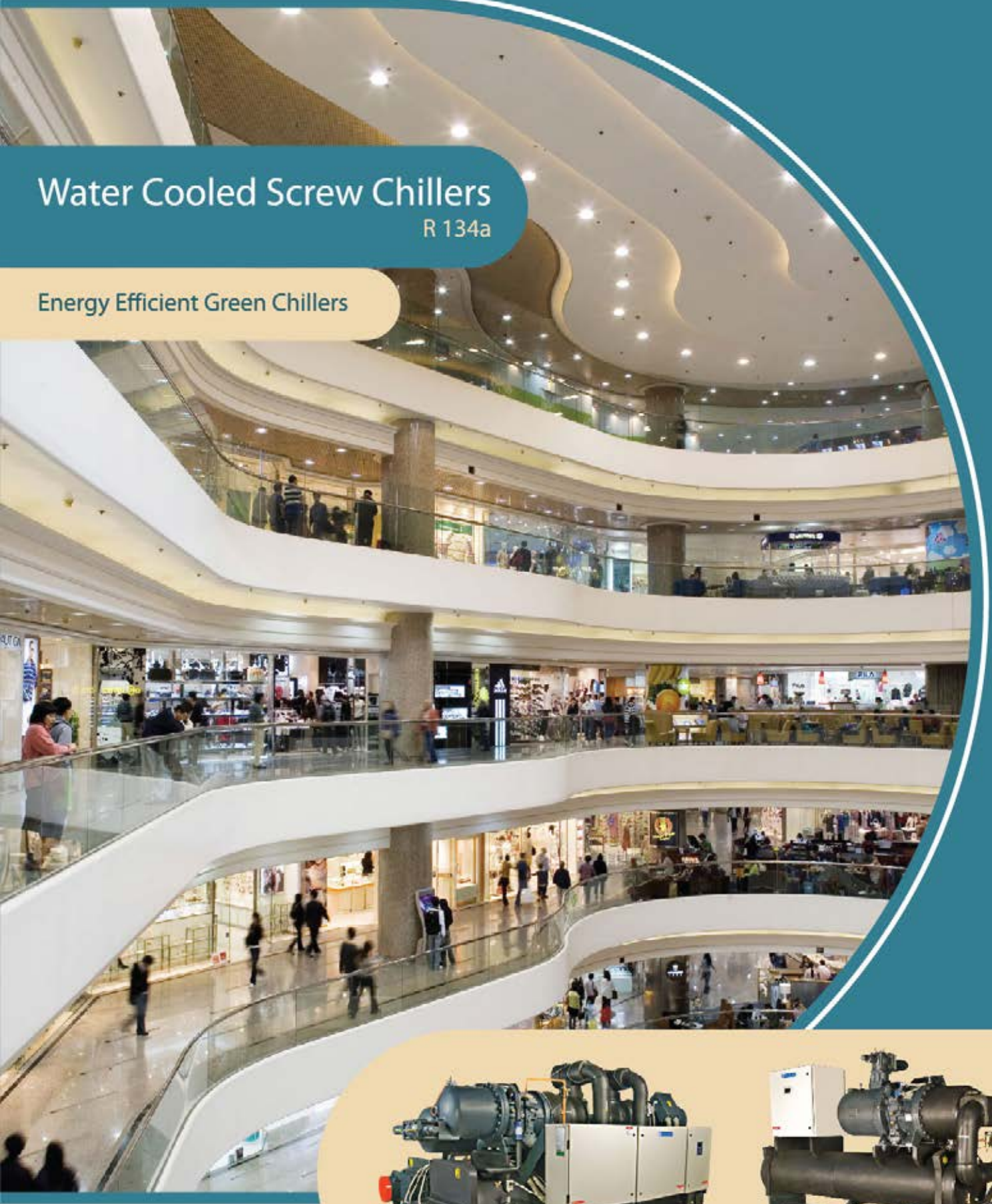
BLUE STAR

Water Cooled Screw Chillers

R 134a

Energy Efficient Green Chillers



SELECTED Superbrand Consumer & Industry

A range of Screw Chillers for all your needs

- Flooded Chillers (380 to 660 KW)
- AHRI Certified Flooded Chillers (705 to 1395 KW)
- DX Chillers (345 to 665 KW)

