

Datasheets

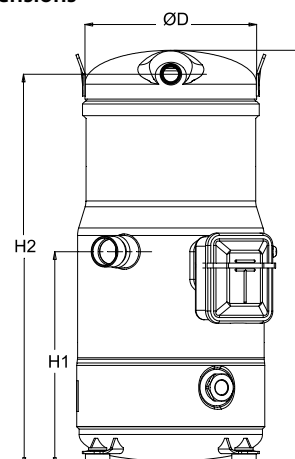
Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



General Characteristics

Model number (on compressor nameplate)		SH140A4ALC
Code number for Singlepack*		120H0201
Code number for Industrial pack**		120H0202
Drawing number		8560003h
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		132.9 cm ³ /rev
Displacement @ Nominal speed		23.1 m ³ /h @ 2900 rpm - 27.9 m ³ /h @ 3500 rpm
Net weight		67 kg
Oil charge		3.3 litre, POE - 160SZ
Maximum system test pressure Low Side / High side		33.3 bar(g) / 48.7 bar(g)
Maximum differential test pressure		37 bar
Maximum number of starts per hour		12
Refrigerant charge limit		7.9 kg
Approved refrigerants		R410A

Dimensions

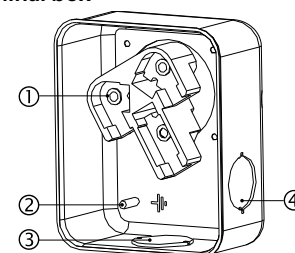


D=243 mm
H=540 mm
H1=278 mm
H2=509 mm
H3=- mm

Electrical Characteristics

Nominal voltage	380-400V/3/50Hz - 460V/3/60Hz
Voltage range	342-440 V @ 50Hz - 414-506 V @ 60Hz
Winding resistance (between phases) +/- 7% at 25°C	0.92 Ω
Rated Load Amps (RLA)	21.4 A
Maximum Continuous Current (MCC)	30 A
Locked Rotor Amps (LRA)	147 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	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)

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
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

R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	12 459	15 393	18 850	22 896	27 597	33 020	39 232	46 300	54 289
35	11 572	14 428	17 776	21 681	26 211	31 431	37 409	44 211	51 904
40	-	13 435	16 644	20 378	24 706	29 693	35 406	41 912	49 278
45	-	-	15 450	18 983	23 078	27 802	33 220	39 400	46 408
50	-	-	14 191	17 493	21 325	25 754	30 847	36 670	43 289
55	-	-	-	15 903	19 442	23 547	28 283	33 719	39 920
60	-	-	-	-	17 426	21 176	25 526	30 544	36 296
65	-	-	-	-	-	-	22 571	27 141	32 414

Power input in W

30	6 051	6 152	6 243	6 324	6 392	6 445	6 481	6 497	6 492
35	6 680	6 781	6 877	6 964	7 041	7 106	7 156	7 189	7 203
40	-	7 492	7 587	7 678	7 760	7 833	7 893	7 940	7 969
45	-	-	8 395	8 484	8 568	8 645	8 713	8 769	8 811
50	-	-	9 319	9 404	9 487	9 564	9 635	9 697	9 748
55	-	-	-	10 458	10 535	10 610	10 680	10 745	10 800
60	-	-	-	-	11 733	11 801	11 868	11 931	11 988
65	-	-	-	-	-	-	13 219	13 277	13 332

Current consumption in A

30	13.60	13.69	13.76	13.80	13.85	13.91	13.99	14.11	14.27
35	14.29	14.42	14.51	14.58	14.64	14.71	14.79	14.90	15.05
40	-	15.21	15.33	15.42	15.50	15.57	15.65	15.75	15.89
45	-	-	16.26	16.37	16.46	16.54	16.62	16.72	16.84
50	-	-	17.35	17.48	17.59	17.68	17.76	17.85	17.96
55	-	-	-	18.80	18.92	19.02	19.10	19.18	19.28
60	-	-	-	-	20.51	20.62	20.70	20.78	20.86
65	-	-	-	-	-	-	22.60	22.67	22.74

Mass flow in kg/h

30	258	317	383	460	548	648	762	892	1 038
35	254	313	380	457	546	647	761	892	1 039
40	-	308	376	453	542	644	759	890	1 038
45	-	-	370	448	537	639	755	886	1 035
50	-	-	363	441	531	633	749	881	1 030
55	-	-	-	433	522	625	741	873	1 022
60	-	-	-	-	513	615	731	863	1 013
65	-	-	-	-	-	-	719	852	1 001

Coefficient of performance (C.O.P.)

