



BLUE STAR



Air Cooled Screw Chiller **R134a**

New generation Screw Chiller



Blue Star, India's preferred airconditioning company has been providing expert cooling solutions for over six decades. It is with this expertise Blue Star brings to you a wide range of Air Cooled Screw Chillers, manufactured at its own ISO 9001 certified factory with world-class capabilities.







Blue Star has been a pioneer in developing and manufacturing Chillers for various applications. A new generation of Air Cooled Screw Chillers with refrigerant R134a are being added to the present range of R22 - Air Cooled and Water Cooled Screw Chillers. These Chillers are energy efficient and robust in construction and are developed with latest technology which includes R134a optimised screw compressor, highly efficient DX cooler and air cooled condenser. The latest generation, highly efficient copper tubes are incorporated in the cooler. Electronic expansion valves and the advanced MCS Magnum Controller are also incorporated. The units have very low input kW/TR and are tested in our state-of-the-art test lab to validate the performance.



Compressor

The Screw Compressor is semi-hermetic in construction, which makes it serviceable. Due to geometrically symmetrical moving parts, the compressor has extremely low vibrations. The compressor is tested in accordance with ARI/European standards.

The salient features of these compressors are:

-  Highly efficient and low noise levels.
-  Tested in accordance with ARI/European standards.
-  Due to few moving parts such as male and female screws and slider valve, these compressors have minimal wear and tear. Thereby resulting in longer life of the compressor.
-  This compressor has stepless capacity control, from 25% to 100% making it suitable for varying load applications and efficient under part load conditions. The capacity control also helps in limiting the starting current and the loading is done steplessly.
-  Due to its inherent characteristics, Screw Compressor has the highest volumetric efficiency, de-rating at higher temperature is negligible.
-  Each compressor has the latest 5 to 6 Patented Profile design, with separate radial and axial force bearings, built-in oil separator, PTC motor winding protection, discharge temperature protection with its controller, oil level switch and oil differential pressure switch. This guarantees reliability and long life of bearings under heavy working operating conditions.



Economiser

Refrigerant liquid to liquid plate type heat exchanger is provided for the Economiser system. The liquid refrigerant is sub-cooled to enhance the capacity thereby reducing power consumption (lkW/TR) and enhancing the Coefficient of Performance (COP). The result is about 8% higher efficiency and reduced power consumption, thereby lowering operating costs when compared to the typical chillers without Economiser.



Liquid Injection

The refrigerant suction gas cools the winding of the semi-hermetic screw compressor motor. During part load operation where the suction gas circulation is less, as an abundant precaution, liquid refrigerant is injected into the suction side of the compressor to cool the motor winding. Liquid injection during this period keeps the motor winding temperature within limits. This is provided as a standard feature to enhance the life of the compressor.



Cooler

The shell and tube evaporator has been built using imported, doubly enhanced and highly efficient finned copper tubes of 16 mm dia, and has been optimised for refrigerant and water velocities. The shell is manufactured from high-grade steel. The expansion of the tube is done with torque controlled process.

Air Cooled Condenser

Fin and tube condensers are manufactured using Super Slit aluminum fins. The copper tubes used are inner grooved type, with higher height trapezoidal cross section, to increase the internal surface area of heat transfer.

Hydrophobic coated fins can be manufactured as an optional feature which gives corrosion resistance, typically 3 to 5 times more than the uncoated fins, depending upon the atmosphere in which the equipment is installed. The coated fins have been tested for 500 hours of salt spray test.





Fans

The chiller is fitted with 5-lobe, bird-wing design fans. This profile optimises both the noise level and power consumption against the required airflow and static pressure.

Electronic Expansion Valve

The units are fitted with electronic expansion valves for precise control of refrigerant flow through the cooler to accurately maintain the desired super heat. The expansion valve is very sensitive to load variations and adjusts the flow of the refrigerant with short response times to achieve power savings. The microprocessor-based control panel provides the signals for accurate operation of the expansion valve based on the super heat.










Springs

Specially designed springs are supplied along with the units to minimise the transmission of vibration.

