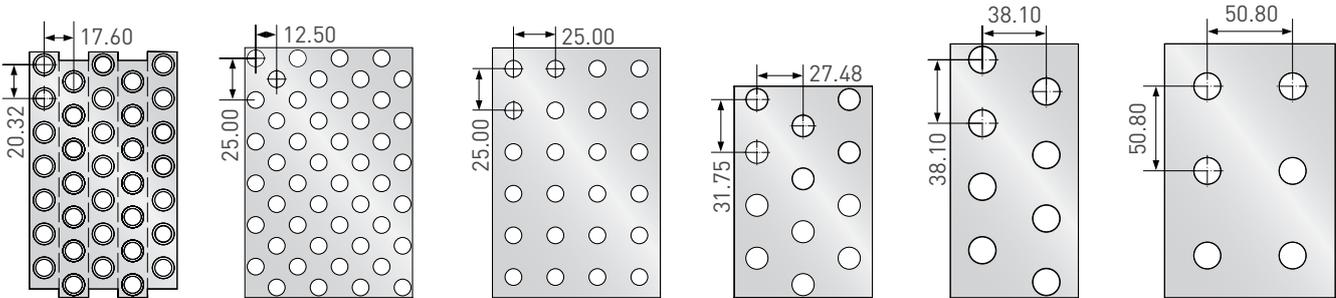
- Heat Pumps
- Cooling Towers
- Refrigeration Units
- Oil Coolers
- Exhaust Gas Cooling

COIL PATTERNS INDEX

LORDAN COIL PATTERNS



Pattern No.	55 Lord FiVe		15 Triple 7		8		9	
Tube diameter mm	5mm		7mm		9.5mm 3/8"		9.5mm 3/8"	
Tube material	Cu		Cu/Al/St.St.		Cu/Al		Cu/Al/St.St.	
Tube matrix mm [inch]	19.05 X 12.70 (3/4" X 1/2")		19.05 X 16.51 (3/4" X 0.65")		25.4 X 15.88 (1" X 5/8")		25.4 X 22 (1" X 0.866")	
Tube pitch	staggered		Staggered		Staggered		Staggered	
Tube geometry			Equilateral				Equilateral	
Fin shape			Louvered				Louvered	
	Corrugated		Corrugated		Corrugated		Corrugated	
	Sine wave		Sine wave				Sine wave	
	Flat		Flat				Flat	
Fin edge	Rippled /Straight		Ripple / Straight		Ripple / Straight		Ripple / Straight	
Fin density / spacing	FPI	(mm)	FPI	(mm)	FPI	(mm)	FPI	(mm)
Aluminum 0.12 mm (.0045")	10-21	(2.5-1.2)	10-22	(2.5-1.2)	9-17	(2.8-1.5)	9-18	(2.8-1.4)
Aluminum 0.15 mm (.0060") Natural, Hydrophobic, Hydrophilic, marine Al	8-21	(3.2-1.2)	7-22	(3.6-1.2)	7-17	(3.6-1.5)	6-18	(4.2-1.4)
Aluminum 0.20 mm (.0080") Natural, Hydrophobic, Hydrophilic, marine Al	7-16	(3.6-1.6)	6-16	(4.2-1.6)	7-17	(3.6-1.5)	4-18	(6.3-1.4)
Aluminum 0.30 mm (.0120") Natural, Hydrophobic, Hydrophilic	7-16	(3.6-1.6)	6-16	(4.2-1.6)			4-18	(6.3-1.4)
Copper 0.13 mm (.0052")	10-21	(2.5-1.2)	10-16	(2.5-1.6)	10-16	(2.5-1.6)	10-16	(2.5-1.6)
Copper 0.15 mm (.0060")	8-21	(3.2-1.2)	8-16	(3.2-1.6)	8-16	(3.2-1.6)	8-16	(3.2-1.6)
Copper 0.20 mm (.0080")	8-16	(3.2-1.6)	6-16	(4.2-1.6)			7-16	(3.6-1.6)



11		13		14		7		5		6	
9.5mm 3/8"		9.5mm 3/8"		9.5mm 3/8"		12.7mm 1/2"		15.9mm 5/8"		15.9mm 5/8"	
Cu/St.St.		Cu		Cu/Al/St.St.		Cu/St.St.		Cu		Cu	
20.32 X 17.6 (0.8" X 0.693")		25 X 12.5 (~1" X ~1/2")		25 X 25 (~1" X ~1")		31.75 X 27.48 (1 1/4" X 1.082")		38.1 X 38.1 (1 1/2" X 1 1/2")		50.8 X 50.8 (2" X 2")	
Staggered		Staggered		In line		Staggered		Staggered		In line	
Equilateral						Equilateral					
Louvered											
Corrugated						Corrugated		Corrugated			
				Sine wave							
Flat		Flat		Flat						Flat	
Ripple / Straight		Straight		Ripple / Straight		Ripple		Ripple / Straight		Straight	
FPI	(mm)	FPI	(mm)	FPI	(mm)	FPI	(mm)	FPI	(mm)	FPI	(mm)
10-16	[2.5-1.6]	10-15	[2.5-1.7]	9-16	[2.8-1.6]	9-14	[2.8-1.8]	9-12	[2.8-2.1]		
8-16	[3.2-1.6]	8-15	[3.2-1.7]	7-16	[3.6-1.6]	6-14	[4.2-1.8]	6-12	[4.2-2.1]	7-8	[3.6-3.2]
		7-15	[3.6-1.7]	4-16	[6.3-1.6]	5-14	[5.1-1.8]	5-12	[5.1-2.1]	4-8	[6.3-3.2]
				4-16	[6.3-1.6]					4-8	[6.3-3.2]
9-16	[2.8-1.6]	9-14	[2.8-1.8]	6-16	[4.2-1.6]	6-14	[4.2-1.8]	8-12	[3.2-2.1]		
9-16	[2.8-1.6]	9-14	[2.8-1.8]	6-16	[4.2-1.6]	6-14	[4.2-1.8]	8-12	[3.2-2.1]		
				5-16	[5.1-1.6]	5-14	[5.1-1.8]	5-12	[5.1-2.1]	7-8	[3.6-3.2]

STANDARDS & TESTING

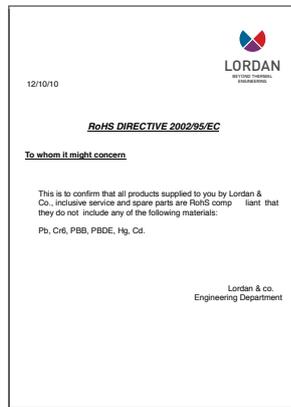
QUALITY STANDARDS

Lordan is committed to manufacturing superior custom-made specialized products that comply with international standards.

Dedicated to maintaining high quality operations, Lordan complies with international quality management standard ISO 9001-2008.

Our concern for the environment has led us to obtain ISO-14001 environmental management standard and fully support its directives.

Since 1999, Lordan has been UL certified for all standard refrigerants to the UL207 heat exchanger pressure standard. This includes quarterly visits from the UL representatives to assure consistent adherence to this standard.



TESTING FACILITIES

To support our promise guaranteeing the long life and high reliability of all our products, each Lordan coil undergoes either helium test or bubble leak test.

The helium leak test is conducted according to international standard (B6), with the test device calibrated to test minute amounts of leakage at an internal pressure of 42 bars, an equivalent of 0.5 gram refrigerant leakage rate per year.

The helium testing process is:

- Based on a temperature stable dry technique
- Capable of finding small leaks that can go undetected by other testing processes
- Have a high level of accuracy



ADVANCEMENT BEYOND THERMAL ENGINEERING

TESTING THE LIMITS OF THERMAL ENGINEERING

Lordan has distinguished itself as a leading developer of advanced fin and tube technology with the introduction of Triple 7 and now with its latest innovation, the Lord FiVe.

More than a decade ago, Lordan unveiled its advanced Triple 7 coil pattern providing a high capacity coil in a small area also available in stainless steel. With Lord FiVe Lordan has outdone itself again, introducing to the market a compact, lightweight coil pattern with a 5 mm diameter tube - the smallest coil on the market today.

