KyBOM

ASH SERIES

PRODUCT BROCHURE

Air Cooled Screw Chiller

ASH-Series

Features

Cooling only/Heat pump
Heating- recovery (optional)
Capacity: 150-1180 KW
Refrigerant： R407/ R134a

Technology advantage

Optimised screw compressor, Hanbell brand or Bitzer brand
Highly efficient DX cooler and air cooled condenser
The latest generation, highly efficient copper tubes are incorporated in the cooler.
Electronic expansion valves
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.

Major component

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:

● Hanbell brand or Bitzer brand
● 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 stepped 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 stepped.
● 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 (IkW/TR) and enhancing the Coeffcient of Performance (COP). The result is about 8% higher effciency 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.

Evaporator

The shell and tube evaporator has been built using imported, doubly enhanced and highly efficient finned copper tubes, 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.

Acoustic Enclosure

An acoustic enclosure can be optionally provided for the compressor to reduce the noise levels.
All the units will be tested strictly before delivery.

All the units will be tested strictly before delivery.

Specifications

Model	Unit	150	180	250	320	380
Cooling capacity *	kW	156	180	250	320	380
Heating capacity *	kW	180	198	276	353	416
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R134a				
Quantity	kg	38	48	64	82	100
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	1	1	1	1	1
Cooling power input *	kW	49.3	54.2	77.4	96.7	114
Cooling current *	A	87.8	95.2	134	166	199
Heating power input *	kW	48.4	53.2	76	95	112
Heating current *	A	86.5	93.7	132	164	196
Energy adjustment steps	step	4	3	4	3	3
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	26.7	31	42.8	54.8	65
Water side pressure drop	kPa	41	41	42	42	42
Water pipe	DN	100	100	100	125	125
Axial Fan						
Fan motor number	Nr.	4	4	6	6	8
Power input	kW	4*2.2	4*2.2	6*2.2	6*2.2	8*2.2
Current input	A	4*5.6	4*5.6	6*5.6	6*5.6	8*5.6
Air flow	m^3/h	68000	96000	144000	144000	196000
Dimensions						
L	mm	2500	2500	3300	3590	4680
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	73	73	75	75	78
Net weight	kg	2050	2350	2750	3150	3650

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃

Model	Unit	430	500	570	640	700
Cooling capacity *	kW	428	497.6	568	637.8	700
Heating capacity *	kW	474	550	630	706	772
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R134a				
Quantity	kg	65*2	77*2	82*2	98*2	105*2
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	2	2	2	2	2
Cooling power input *	kW	131.6	154.8	174.1	193.4	210.7
Cooling current *	A	229.2	268	300	332	365
Heating power input *	kW	129.2	152	171	190	207
Heating current *	A	225.7	264	296	328	360
Energy adjustment steps	step	4	4	3	3	3
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	74	85.6	97.4	109.7	120
Water side pressure drop	kPa	42	43	43	44	45
Water pipe	DN	125	125	125	150	150
Axial Fan						
Fan motor number	Nr.	10	12	12	12	14
Power input	kW	10*2.2	12*2.2	12*2.2	12*2.2	14*2.2
Current input	A	10*5.6	12*5.6	12*5.6	12*5.6	14*5.6
Air flow	m^3/h	240000	288000	288000	288000	333600
Dimensions						
L	mm	5800	6790	6790	7190	8280
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	80	81	81	81	82
Net weight	kg	4800	5250	5600	6150	6900

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃

Model	Unit	760	870	930	1000	1180
Cooling capacity *	kW	758	868	923.8	992.8	1172
Heating capacity *	kW	827	953	1014	1086	1264
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R134a				
Quantity	kg	115*2	75*3	80*3	85*3	100*3
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	2	3	3	3	3
Cooling power input *	kW	228	268.8	286.4	309.6	348.2
Cooling current *	A	398	467	497.2	536	600.4
Heating power input *	kW	224	264	281.2	304	342
Heating current *	A	392	460	489.7	528	591.2
Energy adjustment steps	step	3	3	3	3	3
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	130	149	159	170.8	201.6
Water side pressure drop	kPa	45	45	45	45	45
Water pipe	DN	150	150	150	150	200
Axial Fan						
Fan motor number	Nr.	16	18	18	18	20
Power input	kW	16*2.2	18*2.2	18*2.2	18*2.2	20*2.2
Current input	A	16*5.6	18*5.6	18*5.6	18*5.6	20*5.6
Air flow	m^3/h	384000	432000	432000	432000	576000
Dimensions						
L	mm	9370	10290	10580	10980	11780
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	83	83	83	83	83
Net weight	kg	7600	8900	9650	10000	11000

