Danfoss scroll compressors are available both as single compressors and as tandem units. The example below presents the single compressor nomenclature which equals the technical reference as shown on the compressor nameplate.

Code numbers for ordering list are in section "Ordering information & packaging".

For tandem and trio assemblies, please refer to the Danfoss Parallel Application Guidelines documentation FRCC.PC.005.

Nomenclature

Family, lubricant & refrigerant	Nominal capacity		Voltage	Version	Evolution index	
SZ	**185**	**-**	**4**	**R**	**C**	Single compressors
SY	**300**	**A**	**7**	**CA**	**A**	Single compressors

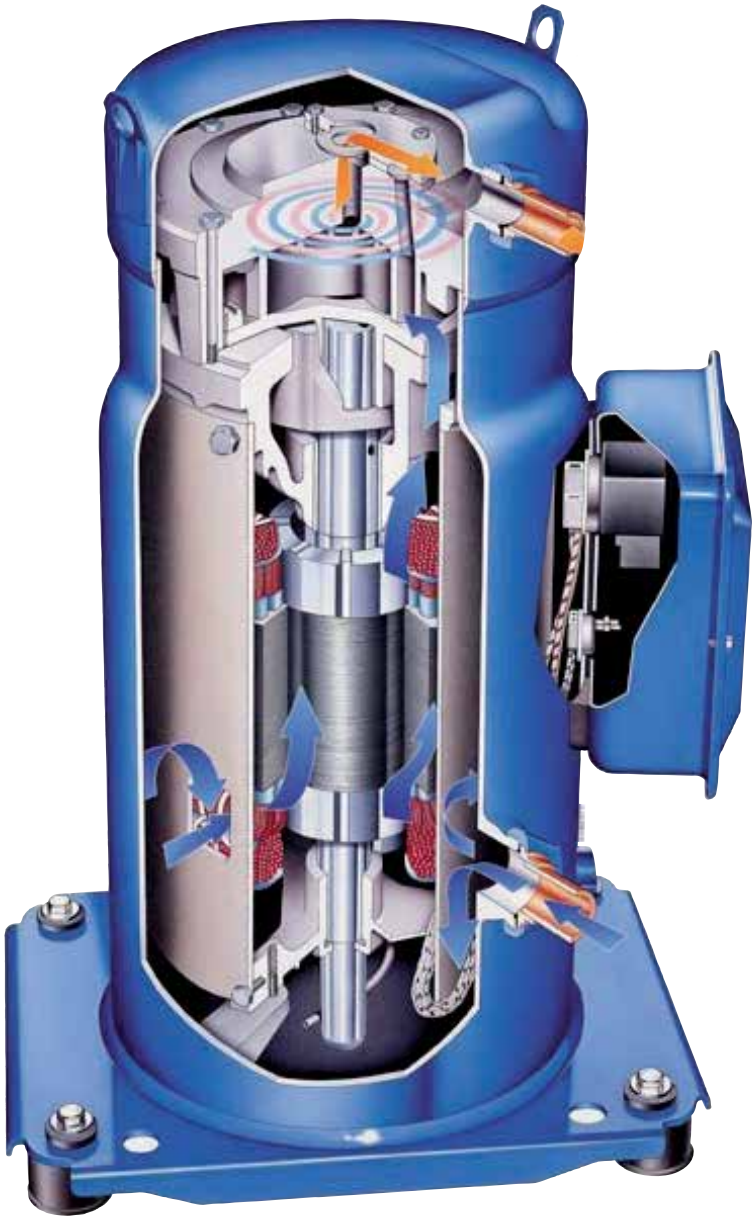
Family, lubricant & refrigerant
SM: Scroll, Mineral oil, R22/R417A*
SY: Scroll, POE lubricant, R22/R417A/ R407C/R134a/R513A**
SZ: Scroll, POE lubricant, R407C - R134a (R404A, R507A for SZ084 to SZ185, R513A for SZ148 to SZ185 **)