Blue Star, India's largest central airconditioning company has been providing expert cooling solutions for over six decades. It has been manufacturing a wide range of screw, scroll and centrifugal chillers. Drawing from this expertise, Blue Star offers a wide range of water cooled Flooded and DX screw chillers with an environment-friendly R134a refrigerant.

These chillers are manufactured ar Blue Star's own ISO 9001 certified factory, with the chiller test bench certified by Airconditioning, Heating and Refrigeration Institute (AHRI). Blue Star screw chillers which are equipped with effective capacity control, provide excellent efficiency under part loads, making it ideal for varying load applications such as office spaces, hotels, hospitals, malls and multiplexes.

Blue Star offers Flooded as well as DX type Screw Chillers.

Flooded Chillers

- Series I: 385 to 660 KW – 6 models in capacities of 385,470,535,570,625,660 KW.

All Flooded Chillers have been designed to exceed ASHRAE 90.1 and meet the ECBC (Energy Conservation Building Code) norms as stipulated by the Bureau of Energy Efficiency (BEE), making them ideal for Green Building applications.

- Series II: 705 to 1395 KW (AHRI certified series) – 14 models in capacities of 705, 730, 755, 775, 820, 845, 875, 930, 985, 1065, 1070, 1125, 1225 &1395 KW. This series has been certified by AHRI in compliance with the certification sections of the latest issue of AHRI Standard 550/590.

DX Chillers

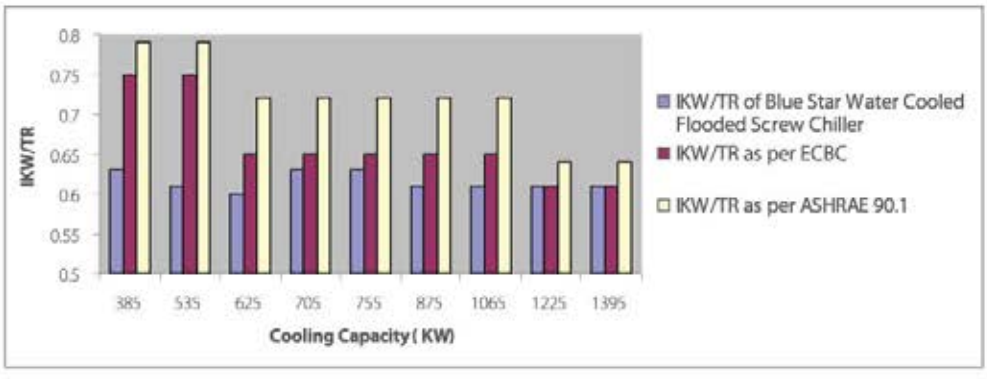
- 345 to 665 KW 5 models in capacities of 345, 385, 525, 525,665

Water Cooled Flooded type Screw Chiller features

Highly energy efficient

These chillers have very low power consumption at full load as well as part load conditions and are tested in fully automated test labs to validate their performance.

IKW/TR comparison of Blue Star Water Cooled Flooded Screw Chillers with ECBC & ASHRAE 90.1



Economizer

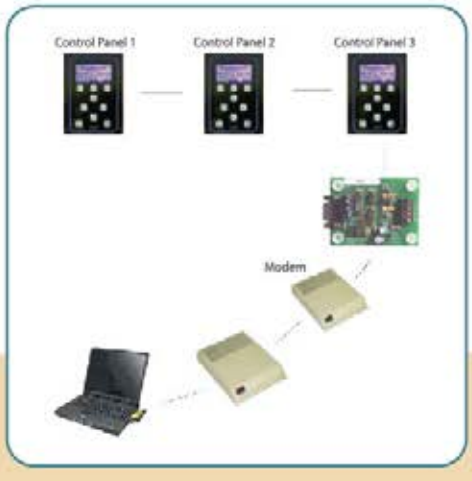
The economizer is a plate type heat exchanger in which the liquid refrigerant is further sub-cooled. The economizer system enhances the unit's refrigeration effect by providing more Kcal/kg of refrigerant circulated. This yields about 5% higher cooling capacity and higher COP as compared to chillers without economizers.

