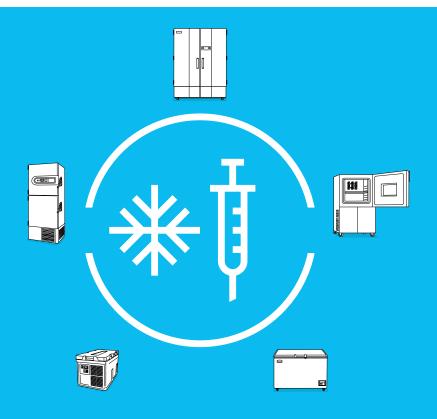
Secop is the first choice for partners looking for leading-edge refrigeration solutions and a premium customer experience.

Secop delivers advanced refrigeration compressors and controls, providing customers tailored sustainable solutions for light commercial, battery-driven, and special cooling applications.

MEDICAL COMPRESSORS FOR ULT COOLING

SECOP

R170 | R290



12-24 V DC

100-240 V · 50/60 Hz

115-127 V · 60 Hz | 220-240 V · 50 Hz

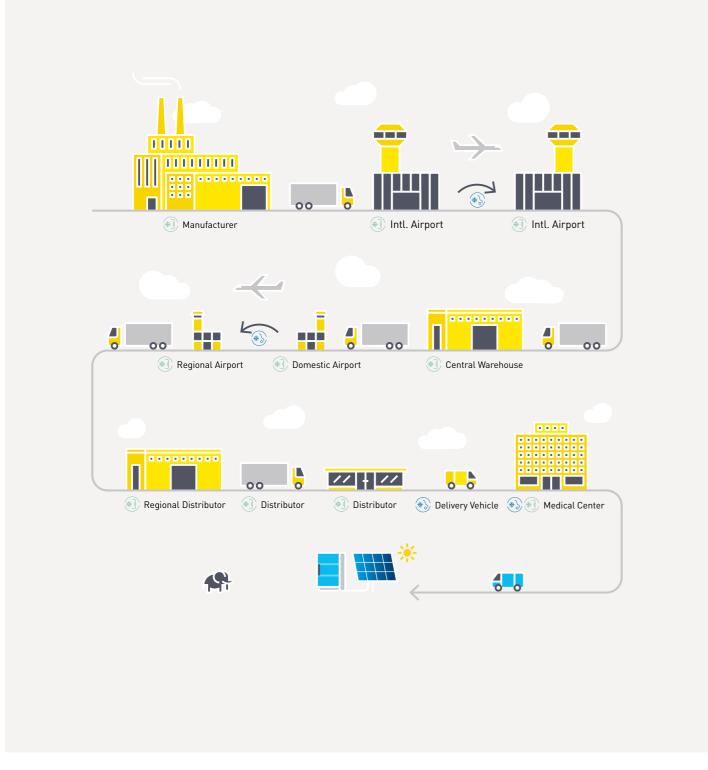








MEDICAL COLD CHAIN







ULTRA-LOW TEMPERATURE MEDICAL COOLING



Secop's new dedicated range of compressors for ultralow temperatures is optimized to safely store, transport, and handle highly sensitive substances including pharmaceuticals, vaccines, cells, genes, blood, etc. The reliability of cooling equipment is essential to ensure the quality and usability of stored assets. Secop's new medical compressors range now provides a solution with several benefits such as enhanced robustness, ultra-low temperature technology, and compatibility with the refrigerants propane (R290) and ethane (R170). This makes them the ideal solution for hospitals, laboratories, pharmacies, research centers, universities, and the medical industry.

The medical and vaccine cold chain requires storage and transport at different temperature levels: +2°C to +8°C, -20°C down to -86°C. Stability is key to guarantee safe product delivery up to the last mile temperature.

Our compressor and electronic control solutions are installed in different applications which are certified for WHO (World Health Organization) installations.

