ABAN ENERGY

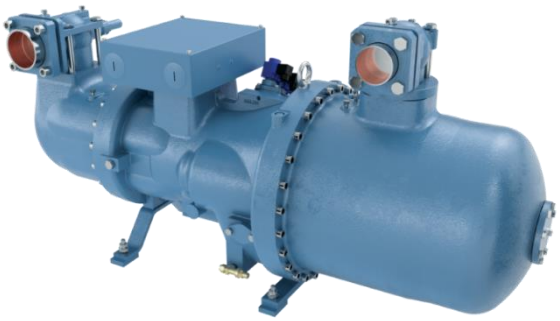
Air Cooled Screw Chiller

Air Cooled Chillers Catalogue – ASW Series

Ver. 01 – Summer 2025

Screw Compressors

SRM ES3 series semi-hermetic screw compressor is developed especially for applications in air-conditioning and refrigeration. With high operating load design, each SRM compressor is of high efficiency and reliability in all operating conditions such as medium and high evaporating temperature applications including chillers, heat pumps and process cooling.



ES3 Series Features

- Advanced 5-to-6 patented screw rotor profile designed to ensure high capacity and efficiency in all operating conditions.
- Simple and robust design which provides high reliability and low vibration and noise level.
- High efficiency motor. Premium grade low-loss core steel with special motor cooling slot and refrigerant guide vane which pilot the cold suction refrigerant gas through the motor provides the highest operating efficiency possible no matter how strict operating conditions are.

Canopy for Reducing Noise Level

A sound-insulated canopy is used to reduce the noise level of the unit by enclosing the compressors and key components within an acoustic enclosure. Lined with high-density sound-absorbing materials, the canopy minimizes noise transmission, ensuring quieter operation, especially important for installations in noise-sensitive environments like offices, hospitals, or residential areas.

Build-in Oil Separator

- Three-stage oil separation
- Low pressure drops and oil carry-over
- Fine demister mesh in oil separation
- High volume oil sump and inbuilt rust remover pressure relive valve available
- Dual capacity control
- Flanged-on solenoid valve, easy on installation
- Step or continuous (stepless) control mechanism
- High ingress protection
- Quick loading and unloading to target water temp
- Special supply voltage on request

Microchannel Condenser Coil

High Surface Area: The microchannel design maximizes surface area relative to volume, allowing for more efficient heat transfer compared to traditional tube-and-fin condensers.

Enhanced Cooling Performance: With a higher heat exchange rate, microchannel coils offer superior cooling performance even under demanding conditions.

Faster Response Time: The increased heat transfer efficiency results in quicker response times, improving the overall system performance.

Compact and Lightweight Design

Space-Saving: Microchannel coils are significantly more compact than traditional counterparts, making them ideal for applications where space is at a premium.

Reduced Weight: The use of aluminum and the efficient design contribute to a lighter coil, which is beneficial in automotive and aerospace applications where weight reduction is crucial.

Installation Flexibility: The compact design allows for easier integration into various systems, providing greater flexibility in design and installation.

Environmental and Cost Benefits

Lower Refrigerant Charge: Microchannel coils require less refrigerant to achieve the same cooling capacity, leading to cost savings and reduced environmental impact.

Energy Efficiency: The higher efficiency of these coils reduces the energy consumption of the system, contributing to lower operational costs and a smaller carbon footprint.

Eco-Friendly: By reducing the amount of refrigerant and energy used, microchannel coils help meet stricter environmental regulations and sustainability goals.

Durability and Reliability

Corrosion Resistance: Constructed primarily from aluminum, these coils offer excellent resistance to corrosion, extending their lifespan even in harsh environments.

Pressure Tolerance: Designed to withstand high operating pressures, microchannel coils are suitable for both low and high-pressure systems, ensuring reliability across a wide range of applications.

Vibration Resistance: The robust construction of microchannel coils reduces the risk of damage from vibration, a common issue in mobile and industrial applications.

Maintenance and Serviceability

Low Maintenance: The all-aluminum construction with fewer mechanical joints reduces the potential for leaks and the need for frequent maintenance, resulting in lower long-term service costs.

