



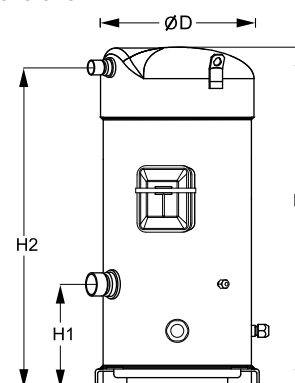
Datasheets

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



General Characteristics

Model number (on compressor nameplate)		SZ148T4VC
Code number for Singlepack*		SZ148-4VAI
Code number for Industrial pack**		SZ148-4VAM
Drawing number		8551106b
Suction and discharge connections		Brazed
Suction connection		1-3/8" ODF
Discharge connection		7/8" ODF
Oil sight glass		Threaded
Oil equalisation connection		3/8" flare SAE
Oil drain connection		None
LP gauge port		Schrader
IPR valve		None
Swept volume	199 cm ³ /rev	
Displacement @ Nominal speed	34.6 m ³ /h @ 2900 rpm - 41.8 m ³ /h @ 3500 rpm	
Net weight	88 kg	
Oil charge	3,6 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	12,5 kg	
Approved refrigerants	R407C, R134a, R404A, R507A	

Dimensions


D=266 mm

H=591 mm

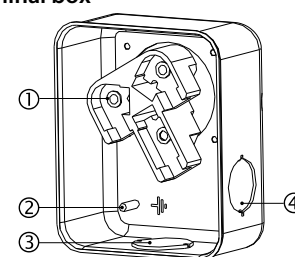
H1=180 mm

H2=556 mm

H3=- mm

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	0.94 Ω
Rated Load Amps (RLA)	22.9 A
Maximum Continuous Current (MCC)	32 A
Locked Rotor Amps (LRA)	145 A
Motor protection	Internal overload protector

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")

Recommended Installation torques

Oil sight glass	50 Nm
Power connections / Earth connection	3 Nm / 2 Nm
Mounting bolts	21 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: 6 Unboxed compressors on pallet (order per multiples of 6)

Rotolock accessories, suction side
Code no.

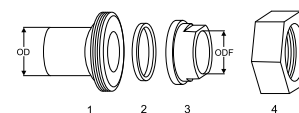
Solder sleeve, P10 (1-3/4" Rotolock, 1-3/8" ODF)	8153003
Rotolock valve, V10 (1-3/4" Rotolock, 1-3/8" ODF)	8168022
Gasket, 1-3/4"	8156132

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)	7765006
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

Solder sleeve adapter set


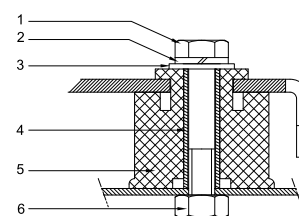
- 1: Rotolock adapter (Suc & Dis)
 2: Gasket (Suc & Dis)
 3: Solder sleeve (Suc & Dis)
 4: Rotolock nut (Suc & Dis)

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 + bottom insulation, 48 W, 24 V, CE mark, UL	120Z0361
Surface sump heater + bottom insulation, 48 W, 230 V, CE mark, UL	120Z0380
Surface sump heater + bottom insulation, 48 W, 400 V, CE mark, UL	120Z0381
Surface sump heater + bottom insulation, 48 W, 460 V, CE mark, UL	120Z0382
Belt type crankcase heater, 65 W, 460 V, CE mark, UL	120Z0466
Belt type crankcase heater, 65 W, 230 V, CE mark, UL	7773107
Belt type crankcase heater, 65 W, 400 V, CE mark, UL	7773117
Belt type crankcase heater, 65 W, 400 V, CE mark, UL	120Z0039

Mounting kit


- 1: Bolt (4x)
 2: Lock washer (4x)
 3: Flat washer (4x)
 4: Sleeve (4x)
 5: Grommet (4x)
 6: Nut (4x)

Miscellaneous accessories
Code no.

Electronic soft start kit, MCI 25 C	7705007
Acoustic hood for scroll compressor S148-S161 (except code 3)	7755017
Bottom insulation for scroll compressor	120Z0356
Discharge thermostat kit	7750009

Spare parts
Code no.

Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	8156138
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	13 293	16 939	21 273	26 388	32 377	39 332	47 346	56 513	-
35	12 479	16 003	20 173	25 084	30 827	37 496	45 183	53 981	-
40	11 633	15 017	19 007	23 697	29 178	35 544	42 887	51 301	-
45	-	13 990	17 783	22 235	27 438	33 485	40 468	48 480	-
50	-	-	16 510	20 708	25 616	31 326	37 932	45 527	-
55	-	-	-	19 122	23 719	29 077	35 290	42 450	-
60	-	-	-	-	21 756	26 745	32 549	39 258	-
65	-	-	-	-	19 736	24 340	29 716	35 959	-

Power input in W

30	6 183	6 230	6 268	6 303	6 338	6 378	6 427	6 490	-
35	6 922	6 974	7 015	7 049	7 079	7 111	7 149	7 196	-
40	7 748	7 808	7 852	7 885	7 912	7 936	7 962	7 995	-
45	-	8 749	8 797	8 830	8 854	8 871	8 887	8 906	-
50	-	-	9 870	9 904	9 924	9 935	9 942	9 947	-
55	-	-	-	11 124	11 142	11 147	11 144	11 137	-
60	-	-	-	-	12 526	12 526	12 514	12 495	-
65	-	-	-	-	14 094	14 090	14 070	14 039	-

Current consumption in A

30	13.32	13.38	13.44	13.49	13.55	13.61	13.69	13.79	-
35	14.13	14.20	14.25	14.30	14.34	14.38	14.42	14.48	-
40	15.06	15.15	15.20	15.25	15.27	15.30	15.32	15.35	-
45	-	16.25	16.32	16.37	16.39	16.40	16.40	16.40	-
50	-	-	17.63	17.68	17.71	17.72	17.70	17.68	-
55	-	-	-	19.23	19.26	19.27	19.25	19.22	-
60	-	-	-	-	21.08	21.09	21.07	21.03	-
65	-	-	-	-	23.18	23.21	23.19	23.15	-

Mass flow in kg/h

30	279	351	434	530	640	766	910	1 073	-
35	275	347	431	527	637	763	907	1 069	-
40	270	343	426	522	632	758	902	1 064	-
45	-	337	420	516	626	752	895	1 056	-
50	-	-	414	509	619	744	886	1 046	-
55	-	-	-	501	609	734	875	1 035	-
60	-	-	-	-	599	722	862	1 021	-
65	-	-	-	-	587	709	848	1 005	-

Coefficient of performance (C.O.P.)

30	2.15	2.72	3.39	4.19	5.11	6.17	7.37	8.71	-
35	1.80	2.29	2.88	3.56	4.35	5.27	6.32	7.50	-
40	1.50	1.92	2.42	3.01	3.69	4.48	5.39	6.42	-
45	-	1.60	2.02	2.52	3.10	3.77	4.55	5.44	-
50	-	-	1.67	2.09	2.58	3.15	3.82	4.58	-
55	-	-	-	1.72	2.13	2.61	3.17	3.81	-
60	-	-	-	-	1.74	2.14	2.60	3.14	-
65	-	-	-	-	1.40	1.73	2.11	2.56	-

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

Cooling capacity	31 326	W
Power input	9 935	W
Current consumption	17.72	A
Mass flow	744	kg/h
C.O.P.	3.15	

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	79	dB(A)
With acoustic hood	71	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	14 257	18 146	22 764	28 207	34 573	41 959	50 461	60 175	-
35	13 450	17 225	21 687	26 934	33 063	40 172	48 358	57 716	-
40	12 608	16 252	20 542	25 576	31 453	38 269	46 122	55 110	-
45	-	15 237	19 339	24 144	29 751	36 258	43 764	52 364	-
50	-	-	18 085	22 645	27 968	34 150	41 292	49 491	-
55	-	-	-	21 091	26 113	31 956	38 719	46 502	-
60	-	-	-	-	24 198	29 687	36 059	43 413	-
65	-	-	-	-	22 240	27 361	33 329	40 243	-

Power input in W

30	6 183	6 230	6 268	6 303	6 338	6 378	6 427	6 490	-
35	6 922	6 974	7 015	7 049	7 079	7 111	7 149	7 196	-
40	7 748	7 808	7 852	7 885	7 912	7 936	7 962	7 995	-
45	-	8 749	8 797	8 830	8 854	8 871	8 887	8 906	-
50	-	-	9 870	9 904	9 924	9 935	9 942	9 947	-
55	-	-	-	11 124	11 142	11 147	11 144	11 137	-
60	-	-	-	-	12 526	12 526	12 514	12 495	-
65	-	-	-	-	14 094	14 090	14 070	14 039	-

