

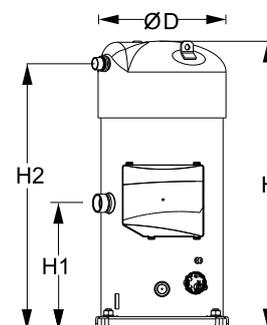
Datasheets

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



General Characteristics

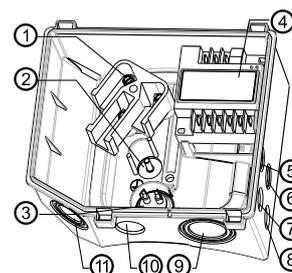
Model number (on compressor nameplate)		SH380A4AAE
Code number for Singlepack*		120H0253
Code number for Industrial pack**		120H0254
Drawing number		8556091c
Suction and discharge connections		Brazed
Suction connection		1-5/8" ODF
Discharge connection		1-1/8" ODF
Oil sight glass		Threaded
Oil equalisation connection		2-1/4" Rotolock
Oil drain connection		1/4" flare
LP gauge port		Schrader
IPR valve		Yes
Reverse rotation protection		Electronic module
Swept volume	345 cm ³ /rev	
Displacement @ Nominal speed	60.0 m ³ /h @ 2900 rpm - 72.5 m ³ /h @ 3500 rpm	
Net weight	159 kg	
Oil charge	6.7 litre, POE - 160SZ	
Maximum system test pressure Low Side / High side	34.3 bar(g) / 48.7 bar(g)	
Maximum differential test pressure	37 bar	
Maximum number of starts per hour	12	
Refrigerant charge limit	14.5 kg	
Approved refrigerants	R410A	

Dimensions


D=333.2 mm
H=755.3 mm
H1=331 mm
H2=696.5 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	0.418 Ω
Rated Load Amps (RLA)	56.4 A
Maximum Continuous Current (MCC)	79 A
Locked Rotor Amps (LRA)	320 A
Motor protection	Electronic protection module, 24 V AC

Terminal box


IP54 (with cable gland)

- 1: Power connection, 3 x 4.8 mm (3/16")
- 2: Earth M5
- 3: Thermistor connector
- 4: Electronic protection module
- 5: Double knock-out Ø 22.5 mm (7/8") & Ø 16.5 mm (0.65")
- 6: Double knock-out Ø 22.5 mm (7/8") & Ø 16.5 mm (0.65")
- 7: Knock-out Ø 20.7 mm (0.81")
- 8: Knock-out Ø 20.7 mm (0.81")
- 9: Triple knock-out Ø 50.8 mm (2") & Ø 43.7 mm (1.72") & Ø 34.5 mm (1.35")
- 10: Knock-out Ø 25.5 mm (1.00")
- 11: Triple knock-out Ø 40.5 mm (1.59") & Ø 32.2 mm (1.27") & Ø 25.5 mm (1")

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 rigid grommets, bolts, nuts, sleeves and washers
Electronic protection module mounted in terminal box
Initial oil charge
Installation instructions

Approvals : CE certified, UL certified (file SA6873), -

*Singlepack: Compressor in cardboard box

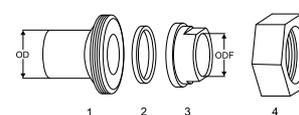
**Industrial pack: 4 Unboxed compressors on pallet (order per multiples of 4)

Rotolock accessories, suction side
Code no.

Solder sleeve, P03 (2-1/4" Rotolock, 1-5/8" ODF)	8153006
Rotolock valve, V03 (2-1/4" Rotolock, 1-5/8" ODF)	8168026
Rotolock adapter (2"1/4 Rotolock, 1"5/8 ODF)	12020432
Gasket, 2-1/4"	8156133

Rotolock accessories, discharge 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
Rotolock adapter (1-3/4" Rotolock, 1-1/8" ODF)	12020364
Gasket, 1-3/4"	8156132

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, (2-1/4" Rotolock, 1-5/8" ODF), (1-3/4" Rotolock, 1"1/8 ODF)	7765028
Valve set, V03 (2-1/4"~1-5/8"), V02 (1-3/4"~1-1/8")	7703383
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	12020571

Crankcase heaters
Code no.