Microprocessor Controller

The control panel is specially designed for this chiller framework. The micro control parts and power section are separated in the control panel for ease of installation and servicing. The microprocessor control panel helps in controlling various chiller operating parameters accurately.

Salient features of this control panel are:

- Direct communication through RS-485 to MODBUS
- Dynamic data logging of readings (1020 sets of readings)
- Power supply 230V AC
- Graphic display, clear and simple language of information
- Trending facility to analyse chiller operating data for maximizing energy savings and enhancing machine uptime
- Scheduling to facilitate auto operation
- Option to upgrade the memory of controller up to 2 GB via a flash card
- Real time clock battery back-up to keep the data in the memory of the controller in case of power failure
- Stores the operating data for 99 trippings to facilitate troubleshooting
- Minimum run time equalization logic for compressors
- Allows remote monitoring of the chiller as a standard feature



Water Cooled DX type Screw Chiller Features

Microprocessor Control Panel

The control centre is provided in the framework of the chiller. The controller features ensure significant savings and reduced maintenance and break down.

Digital setting of temperature controls

This allows the cooler outlet temperature to be accurately controlled within a close tolerance of ± 0.5° F, thereby resulting in optimal cooling.

Built-in delays and safety

In-built time delays are provided for longer compressor life and features such as single phase, phase reversal protection and anti-freeze protection are incorporated in each chiller. Moreover, password protection is provided at two levels to secure the settings.

Optional features in the Control Panel

For accurate operation and control of the chillers, the following optional features are available:

- RS 485 port & TCP /IP web gate for remote connectivity, fault indication and status facility
- PC connectivity and remote monitoring without BMS, through dedicated telephone line, gateway and modem
- BMS compatibility with JC N2, BACnet and Modbus protocol with a translator
- Windows based support system helps provide a complete status on all operations, both locally and remotely. History, static and dynamic graphing to aid in commissioning, trouble shooting and evaluation

Common features

for Water Cooled Flooded and DX Chillers

Efficient Compressor

The reliable semi-hermetic screw compressors are tested in accordance with ARI standards and are quiet in operation, efficient and maintenance-friendly.

These compressors have the latest patented profile design, with separate radial and axial force bearings, PTC motor winding protection, discharge temperature protection with its controller, oil level and oil differential pressure switches. This guarantees reliability and long life of bearings even after working for more than 1 lakh hours under heavy operating conditions. Moreover, due to fewer moving parts, there is minimum wear-and-tear. This results in a longer life of these compressors.

High Efficiency Cooler

The flooded evaporators are built using imported, doubly enhanced and highly efficient finned copper tubes sized for optimum refrigerant and water velocities. The shell is manufactured using high–grade steel and the cooler is designed as per ASME Section VIII Div.1.

Performance Optimising Condenser

The shell and tube condensers are built with imported, doubly enhanced, highly efficient finned copper tubes sized for optimum refrigerant and water velocities. The shell is manufactured from high-grade steel. The condenser is designed as per ASME section VIII Div.1 and is incorporated with safety relief valve and purge valve.

