

Datasheets

Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



General Characteristics

Model number (on compressor nameplate)		SZ147A4ALB
Code number for Singlepack*		120H1096
Code number for Industrial pack**		120H1097
Drawing number		8560072b
Suction and discharge connections		Brazed
Suction connection		1-3/8" ODF
Discharge connection		7/8" ODF
Oil sight glass		Threaded
Oil equalisation connection		1-3/4" Rotolock
Oil drain connection		None
LP gauge port		Schrader
IPR valve		None
Swept volume		193,5 cm ³ /rev
Displacement @ Nominal speed		33.7 m ³ /h @ 2900 rpm - 40.6 m ³ /h @ 3500 rpm
Net weight		67 kg
Oil charge		3,3 litre, POE - 160SZ
Maximum system test pressure Low Side / High side		25 bar(g) / 32 bar(g)
Maximum differential test pressure		24 bar
Maximum number of starts per hour		12
Refrigerant charge limit		7,9 kg
Approved refrigerants		R407C

Electrical Characteristics

Nominal voltage	380-400V/3/50Hz - 460V/3/60Hz
Voltage range	340-440 V @ 50Hz - 414-506 V @ 60Hz
Winding resistance (between phases) +/- 7% at 25°C	0.92 Ω
Rated Load Amps (RLA)	20.7 A
Maximum Continuous Current (MCC)	29 A
Locked Rotor Amps (LRA)	147 A
Motor protection	Internal overload protector

Recommended Installation torques

Oil sight glass	50 Nm
Power connections / Earth connection	3 Nm / 2 Nm
Mounting bolts	15 Nm

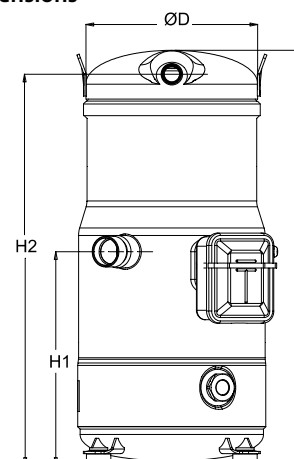
Parts shipped with compressor

Mounting kit with grommets, bolts, nuts, sleeves and washers
Initial oil charge
Installation instructions

Approvals : CE certified, UL certified (file SA6873), -

*Singlepack: Compressor in cardboard box

**Industrial pack: 8 Unboxed compressors on pallet (order per multiples of 8)

Dimensions


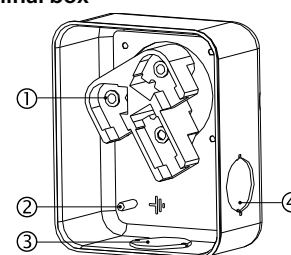
D=243 mm

H=542,5 mm

H1=277,8 mm

H2=508,8 mm

H3= mm

Terminal box


IP54 (with cable gland)

1: Power connection, 3 x 4.8 mm (3/16")

2: Earth M4-12

3: Knock-out Ø 29 mm (1.14")

4: Knock-out Ø 25.5 mm (1.00")

Rotolock accessories, suction side
Code no.

Solder sleeve, P10 (1-3/4" Rotolock, 1-3/8" ODF)	8153003
Rotolock valve, V10 (1-3/4" Rotolock, 1-3/8" ODF)	8168022
Gasket, 1-3/4"	8156132

Rotolock accessories, discharge side
Code no.

Rotolock valve, V05 (1-1/4" Rotolock, 7/8" ODF)	8168030
Gasket, 1-3/4"	8156132

Rotolock accessories, sets
Code no.

Solder sleeve adapter set (1-3/4" Rotolock, 1-3/8" ODF), (1-1/4" Rotolock, 7/8" ODF)	120Z0405
Valve set, V10 (1-3/4"~1-3/8"), V05 (1-1/4"~7/8")	7703392
Gasket set, 1-1/4", 1-3/4", 2-1/4", OSG gaskets black & white	8156013

Oil / lubricants
Code no.

POE lubricant, 160SZ, 1 litre can	7754023
POE lubricant, 160SZ, 2.5 litre can	120Z0571

Crankcase heaters
Code no.