Ultra-Low Temperature for Medical Cooling
Sustainable Cooling



Ult Medical Cooling Mobile Battery-Driven CompressorS





MP2UVULTM













- → Mobile battery-driven solution which is able to reach -70 °C to -86 °C
- → Ideal solution for mains voltage independent transport of mRNA-based COVID-19 vaccines
- → Precise cooling and control of target temperature
- → Perfect for vaccine transportation with temperature control and no risk of wasting vaccine
- → Reliable long lasting systems with low TCO life cycle
- → Optimized and proven design for robust transport boxes
- → Electronically controlled variable-speed drive compressor
- → Easy °CCD® (Cool Capacity Drive) controller customization with Tool4Cool®
- → Optimized for green refrigerants R290 (propane) and R170 (ethane)

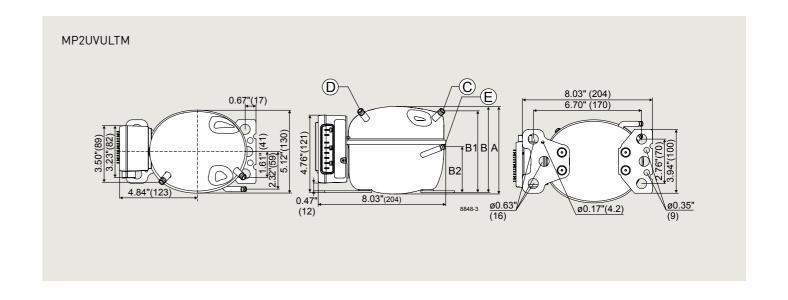
Secop has developed the technology for an ultra-low temperature cooling system. This system is optimized for the last mile of distribution for the new generations of vaccines and offers mobile operation even in high ambient conditions such as in tropical regions.

This solution with a MP2UVULTM compressor takes advantage of Secop's experience in medical applications, vaccine solar freezers, and mobile solutions and combines all of these areas of use.

Battery-driven active cooling systems for mRNA-based vaccines provide a number of advantages compared to existing passive cooling (dry ice) transport boxes. Active systems offer temperature control, do not need huge quantities of dry ice, are re-usable, do not waste tons of CO₂, and prevent wasting vaccine.

They are suitable for any distribution point, including in remote areas where the availability of ${\rm CO_2}$ cannot be guaranteed or ambient conditions are severe.

General			MP2UVULTM					
Compressor			101M0800					
Electronic unit			101NULT1					
Approvals	als				, CB IEC 60335	-2-34, CB IEC	60335-1	
Application			R170					
Application			Low tempera	ture stage in a	2-stage casca	de system		
Evaporating temperature		°C °F	-90 to -60 -					
Voltage range / max. voltage		V DC	9.6-17 / 21.3-31.5					
Speed range		rpm	2,500-4,400					
Performance Data ULT (12 V	DC • static cool	ing) @ 2,500 rp r	n					
Evaporating temperature	°C °F	-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h	27 91	40 135	56 190	75 257	99 337	126 430	157 537
Power consumption	W	18	23	27	31	34	37	39
COP	W/W	1.47	1.76	2.09	2.46	2.90	3.42	4.05
EER	BTU/Wh	5.05	6.02	7.12	8.4	9.9	11.7	13.8
Test conditions	Condensing t	emp.: -35°C (-31°	°F) Suction gas te	emp.: 20°C (68°F	-) Ambient temp	.: 32.2°C (90°F)	Liquid temp.: -	35°C (-31°F)
Performance Data ULT (12 V	DC • static cool	ing) @ 4,400 rpr	n					
Evaporating temperature	°C °F	-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h	47 160	69,7 238	98 335	133 452	174 592	221 756	277 945
Power consumption	W	33	40	47	54	60	64	67
COP	W/W	1.44	1.74	2.07	2.46	2.92	3.46	4.10
EER	BTU/Wh	4.93	5.92	7.07	8.40	9.96	11.8	14.0
Test conditions	Condensing t	emp.: -35°C (-31°	F) Suction gas te	emp.: 20°C (68°F) Ambient temp	.: 32.2°C (90°F)	Liquid temp.: -	35°C (-31°F)
Dimensions								
			А		137			
Height	mm		B/B1/B2		135 / 128 / 73			
Suction connector	location/I.D. m		С		6.2 40°			
	material sea	l			Cu-plated ste	el Al cap		
Process connector	location/I.D. m		D		6.2 45°			
1 100000 confidence	material sea	l			Cu-plated ste	eel Al cap		
Discharge connector	location/I.D. m		Е		5.0 21°			
2.23arge conficctor	material sea	l			Cu-plated ste	el Al cap		



