

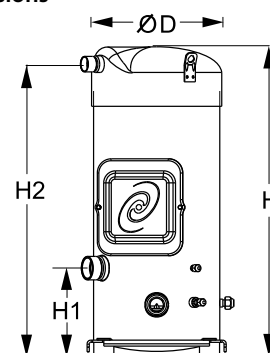
Datasheets

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



General Characteristics

Model number (on compressor nameplate)	SZ160T4RC	SZ160T4CC
Code number for Singlepack*	SZ160-4RAI	SZ160-4CBI
Code number for Industrial pack**	SZ160-4RAM	SZ160-4CBM
Drawing number	8551120b	8551055c
Suction and discharge connections	Rotolock	Brazed
Suction connection	2-1/4 " Rotolock	1-5/8 " ODF
Discharge connection	1-3/4 " Rotolock	1-1/8 " ODF
Suction connection with supplied sleeve	1-3/8 " ODF	
Discharge connection with supplied sleeve	7/8 " ODF	
Oil sight glass	Threaded	Threaded
Oil equalisation connection	3/8" flare SAE	3/8" flare SAE
Oil drain connection	1/4" flare	1/4" flare
LP gauge port	Schrader	Schrader
IPR valve	None	None
Swept volume	216.6 cm ³ /rev	
Displacement @ Nominal speed	37.7 m ³ /h @ 2900 rpm - 45.5 m ³ /h @ 3500 rpm	
Net weight	90 kg	
Oil charge	4 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=631 mm

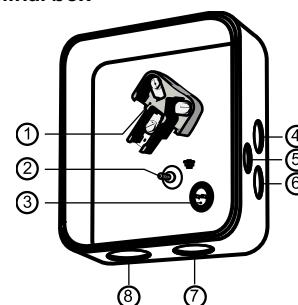
H1=180 mm

H2=596 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
Maximum Must Trip current (MMT)	29 A
Locked Rotor Amps (LRA)	150 A
Motor protection	Internal thermostat, ext. overload protector needed

Terminal box


IP54 (with cable gland)

- 1: Power connection, 3 x 4.8 mm (3/16")
- 2: Earth M5
- 3: Thermostat connector
- 4: Knock-out Ø 22 mm (7/8") for 1/2" conduit
- 5: Knock-out Ø 16.5 mm (0.65")
- 6: Knock-out Ø 20.5 mm (0.81")
- 7: Double knock-out Ø 32.1 mm (1.26") & Ø 25.4 mm (1")
- 8: Double knock-out Ø 44 mm (1-3/4") for 1-1/4" conduit & Ø 34 mm (1-3/8") for 1" conduit

Recommended Installation torques

Suction Rotolock nut or valve	130 Nm
Discharge Rotolock nut or valve	110 Nm
Oil sight glass	50 Nm
Power connections / Earth connection	3 Nm / 2 Nm
Terminal box cover screws	2.3 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

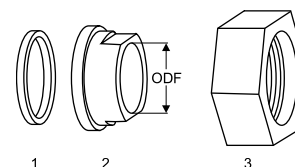
**Industrial pack: 6 Unboxed compressors on pallet (order per multiples of 6)

Rotolock accessories, suction side
Code no.

Solder sleeve, P08 (2-1/4" Rotolock, 1-3/8" ODF)	8153005
Solder sleeve, P03 (2-1/4" Rotolock, 1-5/8" ODF)	8153006
Rotolock valve, V08 (2-1/4" Rotolock, 1-3/8" ODF)	8168025
Rotolock valve, V03 (2-1/4" Rotolock, 1-5/8" ODF)	8168026
Gasket, 2-1/4"	8156133

Rotolock accessories, discharge side
Code no.

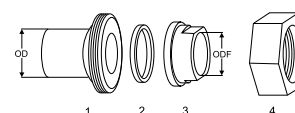
Solder sleeve, P07 (1-3/4" Rotolock, 7/8" ODF)	8153013
Solder sleeve, P02 (1-3/4" Rotolock, 1-1/8" ODF)	8153004
Angle adapter, C07 (1-3/4" Rotolock, 7/8" ODF)	8168008
Angle adapter, C02 (1-3/4" Rotolock, 1-1/8" ODF)	8168005
Rotolock valve, V07 (1-3/4" Rotolock, 7/8" ODF)	8168032
Rotolock valve, V02 (1-3/4" Rotolock, 1-1/8" ODF)	8168028
Gasket, 1-3/4"	8156132

Gaskets, sleeves and nuts


- 1: Gasket
2: Solder sleeve
3: Rotolock nut

Rotolock accessories, sets
Code no.

