

Datasheets

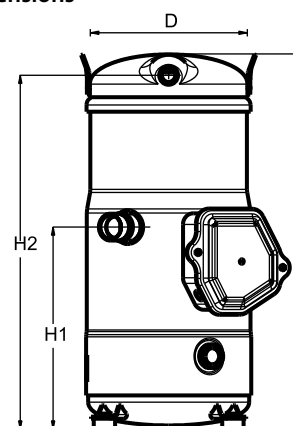
Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



General Characteristics

Model number (on compressor nameplate)		SH175A4ALC
Code number for Singlepack*		120H0870
Code number for Industrial pack**		120H0869
Drawing number		8560023e
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		163.5 cm ³ /rev
Displacement @ Nominal speed		28.4 m ³ /h @ 2900 rpm - 34.3 m ³ /h @ 3500 rpm
Net weight		72 kg
Oil charge		3.6 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

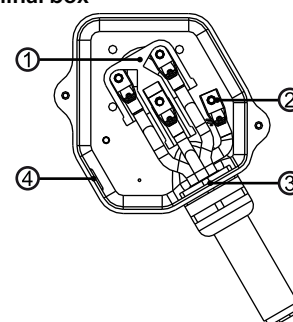


D=243 mm
H=555 mm
H1=300 mm
H2=525 mm
H3=- mm

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	0.83 Ω
Rated Load Amps (RLA)	27.6 A
Maximum Continuous Current (MCC)	38.6 A
Locked Rotor Amps (LRA)	197 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
3: Hole Ø 40.5 mm (1.59")
4: Knock-out Ø 16.5 mm (0.65")

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.

Electronic soft start kit, MCI 25 C	7705007
Acoustic hood for scroll compressor SH184	120Z0135
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
Terminal box cover	120Z0413
T block connector 60 x 75 mm	8173021

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	15 169	18 896	23 295	28 438	34 401	41 258	49 083	57 950	67 934
35	14 206	17 792	22 007	26 924	32 618	39 163	46 633	55 103	64 647
40	-	16 656	20 658	25 320	30 717	36 921	44 008	52 053	61 128
45	-	-	19 237	23 615	28 685	34 520	41 196	48 785	57 364
50	-	-	17 729	21 795	26 509	31 947	38 182	45 288	53 341
55	-	-	-	19 847	24 177	29 188	34 954	41 549	49 047
60	-	-	-	-	21 676	26 232	31 499	37 554	44 468
65	-	-	-	-	-	-	27 805	33 290	39 593

Power input in W

30	7 480	7 587	7 726	7 886	8 053	8 213	8 354	8 463	8 525
35	8 256	8 346	8 477	8 636	8 809	8 983	9 145	9 283	9 382
40	-	9 214	9 329	9 479	9 651	9 832	10 009	10 167	10 296
45	-	-	10 308	10 443	10 607	10 787	10 970	11 144	11 293
50	-	-	11 443	11 554	11 703	11 875	12 057	12 238	12 402
55	-	-	-	12 839	12 965	13 121	13 296	13 476	13 648
60	-	-	-	-	14 420	14 554	14 714	14 886	15 057
65	-	-	-	-	-	-	16 337	16 494	16 658

Current consumption in A

30	16.75	16.96	17.13	17.29	17.45	17.65	17.91	18.23	18.65
35	17.58	17.80	17.98	18.14	18.30	18.49	18.72	19.01	19.40
40	-	18.76	18.95	19.11	19.27	19.44	19.66	19.92	20.27
45	-	-	20.08	20.25	20.40	20.57	20.76	21.01	21.32
50	-	-	21.41	21.58	21.74	21.90	22.08	22.30	22.59
55	-	-	-	23.16	23.32	23.47	23.64	23.85	24.11
60	-	-	-	-	25.18	25.33	25.49	25.68	25.92
65	-	-	-	-	-	-	27.67	27.84	28.06

Mass flow in kg/h

30	317	390	474	571	682	808	952	1 115	1 298
35	313	386	471	567	678	805	948	1 111	1 295
40	-	382	466	562	673	799	943	1 105	1 289
45	-	-	460	556	667	792	936	1 098	1 281
50	-	-	454	549	659	784	927	1 088	1 270
55	-	-	-	541	650	774	916	1 076	1 257
60	-	-	-	-	639	763	903	1 063	1 243
65	-	-	-	-	-	-	889	1 047	1 226

Coefficient of performance (C.O.P.)