Current consumption in A

30	13.32	13.38	13.44	13.49	13.55	13.61	13.69	13.79	-
35	14.13	14.20	14.25	14.30	14.34	14.38	14.42	14.48	-
40	15.06	15.15	15.20	15.25	15.27	15.30	15.32	15.35	-
45	-	16.25	16.32	16.37	16.39	16.40	16.40	16.40	-
50	-	-	17.63	17.68	17.71	17.72	17.70	17.68	-
55	-	-	-	19.23	19.26	19.27	19.25	19.22	-
60	-	-	-	-	21.08	21.09	21.07	21.03	-
65	-	-	-	-	23.18	23.21	23.19	23.15	-

Mass flow in kg/h

30	278	349	431	527	636	762	904	1 066	-
35	274	346	428	524	633	759	901	1 063	-
40	269	341	424	519	629	754	896	1 057	-
45	-	335	418	513	623	748	889	1 050	-
50	-	-	411	506	615	739	880	1 040	-
55	-	-	-	498	606	729	870	1 028	-
60	-	-	-	-	596	718	857	1 014	-
65	-	-	-	-	584	705	843	998	-

Coefficient of performance (C.O.P.)

30	2.31	2.91	3.63	4.48	5.45	6.58	7.85	9.27	-
35	1.94	2.47	3.09	3.82	4.67	5.65	6.76	8.02	-
40	1.63	2.08	2.62	3.24	3.98	4.82	5.79	6.89	-
45	-	1.74	2.20	2.73	3.36	4.09	4.92	5.88	-
50	-	-	1.83	2.29	2.82	3.44	4.15	4.98	-
55	-	-	-	1.90	2.34	2.87	3.47	4.18	-
60	-	-	-	-	1.93	2.37	2.88	3.47	-
65	-	-	-	-	1.58	1.94	2.37	2.87	-

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

Cooling capacity	35 100	W
Power input	10 993	W
Current consumption	19.06	A
Mass flow	790	kg/h
C.O.P.	3.19	

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	79	dB(A)
With acoustic hood	71	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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Performance data at 50 Hz, EN 12900 rating conditions
R134a

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

Cooling capacity in W

35	10 345	13 277	16 793	20 972	25 890	31 626	38 256	-	-
40	9 677	12 462	15 794	19 752	24 413	29 855	36 154	-	-
45	9 020	11 658	14 808	18 546	22 951	28 099	34 069	-	-
50	8 371	10 864	13 832	17 351	21 500	26 356	31 997	-	-
55	-	10 075	12 862	16 163	20 058	24 623	29 936	-	-
60	-	-	11 895	14 980	18 621	22 896	27 881	-	-
65	-	-	-	13 797	17 186	21 171	25 831	-	-
70	-	-	-	12 613	15 750	19 447	23 781	-	-

Power input in W

35	5 013	5 020	5 021	5 018	5 015	5 015	5 021	-	-
40	5 600	5 606	5 609	5 610	5 613	5 621	5 637	-	-
45	6 230	6 236	6 240	6 245	6 254	6 270	6 297	-	-
50	6 922	6 928	6 934	6 943	6 958	6 982	7 018	-	-
55	-	7 703	7 710	7 723	7 743	7 776	7 822	-	-
60	-	-	8 588	8 604	8 631	8 671	8 728	-	-
65	-	-	-	9 607	9 639	9 688	9 754	-	-
70	-	-	-	10 750	10 789	10 845	10 922	-	-

Current consumption in A

35	13.00	13.00	12.99	12.98	13.01	13.09	13.27	-	-
40	13.53	13.54	13.52	13.49	13.49	13.54	13.66	-	-
45	14.13	14.16	14.14	14.11	14.09	14.11	14.19	-	-
50	14.82	14.87	14.87	14.84	14.81	14.81	14.87	-	-
55	-	15.70	15.72	15.71	15.68	15.67	15.71	-	-
60	-	-	16.70	16.71	16.70	16.70	16.72	-	-
65	-	-	-	17.88	17.89	17.90	17.92	-	-
70	-	-	-	19.21	19.26	19.29	19.32	-	-

Mass flow in kg/h

35	251	316	391	478	579	693	824	-	-
40	248	312	386	473	572	686	815	-	-
45	244	308	382	468	566	678	806	-	-
50	241	304	378	462	560	671	798	-	-
55	-	300	373	458	554	664	789	-	-
60	-	-	369	453	548	658	781	-	-
65	-	-	-	448	543	651	774	-	-
70	-	-	-	444	538	645	766	-	-

Coefficient of performance (C.O.P.)

