



Water Cooled Screw Chiller R134a

Energy efficient green chillers

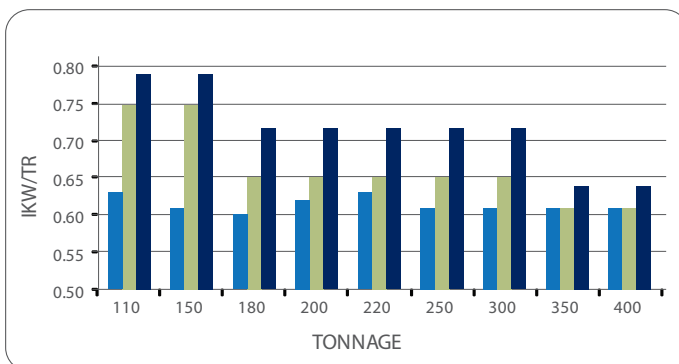


Blue Star, India's preferred airconditioning Company, has been providing expert cooling solutions for over six decades. It has been a pioneer in manufacturing a wide range of Screw Chillers. Drawing from this expertise, Blue Star now introduces a wide range of eco-friendly and energy efficient Water Cooled Flooded Type Screw Chillers with R134a.

Manufactured at its own ISO 9001 certified factory with world-class capabilities, these energy efficient green chillers are robust in construction and have been developed with the latest technology screw compressors specially designed for R134a refrigerant. Moreover, they have been designed to **exceed ASHRAE 90.1** and **meet ECBC (Energy Conservation Building Code)** norms as stipulated by the Bureau of Energy Efficiency (BEE), making them ideal for Green Building Applications.

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

IKW/TR Comparison of Blue Star Water Cooled Flooded Screw Chiller with ECBC & ASHRAE 90.1










- IKW/TR of Blue Star Water Cooled Flooded Screw Chiller
- IKW/TR as per ECBC
- IKW/TR as per ASHRAE 90.1



Highly Efficient and Low Maintenance Compressor

The Screw Compressor is semi-hermetic in construction, thereby making it maintenance friendly. Due to geometrically symmetrical moving parts, these compressors have extremely low vibration and are tested in accordance with AHRI/European Standards.



-  Highly efficient and low noise levels
-  Tested in accordance with AHRI/European Standards
-  Due to few moving parts, these compressors have minimal wear and tear; thereby resulting in longer life of the compressor
-  Step-less capacity control makes the chiller energy efficient for part load conditions
-  These screw compressors have the highest volumetric efficiency, and are superior to other type of compressors
-  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; more than 1 lakh hours under heavy operating conditions.
-  The external oil separator is provided to effectively separate oil from the refrigerant. The oil automatically returns back to the compressor through an oil level float valve. Further, an automatic oil return system with eductor is provided for the cooler to avoid any oil accumulation within the cooler and prevent any loss in efficiency.

The High Efficiency Cooler

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

The Performance Optimising Condenser

The shell and tube condensers are also 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 fitted with a safety relief valve and a purge valve. The condenser is designed as per ASME Section VIII Div. 1.

Electronic Expansion Valve

These chillers are fitted with electronic expansion valves for precise control of refrigerant flow through the cooler and accurately maintain the desired liquid level. The expansion valve is very sensitive to load variations and adjusts the flow of refrigerant with short response times to achieve power savings. The microprocessor based control panel provides signals for accurate operation of the expansion valve on the basis of the level of refrigerant in the cooler which is sensed through a level controller.



The Intelligent Microprocessor Control Panel












The control panel is specially designed to fit perfectly in the chiller framework. The micro control parts and power section are clearly separated in the control panel for ease of installation and servicing.





The microprocessor control panel helps in accurate control of various chiller operating parameters.

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 230 V ac
-  Graphic display and clear and simple language for information
-  Trending facility to analyse chiller operating data for maximising energy savings and enhancing uptime of machine
-  Scheduling to facilitate auto operation
-  Option to upgrade the memory of controller up to 2 GB using 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 Equalisation Logic for compressors
-  Allows remote monitoring of the chiller as a standard feature

Time Saving Installation Process

These chillers are supplied in fully assembled condition, duly charged and tested at the factory. This saves substantial time during installation and helps avoid difficulties that may arise during commissioning.

Responsive After Sales Service

Blue Star Engineers along with their associates are well trained in all aspects of maintenance and troubleshooting. Through a network of 29 offices and a dedicated network of service associates of over 300 engineers, high uptime guarantee is offered. Moreover, Blue Star also offers expertise in areas such as Air, Water and Energy Management, Remote Monitoring of chillers and advanced preemptive diagnostics for your airconditioning systems.