Solder sleeve adapter set, (2-1/4" Rotolock, 1-5/8" ODF), (1-3/4" Rotolock, 1"1/8 ODF)	7765028
Valve set, V08 (2-1/4"~1-3/8"), V07 (1-3/4"~7/8")	7703010
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.

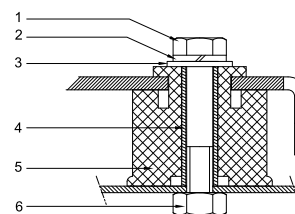
Surface sump heater + bottom insulation, 48 W, 24 V, CE mark, UL	120Z0363
Surface sump heater + bottom insulation, 48 W, 230 V, CE mark, UL	120Z0384
Surface sump heater + bottom insulation, 48 W, 400 V, CE mark, UL	120Z0385
Surface sump heater + bottom insulation, 48 W, 460 V, CE mark, UL	120Z0386
Belt 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
Acoustic hood for scroll compressor S160	7755008
Bottom insulation for scroll compressor	120Z0357
Discharge thermostat kit	7750009

Spare parts
Code no.

Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	8156138
Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers, 2 rotolock nuts, 2 solder sleeves, 2 gaskets	8156147
Oil sight glass with gaskets (black & white)	8156019
Gasket for oil sight glass (white teflon)	8156129
Terminal box 186 x 198 mm, incl cover	8156139
T block connector 60 x 75 mm	8173021

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	14 560	18 543	23 283	28 882	35 443	43 068	51 857	61 914	-
35	13 697	17 568	22 154	27 558	33 881	41 226	49 693	59 386	-
40	12 777	16 505	20 906	26 083	32 137	39 171	47 286	56 584	-
45	-	15 374	19 559	24 478	30 232	36 924	44 655	53 527	-
50	-	-	18 133	22 763	28 186	34 505	41 821	50 236	-
55	-	-	-	20 957	26 018	31 933	38 803	46 730	-
60	-	-	-	-	23 750	29 229	35 622	43 030	-
65	-	-	-	-	21 400	26 413	32 297	39 155	-

Power input in W

30	6 584	6 668	6 729	6 769	6 791	6 796	6 786	6 764	-
35	7 344	7 442	7 516	7 567	7 599	7 612	7 610	7 593	-
40	8 191	8 303	8 389	8 451	8 492	8 514	8 518	8 506	-
45	-	9 268	9 366	9 439	9 489	9 518	9 528	9 522	-
50	-	-	10 466	10 549	10 608	10 644	10 660	10 658	-
55	-	-	-	11 800	11 866	11 910	11 931	11 933	-
60	-	-	-	-	13 283	13 333	13 360	13 365	-
65	-	-	-	-	14 877	14 933	14 964	14 973	-

Current consumption in A

30	13.98	14.05	14.06	14.04	13.98	13.89	13.78	13.65	-
35	14.79	14.88	14.93	14.95	14.93	14.89	14.83	14.75	-
40	15.72	15.84	15.93	15.97	15.99	15.99	15.97	15.93	-
45	-	16.97	17.07	17.14	17.19	17.21	17.22	17.22	-
50	-	-	18.42	18.50	18.57	18.61	18.64	18.67	-
55	-	-	-	20.09	20.16	20.22	20.26	20.31	-
60	-	-	-	-	22.02	22.07	22.13	22.18	-
65	-	-	-	-	24.17	24.22	24.27	24.32	-

Mass flow in kg/h

30	306	384	475	580	700	839	996	1 175	-
35	302	381	473	578	700	839	997	1 177	-
40	297	377	469	575	696	836	994	1 174	-
45	-	371	462	568	690	829	987	1 166	-
50	-	-	454	560	681	819	976	1 155	-
55	-	-	-	549	668	806	962	1 139	-
60	-	-	-	-	654	789	944	1 119	-
65	-	-	-	-	636	770	922	1 095	-

Coefficient of performance (C.O.P.)

30	2.21	2.78	3.46	4.27	5.22	6.34	7.64	9.15	-
35	1.87	2.36	2.95	3.64	4.46	5.42	6.53	7.82	-
40	1.56	1.99	2.49	3.09	3.78	4.60	5.55	6.65	-
45	-	1.66	2.09	2.59	3.19	3.88	4.69	5.62	-
50	-	-	1.73	2.16	2.66	3.24	3.92	4.71	-
55	-	-	-	1.78	2.19	2.68	3.25	3.92	-
60	-	-	-	-	1.79	2.19	2.67	3.22	-
65	-	-	-	-	1.44	1.77	2.16	2.62	-

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

Cooling capacity	34 505	W
Power input	10 644	W
Current consumption	18.61	A
Mass flow	819	kg/h
C.O.P.	3.24	


