

Application guidelines

# Danfoss scrolls, **H-Series** Residential and light commercial

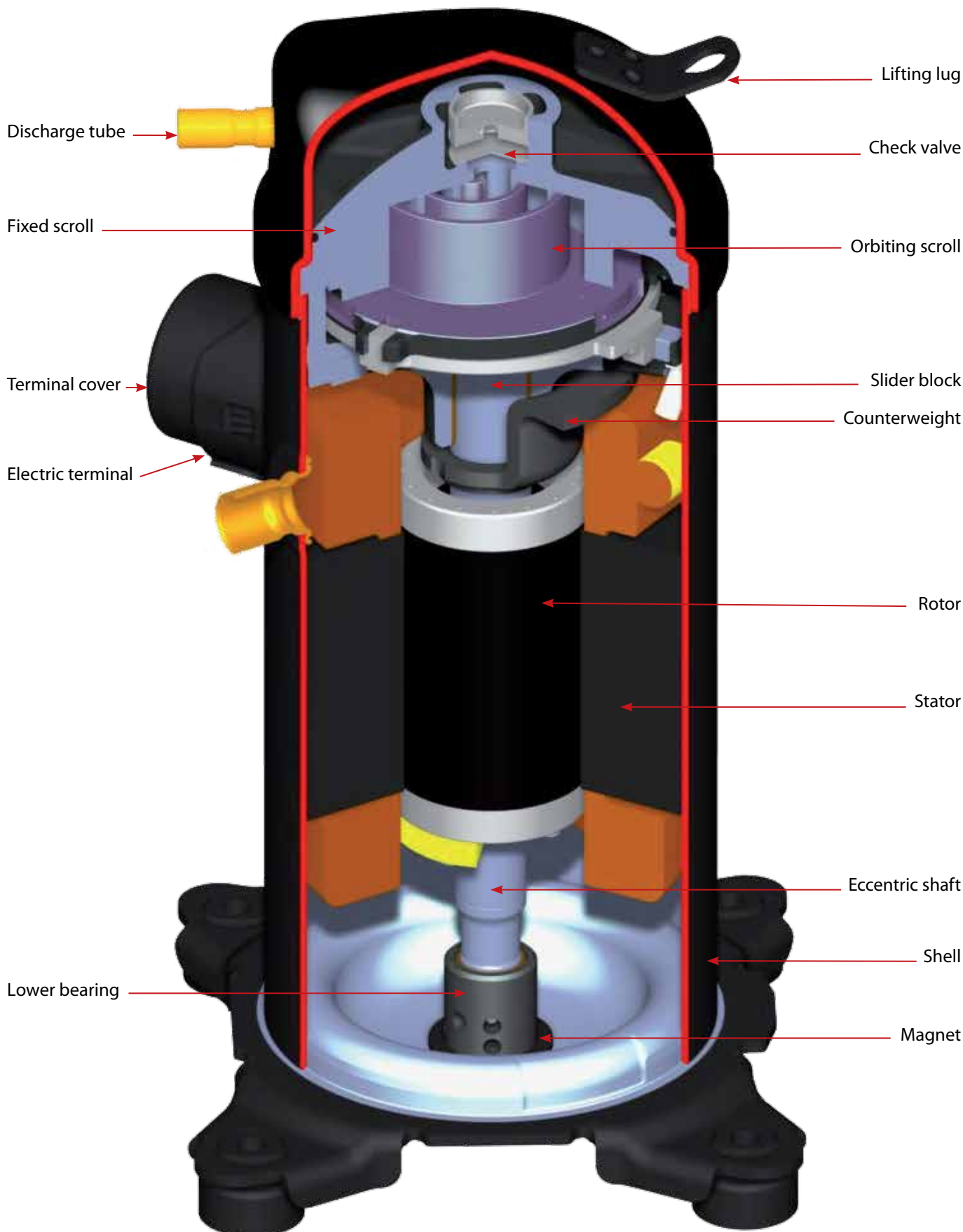
R22, R407C, R410A; 50 - 60 Hz



## Features

Danfoss H-series scroll compressors are manufactured using the most advanced machining, assembly, and process control techniques. In design of both the compressor and the factory, very high standards of reliability

and process control were first priority. The result is a highly efficient product with the highest reliability obtainable, and a low sound level. The H-series compressors can be black or blue depending on the production site.



