

ULT - ready

Model

Designation	MS18UHULTM	115V/60Hz 1~	Sales code:	104M0810
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Compressor design

Oil type	Polyolester	Refrigerant(s)	R170, R508B
Oil viscosity	32cST	Displacement	17,68cm ³ / 1,08cu.in
Oil quantity	620cm ³ / 21fl.oz	Compressors on pallet	80
Refr. charge - tech. limit	450g / 15,9oz		
Free gas volume comp.	1460cm ³ / 49,4fl.oz		
Weight	14,2kg / 31,3lbs		
Motor protection	external		
Winding resistance main	0,82Ω (at 25°C)		
Winding resistance aux	2,9Ω (at 25°C)		
Max. winding temp.	125°C / 257°F		
Max. discharge temp.	140°C / 284°F		



General - Configurations with MS18UHULTM

	Conf. 1
Motorconfiguration	CSCR
Power supply (nominal)	115V/60Hz
Number of phases	1
Voltage range	103-127V
Approvals	UL
Starting torque	HST
Note	ULT-ready. Compressor for low-temp-stage of cascade refrigeration systems.

Applications with MS18UHULTM

	Conf. 1
Refrigerant	R170
Application	LBP
System cooling	fan 3m/s
Hot gas defrost	-/-
Long interval pull down	-/-

Electrical data - Configurations with MS18UHULTM

	Conf. 1
Starting device type	relay
Run capacitor	23,5μF
Start capacitor	280μF
LRA (locked rotor amps / 4s)	44,12A
RLA (rated load amps / 1s)	7,48A
Cut in current	44,12A

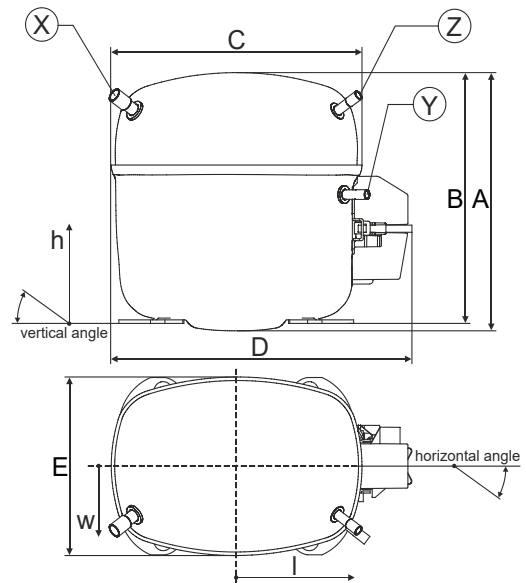
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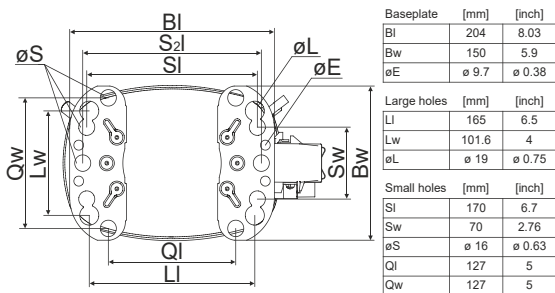
Compressor dimensions

Housing	A Height	219mm / 8,62in
	B Height	213mm / 8,39in
	C Length shell	218mm / 8,58in
	D Length w. cover	255mm / 10,04in
	E Width	151mm / 5,94in

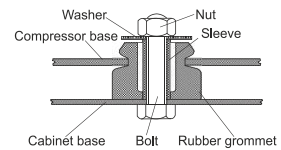


Connectors		Suction	Discharge	Process
		X	Y	Z
Diameter	[mm]	øi 9,54-9,72	øi 6,41-6,59	øi 6,41-6,59
	(i:inside, o:outside) [in]	øi 0,38-0,38	øi 0,25-0,26	øi 0,25-0,26
Material		copper	copper	copper
Horizontal angle	±2°	37°	37°	143°
Vertical angle	±2°	30°	0°	150°
Position l/h/w	[mm]	107/193/55	115/110/63	-107/193/55
	[in]	4,2/7,6/2,2	4,5/4,3/2,5	-4,2/7,6/2,2
Straight tube l.	[mm]	12	12	12
	[in]	0,5	0,5	0,5

