



CUSTOMER FAQ

CUSTOMER Question	SANYO Answer
<p>What is the difference between SANYO's cascade refrigeration system and conventional types ?</p>	<p>By design, SANYO high-stage compressor runs 100% of the time, permitting the low-stage compressor to cycle on demand for cooling from the interior chamber, reducing high head pressures on the low-stage system, permitting easier start-up and reducing energy demand. Since conventional cascade refrigeration systems cycle both systems On and Off, the high and low stage compressors must "step start" nearly simultaneously or with a slight delay. This requires a high power demand for two systems to start, and can trip a circuit breaker during periods of high electrical demand.</p>
<p>Why are commercial air conditioning compressors not designed for ultra-low temperature applications ?</p>	<p>In ultra-low circuits, these compressors are subjected to higher than normal operating pressures required to achieve and sustain evaporator temperatures. Operating pressures generate heat. These pressures demand more compressor motor torque to accommodate start-up and to maintain ultra low temperatures, thus adding stress and potentially more heat into the system. Commercial air conditioning compressor cannot meet these critical operating conditions. Bypassing the commercial air conditioning sourcing model, SANYO has successfully tested and refined its own compressor to meet the physical challenges of ultra-low temperature operation using new, environmentally safe refrigerants.</p>
<p>What are other design concepts that can affect the reliability of compressors ?</p>	<p>The phenomena of high-temperature "in-rush currents" over time can weaken and degrade compressor windings resulting in compressor failure. New SANYO compressors feature oversized windings designed to anticipate and accommodate in-rush currents within the normal performance envelope to mitigate compressor degradation due to frequent start-ups.</p>
<p>How did SANYO develop their proprietary refrigeration compressor specifically for ultra-low freezer applications ?</p>	<p>Bypassing the commercial air conditioning sourcing model, SANYO has successfully tested and refined its own compressor to meet the physical challenges of ultra-low temperature operation using new, environmentally safe refrigerants. Collaborating with industry leaders in refrigeration chemistry, lubrication pathways, natural and synthetic oils, and cabinet insulation technologies, SANYO engineers have created a highly reliable ultra-low temperature freezer based on the performance of compressors doing the work they were specifically designed to do.</p>
<p>What improvements have been made since the original development of the SANYO V.I.P. panels ?</p>	<p>Since the original V.I.P. design was introduced, SANYO researchers developed proprietary improvements in the open cell panel technique, creating better matrices to support a sustainable vacuum, and permitting manufacturing engineers more latitude in composite orientation with conventional foam. As a result, evaporator coils within the thin-wall SANYO cabinet are arranged for optimal interior uniformity and best heat removal (energy transfer), further reducing the burden on the cascade refrigeration system.</p>
<p>What are the major advantages of SANYO's V.I.P. design for cabinet construction ?</p>	<p>The cost per cu.ft. (or liter) of interior storage space is significantly lower in a SANYO ultra-low freezer VIP® vacuum insulation panel cabinet; SANYO can offer more useable storage volume within the same sq.ft. of floor space than competitive models; Provides an faster return on investment based on first costs, operating costs and maintenance costs over time; Placement of evaporator surfaces within the cabinet walls achieve exceptional documented ultra-low temperature uniformity</p>
<p>What is SANYO vertical component integration ?</p>	<p>The concept of Vertical Component Integration is central to SANYO's entire product line. SANYO manufactures its own oil separators, circuit boards and vacuum insulation panels, and designs its own compressors. This integrated supply chain assures component quality from source to application, and permits SANYO to evaluate and improve its own components without third party involvement.</p>
<p>What are the major design elements applied to SANYO compressor components ?</p>	<p>Each component of the new SANYO compressor has been electronically designed and modeled in stereolithographic beta form to exceed actual operating conditions. Pistons, connecting arms, valve plates and wrist pins are designed to handle high load capacities. All testing is performed in a +35°C ambient. Proper delivery and return of lubricants is a key factor in extending component life. Compressor motor sizing is predicated on refrigerant flow as well as energy required for initial pull down, and then sustained ultra low temperature with reserve capacity. Motor windings are configured to accommodate fluctuating electrical supplies in many institutional settings.</p>
<p>How does SANYO conduct performance testing on their ultra-low temperature freezers ?</p>	<p>In the SANYO research and development laboratory prototype compressors were tested under harsh environmental conditions to exceed actual freezer use in typical labs. Because SANYO controls its own compressor design, all amendments and re-engineering options were explored as needed, with new prototypes brought into test quickly.</p>

