

Datasheets

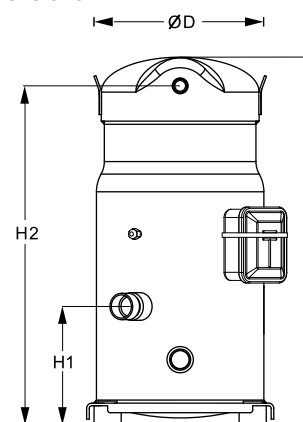
# Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



**General Characteristics**

Model number (on compressor nameplate)		<b>SM084S4VC</b>
Code number for Singlepack*		SM084-4V1
Code number for Industrial pack**		SM084-4VM
Drawing number		8552036b
Suction and discharge connections		Brazed
Suction connection		1-1/8" ODF
Discharge connection		3/4" 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		114,5 cm <sup>3</sup> /rev
Displacement @ Nominal speed		19.9 m <sup>3</sup> /h @ 2900 rpm - 24.1 m <sup>3</sup> /h @ 3500 rpm
Net weight		64 kg
Oil charge		3,25 litre, Mineral - 160P
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		8,5 kg
Approved refrigerants		R22, R417A-160SZ

**Dimensions**

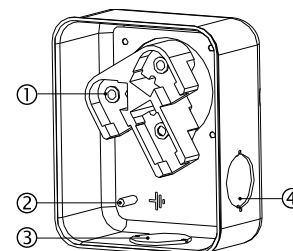


D=254 mm  
H=508 mm  
H1=141,9 mm  
H2=464,5 mm  
H3=- mm

**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	1.74 Ω
Rated Load Amps (RLA)	12.1 A
Maximum Continuous Current (MCC)	17 A
Locked Rotor Amps (LRA)	86 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

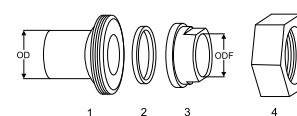
\*\*Industrial pack: 8 Unboxed compressors on pallet (order per multiples of 8)

**Rotolock accessories, suction side**
**Code no.**

Solder sleeve, P02 (1-3/4" Rotolock, 1-1/8" ODF)	8153004
Angle adapter, C02 (1-3/4" Rotolock, 1-1/8" ODF)	8168005
Rotolock valve, V02 (1-3/4" Rotolock, 1-1/8" ODF)	8168028
Gasket, 1-3/4"	8156132

**Rotolock accessories, discharge side**
**Code no.**

Solder sleeve, P04 (1-1/4" Rotolock, 3/4" ODF)	8153008
Angle adapter, C04 (1-1/4" Rotolock, 3/4" ODF)	8168006
Rotolock valve, V04 (1-1/4" Rotolock, 3/4" ODF)	8168029
Gasket, 1-1/4"	8156131

**Solder sleeve adapter set**


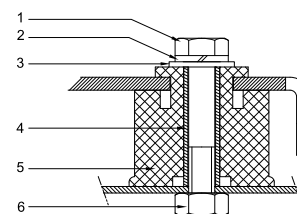
- 1: Rotolock adapter (Suc & Dis)
- 2: Gasket (Suc & Dis)
- 3: Solder sleeve (Suc & Dis)
- 4: Rotolock nut (Suc & Dis)

**Rotolock accessories, sets**
**Code no.**

Solder sleeve adapter set (1-3/4" Rotolock, 1-1/8" ODF), (1-1/4" Rotolock, 3/4" ODF)	7765005
Angle adapter set, C02 (1-3/4"~1-1/8"), C04 (1-1/4"~3/4")	7703014
Valve set, V02 (1-3/4"~1-1/8"), V04 (1-1/4"~3/4")	7703009
Gasket set, 1-1/4", 1-3/4", 2-1/4", OSG gaskets black & white	8156013

**Oil / lubricants**
**Code no.**

Mineral oil, 160P, 2 litre can	7754001
Mineral oil, 160P, 5 litre can	7754002

**Mounting kit**


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

**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 15 C	7705006
Acoustic hood for scroll compressor S084-S090-S100	7755011
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

R22

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

Cooling capacity in W

30	7 796	9 932	12 423	15 303	18 603	22 357	26 598	31 359	-
35	7 224	9 319	11 759	14 575	17 802	21 471	25 616	30 270	-
40	6 615	8 662	11 043	13 789	16 935	20 512	24 554	29 093	-
45	-	7 959	10 273	12 942	15 999	19 477	23 408	27 825	-
50	-	-	9 448	12 033	14 994	18 364	22 177	26 464	-
55	-	-	-	11 059	13 917	17 172	20 858	25 006	-
60	-	-	-	-	12 766	15 898	19 448	23 450	-
65	-	-	-	-	11 540	14 539	17 945	21 790	-