Technical Data for Blue Star Water Cooled R134a Flooded High Efficiency Screw Chillers

Sr. No.	Description	Units	LCWX1-110EEF	CWX1-150EEF	LCWX1-180EEF	LCWX1-200EEF
(A)	Nominal Cooling Capacity	TR	110.0	150.0	180.0	200.0
(B)	Compressor					
1	Quantity	No.	1	1	1	1
2	Type		Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
3	Motor Type: Refrigerant Gas Cooled		Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor
4	Rated Current	Amp.	109.3	147.1	178.5	208.6
5	Starting Current	Amp.	282	407	537	597
6	Class of Motor Insulation		F	F	F	F
7	Operating Speed	RPM	2950	2950	2950	2950
8	Oil Separator Type (external)		Horizontal, Impingement Type	Horizontal, Impingement Type	Horizontal, Impingement Type	Horizontal, Impingement Type
(C)	Electrical Power Supply					
1	Power Supply		400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ
2	Power Consumption Per Unit TR	kW/TR	0.63	0.61	0.60	0.62
(D)	Condenser					
1	Model		CDFL-110	CDFL-150	CDFL-180	CDFL-200
2	Tube Type and Material		Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes
3	Tube OD	mm	19	19	19	19
4	Tube Length	mm	3000	3000	3000	3000
5	No. of Pass (Water Side)	Nos.	2	2	2	2
6	No. of Refrigerant Circuit	Nos.	1	1	1	1
7	Water Flow Rate	Min. USGPM	330	450	540	600
		Max. USGPM	440	600	720	800
(E)	Flooded Cooler					
1	Model		CHFL-110	CHFL-150	CHFL-180	CHFL-200
2	Tube Type and Material		Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes
3	Tube OD	mm	19	19	19	19
4	Tube Length	mm	3000	3000	3000	3000
5	No. of Pass (Water Side)	Nos.	2	3	3	2
6	No. of Refrigerant Circuit	Nos.	1	1	1	1
7	Water Flow Rate	Min. USGPM	165	225	225	300
		Max. USGPM	330	500	500	600
(F)	Overall Dimensions:					
1	Length	mm	3587	3800	3800	3644
2	Width	mm	1323	1910	1910	1863
3	Height	mm	2505	1975	1975	1917
(G)	Net Weight (approx.)	Kg.	3425	4690	4990	5350
	Operating Weight (approx.)	Kg.	3750	5100	5400	5800

Rating Conditions : 1) Cooler Leaving Water Temp. 44° F at Flow Rate of 2.4 USGPM/TR
 2) Cooler Fouling Factor 0.0001 Hr.Ft².F/Btu
 3) Entering Condenser Water Temp 85° F at Flow Rate of 3 USGPM/TR
 4) Condenser Fouling Factor 0.00025 Hr.Ft².F/Btu

* Specifications are subject to change due to continuous product development.

LCWX2-220EEF	LCWX2-250EEF	LCWX2-300EEF	LCWX2-350EEF	LCWX2-400EEF
220.0	250.0	300.0	350.0	400.0
2	2	2	2	2
Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor	Semi-Hermetic, 3Ph., 2 Pole Squirrel Cage Induction Motor
109.3 + 109.3	122.4 + 122.4	147.1 + 147.1	170.3 + 170.3	208.6 + 208.6
282, 282	303, 303	407, 407	537, 537	597, 597
F	F	F	F	F
2950	2950	2950	2950	2950
Horizontal, Impingement Type	Horizontal, Impingement Type	Horizontal, Impingement Type	Horizontal, Impingement Type	Horizontal, Impingement Type
400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ	400 V(+/- 10%), 3 PH., 50HZ
0.63	0.61	0.61	0.61	0.61
CDFL2-220	CDFL2-250	CDFL2-300	CDFL2-350	CDFL2-400
Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes
19	19	19	19	19
3600	3600	3600	3600	3600
2	2	2	2	2
2	2	2	2	2
660	750	900	1050	1200
880	1000	1200	1400	1600
CHFL2-220	CHFL2-250	CHFL2-300	CHFL2-350	CHFL2-400
Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes	Both Side Finned Copper Tubes
19	19	19	19	19
3600	3600	3600	3600	3600
2	2	2	2	2
2	2	2	2	2
330	375	450	525	600
660	750	900	1050	1200
4184	4216	4310	4400	4400
2162	2163	2320	2320	2370
1801	1801	2110	2110	2150
6760	7010	8030	8410	8940
7250	7500	8520	8950	9500



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