Nominal capacity
in thousand Btu/h at 60 Hz, R22, ARI conditions

Motor voltage code
3: 200-230V/3~/60 Hz
4: 380-400V/3~/50 Hz - 460V/3~/60 Hz
SY380: 380-415V/3~/50 Hz - 460V/3~/60 Hz
6: 230V/3~/50 Hz
7: 500V/3~/50 Hz - 575V/3~/60 Hz
9: 380V/3~/60 Hz
SY380: 380-400V/3~/60 Hz

Motor protection type		Connection	Module voltage	Applies to
Internal overload protector	**V**	: brazed		S 084-090-100-110-120-148-161
	A	: brazed		S 112-124-147
Internal thermostat	**C**	: brazed		S175-185
	R	: rotolock		
Electronic protection module	**P**	: brazed	24V AC	S 185
	X	: brazed	110-240V	
	Y	: rotolock	110-240V	
	CA	**C**: brazed	**A**: 24V AC	S 240 - 300
	CB		**B**: 110-240V	
	PA	**P**: rotolock	**A**: 24V AC	
	PB		**B**: 110-240V	
	CA	**C**: brazed	**A**: 24V AC	S 380
	CB		**B**: 110-240V	

* When SM compressors are used with R417A, the factory charged mineral oil 160P must be replaced by polyolester oil 160SZ
** Only motor voltage 4 are qualified with R513A

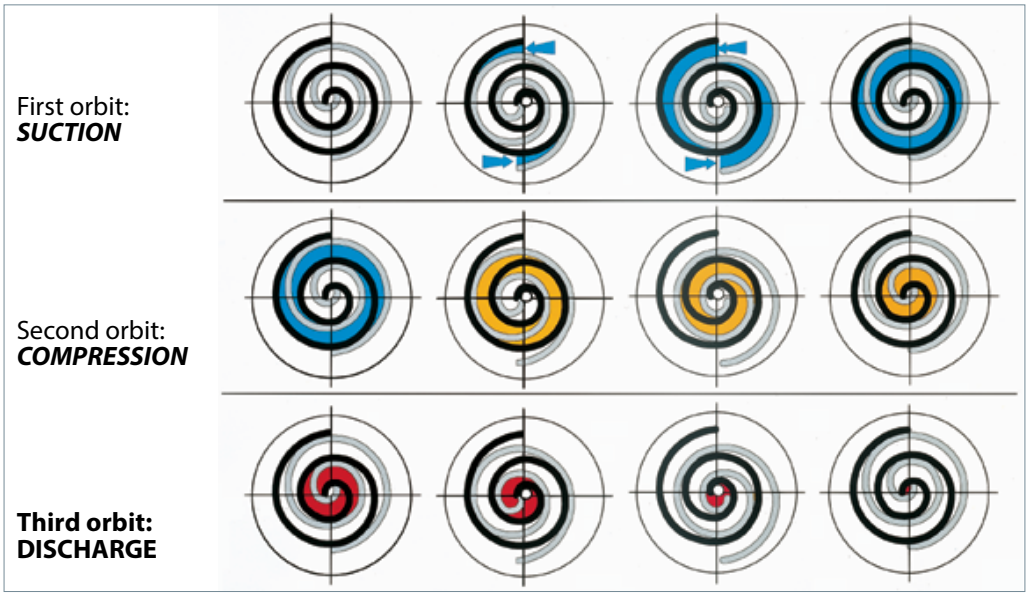


SM / SY / SZ 084-090-100-110-120-148-161-175-185-240-300-380

In a Danfoss SM / SY / SZ scroll compressor, the compression is performed by two scroll elements located in the upper part of the compressor.

Suction gas enters the compressor at the suction connection. As all of the gas flows around and through the electrical motor, thus ensuring complete motor cooling in all applications, oil droplets separate and fall into the oil sump. After exiting the electrical motor, the gas enters the scroll elements where compression takes place. Ultimately, the discharge gas leaves the compressor at the discharge connection.