Technical Specifications

R134a Water Cooled Flooded Chillers Single Circuit

DESCRIPTION	UNITS	LCWX1-0705FA	LCWX1-0730FA	LCWX1-0775FA	LCWX1-0820FA	LCWX1-0845FA	LCWX1-0930FA	LCWX1-0985FA	LCWX1-1070FA	LCWX1-1125FA
Nominal Cooling Capacity	KW	703.6	744.0	774.9	819.9	858.6	930.0	1002.1	1054.4	1139.2
Compressor										
Type		Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw
Quantity	No.	1	1	1	1	1	1	1	1	1
Operating Speed	RPM	2950	2950	2950	2950	2950	2950	2950	2950	2950
Electrical Power Supply	360 - 440 V, 3 Ph, 50 Hz									
Condenser										
Type		Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser
No. of Pass (Water Side)	No.	4	2	2	2	2	2	2	2	2
No. of Refrigerant Circuit	No.	1	1	1	1	1	1	1	1	1
Water Connection Size In / Out	Inch	6	8	6	8	6	8	6	8	8
Evaporator										
Type		Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator
No. of Pass (Water Side)	No.	4	2	2	2	2	2	2	2	2
No. of Refrigerant Circuit	No.	1	1	1	1	1	1	1	1	1
Water Connection Size In / Out	Inch	5	6	5	6	6	6	6	6	6
Expansion Valve		Electronic	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic
Economiser		Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
Overall Dimension										
Length	mm	2446	3266	4079	3266	4116	3266	4330	3601	4350
Width	mm	1985	2054	1944	2054	1980	2054	1985	2169	2109
Height	mm	2029	2016	1812	2016	1821	2016	2057	2080	2090
Weight										
Operating Weight	Kg	4880	6120	5575	6154	5810	7232	7114	7322	7968

#Specifications are subject to change due to continuous product development

Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Water Temperature at 85 F at the Flow Rate of 3 USGPM/TR
2. Cooler Leaving Water Temperature at 44 F at the Flow Rate of 2.4 USGPM/TR
3. Condenser Fouling Factor 0.00025 Hr.Sq.ft.Deg.F/BTU
4. Cooler Fouling Factor 0.0001 Hr.Sq.ft.Deg.F/BTU

Technical Specifications

R134a Water Cooled Flooded Chillers Twin Circuit

DESCRIPTION	UNITS	LCWX2-0755FA	LCWX2-0875FA	LCWX2-1065FA	LCWX2-1225FA	LCWX2-1395FA
Nominal Cooling Capacity	KW	755.9	879.0	1065.3	1230.6	1388.8
Compressor						
Type		Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw
Quantity	No.	2	2	2	2	2
Operating Speed	RPM	2950	2950	2950	2950	2950
Electrical Power Supply		360 - 440 V, 3 Ph, 50 Hz				
Condenser						
Type		Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser
No. of Pass (Water Side)	No.	2	2	2	2	2
No. of Refrigerant Circuit	No.	2	2	2	2	2
Water Connection Size In / Out	Inch	6	6	8	10	10
Evaporator						
Type		Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator
No. of Pass (Water Side)	No.	2	2	2	2	2
No. of Refrigerant Circuit	No.	2	2	2	2	2
Water Connection Size In / Out	Inch	6	6	8	8	8
Expansion Valve		Electronic	Electronic	Electronic	Electronic	Electronic
Economiser		Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger
Overall Dimension						
Length	mm	4165	4165	4272	4287	4350
Width	mm	2163	2163	2205	2338	2338
Height	mm	1801	1801	2070	2110	2120
Weight						
Operating Weight	Kg	7050	7300	8320	8750	9300

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Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Water Temperature at 85 F at the Flow Rate of 3 USGPM/TR
2. Cooler Leaving Water Temperature at 44 F at the Flow Rate of 2.4 USGPM/TR
3. Condenser Fouling Factor 0.00025 Hr.Sq.ft.Deg.F/BTU
4. Cooler Fouling Factor 0.0001 Hr.Sq.ft.Deg.F/BTU