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## Compressor model designation

Danfoss H-series scroll compressor for R22/R407C/R410A is available as single compressor and can be assembled in tandem combinations. The example below presents the compressor

nomenclature which equals the technical reference as shown on the compressor nameplate. Code numbers for ordering are listed section "Ordering information and packaging".

### Nomenclature

Type	Size	Motor	Features
<b>HRH</b>	<b>036</b>	<b>U1L</b>	<b>P6</b>

**Application:** \_\_\_\_\_  
**H:** high temperature / air conditioning

**Family:** \_\_\_\_\_  
**C:** commercial scroll  
**R:** residential scroll  
**L:** light commercial scroll

**Refrigerant & lubricant:** \_\_\_\_\_  
**M:** R22, alkylbenzene lubricant  
**P:** R407C, PVE lubricant  
**H:** R410A, PVE lubricant  
**J:** R410A, PVE lubricant

**Nominal capacity:** \_\_\_\_\_  
 In thousand Btu/h at 60 Hz, ARI conditions

**Model variation** \_\_\_\_\_  
**T:** design optimized for 7.2/54.4°C  
**U:** design optimized for 7.2/37.8°C

**Other features**

	Oil sight glass	Oil equalisation	Oil drain	LP gauge port	Gas equalisation port
<b>6</b>	None	None	None	None	None
<b>8</b>	None	Brazed	None	None	Brazed

**Tubing and electrical connections**  
**P:** brazed connections, spade terminals  
**C:** brazed connections, screw terminals

**Motor protection**  
**L:** internal motor protection

**Motor voltage code**  
**1:** 208-230V/1~/60 Hz  
**2:** 200-220V/3~/50Hz & 208-230V/3~/60 Hz  
**4:** 380-415V/3~/50 Hz & 460V/3~/60 Hz  
**5:** 220-240V/1~/50 Hz  
**7:** 575V/ 3~/60 Hz  
**9:** 380V/3~/60 Hz