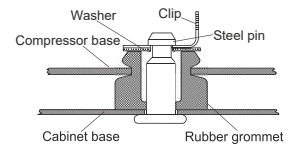
Compressor fixation



Bolt joint



Snap-on



Mounting accessories

	one comp.	multi pack
Bolt joint M6 ø16mm	118-1917	118-1918
Bolt joint ø1/4" ø16mm	118-1946	
Bolt joint ø1/4" ø19mm	118-1949	
Snap-on ø7,3 ø16mm	118-1947	118-1919

Application notes

ULT-ready. Compressor for low-temp-stage of cascade refrigeration systems.

No warranty if compressor operated relevant time outside of published operation limits.

Contact SECOP-Sales to agree on warranty limits (depends on kind of application).

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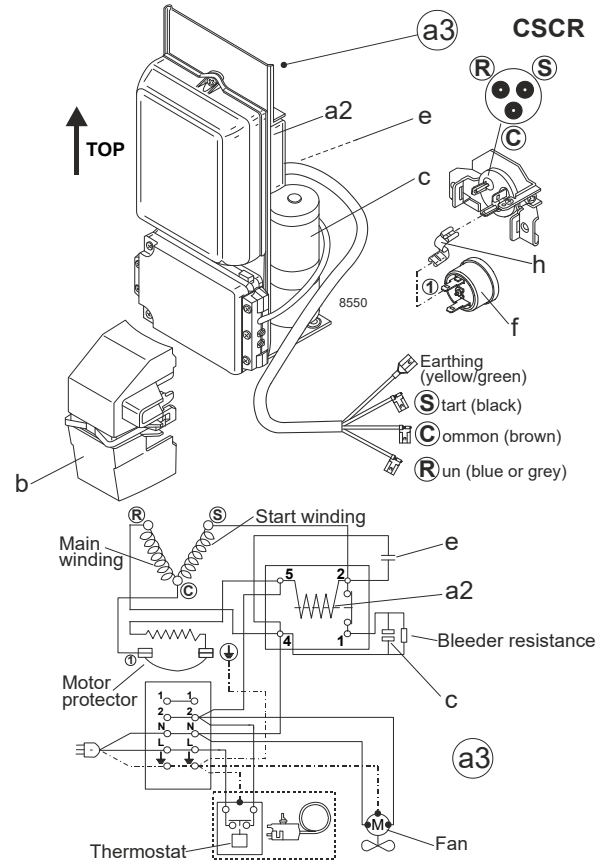
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Configuration

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Power supply (nominal)	115V/60Hz 1~
Refrigerant	R170
Application	LBP
Voltage range	103-127V
Starting torque	HST
Approvals	UL

Electrical accessories / wiring diagram

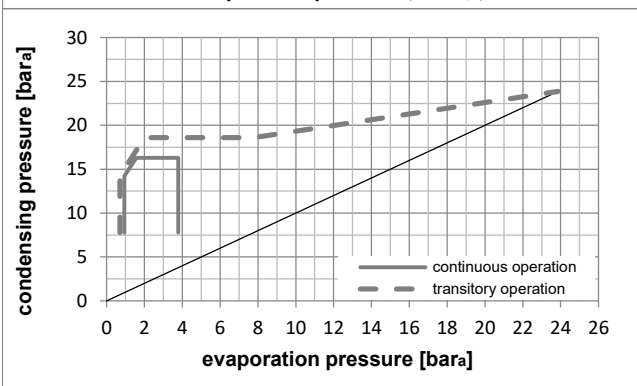
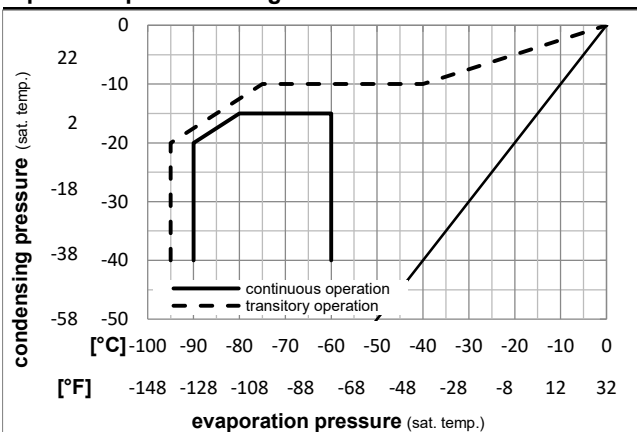