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	80.5	dB(A)
With acoustic hood	73	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	15 616	19 865	24 915	30 874	37 848	45 944	55 268	65 926	-
35	14 762	18 909	23 816	29 591	36 339	44 168	53 185	63 495	-
40	13 848	17 862	22 594	28 152	34 643	42 174	50 853	60 785	-
45	-	16 744	21 269	26 579	32 781	39 983	48 292	57 816	-
50	-	-	19 863	24 893	30 774	37 615	45 525	54 610	-
55	-	-	-	23 115	28 644	35 094	42 574	51 191	-
60	-	-	-	-	26 416	32 444	39 464	47 584	-
65	-	-	-	-	24 116	29 692	36 224	43 821	-

Power input in W

30	6 584	6 668	6 729	6 769	6 791	6 796	6 786	6 764	-
35	7 344	7 442	7 516	7 567	7 599	7 612	7 610	7 593	-
40	8 191	8 303	8 389	8 451	8 492	8 514	8 518	8 506	-
45	-	9 268	9 366	9 439	9 489	9 518	9 528	9 522	-
50	-	-	10 466	10 549	10 608	10 644	10 660	10 658	-
55	-	-	-	11 800	11 866	11 910	11 931	11 933	-
60	-	-	-	-	13 283	13 333	13 360	13 365	-
65	-	-	-	-	14 877	14 933	14 964	14 973	-

Current consumption in A

30	13.98	14.05	14.06	14.04	13.98	13.89	13.78	13.65	-
35	14.79	14.88	14.93	14.95	14.93	14.89	14.83	14.75	-
40	15.72	15.84	15.93	15.97	15.99	15.99	15.97	15.93	-
45	-	16.97	17.07	17.14	17.19	17.21	17.22	17.22	-
50	-	-	18.42	18.50	18.57	18.61	18.64	18.67	-
55	-	-	-	20.09	20.16	20.22	20.26	20.31	-
60	-	-	-	-	22.02	22.07	22.13	22.18	-
65	-	-	-	-	24.17	24.22	24.27	24.32	-

Mass flow in kg/h

30	304	382	472	577	697	834	990	1 168	-
35	301	379	470	575	696	834	991	1 169	-
40	296	375	466	571	693	831	988	1 166	-
45	-	369	460	565	686	824	981	1 159	-
50	-	-	452	557	677	814	971	1 148	-
55	-	-	-	546	665	801	956	1 132	-
60	-	-	-	-	650	785	938	1 112	-
65	-	-	-	-	633	765	917	1 088	-

Coefficient of performance (C.O.P.)

30	2.37	2.98	3.70	4.56	5.57	6.76	8.14	9.75	-
35	2.01	2.54	3.17	3.91	4.78	5.80	6.99	8.36	-
40	1.69	2.15	2.69	3.33	4.08	4.95	5.97	7.15	-
45	-	1.81	2.27	2.82	3.45	4.20	5.07	6.07	-
50	-	-	1.90	2.36	2.90	3.53	4.27	5.12	-
55	-	-	-	1.96	2.41	2.95	3.57	4.29	-
60	-	-	-	-	1.99	2.43	2.95	3.56	-
65	-	-	-	-	1.62	1.99	2.42	2.93	-

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

Cooling capacity	38 585	W
Power input	11 761	W
Current consumption	20.03	A
Mass flow	869	kg/h
C.O.P.	3.28	

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	80.5	dB(A)
With acoustic hood	73	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	11 454	14 689	18 492	22 920	28 031	33 883	40 533	-	-
40	10 708	13 831	17 497	21 764	26 688	32 328	38 742	-	-
45	9 943	12 939	16 454	20 544	25 267	30 680	36 841	-	-
50	9 162	12 017	15 365	19 263	23 769	28 939	34 831	-	-
55	-	11 068	14 234	17 925	22 198	27 109	32 717	-	-
60	-	-	13 064	16 532	20 556	25 193	30 500	-	-
65	-	-	-	15 087	18 846	23 192	28 182	-	-
70	-	-	-	13 591	17 070	21 108	25 762	-	-

Power input in W

35	5 259	5 322	5 374	5 410	5 427	5 421	5 389	-	-
40	5 790	5 856	5 912	5 953	5 975	5 976	5 950	-	-
45	6 391	6 461	6 521	6 567	6 595	6 602	6 584	-	-
50	7 067	7 141	7 206	7 257	7 292	7 306	7 295	-	-
55	-	7 902	7 972	8 030	8 071	8 093	8 090	-	-
60	-	-	8 825	8 890	8 938	8 968	8 974	-	-
65	-	-	-	9 842	9 899	9 937	9 952	-	-
70	-	-	-	10 893	10 957	11 004	11 030	-	-