Power input in W

30	3 577	3 582	3 583	3 581	3 573	3 560	3 541	3 514	-
35	4 014	4 015	4 011	4 002	3 987	3 964	3 934	3 895	-
40	4 515	4 512	4 503	4 486	4 462	4 430	4 388	4 336	-
45	-	5 077	5 061	5 037	5 004	4 961	4 907	4 842	-
50	-	-	5 692	5 659	5 616	5 561	5 495	5 416	-
55	-	-	-	6 356	6 302	6 236	6 156	6 062	-
60	-	-	-	-	7 066	6 987	6 894	6 785	-
65	-	-	-	-	7 913	7 821	7 712	7 587	-

Current consumption in A

30	8.05	8.07	8.09	8.09	8.09	8.07	8.04	7.99	-
35	8.46	8.48	8.49	8.49	8.48	8.46	8.42	8.36	-
40	8.97	8.99	8.99	8.99	8.97	8.94	8.89	8.82	-
45	-	9.59	9.59	9.58	9.56	9.51	9.45	9.37	-
50	-	-	10.31	10.29	10.25	10.20	10.13	10.04	-
55	-	-	-	11.12	11.07	11.01	10.93	10.82	-
60	-	-	-	-	12.03	11.96	11.86	11.74	-
65	-	-	-	-	13.13	13.04	12.93	12.80	-

Mass flow in kg/h

30	168	211	261	317	381	452	533	622	-
35	162	206	256	313	378	451	532	622	-
40	155	199	250	309	374	448	530	621	-
45	-	191	243	302	369	443	526	619	-
50	-	-	234	294	362	437	521	615	-
55	-	-	-	284	352	429	514	609	-
60	-	-	-	-	341	418	504	600	-
65	-	-	-	-	326	405	492	589	-

Coefficient of performance (C.O.P.)

30	2.18	2.77	3.47	4.27	5.21	6.28	7.51	8.92	-
35	1.80	2.32	2.93	3.64	4.47	5.42	6.51	7.77	-
40	1.47	1.92	2.45	3.07	3.80	4.63	5.60	6.71	-
45	-	1.57	2.03	2.57	3.20	3.93	4.77	5.75	-
50	-	-	1.66	2.13	2.67	3.30	4.04	4.89	-
55	-	-	-	1.74	2.21	2.75	3.39	4.13	-
60	-	-	-	-	1.81	2.28	2.82	3.46	-
65	-	-	-	-	1.46	1.86	2.33	2.87	-

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

Cooling capacity	18 364	W
Power input	5 561	W
Current consumption	10.20	A
Mass flow	437	kg/h
C.O.P.	3.30	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	70	dB(A)
With acoustic hood	62	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

R22

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

Cooling capacity in W

30	8 273	10 532	13 163	16 202	19 683	23 638	28 104	33 114	-
35	7 693	9 916	12 501	15 483	18 896	22 774	27 151	32 062	-
40	7 073	9 252	11 784	14 702	18 041	21 834	26 116	30 922	-
45	-	8 538	11 010	13 857	17 115	20 816	24 997	29 690	-
50	-	-	10 176	12 946	16 115	19 719	23 790	28 364	-
55	-	-	-	11 966	15 040	18 538	22 494	26 942	-
60	-	-	-	-	13 887	17 273	21 106	25 421	-
65	-	-	-	-	12 654	15 921	19 625	23 799	-

Power input in W

30	3 577	3 582	3 583	3 581	3 573	3 560	3 541	3 514	-
35	4 014	4 015	4 011	4 002	3 987	3 964	3 934	3 895	-
40	4 515	4 512	4 503	4 486	4 462	4 430	4 388	4 336	-
45	-	5 077	5 061	5 037	5 004	4 961	4 907	4 842	-
50	-	-	5 692	5 659	5 616	5 561	5 495	5 416	-
55	-	-	-	6 356	6 302	6 236	6 156	6 062	-
60	-	-	-	-	7 066	6 987	6 894	6 785	-
65	-	-	-	-	7 913	7 821	7 712	7 587	-