Ambient temperatures / system cooling

Ambient temperature min.:	10°C / 50°F
Ambient temperature max.:	38°C / 101°F

System cooling (n/a: outside limits)			
T ambient	LBP	MBP	HBP
32°C / 90°F	fan 3m/s	n/a	n/a
38°C / 100°F	fan 3m/s	n/a	n/a
43°C / 110°F	n/a	n/a	n/a

Operation pressure range



Components (protector + ~holder + cover: pre assembled)

a3	SC starter kit (550mm)	117-7801
h	protector holder	117U0439
f	ext. protector (T1100)	117U3219
b	plastic cover	117U1021

Alternative comp. (protector + ~holder + cover: pre assemb.)

a2	potential relay (RVA 7AA3R)	117-7441
e	run capacitor (23,5µF, 6.3mm)	117-7133
c	start capacitor (280µF, 6.3mm)	117U5350
h	protector holder	117U0439
f	ext. protector (T1100)	117U3219
b	plastic cover	117U1021

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Optimization + standard conditions

R170, 115V/60Hz, CSCR, fan 3m/s, UL

Evaporating pressure (saturation temperature)					Condensing pressure (saturation temperature)					Power consumption					
				Return gas temp.					Current consumption						
			Liquid temp.		Cooling capacity			COP		EER		P1	I	Ref. mass flow	
pe	pc	RGT	Tliq		[W]	[Btu/h]	[kcal/h]	[W/W]	[Btu/Wh]	[kcal/Wh]	[W]	[A]	[kg/h]		
[°C]	-90	-15	-20	-15	211,2	721	181,8	0,81	2,75	0,69	262,0	3,54	1,93	1	
[°F]	-130	5	-4	5											
[°C]	-90	-20	-20	-20	243,5	832	209,6	0,91	3,09	0,78	269,1	3,58	2,14	2	
[°F]	-130	-4	-4	-4											
[°C]	-90	-25	-20	-25	277,6	948	238,9	1,03	3,50	0,88	270,5	3,59	2,36	3	
[°F]	-130	-13	-4	-13											
[°C]	-90	-30	-20	-30	312,8	1068	269,2	1,17	4,00	1,01	267,0	3,56	2,57	4	
[°F]	-130	-22	-4	-22											
[°C]	-90	-35	-20	-35	348,4	1190	299,9	1,35	4,59	1,16	259,1	3,51	2,77	5	
[°F]	-130	-31	-4	-31											
[°C]	-90	-40	-20	-40	383,9	1311	330,3	1,55	5,30	1,34	247,3	3,44	2,96	6	
[°F]	-130	-40	-4	-40											