As part of our vision to retain a leading edge in the development of technical and business innovation, we invest long and extensive engineering hours in research and development that guarantees you:

- Long term savings in energy costs, with solutions that save you space and volume, environmentally friendly, less reliant on dwindling resources and low in maintenance.
- High quality coils that are built to last for many years to come.

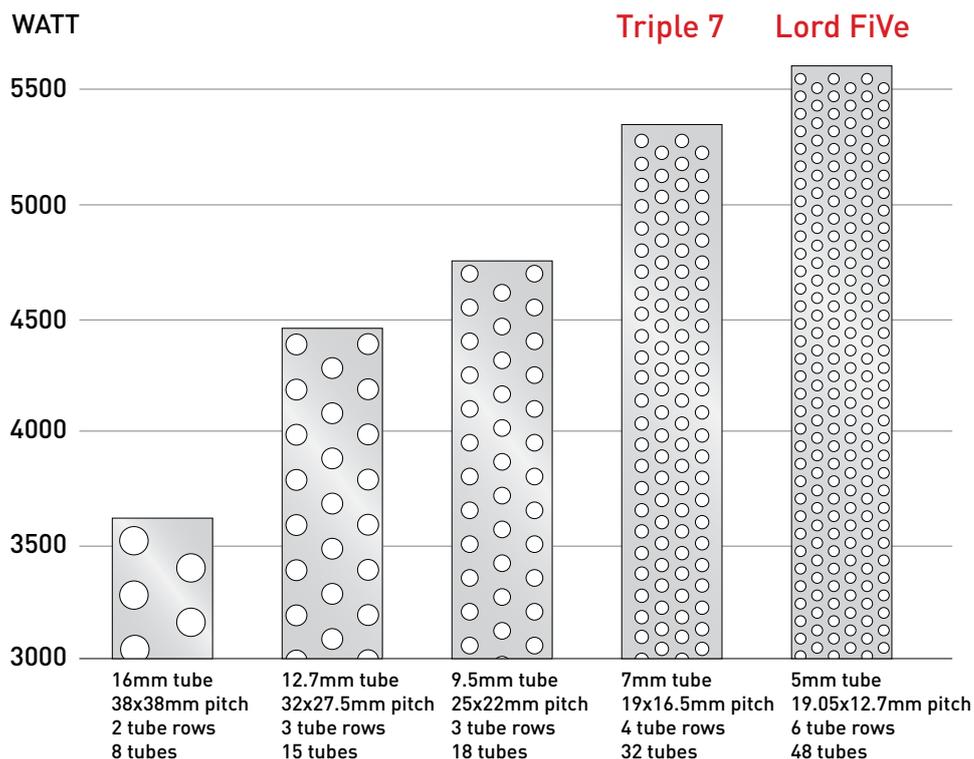
Lord FiVe

New compact and lightweight, the Lord FiVe, is a 5 mm diameter tube design, whose small diameter provides excellent heat exchange while utilizing smaller amounts of refrigerant making it more environment friendly and cost-effective.



TRIPLE 7

Best performing high capacity coil pattern generating increased airflow, the Triple 7 combines 7mm tubes in an equilateral tube arrangement creating an optimal ratio between tube diameter and distance. This highly versatile coil can be adapted to hand-sized heat transfer applications and giant chillers alike.



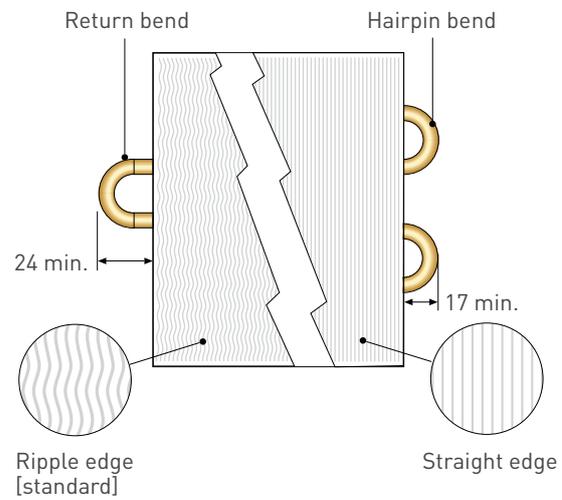
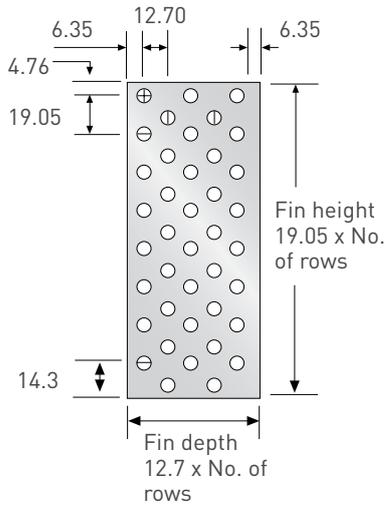
* Capacities are for 30cm x 30cm x8cm evaporator with the same fan at standard ASHRAE conditions

Lord FiVe

Lord FiVe

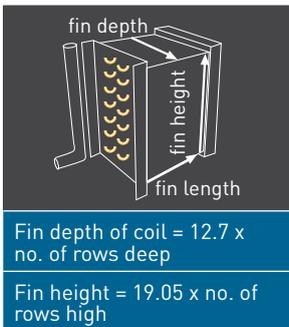
LORD FIVE / PATTERN 55 / 19.05 X 12.7

TUBE Ø 5MM



Fin Density Details

Fin Per Inch (FPI)	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Distance (mm)	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
Aluminum Fin Thickness (mm)	0.20, 0.30	0.15, 0.20, 0.30		0.12, 0.15, 0.20, 0.30								0.12, 0.15			
Copper Fin Thickness (mm)		0.15, 0.20		0.13, 0.15, 0.20								0.13, 0.15			
Fin Shapes	Flat			Sine wave, Corrugated, Flat									Flat		



Optional Specifications



Bent and Circular Coils

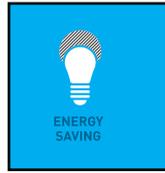
Catalogue 2013

LORDAN COIL DESCRIPTION KEY

55 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

TRIPLE 7



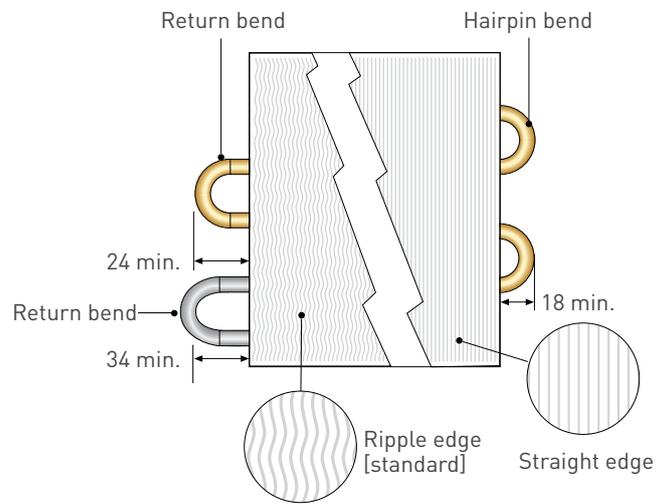
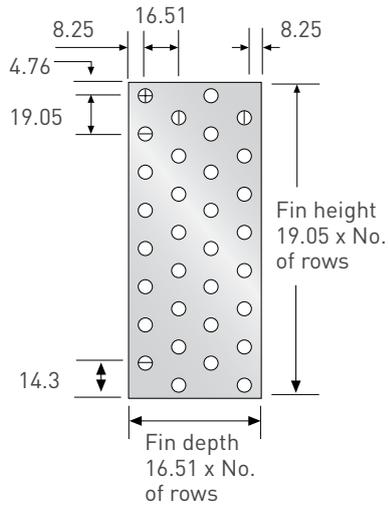
TRIPLE 7 / PATTERN 15 / 19.05 X 16.5