I.D. mm

Connector tolerance

±0.09, on 5.0 +0.12/+0.20

Ultra-Low Temperature for Medical Cooling
Sustainable Cooling



ULT MEDICAL COOLING STATIONARY FIXED-SPEED COMPRESSORS















- → Made for reliable cooling equipment is essential to ensure the quality and usability of stored assets
- → Ideal solution for new highly effective mRNA-based vaccines for COVID-19, Ebola, and CGTs which require an ultra-low temperature storage
- → Precise cooling and control of target temperature
- → Reliable long lasting systems with low TCO life cycle
- → Optimized proven and robust designs
- → Used in different applications which are officially certified by the WHO (World Health Organization)
- → Optimized for green refrigerants R290 (propane) and R170 (ethane)

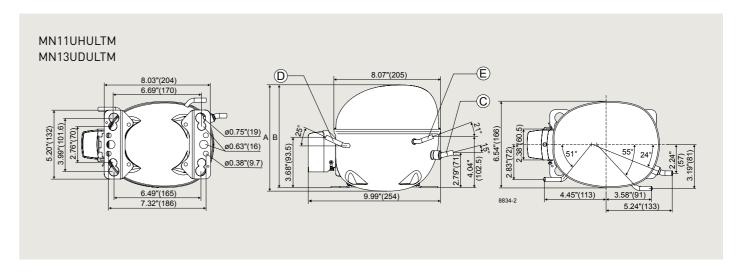
Secop's new dedicated range of compressors is optimized to safely store and handle highly sensitive substances including pharmaceuticals, vaccines, cells, genes, blood, etc. The reliability of cooling equipment is essential to ensure the quality and usability of stored assets.

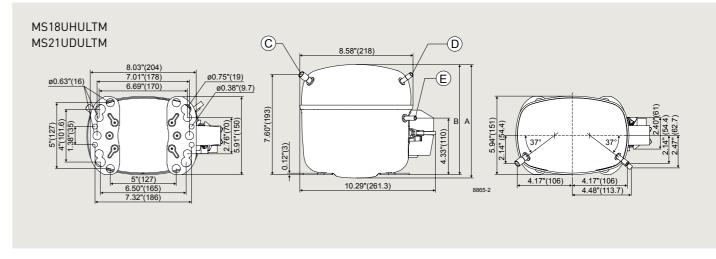
Secop's new medical compressors range now provides a solution with several benefits such as enhanced robustness, ultra-low temperature technology, and compatibility with the refrigerant Ethan (R170). This makes them the ideal solution for hospitals, laboratories, pharmacies, research centers, universities, and the medical industry.

The medical and vaccine cold chain requires storage at different temperature levels: +2 °C to +8 °C, -20 °C down to -86 °C.

Our compressor solutions make us a reliable partner for leading companies by supporting the development of a global ULT (ultra-low temperature) supply chain.

GENERAL		MN1	1UHULTM	MN13UDULTM	MS18UHULTM	MS21UDULTM
Compressor			M0830	105M0840	104M0810	104M0811
Approvals			0335-2-34	EN 60335-2-34, CCC		EN 60335-2-34, CCC
APPLICATION		R17	70			
Application			Lov	w temperature stage in	a 2-stage cascade s	ystem
Evaporating temperature	°C °F			-90 to -60 l	-130 to -76	
Voltage range / frequency	V/Hz		103-127/60	198-254/50	103-127/60	198-254/50
PERFORMANCE DATA ULT	(115 V, 60 Hz or 220 V, 50 Hz •	fan cooli	ng)			
Evaporating temperature	°C °F		90 -130	-90 -130	-90 -130	-90 -130
Cooling capacity	W BTU/h		313 1070	262 896	439 1498	367 1253
Power consumption	W	223		195	316	267
COP	W/W	1.40		1.34	1.38	1.37
EER	BTU/Wh	4.79		4.59	4.74	4.69
Test conditions	Condensing temp.: -35°C (-3	1°F) Suct	ion gas temp.: 20	°C (68°F) Ambient temp.	: 32.2°C (90°F) Liquid	temp.: -35°C (-31°F)
DIMENSIONS						
11.5.15			7.99	203	8.60	218
Height	inch or mm	В	7.76	197	8.40	212
C 1:	location/I.D. inch or mm	0	0.320-0.327	8.2 ±0.09	0.378-0.385	10.2 ±0.09
Suction connector	angle material seal	С	15° Copp	oer Rubber plug	37° Copper Rubber plug	
D	location/I.D. inch or mm	D	0.252-0.259	6.2 ±0.09	0.252-0.259	6.2 ±0.09
Process connector	angle material seal	D	25° Copper Rubber plug		37° Coppe	r Rubber plug
Dischause seems	location/I.D. inch or mm		0.252-0.259	6.2 ±0.09	0.252-0.259	6.2 ±0.09
Discharge connector	angle material seal	Е	21° Cop	per Rubber plug	37° Coppe	r Rubber plug