Current consumption in A

30	8.05	8.07	8.09	8.09	8.09	8.07	8.04	7.99	-
35	8.46	8.48	8.49	8.49	8.48	8.46	8.42	8.36	-
40	8.97	8.99	8.99	8.99	8.97	8.94	8.89	8.82	-
45	-	9.59	9.59	9.58	9.56	9.51	9.45	9.37	-
50	-	-	10.31	10.29	10.25	10.20	10.13	10.04	-
55	-	-	-	11.12	11.07	11.01	10.93	10.82	-
60	-	-	-	-	12.03	11.96	11.86	11.74	-
65	-	-	-	-	13.13	13.04	12.93	12.80	-

Mass flow in kg/h

30	167	210	259	315	379	450	530	618	-
35	161	205	255	312	376	448	529	619	-
40	154	198	249	307	372	445	527	618	-
45	-	190	242	301	367	441	523	615	-
50	-	-	233	293	360	435	518	611	-
55	-	-	-	283	350	426	511	605	-
60	-	-	-	-	339	416	502	597	-
65	-	-	-	-	325	403	489	585	-

Coefficient of performance (C.O.P.)

30	2.31	2.94	3.67	4.52	5.51	6.64	7.94	9.42	-
35	1.92	2.47	3.12	3.87	4.74	5.74	6.90	8.23	-
40	1.57	2.05	2.62	3.28	4.04	4.93	5.95	7.13	-
45	-	1.68	2.18	2.75	3.42	4.20	5.09	6.13	-
50	-	-	1.79	2.29	2.87	3.55	4.33	5.24	-
55	-	-	-	1.88	2.39	2.97	3.65	4.44	-
60	-	-	-	-	1.97	2.47	3.06	3.75	-
65	-	-	-	-	1.60	2.04	2.54	3.14	-

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

Cooling capacity	20 373	W
Power input	6 118	W
Current consumption	10.87	A
Mass flow	464	kg/h
C.O.P.	3.33	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	70	dB(A)
With acoustic hood	62	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 60 Hz, EN 12900 rating conditions**
**R22**

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

**Cooling capacity in W**

30	9 587	12 082	14 982	18 325	22 145	26 480	31 366	36 839	-
35	9 012	11 457	14 296	17 563	21 295	25 529	30 301	35 646	-
40	8 394	10 782	13 550	16 734	20 370	24 494	29 142	34 351	-
45	-	10 054	12 743	15 834	19 365	23 370	27 886	32 950	-
50	-	-	11 872	14 863	18 280	22 157	26 532	31 440	-
55	-	-	-	13 818	17 111	20 852	25 076	29 819	-
60	-	-	-	-	15 857	19 451	23 514	28 082	-
65	-	-	-	-	14 516	17 952	21 844	26 226	-

**Power input in W**

30	4 273	4 307	4 342	4 376	4 408	4 437	4 462	4 481	-
35	4 775	4 805	4 834	4 861	4 885	4 905	4 920	4 928	-
40	5 345	5 370	5 393	5 413	5 428	5 438	5 442	5 438	-
45	-	6 010	6 025	6 036	6 042	6 041	6 033	6 016	-
50	-	-	6 737	6 739	6 734	6 721	6 700	6 670	-
55	-	-	-	7 526	7 510	7 485	7 450	7 404	-
60	-	-	-	-	8 376	8 337	8 288	8 227	-
65	-	-	-	-	9 338	9 286	9 221	9 143	-

**Current consumption in A**

30	7.61	7.64	7.67	7.70	7.73	7.76	7.79	7.82	-
35	8.11	8.13	8.16	8.18	8.20	8.22	8.24	8.26	-
40	8.70	8.72	8.73	8.75	8.76	8.77	8.78	8.78	-
45	-	9.40	9.41	9.42	9.42	9.42	9.41	9.40	-
50	-	-	10.19	10.19	10.18	10.17	10.15	10.12	-
55	-	-	-	11.07	11.05	11.03	10.99	10.95	-
60	-	-	-	-	12.05	12.01	11.96	11.90	-
65	-	-	-	-	13.17	13.12	13.05	12.98	-

**Mass flow in kg/h**

30	207	257	314	380	453	536	628	731	-
35	202	253	311	378	452	536	629	733	-
40	196	248	307	374	450	535	629	733	-
45	-	242	302	370	446	532	627	733	-
50	-	-	295	363	441	527	624	730	-
55	-	-	-	355	433	521	618	726	-
60	-	-	-	-	423	512	610	719	-
65	-	-	-	-	411	500	599	709	-

