

Semi-hermetic High-efficient Variable-frequency Refrigeration Screw Compressor

SRM Sweden

The inventor and leader of screw compressor
100-year legacy of technical quality&energy efficiency



Focus on screw technology
for one hundred years

More than 3 million screw compressors all over the world
are technologically licensed by SRM



SRMTEC SRS Semi-hermetic High-efficient Screw Compressor

The product range consists of 20 models (SRS-08 to SRS-20) with displacements ranging from 85 to 850 m³/h which operate with Ammonia (R717).

The compressor is widely used in food processing and –storage, marine applications, industrial process chillers, air-conditioning and other fields.



Compressor body

- High-strength design with working pressure of up to 28 bar;
- Optimized suction gas flow through the motor to ensure motor cooling with significantly reduced pressure drop for low energy consumption;
- Integrated reliable lubrication system for simple installation;
- Compact design with integrated stop valve, discharge temperature sensor, oil filter, oil differential pressure switch, oil shut-off valve.



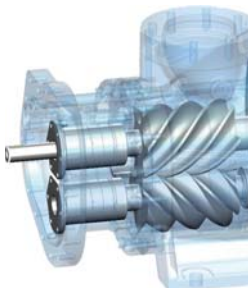
Motor

- Specially adopted materials are used to make it applicable to ammonia;
- Permanent Magnet synchronous variable frequency motors with a high power factor increase efficiency and flexibility;
- Controlled by an inverter the compressor can follow the load profile exactly and smoothly, thus saving energy especially during part load conditions.



Motor protection

- INT69 SNY module protects from excess temperature , reverse rotation and phase failure ;
- 6 PTC thermistors in series prevent motor burn out;
- Feedback of status and real-time monitoring are enabled during operation.



Bearing

- Multiple bearings are combined for perfect axial and radial compliance for high load at lowest wear and noise levels;
- Precision and wear resistant rolling bearing elements and a special profile result in a design life of 80,000 h.



Suction filter

With pores of 100 μm the suction filter removes contamination from the refrigerant and protects the system.

Rotor



- SRM "I" type patented profile with 5 + 7 gear ratio, results in high efficiency and smooth operation;
- The rotors are machined from high quality steel of high strength and wear resistance;
- Micrometer precision ensures tight sealing and smooth operation resulting in low noise and long service life;
- The maximum speed of up to 5,000 rpm is significantly increasing capacity and flexibility.



VI (Interior volume ratio)

- Vi-control guarantees best adaptation to the operating parameters for highest COP. It is available on SRS-14 to SRS-16 models.
- Manual Regulation is used to adapt infrequently to new conditions like for summer/winter mode or changing temperature levels in cold-rooms for different goods (rental warehouses).
- Automatic Regulation is perfectly suitable for frequently changing conditions like huge differences between day and night or climate chambers with multiple temperature simulations.



The suction and discharge shut-off valves are

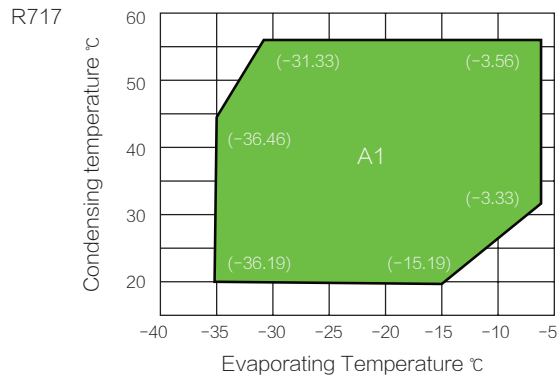
- 360 degree rotatable;
- side-changeable;
- compact and of low pressure drop => flexible and easy to integrate into systems.

Capacity regulator

- Stepped or step-less capacity regulation follows the load profile;
- The slide valve is installed between housing and rotor presenting a compact design with superior sealing performance.

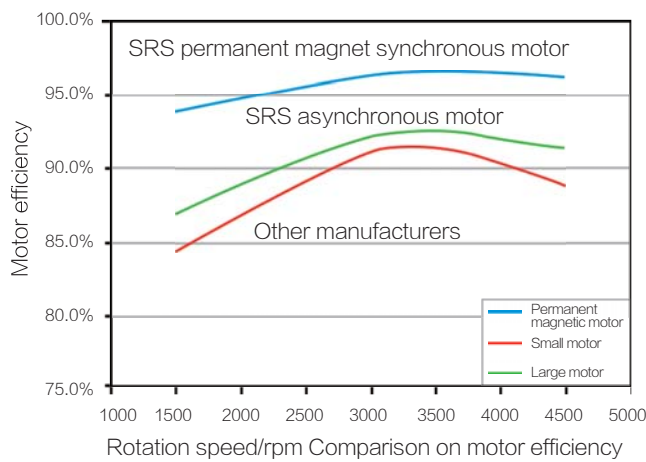


Working Conditions

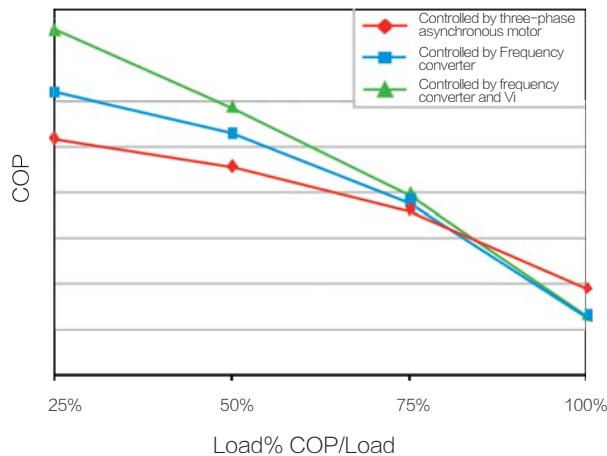


Energy-saving Analysis

Comparison on efficiency of permanent magnet synchronous motor and asynchronous motor:



