



BLUE STAR



Screw Chillers

High on reliability.
Low on operating cost.



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 and water cooled Screw Chillers, manufactured at its ISO 9001 factory with world-class capabilities.

These chillers which operate on HCFC-22 refrigerant come in a quality range of eleven models varying from 75 TR – 366 TR in the air cooled version and ten models varying from 115 TR – 400 TR in the water cooled version. The condensers are designed for operation under a wide range of ambient conditions.

Due to lesser moving parts, these chillers are reliable and rugged. Further, with its automatic capacity control, it provides better efficiency under part loads making it ideal for varying load applications such as office spaces, hotels, hospitals, malls and multiplexes.

In short, these chillers offer you reliable, energy efficient performance year after year.





Compressor

The BSC Series semi hermetic screw compressors incorporated in the chillers are manufactured by Hanbell Precise Machinery Co. Ltd., Taiwan. Hanbell follows state-of-the-art manufacturing processes which are ISO 9001 certified and use high precision machinery. Hanbell is one of the largest manufacturers of such compressors and is widely used in chillers in Europe including France, Germany and Italy.

The salient features of these compressors are:



Highly efficient with low noise levels



Tested in accordance with ARI Standards



Due to few moving parts such as male & female screws and slider valve, these compressors have minimal wear and tear



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



Each compressor has 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

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 to 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.






Evaporator





The shell and tube evaporator has inner grooved copper tubes for better heat transfer. The tubes are designed to optimize for refrigerant and water velocities.

Control Centre

The control centre is mounted in the framework of the chiller. It is provided with an advanced microprocessor control panel which has unique features and advantages.

-  The cooler outlet temperature can be controlled accurately within a close tolerance of $\pm 0.5^{\circ}\text{F}$
-  In-built time delays for compressor single phase / phase reversal protection and anti freeze protection
-  Password protection at two levels

Optional features in Control Centre

-  RS 485 port & TCP/ IP webgate 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 Translator
-  Windows based support system to provide complete status on all operations both locally and remotely. History, static and dynamic graphing to aid in commissioning, trouble shooting and evaluation





Following features are available in Air Cooled Version:



Economizer

Refrigerant liquid to liquid plate type heat exchanger is provided for the economizer system. The liquid refrigerant is sub cooled to enhance the capacity thereby reducing power consumption (IKW/TR) and enhancing the Coefficient of Performance (COP).

Oil Cooler

Effective lubrication of bearing depends on the viscosity of lubricant, which in turn depends on the oil temperature. To ensure effective lubrication for longevity, oil cooler is provided as a standard option.



Air Cooled Condenser

The air cooled condenser coils uses copper tubes and aluminium fins. The inner grooved type copper tubes used in the condenser provide increased surface area for better heat transfer. Hydrophobic coated aluminium fins and condenser coil protection guards are available as optional items.

Technical Specifications for Air Cooled Screw Chiller - Single Circuit

Models					
Description	Units	LCAX 1 - 075 D i A	LCAX 1 - 102 D i A	LCAX 1 - 145 D i A	LCAX 1 - 206 D i A
Nominal Cooling Capacity	kW (TR)	263.7 (75)	359.3 (102)	509.8 (145)	724.3 (206)
Screw Compressor		BSC - 075A (1 no.)	BSC - 105A (1 no.)	BSC - 145A (1 no.)	BSC - 210A (1 no.)
Power Supply	V/Ph/Hz	400 ± 10%/3/50			
Fan Diameter	mm (inch)	915 (36)			
Quantity	nos.	4	6	8	12
Total Air Flow	CFM	48000	72000	96000	144000
Fan Motor Rating	kW (HP)	1.2 (1.6)			
	RPM	700			
Condenser Coils: Type		3/8" OD Inner Grooved Tubes and Slit Fins			
Rows	nos.	3			
Face Area	Sq.m. (Sq.ft)	10.3 (110)	14.9 (160)	19.8 (213)	29.7 (320)
Cooler (Shell & Tube type)					
Quantity	no./circuit	1/1			
Water Flow Rate: Max.	CMH (USGPM)	51.1 (225)	79.5 (306)	98.9 (435)	140.5 (618)
Water Connections in / out	no.	1 each			
Size	mm NB (inch)	150 (6)	150 (6)	150 (6)	200 (8)
Dimensions (L x W x H)	mm	2700 x 2040 x 2486	3800 x 2040 x 2495	4820 x 2040 x 2495	7260 x 2040 x 2495
Operating Weight	kg	2677	3382	4358	6200

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

Rating Conditions: The ratings are based on 12.2°C (54°F) chilled water inlet and 6.7°C (44°F) chilled water outlet with 0.0001°F.ft.².hr / Btu fouling factor in cooler and 35°C (95°F) air over condenser.