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃

Model	Unit	150	180	250	320	380
Cooling capacity *	kW	150	180	250	320	380
Heating capacity *	kW	170	202	276	357	425
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R407c				
Quantity	kg	38	48	64	82	100
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	1	1	1	1	1
Cooling power input *	kW	50	60.4	81	103	126
Cooling current *	A	85	104	137.6	174	213.3
Heating power input *	kW	48.7	58.8	79	100.5	123
Heating current *	A	83	101.4	134	170	208
Energy adjustment steps	step	4	4	4	4	4
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	25.7	31	42.8	54.9	65
Water side pressure drop	kPa	41	41	42	42	42
Water pipe	DN	100	100	100	125	125
Axial Fan						
Fan motor number	Nr.	4	4	6	6	8
Power input	kW	4*2.2	4*2.2	6*2.2	6*2.2	8*2.2
Current input	A	4*5.6	4*5.6	6*5.6	6*5.6	8*5.6
Air flow	m^3/h	68000	96000	144000	144000	196000
Dimensions						
L	mm	2500	2500	3300	3590	4680
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	73	73	75	75	78
Net weight	kg	2050	2350	2750	3150	3650

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃

Model	Unit	430	500	570	640	700
Cooling capacity *	kW	428	498	563	632	699
Heating capacity *	kW	476	550	627	710	780
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R407c				
Quantity	kg	65*2	77*2	82*2	98*2	105*2
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	2	2	2	2	2
Cooling power input *	kW	141.4	162	184	206	229
Cooling current *	A	241.6	275.2	311.6	348	387.3
Heating power input *	kW	137.8	158	179.5	201	223.5
Heating current *	A	235.4	268	304	340	378
Energy adjustment steps	step	4	4	4	4	4
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	74	85.6	96.5	108.7	120
Water side pressure drop	kPa	42	43	43	44	45
Water pipe	DN	125	125	125	150	150
Axial Fan						
Fan motor number	Nr.	10	12	12	12	14
Power input	kW	10*2.2	12*2.2	12*2.2	12*2.2	14*2.2
Current input	A	10*5.6	12*5.6	12*5.6	12*5.6	14*5.6
Air flow	m^3/h	240000	288000	288000	288000	333600
Dimensions						
L	mm	5800	6790	6790	7190	8280
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	80	81	81	81	82
Net weight	kg	4800	5250	5600	6150	6900

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃

Model	Unit	760	870	930	1000	1180
Cooling capacity *	kW	760	865	925.6	992	1164
Heating capacity *	kW	850	967	1012	1088	1250
Power supply	V/PH/Hz	380/3/50/60				
Refrigerant						
Type		R407c				
Quantity	kg	115*2	75*3	80*3	85*3	100*3
Control method		Thermal expansion valve or Electronic expansion valves				
Compressor		Semi-hermetic screw compressor				
Qty/refrigerant circuit	Nr.	2	3	3	3	3
Cooling power input *	kW	252	288	303.7	324.4	368.6
Cooling current *	A	426.6	488.2	516.8	550.4	623.2
Heating power input *	kW	246	281	295.8	316	359
Heating current *	A	416	476	503.7	536.4	607.2
Energy adjustment steps	step	4	4	4	4	3
Condenser	type	Fin heat exchanger				
Evaporator	type	Shell and tube /tube and tube heat exchanger				
Water flow rate	m^3/h	130.7	148.8	159	170.6	200
Water side pressure drop	kPa	45	45	45	45	45
Water pipe	DN	150	150	150	150	200
Axial Fan						
Fan motor number	Nr.	16	18	18	18	20
Power input	kW	16*2.2	18*2.2	18*2.2	18*2.2	20*2.2
Current input	A	16*5.6	18*5.6	18*5.6	18*5.6	20*5.6
Air flow	m^3/h	384000	432000	432000	432000	576000
Dimensions						
L	mm	9370	10290	10580	10980	11780
W	mm	2160	2160	2160	2160	2160
H	mm	2450	2450	2450	2450	2450
Sound pressure level **	dB(A)	83	83	83	83	83
Net weight	kg	7600	8900	9650	10000	11000

Performance values refer to the following conditions:

*Cooling capacity is measured under the condition : Ambient temperature DB 35℃/WB 24℃ ,user side water inlet/outlet temperature 12℃/ 7℃

*Heating capacity is measured under the condition : Ambient temperature DB 7℃/WB 6℃ ,user side water inlet/outlet temperature 40℃ /45℃