Surface sump heater + bottom insulation, 56 W, 24 V, CE mark, UL	12020360
Surface sump heater + bottom insulation, 56 W, 230 V, CE mark, UL	12020376
Surface sump heater + bottom insulation, 56 W, 400 V, CE mark, UL	12020377
Surface sump heater + bottom insulation, 56 W, 460 V, CE mark, UL	12020378
Belt type crankcase heater, 130 W, 230 V, CE mark, UL	7773122
Belt type crankcase heater, 130 W, 400 V, CE mark, UL	7773123

Miscellaneous accessories
Code no.

Electronic soft start kit, MCI 50 CM	037N0401
Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers	8156138
Acoustic hood for scroll compressor	12020022
Acoustic bottom insulation for scroll compressor	12020353
Discharge thermostat kit	7750009

Spare parts
Code no.

Electronic motor protection module, 24 V AC	12020584
Mounting kit for 1 scroll compressor including 4 hexagon rigid grommets, 4 sleeves, 4 bolts, 4 washers	7777045
Oil sight glass with gaskets (black & white)	8156019
Gasket for oil sight glass (white teflon)	8156129
Terminal box 210 x 190 incl. cover	12020458
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	31 721	39 606	48 843	59 622	72 134	86 568	103 114	121 962	143 303
35	29 640	37 234	46 095	56 415	68 382	82 187	98 019	116 069	136 527
40	-	34 752	43 185	52 991	64 361	77 484	92 550	109 749	129 270
45	-	-	40 088	49 328	60 048	72 435	86 682	102 976	121 509
50	-	-	36 780	45 402	55 418	67 018	80 392	95 729	113 220
55	-	-	-	41 189	50 448	61 207	73 656	87 983	104 380
60	-	-	-	-	45 115	54 981	66 451	79 715	94 964
65	-	-	-	-	-	-	58 753	70 901	84 950

Power input in W

30	16 508	16 696	16 826	16 941	17 084	17 296	17 621	18 102	18 781
35	18 152	18 408	18 577	18 702	18 825	18 988	19 235	19 608	20 150
40	-	20 285	20 513	20 666	20 788	20 922	21 110	21 394	21 819
45	-	-	22 650	22 851	22 992	23 115	23 263	23 478	23 804
50	-	-	25 006	25 275	25 454	25 585	25 712	25 877	26 123
55	-	-	-	27 954	28 189	28 348	28 474	28 607	28 793
60	-	-	-	-	31 217	31 423	31 565	31 687	31 831
65	-	-	-	-	-	-	35 004	35 133	35 255

Current consumption in A

30	33.66	33.99	34.18	34.30	34.42	34.61	34.95	35.50	36.34
35	35.55	35.97	36.21	36.35	36.45	36.60	36.87	37.32	38.03
40	-	38.20	38.51	38.68	38.80	38.92	39.13	39.49	40.09
45	-	-	41.14	41.37	41.51	41.63	41.80	42.09	42.59
50	-	-	44.17	44.47	44.65	44.78	44.93	45.18	45.59
55	-	-	-	48.05	48.29	48.45	48.60	48.81	49.16
60	-	-	-	-	52.48	52.69	52.85	53.05	53.35
65	-	-	-	-	-	-	57.76	57.96	58.23

Mass flow in kg/h

30	662	816	993	1 196	1 430	1 697	2 002	2 348	2 739
35	652	807	984	1 188	1 423	1 691	1 996	2 343	2 735
40	-	795	973	1 177	1 412	1 680	1 986	2 333	2 726
45	-	-	959	1 163	1 398	1 666	1 972	2 319	2 712
50	-	-	942	1 146	1 380	1 648	1 953	2 300	2 692
55	-	-	-	1 125	1 358	1 625	1 930	2 276	2 667
60	-	-	-	-	1 333	1 599	1 902	2 247	2 638
65	-	-	-	-	-	-	1 871	2 214	2 603

Coefficient of performance (C.O.P.)