Ease of Cleaning: The flat surface of microchannel coils allows for easier cleaning compared to traditional coils, which helps maintain efficiency and extends the coil's operational life.

Technical Specifications

Material: High-grade aluminum with optional anti-corrosion coatings

Efficiency: Heat transfer efficiency exceeding 95%

Test Pressure: up to 450 PSI

Refrigerant Compatibility: Compatible with a wide range of refrigerants, including R134a, R410A, and newer low-GWP refrigerants

Customizability: Available in various sizes and configurations to meet specific application needs, with options for fin design, tube spacing and coating

Electronic Expansion Valve

An electronic expansion valve uses a motorized actuator to modulate refrigerant flow with high precision, maintaining optimal superheat and maximizing system efficiency across varying loads. By continuously adjusting its stepper-motor-driven orifice based on real-time temperature and pressure feedback, it ensures stable evaporator performance, prevents compressor slugging, and reduces energy consumption.

All our air-cooled screw chillers use Danfoss ETS Colibri Electronic Expansion valves. Carel EEVs are also available as an option upon request

Axial Fans

The unit is equipped with high-performance AC axial fans, engineered for reliable airflow and stable performance under varying load conditions. These fans feature aerodynamically designed blades and are statically and dynamically balanced to ensure smooth, low-noise operation. Each fan includes protective grilles for safety and long-term durability. Fan speed control is available through optional external controllers, allowing efficient condensation management and improved energy performance in moderate to ambient conditions.

High-Efficiency Shell and Tube Evaporator

The evaporator is a Single-pass Direct expansion shell and tube, providing excellent heat transfer while maintaining low pressure drops. Refrigerant passes through the internal tubes, and chilled water circulates through the shell. The system is insulated with EPDM to prevent energy loss and condensation.

Compatible Fluids

The heat exchangers are designed according to the pressure and temperature limits and with the materials described here below. The main data of the heat exchanger, according to Art. 4 of Annex 1 of the European Directive 2014/68/UE, are indicated on the unit's name plate.

Materials

The choice of the materials used in the evaporators is the result of strict quality checks carried out in compliance with the PED norm (Dir. 2014/68/UE) and the European norms regulating the construction of pressure vessels. The standard components are: - carbon steel: head (medium-large sizes in cast iron), tube sheet, shell and refrigerant and water connections, - copper alloy C12200 – EN12452/SB359 with inner finned surface suitable for exchanger pipes, - asbestos free gaskets suitable for the use of HCFC, HFC, HFO refrigerants, - PVC plastic baffles, - bonded steel bolts fit for the temperatures generated during the use.

Test, Quality and Identification

All tests comply with the procedures of our internal quality manual UNI EN ISO 9001 and specifically all the evaporators undergo the following: - Pneumatic pressure test refrigerant and water side (coefficient x 1,43), - Test with penetration liquids (PT) on the welding according to the norms, - Separate pressure test for each single refrigerant circuit, - Hydrostatic test with the use of a helium leakage detector (accepted max. level of 3 g/year of R22). Once the tests are over and before shipping, the refrigerant circuits are dried and protected against humidity by means of moisture absorber bags.

Electrical Panel

The electrical panel houses all power distribution and control components in a single, lockable enclosure rated IP54 for dust and splash protection. Inside you'll find:

- A main circuit breaker and individual overload protectors for Chiller
- Contactor relays, motor drives, and phase-failure relays
- DIN-rail-mounted circuit breaker and individual overload protectors for each compressor, plus terminal blocks for easy field wiring
- Forced-ventilation fan to keep components within their operating temperature range

Maintenance and Serviceability

Designed with service in mind, all key components are accessible from the front and side panels, making inspection, maintenance, and parts replacement simple and efficient. This reduces system downtime and minimizes operational costs over time.

Wide Range Operation Temperature

Engineered for operation in ambient temperatures up to 46°C. The robust thermal design ensures consistent cooling performance during peak summer loads and mission-critical operations such as in data centers, or industrial environments.