TUBE Ø 7MM

Triple 7

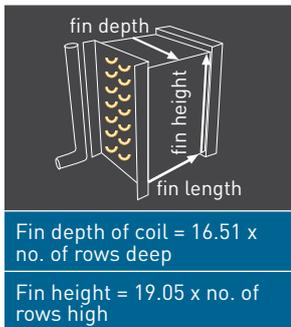


CU / AL / STST



Fin Density Details

Fins Per Inch (FPI)	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22
Distance (mm)	4.2	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2
Aluminum Fin Thickness (mm)	0.2, 0.3	0.15, 0.2, 0.3			0.12, 0.15, 0.2, 0.3						0.12, 0.15				
Copper Fin Thickness (mm)	0.2		0.15, 0.2		0.13, 0.15, 0.2										
Fin Shapes	Louvered, Corrugated, High Corrugated, Sine Wave, Flat														



Optional Specifications



Slanted Coils



Bent and Circular Coils

LORDAN COIL DESCRIPTION KEY

15 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

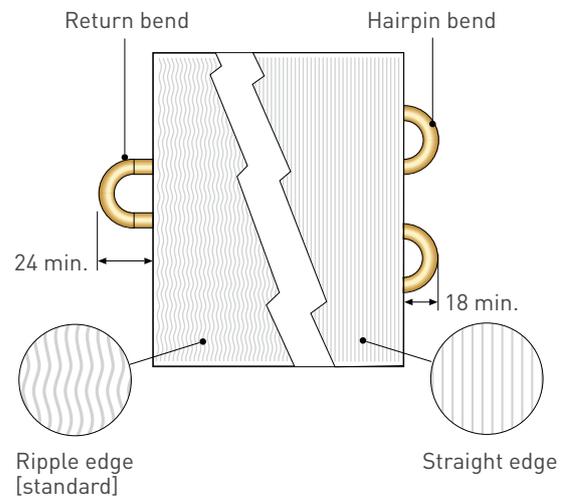
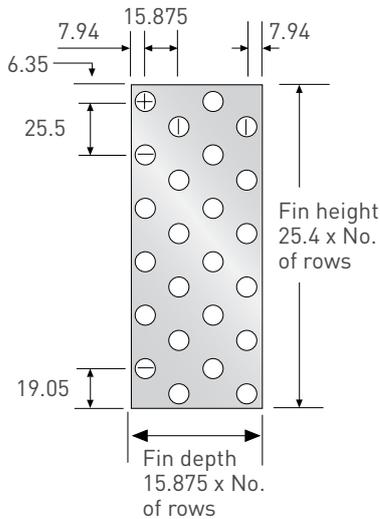
PATTERN 8

Pattern 8

PATTERN 8 / 25.4 X 15.875

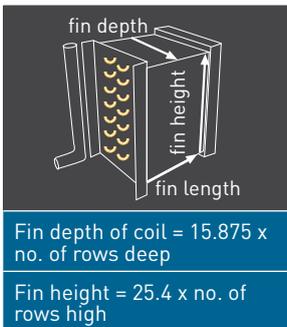
TUBE Ø 9.52MM (3/8")

SPECIAL DENSE PATTERN FOR AUTOMOTIVE



Fin Density Details

Fins Per Inch (FPI)	7	8	9	10	11	12	13	14	15	16	17
Distance (mm)	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.5
Aluminum Fin Thickness (mm)	0.15, 0.2			0.12, 0.15, 0.2							
Copper Fin Thickness (mm)	0.15			0.13, 0.15							
Fin Shapes	Corrugated										



Optional Specifications



Bent and Circular Coils

Catalogue 2013

LORDAN COIL DESCRIPTION KEY

8 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

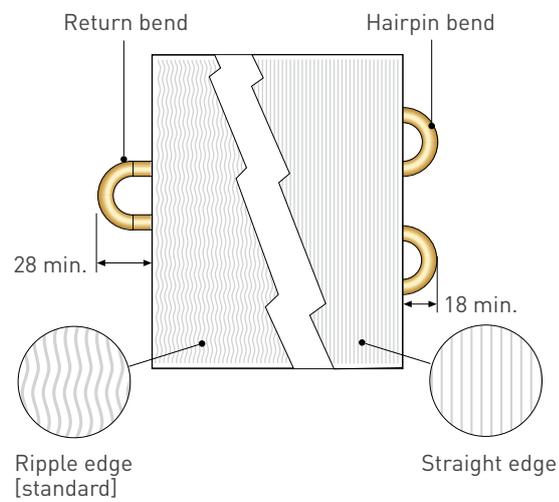
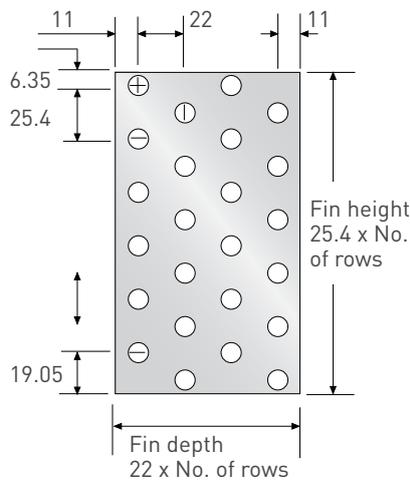
PATTERN 9

PATTERN 9 / 25.4 X 22

TUBE Ø 9.52MM (3/8")

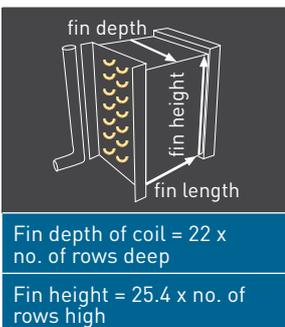
Pattern 9

COPPER / AL / STST



Fin Density Details

Fins Per Inch (FPI)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Distance (mm)	6.3	5.1	4.2	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.5	1.4	
Aluminum Fin Thickness (mm)	0.2, 0.3		0.15, 0.2, 0.3				0.12, 0.15, 0.2, 0.3									
Copper Fin Thickness (mm)					0.2		0.15, 0.2		0.13, 0.15, 0.2							
Fin Shapes	Louvered, Corrugated, Sine Wave								Louvered, Corrugated, Sine Wave, Flat							



Optional Specifications



LORDAN COIL DESCRIPTION KEY

9 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

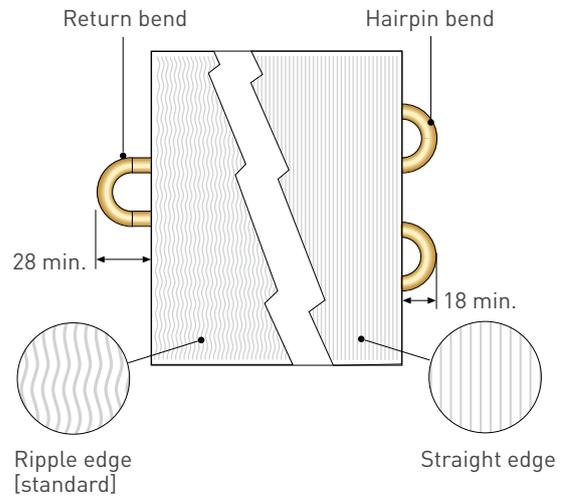
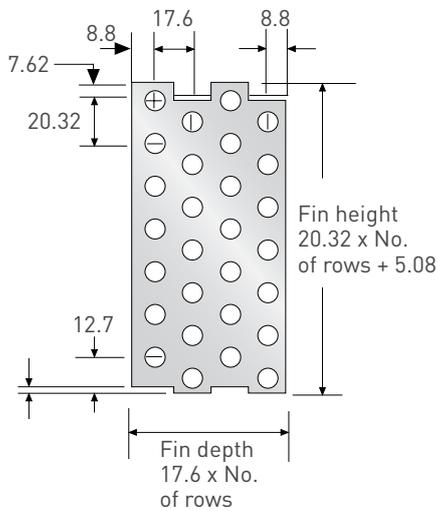
PATTERN 11

Pattern 11

PATTERN 11 / 20.32 X 17.6

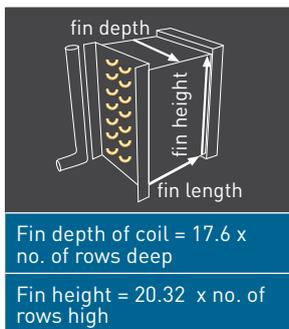
TUBE Ø 9.52MM (3/8")