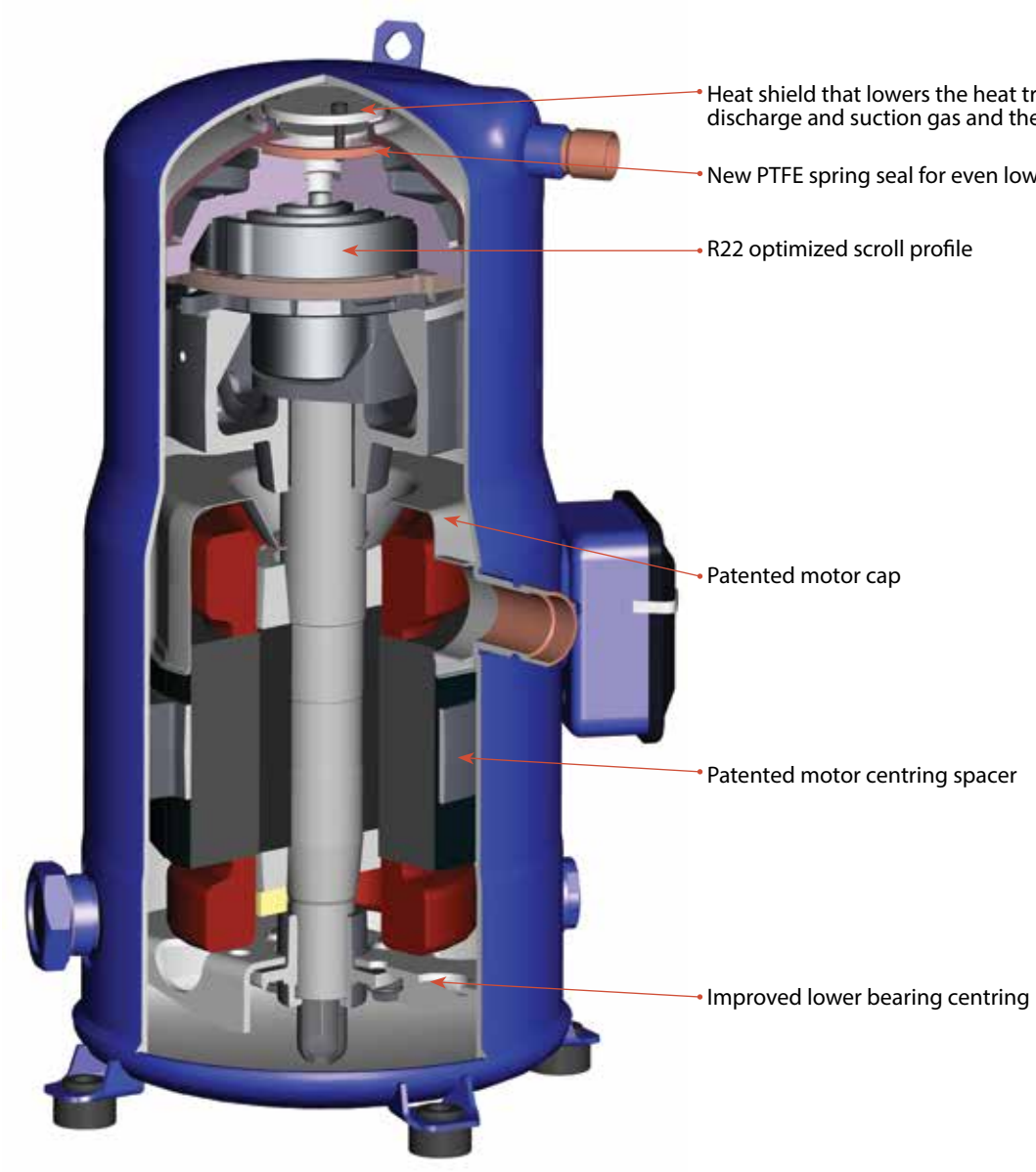
The figure below illustrates the entire compression process. The centre of the orbiting scroll (in grey) traces a circular path around the centre of the fixed scroll (in black). This movement creates symmetrical compression pockets between the two scroll elements. Low-pressure suction gas is trapped within each crescent-shaped pocket as it gets formed; continuous motion of the orbiting scroll serves to seal the pocket, which decreases in volume as the pocket moves towards the centre of the scroll set increasing the gas pressure. Maximum compression is achieved once a pocket reaches the centre where the discharge port is located; this stage occurs after three complete orbits. Compression is a continuous process: the scroll movement is suction, compression and discharge all at the same time.