Surface sump heater, 80 W, 24 V, CE mark, UL	120Z0388
Surface sump heater, 80 W, 230 V, CE mark, UL	120Z0389
Surface sump heater, 80 W, 400 V, CE mark, UL	120Z0390
Surface sump heater, 80 W, 460 V, CE mark, UL	120Z0391

Miscellaneous accessories
Code no.

Acoustic hood for scroll compressor SH105-161 & SM124, SM147	120Z0035
Gasket, 1-3/4"	8156132
Discharge thermostat kit	7750009

Spare parts
Code no.

Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	120Z0066
Oil sight glass with gaskets (black & white)	8156019
Gasket for oil sight glass (white teflon)	8156129
Service kit for terminal box 96 x 115 mm, including 1 cover, 1 clamp	8156135
T block connector 52 x 57 mm	8173230

Performance data at 50 Hz, EN 12900 rating conditions
R407C

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	13 752	17 292	21 499	26 466	32 282	39 040	46 832	55 750	-
35	12 975	16 383	20 418	25 172	30 736	37 201	44 658	53 200	-
40	12 180	15 442	19 291	23 819	29 116	35 273	42 381	50 532	-
45	-	14 473	18 123	22 411	27 428	33 263	40 007	47 753	-
50	-	-	16 919	20 953	25 674	31 173	37 540	44 864	-
55	-	-	-	19 448	23 860	29 008	34 981	41 870	-
60	-	-	-	-	21 988	26 769	32 333	38 768	-
65	-	-	-	-	20 055	24 454	29 591	35 555	-

Power input in W

30	5 566	5 533	5 578	5 681	5 823	5 983	6 143	6 283	-
35	6 374	6 287	6 290	6 365	6 490	6 648	6 818	6 981	-
40	7 270	7 117	7 067	7 102	7 201	7 345	7 514	7 689	-
45	-	8 061	7 948	7 932	7 993	8 112	8 269	8 444	-
50	-	-	8 971	8 893	8 905	8 988	9 122	9 287	-
55	-	-	-	10 024	9 977	10 012	10 112	10 257	-
60	-	-	-	-	11 246	11 224	11 279	11 391	-
65	-	-	-	-	12 753	12 662	12 660	12 729	-

Current consumption in A

30	13.26	13.34	13.44	13.56	13.69	13.84	14.01	14.20	-
35	13.94	14.00	14.07	14.17	14.28	14.41	14.55	14.72	-
40	14.75	14.79	14.85	14.92	15.01	15.11	15.24	15.39	-
45	-	15.75	15.78	15.83	15.90	15.99	16.10	16.22	-
50	-	-	16.90	16.94	16.99	17.06	17.14	17.25	-
55	-	-	-	18.26	18.29	18.34	18.41	18.50	-
60	-	-	-	-	19.83	19.86	19.92	19.99	-
65	-	-	-	-	21.64	21.66	21.69	21.75	-

Mass flow in kg/h

30	289	358	438	531	638	760	900	1 058	-
35	286	356	436	528	635	757	896	1 054	-
40	283	352	432	525	631	753	891	1 048	-
45	-	349	429	520	626	747	884	1 040	-
50	-	-	424	515	620	740	876	1 031	-
55	-	-	-	509	613	732	867	1 020	-
60	-	-	-	-	605	723	856	1 008	-
65	-	-	-	-	597	712	845	995	-

Coefficient of performance (C.O.P.)

30	2.47	3.13	3.85	4.66	5.54	6.52	7.62	8.87	-
35	2.04	2.61	3.25	3.96	4.74	5.60	6.55	7.62	-
40	1.68	2.17	2.73	3.35	4.04	4.80	5.64	6.57	-
45	-	1.80	2.28	2.83	3.43	4.10	4.84	5.66	-
50	-	-	1.89	2.36	2.88	3.47	4.12	4.83	-
55	-	-	-	1.94	2.39	2.90	3.46	4.08	-
60	-	-	-	-	1.96	2.38	2.87	3.40	-
65	-	-	-	-	1.57	1.93	2.34	2.79	-

