



SPECTRUM™ TS

Total flexibility, total control



The new world standard in multi-temperature control for trucks.

- Now with three temperature option
- User-friendly SPECTRUM™ TS controller
- Reliability through quality and design
- Total load protection through precise temperature management
- Simple operation through intuitive controls
- Flexibility to suit your needs
- High performance - Low life cost



Total innovation for performance

Pull-down and recovery

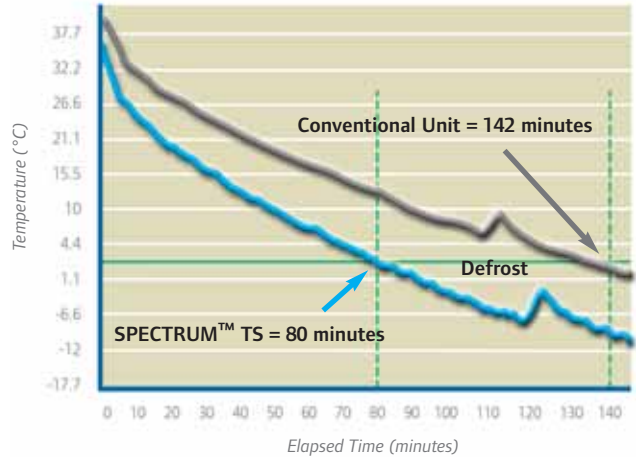
Heightened by growing concerns over temperature accuracy and the shelf-life of food products, governments and customers worldwide are demanding tighter control and more accurate monitoring of temperatures throughout the cold chain.

SPECTRUM™ TS gives you maximum capacity under all conditions; in fact, the new remote evaporators deliver up to 45% more cooling capacity than their predecessors.

With scroll compressor efficiency our new high performance system with new remote evaporators pull-down up to 35% faster than conventional units. As the graph on the right shows, even after defrost, pull-down is rapid.

And the system uses up to 14% less fuel in the process. Each time the doors are opened to make a delivery, the temperature of the truck and its contents rises. The ability to recover set-point quickly is critical for product quality.

Ambient / start up temperature = 37.7°C
Pulldown to 1.6°C

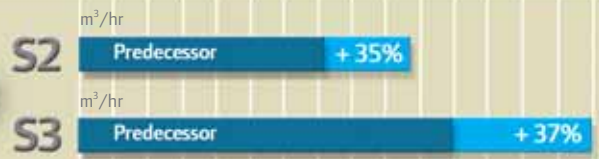


■ SPECTRUM™ TS
■ Conventional Unit

Airflow

For superior protection of your load we must deliver superior airflow.

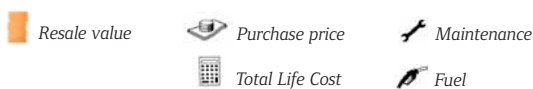
The SPECTRUM™ remote evaporators move more air, faster, than their predecessors. Such airflow performance ensures that temperature variance is kept to an absolute minimum.



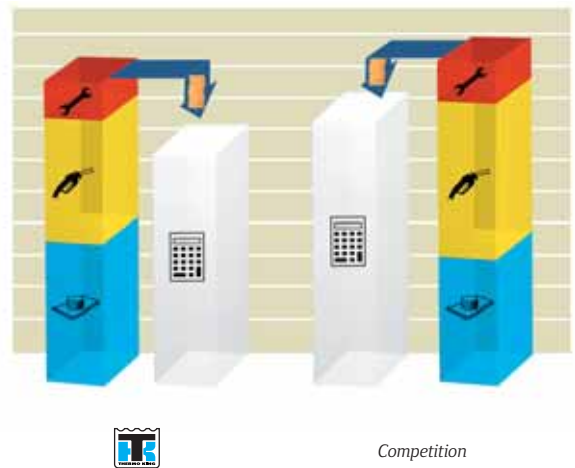
The SPECTRUM™ remote evaporators' exclusive directional air blowers discharge a smooth stream of high velocity air for maximum air throw. Maximum air throw means more air reaches the back of the compartment faster. Air penetrates more thoroughly around and through the entire load for accurate temperature management.