30	1.92	2.37	2.90	3.52	4.22	5.01	5.85	6.74	7.63
35	1.63	2.02	2.48	3.02	3.63	4.33	5.10	5.92	6.78
40	-	1.71	2.11	2.56	3.10	3.70	4.38	5.13	5.92
45	-	-	1.77	2.16	2.61	3.13	3.73	4.39	5.10
50	-	-	1.47	1.80	2.18	2.62	3.13	3.70	4.33
55	-	-	-	1.47	1.79	2.16	2.59	3.08	3.63
60	-	-	-	-	1.45	1.75	2.11	2.52	2.98
65	-	-	-	-	-	-	1.68	2.02	2.41

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

Cooling capacity	80 392	W
Power input	25 712	W
Current consumption	44.93	A
Mass flow	1 953	kg/h
C.O.P.	3.13	

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	83	dB(A)
With acoustic hood	77	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	34 257	42 726	52 638	64 194	77 595	93 042	110 735	130 875	153 661
35	32 218	40 423	49 987	61 113	74 002	88 856	105 878	125 269	147 230
40	-	38 017	47 182	57 826	70 153	84 366	100 669	119 264	140 354
45	-	-	44 202	54 315	66 032	79 557	95 095	112 851	133 029
50	-	-	-	50 569	61 631	74 425	89 158	106 038	125 271
55	-	-	-	46 592	56 961	68 990	82 890	98 869	117 138
60	-	-	-	-	52 082	63 333	76 393	91 476	108 796
65	-	-	-	-	-	-	69 983	84 247	100 718

Power input in W

30	16 508	16 696	16 826	16 941	17 084	17 296	17 621	18 102	18 781
35	18 152	18 408	18 577	18 702	18 825	18 988	19 235	19 608	20 150
40	-	20 285	20 513	20 666	20 788	20 922	21 110	21 394	21 819
45	-	-	22 650	22 851	22 992	23 115	23 263	23 478	23 804
50	-	-	-	25 275	25 454	25 585	25 712	25 877	26 123
55	-	-	-	27 954	28 189	28 348	28 474	28 607	28 793
60	-	-	-	-	31 217	31 423	31 565	31 687	31 831
65	-	-	-	-	-	-	35 004	35 133	35 255

Current consumption in A

30	33.66	33.99	34.18	34.30	34.42	34.61	34.95	35.50	36.34
35	35.55	35.97	36.21	36.35	36.45	36.60	36.87	37.32	38.03
40	-	38.20	38.51	38.68	38.80	38.92	39.13	39.49	40.09
45	-	-	41.14	41.37	41.51	41.63	41.80	42.09	42.59
50	-	-	-	44.47	44.65	44.78	44.93	45.18	45.59
55	-	-	-	48.05	48.29	48.45	48.60	48.81	49.16
60	-	-	-	-	52.48	52.69	52.85	53.05	53.35
65	-	-	-	-	-	-	57.76	57.96	58.23

Mass flow in kg/h

30	658	811	987	1 189	1 421	1 686	1 988	2 331	2 718
35	648	802	979	1 181	1 413	1 679	1 982	2 326	2 714
40	-	791	967	1 170	1 403	1 669	1 972	2 317	2 705
45	-	-	953	1 156	1 389	1 655	1 958	2 302	2 691
50	-	-	-	1 139	1 371	1 637	1 940	2 284	2 672
55	-	-	-	1 118	1 349	1 614	1 917	2 260	2 647
60	-	-	-	-	1 325	1 588	1 889	2 231	2 618
65	-	-	-	-	-	-	1 858	2 198	2 583

Coefficient of performance (C.O.P.)