Current consumption in A

35	12.56	12.61	12.63	12.63	12.61	12.55	12.45	-	-
40	13.04	13.09	13.13	13.15	13.14	13.09	13.02	-	-
45	13.61	13.68	13.73	13.76	13.77	13.75	13.70	-	-
50	14.31	14.39	14.45	14.50	14.53	14.53	14.50	-	-
55	-	15.22	15.30	15.37	15.42	15.44	15.44	-	-
60	-	-	16.29	16.38	16.45	16.50	16.53	-	-
65	-	-	-	17.55	17.65	17.72	17.78	-	-
70	-	-	-	18.89	19.01	19.12	19.20	-	-

Mass flow in kg/h

35	278	348	429	521	625	742	872	-	-
40	273	344	426	519	623	741	872	-	-
45	267	340	422	515	621	738	870	-	-
50	261	334	417	511	616	734	866	-	-
55	-	328	411	505	611	729	860	-	-
60	-	-	405	498	604	722	853	-	-
65	-	-	-	490	595	713	843	-	-
70	-	-	-	481	585	702	832	-	-

Coefficient of performance (C.O.P.)

35	2.18	2.76	3.44	4.24	5.16	6.25	7.52	-	-
40	1.85	2.36	2.96	3.66	4.47	5.41	6.51	-	-
45	1.56	2.00	2.52	3.13	3.83	4.65	5.60	-	-
50	1.30	1.68	2.13	2.65	3.26	3.96	4.77	-	-
55	-	1.40	1.79	2.23	2.75	3.35	4.04	-	-
60	-	-	1.48	1.86	2.30	2.81	3.40	-	-
65	-	-	-	1.53	1.90	2.33	2.83	-	-
70	-	-	-	1.25	1.56	1.92	2.34	-	-

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

Cooling capacity	23 769	W
Power input	7 292	W
Current consumption	14.53	A
Mass flow	616	kg/h
C.O.P.	3.26	

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	12 406	15 883	19 962	24 704	30 167	36 413	43 501	-	-
40	11 660	15 033	18 984	23 572	28 858	34 902	41 763	-	-
45	10 895	14 148	17 955	22 375	27 468	33 293	39 912	-	-
50	10 112	13 231	16 878	21 114	25 998	31 591	37 952	-	-
55	-	12 285	15 757	19 793	24 454	29 798	35 886	-	-
60	-	-	14 595	18 417	22 838	27 918	33 717	-	-
65	-	-	-	16 988	21 154	25 955	31 450	-	-
70	-	-	-	15 510	19 406	23 912	29 088	-	-

Power input in W

35	5 259	5 322	5 374	5 410	5 427	5 421	5 389	-	-
40	5 790	5 856	5 912	5 953	5 975	5 976	5 950	-	-
45	6 391	6 461	6 521	6 567	6 595	6 602	6 584	-	-
50	7 067	7 141	7 206	7 257	7 292	7 306	7 295	-	-
55	-	7 902	7 972	8 030	8 071	8 093	8 090	-	-
60	-	-	8 825	8 890	8 938	8 968	8 974	-	-
65	-	-	-	9 842	9 899	9 937	9 952	-	-
70	-	-	-	10 893	10 957	11 004	11 030	-	-

Current consumption in A

35	12.56	12.61	12.63	12.63	12.61	12.55	12.45	-	-
40	13.04	13.09	13.13	13.15	13.14	13.09	13.02	-	-
45	13.61	13.68	13.73	13.76	13.77	13.75	13.70	-	-
50	14.31	14.39	14.45	14.50	14.53	14.53	14.50	-	-
55	-	15.22	15.30	15.37	15.42	15.44	15.44	-	-
60	-	-	16.29	16.38	16.45	16.50	16.53	-	-
65	-	-	-	17.55	17.65	17.72	17.78	-	-
70	-	-	-	18.89	19.01	19.12	19.20	-	-

Mass flow in kg/h

35	276	347	427	518	622	738	867	-	-
40	271	343	424	516	620	737	867	-	-
45	266	338	420	513	617	734	865	-	-
50	260	333	415	508	613	730	861	-	-
55	-	327	409	503	608	725	855	-	-
60	-	-	402	496	601	718	848	-	-
65	-	-	-	488	592	709	839	-	-
70	-	-	-	478	582	698	827	-	-

Coefficient of performance (C.O.P.)