35	2.06	2.64	3.34	4.18	5.16	6.31	7.62	-	-
40	1.73	2.22	2.82	3.52	4.35	5.31	6.41	-	-
45	1.45	1.87	2.37	2.97	3.67	4.48	5.41	-	-
50	1.21	1.57	1.99	2.50	3.09	3.78	4.56	-	-
55	-	1.31	1.67	2.09	2.59	3.17	3.83	-	-
60	-	-	1.39	1.74	2.16	2.64	3.19	-	-
65	-	-	-	1.44	1.78	2.19	2.65	-	-
70	-	-	-	1.17	1.46	1.79	2.18	-	-

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

Cooling capacity	21 500	W
Power input	6 958	W
Current consumption	14.81	A
Mass flow	560	kg/h
C.O.P.	3.09	

Pressure switch settings

Maximum HP switch setting	20.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	0.5	bar(g)

Sound power data

Sound power level	0	dB(A)
With acoustic hood	0	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
R134a

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

Cooling capacity in W

35	11 205	14 356	18 128	22 604	27 864	33 988	41 057	-	-
40	10 538	13 545	17 136	21 393	26 398	32 231	38 973	-	-
45	9 884	12 748	16 159	20 199	24 950	30 493	36 909	-	-
50	9 239	11 961	15 193	19 018	23 517	28 772	34 863	-	-
55	-	11 182	14 238	17 848	22 097	27 065	32 834	-	-
60	-	-	13 289	16 688	20 688	25 372	30 822	-	-
65	-	-	-	15 536	19 290	23 693	28 826	-	-
70	-	-	-	14 393	17 905	22 030	26 851	-	-

Power input in W

35	5 013	5 020	5 021	5 018	5 015	5 015	5 021	-	-
40	5 600	5 606	5 609	5 610	5 613	5 621	5 637	-	-
45	6 230	6 236	6 240	6 245	6 254	6 270	6 297	-	-
50	6 922	6 928	6 934	6 943	6 958	6 982	7 018	-	-
55	-	7 703	7 710	7 723	7 743	7 776	7 822	-	-
60	-	-	8 588	8 604	8 631	8 671	8 728	-	-
65	-	-	-	9 607	9 639	9 688	9 754	-	-
70	-	-	-	10 750	10 789	10 845	10 922	-	-

Current consumption in A

35	13.00	13.00	12.99	12.98	13.01	13.09	13.27	-	-
40	13.53	13.54	13.52	13.49	13.49	13.54	13.66	-	-
45	14.13	14.16	14.14	14.11	14.09	14.11	14.19	-	-
50	14.82	14.87	14.87	14.84	14.81	14.81	14.87	-	-
55	-	15.70	15.72	15.71	15.68	15.67	15.71	-	-
60	-	-	16.70	16.71	16.70	16.70	16.72	-	-
65	-	-	-	17.88	17.89	17.90	17.92	-	-
70	-	-	-	19.21	19.26	19.29	19.32	-	-

Mass flow in kg/h

35	250	314	389	476	576	690	819	-	-
40	246	310	384	470	569	682	810	-	-
45	243	306	380	465	563	675	802	-	-
50	240	303	376	460	557	668	793	-	-
55	-	299	372	455	551	661	785	-	-
60	-	-	368	451	546	654	777	-	-
65	-	-	-	446	540	648	769	-	-
70	-	-	-	442	535	641	762	-	-

Coefficient of performance (C.O.P.)

35	2.24	2.86	3.61	4.50	5.56	6.78	8.18	-	-
40	1.88	2.42	3.06	3.81	4.70	5.73	6.91	-	-
45	1.59	2.04	2.59	3.23	3.99	4.86	5.86	-	-
50	1.33	1.73	2.19	2.74	3.38	4.12	4.97	-	-
55	-	1.45	1.85	2.31	2.85	3.48	4.20	-	-
60	-	-	1.55	1.94	2.40	2.93	3.53	-	-
65	-	-	-	1.62	2.00	2.45	2.96	-	-
70	-	-	-	1.34	1.66	2.03	2.46	-	-

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

Cooling capacity	24 373	W
Power input	7 656	W
Current consumption	15.56	A
Mass flow	598	kg/h
C.O.P.	3.18	

Pressure switch settings

Maximum HP switch setting	20.5	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	0.5	bar(g)

Sound power data

Sound power level	0	dB(A)
With acoustic hood	0	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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