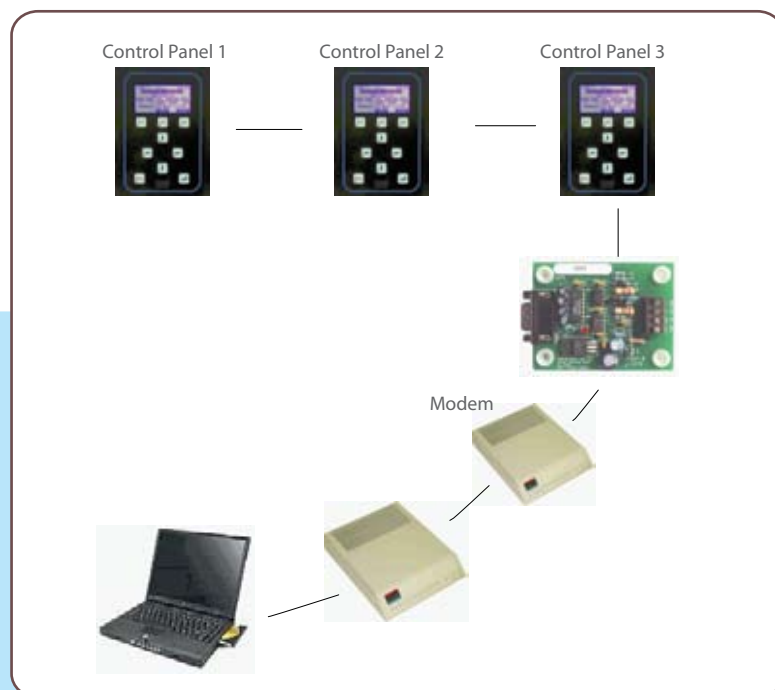
Acoustic Enclosure

An acoustic enclosure can be optionally provided for the compressor to reduce the noise levels.



-  The cooler outlet temperature can be controlled accurately within a tolerance of $\pm 0.5^{\circ}\text{ F}$.
-  In-built time delays for compressors and condenser fans, single phase/phase reversal protection and anti-freeze protection.
-  Password protection at four levels.
-  RS 232 and RS 485 ports for remote connectivity, fault indication and status facility.
-  PC connectivity and remote monitoring without BMS through dedicated telephone line and optional gateway and modem.
-  BMS compatibility with Modbus as a standard feature. Optional translators available for compatibility with JC, N2, BACnet.
-  Windows based support system provides complete status on all operations both locally and remotely. History, static and dynamic graphing is standard to aid in commissioning, trouble shooting and evaluation.

These features help in accurate operation and protection of the chiller and allow remote monitoring.



Technical Data - Single Circuit

DESCRIPTION	UNITS	LCAX1-110 D EF	LCAX1-140 D EF
Nominal Cooling Capacity	kW (TR)	385 (109.5)	493 (140.2)
Screw Compressor		CSH9561-160Y (1 no.)	CSH9581-210Y (1 no.)
Type		Semi-Hermetic Screw	Semi-Hermetic Screw
Power Supply	V/Ph/Hz	400 V(+/- 10%) , 3 Ph. , 50Hz	400 V(+/- 10%) , 3 Ph. , 50Hz
Unit Power Consumption	kW	123	157.1
Condenser Coil - Type		3/8" OD Inner grooved tubes and super slit fins	3/8" OD Inner grooved tubes and super slit fins
Condenser Fan Diameter	mm (inch)	915 (36)	915 (36)
Quantity	No.	6	8
Fan Motor Rating	kW	1.5	1.5
Speed	RPM	860	860
Cooler (Shell and Tube DX)			
Quantity	No./Circuit	1/1	1/1
Water Flow Rate : Maximum	USGPM	450	550
Water Connection in/out	No.	1 each	1 each
Water Connection Size in/out	mm NB (Inch)	200 (8)	200 (8)
Overall Dimensions :			
Length	mm	4374	5502
Width	mm	2235	2235
Height	mm	2700	2700
Operating Weight (Approx.)	kg	3800	4850

Specifications are subject to change due to continuous product development.