SPECIALLY DESIGNED FOR STAINLESS STEEL TUBES



Fin Density Details

Fins Per Inch (FPI)	8	9	10	11	12	13	14	15	16
Distance (mm)	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6
Aluminum Fin Thickness (mm)	0.15		0.15						
Copper Fin Thickness (mm)						0.13, 0.15			
Fin Shapes	Louvered, Corrugated, Flat								



Catalogue 2013

LORDAN COIL DESCRIPTION KEY

11 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

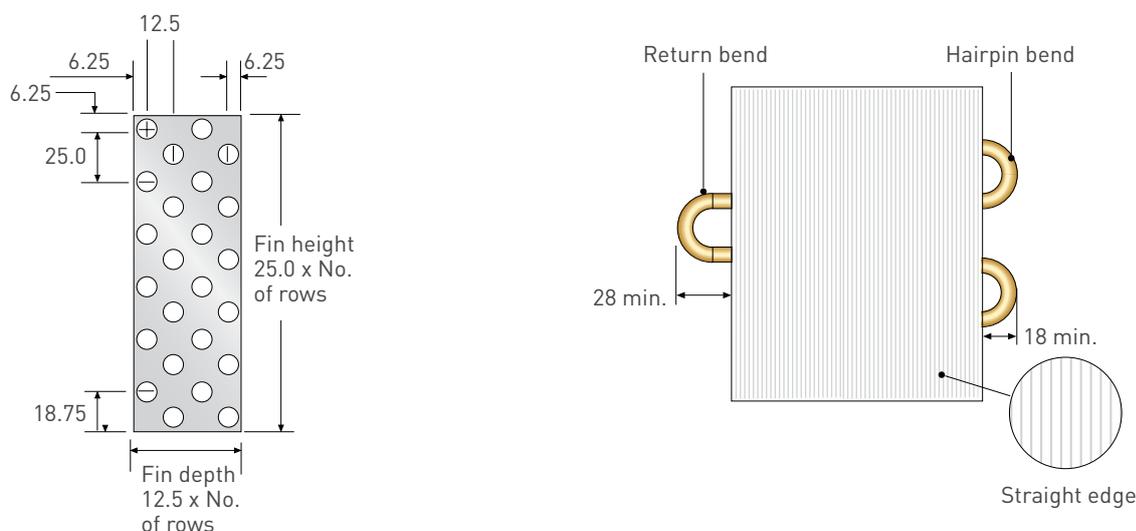
PATTERN 13

PATTERN 13 / 25 X 12.5

TUBE Ø 9.52MM (3/8")

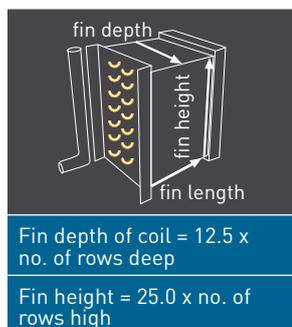
Pattern 13

EXTRA DENSE FOR HIGH OUTPUT IN MINIMUM DEPTH



Fin Density Details

Fins Per Inch (FPI)	7	8	9	10	11	12	13	14	15	16
Distance (mm)	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6
Aluminum Fin Thickness (mm)	0.2	0.15, 0.2		0.12, 0.15, 0.2						
Copper Fin Thickness (mm)	0.13, 0.15									
Fin Shapes	Flat									



Optional Specifications



Bent and Circular Coils

LORDAN COIL DESCRIPTION KEY

13 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

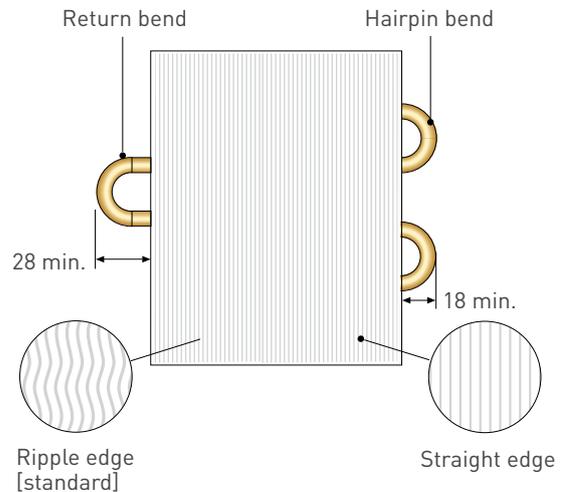
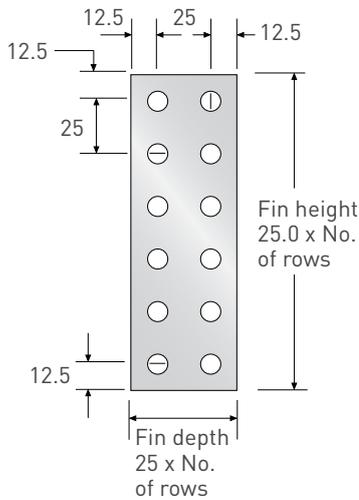
PATTERN 14

Pattern 14

PATTERN 14 / 25 X 25

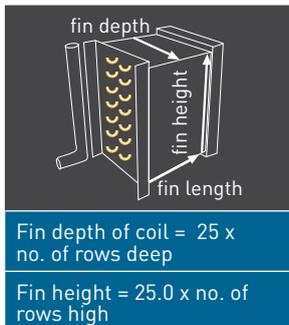
TUBE Ø 9.52MM (3/8")

FOR VERY LOW AIR PRESSURE DROP



Fin Density Details

Fins Per Inch (FPI)	4	5	6	7	8	9	10	11	12	13	14	15	16
Distance (mm)	6.4	5.1	4.2	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6
Aluminum Fin Thickness (mm)	0.2, 0.3		0.15, 0.2, 0.3						0.12, 0.15		0.12		
Copper Fin Thickness (mm)					0.13, 0.15, 0.2								
Fin Shapes	Flat				Flat, Sine wave								



Optional Specifications



Slanted Coils



Bent and Circular Coils

Catalogue 2013

LORDAN COIL DESCRIPTION KEY

14 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

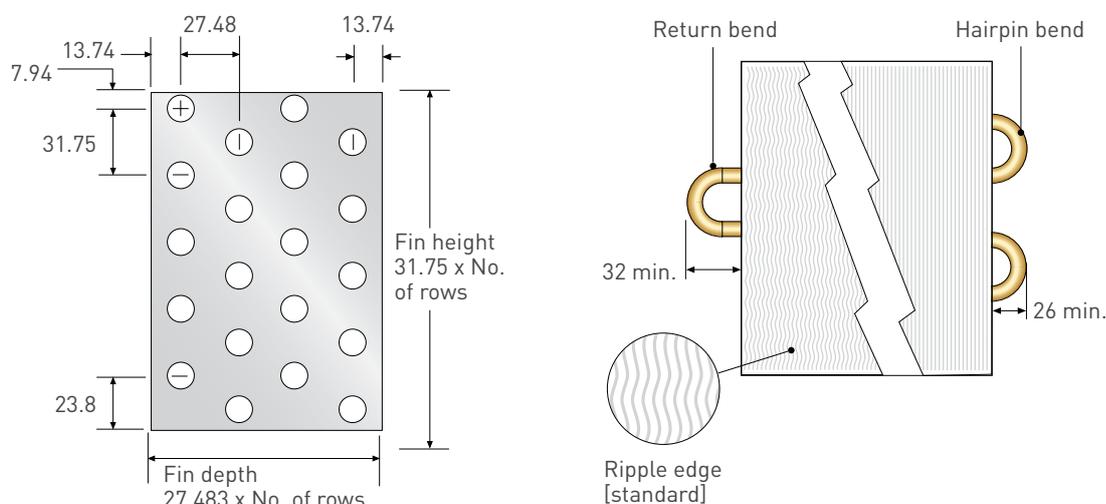
PATTERN 7

PATTERN 7 / 31.75 X 27.48

TUBE Ø 12.7MM (1/2")