30	2.06	2.50	3.02	3.62	4.32	5.12	6.05	7.13	8.36
35	1.73	2.13	2.58	3.11	3.72	4.42	5.23	6.15	7.21
40	-	1.79	2.19	2.65	3.18	3.79	4.49	5.28	6.18
45	-	-	1.84	2.24	2.69	3.22	3.81	4.49	5.27
50	-	-	1.52	1.86	2.25	2.69	3.20	3.78	4.44
55	-	-	-	1.52	1.85	2.22	2.65	3.14	3.70
60	-	-	-	-	1.49	1.79	2.15	2.56	3.03
65	-	-	-	-	-	-	1.71	2.04	2.43

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

Cooling capacity	30 847	W
Power input	9 635	W
Current consumption	17.76	A
Mass flow	749	kg/h
C.O.P.	3.20	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	72.5	dB(A)
With acoustic hood	66.5	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alternations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 50 Hz, ARI rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	13 455	16 606	20 315	24 651	29 686	35 490	42 132	49 683	58 213
35	12 578	15 664	19 277	23 487	28 365	33 982	40 409	47 715	55 973
40	-	14 698	18 184	22 237	26 929	32 330	38 512	45 546	53 503
45	-	-	17 036	20 902	25 378	30 535	36 444	43 178	50 807
50	-	-	-	19 484	23 716	28 600	34 211	40 619	47 897
55	-	-	-	17 990	21 952	26 541	31 829	37 891	44 800
60	-	-	-	-	20 117	24 393	29 345	35 050	41 583
65	-	-	-	-	-	-	26 886	32 250	38 430

Power input in W

30	6 051	6 152	6 243	6 324	6 392	6 445	6 481	6 497	6 492
35	6 680	6 781	6 877	6 964	7 041	7 106	7 156	7 189	7 203
40	-	7 492	7 587	7 678	7 760	7 833	7 893	7 940	7 969
45	-	-	8 395	8 484	8 568	8 645	8 713	8 769	8 811
50	-	-	-	9 404	9 487	9 564	9 635	9 697	9 748
55	-	-	-	10 458	10 535	10 610	10 680	10 745	10 800
60	-	-	-	-	11 733	11 801	11 868	11 931	11 988
65	-	-	-	-	-	-	13 219	13 277	13 332

Current consumption in A

30	13.60	13.69	13.76	13.80	13.85	13.91	13.99	14.11	14.27
35	14.29	14.42	14.51	14.58	14.64	14.71	14.79	14.90	15.05
40	-	15.21	15.33	15.42	15.50	15.57	15.65	15.75	15.89
45	-	-	16.26	16.37	16.46	16.54	16.62	16.72	16.84
50	-	-	-	17.48	17.59	17.68	17.76	17.85	17.96
55	-	-	-	18.80	18.92	19.02	19.10	19.18	19.28
60	-	-	-	-	20.51	20.62	20.70	20.78	20.86
65	-	-	-	-	-	-	22.60	22.67	22.74

Mass flow in kg/h

30	257	315	381	457	544	644	757	885	1 030
35	253	311	378	454	542	642	756	885	1 031
40	-	306	374	450	539	639	754	884	1 030
45	-	-	368	445	534	635	750	880	1 027
50	-	-	-	439	527	628	744	874	1 022
55	-	-	-	431	519	620	736	867	1 015
60	-	-	-	-	509	611	726	857	1 005
65	-	-	-	-	-	-	715	845	993

Coefficient of performance (C.O.P.)