Performance tables

R170, 115V/60Hz, CSCR, fan 3m/s, UL

	pe	Cooling capacity			COP		EER		P1	I	m
	[°C]	[°F]	[W]	[Btu/h]	[kcal/h]	[W/W]	[Btu/Wh]	[kcal/Wh]	[W]	[A]	[kg/h]
[°C / °F]	-90	-130	277,6	948	238,9	1,03	3,50	0,88	270,5	3,59	2,36
cond. pressure	-85	-121	416,8	1424	358,7	1,27	4,34	1,09	327,9	3,95	3,55
pc= -25/-13	-80	-112	589,8	2014	507,6	1,53	5,23	1,32	385,0	4,34	5,03
return gas temp.	-75	-103	800,4	2734	688,9	1,82	6,21	1,56	440,2	4,74	6,84
RGT= -20/-4	-70	-94	1052,3	3594	905,6	2,14	7,31	1,84	491,4	5,13	9,03
liquid temp	-65	-85	1349,1	4607	1161,0	2,51	8,58	2,16	536,8	5,49	11,62
Tliq= -25/-13	-60	-76	1694,0	5785	1457,9	2,95	10,07	2,54	574,5	5,80	14,66
[°C / °F]	-90	-130	348,4	1190	299,9	1,35	4,59	1,16	259,1	3,51	2,77
cond. pressure	-85	-121	497,5	1699	428,2	1,63	5,55	1,40	305,9	3,80	3,96
pc= -35/-31	-80	-112	682,5	2331	587,4	1,95	6,66	1,68	350,0	4,10	5,44
return gas temp	-75	-103	907,3	3099	780,8	2,33	7,96	2,01	389,3	4,37	7,26
RGT= -20/-4	-70	-94	1175,5	4015	1011,7	2,79	9,51	2,40	421,9	4,61	9,43
liquid temp	-65	-85	1490,9	5092	1283,1	3,34	11,41	2,88	446,1	4,79	12,00
Tliq= -35/-31	-60	-76	1856,9	6342	1598,0	4,04	13,79	3,47	459,9	4,88	15,02

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Application note

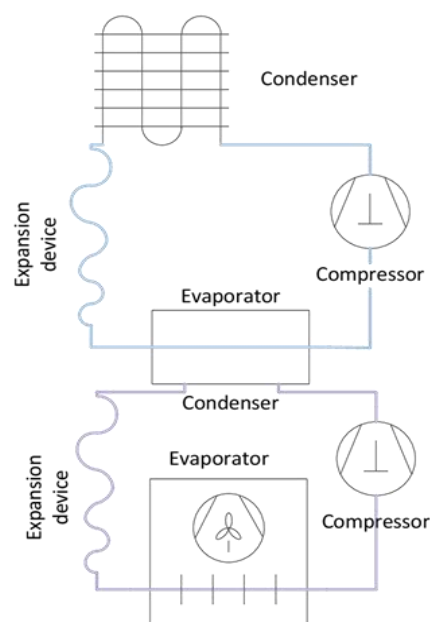
This compressor is designed for operation inside the low-temperature-stage of a two stage refrigeration cascade. Use of various refrigerants and refrigerant-mixtures is possible but it must be ensured that the pressure limits shown on the pages before are not exceeded.

Operation outside of the published operation limits (pressures, temperatures, compressor cooling, voltage range) may lead to serious overloading of motor protector and starting equipment and must be avoided. In case of frequent overloading defects of relays, capacitors or motor protectors can occur.

To avoid overloading (or to keep it on the lowest possible level) adjust size of heat-exchangers, temperature of intercooler, and on-off control of compressors and fans.

Please also read design recommendations for ULT cabinets:

<https://www.secop.com/ult>



ULT - ready compressors

These compressors allow operation with various refrigerants. Chemical compatibility (UL) is proven for R170. Motor and motor-protector are adjusted for safe and reliable operation inside the published operation limits. Extra-robust starting equipment is used but unfortunate performance regulation of the high-temperature-stage may create serious overloading of the second stage during starting. Compressors are proven reliable by internal SECOP testing (running inside given operation limits).

Warranty

Since design and regulation-strategy of the two stage cascade significantly define overloading of the compressor in the low-temperature-stage SECOP can't give universal warranty. Conditional warranty can be given in cases of joined (cabinet producer & SECOP) testing and approval. No liability in case of design changes like: use of different oil, use of different starting equipment or motor protector. No warranty if operated relevant time outside of published operation limits.