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

30	2.24	2.81	3.45	4.19	5.02	5.97	7.03	8.22	-
35	1.89	2.38	2.96	3.61	4.36	5.20	6.16	7.23	-
40	1.57	2.01	2.51	3.09	3.75	4.50	5.36	6.32	-
45	-	1.67	2.11	2.62	3.21	3.87	4.62	5.48	-
50	-	-	1.76	2.21	2.71	3.30	3.96	4.71	-
55	-	-	-	1.84	2.28	2.79	3.37	4.03	-
60	-	-	-	-	1.89	2.33	2.84	3.41	-
65	-	-	-	-	1.55	1.93	2.37	2.87	-

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

Cooling capacity	22 157	W
Power input	6 721	W
Current consumption	10.17	A
Mass flow	527	kg/h
C.O.P.	3.30	

**Pressure switch settings**

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

**Sound power data**

Sound power level	74	dB(A)
With acoustic hood	66	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 60 Hz, ARI rating conditions

R22

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

Cooling capacity in W

30	10 174	12 811	15 875	19 402	23 431	27 998	33 142	38 900	-
35	9 597	12 190	15 198	18 657	22 604	27 079	32 117	37 757	-
40	8 974	11 516	14 459	17 842	21 700	26 073	30 997	36 510	-
45	-	10 786	13 657	16 954	20 715	24 978	29 779	35 158	-
50	-	-	12 787	15 991	19 647	23 791	28 462	33 697	-
55	-	-	-	14 951	18 493	22 511	27 043	32 127	-
60	-	-	-	-	17 251	21 134	25 519	30 443	-
65	-	-	-	-	15 918	19 658	23 888	28 644	-

Power input in W

30	4 273	4 307	4 342	4 376	4 408	4 437	4 462	4 481	-
35	4 775	4 805	4 834	4 861	4 885	4 905	4 920	4 928	-
40	5 345	5 370	5 393	5 413	5 428	5 438	5 442	5 438	-
45	-	6 010	6 025	6 036	6 042	6 041	6 033	6 016	-
50	-	-	6 737	6 739	6 734	6 721	6 700	6 670	-
55	-	-	-	7 526	7 510	7 485	7 450	7 404	-
60	-	-	-	-	8 376	8 337	8 288	8 227	-
65	-	-	-	-	9 338	9 286	9 221	9 143	-

Current consumption in A

30	7.61	7.64	7.67	7.70	7.73	7.76	7.79	7.82	-
35	8.11	8.13	8.16	8.18	8.20	8.22	8.24	8.26	-
40	8.70	8.72	8.73	8.75	8.76	8.77	8.78	8.78	-
45	-	9.40	9.41	9.42	9.42	9.42	9.41	9.40	-
50	-	-	10.19	10.19	10.18	10.17	10.15	10.12	-
55	-	-	-	11.07	11.05	11.03	10.99	10.95	-
60	-	-	-	-	12.05	12.01	11.96	11.90	-
65	-	-	-	-	13.17	13.12	13.05	12.98	-

Mass flow in kg/h

30	206	256	313	378	451	533	624	726	-
35	201	252	310	376	450	533	625	728	-
40	195	247	306	372	447	532	625	729	-
45	-	240	300	368	444	529	624	729	-
50	-	-	293	361	438	524	620	726	-
55	-	-	-	353	431	518	615	722	-
60	-	-	-	-	421	509	606	714	-
65	-	-	-	-	408	497	596	705	-

Coefficient of performance (C.O.P.)

30	2.38	2.97	3.66	4.43	5.32	6.31	7.43	8.68	-
35	2.01	2.54	3.14	3.84	4.63	5.52	6.53	7.66	-
40	1.68	2.14	2.68	3.30	4.00	4.79	5.70	6.71	-
45	-	1.79	2.27	2.81	3.43	4.13	4.94	5.84	-
50	-	-	1.90	2.37	2.92	3.54	4.25	5.05	-
55	-	-	-	1.99	2.46	3.01	3.63	4.34	-
60	-	-	-	-	2.06	2.53	3.08	3.70	-
65	-	-	-	-	1.70	2.12	2.59	3.13	-

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

Cooling capacity	24 606	W
Power input	7 375	W
Current consumption	10.90	A
Mass flow	560	kg/h
C.O.P.	3.34	

Pressure switch settings

Maximum HP switch setting	28	bar(g)
Minimum LP switch setting	0.5	bar(g)
LP pump down setting	1.3	bar(g)

Sound power data

Sound power level	74	dB(A)
With acoustic hood	66	dB(A)