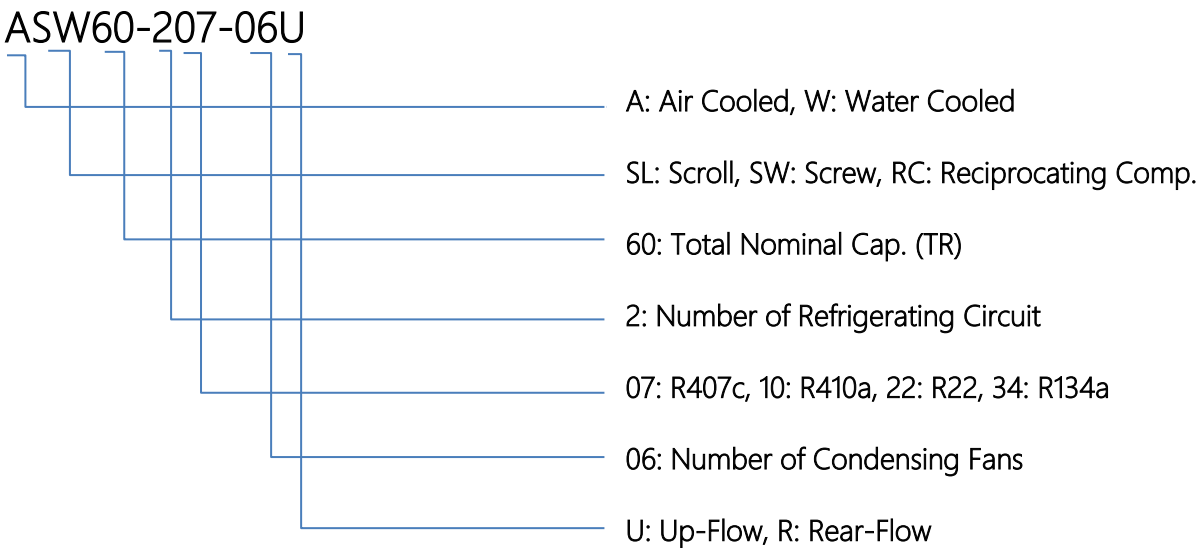
Advanced Unit Controller

A screw chiller controller adjusts cooling capacity by modulating the compressor's slide valve based on load, ensuring efficient operation and stable temperatures. It monitors key parameters, protects the system from faults, controls expansion valves and fans, and supports BMS integration via protocols like Modbus.

- Intuitive LCD-based user interface
- PID-driven chilled-water temperature control
- Electronic expansion-valve control
- Compressor & Condenser Capacity Control
- LAN, USB and RS-485 connectivity
- Modbus, CANbus and BACnet protocol support
- Adaptive set-point adjustment for optimal efficiency

All our screw chillers use Danfoss MCX-series Controllers, with Carel pCO-range controllers available as an option.

Nomenclature



Technical Data

ASW Series

- **Advanced Compressor Control:** Screw compressors with both step and stepless capacity modulation for pinpoint load matching.
- **Compact Footprint:** Space-saving design ideal for installations with limited plant-room area.
- **R-134a Refrigerant:** Zero Ozone Depletion Potential (ODP), optimized for reliable performance in high ambient temperatures.
- **High Efficiency:** Engineered for exceptional COP at both full- and part-load conditions.

ASW*-134-*U

Single Refrigerant Circuits with Tandem Compressors

R134a

Up-Flow Condenser

Model No. ASW*-134-*U				140-06	160-06	180-08	200-08
1	Cooling capacity		kW	292.2	331.2	373	401.6
			RT	83	94.17	106	114.18
	Total input power		kW	105.8	116.8	133.2	142.6
	Total rated current		A	174	208.4	225.2	247.8
	EER		-	3.04	3.09	3.1	3.09
2	Cooling capacity		kW	266.6	302.4	340.4	366.4
			RT	75.8	85.98	96.79	104.18
	Total input power		kW	113.6	125.4	143	153
	Total rated current		A	185.6	218	239.4	263
	EER		-	2.56	2.61	2.61	2.61
Evaporator		Type	-	Shell and Tube			
		Brand	-	ABAN ENERGY			
		Water flow rate	m ³/h	45.32	51.36	57.82	62.3
		Water pressure drop	bar	0.34	0.41	0.35	0.39
Condenser		Type	-	V Shape			
		Heat exchanger	-	Micro-channel			
Fan		Type	-	Axial			
		Number	-	6		8	
		Speed	rpm	900			
		Diameter	mm	800			
		Air flow rate	m ³/h	22000			
		Discharge	Side/Top	Top			
Compressor		Type	-	Screw			
		Brand	-	SRM			
		Model	-	L070	L080	L090	L100
		Combination	Pieces	2			
		Oil heater	-	Optional			
Refrigerant		Type	-	R134a			
Refrigerant circuits			-	1			
Ambient temp. range			°C	21 ~ 46			
Connection size			inch	4			5
Sound pressure level			dB(A)	~ 74			
Power supply			Ø, V, Hz	3, 400, 50			
Dimension	W x H x D		mm	4100x2200x2764		5370x2200x2764	