## Technical specifications

### 50-60 Hz data

Model	Nominal tons 60 Hz	Nominal cooling capacity		Power input	COP	E.E.R	Swept volume	Displacement	Oil charge	Net weight	
	TR	W	Btu/h	kW	W/W	Btu/h/W	cm <sup>3</sup> /rev	m <sup>3</sup> /h	dm <sup>3</sup>	kg	
50Hz	HRP025T4	2.0	5730	19 570	1.86	3.08	10.5	34.1	5.90	1.06	32
	HRP034T4	2.8	7 940	27 080	2.68	2.96	10.1	46.2	8.03	1.06	32
	HRP038T4	3.2	8 840	30 150	2.82	3.14	10.7	51.6	8.98	1.06	32
	HRP040T4	3.3	9 110	31 080	3.14	2.90	9.9	54.4	9.47	1.06	32
	HRP042T4	3.5	9 580	32 680	3.30	2.90	9.9	57.2	9.95	1.06	32
	HRP045T4	3.8	10 810	36 890	3.58	3.02	10.3	61.5	10.69	1.33	32
	HRP047T4	3.9	11 130	37 980	3.69	3.02	10.3	64.1	11.15	1.33	32
	HRP048T4	4.0	11 100	37 880	3.35	3.31	11.3	64.4	11.21	1.57	39
	HRP051T4	4.3	12 120	41 370	3.83	3.17	10.8	68.8	11.98	1.57	39
	HRP054T4	4.5	12 570	42 880	3.97	3.17	10.8	72.8	12.66	1.57	41
	HRP058T4	4.8	13 470	45 970	4.25	3.17	10.8	78.2	13.60	1.57	41
	HRP060T4	5.0	13 860	47 280	4.26	3.25	11.1	81.0	14.09	1.57	41
	HLP068T4	5.7	15 700	53 560	5.10	3.08	10.5	93.1	16.20	1.57	41
	HLP072T4	6.0	16 620	56 740	5.30	3.14	10.7	98.7	17.17	1.57	41
	HLP075T4	6.3	18 040	61 550	5.54	3.26	11.1	102.8	17.88	1.57	41
	HLP081T4	6.8	19 480	66 510	5.99	3.25	11.1	110.9	19.30	1.57	41
	HCP094T4	7.8	21 590	73 660	6.63	3.26	11.1	126.0	21.93	2.66	47
	HCP109T4	9.1	26 060	88 950	7.93	3.28	11.2	148.8	25.89	2.66	47
	HCP120T4	10.0	28 150	96 080	8.88	3.17	10.8	162.4	28.26	2.66	47
60Hz	HRP025T4	2.0	6880	23 490	2.22	3.11	10.6	34.1	7.12	1.06	32
	HRP034T4	2.8	9580	32 700	3.20	3.00	10.2	46.2	9.69	1.06	32
	HRP038T4	3.2	10 670	36 410	3.36	3.18	10.8	46.2	10.84	1.06	32
	HRP040T4	3.3	10 990	37 510	3.70	2.97	10.1	54.4	11.43	1.06	32
	HRP042T4	3.5	11 560	39 460	3.93	2.94	10.0	57.2	12.01	1.06	32
	HRP045T4	3.8	13 050	44 540	4.27	3.06	10.4	61.5	12.9	1.33	32
	HRP047T4	3.9	12 690	43 300	4.24	3.00	10.2	64.1	13.46	1.33	32
	HRP048T4	4.0	13 400	45 740	3.99	3.36	11.5	64.4	13.53	1.57	39
	HRP051T4	4.3	14 380	49080	4.46	3.23	11.0	68.8	14.46	1.57	39
	HRP054T4	4.5	15 120	51 770	4.73	3.21	11.0	72.8	15.28	1.57	41
	HRP058T4	4.8	16 260	55 510	5.07	3.17	10.8	78.2	16.41	1.57	41
	HRP060T4	5.0	16 720	57 010	5.07	3.30	11.3	81.0	17.01	1.57	41
	HLP068T4	5.7	18 950	64 660	6.08	3.12	10.6	93.1	19.55	1.57	41
	HLP072T4	6.0	20 060	68 480	6.32	3.17	10.8	98.7	20.72	1.57	41
	HLP075T4	6.3	21 770	74 330	6.60	3.30	11.3	102.8	21.58	1.57	41
	HLP081T4	6.8	23 380	79 810	7.14	3.27	11.2	110.9	23.29	1.57	41
	HCP094T4	7.8	26 060	88 950	7.90	3.30	11.3	126.0	26.47	2.66	47
	HCP109T4	9.1	31 450	107 350	9.46	3.32	11.3	148.8	31.25	2.66	47
	HCP120T4	10.0	33 970	115 960	10.59	3.21	11.0	162.4	34.11	2.66	47

① Displacement at nominal speed: 2900 rpm at 50 Hz, 3500 rpm at 60 Hz

② Net weight with oil charge

TR = Ton of Refrigeration

COP = Coefficient Of Performance

EER = Energy Efficiency Ratio

Standard rating conditions: ARI standard

Refrigerant: R407C

Superheat: 11.1 K

Evaporating temperature: 7.2 °C

Condensing temperature: 54.4 °C

Sub-cooling: 8.3 K

All performance test data after run-in 72hr

Subject to modification without prior notification

Data given for motor code 4 compressor, for full data details and capacity tables refer to Online Datasheet Generator: [www.danfoss.com/odsg](http://www.danfoss.com/odsg)