Nominal performance at to = 5 °C, tc = 50 °C

Cooling capacity	31 173	W
Power input	8 988	W
Current consumption	17.06	A
Mass flow	740	kg/h
C.O.P.	3.47	

Pressure switch settings

Maximum HP switch setting	29.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1	bar(g)

Sound power data

Sound power level	77	dB(A)
With acoustic hood	69	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 10 K , Subcooling = 0 K

All performance data +/- 5%

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Performance data at 50 Hz, ARI rating conditions
R407C

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-20	-15	-10	-5	0	5	10	15

Cooling capacity in W

30	14 749	18 525	23 006	28 290	34 472	41 648	49 913	59 363	-
35	13 984	17 634	21 951	27 029	32 966	39 856	47 796	56 881	-
40	13 201	16 712	20 849	25 709	31 386	37 977	45 578	54 284	-
45	-	15 764	19 708	24 335	29 740	36 018	43 266	51 578	-
50	-	-	18 533	22 914	28 032	33 983	40 864	48 771	-
55	-	-	-	21 451	26 268	31 880	38 381	45 866	-
60	-	-	-	-	24 456	29 713	35 820	42 871	-
65	-	-	-	-	22 600	27 489	33 188	39 792	-

Power input in W

30	5 566	5 533	5 578	5 681	5 823	5 983	6 143	6 283	-
35	6 374	6 287	6 290	6 365	6 490	6 648	6 818	6 981	-
40	7 270	7 117	7 067	7 102	7 201	7 345	7 514	7 689	-
45	-	8 061	7 948	7 932	7 993	8 112	8 269	8 444	-
50	-	-	8 971	8 893	8 905	8 988	9 122	9 287	-
55	-	-	-	10 024	9 977	10 012	10 112	10 257	-
60	-	-	-	-	11 246	11 224	11 279	11 391	-
65	-	-	-	-	12 753	12 662	12 660	12 729	-

Current consumption in A

30	13.26	13.34	13.44	13.56	13.69	13.84	14.01	14.20	-
35	13.94	14.00	14.07	14.17	14.28	14.41	14.55	14.72	-
40	14.75	14.79	14.85	14.92	15.01	15.11	15.24	15.39	-
45	-	15.75	15.78	15.83	15.90	15.99	16.10	16.22	-
50	-	-	16.90	16.94	16.99	17.06	17.14	17.25	-
55	-	-	-	18.26	18.29	18.34	18.41	18.50	-
60	-	-	-	-	19.83	19.86	19.92	19.99	-
65	-	-	-	-	21.64	21.66	21.69	21.75	-

Mass flow in kg/h

30	288	356	436	528	634	756	895	1 052	-
35	285	354	433	526	631	753	891	1 047	-
40	282	351	430	522	627	748	886	1 042	-
45	-	347	426	518	622	742	879	1 034	-
50	-	-	422	512	616	736	871	1 025	-
55	-	-	-	506	609	727	862	1 014	-
60	-	-	-	-	602	718	851	1 002	-
65	-	-	-	-	593	708	840	989	-

Coefficient of performance (C.O.P.)

30	2.65	3.35	4.12	4.98	5.92	6.96	8.12	9.45	-
35	2.19	2.80	3.49	4.25	5.08	6.00	7.01	8.15	-
40	1.82	2.35	2.95	3.62	4.36	5.17	6.07	7.06	-
45	-	1.96	2.48	3.07	3.72	4.44	5.23	6.11	-
50	-	-	2.07	2.58	3.15	3.78	4.48	5.25	-
55	-	-	-	2.14	2.63	3.18	3.80	4.47	-
60	-	-	-	-	2.17	2.65	3.18	3.76	-
65	-	-	-	-	1.77	2.17	2.62	3.13	-

Nominal performance at to = 7.2 °C, tc = 54.4 °C

Cooling capacity	34 901	W
Power input	9 920	W
Current consumption	18.20	A
Mass flow	786	kg/h
C.O.P.	3.52	

Pressure switch settings

Maximum HP switch setting	29.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1	bar(g)

Sound power data

Sound power level	77	dB(A)
With acoustic hood	69	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

All performance data +/- 5%

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