Technical Specifications for Air Cooled Screw Chiller - Twin Circuit

Models					
Description	Units	LCAX 2 - 150 D i A	LCAX 2 - 177 D i A	LCAX 2 - 204 D i A	LCAX 2 - 247 D i A
Nominal Cooling Capacity	kW (TR)	527.4 (150)	622.3 (177)	717.2 (204)	868.4 (247)
Screw Compressor		BSC - 075A (2 nos.)	BSC - 075A (1 no.) + BSC - 105A (1 no.)	BSC - 105A (2 nos.)	BSC - 105A (1 no.) + BSC - 145A (1 no.)
Power Supply	V/Ph/Hz	400 ± 15%/3/50			
Fan Diameter	mm (inch)	915 (36)			
Quantity	nos.	8	12	12	14
Total Air Flow	CFM	96000	144000	144000	168000
Fan Motor Rating	kW (HP)	1.2 (1.6)			
	RPM	700			
Condenser Coils: Type		3/8" OD Inner Grooved Tubes and Super Slit Fins			
Rows	nos.	3	3/2	3	3
Face Area	Sq.m. (Sq.ft)	19.8 (213)	9.8 (106) / 19.8 (213)	29.7 (320)	34.6 (373)
Cooler (Shell & Tube type)					
Quantity	no./circuit	1/2	1/2	1/2	2/2
Water Flow Rate: Max.	CMH (USGPM)	102.3 (450)	120.7 (531)	139.1 (612)	168.4 (741)
Water Connections in / out	no.	1 each			2 each
Size	mm NB (inch)	200 (8)	200 (8)	200 (8)	150 (6)
Dimensions (L x W x H)	mm	4820 x 2040 x 2495	7260 x 2040 x 2495	7260 x 2040 x 2495	8630 x 2040 x 2495
Operating Weight	kg	4873	5485	6500	7168

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

Rating Conditions: The ratings are based on 12.2°C (54°F) chilled water inlet and 6.7°C (44°F) chilled water outlet with 0.0001°F.ft.².hr / Btu fouling factor in cooler and 35°C (95°F) air over condenser.

Technical Specifications for Air Cooled Screw Chiller - Twin Circuit

Models				
Description	Units	LCAX 2 - 290 D i A	LCAX 2 - 320 D i A	LCAX 2 - 366 D i A
Nominal Cooling Capacity	kW (TR)	1019.6 (290)	1125.1 (320)	1286.8 (366)
Screw Compressor		BSC - 145A (2 nos.)	BSC - 160A (2 nos.)	BSC - 160A (1 no.) + BSC - 210A (1 no.)
Power Supply	V/Ph/Hz	400 ± 10%/3/50		
Fan Diameter	mm (inch)	915 (36)		
Quantity	nos.	16	16	20
Total Air Flow	CFM	192000	232000	260000
Fan Motor Rating	kW (HP)	1.2 (1.6)	1.5 (2)	1.5 (2)/1.2 (1.6)
	RPM	700	860	860/700
Condenser Coils: Type		3/8" OD Inner Grooved Tubes and Super Slit Fins		
Rows	nos.	3	4	4/3
Face Area	Sq. m. (Sq. ft.)	39.6 (426)	39.6 (426)	49.5 (533)
Cooler (Shell & Tube type)				
Quantity	no./ circuit	2/2		
Water Flow Rate: Max.	CMH (USGPM)	197.7 (870)	218.2 (960)	249.5 (1098)
Water Connections in / out	nos.	2 each		
Size	mm NB (inch)	150 (6)	200 (8)	200 (8)
Dimensions (L x W x H)	mm	9650 x 2040 x 2495	9650 x 2040 x 2495	12090 x 2040 x 2495
Operating Weight	kg	8390	9430	10126

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Rating Conditions: The ratings are based on 12.2°C (54°F) chilled water inlet and 6.7°C (44°F) chilled water outlet with 0.0001°F.ft.².hr / Btu fouling factor in cooler and 35°C (95°F) air over condenser.