30	2.22	2.70	3.25	3.90	4.64	5.51	6.50	7.65	8.97
35	1.88	2.31	2.80	3.37	4.03	4.78	5.65	6.64	7.77
40	-	1.96	2.40	2.90	3.47	4.13	4.88	5.74	6.71
45	-	-	2.03	2.46	2.96	3.53	4.18	4.92	5.77
50	-	-	-	2.07	2.50	2.99	3.55	4.19	4.91
55	-	-	-	1.72	2.08	2.50	2.98	3.53	4.15
60	-	-	-	-	1.71	2.07	2.47	2.94	3.47
65	-	-	-	-	-	-	2.03	2.43	2.88

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

Cooling capacity	34 707	W
Power input	10 577	W
Current consumption	18.96	A
Mass flow	793	kg/h
C.O.P.	3.28	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	72.5	dB(A)
With acoustic hood	66.5	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alternations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 60 Hz, EN 12900 rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	15 034	18 596	22 780	27 673	33 362	39 935	47 477	56 076	65 820
35	14 138	17 584	21 617	26 323	31 789	38 102	45 347	53 612	62 982
40	-	16 471	20 324	24 813	30 026	36 048	42 965	50 863	59 828
45	-	-	18 925	23 167	28 096	33 795	40 351	47 849	56 375
50	-	-	17 442	21 405	26 017	31 361	37 522	44 584	52 632
55	-	-	-	19 539	23 798	28 750	34 478	41 064	48 592
60	-	-	-	-	21 427	25 943	31 189	37 249	44 202
65	-	-	-	-	-	-	27 546	33 001	39 295

Power input in W

30	7 329	7 445	7 573	7 707	7 844	7 980	8 112	8 234	8 344
35	8 074	8 183	8 307	8 442	8 586	8 733	8 880	9 023	9 157
40	-	9 016	9 130	9 261	9 404	9 555	9 712	9 869	10 022
45	-	-	10 068	10 187	10 324	10 474	10 633	10 797	10 964
50	-	-	11 147	11 248	11 372	11 513	11 669	11 835	12 007
55	-	-	-	12 469	12 573	12 700	12 846	13 007	13 179
60	-	-	-	-	13 953	14 060	14 189	14 339	14 504
65	-	-	-	-	-	-	15 725	15 857	16 009

Current consumption in A

30	13.01	13.09	13.18	13.28	13.40	13.53	13.69	13.87	14.08
35	13.76	13.87	13.99	14.11	14.25	14.40	14.58	14.77	14.99
40	-	14.74	14.88	15.02	15.17	15.33	15.51	15.71	15.93
45	-	-	15.89	16.04	16.20	16.37	16.55	16.74	16.96
50	-	-	17.09	17.24	17.39	17.56	17.73	17.92	18.13
55	-	-	-	18.65	18.80	18.96	19.12	19.29	19.48
60	-	-	-	-	20.47	20.61	20.75	20.90	21.06
65	-	-	-	-	-	-	22.68	22.80	22.93

Mass flow in kg/h

30	313	383	463	556	662	784	922	1 080	1 257
35	310	380	461	554	661	784	923	1 082	1 260
40	-	377	458	552	659	782	922	1 081	1 260
45	-	-	454	547	654	778	918	1 077	1 257
50	-	-	448	541	648	771	912	1 071	1 251
55	-	-	-	533	640	763	903	1 062	1 242
60	-	-	-	-	630	752	892	1 051	1 230
65	-	-	-	-	-	-	878	1 036	1 215

Coefficient of performance (C.O.P.)

30	2.05	2.50	3.01	3.59	4.25	5.00	5.85	6.81	7.89
35	1.75	2.15	2.60	3.12	3.70	4.36	5.11	5.94	6.88
40	-	1.83	2.23	2.68	3.19	3.77	4.42	5.15	5.97
45	-	-	1.88	2.27	2.72	3.23	3.79	4.43	5.14
50	-	-	1.56	1.90	2.29	2.72	3.22	3.77	4.38
55	-	-	-	1.57	1.89	2.26	2.68	3.16	3.69
60	-	-	-	-	1.54	1.85	2.20	2.60	3.05
65	-	-	-	-	-	-	1.75	2.08	2.45

