

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

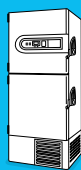
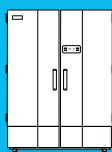
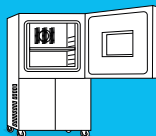
Secop delivers advanced refrigeration compressors and controls, providing customers tailored sustainable solutions for light commercial, battery-driven, and special cooling applications.

# MEDICAL COMPRESSORS FOR ULT COOLING

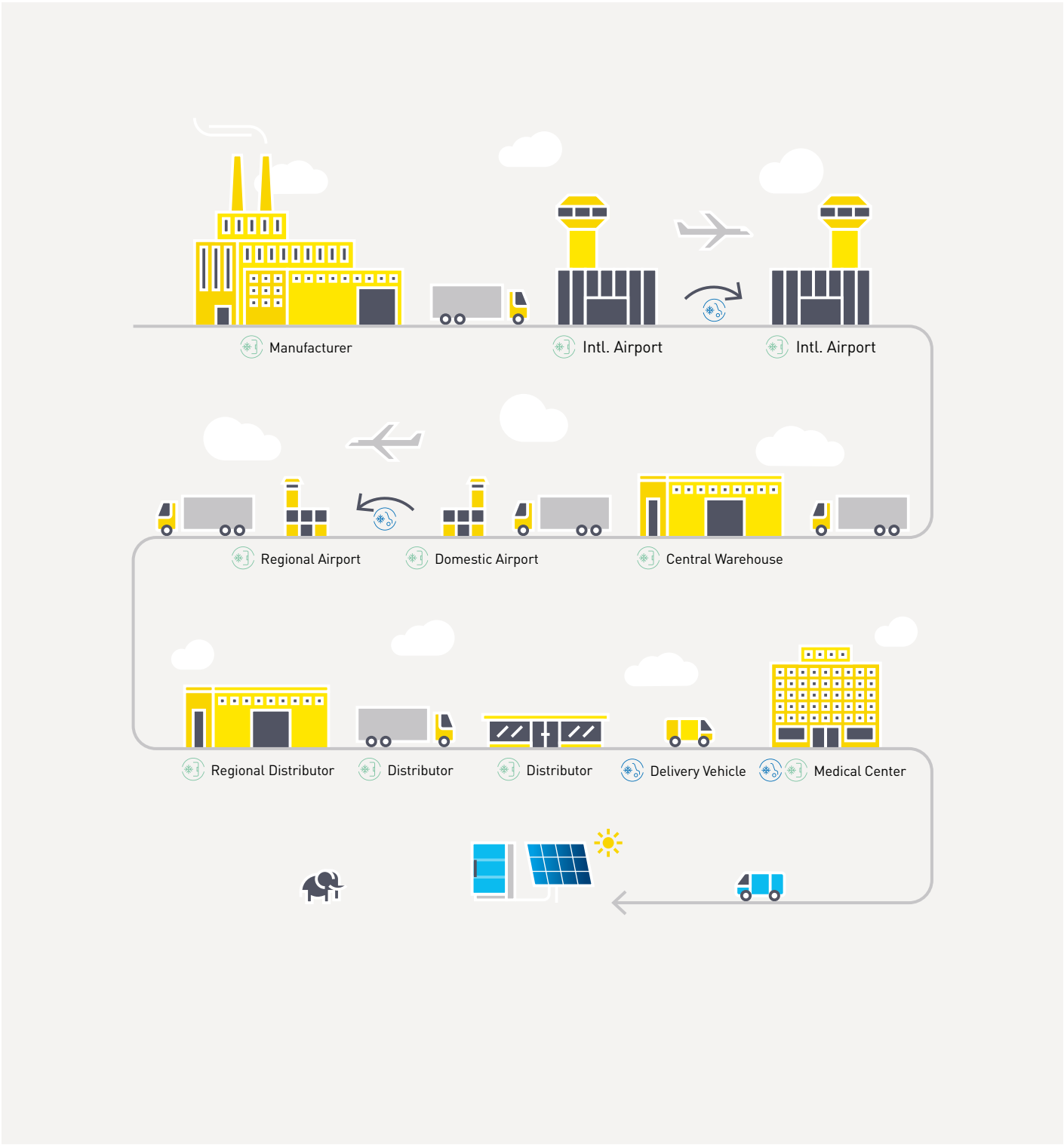
**SECCP**



Medical  
Applications



# MEDICAL COLD CHAIN



 Mobile Cooling |  Stationary Cooling

# ULTRA-LOW TEMPERATURE MEDICAL COOLING



Secop's new dedicated range of compressors for ultra-low 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.