30	2.03	2.49	3.01	3.61	4.27	5.02	5.88	6.85	7.97
35	1.72	2.13	2.60	3.12	3.70	4.36	5.10	5.94	6.89
40	-	1.81	2.21	2.67	3.18	3.76	4.40	5.12	5.94
45	-	-	1.87	2.26	2.70	3.20	3.76	4.38	5.08
50	-	-	1.55	1.89	2.27	2.69	3.17	3.70	4.30
55	-	-	-	1.55	1.86	2.22	2.63	3.08	3.59
60	-	-	-	-	1.50	1.80	2.14	2.52	2.95
65	-	-	-	-	-	-	1.70	2.02	2.38

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

Cooling capacity	38 182	W
Power input	12 057	W
Current consumption	22.08	A
Mass flow	927	kg/h
C.O.P.	3.17	

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		dB(A)
With acoustic hood		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

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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	16 381	20 385	25 105	30 619	37 006	44 344	52 711	62 185	72 845
35	15 441	19 316	23 865	29 166	35 298	42 341	50 372	59 471	69 716
40	-	18 221	22 570	27 630	33 481	40 200	47 869	56 566	66 369
45	-	-	21 211	26 002	31 543	37 914	45 194	53 463	62 802
50	-	-	-	24 275	29 481	35 478	42 345	50 165	59 018
55	-	-	-	22 450	27 298	32 900	39 336	46 689	55 042
60	-	-	-	-	25 023	30 217	36 213	43 094	50 945
65	-	-	-	-	-	-	33 120	39 556	46 942

Power input in W

30	7 480	7 587	7 726	7 886	8 053	8 213	8 354	8 463	8 525
35	8 256	8 346	8 477	8 636	8 809	8 983	9 145	9 283	9 382
40	-	9 214	9 329	9 479	9 651	9 832	10 009	10 167	10 296
45	-	-	10 308	10 443	10 607	10 787	10 970	11 144	11 293
50	-	-	-	11 554	11 703	11 875	12 057	12 238	12 402
55	-	-	-	12 839	12 965	13 121	13 296	13 476	13 648
60	-	-	-	-	14 420	14 554	14 714	14 886	15 057
65	-	-	-	-	-	-	16 337	16 494	16 658

Current consumption in A

30	16.75	16.96	17.13	17.29	17.45	17.65	17.91	18.23	18.65
35	17.58	17.80	17.98	18.14	18.30	18.49	18.72	19.01	19.40
40	-	18.76	18.95	19.11	19.27	19.44	19.66	19.92	20.27
45	-	-	20.08	20.25	20.40	20.57	20.76	21.01	21.32
50	-	-	-	21.58	21.74	21.90	22.08	22.30	22.59
55	-	-	-	23.16	23.32	23.47	23.64	23.85	24.11
60	-	-	-	-	25.18	25.33	25.49	25.68	25.92
65	-	-	-	-	-	-	27.67	27.84	28.06

Mass flow in kg/h

30	315	388	471	567	677	803	945	1 107	1 289
35	311	384	468	564	674	799	942	1 103	1 285
40	-	379	463	559	669	794	936	1 098	1 279
45	-	-	457	553	662	787	929	1 090	1 271
50	-	-	-	546	655	779	920	1 080	1 260
55	-	-	-	538	646	769	909	1 069	1 248
60	-	-	-	-	635	758	897	1 055	1 233
65	-	-	-	-	-	-	883	1 040	1 217

Coefficient of performance (C.O.P.)