R134a Water Cooled Flooded Chiller

DESCRIPTION	UNITS	LCWX1-0385F	LCWX1-0470F	LCWX1-0535F	LCWX1-0570F	LCWX1-0625F	LCWX1-0650F
Nominal Cooling Capacity	KW	379.7	472.9	537.9	580.1	632.9	660.0
Compressor							
Type		Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw
Quantity	No.	1	1	1	1	1	1
Operating Speed	RPM	2950	2950	2950	2950	2950	2950
Electrical Power Supply		360 - 440 V, 3 Ph, 50 Hz					
Condenser							
Type		Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser
No. of Pass (Water Side)	No.	4	2	4	2	4	2
No. of Refrigerant Circuit	No.	1	1	1	1	1	1
Water Connection Size In / Out	Inch	5	6	5	6	6	6
Evaporator							
Type		Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator	Shell & Tube Flooded Evaporator
No. of Pass (Water Side)	No.	4	2	4	2	4	2
No. of Refrigerant Circuit	No.	1	1	1	1	1	1
Water Connection Size In / Out	Inch	4	5	5	5	5	5
Expansion Valve		Electronic	Electronic	Electronic	Electronic	Electronic	Electronic
Economiser		Brazed Plate Heat Exchanger	NA	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchanger	Brazed Plate Heat Exchange	Brazed Plate Heat Exchangerr
Overall Dimension							
Length	mm	2398	3082	2452	3082	2446	3082
Width	mm	1628	1716	1675	1716	1985	1716
Height	mm	1740	1934	1998	1934	2029	1934
Weight							
Operating Weight	Kg	3550	3572	4185	3778	4820	3845

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Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Water Temperature at 85 F at the Flow Rate of 3 USGPM/TR
2. Cooler Leaving Water Temperature at 44 F at the Flow Rate of 2.4 USGPM/TR
3. Condenser Fouling Factor 0.00025 Hr.Sq.ft.Deg.F/BTU
4. Cooler Fouling Factor 0.0001 Hr.Sq.ft.Deg.F/BTU

R134a Water Cooled DX Chiller

DESCRIPTION	UNITS	LCWX1-0345D	LCWX1-0525D	LCWX2-0385D	LCWX2-0525D	LCWX2-0665D
Nominal Cooling Capacity	KW	348.1	526.7	386.8	526.7	661.0
Compressor						
Type		Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw	Semi-Hermetic Twin Screw
Quantity	No.	1	1	2	2	2
Operating Speed	RPM	2950	2950	2950	2950	2950
Electrical Power Supply		360 - 440 V, 3 Ph, 50 Hz				
Condenser						
Type		Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser	Shell & Tube Condenser
No. of Pass (Water Side)	No.	2	2	2	2	2
No. of Pass (Refrigerant Side)	No.	1	1	1	1	1
No. of Refrigerant Circuit	No.	1	1	2	2	2
Water Connection Size In / Out	Inch	4	4	4	4	6
Cooler						
Type		Shell & Tube DX Evaporator	Shell & Tube DX Evaporator	Shell & Tube DX Evaporator	Shell & Tube DX Evaporator	Shell & Tube DX Evaporator
No. of Pass (Water Side)	No.	1	1	1	1	1
No. of Pass (Refrigerant Side)	No.	4	4	4	4	4
No. of Refrigerant Circuit	No.	1	1	2	2	2
Water Connection Size In / Out	Inch	6	8	6	8	8
Expansion Valve		Thermostatic	Thermostatic	Thermostatic	Thermostatic	Thermostatic
Overall Dimension						
Length	mm	2900	2958	3231	3231	3470
Width	mm	950	1364	1324	1350	1850
Height	mm	2125	2224	2075	2110	2310
Weight						
Operating Weight	Kg	2725	3300	3050	3750	4950

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Rating Conditions (As per ARI 550/590 std)

1. Condenser Entering Water Temperature at 85 F at the Flow Rate of 3 USGPM/TR
2. Cooler Leaving Water Temperature at 44 F at the Flow Rate of 2.4 USGPM/TR
3. Condenser Fouling Factor 0.00025 Hr.Sq.ft.Deg.F/BTU
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BLUE STAR

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