Mobile Cooling

# Ult Medical Cooling Mobile Battery-Driven CompressorS


R170 • 12–24 V DC




MP2UVULTM



Ultra-Low Temperatures



Vaccine Transport and Storage




Biomaterial and Medical Storage



Variable-Speed Efficiency



Premium Controllers



Natural Refrigerants

- 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 CO<sub>2</sub>, and prevent wasting vaccine.

They are suitable for any distribution point, including in remote areas where the availability of CO<sub>2</sub> cannot be guaranteed or ambient conditions are severe.

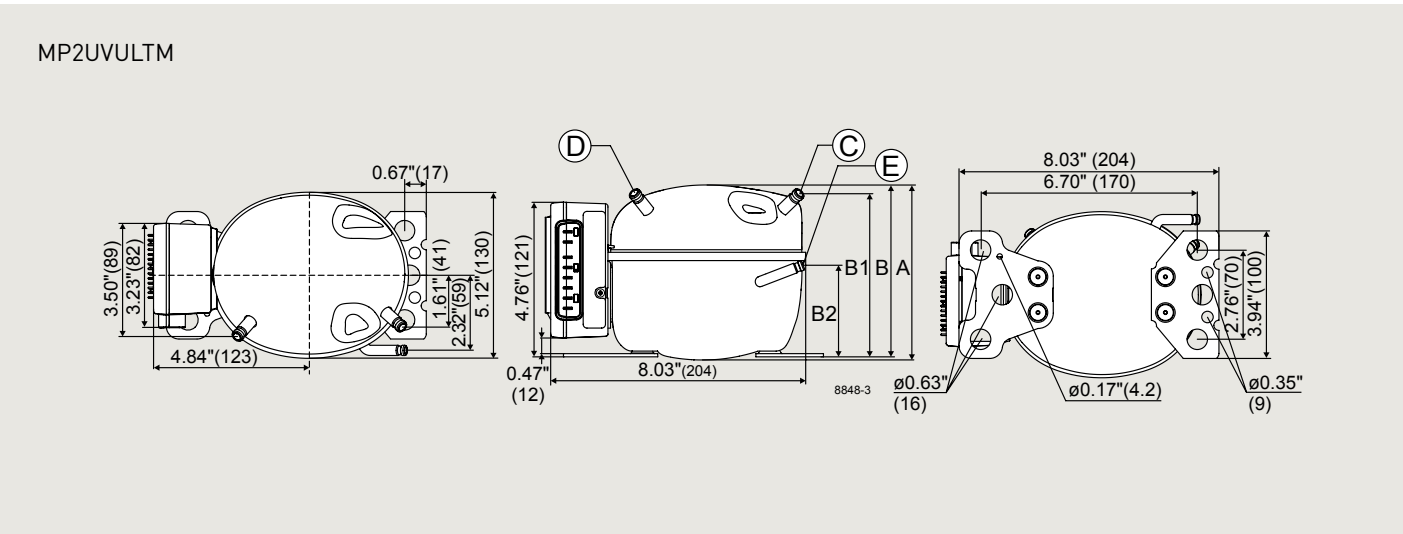
General	MP2UVULTM
Compressor	101M0800
Electronic unit	101NULT1
Approvals	UL 60335-2-34, UL 60335-1, CB IEC 60335-2-34, CB IEC 60335-1