Ultra-Low Temperature for Medical Cooling



ULT MEDICAL COOLING STATIONARY VARIABLE-SPEED COMPRESSORS















- → Reduction of variants thanks to a wide cooling capacity range
- → Ideal solution for new highly effective mRNA-based vaccines for COVID-19, Ebola, and CGTs which require an ultra-low temperature storage
- → One global reach electronic variant (90–270 V, 50–60 Hz)
- → GFCI compatibility for USA (low touch current level)
- → Variable cooling range for precise cooling and temperature control
- → Electronically controlled variable-speed drive compressors
- → Easy °CCD® (Cool Capacity Drive) controller customization via Tool4Cool®
- → Robust compressors for medical use and ULT refrigerant approved
- → Optimized for green refrigerants R290 (propane) and R170 (ethane)

Secop has developed new electronic controlled compressors for medical applications. Significantly more efficient and with additional features for the next generation of medical cold chain cabinets. Ultra-low temperature systems require reliable environmentally friendly solutions.

Secop's dedicated range of electronically controlled compressors meet these requirements by using green low GWP hydrocarbon refrigerants and electronic control for low energy consumption.

NM13UVULTM and MS18UVULTM medical variable-speed compressors come with innovative modular multi-voltage controllers featuring speed control through Adaptive Energy Optimization (AEO), frequency signal, or serial communication. These multi-voltage controller can be used for all voltages and frequencies globally. The new MP controllers features improved robustness and safety: fire-proof IP54 housing, PCB coating, galvanic isolated I/Os, and SW safety layers.

The perfect choice for ULT systems with minimal energy consumption and maximum robustness. Secop's latest generation of innovative, green efficient compressors are a significant contribution to securing the ULT medical cold chain network supply.

GENERAL	MN13UVULTM
Compressor	105M0850
Electronic unit – MP Multi-Voltage (with US GFCI-conformity)	105N4962 (with power factor correction according to EN 61000-3-2:2014)
Approvals	EN 60335-2-34 with Annex AA, UL 60335-2-34 with Annex AA

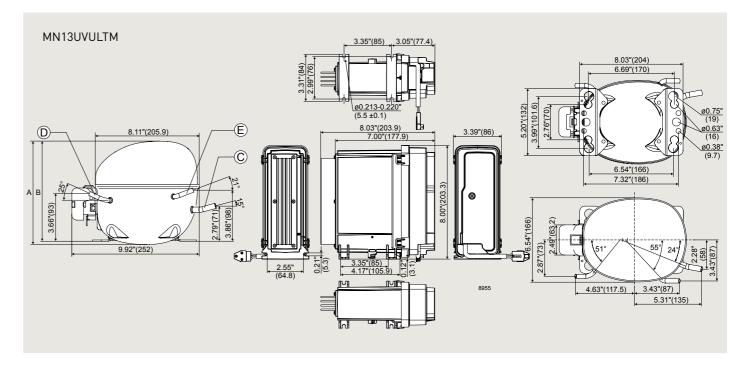
*available in Q3 2024

APPLICATION		R170 or R290
Application		Low and high temperature stage in a 2-stage cascade system
Evaporating temperature	°C °F	-90 to -60 -130 to -76
Voltage range / frequency	V/Hz	90–270 / 50/60

PERFORMANCE DATA ULT	PERFORMANCE DATA ULT (115/220 V, 50/60 Hz • fan cooling) @ 2,000 rpm							
Evaporating temperature	°C °F	-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h	182 621	250 855	334 1140	436 1488	560 1912	710 2426	891 3032
Power consumption	W	122	144	165	184	198	207	209
COP	W/W	1.50	1.74	2.02	2.37	2.83	3.43	4.26
EER	BTU/Wh	5.11	5.94	6.90	8.10	9.65	11.70	14.50
Test conditions	Condensing temp.: -35°C (-31°F) Suction gas	temp.: 20°C (6	8°F) Ambien	t temp.: 32.2°0	C (90°F) Liqu	id temp.: -35°	C (-31°F)

