



Datasheets

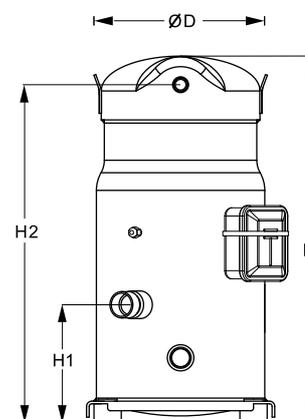
Danfoss scroll compressors  
**SM / SY / SZ / SH / WSH**



**General Characteristics**

Model number (on compressor nameplate)		<b>SZ120S4VC</b>
Code number for Singlepack*		SZ120-4VI
Code number for Industrial pack**		SZ120-4VM
Drawing number		8552037b
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		166,6 cm <sup>3</sup> /rev
Displacement @ Nominal speed		29.0 m <sup>3</sup> /h @ 2900 rpm - 35.0 m <sup>3</sup> /h @ 3500 rpm
Net weight		73 kg
Oil charge		3,25 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		10 kg
Approved refrigerants		R407C, R134a, R404A, R507A

**Dimensions**

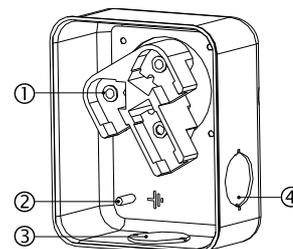


D=254 mm  
H=558 mm  
H1=178,4 mm  
H2=514,5 mm  
H3=- mm

**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	1.05 Ω
Rated Load Amps (RLA)	20.7 A
Maximum Continuous Current (MCC)	29 A
Locked Rotor Amps (LRA)	130 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: 8 Unboxed compressors on pallet (order per multiples of 8)

**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 + 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

**Miscellaneous accessories**

**Code no.**

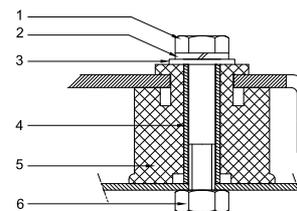
Electronic soft start kit, MCI 25 C	7705007
Soft start kit with statoric resistors, prewired box, SCR03	7705001
Acoustic hood for scroll compressor S110-S120	7755010
Bottom insulation for scroll compressor	120Z0356
Discharge thermostat kit	7750009

**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

**Mounting kit**



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

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	10 889	13 929	17 524	21 748	26 676	32 383	38 943	46 431	-
35	10 170	13 127	16 603	20 673	25 412	30 894	37 193	44 385	-
40	9 391	12 248	15 589	19 489	24 021	29 261	35 283	42 162	-
45	-	11 304	14 493	18 205	22 514	27 496	33 224	39 774	-
50	-	-	13 325	16 833	20 903	25 609	31 027	37 231	-
55	-	-	-	15 384	19 198	23 613	28 703	34 544	-
60	-	-	-	-	17 410	21 517	26 263	31 725	-
65	-	-	-	-	15 551	19 333	23 719	28 785	-

Power input in W

30	5 043	5 109	5 159	5 190	5 201	5 189	5 152	5 088	-
35	5 679	5 742	5 785	5 806	5 803	5 774	5 716	5 627	-
40	6 379	6 446	6 489	6 506	6 496	6 455	6 383	6 277	-
45	-	7 227	7 276	7 296	7 285	7 241	7 161	7 043	-
50	-	-	8 155	8 185	8 179	8 137	8 056	7 933	-
55	-	-	-	9 177	9 184	9 151	9 075	8 954	-
60	-	-	-	-	10 307	10 289	10 225	10 112	-
65	-	-	-	-	11 555	11 559	11 513	11 415	-

Current consumption in A

30	12.03	12.11	12.18	12.21	12.22	12.17	12.08	11.92	-
35	12.67	12.75	12.81	12.84	12.84	12.78	12.68	12.50	-
40	13.43	13.51	13.57	13.60	13.59	13.53	13.41	13.23	-
45	-	14.41	14.47	14.50	14.48	14.42	14.30	14.11	-
50	-	-	15.54	15.57	15.55	15.48	15.36	15.16	-
55	-	-	-	16.82	16.81	16.74	16.61	16.41	-
60	-	-	-	-	18.28	18.21	18.08	17.87	-
65	-	-	-	-	19.97	19.91	19.78	19.57	-

Mass flow in kg/h

30	229	289	357	436	527	631	748	881	-
35	224	285	354	434	525	629	746	879	-
40	218	280	349	429	521	624	742	874	-
45	-	273	343	423	514	617	735	867	-
50	-	-	334	414	505	608	724	856	-
55	-	-	-	403	493	596	711	842	-
60	-	-	-	-	479	581	696	825	-
65	-	-	-	-	463	563	677	804	-

Coefficient of performance (C.O.P.)