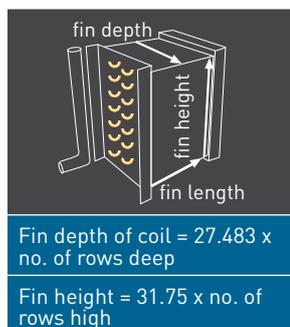
Pattern 7

FOR HIGH WATER FLOW COILS



Fin Density Details

Fins Per Inch (FPI)	5	6	7	8	9	10	11	12	13	14
Distance (mm)	5.1	4.2	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8
Aluminum Fin Thickness (mm)	0.2	0.15, 0.2			0.15, 0.2					
Copper Fin Thickness (mm)	0.2	0.13, 0.15, 0.2								
Fin Shapes	Corrugated									



Optional Specifications



Bent and Circular Coils

LORDAN COIL DESCRIPTION KEY

7 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

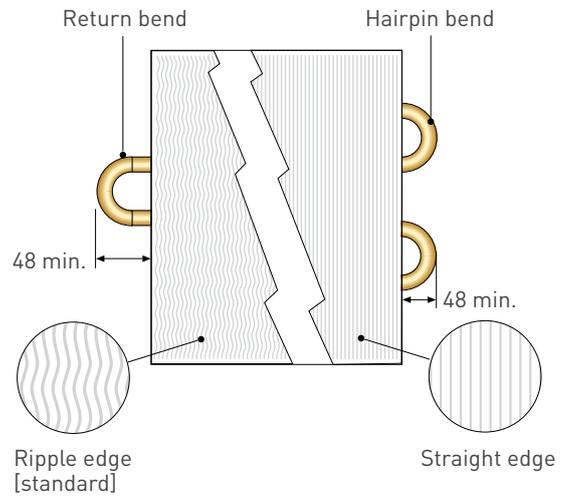
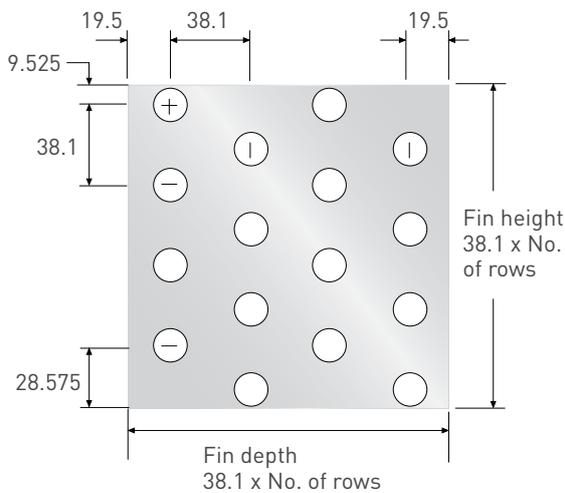
PATTERN 5

Pattern 5

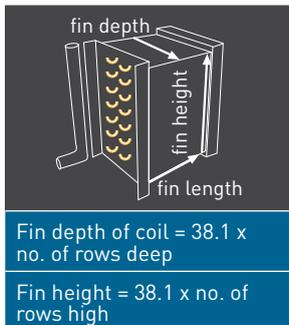
PATTERN 5 / 38.1 X 38.1

TUBE Ø 15.88MM (5/8")

FOR LARGE OUTPUTS UP TO 5 METERS LONG



Fins Per Inch (FPI)	6	7	8	9	10	11	12
Distance (mm)	4.2	3.6	3.2	2.8	2.5	2.3	2.1
Aluminum Fin Thickness (mm)	0.15, 0.2			0.12, 0.15, 0.2			
Copper Fin Thickness (mm)	0.2		0.13, 0.15, 0.2				
Fin Shapes	Corrugated						



Optional Specifications



Bent and Circular Coils

Catalogue 2013

LORDAN COIL DESCRIPTION KEY

5 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

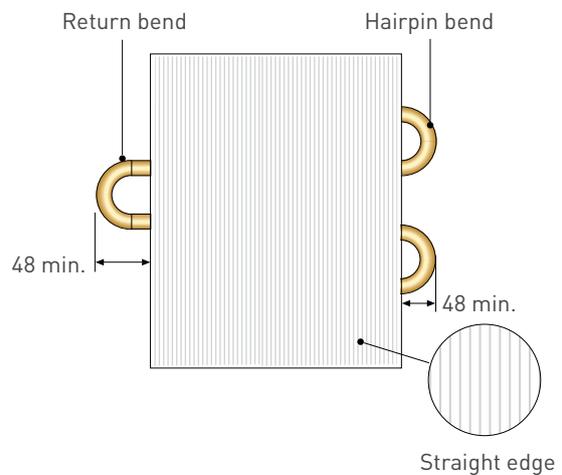
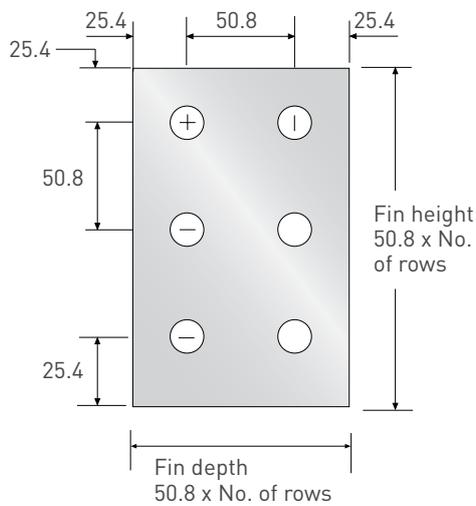
PATTERN 6

PATTERN 6 / 50.8 X 50.8

TUBE Ø 15.88MM (5/8")

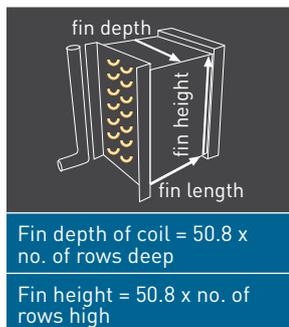
Pattern 6

ULTRA LOW FIN DENSITY FOR FREEZERS



Fin Density Details

Fins Per Inch (FPI)	4	5	6	7	8
Distance (mm)	6.4	5.1	4.2	3.6	3.2
Aluminum Fin Thickness (mm)	0.2, 0.3			0.15, 0.2, 0.3	
Copper Fin Thickness (mm)	0.2				
Fin Shapes	Flat				



Optional Specifications



Bent and Circular Coils

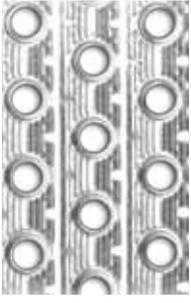
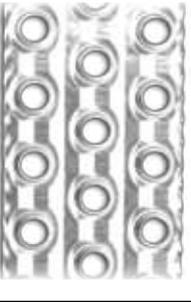
LORDAN COIL DESCRIPTION KEY

6 / 3 X 9 X 800 / 11 - 5 [0]

pattern# rows deep rows high fins length mm fpi circuits empty holes

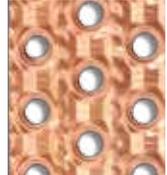
FINS: SHAPES & APPLICATIONS

Fins: Shapes & Applications

Fin Shapes		Characteristics	Common Applications
Louvered		Louvered fins increase the heat-transfer capacity by creating air turbulence which reduces the boundary layer on the fin's surface, but at a cost of increased air-pressure drop across the coil.	<ul style="list-style-type: none"> • Evaporators • Heaters and Coolers • Condensers operating in areas with light to normal dust conditions • This fin shape is for all applications with normal dust conditions
Corrugated (low and high)		Corrugated fins improve the heat transfer factor to a lower degree than louvered fins. They also have a lower resistance to air flow.	<ul style="list-style-type: none"> • Used where icing or heavy-dust conditions are expected, like condensers for off road vehicles and for heavy dust applications
Sine Wave		Sine wave fins improve the heat transfer factor to a higher degree than corrugated fins. These have about the same resistance to air flow as the corrugated fins.	<ul style="list-style-type: none"> • Good all purpose selection for all types of coils, provides the best output to air pressure drop ratio • Default fin shape when not otherwise specified
Flat		Flat fins reduce ice accumulation on fins. They have the lowest resistance to air flow.	<ul style="list-style-type: none"> • Deep freezers • Cooling / freezing systems • Passive air flow systems