PERFORMANCE DATA ULT (115/220 V, 50/60 Hz • fan cooling) @ 4,500 rpm								
Evaporating temperature	°C °F	-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h	367 1356	549 1874	741 2530	978 3339	1266 4322	1610 5498	2016 6884
Power consumption	W	251	299	345	386	419	444	456
COP	W/W	1.58	1.83	2.15	2.54	3.02	3.63	4.42
EER	BTU/Wh	5.40	6.26	7.33	8.66	10.30	12.40	15.10
Test conditions	Condensing temp.: -35°C (-31°F) Suction gas	temp.: 20°C (6	8°F) Ambien	t temp.: 32.2°(C (90°F) Liqu	id temp.: -35°	C (-31°F)

DIMENSIONS			
Haiabt	mm l inch	А	203 7.99
Height	mm incn	В	197 7.76
Suction connector	location/I.D. inch or mm	0	8.2 ±0.09 0.320-0.327
	angle material seal	С	15° Copper Rubber plug
D	location/I.D. inch or mm	D	6.2 ±0.09 0.240-0.250
Process connector	angle material seal	U	25° Copper Rubber plug
Discharge connector	location/I.D. inch or mm	Г	6.2 ±0.09 0.2400.250
	angle material seal	E,	21° Copper Rubber plug

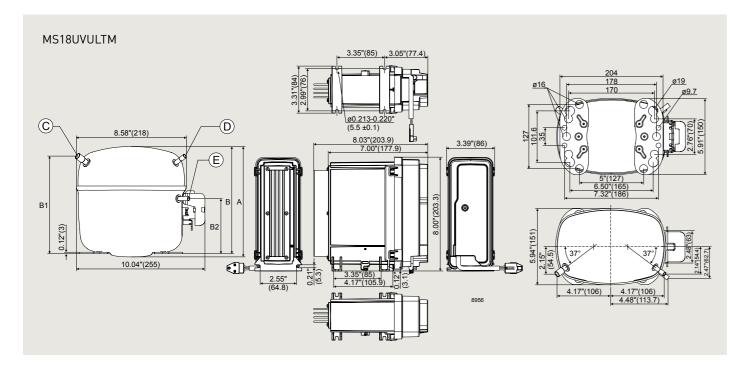


Ultra-Low Temperature for Medical Cooling

GENERAL	MS18UVULTM
Compressor	104M0820
Electronic unit – MP Multi-Voltage (with US GFCI-conformity)	105N4932* (with power factor correction according to EN 61000-3-2:2014)
Approvals	EN 60335-2-34 with Annex AA, UL 60335-2-34 with Annex AA

							*avail	lable in 3rd q	juarter 2024
APPLICATION			R170 or R2	290					
Application			Low and h	igh tempera	ture stage in	a 2-stage ca	scade syster	n	
Evaporating temperature	°C	: °F	-90 to -60	-130 to -76					
Voltage range / frequency	V/	Hz	90-270 / 50	0/60					
PERFORMANCE DATA ULT	(115/220 V, 50/60 Hz	• fan cooling)	@ 2,000 rpr	n					
Evaporating temperature	°C °F		-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h		234 800	337 1150	467 1594	629 2149	830 2833	1073 3663	1363 4656
Power consumption	W		173	208	240	268	290	304	307
COP	W/W		1.35	1.62	1.94	2.35	2.86	3.53	4.44
EER	BTU/Wh		4.62	5.53	6.64	8.02	9.77	12.07	15.15
Test conditions	Condensing temp.	: -35°C (-31°F)	Suction gas t	temp.: 20°C (6	8°F) Ambien	temp.: 32.2°0	C (90°F) Liqu	id temp.: -35°	C (-31°F)
PERFORMANCE DATA ULT	(115/220 V, 50/60 Hz	• fan cooling)	@ 4,500 rpr	n					
Evaporating temperature	°C °F		-90 -130	-85 -121	-80 -112	-75 -103	-70 -94	-65 -85	-60 -76
Cooling capacity	W BTU/h		477 1628	703 2399	990 3380	1345 4594	1777 6067	2291 7823	2895 9887
Power consumption	W		332	403	470	529	577	610	625
COP	W/W		1.44	1.74	2.10	2.54	3.08	3.76	4.63
EER	BTU/Wh		4.90	5.95	7.19	8.68	10.50	12.80	15.80
Test conditions	Condensing temp.	: -35°C (-31°F)	Suction gas t	temp.: 20°C (6	8°F) Ambien	temp.: 32.2°0	C (90°F) Liqu	id temp.: -35°	C (-31°F)
DIMENSIONS									
			А		21	9	8.	62	