Application	R170
Application	Low temperature stage in a 2-stage cascade system
Evaporating temperature	°C   °F -90 to -60   -130 to -76
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 cooling] @ 2,500 rpm								
Evaporating temperature	°C   °F	-90   -130	-85   -121	-80   -112	-75   -103	-70   -94	-65   -85	-60   -76
Cooling capacity	W   BTU/h	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 temp.: -35 °C [-31 °F]   Suction gas temp.: 20 °C [68 °F]   Ambient temp.: 32.2 °C [90 °F]   Liquid temp.: -35 °C [-31 °F]							

Performance Data ULT [12 V DC • static cooling] @ 4,400 rpm								
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 temp.: -35 °C [-31 °F]   Suction gas temp.: 20 °C [68 °F]   Ambient temp.: 32.2 °C [90 °F]   Liquid temp.: -35 °C [-31 °F]							

Dimensions			
Height	mm	A	137
		B / B1 / B2	135 / 128 / 73
Suction connector	location/I.D. mm   angle material   seal	C	6.2   40° Cu-plated steel   Al cap
Process connector	location/I.D. mm   angle material   seal	D	6.2   45° Cu-plated steel   Al cap
Discharge connector	location/I.D. mm   angle material   seal	E	5.0   21° Cu-plated steel   Al cap
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20







Stationary Cooling

## ULT MEDICAL COOLING STATIONARY FIXED-SPEED COMPRESSORS

R170 • 220–240 V | 50 Hz • 115–127 V | 60 Hz



MN11UHULTM  
MN13UDULTM

MS18UHULTM  
MS21UDULTM



Ultra-Low  
Temperatures



Vaccines  
Storage



Biomaterial and  
Medical Storage



High  
Efficiency



Premium  
Quality



Natural  
Refrigerants

- 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.

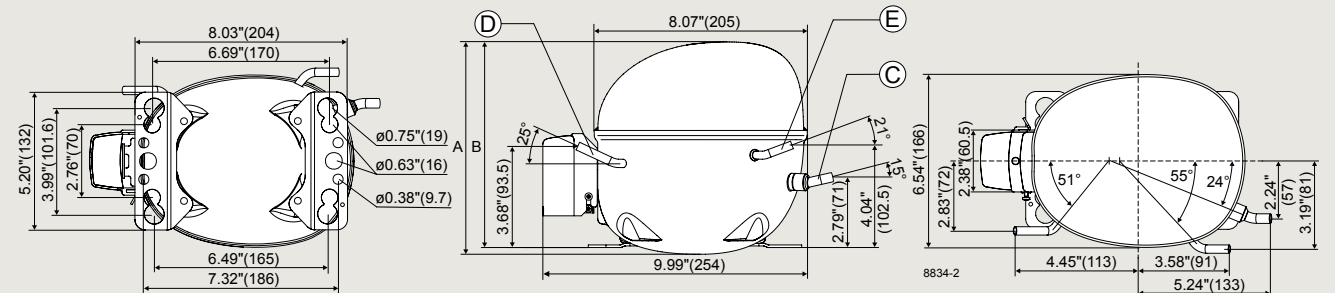
GENERAL	MN11UHULTM	MN13UDULTM	MS18UHULTM	MS21UDULTM
Compressor	105M0830	105M0840	104M0810	104M0811
Approvals	UL 60335-2-34	EN 60335-2-34, CCC	UL 60335-2-34	EN 60335-2-34, CCC

APPLICATION	R170			
Application	Low temperature stage in a 2-stage cascade system			
Evaporating temperature	°C   °F	-90 to -60   -130 to -76		
Voltage range / frequency	V/Hz	103–127/60	198–254/50	103–127/60 198–254/50