30	2.19	2.69	3.25	3.88	4.60	5.40	6.31	7.35	8.54
35	1.87	2.31	2.82	3.38	4.01	4.71	5.51	6.41	7.43
40	-	1.98	2.42	2.91	3.47	4.09	4.78	5.56	6.45
45	-	-	2.06	2.49	2.97	3.51	4.12	4.80	5.56
50	-	-	-	2.10	2.52	2.99	3.51	4.10	4.76
55	-	-	-	1.75	2.11	2.51	2.96	3.46	4.03
60	-	-	-	-	1.74	2.08	2.46	2.89	3.38
65	-	-	-	-	-	-	2.03	2.40	2.82

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

Cooling capacity	42 847	W
Power input	13 218	W
Current consumption	23.53	A
Mass flow	978	kg/h
C.O.P.	3.24	

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		dB(A)
With acoustic hood		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

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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	18 508	22 948	28 144	34 194	41 198	49 256	58 466	68 929	80 744
35	17 365	21 636	26 621	32 420	39 130	46 851	55 681	65 720	77 065
40	-	20 249	24 996	30 513	36 900	44 253	52 672	62 255	73 099
45	-	-	23 272	28 478	34 510	41 465	49 440	58 533	68 841
50	-	-	21 452	26 316	31 960	38 483	45 979	54 546	64 280
55	-	-	-	24 016	29 237	35 289	42 266	50 264	59 378
60	-	-	-	-	26 301	31 835	38 242	45 615	54 049
65	-	-	-	-	-	-	33 748	40 409	48 065

Power input in W

30	8 952	9 132	9 341	9 560	9 765	9 938	10 055	10 096	10 040
35	9 863	10 019	10 220	10 445	10 673	10 883	11 053	11 163	11 190
40	-	11 033	11 211	11 428	11 663	11 895	12 103	12 265	12 361
45	-	-	12 346	12 539	12 766	13 004	13 235	13 434	13 583
50	-	-	13 656	13 810	14 013	14 244	14 481	14 703	14 889
55	-	-	-	15 274	15 437	15 644	15 872	16 101	16 310
60	-	-	-	-	17 070	17 237	17 442	17 662	17 877
65	-	-	-	-	-	-	19 220	19 416	19 623

Current consumption in A

30	16.94	17.12	17.27	17.45	17.66	17.95	18.33	18.85	19.52
35	17.78	17.97	18.13	18.29	18.48	18.73	19.07	19.52	20.11
40	-	18.97	19.14	19.30	19.47	19.70	19.99	20.39	20.92
45	-	-	20.31	20.48	20.66	20.86	21.13	21.48	21.96
50	-	-	21.67	21.86	22.04	22.24	22.49	22.81	23.24
55	-	-	-	23.45	23.64	23.85	24.09	24.39	24.78
60	-	-	-	-	25.48	25.70	25.94	26.23	26.60
65	-	-	-	-	-	-	28.07	28.36	28.71

Mass flow in kg/h

30	386	472	572	685	816	965	1 134	1 326	1 543
35	382	469	568	683	814	963	1 134	1 326	1 544
40	-	464	564	679	810	960	1 131	1 324	1 542
45	-	-	558	672	804	954	1 125	1 319	1 537
50	-	-	550	665	796	946	1 117	1 311	1 529
55	-	-	-	655	786	936	1 107	1 300	1 518
60	-	-	-	-	774	923	1 094	1 287	1 504
65	-	-	-	-	-	-	1 078	1 270	1 488

Coefficient of performance (C.O.P.)