# Dimensions

## HCM/HCP 094-109-120

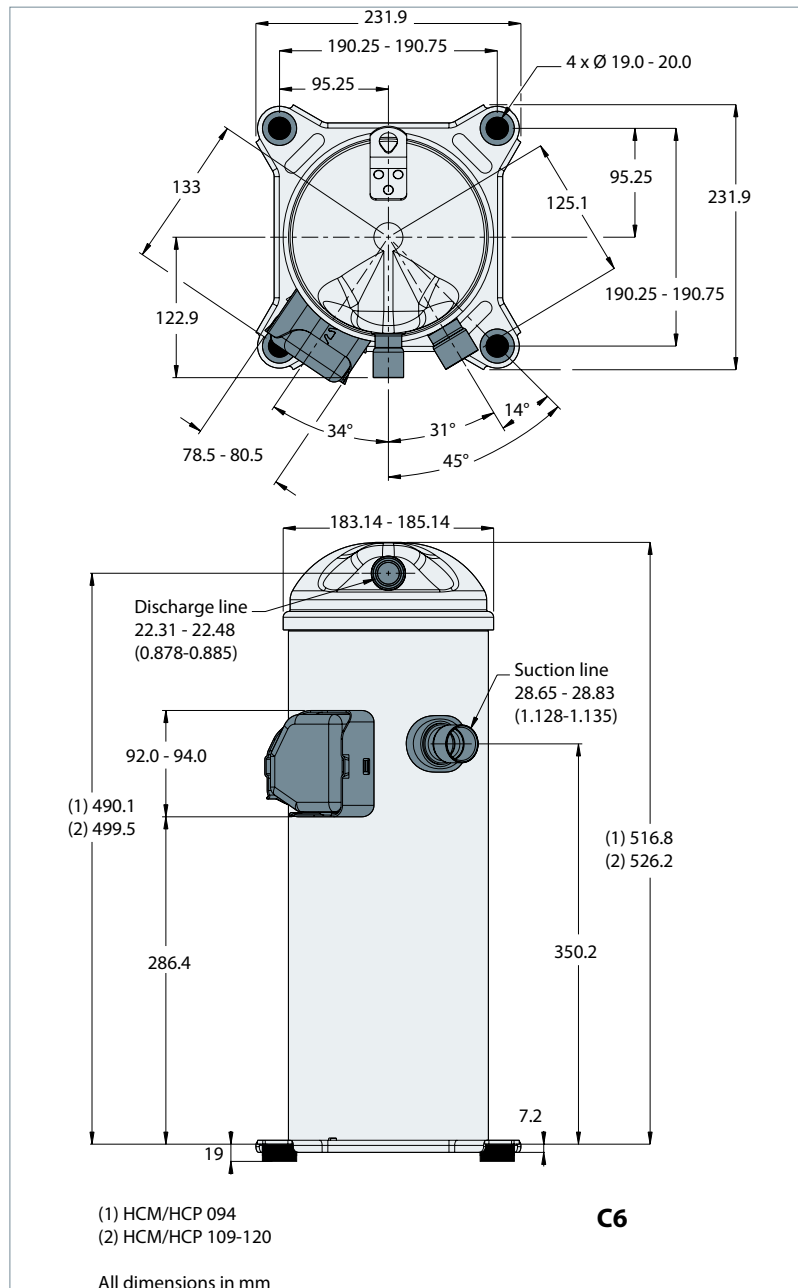
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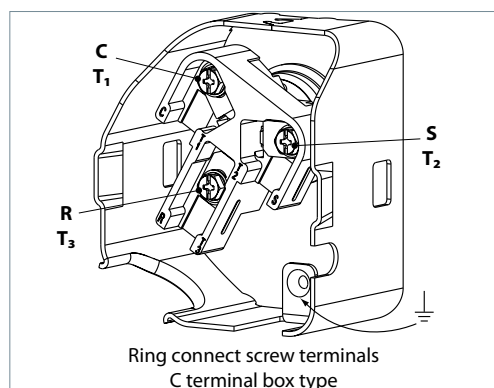
SYSTEM DESIGN

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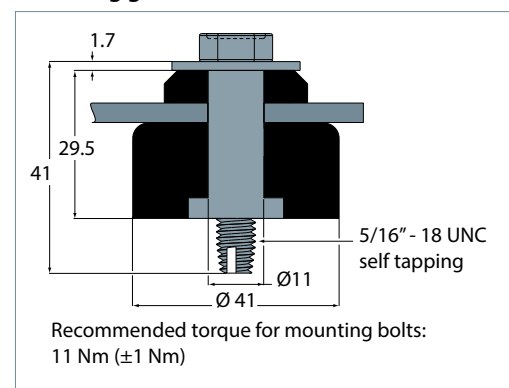
ORDERING INFORMATION