30	2.16	2.73	3.40	4.19	5.13	6.24	7.56	9.13	-
35	1.79	2.29	2.87	3.56	4.38	5.35	6.51	7.89	-
40	1.47	1.90	2.40	3.00	3.70	4.53	5.53	6.72	-
45	-	1.56	1.99	2.50	3.09	3.80	4.64	5.65	-
50	-	-	1.63	2.06	2.56	3.15	3.85	4.69	-
55	-	-	-	1.68	2.09	2.58	3.16	3.86	-
60	-	-	-	-	1.69	2.09	2.57	3.14	-
65	-	-	-	-	1.35	1.67	2.06	2.52	-

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

Cooling capacity	25 609	W
Power input	8 137	W
Current consumption	15.48	A
Mass flow	608	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	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	11 678	14 922	18 752	23 247	28 486	34 546	41 504	49 439	-
35	10 961	14 129	17 849	22 198	27 256	33 099	39 806	47 456	-
40	10 178	13 256	16 848	21 035	25 894	31 504	37 945	45 292	-
45	-	12 311	15 760	19 767	24 412	29 774	35 930	42 961	-
50	-	-	14 597	18 408	22 822	27 918	33 775	40 473	-
55	-	-	-	16 968	21 135	25 950	31 492	37 842	-
60	-	-	-	-	19 364	23 883	29 096	35 083	-
65	-	-	-	-	17 524	21 732	26 602	32 214	-

Power input in W

30	5 043	5 109	5 159	5 190	5 201	5 189	5 152	5 088	-
35	5 679	5 742	5 785	5 806	5 803	5 774	5 716	5 627	-
40	6 379	6 446	6 489	6 506	6 496	6 455	6 383	6 277	-
45	-	7 227	7 276	7 296	7 285	7 241	7 161	7 043	-
50	-	-	8 155	8 185	8 179	8 137	8 056	7 933	-
55	-	-	-	9 177	9 184	9 151	9 075	8 954	-
60	-	-	-	-	10 307	10 289	10 225	10 112	-
65	-	-	-	-	11 555	11 559	11 513	11 415	-

Current consumption in A

30	12.03	12.11	12.18	12.21	12.22	12.17	12.08	11.92	-
35	12.67	12.75	12.81	12.84	12.84	12.78	12.68	12.50	-
40	13.43	13.51	13.57	13.60	13.59	13.53	13.41	13.23	-
45	-	14.41	14.47	14.50	14.48	14.42	14.30	14.11	-
50	-	-	15.54	15.57	15.55	15.48	15.36	15.16	-
55	-	-	-	16.82	16.81	16.74	16.61	16.41	-
60	-	-	-	-	18.28	18.21	18.08	17.87	-
65	-	-	-	-	19.97	19.91	19.78	19.57	-

Mass flow in kg/h

30	228	287	355	434	524	627	744	876	-
35	223	283	352	432	522	625	742	874	-
40	217	278	348	427	518	621	737	869	-
45	-	271	341	420	511	614	730	861	-
50	-	-	332	412	502	604	720	850	-
55	-	-	-	401	490	592	707	837	-
60	-	-	-	-	476	577	691	820	-
65	-	-	-	-	460	560	673	800	-

Coefficient of performance (C.O.P.)

30	2.32	2.92	3.63	4.48	5.48	6.66	8.06	9.72	-
35	1.93	2.46	3.09	3.82	4.70	5.73	6.96	8.43	-
40	1.60	2.06	2.60	3.23	3.99	4.88	5.94	7.22	-
45	-	1.70	2.17	2.71	3.35	4.11	5.02	6.10	-
50	-	-	1.79	2.25	2.79	3.43	4.19	5.10	-
55	-	-	-	1.85	2.30	2.84	3.47	4.23	-
60	-	-	-	-	1.88	2.32	2.85	3.47	-
65	-	-	-	-	1.52	1.88	2.31	2.82	-

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

Cooling capacity	28 553	W
Power input	8 994	W
Current consumption	16.53	A
Mass flow	643	kg/h
C.O.P.	3.17	

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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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	8 715	11 130	13 982	17 317	21 181	25 619	30 677	-	-
40	8 163	10 493	13 239	16 449	20 169	24 443	29 317	-	-
45	7 585	9 816	12 446	15 520	19 082	23 180	27 859	-	-
50	6 981	9 103	11 604	14 529	17 923	21 833	26 304	-	-
55	-	8 353	10 713	13 478	16 692	20 402	24 652	-	-
60	-	-	9 776	12 368	15 390	18 887	22 904	-	-
65	-	-	-	11 201	14 018	17 289	21 060	-	-
70	-	-	-	9 978	12 577	15 609	19 120	-	-