30	2.08	2.56	3.13	3.79	4.54	5.38	6.28	7.23	8.18
35	1.77	2.20	2.69	3.27	3.93	4.68	5.50	6.39	7.31
40	-	1.87	2.30	2.80	3.37	4.03	4.77	5.57	6.43
45	-	-	1.95	2.38	2.87	3.44	4.09	4.81	5.59
50	-	-	-	2.00	2.42	2.91	3.47	4.10	4.80
55	-	-	-	1.67	2.02	2.43	2.91	3.46	4.07
60	-	-	-	-	1.67	2.02	2.42	2.89	3.42
65	-	-	-	-	-	-	2.00	2.40	2.86

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

Cooling capacity	90 466	W
Power input	28 181	W
Current consumption	48.21	A
Mass flow	2 065	kg/h
C.O.P.	3.21	

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	83	dB(A)
With acoustic hood	77	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	38 248	47 735	58 860	71 847	86 923	104 315	124 248	146 950	172 647
35	35 785	44 881	55 529	67 954	82 382	99 036	118 142	139 927	164 615
40	-	41 895	52 010	63 815	77 534	93 391	111 608	132 412	156 024
45	-	-	48 303	59 427	72 377	87 372	104 636	124 390	146 857
50	-	-	44 400	54 781	66 895	80 962	97 200	115 831	137 074
55	-	-	-	49 848	61 054	74 113	89 244	106 663	126 587
60	-	-	-	-	54 763	66 717	80 632	96 722	115 198
65	-	-	-	-	-	-	71 024	85 596	102 413

Power input in W

30	20 040	20 229	20 472	20 765	21 103	21 481	21 896	22 342	22 816
35	22 074	22 231	22 443	22 708	23 019	23 374	23 767	24 193	24 649
40	-	24 504	24 686	24 922	25 207	25 537	25 907	26 314	26 752
45	-	-	27 229	27 435	27 694	27 999	28 347	28 733	29 153
50	-	-	30 101	30 278	30 509	30 790	31 115	31 480	31 882
55	-	-	-	33 479	33 682	33 937	34 239	34 584	34 966
60	-	-	-	-	37 242	37 471	37 749	38 072	38 436
65	-	-	-	-	-	-	41 674	41 975	42 319

Current consumption in A

30	32.33	32.78	33.11	33.39	33.65	33.94	34.33	34.85	35.57
35	34.49	34.96	35.32	35.62	35.90	36.22	36.63	37.18	37.91
40	-	37.46	37.83	38.13	38.42	38.74	39.16	39.71	40.44
45	-	-	40.73	41.02	41.30	41.61	42.02	42.55	43.28
50	-	-	44.13	44.40	44.65	44.94	45.31	45.82	46.51
55	-	-	-	48.37	48.57	48.82	49.14	49.61	50.25
60	-	-	-	-	53.18	53.36	53.62	54.02	54.61
65	-	-	-	-	-	-	58.86	59.18	59.68

Mass flow in kg/h

30	797	982	1 196	1 441	1 722	2 045	2 412	2 829	3 299
35	787	972	1 186	1 432	1 714	2 038	2 407	2 825	3 297
40	-	959	1 173	1 419	1 702	2 027	2 397	2 816	3 290
45	-	-	1 157	1 403	1 686	2 011	2 381	2 802	3 276
50	-	-	1 138	1 383	1 666	1 991	2 361	2 781	3 256
55	-	-	-	1 360	1 642	1 966	2 336	2 756	3 230
60	-	-	-	-	1 614	1 936	2 305	2 724	3 199
65	-	-	-	-	-	-	2 270	2 688	3 161

Coefficient of performance (C.O.P.)