### Terminal box



### Mounting grommet



Refer to section 44 for overview of shipped mounting accessories

Three phase electrical characteristics

Compressor model	LRA	MCC	Max. operating current	Winding resistance (Ohm)			
	A	A	A	L2-L3	L1-L3	L2-L1	
Motor voltage code 4 380-415 V / 3ph / 50 Hz 460 V / 3 ph / 60 Hz	HRP025T4	30	7	4.9	6.72	4.95	6.72
	HRP034T4	45	9.5	6.8	4.66	3.42	4.66
	HRP038T4	45	11	7.9	4.66	3.42	4.66
	HRP040T4	45	12	8.6	4.66	3.42	4.66
	HRP042T4	45	11	8.3	4.66	3.42	4.66
	HRP045T4	50	12	8.9	3.87	2.85	3.87
	HRP047T4	50	12	9.3	3.87	2.85	3.87
	HRP048T4	60	12	9.0	2.65	2.61	2.60
	HRP051T4	60	13	9.8	2.65	2.62	2.60
	HRP054T4	70	12.5	10.5	2.37	2.37	2.37
	HRP058T4	70	14	11.3	2.36	2.33	2.32
	HRP060T4	70	14	11.7	2.37	2.36	2.35
	HLP068T4	82	15	12.4	1.80	1.88	1.87
	HLP072T4	87	15	14.1	1.91	1.93	1.94
	HLP075T4	100	17	15.0	1.62	1.60	1.63
	HLP078T4	87	16	15.6	1.67	1.69	1.72
	HLP081T4	87	17	16.6	1.90	1.88	1.89
HCP094T4	95	21	18.1	1.48	1.48	1.48	
HCP109T4	110	24	20.3	1.30	1.28	1.34	
HCP120T4	140	25	23.9	1.13	1.11	1.10	
Motor voltage code 2 200-220 V / 3 ph / 50 Hz 208-230 V / 3 ph / 60 Hz	HRH029U2	95	20	14.8	1.18	0.87	1.18
	HRH031U2	95	20	15.8	1.18	0.87	1.18
	HRH032U2	95	20	16.3	1.18	0.87	1.18
	HRH034U2	95	22	17.4	1.18	0.87	1.18
	HRH036U2	95	22	18.4	1.18	0.87	1.18
	HRH038U2	115	23	18.8	0.98	0.73	0.98
	HRH040U2	115	25	19.8	0.98	0.73	0.98
	HRH041U2	120	25	16.8	0.68	0.67	0.67
	HRH044U2	120	26	17.5	0.68	0.67	0.67
	HRH047U2	115	27	22.4	0.83	0.61	0.83
	HRH048U2	115	27	23.0	0.83	0.61	0.83
	HRH049U2	120	26	18.1	0.68	0.67	0.67
	HRH050U2	115	30	23.3	0.83	0.61	0.83
	HRH051U2	121.5	27.5	20.5	0.59	0.59	0.59
	HRH054U2	123	27.5	20.5	0.59	0.59	0.59
	HRH056U2	120	27.5	21.1	0.61	0.60	0.60
	HLH061T2	170	30	24.9	0.48	0.48	0.46
HLH068T2	160	35.6	25.7	0.45	0.45	0.45	
HLJ072T2	180	35	30.0	0.42	0.42	0.42	
HLJ075T2	190	35	31.2	0.41	0.40	0.41	
HLJ083T2	190	39	34.0	0.36	0.36	0.37	
Motor voltage code 4 380-415 V / 3ph / 50 Hz 460 V / 3 ph / 60 Hz	HRH029U4	45	10	6.8	4.66	3.42	4.66
	HRH031U4	45	10	7.3	4.66	3.42	4.66
	HRH032U4	45	10	7.5	4.66	3.42	4.66
	HRH034U4	45	10	8.0	4.66	3.42	4.66
	HRH036U4	45	10	8.4	4.66	3.42	4.66
	HRH038U4	50	12	9.4	3.87	2.85	3.87
	HRH040U4	50	12	10.0	3.87	2.85	3.87
	HRH041U4	60	13	8.8	2.65	2.61	2.60
	HRH044U4	60	13.5	9.1	2.65	2.61	2.60
	HRH047U4	53	13	10.0	3.29	2.41	3.29
	HRH048U4	53	14	10.5	3.29	2.41	3.29
	HRH049U4	60	13.5	10.2	2.65	2.61	2.60
	HRH051U4	70	13	8.3	2.37	2.35	2.34
	HRH054U4	70	15	10.2	2.37	2.36	2.35
	HRH056U4	70	15	10.6	2.37	2.35	2.34
	HLH061T4	82	15	12.8	1.83	1.85	1.84
	HLH068T4	87	19	12.8	1.93	1.92	1.93
	HLJ072T4	87	19	13.4	1.93	1.92	1.93
	HLJ075T4	100	18	15.7	1.62	1.60	1.63
	HLJ083T4	100	19	15.7	1.48	1.44	1.47
HCJ091T4	125	25	19.0	0.98	0.97	1.01	
HCJ106T4	125	26	21.5	0.98	0.97	1.01	
HCJ121T4	125	27	24.0	0.98	0.97	1.01	