# ULT SALES POSITIONING

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<p>How does SANYO ULT system reduce discharge temperatures ?</p>	<p>SANYO's new ultra low temperature compressor employs a unique orientation of conventional components to reduce discharge temperatures and compressor heat while using commercially available refrigerants and lubricants. Heat reduction results range from as low as 25°C below previous SANYO compressors and more than 40°C below leading brand compressors used by numerous competitors. With lower compressor discharge temperatures and pressures, newer refrigerants can be more effective.</p>
<p>How does the SANYO compressor oil cooling loop help reduce discharge temperatures ?</p>	<p>At the heart of the SANYO solution is a compressor oil cooling loop that reapportions the working heat byproduct between the low stage compressor and the high stage compressor. Due to low molecular weights in low stage refrigerant formulations, low stage compressors must work harder to achieve cooling targets. The SANYO technique uses existing lubricating oil to cool the low stage compressor, passing the resulting heat load to the high stage compressor which, by design, is already doing less work.</p>
<p>What are the advantages of reducing discharge temperatures in the SANYO system ?</p>	<p>SANYO's new ultra low temperature compressor employs a unique orientation of conventional components to reduce discharge temperatures and compressor heat. Heat reduction results range from as low as 25°C below previous SANYO compressors and more than 40°C below leading brand compressors used by numerous competitors</p>
<p>Why is low voltage a problem in laboratories ? How does SANYO Status alert detect and correct this issue ?</p>	<p>Low voltage is common in many laboratories due to increased power demand in clinical and research environments, drug discovery, storage and processing. These conditions are most common in older institutions or those that have been retrofitted for laboratory use. The SANYO Status alert detects low voltage and warns the user through the freezer control panel monitoring system. When this notification occurs, building maintenance or facilities engineering personnel should be contacted to investigate the issue. To protect the valuable stored product, SANYO ultra-low freezers with voltage enhancement systems will automatically correct the voltage through an internal transformer and boost the voltage to the proper level.</p>
<p>How is SANYO conscious of the need to protect our environment and conserve energy ?</p>	<p>As a corporate pioneer in life science laboratory equipment and appliances, and as a global source of solutions ranging from energy management to solar power and alternative energies, SANYO remains committed to providing the best possible laboratory equipment for research and clinical needs. This commitment was demonstrated when SANYO took the initiative to revamp and redesign newer refrigeration systems that would employ new, environmentally-friendly refrigerants throughout the laboratory without compromising performance.</p>
<p>What elements of the SANYO ULT design reflect GREEN initiatives ?</p>	<ul style="list-style-type: none"> <li>CFC Free Refrigerants</li> <li>RoHS Compliance</li> <li>Energy Efficiency</li> <li>Noise Reduction</li> <li>Operating Costs</li> <li>High Density Storage</li> <li>Storage Volume Efficiency</li> </ul>
<p>What are the overall benefits of the SANYO ULT refrigeration system?</p>	<ul style="list-style-type: none"> <li>Greater system longevity &amp; reliability</li> <li>Minimizing compressor operating temperatures</li> <li>Efficient location of evaporator systems around the interior chamber</li> <li>Balanced refrigeration system</li> <li>Better temperature uniformity, permitting the entire interior volume to be used for long-term storage.</li> <li>Reduced noise at critical Hz ranges.</li> <li>Enhanced viability of stored product.</li> </ul>



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