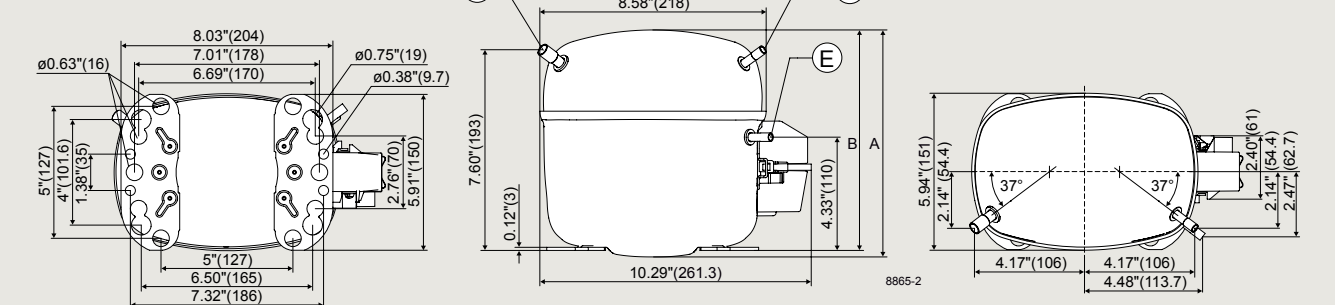
PERFORMANCE DATA ULT (115 V, 60 Hz or 220 V, 50 Hz • fan cooling)				
Evaporating temperature	°C   °F	90   -130	-90   -130	-90   -130
Cooling capacity	W   BTU/h	313   1070	262   896	439   1498
Power consumption	W	223	195	316
COP	W/W	1.40	1.34	1.38
EER	BTU/Wh	4.79	4.59	4.74
Test conditions	Condensing temp.: -35°C (-31°F)   Suction gas temp.: 20°C (68°F)   Ambient temp.: 32.2°C (90°F)   Liquid temp.: -35°C (-31°F)			

DIMENSIONS					
Height	inch or mm	A	7.99	203	8.60
		B	7.76	197	8.40
Suction connector	location/I.D. inch or mm	C	0.320–0.327	8.2 ±0.09	0.378–0.385
	angle   material   seal		15°   Copper   Rubber plug		37°   Copper   Rubber plug
Process connector	location/I.D. inch or mm	D	0.252–0.259	6.2 ±0.09	0.252–0.259
	angle   material   seal		25°   Copper   Rubber plug		37°   Copper   Rubber plug
Discharge connector	location/I.D. inch or mm	E	0.252–0.259	6.2 ±0.09	0.252–0.259
	angle   material   seal		21°   Copper   Rubber plug		37°   Copper   Rubber plug

MN11UHULTM  
MN13UDULTM



MS18UHULTM  
MS21UDULTM






Stationary Cooling

# ULT MEDICAL COOLING STATIONARY VARIABLE-SPEED COMPRESSORS






Ultra-Low  
Temperatures




Vaccines  
Storage



Biomaterial and  
Medical Storage



Variable-Speed  
Efficiency



Premium  
Controllers



Natural  
Refrigerants

- 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 – <b>MP</b> 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