Technical Specifications for Water Cooled Screw Chiller - Single Circuit

Models						
Description	Units	LCWX 1 - 115 D i B	LCWX 1 - 135 D i B	LCWX 1 - 160 D i B	LCWX 1 - 175 D i B	LCWX 1 - 225 D i B
Nominal Cooling Capacity	kW (TR)	404.3 (115)	474.7 (135)	562.6 (160)	615.3 (175)	791.1 (225)
Dimensions (L x W x H)	mm	2700 x 800 x 2000	2953 x 900 x 2100	2979 x 900 x 2100	2958 x 1350 x 2400	2958 x 1350 x 2397
Operating Weight/Unit (approx.)	kg	2750	3025	3750	4000	5040
Compressor Type		Semi-Hermetic Screw				
- Model		BSC - 110W	BSC - 130W	BSC - 155W	BSC - 170W	BSC - 220W
- Quantity	no.	1	1	1	1	1
- Power Supply	V/Ph/Hz	400 ± 10%/3/50				
Cooler (DX - Shell & Tube Type)						
- Quantity	no.	1	1	1	1	1
- Water Flow Rate Max.	USGPM	330	400	465	510	670
Water Connection Size (NB)	inches	6	6	6	8	8
Condenser (Shell & Tube Type)						
- Quantity	no.	1	1	1	1	1
- Water Flow Rate Max.	USGPM	535	640	750	825	1075
Condenser Connection	inches	4	4	4	5	6

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

Rating Conditions : 1) Entering Cooler Water temp. 54° F, Leaving Cooler Water temp. 44° F, Flow Rate 2.4 gpm/TR

2) Cooler Fouling Factor 0.0001 Hr.Ft².F/Btu

3) Entering Condenser Water temp. 85° F, Leaving Condenser Water temp. 95° F, Flow Rate 3gpm/TR

4) Condenser Fouling Factor 0.00025 Hr.Ft².F/Btu

Technical Specifications for Water Cooled Screw Chiller - Twin Circuit

Models						
Description	Units	LCWX 2 - 225 Di B	LCWX 2 - 270 Di B	LCWX 2 - 315 Di B	LCWX 2 - 345 Di B	LCWX 2 - 400 Di B
Nominal Cooling Capacity	kW (TR)	791.1 (225)	949.3 (270)	1107.5 (315)	1213 (345)	1406.4 (400)
Dimensions (L x W x H)	mm	3100 x 1450 x 2300	3400 x 1848 x 2300	3400 x 1848 x 2300	3400 x 1848 x 2450	3400 x 1848 x 3000
Operating Weight/Unit (approx.)	kg	5450	6250	7280	7500	8300
Compressor Type		Semi-Hermetic Screw				
- Model		BSC - 110W + BSC - 110W	BSC - 110W + BSC - 155W	BSC - 155W + BSC - 155W	BSC - 170W + BSC - 170W	BSC - 170W + BSC - 220W
- Quantity	nos.	2	2	2	2	2
- Power Supply	V/Ph/Hz	400 ± 10%/3/50				
Cooler (DX - Shell & Tube Type)						
- Quantity	nos.	1	2	2	2	2
- Water Flow Rate Max.	USGPM	660	795	930	1020	1175
Water Connection Size (NB)	inches	8	6,6	6,6	8,8	8,8
Condenser (Shell & Tube Type)						
- Quantity	nos.	1	2	2	2	2
- Water Flow Rate Max.	USGPM	1070	1285	1500	1645	1900
Water Connection Size (NB)	inches	6	4,4	4,4	5,5	5,6

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

- Rating Conditions : 1) Entering Cooler Water temp. 54° F, Leaving Cooler Water temp. 44° F, Flow Rate 2.4gpm/TR
 2) Cooler Fouling Factor 0.0001 Hr.Ft².F/Btu
 3) Entering Condenser Water temp. 85° F, Leaving Condenser Water temp. 95° F, Flow Rate 3gpm/TR
 4) Condenser Fouling Factor 0.00025 Hr.Ft².F/Btu



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