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## Electrical data, connections and wiring

### Three phase electrical characteristics

Compressor model		LRA	MCC	Max. operating current	Winding resistance (Ohm)		
		A	A	A	L2-L3	L1-L3	L2-L1
Motor voltage code 7 575 V / 3ph / 60 Hz	HRH032U7	38	8.5	6.2	7.34	5.38	7.34
	HRH034U7	38	8.5	6.6	7.34	5.38	7.34
	HRH036U7	38	8.5	7.0	7.34	5.38	7.34
	HRH038U7	40	9.5	6.7	6.09	4.47	6.09
	HRH040U7	40	10	6.7	6.09	4.47	6.09
	HRH041U7	42	10	6.6	4.47	4.40	4.39
	HRH049U7	42	10.5	7.4	4.47	4.40	4.39
	HRH051U7	53	11.5	7.8	4.12	4.06	4.03
	HRH054U7	53	11.7	8.2	4.12	4.06	4.03
	HRH056U7	53	12.5	8.5	4.12	4.06	4.03
	HLLH061T7	63.6	12	10.8	2.89	2.83	2.87
	HLLH068T7	62	13.5	10.4	3.26	3.29	3.33
HLJ072T7	62	15	11.0	3.26	3.29	3.33	
HLJ083T7	72	14.5	12.5	2.51	2.48	2.53	
Motor voltage code 9 380 V / 3ph / 60 Hz	HRH031U9	52	12.5	8.3	3.01	2.20	3.01
	HRH034U9	52	10	9.1	3.01	2.20	3.01
	HRH038U9	59.6	13.5	9.8	2.51	1.84	2.51
	HRH054U9	81	16	13.1	1.49	1.46	1.48
	HLLH061T9	96	20	15.8	1.27	1.25	1.28
	HLLH068T9	95	19	13.1	0.58	0.58	0.58
	HLJ072T9	95	19	17.5	0.58	0.58	0.58
	HLJ083T9	110	22.4	20.8	1.13	1.08	1.10