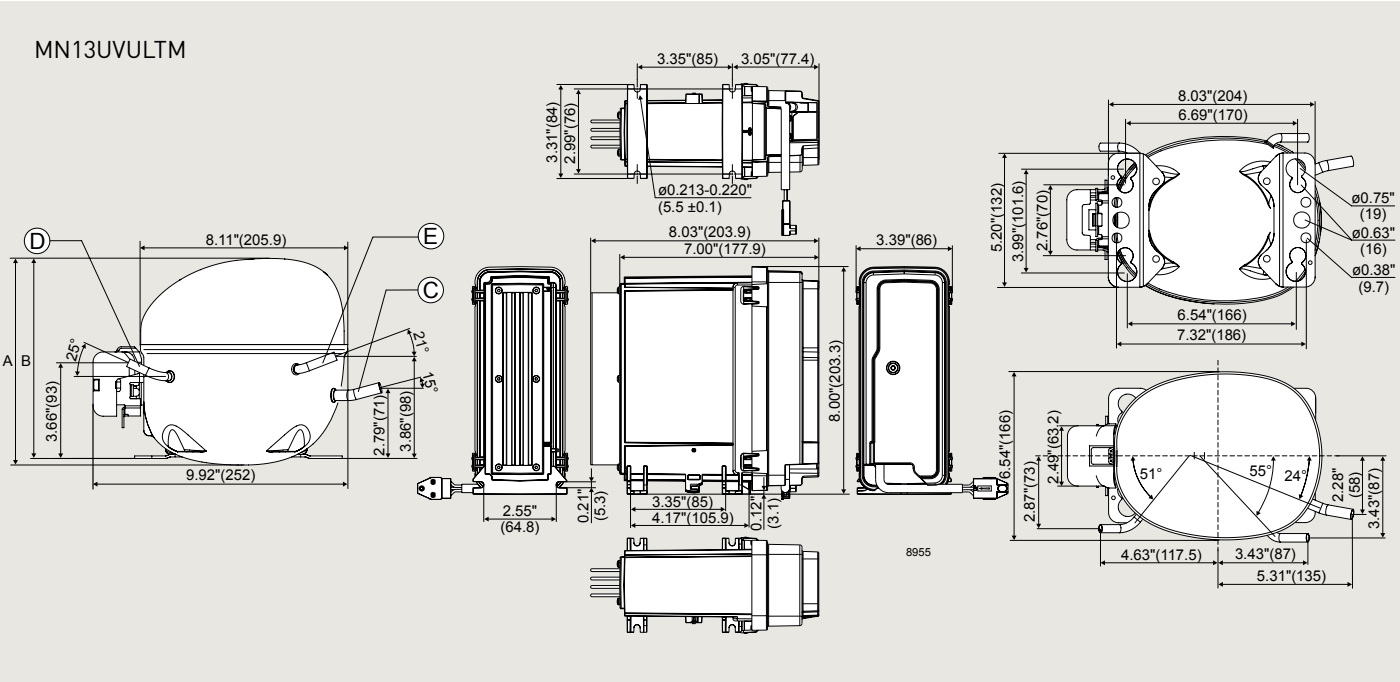
\*available in Q3 2024

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 (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 (68°F)   Ambient temp.: 32.2°C (90°F)   Liquid 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 (68°F)   Ambient temp.: 32.2°C (90°F)   Liquid temp.: -35°C (-31°F)							

DIMENSIONS				
Height	mm   inch	A	203	7.99
		B	197	7.76
Suction connector	location/I.D. inch or mm angle   material   seal	C	8.2 ±0.09	0.320-0.327
			15°   Copper   Rubber plug	
Process connector	location/I.D. inch or mm angle   material   seal	D	6.2 ±0.09	0.240-0.250
			25°   Copper   Rubber plug	
Discharge connector	location/I.D. inch or mm angle   material   seal	E	6.2 ±0.09	0.2400.250
			21°   Copper   Rubber plug	



GENERAL	MS18UVULTM
Compressor	104M0820
Electronic unit – <b>MP</b> 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