Comparison on COP in different control ways:



SRS compressor performance data list

NH ₃	Cooling capacity [kW]					
	SRS 08S					
	Pe(bar)	1.90	2.36	2.91	3.55	
Pc(bar)	Tc	Te	-20	-15	-10	-5
8.57	20		42.3	52.3	64.0	77.6
10.03	25		40.7	50.8	63.0	76.5
11.67	30		39.2	49.2	60.8	74.5
13.51	35		37.2	47.6	58.8	72.2

NH ₃	Cooling capacity [kW]					
	SRS 08M					
	Pe(bar)	1.90	2.36	2.91	3.55	
Pc(bar)	Tc	Te	-20	-15	-10	-5
8.57	20		51.7	63.9	78.1	94.7
10.03	25		49.8	62.0	76.9	93.3
11.67	30		47.9	60.1	74.2	91.0
13.51	35		45.4	58.1	71.8	88.1

SRS compressor performance data list

NH ₃		Cooling capacity [kW]				
		SRS 08L				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		59.0	73.0	89.2	108.2
10.03	25		56.9	70.8	87.9	106.7
11.67	30		54.8	68.6	84.8	104.0
13.51	35		51.9	66.4	82.0	100.7

NH ₃		Cooling capacity [kW]				
		SRS 10S				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		69.9	86.4	105.6	128.1
10.03	25		67.3	83.8	104.0	126.2
11.67	30		64.8	81.2	100.4	123.1
13.51	35		61.4	78.6	97.1	119.1

NH ₃		Cooling capacity [kW]				
		SRS 10L				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		82.6	102.2	124.9	151.5
10.03	25		79.6	99.2	123.1	149.4
11.67	30		76.7	96.1	118.8	145.6
13.51	35		72.7	93.0	114.8	141.0

NH ₃		Cooling capacity [kW]				
		SRS 12S				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		103.3	127.8	156.2	189.4
10.03	25		99.5	124.0	153.8	186.7
11.67	30		95.8	120.1	148.5	182.0
13.51	35		90.9	116.2	143.6	176.2

NH ₃		Cooling capacity [kW]				
		SRS 12M				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		114.6	141.8	173.3	210.2
10.03	25		110.4	137.6	170.7	207.1
11.67	30		106.3	133.3	164.7	201.9
13.51	35		100.8	128.9	159.3	195.5

NH ₃		Cooling capacity [kW]				
		SRS 12L				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		125.4	155.2	189.6	230.0
10.03	25		120.8	150.6	186.8	226.7
11.67	30		116.3	145.9	180.3	221.0
13.51	35		110.3	141.1	174.3	213.9

NH ₃		Cooling capacity [kW]				
		SRS 14S				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		152.0	188.0	229.8	278.7
10.03	25		146.4	182.4	226.3	274.7
11.67	30		141.0	176.8	218.4	267.8
13.51	35		133.7	171.0	211.2	259.2

NH ₃		Cooling capacity [kW]				
		SRS 14M				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		168.2	208.1	254.3	308.5
10.03	25		162.1	201.9	250.5	304.0
11.67	30		156.0	195.6	241.8	296.4
13.51	35		148.0	189.2	233.8	286.9

NH ₃		Cooling capacity [kW]				
		SRS 14L				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		182.5	225.7	275.9	334.7
10.03	25		175.8	219.0	271.7	329.8
11.67	30		169.3	212.2	262.3	321.5
13.51	35		160.5	205.3	253.6	311.3

NH ₃		Cooling capacity [kW]				
		SRS 16S				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		206.6	255.5	312.3	378.9
10.03	25		199.0	248.0	307.6	373.4
11.67	30		191.6	240.3	300.3	370.2
13.51	35		181.7	232.4	287.1	356.8

NH ₃		Cooling capacity [kW]				
		SRS 16M				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		222.1	274.7	335.8	407.3
10.03	25		213.9	266.6	330.7	401.4
11.67	30		206.0	258.3	322.9	397.9
13.51	35		195.4	249.8	308.6	383.6

NH ₃		Cooling capacity [kW]				
		SRS 16L				
Pe(bar)	Tc	Te	1.90	2.36	2.91	3.55
Pc(bar)			-20	-15	-10	-5
8.57	20		246.0	304.2	371.8	451.0
10.03	25		236.9	295.2	366.2	444.5
11.67	30		228.1	286.0	357.5	440.7
13.51	35		216.4	276.7	341.8	424.8