Power input in W

35	4 013	4 041	4 061	4 071	4 069	4 053	4 020	-	-
40	4 468	4 495	4 516	4 526	4 525	4 509	4 476	-	-
45	4 981	5 009	5 030	5 041	5 039	5 024	4 991	-	-
50	5 559	5 587	5 608	5 619	5 618	5 603	5 571	-	-
55	-	6 233	6 255	6 266	6 266	6 251	6 219	-	-
60	-	-	6 975	6 987	6 987	6 973	6 942	-	-
65	-	-	-	7 787	7 787	7 773	7 743	-	-
70	-	-	-	8 670	8 671	8 657	8 627	-	-

Current consumption in A

35	11.07	11.11	11.13	11.13	11.12	11.09	11.02	-	-
40	11.49	11.52	11.55	11.55	11.54	11.51	11.45	-	-
45	11.98	12.02	12.04	12.05	12.04	12.01	11.95	-	-
50	12.56	12.60	12.63	12.64	12.63	12.60	12.54	-	-
55	-	13.28	13.30	13.31	13.31	13.28	13.22	-	-
60	-	-	14.08	14.09	14.09	14.06	14.01	-	-
65	-	-	-	14.98	14.98	14.96	14.91	-	-
70	-	-	-	15.99	15.99	15.97	15.92	-	-

Mass flow in kg/h

35	211	264	325	394	472	561	660	-	-
40	208	261	322	392	471	560	660	-	-
45	204	258	319	389	469	558	658	-	-
50	199	253	315	385	465	554	654	-	-
55	-	248	310	380	459	548	648	-	-
60	-	-	303	373	452	541	640	-	-
65	-	-	-	364	443	531	630	-	-
70	-	-	-	353	431	519	618	-	-

Coefficient of performance (C.O.P.)

35	2.17	2.75	3.44	4.25	5.20	6.32	7.63	-	-
40	1.83	2.33	2.93	3.63	4.46	5.42	6.55	-	-
45	1.52	1.96	2.47	3.08	3.79	4.61	5.58	-	-
50	1.26	1.63	2.07	2.59	3.19	3.90	4.72	-	-
55	-	1.34	1.71	2.15	2.66	3.26	3.96	-	-
60	-	-	1.40	1.77	2.20	2.71	3.30	-	-
65	-	-	-	1.44	1.80	2.22	2.72	-	-
70	-	-	-	1.15	1.45	1.80	2.22	-	-

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

Cooling capacity	17 923	W
Power input	5 618	W
Current consumption	12.63	A
Mass flow	465	kg/h
C.O.P.	3.19	

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	9 439	12 035	15 094	18 665	22 795	27 532	32 923	-	-
40	8 890	11 405	14 364	17 816	21 808	26 388	31 603	-	-
45	8 312	10 734	13 581	16 902	20 744	25 155	30 182	-	-
50	7 705	10 022	12 746	15 924	19 604	23 834	28 660	-	-
55	-	9 272	11 859	14 883	18 389	22 425	27 039	-	-
60	-	-	10 922	13 779	17 098	20 930	25 320	-	-
65	-	-	-	12 613	15 735	19 349	23 502	-	-
70	-	-	-	11 386	14 298	17 683	21 588	-	-

**Power input in W**

35	4 013	4 041	4 061	4 071	4 069	4 053	4 020	-	-
40	4 468	4 495	4 516	4 526	4 525	4 509	4 476	-	-
45	4 981	5 009	5 030	5 041	5 039	5 024	4 991	-	-
50	5 559	5 587	5 608	5 619	5 618	5 603	5 571	-	-
55	-	6 233	6 255	6 266	6 266	6 251	6 219	-	-
60	-	-	6 975	6 987	6 987	6 973	6 942	-	-
65	-	-	-	7 787	7 787	7 773	7 743	-	-
70	-	-	-	8 670	8 671	8 657	8 627	-	-

**Current consumption in A**

35	11.07	11.11	11.13	11.13	11.12	11.09	11.02	-	-
40	11.49	11.52	11.55	11.55	11.54	11.51	11.45	-	-
45	11.98	12.02	12.04	12.05	12.04	12.01	11.95	-	-
50	12.56	12.60	12.63	12.64	12.63	12.60	12.54	-	-
55	-	13.28	13.30	13.31	13.31	13.28	13.22	-	-
60	-	-	14.08	14.09	14.09	14.06	14.01	-	-
65	-	-	-	14.98	14.98	14.96	14.91	-	-
70	-	-	-	15.99	15.99	15.97	15.92	-	-

**Mass flow in kg/h**

35	210	263	323	392	470	558	656	-	-
40	207	260	321	390	469	557	656	-	-
45	203	257	318	387	466	555	654	-	-
50	198	252	314	383	462	551	650	-	-
55	-	247	308	378	457	545	644	-	-
60	-	-	301	371	450	538	637	-	-
65	-	-	-	362	441	528	627	-	-
70	-	-	-	351	429	517	614	-	-