FINS: MATERIAL OPTIONS

Natural Materials

Fin Type	Characteristics	Common Applications
 <p>Regular Aluminum</p>	<p>Regular Aluminum of the 8xxx alloy series is the most common and cost effective fin material. It exhibits good endurance under normal environmental conditions.</p>	<ul style="list-style-type: none"> Residential applications (both indoors and outdoors) Vehicles of all kind Large coils for central systems Freeze & deep-freeze
 <p>Marine Quality Aluminum</p>	<p>Marine Quality Aluminum has improved resistance to salty, humid conditions. It is cost effective and has demonstrated first-rate Salt Spray test results.</p>	<ul style="list-style-type: none"> Coils for marine equipment Coils for coastal residences Coils for mining equipment Coils for corrosive industries Applications exposed to salty, humid and/or corrosive conditions
 <p>Copper</p>	<p>Copper has higher heat conductivity and mass, and is more costly than Aluminum.</p>	<ul style="list-style-type: none"> Coolers for special industrial machines Areas with space limitations High-tech environments

Precoated Materials

Fin Type	Characteristics	Common Uses
 <p>Hydrophobic</p>	<p>The epoxy based hydrophobic coating effectively repels water and inhibits dust and bacterial accumulation. Salt Spray test results are excellent (over 1,000 hours).</p>	<ul style="list-style-type: none"> Condensers for coastal residences Condenser coils for polluted areas Coils for corrosive industries Coils for laboratories and hospitals
 <p>Hydrophilic</p>	<p>The special two-micron pre-coated polymer hydrophilic coating improves airflow by reducing thickness of condensing water layers, known as water carry-over phenomenon.</p>	<ul style="list-style-type: none"> Evaporators and coolers Avoids carry-over of condensed water at high air velocities
 <p>Nano Coatings</p>	<p>The nano coating is only 5μ thin with high heat transfer capabilities. Resists corrosion, salt water, and dust; Salt Spray test results are superior (over 3,000 hours).</p>	<ul style="list-style-type: none"> Protection against organic solvents and chemicals Self-cleaning Reduced dirt accumulation Lower energy consumption Lower maintenance costs

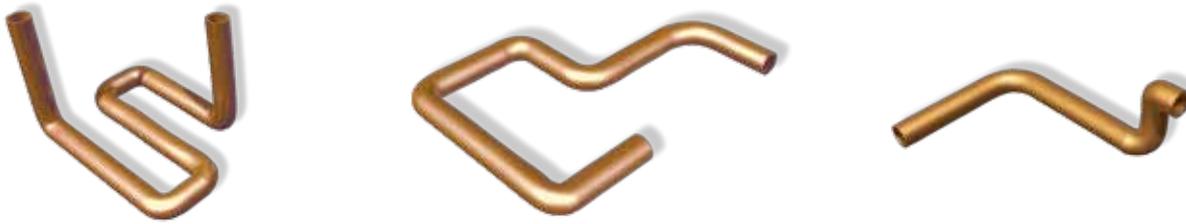
TUBES & APPLICATIONS

Tube Shape		Applicable Diameters mm (inch)		Applicable Lordan Patterns	Common Uses
Smooth		15.88mm	(5/8")	5,6,7,8,9,11,13,14 Triple 7 (15) Five (55)	Standard in all coils
		12.70mm	(1/2")		
Rifled		9.52mm	(3/8")	7,8,9,11,13,14 Triple 7 (15) Five (55)	Condensers and evaporators for increased capacities
		7mm			
		5mm			
Turbo Spirals in Tube		15.88mm	(5/8")	5,6,7,8,9,11,13,14 Triple 7 (15)	Improved capacities for liquid carrying coils with limited size restrictions
		12.70mm	(1/2")		
		9.52mm	(3/8")		
		7mm			

Tube Materials Options

Standard Tube Material	Specification and Standard	Tube diameter		Available Wall Thickness	
		mm	(inch)	mm	(inch)
Copper	ASTM B-280	15.88mm	(5/8")	0.40mm 0.46mm	.016", .018"
		12.70mm	(1/2")	0.35mm 0.40mm	.014", .016"
		9.52mm	(3/8")	0.28mm 0.35mm	.011", .014"
		7mm		0.25mm, 0.28mm 0.50mm, 0.71mm	.010", .011" .020", .028"
		5mm		0.25mm, 0.35mm 0.40mm	.010", .014" .016"
Stainless Steel	316L	12.70mm	(1/2")	0.89mm	.035"
		9.52mm	(3/8")	0.71mm	.028"
		7mm		0.51mm	.020"
Aluminum	DIN EN 754- 2DIN EN 573-3	7mm		0.75mm	.030"
		9.52mm	(3/8")	0.50mm	.020"

TUBES BENDING CAPABILITY



Available Tube O.D.

inch		3/16"	1/4"		5/16"	3/8"			1/2"		5/8"		3/4"
mm	4			7			10	12		15		18	

End Forming Of Copper Tubes – Standard Options

		O.D. range
O-Ring Long Pilot		9.53 to 19.05 (3/8" to 3/4")
O-Ring Short Pilot		9.53 to 19.05 (3/8" to 3/4")
Flare		6.35 to 19.05 (1/4" to 3/4")
Water O-Ring		9.53 to 22.22 (3/8" to 7/8")
Water Cone Head		9.53 to 19.05 (3/8" to 3/4")
Reduced Diameter		Any
Expanded Diameter		Any

FINS: SPECIAL COATINGS

Fins: Special Coatings

Today, a long-lasting coil is as important as the air quality it handles. Lordan offers specialized coatings for extended product life and protection against bacteria buildup and corrosion, especially important for central cooling systems, offices, shopping centers, as well as central systems for residential buildings.

SOLUTIONS FOR EXTREME ENVIRONMENTS



Complex heating, cooling and refrigeration challenges demand high enduring coils suitable to withstand exposure to extreme environments. Harsh conditions found in coastal or industrial environments release airborne contaminants that are corrosive to the materials of the coil.

Lordan's specialized coatings are designed to reduce deterioration by sealing out moisture and airborne contaminants such as salt and salt-spray, humidity, corrosive fumes emitted from highly polluted industrial areas and chemical production, and other damaging elements.



NANO-COATING

WATER REPELLENT, CORROSION & DUST RESISTANT

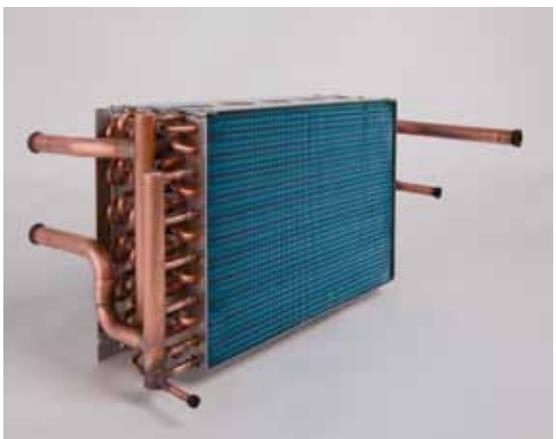


Lordan offers an innovative super water repellent Nano-coating with an enhanced super-thin hydrophobic layer that is only 5 μ thin. Our Nano-coating guarantees extended product life while maintaining excellent heat transfer capabilities.

The Nano-coating is corrosion resistant and suited for especially harsh environmental conditions with excellent salt spray results (over 3000 hours).

In addition, our Nano-coating coils demonstrated exceptional dust resistance. The highly hydrophobic and smooth surface retains the original clean fin surface even after years of field operation. In accelerated dust accumulation tests performed for Lordan in an accredited A2LA lab for environmental testing, the coating showed its superiority in comparison with uncoated and standard epoxy coated coils.

Where uncoated coils corrode or become clogged with dust, Lordan's Nano-coated coil endure and maintain a clean fin surface, for prolonged original heat transfer performance and best energy consumption savings.