### Single phase electrical characteristics

Compressor model		LRA	MCC	Max. operating current	Winding resistance (Ohm)	
		A	A	A	Start	Run
Motor voltage code 5 200-220 V / 1 ph / 50 Hz	HRM032T5	97	23	17.9	1.51	0.69
	HRM034T5	97	25	19.5	1.51	0.69
	HRM038U5	97	25	21.2	1.51	0.69
	HRM042T5	97	27	24.2	1.51	0.69
	HRM042U5	97	26	24.2	1.51	0.69
	HRM047T5	102.5	31.2	29.0	1.61	0.66
	HRM047U5	102.5	31.2	29.0	1.61	0.66
	HRM060U5	130	45	33.9	1.02	0.39
Motor voltage code 1 208-230 V / 1 ph / 60 Hz	HRM025T1	69	19	13.8	1.74	0.85
	HRM032U1	96.7	26	20.1	1.57	0.67
	HRM034U1	96.7	26	21.4	1.57	0.67
	HRM038U1	105	30	24.7	1.44	0.54
	HRM040U1	115	32.9	25.5	1.43	0.54
	HRM042U1	115	32.9	26.8	1.45	0.54
	HRM045U1	115	35	28.5	0.82	0.32
	HRM047U1	120	38	29.8	1.32	0.52
	HRM048U1	150	41.5	32.5	0.86	0.33
	HRM051U1	150	40	31.9	0.86	0.33
	HRM054U1	150	39	33.9	0.86	0.33
	HRM058T1	160	45	36.0	1.72	0.27
	HRM058U1	145	45	36.4	0.84	0.29
	HRM060T1	160	45	37.2	1.76	0.28
	HRM060U1	145	45	37.7	0.84	0.29
	HLM068T1	145	45	38.2	0.84	0.29
HLM072T1	145	45	40.5	0.84	0.29	
HLM081T1	145	45	41.2	0.84	0.29	