1: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 35 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included

2: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 40 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included

- Evaporating SST: 3 °C
- Water side fouling factor: 0.000043 m^2. °C / kW
- Measuring sound pressure level at 3m away and ±3dB tolerance.
- The characteristics of water flow rate and water pressure drop are given based on case "1".

ASW*-234-*U

Two Refrigerant Circuits with Two Compressors
R134a
Up-Flow Condenser

Model No. ASW*-234-*U				220-08	240-10	280-12	320-12
1	Cooling capacity		kW	481.6	541.8	624.8	726.8
			RT	136.93	154	177.65	206.65
	Total input power		kW	158.6	177.4	203.2	237
	Total rated current		A	269.6	305.2	343,6	376.8
	EER		-	3.30	3.36	3.40	3.34
2	Cooling capacity		kW	446.4	502.6	579.6	674.2
			RT	126.93	142.9	164.8	191.7
	Total input power		kW	172.4	192.6	220.9	257.6
	Total rated current		A	289.4	326.8	368.6	408.2
	EER		-	2.80	2.85	2.88	2.83
Evaporator		Type	-	Shell and Tube			
		Brand	-	ABAN ENERGY			
		Water flow rate	m ³/h	74.7	84	97	112.72
		Water pressure drop	bar	0.42	0.38	0.34	0.41
Condenser		Type	-	V Shape			
		Heat exchanger	-	Micro-channel			
Fan		Type	-	Axial			
		Number	-	8	10	12	
		Speed	rpm	900			
		Diameter	mm	800			
		Air flow rate	m ³/h	22000			
		Discharge	Side/Top	Top			
Compressor		Type	-	Screw			
		Brand	-	SRM			
		Model	-	L110	L120	L140	L160
		Combination	Pieces	2			
		Oil heater	-	Optional			
Refrigerant		Type	-	R134a			
Refrigerant circuits			-	2			
Ambient temp. range			°C	21 ~ 46			
Connection size			inch	5			6
Sound pressure level			dB(A)	~ 74			
Power supply			Ø, V, Hz	3, 400, 50			
Dimension	W x H x D		mm	5370x2200x 2764	6600x2200x 2764	7806x2200x2764	

1: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 35 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included
2: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 40 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included
- Evaporating SST: 3 °C
- Water side fouling factor: 0.000043 m^2. °C / kW
- Measuring sound pressure level at 3m away and ±3dB tolerance.
- The characteristics of water flow rate and water pressure drop are given based on case "1".