Performance in accordance with ARI 550/590 rating conditions :

Chilled water in 12.2 Deg. C (54 Deg. F), water out 6.7 Deg. C (44 Deg. F)

Fouling Factor: 0.0001 Deg. F.sq.ft.hr/Btu in Cooler, and 35 Deg. C (95 Deg. F) air over condenser



Technical Data - Twin Circuit

DESCRIPTION	UNITS	LCAX2-180 D EF
Nominal Cooling Capacity	kW (TR)	640 (182)
Screw Compressor		CSH8591-140Y (2nos)
Type		Semi-Hermetic Screw
Power Supply	V/Ph/Hz	400 V(+/- 10%) , 3 Ph. , 50Hz
Unit Power Consumption	kW	202.2
Condenser Coil - Type		3/8" OD Inner grooved tubes and super slit fins
Condenser Fan Diameter	mm (inch)	915 (36)
Quantity	No.	12
Fan Motor Rating	kW	1.5
Speed	RPM	860
Cooler (Shell and Tube DX)		
Quantity	No./Circuit	1/2
Water Flow Rate : Maximum	USGPM	650
Water Connection in/out	No.	1 each
Water Connection Size in/out	mm NB (Inch)	200 (8)
Overall Dimensions:		
Length	mm	7846
Width	mm	2235
Height	mm	2700
Operating Weight (Approx.)	kg.	6900

Performance in accordance with ARI 550/590 rating conditions :

Chilled water in 12.2 Deg. C (54 Deg. F), water out 6.7 Deg. C (44 Deg. F)

Fouling Factor: 0.0001 Deg. F.sq.ft.hr/Btu in Cooler, and 35 Deg. C (95 Deg. F) air over condenser



LCAX2-220 D EF	LCAX2-250 D EF	LCAX2-280 D EF
770 (219)	250	281
CSH9561-160Y (2 nos)	CSH9571-180Y (2 nos)	CSH9581-210Y (2 nos)
Semi-Hermetic Screw	Semi-Hermetic Screw	Semi-Hermetic Screw
400 V(+/- 10%) , 3 Ph. , 50Hz	400 V(+/- 10%) , 3 Ph. , 50Hz	400 V(+/- 10%) , 3 Ph. , 50Hz
246	280	312
3/8" OD Inner grooved tubes and super slit fins	3/8" OD Inner grooved tubes and super slit fins	3/8" OD Inner grooved tubes and super slit fins
915 (36)	915 (36)	915 (36)
12	16	16
1.5	1.5	1.5
860	860	860
1/2	1/2	1/2
850	950	1150
1 each	1 each	1 each
250 (10)	250 (10)	250 (10)
7846	10944	10944
2235	2235	2235
2700	2700	2700
7406	8990	9200

Specifications are subject to change due to continuous product development.



Technical Data - Tripple Circuit

DESCRIPTION	UNITS	LCAX3-330 D EF
Nominal Cooling Capacity	kW (TR)	328.5
Screw Compressor		CSH9561-160Y (3nos)
Type		Semi-Hermetic Screw
Power Supply	V/Ph/Hz	400 V(+/- 10%) , 3 Ph. , 50Hz
Unit Power Consumption	kW	367.5
Condenser Coil - Type		3/8" OD Inner grooved tubes and super slit fins
Condenser Fan Diameter	mm (inch)	915 (36)
Quantity	No.	18
Fan Motor Rating	kW	1.5
Speed	RPM	860
Cooler (Shell and Tube DX)		
Quantity	No./Circuit	2/3
Water Flow Rate : Maximum	USGPM	1300
Water Connection in/out	No.	2 each
Water Connection Size in/out	mm NB (Inch)	250 (10) + 200 (8)
Overall dimensions:		
Length	mm	11730
Width	mm	2235
Height	mm	2700
Operating Weight (Approx.)	kg	11206

Performance in accordance with ARI 550/590 rating conditions :

Chilled water in 12.2 Deg. C (54 Deg. F), water out 6.7 Deg. C (44 Deg. F)

Fouling Factor: 0.0001 Deg. F.sq.ft.hr/Btu in Cooler, and 35 Deg. C (95 Deg. F) air over condenser



LCAX3-390 D EF	LCAX3-420 D EF
390.5	421.5
CSH9581-210Y(2 nos) & CSH9561-160Y (1 no.)	CSH9581-210Y (3 nos)
Semi-Hermetic Screw	Semi-Hermetic Screw
400 V(+/- 10%) , 3 Ph. , 50Hz	400 V(+/- 10%) , 3 Ph. , 50Hz
434.5	468
3/8" OD Inner grooved tubes and super slit fins	3/8" OD Inner grooved tubes and super slit fins
915 (36)	915 (36)
22	24
1.5	1.5
860	860
2/3	2/3
1600	1700
2 each	2 each
250 (10) + 200 (8)	250 (10) + 200 (8)
15318	15957
2235	2235
2700	2700
13606	14350

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