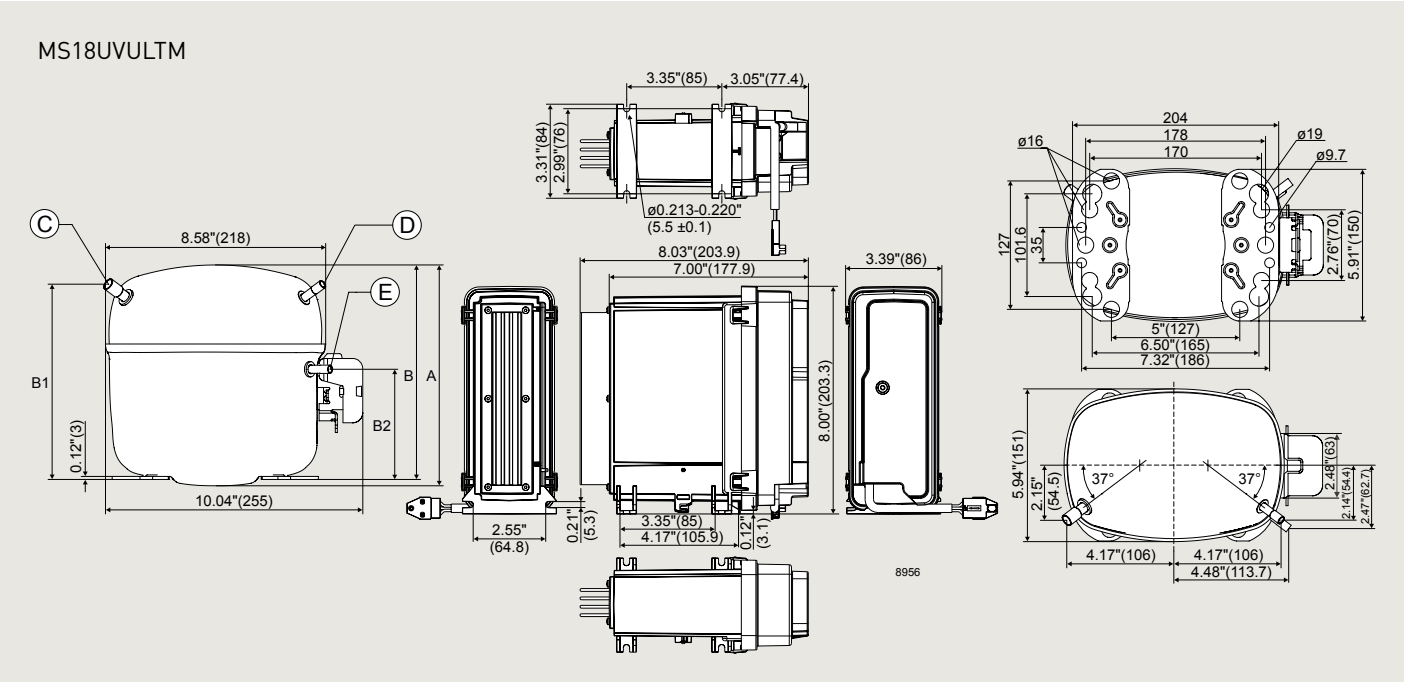
\*available in 3rd quarter 2024

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 (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	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 temp.: 20°C (68 °F)   Ambient temp.: 32.2°C (90 °F)   Liquid 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	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 temp.: 20°C (68 °F)   Ambient temp.: 32.2°C (90 °F)   Liquid temp.: -35°C (-31 °F)							

DIMENSIONS				
Height	mm   inch	A	219	8.62
		B / B1 / B2	213 / 193 / 110	8.39 / 7.60 / 4.33
Suction connector	location/I.D. inch or mm	C	10.2 ±0.09	0.378-0.385
	angle   material   seal		37°   Copper   Rubber plug	
Process connector	location/I.D. inch or mm	D	6.2 ±0.09	0.240-0.250
	angle   material   seal		37°   Copper   Rubber plug	
Discharge connector	location/I.D. inch or mm	E	6.2 ±0.09	0.240-250
	angle   material   seal		37°   Copper   Rubber plug	



Medical Cooling

# 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 U/UV	Biomedical Freezers -30 to -60 °C	11.15 – 12.55	245 – 538	EN 12900 LBP	R290 HC mixture R404A R452A
MS U/UV	Biomedical Freezers -30 to -60 °C	17.69 – 20.95	316 – 657	EN 12900 LBP	R290 HC mixture R404A R452A
MP UV	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
MN U/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
MS U/UV	Ultra-Low Temperature Freezers -60 to -90 °C	17.69 – 20.95	234 – 477	pe= -90° pc= -35° Tsuc= 20° Tliq= -35° Tamb= 32.2°	R170 R290 HC mixture
Mobile ULT Con- densing Units	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
Stationary ULT Con- densing Units	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](http://www.secop.com/ult)

# SECOP GROUP: AROUND THE WORLD

**SECOP****12**

international  
partners for  
advanced  
developments

**33**

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

**160**

R&D engineers  
and technicians

**440**

patents globally

**50+**

countries with  
customer support



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.

- |   |  |
|---|--|
|  <b>Flensburg:</b> Sales and R&D |  <b>Zlaté Moravce:</b> R&D, Logistics, and Manufacturing  |
|  <b>Turin:</b> Sales             |  <b>Tianjin:</b> Sales, R&D, Logistics, and Manufacturing |
|  <b>Gleisdorf:</b> R&D           |  <b>Atlanta:</b> Sales and Logistics                      |



## Stationary Cooling



## Mobile Cooling



## Medical Cooling



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