EPOXY COATING LORD-PHOB EPOXY COATING



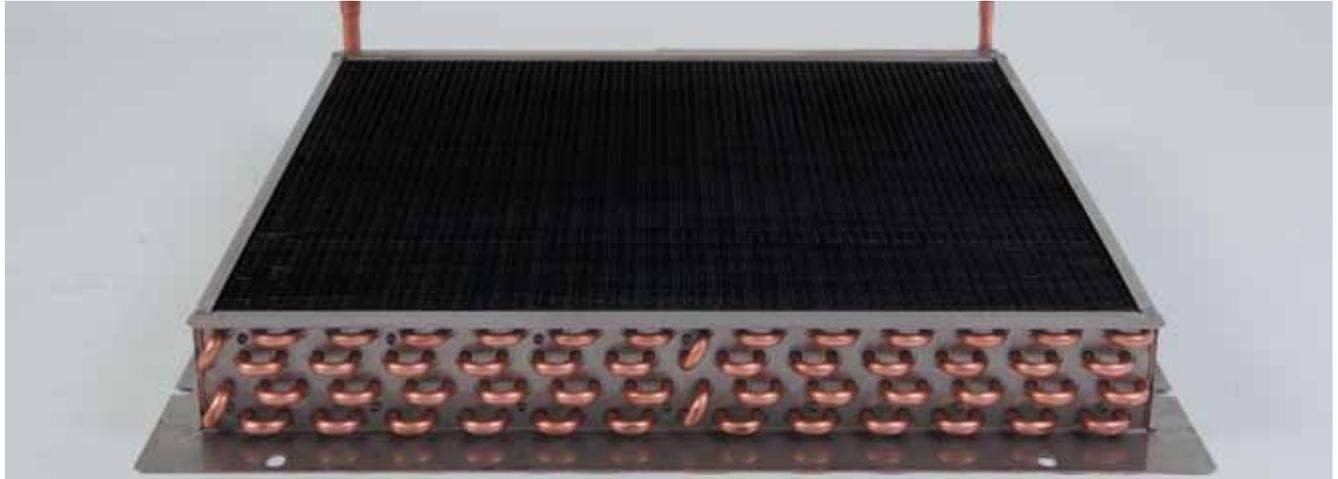
BUILT TO LAST



ROHS



LOW MAINTENANCE



Lord-Phob is an epoxy based coated fin providing first-grade resistance to corrosive conditions. The ultra thin epoxy-based coating preserves the appropriate gap needed for effective heat transfer between the fin and the surrounding air.

LORD-PHILL HYDROPHILIC COATING

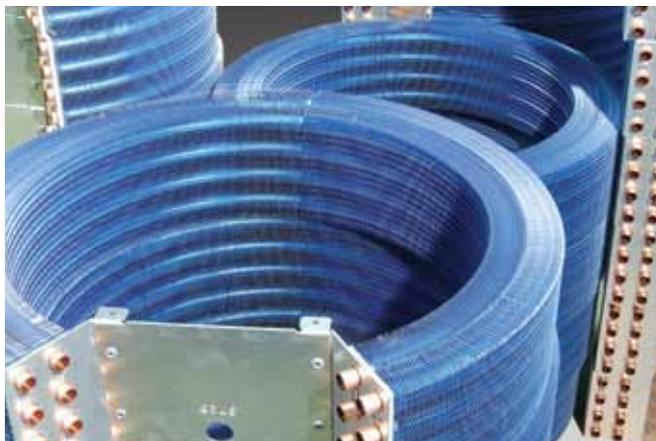


ENERGY SAVING



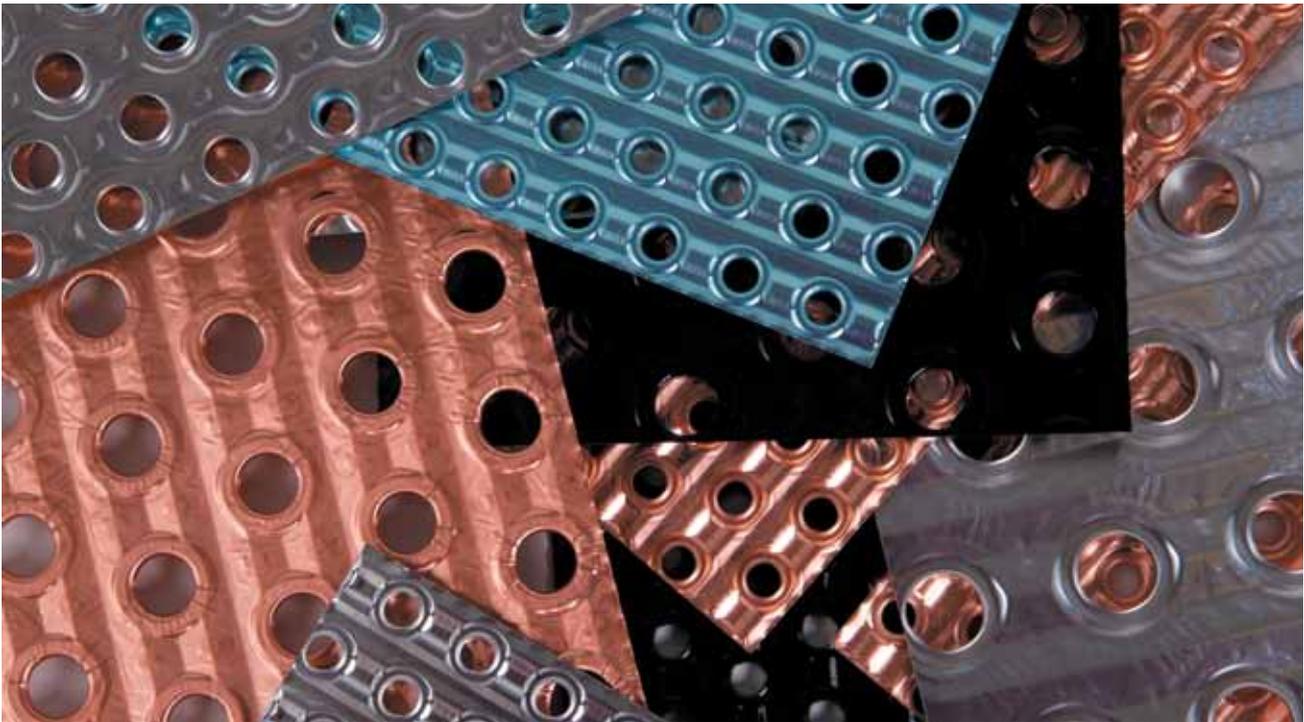
ROHS

Our hydrophilic coating is a 2-micron special pre-coated polymer. The hydrophilic surface-tensile qualities flatten condensing water droplets on the fin, thereby reducing water layer buildup that can restrict air flow between the fin layers.



The coating also prevents the phenomenon of water carry-over from drops getting into the evaporator's airflow at high air speeds.

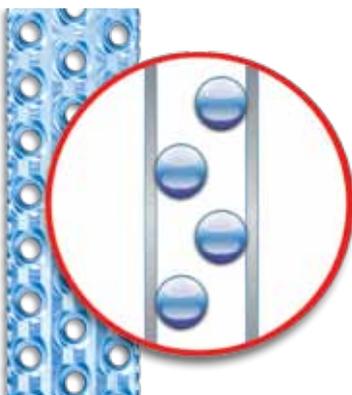
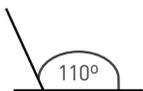
This is especially significant for evaporators with tangential blowers.



Technical Specifications	Nano	Lord Phob	Lord Phill
Material type	polymer	epoxy based + chemical conversion	polymer + chemical conversion
Layer thickness	~ 5 micron	~ 3 micron	~ 2 micron
Thermal conductivity effects	< 1%	< 1%	< 1%
Standard color	light blue	black	light blue
Temperature resistance	-20°C to 250°C	-20°C to 200°C	-20°C to 120°C
Salt spray humidity endurance test	3,000 hours	1,000 hours	500 hours

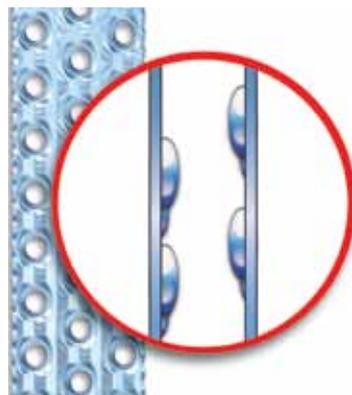
Nano

Nano coating prevents the adhering of the water droplets on the fin surface, keeping the fin dry and not prone to dust accumulation.