DIMENSIONS					
eight	mm inch	A	219	8.62	
reignt	mini į men	B / B1 / B2	213 / 193 / 110	8.39 / 7.60 / 4.33	
Suction connector	location/I.D. inch or mm	0	10.2 ±0.09 0.378-0.385		
	angle material seal	С	37° Copper Rubber plug		
	location/I.D. inch or mm	D	6.2 ±0.09	0.240-0.250	
rocess connector	angle material seal	D	37° Copper Rubber plug		
2	location/I.D. inch or mm	F	6.2 ±0.09	0.240-250	
ischarge connector	angle material seal	Ė	37° Copper Rubber plug		





MEDICAL COMPRESSORS FOR BIOMEDICAL AND ULT FREEZERS

Secop's refrigeration compressors and solutions are also available for various vaccine and biomedical cooling requirements including ultra-low temperature (ULT) models for stationary or mobile appliances providing world-wide safe storage or transport at different temperature levels.

Sub Platform	Applications Evap. Temp Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants
MN J/UV	Biomedical Freezers -30 to -60 °C	11.15 – 12.55	245 - 538	EN 12900 LBP	R290 HC mixture R404A R452A
IS I/UV	Biomedical Freezers -30 to -60 °C	17.69 – 20.95	316 – 657	EN 12900 LBP	R290 HC mixture R404A R452A
IP IV	Ultra-Low Temperature Freezers -60 to -90 °C	2	26.7 - 47	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290 HC mixture
IN I/UV	Ultra-Low Temperature Freezers -60 to -90 °C	11.15 – 12.55	182 – 397	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290 HC mixture
IS V/UV	Ultra-Low Temperature Freezers -60 to -90 °C	17.69 – 20.95	<u>234</u> - 477	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290 HC mixture
lobile LT Con- ensing Inits	Ultra-Low Temperature Freezers -60 to -90 °C	2	26.7 - 47	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290
tationary ILT Con- ensing Inits	Ultra-Low Temperature Freezers -60 to -90 °C	17.69	234 – 477	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290

ULTRA-LOW TEMPERATURE SYSTEMS

Secop recommends using 2-stage cascade systems for temperature ranges from -60 °C to -90 °C. These have been developed to offer the highest reliability and product safety at ultra-low temperatures.



Learn more about
Ultra-Low Temperature (ULT) Freezers at:
www.secop.com/ult

Ultra-Low Temperature for Medical Cooling
Sustainable Cooling Solutions

SECOP GROUP:

SECOP

12
nternational partners for advanced developments

33 laboratories located in Austria, Germany, Slovakia, China, U.S.A., and

160 R&D engineers and technicians

440 patents globally

50+
countries with
customer support

AROUND THE WORLD



Secop is the expert for advanced hermetic compressor technologies and cooling solutions in commercial refrigeration. We develop high performance stationary and mobile cooling solutions for leading international commercial refrigeration manufacturers and are the first choice when it comes to leading hermetic compressors and electronic controls for refrigeration solutions for light commercial and DC-powered applications.

Secop was formerly known as Danfoss Compressors and is one of the founding fathers of modern compressor technology with years of experience that goes back to the beginning of the 1950s.



Flensburg: Sales and R&D



Turin: Sales



Gleisdorf: R&D



Zlaté Moravce: R&D, Logistics, and Manufacturing



Tianjin: Sales, R&D, Logistics, and Manufacturing



Atlanta: Sales and Logistics







Secop GmbH · Lise-Meitner-Str. 29 · 24941 Flensburg, Germany · Tel: +49 461 4941 0 · www.secop.com

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