ASW*-234-*U

Two Refrigerant Circuits with Two Compressors

R134a

Up-Flow Condenser

Model No. ASW*-234-*U				360-14	420-16	440-16	480-18
1	Cooling capacity		kW	823	879.4	928.4	1028.2
			RT	234	250	264	292.35
	Total input power		kW	266.4	283.6	300.8	332
	Total rated current		A	435.2	460	497.2	569.8
	EER		-	3.37	3.41	3.37	3.39
2	Cooling capacity		kW	763.2	815.8	861.2	953.6
			RT	217	231.96	244.87	271.14
	Total input power		kW	289.4	308	326.8	360.6
	Total rated current		A	468.4	496.4	536	615.8
	EER		-	2.86	2.89	2.86	2.87
Evaporator		Type	-	Shell and Tube			
		Brand	-	ABAN ENERGY			
		Water flow rate	m ³/h	127.64	136.4	144	160
		Water pressure drop	bar	0.42	0.39	0.43	0.41
Condenser		Type	-	V Shape			
		Heat exchanger	-	Micro-channel			
Fan		Type	-	Axial			
		Number	-	14	16		18
		Speed	rpm	900			
		Diameter	mm	800			
		Air flow rate	m ³/h	22000			
		Discharge	Side/Top	Top			
Compressor		Type	-	Screw			
		Brand	-	SRM			
		Model	-	L180	L210	L220	L240
		Combination	Pieces	2			
		Oil heater	-	Optional			
Refrigerant		Type	-	R134a			
Refrigerant circuits			-	2			
Ambient temp. range			°C	21 ~ 46			
Connection size			inch	6			
Sound pressure level			dB(A)	~ 74			
Power supply			Ø, V, Hz	3, 400, 50			
Dimension		W x H x D	mm	9204x2200x 2764	10460x2200x2764		11600x2200x 2764

1: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 35 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included

2: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 40 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included

- Evaporating SST: 3 °C
- Water side fouling factor: 0.000043 m^2. °C / kW
- Measuring sound pressure level at 3m away and ±3dB tolerance.
- The characteristics of water flow rate and water pressure drop are given based on case "1".

Two Refrigerant Circuits with Two Compressors
R134a
Up-Flow Condenser

Model No. ASW*-234-*U				540-20	600-22
1	Cooling capacity		kW	1161	1296.4
			RT	330.11	368.6
	Total input power		kW	370.6	419.8
	Total rated current		A	640.4	720.4
	EER		-	3.43	3.37
2	Cooling capacity		kW	1076.8	1202.4
			RT	306.17	341.88
	Total input power		kW	402.6	456.2
	Total rated current		A	691.2	776
	EER		-	2.91	2.86
Evaporator		Type	-	Shell and Tube	
		Brand	-	ABAN ENERGY	
		Water flow rate	m^3/h	180	201
		Water pressure drop	bar	0.4	0.4
Condenser		Type	-	V Shape	
		Heat exchanger	-	Micro-channel	
Fan		Type	-	Axial	
		Number	-	20	22
		Speed	rpm	900	
		Diameter	mm	800	
		Air flow rate	m^3/h	22000	
		Discharge	Side/Top	Top	
Compressor		Type	-	Screw	
		Brand	-	SRM	
		Model	-	L270	L300
		Combination	Pieces	2	
		Oil heater	-	Optional	
Refrigerant		Type	-	R134a	
Refrigerant circuits			-	2	
Ambient temp. range			°C	21 ~ 46	
Connection size			inch	8	
Sound pressure level			dB(A)	~ 74	
Power supply			Ø, V, Hz	3, 400, 50	
Dimension		W x H x D	mm	12750x2200x2764	13960x2200x2764

1: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 35 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included
2: Chilled water inlet / outlet: 12 °C / 7 °C, Outdoor ambient temp: 40 °C DB, Sea level: 0 ft, Fan input power included, Pump input power not included
- Evaporating SST: 3 °C
- Water side fouling factor: 0.000043 m^2. °C / kW
- Measuring sound pressure level at 3m away and ±3dB tolerance.
- The characteristics of water flow rate and water pressure drop are given based on case "1".

Note:

ABAN ENERGY

Aban Energy

At Aban Energy, we believe that advanced engineering and responsible innovation can make the world a better place for all humanity. Since our foundation, we have been committed to designing and manufacturing high-quality mechanical and electronic systems that optimize energy use, enhance reliability, and contribute to sustainable growth.

The foundation of our work lies in our values — Quality, Innovation, Commitment, and Education. These principles guide every decision we make, from research and development to customer support, ensuring that our partners receive solutions that are not only efficient but also future-focused.

Through continuous improvement and collaboration, we aim to optimize energy consumption, embrace renewable resources, and deliver technologies that bring both economic and environmental benefits.

Unit 407, Sharif Technology Tower, Tehran
☎ +98 21 9200 2736
✉ info@aban.energy
🌐 www.aban.energy