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

Cooling capacity	37 522	W
Power input	11 669	W
Current consumption	17.73	A
Mass flow	912	kg/h
C.O.P.	3.22	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	76	dB(A)
With acoustic hood	70	dB(A)

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alternations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

Performance data at 60 Hz, ARI rating conditions
R410A

Cond. temp. in °C (tc)	Evaporating temperature in °C (to)							
	-25	-20	-15	-10	-5	0	5	10

Cooling capacity in W

30	16 236	20 061	24 550	29 795	35 888	42 921	50 986	60 174	70 578
35	15 367	19 090	23 442	28 515	34 402	41 194	48 983	57 861	67 920
40	-	18 019	22 205	27 077	32 728	39 250	46 734	55 272	64 957
45	-	-	20 867	25 510	30 896	37 118	44 268	52 438	61 719
50	-	-	-	23 842	28 934	34 827	41 614	49 386	58 235
55	-	-	-	22 102	26 871	32 406	38 800	46 145	54 532
60	-	-	-	-	24 736	29 884	35 856	42 744	50 640
65	-	-	-	-	-	-	32 811	39 213	46 589

Power input in W

30	7 329	7 445	7 573	7 707	7 844	7 980	8 112	8 234	8 344
35	8 074	8 183	8 307	8 442	8 586	8 733	8 880	9 023	9 157
40	-	9 016	9 130	9 261	9 404	9 555	9 712	9 869	10 022
45	-	-	10 068	10 187	10 324	10 474	10 633	10 797	10 964
50	-	-	-	11 248	11 372	11 513	11 669	11 835	12 007
55	-	-	-	12 469	12 573	12 700	12 846	13 007	13 179
60	-	-	-	-	13 953	14 060	14 189	14 339	14 504
65	-	-	-	-	-	-	15 725	15 857	16 009

Current consumption in A

30	13.01	13.09	13.18	13.28	13.40	13.53	13.69	13.87	14.08
35	13.76	13.87	13.99	14.11	14.25	14.40	14.58	14.77	14.99
40	-	14.74	14.88	15.02	15.17	15.33	15.51	15.71	15.93
45	-	-	15.89	16.04	16.20	16.37	16.55	16.74	16.96
50	-	-	-	17.24	17.39	17.56	17.73	17.92	18.13
55	-	-	-	18.65	18.80	18.96	19.12	19.29	19.48
60	-	-	-	-	20.47	20.61	20.75	20.90	21.06
65	-	-	-	-	-	-	22.68	22.80	22.93

Mass flow in kg/h

30	311	381	461	552	658	778	916	1 072	1 248
35	308	378	459	551	657	779	917	1 074	1 251
40	-	375	455	548	655	777	915	1 073	1 251
45	-	-	451	544	650	772	912	1 070	1 248
50	-	-	-	538	644	766	905	1 063	1 242
55	-	-	-	530	636	758	897	1 055	1 233
60	-	-	-	-	626	747	886	1 043	1 221
65	-	-	-	-	-	-	872	1 029	1 206

Coefficient of performance (C.O.P.)

30	2.22	2.69	3.24	3.87	4.58	5.38	6.29	7.31	8.46
35	1.90	2.33	2.82	3.38	4.01	4.72	5.52	6.41	7.42
40	-	2.00	2.43	2.92	3.48	4.11	4.81	5.60	6.48
45	-	-	2.07	2.50	2.99	3.54	4.16	4.86	5.63
50	-	-	-	2.12	2.54	3.02	3.57	4.17	4.85
55	-	-	-	1.77	2.14	2.55	3.02	3.55	4.14
60	-	-	-	-	1.77	2.13	2.53	2.98	3.49
65	-	-	-	-	-	-	2.09	2.47	2.91

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

Cooling capacity	42 277	W
Power input	12 766	W
Current consumption	19.01	A
Mass flow	965	kg/h
C.O.P.	3.31	

Pressure switch settings

Maximum HP switch setting	46.1	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	1.7	bar(g)

Sound power data

Sound power level	76	dB(A)
With acoustic hood	70	dB(A)