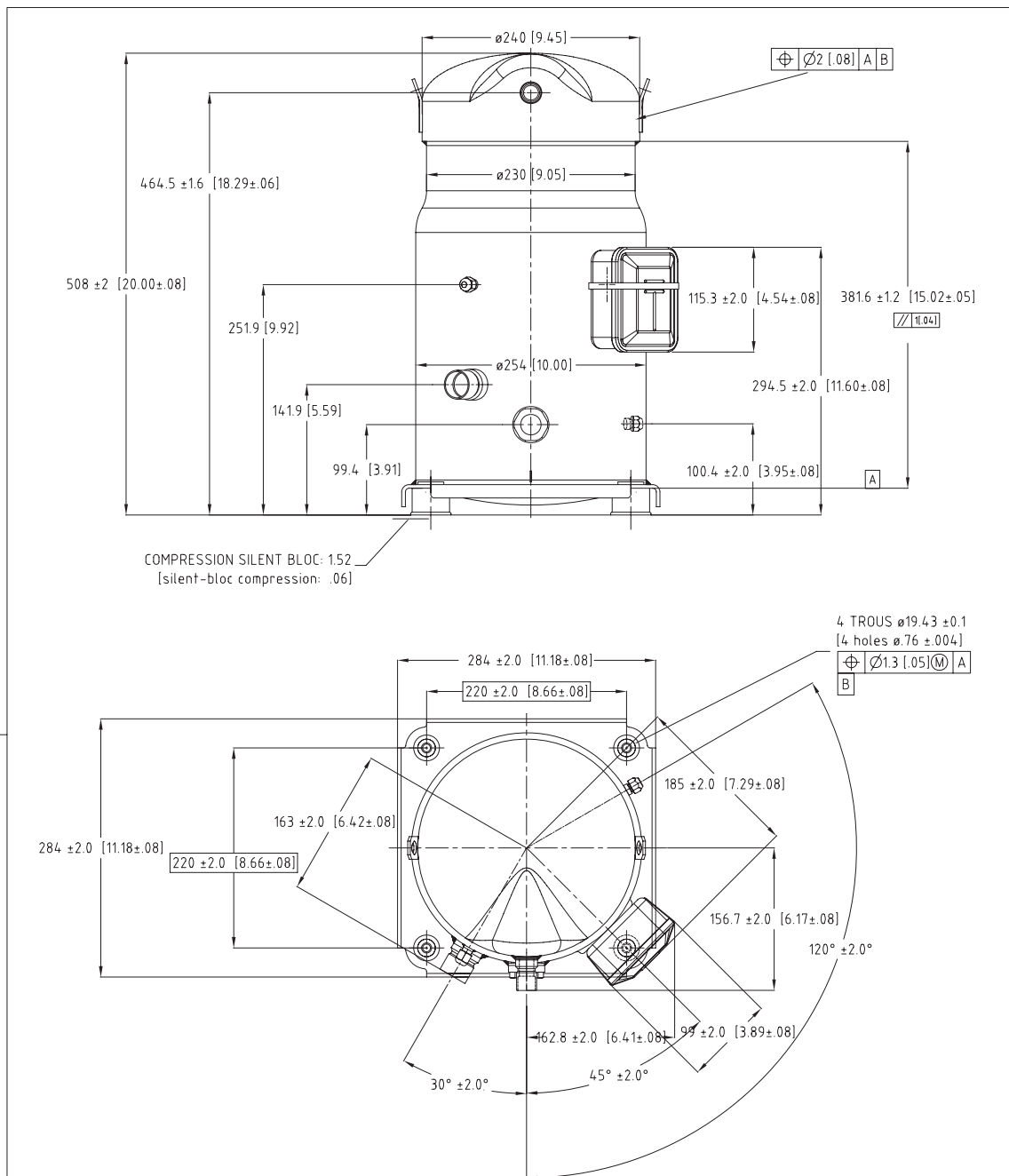
to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

All performance data +/- 5%

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B	PEP	13/06/00	MAP	DM 980927
A	PEP	22/09/99	SOP	CREATION DM990234
IND	RT	PAR	DATE	APPROBATIONS
				OBSERVATIONS
MATERIE:				
Ech.: 1/4	Tol.gén.: ±0.8 [ ± .03 ] ± 2°			
<b>ENCOMBREMENT S084/090/100 - V</b>				<b>Danfoss Maneurop S.A.</b> Z.I. de REYRIEUX - B.P. 331F 01603 TREVOUX - FRANCE
<b>S084/090/100 - V OUTLINE</b>				
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