MAKING MODERN LIVING POSSIBLE

Datasheets

Performer® scroll compressors
SM / SY / SZ / SH

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Performer®
Air Conditioning Scroll Compressors

General Characteristics

Model number (on compressor nameplate)		**SH161A4ALC**
Code number for Singlepack*		120H0023
Code number for Industrial pack**		120H0024
Drawing number		8560003d
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	151,7 cm3/rev	
Displacement @ Nominal speed	26.4 m3/h @ 2900 rpm - 31.9 m3/h @ 3500 rpm	
Net weight	69 kg	
Oil charge	3,3 litre, POE - 160SZ	
Maximum system test pressure Low Side / High side	33,3 bar(g) / 45 bar(g)	
Maximum differential test pressure	37 bar	
Maximum number of starts per hour	12	
Refrigerant charge limit	7,9 kg	
Approved refrigerants	R410A	

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 25ºC	0.83 Ω
Rated Load Amps (RLA)	25 A
Maximum Continuous Current (MCC)	35 A
Locked Rotor Amps (LRA)	158 A
Motor protection	Internal overload protector

Recommended Installation torques

Oil sight glass	50 Nm
Power connections / Earth connection	3 Nm / 2 Nm
Mounting bolts	15 Nm

Parts shipped with compressor

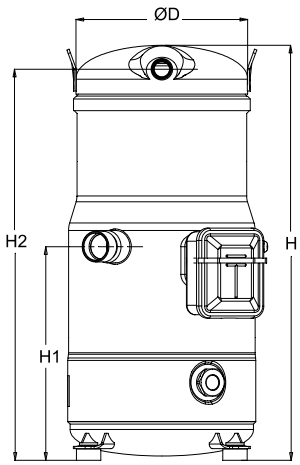
Mounting kit with grommets, bolts, nuts, sleeves and washers
Initial oil charge
Installation instructions

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

*Singlepack: Compressor in cardboard box

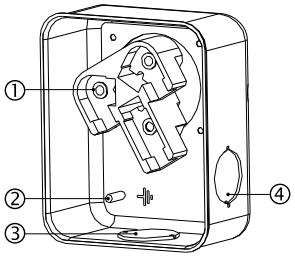
**Industrial pack: 8 Unboxed compressors on pallet (order per multiples of 8)

Dimensions



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

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")

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 litre can	7754024

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	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
Gasket for oil sight glass (white teflon)	8156129
Service kit for terminal box 96 x 115 mm, including 1 cover, 1 clamp, 1 T block connector 52 x 57 mm	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	15
Cooling capacity in W									
30	13 655	17 030	21 004	25 657	31 065	37 306	44 460	52 605	61 817
35	12 664	15 950	19 795	24 277	29 476	35 468	42 333	50 148	58 991
40	-	14 827	18 507	22 785	27 739	33 447	39 988	47 438	55 878
45	-	13 653	17 134	21 172	25 847	31 236	37 417	44 468	52 469
50	-	-	15 665	19 429	23 790	28 824	34 611	41 229	48 755
55	-	-	-	17 548	21 559	26 204	31 562	37 711	44 729
60	-	-	-	-	19 146	23 367	28 262	33 907	40 380
65	-	-	-	-	-	20 304	24 700	29 806	35 702
Power input in W									
30	6 992	7 037	7 077	7 119	7 172	7 246	7 347	7 486	7 671
35	7 798	7 843	7 878	7 912	7 953	8 011	8 093	8 209	8 367
40	-	8 757	8 785	8 809	8 837	8 877	8 939	9 030	9 159
45	-	9 802	9 823	9 835	9 847	9 869	9 907	9 972	10 071
50	-	-	11 014	11 013	11 008	11 008	11 022	11 059	11 126
55	-	-	-	12 365	12 342	12 320	12 308	12 314	12 348
60	-	-	-	-	13 872	13 826	13 786	13 761	13 759
65	-	-	-	-	-	15 550	15 480	15 422	15 383
Current consumption in A									
30	14.45	14.45	14.48	14.51	14.56	14.63	14.72	14.83	14.95
35	15.35	15.35	15.37	15.40	15.44	15.50	15.58	15.67	15.79
40	-	16.42	16.42	16.44	16.47	16.52	16.58	16.66	16.76
45	-	17.69	17.68	17.68	17.70	17.72	17.77	17.83	17.90
50	-	-	19.18	19.16	19.16	19.16	19.18	19.22	19.27
55	-	-	-	20.93	20.90	20.88	20.87	20.88	20.90
60	-	-	-	-	22.96	22.91	22.87	22.84	22.83
65	-	-	-	-	-	25.29	25.22	25.15	25.10
Mass flow in kg/h									
30	283	350	427	515	616	732	863	1 012	1 181
35	278	346	423	512	614	730	862	1 012	1 181
40	-	340	418	507	609	726	858	1 008	1 178
45	-	333	410	500	602	718	851	1 001	1 170
50	-	-	401	490	592	708	840	990	1 159
55	-	-	-	478	579	695	826	976	1 144
60	-	-	-	-	564	679	809	958	1 125
65	-	-	-	-	-	660	789	936	1 102
Coefficient of performance (C.O.P.)									
30	1.95	2.42	2.97	3.60	4.33	5.15	6.05	7.03	8.06
35	1.62	2.03	2.51	3.07	3.71	4.43	5.23	6.11	7.05
40	-	1.69	2.11	2.59	3.14	3.77	4.47	5.25	6.10
45	-	1.39	1.74	2.15	2.62	3.17	3.78	4.46	5.21
50	-	-	1.42	1.76	2.16	2.62	3.14	3.73	4.38
55	-	-	-	1.42	1.75	2.13	2.56	3.06	3.62
60	-	-	-	-	1.38	1.69	2.05	2.46	2.93
65	-	-	-	-	-	1.31	1.60	1.93	2.32