35	2.36	2.98	3.71	4.57	5.56	6.72	8.07	-	-
40	2.01	2.57	3.21	3.96	4.83	5.84	7.02	-	-
45	1.70	2.19	2.75	3.41	4.16	5.04	6.06	-	-
50	1.43	1.85	2.34	2.91	3.57	4.32	5.20	-	-
55	-	1.55	1.98	2.46	3.03	3.68	4.44	-	-
60	-	-	1.65	2.07	2.56	3.11	3.76	-	-
65	-	-	-	1.73	2.14	2.61	3.16	-	-
70	-	-	-	1.42	1.77	2.17	2.64	-	-

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

Cooling capacity	26 920	W
Power input	7 985	W
Current consumption	15.32	A
Mass flow	658	kg/h
C.O.P.	3.37	

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)

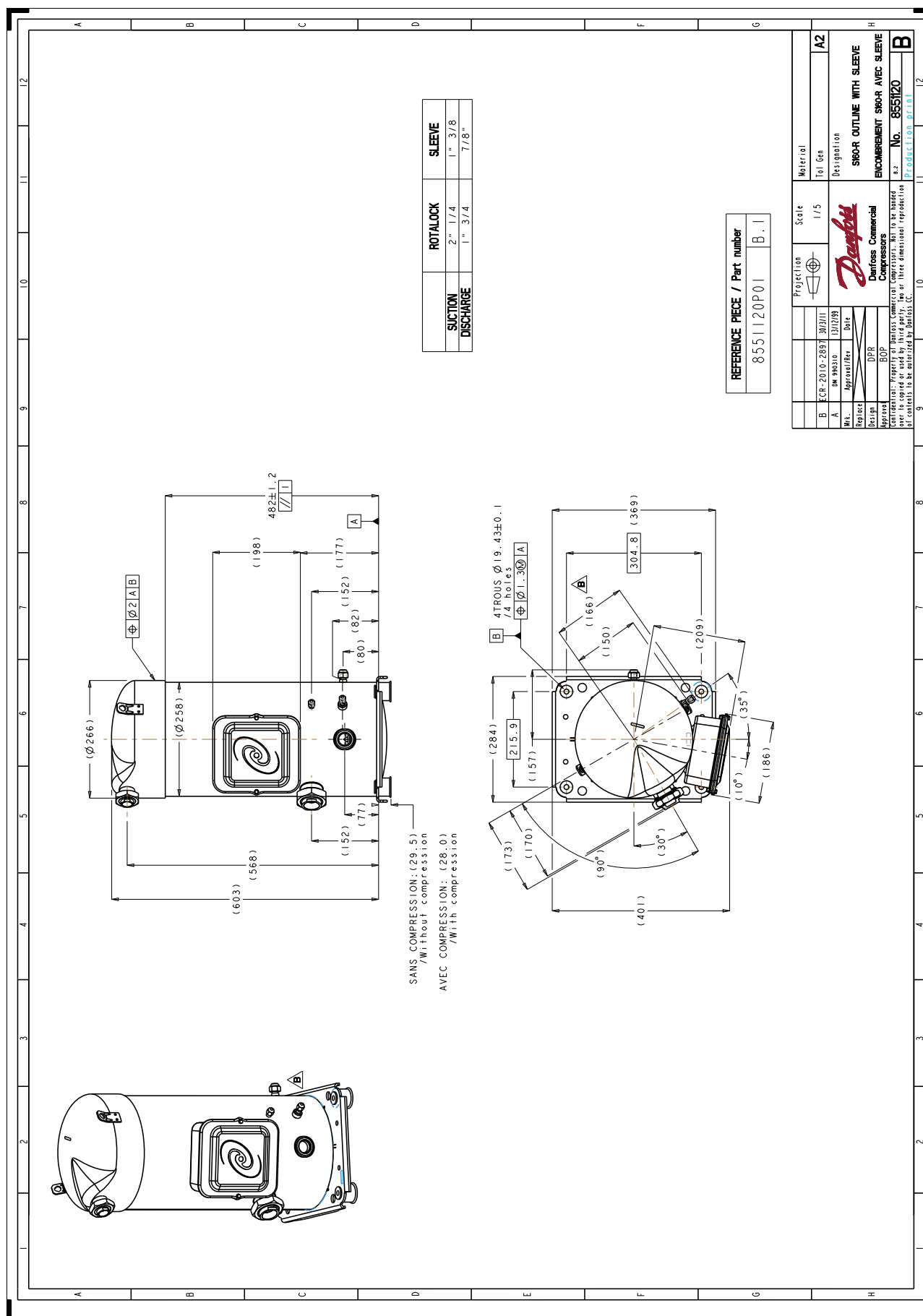
to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

All performance data +/- 5%

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