30	2.07	2.51	3.01	3.58	4.22	4.96	5.81	6.83	8.04
35	1.76	2.16	2.60	3.10	3.67	4.30	5.04	5.89	6.89
40	-	1.84	2.23	2.67	3.16	3.72	4.35	5.08	5.91
45	-	-	1.89	2.27	2.70	3.19	3.74	4.36	5.07
50	-	-	1.57	1.91	2.28	2.70	3.18	3.71	4.32
55	-	-	-	1.57	1.89	2.26	2.66	3.12	3.64
60	-	-	-	-	1.54	1.85	2.19	2.58	3.02
65	-	-	-	-	-	-	1.76	2.08	2.45

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

Cooling capacity	45 979	W
Power input	14 481	W
Current consumption	22.49	A
Mass flow	1 117	kg/h
C.O.P.	3.18	

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		dB(A)
With acoustic hood		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

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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	19 988	24 756	30 331	36 816	44 317	52 939	62 787	73 966	86 580
35	18 875	23 489	28 869	35 120	42 346	50 653	60 146	70 929	83 107
40	-	22 152	27 309	33 297	40 220	48 184	57 293	67 652	79 366
45	-	-	25 661	31 358	37 950	45 542	54 239	64 146	75 368
50	-	-	-	29 311	35 544	42 736	50 993	60 420	71 121
55	-	-	-	27 167	33 011	39 776	47 565	56 483	66 636
60	-	-	-	-	30 363	36 671	43 964	52 345	61 921
65	-	-	-	-	-	-	40 199	48 016	56 986

Power input in W

30	8 952	9 132	9 341	9 560	9 765	9 938	10 055	10 096	10 040
35	9 863	10 019	10 220	10 445	10 673	10 883	11 053	11 163	11 190
40	-	11 033	11 211	11 428	11 663	11 895	12 103	12 265	12 361
45	-	-	12 346	12 539	12 766	13 004	13 235	13 434	13 583
50	-	-	-	13 810	14 013	14 244	14 481	14 703	14 889
55	-	-	-	15 274	15 437	15 644	15 872	16 101	16 310
60	-	-	-	-	17 070	17 237	17 442	17 662	17 877
65	-	-	-	-	-	-	19 220	19 416	19 623

Current consumption in A

30	16.94	17.12	17.27	17.45	17.66	17.95	18.33	18.85	19.52
35	17.78	17.97	18.13	18.29	18.48	18.73	19.07	19.52	20.11
40	-	18.97	19.14	19.30	19.47	19.70	19.99	20.39	20.92
45	-	-	20.31	20.48	20.66	20.86	21.13	21.48	21.96
50	-	-	-	21.86	22.04	22.24	22.49	22.81	23.24
55	-	-	-	23.45	23.64	23.85	24.09	24.39	24.78
60	-	-	-	-	25.48	25.70	25.94	26.23	26.60
65	-	-	-	-	-	-	28.07	28.36	28.71

Mass flow in kg/h

30	383	470	568	681	811	958	1 126	1 317	1 531
35	379	466	565	679	809	957	1 126	1 317	1 532
40	-	461	560	674	805	954	1 123	1 314	1 530
45	-	-	554	668	799	948	1 117	1 309	1 525
50	-	-	-	660	791	940	1 109	1 301	1 517
55	-	-	-	651	781	930	1 099	1 291	1 507
60	-	-	-	-	769	917	1 086	1 277	1 493
65	-	-	-	-	-	-	1 071	1 261	1 476

Coefficient of performance (C.O.P.)

30	2.23	2.71	3.25	3.85	4.54	5.33	6.24	7.33	8.62
35	1.91	2.34	2.82	3.36	3.97	4.65	5.44	6.35	7.43
40	-	2.01	2.44	2.91	3.45	4.05	4.73	5.52	6.42
45	-	-	2.08	2.50	2.97	3.50	4.10	4.77	5.55
50	-	-	-	2.12	2.54	3.00	3.52	4.11	4.78
55	-	-	-	1.78	2.14	2.54	3.00	3.51	4.09
60	-	-	-	-	1.78	2.13	2.52	2.96	3.46
65	-	-	-	-	-	-	2.09	2.47	2.90

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

Cooling capacity	51 791	W
Power input	15 799	W
Current consumption	24.00	A
Mass flow	1 182	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	dB(A)
With acoustic hood	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

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