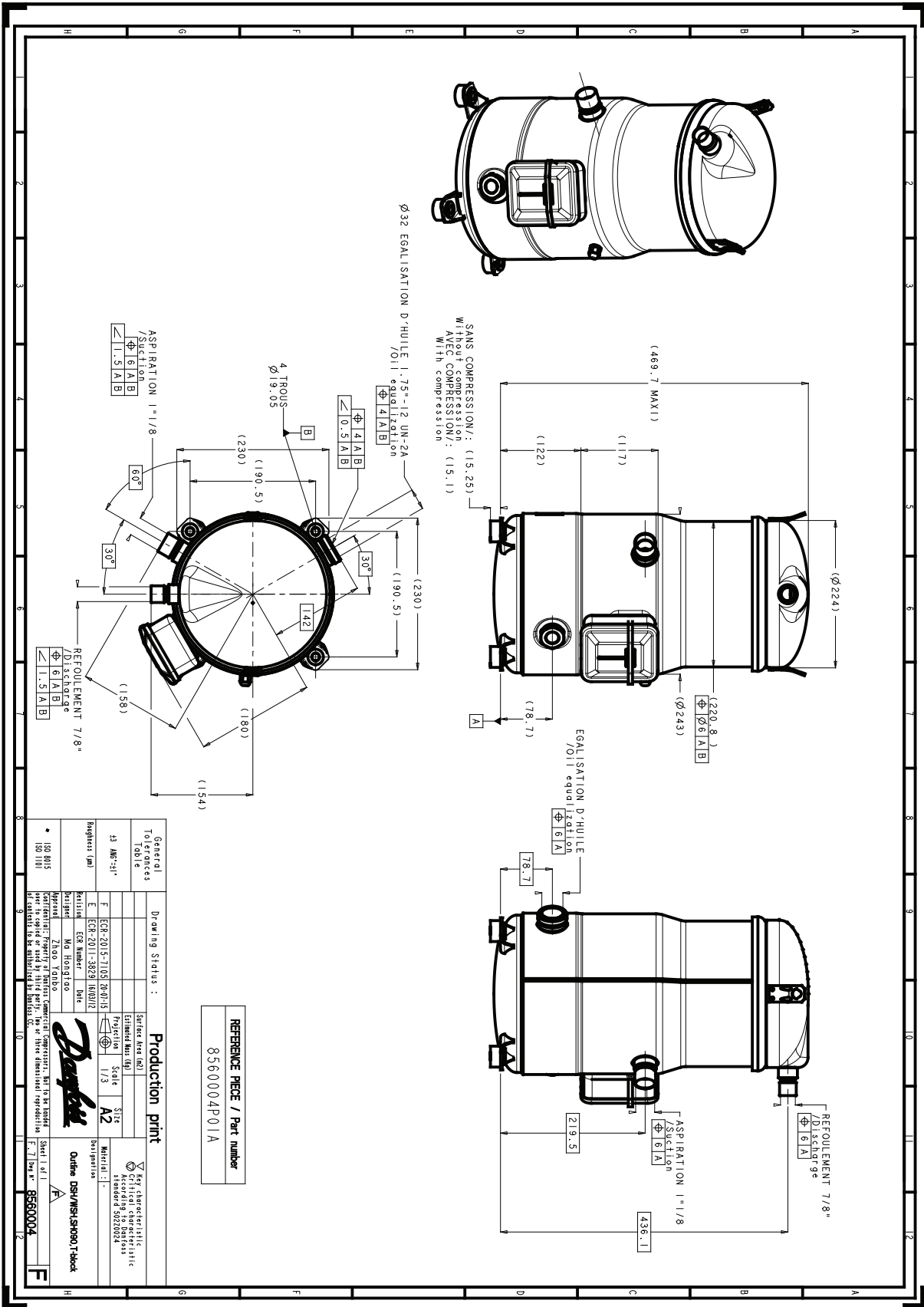
to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

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

Tolerance according EN12900

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alternations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.



Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alternations can be made without consequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss, the Danfoss logotype and Maneurop are trademarks of Danfoss A/S. All rights reserved.