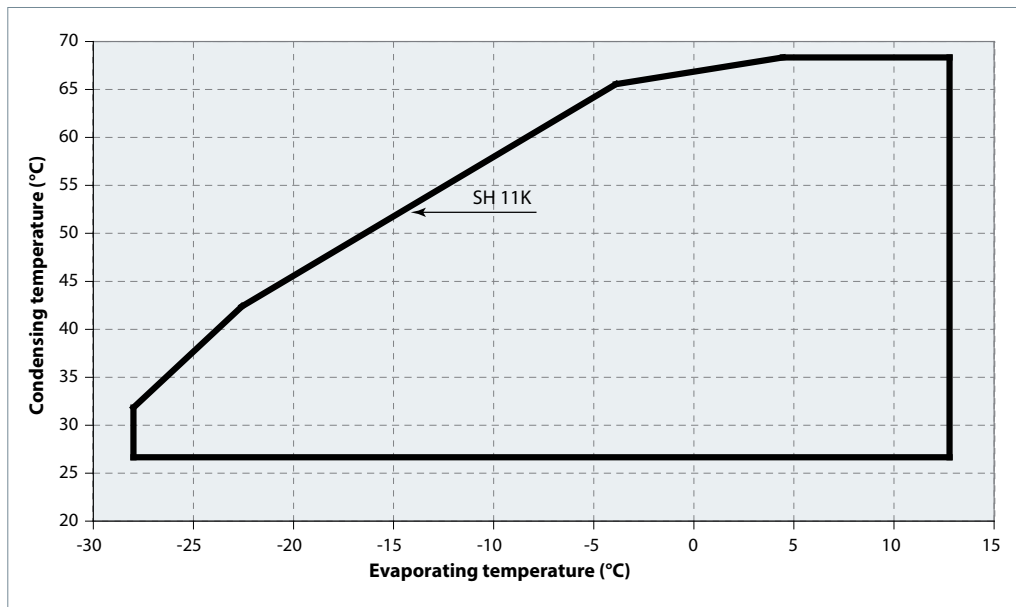
## Manage operating envelope

### Requirement

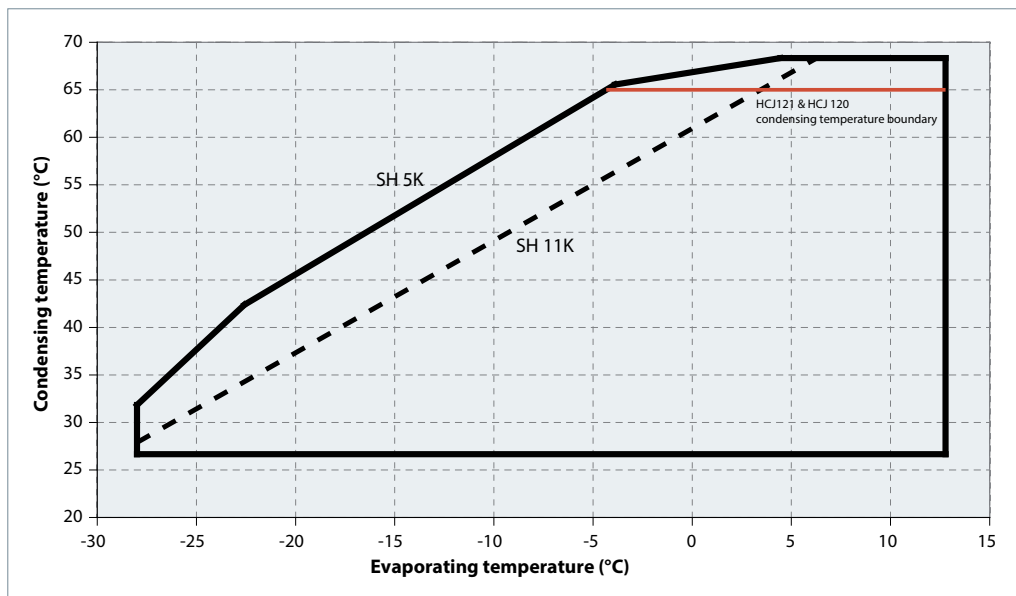
**R** The operating envelope for H-series scroll compressors is given in the figures below and guarantees reliable operations of the compressor for steady-state and transient operation.

Steady-state operation envelope is valid for a suction superheat within 5K to 30K range.

### R22, R407C Model variation T



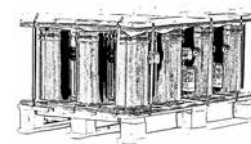
### R410A Model variation T





## Ordering information and packaging

### R407C Industrial pack



Compressors	Model Variation	Connections	Features	Code no.					
				1	2	4	5	7	9
HRP025	T	P	6	121L3085		121L3087			
HRP032	T	P	6	121L3344					
HRP034	T	P	6	121L3091	121L3354	121L2021			
HRP038	T	P	6	121L3352	121L1083	121L1003			
HRP040	T	P	6		121L1093	121L1013	121L1926		
HRP042	T	P	6	121L3093	121L1103	121L1023	121L2154		
HRP045	T	P	6			121L1033			
HRP047	T	P	6	121L3346	121L1123	121L1043			
HRP051	T	P	6	121L1498		121L1678			
HRP054	T	P	6	121L3348	121L3350	121L1688	121L2194		
	T	C	6			121L3183			
HRP058	T	P	6			121L1698			
	T	C	6						
HRP060	T	P	6	121L3068	121L2294	121L1723	121L1603		
HLP068	T	C	6		121L3273	121L2011			
HLP072	T	C	6		121L2900	121L1753			
	T	C	8			121L2069			
	T	P	6				121L1628		
HLP075	T	C	6		121L3097	121L1763			
	T	P	6						
HLP078	T	C	6						
HLP081	T	C	6		121L1913	121L1778			
	T	C	8			121L1783			
HCP081	T	C	6			121L0568			
HCP094	T	C	6		121L0903	121L0598			
	T	C	8		121L0913	121L0608			
HCP109	T	C	6			121L0373			
	T	C	8			121L0383			
HCP120	T	C	6		121L0763	121L0398			
	T	C	8			121L0408			

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# Danfoss Commercial Compressors

is a worldwide manufacturer of compressors and condensing units for refrigeration and HVAC applications. With a wide range of high quality and innovative products we help your company to find the best possible energy efficient solution that respects the environment and reduces total life cycle costs.

We have 40 years of experience within the development of hermetic compressors which has brought us amongst the global leaders in our business, and positioned us as distinct variable speed technology specialists. Today we operate from engineering and manufacturing facilities spanning across three continents.



Our products can be found in a variety of applications such as rooftops, chillers, residential air conditioners, heatpumps, coldrooms, supermarkets, milk tank cooling and industrial cooling processes.

<http://cc.danfoss.com>

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