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

Cooling capacity	34 611	W
Power input	11 022	W
Current consumption	19.18	A
Mass flow	840	kg/h
C.O.P.	3.14	

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Pressure switch settings

Maximum HP switch setting	45	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	2.3	bar(g)

Sound power data

Sound power level	73.5	dB(A)
With accoustic hood	67.5	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%

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	15
Cooling capacity in W									
30	14 746	18 372	22 637	27 624	33 416	40 096	47 746	56 448	66 285
35	13 766	17 316	21 466	26 299	31 898	38 346	45 726	54 122	63 615
40	-	16 220	20 220	24 864	30 235	36 418	43 495	51 551	60 668
45	-	15 077	18 892	23 313	28 423	34 306	41 048	48 732	57 442
50	-	-	17 477	21 641	26 457	32 010	38 385	45 668	53 944
55	-	-	-	19 850	24 342	29 536	35 519	42 377	50 195
60	-	-	-	-	22 102	26 917	32 490	38 909	46 262
65	-	-	-	-	-	24 251	29 421	35 416	42 328
Power input in W									
30	6 992	7 037	7 077	7 119	7 172	7 246	7 347	7 486	7 671
35	7 798	7 843	7 878	7 912	7 953	8 011	8 093	8 209	8 367
40	-	8 757	8 785	8 809	8 837	8 877	8 939	9 030	9 159
45	-	9 802	9 823	9 835	9 847	9 869	9 907	9 972	10 071
50	-	-	11 014	11 013	11 008	11 008	11 022	11 059	11 126
55	-	-	-	12 365	12 342	12 320	12 308	12 314	12 348
60	-	-	-	-	13 872	13 826	13 786	13 761	13 759
65	-	-	-	-	-	15 550	15 480	15 422	15 383
Current consumption in A									
30	14.45	14.45	14.48	14.51	14.56	14.63	14.72	14.83	14.95
35	15.35	15.35	15.37	15.40	15.44	15.50	15.58	15.67	15.79
40	-	16.42	16.42	16.44	16.47	16.52	16.58	16.66	16.76
45	-	17.69	17.68	17.68	17.70	17.72	17.77	17.83	17.90
50	-	-	19.18	19.16	19.16	19.16	19.18	19.22	19.27
55	-	-	-	20.93	20.90	20.88	20.87	20.88	20.90
60	-	-	-	-	22.96	22.91	22.87	22.84	22.83
65	-	-	-	-	-	25.29	25.22	25.15	25.10
Mass flow in kg/h									
30	281	348	424	512	612	727	857	1 005	1 172
35	276	344	421	509	610	725	856	1 005	1 172
40	-	338	415	504	605	721	852	1 001	1 169
45	-	331	408	496	598	713	845	994	1 161
50	-	-	399	487	588	703	834	983	1 150
55	-	-	-	475	576	690	821	969	1 135
60	-	-	-	-	561	674	804	951	1 116
65	-	-	-	-	-	656	784	929	1 094
Coefficient of performance (C.O.P.)									
30	2.11	2.61	3.20	3.88	4.66	5.53	6.50	7.54	8.64
35	1.77	2.21	2.72	3.32	4.01	4.79	5.65	6.59	7.60
40	-	1.85	2.30	2.82	3.42	4.10	4.87	5.71	6.62
45	-	1.54	1.92	2.37	2.89	3.48	4.14	4.89	5.70
50	-	-	1.59	1.97	2.40	2.91	3.48	4.13	4.85
55	-	-	-	1.61	1.97	2.40	2.89	3.44	4.07
60	-	-	-	-	1.59	1.95	2.36	2.83	3.36
65	-	-	-	-	-	1.56	1.90	2.30	2.75

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

Cooling capacity	38 800	W
Power input	12 145	W
Current consumption	20.66	A
Mass flow	885	kg/h
C.O.P.	3.19	

to: Evaporating temperature at dew point
tc: Condensing temperature at dew point
Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

Pressure switch settings

Maximum HP switch setting	45	bar(g)
Minimum LP switch setting	1.5	bar(g)
LP pump down setting	2.3	bar(g)

Sound power data

Sound power level	73.5	dB(A)
With accoustic hood	67.5	dB(A)

All performance data +/- 5%