In addition to the existing SM range compressors previously available, Danfoss is completing its range with 3 compressors.

The new SM112-124 and SM/SZ147 compressors benefit from a further improved design to achieve the highest efficiency.

- Gas circulation, motor cooling and oil behaviour are improved by a new patented motor cap design.
- Part protection and assembly reduces internal leaks and increases life durability.
- Improved part isolation reduces greatly acoustic levels.
- Gas intake design induces higher resistance to liquid slugging.



SM 112-124 - SM/SZ147

For regular updates and detailed capacities, please refer to **Coolselector®2** software

SM-SY Single

Compressor model	Connections	Motor protection	Code no.		
			3	4	9
			200-230V/3/60Hz	460V/3/60Hz 380-400V/3/50Hz	380V/3/60Hz
SM084	Brazed	Internal	-	SM084-4VI	-
SM090	Brazed	Internal	SM090-3VI	SM090-4VI	-
SM100	Brazed	Internal	SM100-3VI	SM100-4VI	SM100-9VI
SM110	Brazed	Internal	SM110-3VI	SM110-4VI	SM110-9VI
SM112	Brazed	Internal	-	120H0611	-
SM120	Brazed	Internal	SM120-3VI	SM120-4VI	SM120-9VI
SM124	Brazed	Internal	120H0183	120H0185	120H0187
SM147	Brazed	Internal	120H0189	120H0191	120H0197
SM148	Brazed	Internal	SM148-3VAI	SM148-4VAI	SM148-9VAI
SM161	Brazed	Internal	SM161-3VAI	SM161-4VAI	SM161-9VAI
SM175	Brazed	Thermostat	SM175-3CAI	SM175-4CAI	-
	Rotolock	Thermostat	-	SM175-4RI	-
SM185	Brazed	Thermostat	SM185-3CAI	SM185-4CAI	SM185-9CAI
	Brazed	Module 24V AC	-	SM185-4PCI	-
	Brazed	Module 110-240V AC	-	-	-
	Rotolock	Thermostat	SM185-3RI	SM185-4RI	SM185-9RI
	Rotolock	Module 110-240V AC	-	SM185-4YCI	SM185-9YCI
SY185	Brazed	Thermostat	-	SY185-4CAI	-
	Rotolock	Thermostat	-	SY185-4RI	-
SY240	Brazed	Module 24V AC	-	SY240A4CAI	-
	Brazed	Module 110-240V AC	SY240A3CBI	SY240A4CBI	SY240A9CBI
	Rotolock	Module 24V AC	-	SY240A4PAI	-
	Rotolock	Module 110-240V AC	-	SY240A4PBI	-
SY300	Brazed	Module 24V AC	-	SY300A4CAI	-
	Brazed	Module 110-240V AC	SY300A3CBI	SY300A4CBI	SY300A9CBI
	Rotolock	Module 24V AC	-	SY300A4PAI	-
	Rotolock	Module 110-240V AC	-	SY300A4PBI	-
SY380	Brazed	Module 24V AC	-	SY380A4CAI	-
	Brazed	Module 110-240V AC	-	SY380A4CBI	120H1115