**Coefficient of performance (C.O.P.)**

35	2.35	2.98	3.72	4.58	5.60	6.79	8.19	-	-
40	1.99	2.54	3.18	3.94	4.82	5.85	7.06	-	-
45	1.67	2.14	2.70	3.35	4.12	5.01	6.05	-	-
50	1.39	1.79	2.27	2.83	3.49	4.25	5.14	-	-
55	-	1.49	1.90	2.38	2.93	3.59	4.35	-	-
60	-	-	1.57	1.97	2.45	3.00	3.65	-	-
65	-	-	-	1.62	2.02	2.49	3.04	-	-
70	-	-	-	1.31	1.65	2.04	2.50	-	-

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

Cooling capacity	20 256	W
Power input	6 180	W
Current consumption	13.21	A
Mass flow	495	kg/h
C.O.P.	3.28	

**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)

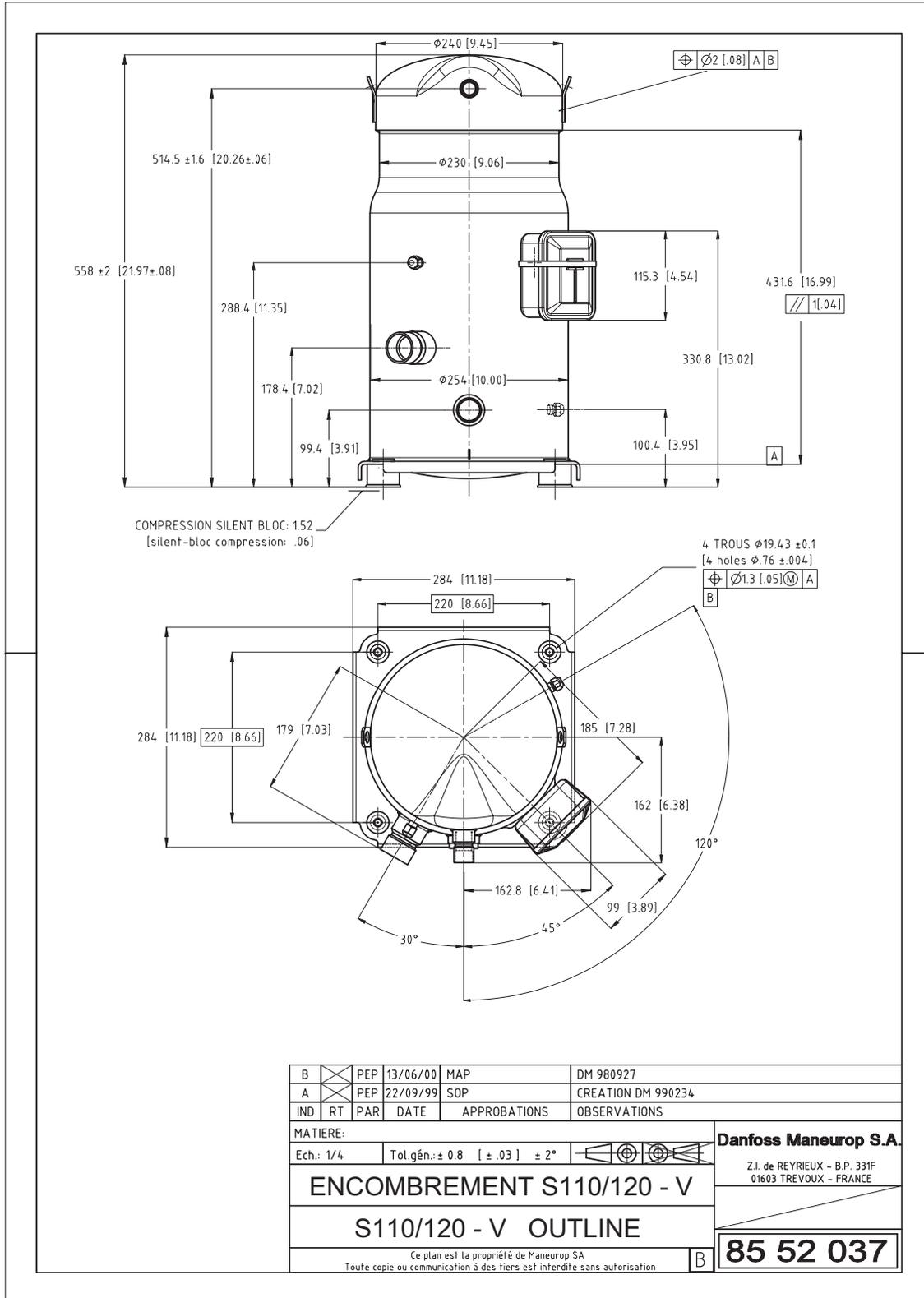
to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

All performance data +/- 5%

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