30	1.91	2.36	2.88	3.46	4.12	4.86	5.67	6.58	7.57
35	1.62	2.02	2.47	2.99	3.58	4.24	4.97	5.78	6.68
40	-	1.71	2.11	2.56	3.08	3.66	4.31	5.03	5.83
45	-	-	1.77	2.17	2.61	3.12	3.69	4.33	5.04
50	-	-	1.48	1.81	2.19	2.63	3.12	3.68	4.30
55	-	-	-	1.49	1.81	2.18	2.61	3.08	3.62
60	-	-	-	-	1.47	1.78	2.14	2.54	3.00
65	-	-	-	-	-	-	1.70	2.04	2.42

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

Cooling capacity	97 200	W
Power input	31 115	W
Current consumption	45.31	A
Mass flow	2 361	kg/h
C.O.P.	3.12	

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	87	dB(A)
With acoustic hood	83	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	41 305	51 496	63 434	77 357	93 504	112 116	133 431	157 688	185 127
35	38 897	48 725	60 218	73 613	89 152	107 073	127 615	151 017	177 520
40	-	45 832	56 824	69 637	84 511	101 686	121 399	143 892	169 402
45	-	-	53 260	65 436	79 590	95 962	114 792	136 318	160 781
50	-	-	-	61 017	74 395	89 910	107 800	128 305	151 664
55	-	-	-	56 388	68 936	83 537	100 433	119 860	142 061
60	-	-	-	-	63 219	76 852	92 697	110 992	131 978
65	-	-	-	-	-	-	84 600	101 707	121 423

Power input in W

30	20 040	20 229	20 472	20 765	21 103	21 481	21 896	22 342	22 816
35	22 074	22 231	22 443	22 708	23 019	23 374	23 767	24 193	24 649
40	-	24 504	24 686	24 922	25 207	25 537	25 907	26 314	26 752
45	-	-	27 229	27 435	27 694	27 999	28 347	28 733	29 153
50	-	-	-	30 278	30 509	30 790	31 115	31 480	31 882
55	-	-	-	33 479	33 682	33 937	34 239	34 584	34 966
60	-	-	-	-	37 242	37 471	37 749	38 072	38 436
65	-	-	-	-	-	-	41 674	41 975	42 319

Current consumption in A

30	32.33	32.78	33.11	33.39	33.65	33.94	34.33	34.85	35.57
35	34.49	34.96	35.32	35.62	35.90	36.22	36.63	37.18	37.91
40	-	37.46	37.83	38.13	38.42	38.74	39.16	39.71	40.44
45	-	-	40.73	41.02	41.30	41.61	42.02	42.55	43.28
50	-	-	-	44.40	44.65	44.94	45.31	45.82	46.51
55	-	-	-	48.37	48.57	48.82	49.14	49.61	50.25
60	-	-	-	-	53.18	53.36	53.62	54.02	54.61
65	-	-	-	-	-	-	58.86	59.18	59.68

Mass flow in kg/h

30	793	977	1 188	1 432	1 711	2 031	2 396	2 808	3 274
35	782	966	1 178	1 423	1 703	2 025	2 390	2 805	3 272
40	-	953	1 166	1 410	1 691	2 013	2 380	2 796	3 265
45	-	-	1 150	1 394	1 676	1 998	2 365	2 781	3 251
50	-	-	-	1 375	1 656	1 977	2 345	2 761	3 232
55	-	-	-	1 352	1 632	1 953	2 319	2 736	3 206
60	-	-	-	-	1 604	1 924	2 289	2 705	3 174
65	-	-	-	-	-	-	2 254	2 668	3 137

Coefficient of performance (C.O.P.)

30	2.06	2.55	3.10	3.73	4.43	5.22	6.09	7.06	8.11
35	1.76	2.19	2.68	3.24	3.87	4.58	5.37	6.24	7.20
40	-	1.87	2.30	2.79	3.35	3.98	4.69	5.47	6.33
45	-	-	1.96	2.39	2.87	3.43	4.05	4.74	5.51
50	-	-	-	2.02	2.44	2.92	3.46	4.08	4.76
55	-	-	-	1.68	2.05	2.46	2.93	3.47	4.06
60	-	-	-	-	1.70	2.05	2.46	2.92	3.43
65	-	-	-	-	-	-	2.03	2.42	2.87

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

Cooling capacity	109 615	W
Power input	33 992	W
Current consumption	48.84	A
Mass flow	2 500	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	87	dB(A)
With acoustic hood	83	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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