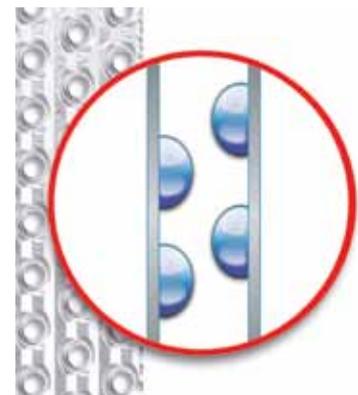
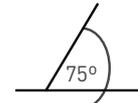
Lord Phill

Lord Phill coating reduces surface tension by flattening water droplets and allowing increased air flow.



Uncoated

On uncoated fins, large round water droplets accumulate that can restrict air flow and produce water spray.



PREMIUM COILS

ALL-AL ALUMINUM COILS

Premium Coils



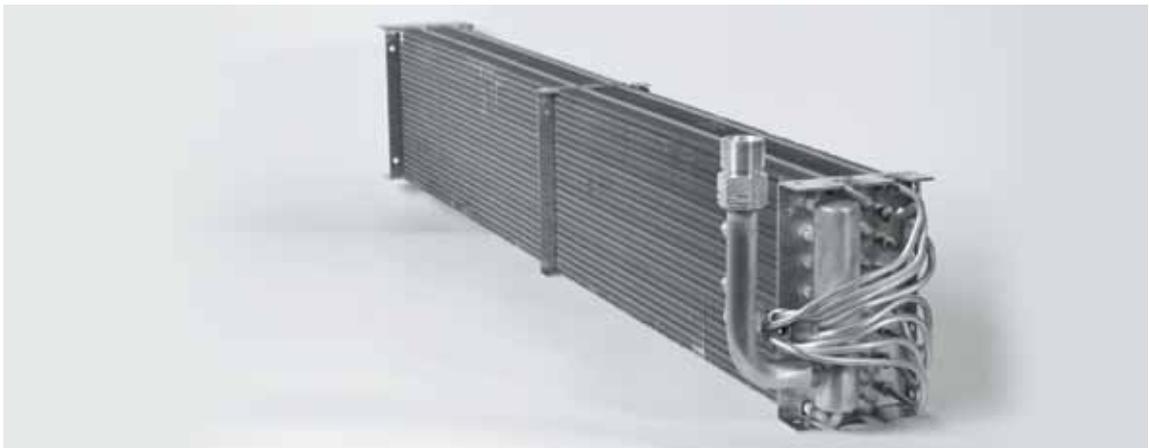
Rising concern over energy savings and the environment has prompted us to take waste reduction measures without compromising performance. Lordan is pleased to offer recyclable round aluminium tubing that is one hundred percent recyclable, designed for both water and gas applications.

Our recyclable All-Al (all aluminum) coils significantly reduces coil weight and provides better corrosion resistance that translates to energy efficiency in terms of lower operating costs and volume savings.



Benefits of Aluminum:

- Cost-effectiveness: Best cost/quality ratio
- 100 percent recyclable
- High strength
- Lightweight and easy to handle
- Non-corrosive
- Good heat and cold conductor
- Suited for heavy duty applications



STAINLESS STEEL COILS



We offer stainless steel tubing suited for a diverse suite of applications handling especially highly corrosive fluids.

Our stainless steel coils are cut-out for work on off-shore rigs cooling servers with sea water, or in highly sophisticated applications such as laser cooling machines handling very pure water, and the like.

Lordan’s experienced engineering team will provide professional advice, starting from material selection, to planning thermal and mechanical designs best suited to your application and specifications, to guarantee a high performing and durable coil that is right for you.

Premium Coils



Benefits of Stainless Steel:

- Cost effective
- High strength, solid materials
- Better wear resistance
- Non corrosive
- Non-abrasive
- Inert metal
- Superior heat and cold conductor
- Suited for heavy duty applications



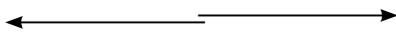
QUOTATION REQUEST

Quotation Request

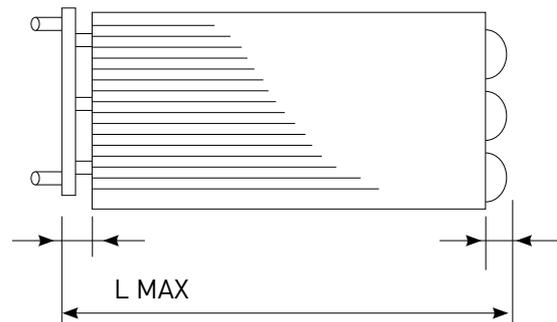
Name _____
 Company _____
 E-mail _____
 Phone _____

Tube Material	Aluminum / Copper / St.St.
Frame Material	C-Alv/Al/mine/CU/Brass/ St.St.
Fin Material + Coating	Aluminum / Copper
Fin Thickness	0.12 / 0.15 / 0.20 / 0.30 mm
Painted	Yes / No

Airflow Direction



1	<input type="checkbox"/>							
2	<input type="checkbox"/>							
3	<input type="checkbox"/>							
4	<input type="checkbox"/>							
5	<input type="checkbox"/>							
6	<input type="checkbox"/>							
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22	<input type="checkbox"/>							
23	<input type="checkbox"/>							



Operating Conditions Evaporator / Condenser

Airflow	m3/h	CFM
Air Inlet Temp. DB	°C	°F
Air Inlet Temp. WB	°C	°F
Or Air Inlet Relative Humidity	RH%	
Refrigerant Type		
Evaporating / Condenser Temp.	°C	°F
Superheat Sub-Cool	°K	°R
Capacity Required	kW	BTU/h

Fluid to Air Coil

Airflow	m3/h	CFM
Air Inlet Temp. DB	°C	°F
Air Inlet Temp. WB	°C	°F
Or Air Inlet Relative Humidity	RH%	
Fluid Flow Rate	L/min	GPM
Fluid Inlet Temp.	°C	°F
Fluid Type	Water %	
	Ethylene glycol %	
	Propylene glycol %	
For any other fluid, indicate the following properties at two relevant temperatures: viscosity, specific heat, thermal conductivity or density.		
Capacity Required	kW	BTU/h

UNIT CONVERSION

LENGTH

1 inch (1") = 25.4 mm
 1 foot (1') = 12 inches = 304.8 mm
 1 yard = 3 feet = 0.914m, 914.4 mm

AREA

1 square foot = 0.09290 square meter
 1 square meter = 10.76 square feet

VOLUME

1 cubic foot = .02832 cubic meter, 1 cubic meter = 35.31 cubic feet
 1 US gallon = 3.7854 liter

FLOW RATE

1 GPM, Gallon per Minute = .2273 CBM/H, cubic meter per hour = 1/4.4
 1 CFM, Cubic Feet per Minute = 1.7 CBM/H

VELOCITY

1 FPM, Foot per Minute = 1/197 meter per second

MASS

1 lb, pound = 16 oz, ounce = 0.4536 kg
 1 oz, ounce = 28.35 gram

TEMPERATURE

Deg. C = $\frac{\text{deg. F} - 32}{1.8}$; Deg. F = Deg. C x 1.8 + 32

THERMAL CAPACITY

1 Btu/h = .2926 Watt
 1 Kcal/h = 1.163 Watt
 1 TR, Ton Refrigeration = 3.515 kW

PRESSURE

1 PSI = 6.89 kPa
 1 Bar = 100 kPa
 1" WG = 25.4 mm WG = 248.8 Pa
 1' WG = 0.434 PSI = 304.8 mm WG = 2.989 kPa

BEYOND THERMAL ENGINEERING





LORDAN WORLDWIDE LOCATIONS

● MANUFACTURING FACILITY ● LOCAL REPRESENTATIVE ● WAREHOUSE



NAME YOUR REQUIREMENT – WE HAVE THE EXPERTISE TO MEET HEATING, COOLING AND REFRIGERATION CHALLENGES WITH TOP QUALITY, ENERGY EFFICIENT SOLUTIONS, BASED ON TECHNOLOGICALLY ADVANCED FIN AND TUBE COILS SUITED TO THE SPECIAL NEEDS OF OUR CUSTOMERS.

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