Economy

You want performance to protect your load and power to accelerate your cycle times. But at what price? The combination of price together with fuel costs, maintenance costs and resale value defines the equipment's Total Life Cost. The low fuel consumption of our SPECTRUM™ TS, our fixed cost maintenance contracts and our superior resale value mean you can have the best for less.



Total Life Cost



nce with economy

Fuel consumption

Fuel contributes around 50% of the total life cost of a temperature control system*. We compared the SPECTRUM™ TS system against a conventional unit. The SPECTRUM™ TS demonstrated an impressive 14% less fuel consumption. This means less fuel cost and reduced environmental emissions.

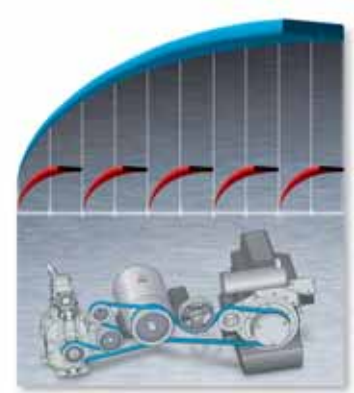
(* Tests conducted with -20°C front and 0°C rear compartments.)



— SPECTRUM™ TS
— Conventional Unit

Reduced maintenance

A two-belt drive system increases belt life by a factor of five. This significantly reduces parts and labour costs while increasing system efficiency through higher torque transfer.



— Poly "V" belt
— Regular "V" belt

User-friendly SPECTRUM™ TS Controller



Easy three-temperature operation

Displays temperature in all three compartments on one screen.



Simple, one-function buttons

New sturdier and more specific buttons ergonomically designed for ease of use and speed of operation, make changes faster and more accurately, giving the driver positive feedback. Specific buttons provide more control - simple push button for manual defrost and high speed lockout.



Audible and visible shut - down alarm warning

Alerts driver of critical, "need to know" alarms first while storing others - eliminates nuisance alarm codes and downtime. Alerts driver that set point change has not been completed and prevents load damage by having more accurately set temperatures.



Simple setpoint change

Accurate monitoring and control of zone by zone setpoint.



Multiple zone display

Monitors system performance quickly, safely and accurately. New larger adjustable backlighting screen helps avoid driver error - designed for complete visibility, day or night.



Multilingual, interactive, text menu

Provides interactive prompts, and leads driver through text menu. In addition the driver will read menu and alarms in their own languages: English, French, German, Italian and Spanish, thus reducing driver error and providing more accurate system monitoring.

SPECTRUM™ TS Key features and options

1- TOTAL KARE

Because maintenance costs constitute a key variable in the Total Life Cost of a temperature control system, we now offer, through Total Kare, a complete selection of maintenance programmes.



2- CYCLE-SENTRY

Stops engine when refrigeration is not needed and restarts when refrigeration or battery charge is needed.

- Fuel savings of up to 80%
- Increases component life
- Reduces maintenance costs

3- EXTENDED MAINTENANCE INTERVAL

Thermo King EMI-2000 will extend your maintenance interval and reduce your operating cost by:

- Reducing clean-up and disposal cost
- Reducing environmental impact with less spillage and less waste
- Extending engine life with improved, highly efficient filtration
- Reducing scheduled maintenance cost by up to 40%

4- THERMO KING HIGH PERFORMANCE BATTERY

The Thermo King high performance battery is designed exclusively for transport refrigeration applications. It is the only battery recommended by Thermo King for its equipment. It incorporates new Silver and Calcium technologies that provide performance far superior to that of any conventional automotive battery technology. The Thermo King high performance battery minimises your costs and maximises your confidence on the road; it is totally maintenance free and delivers a service life more than 20% longer than conventional batteries.



5- WARRANTY COVERAGE

- 1st year complete warranty
- 2nd year major components warranty: covers specified components



6- DAS (DATA ACQUISITION SYSTEM)

High performance data recorder system. Records temperatures, set point, operating modes and external events.

- Data can be output to computer or printer
- Operates independently of unit controller
- 512K memory stores over one year's data
- Reassures customer of total quality control
- Provides evidence of correct practice
- Approved to EN-12830, CE Mark and IP-65 standards
- Up to six independent sensors
- Automatic power-up and shut-off to protect unit battery

7- WINTRAC (DATA ANALYSIS SOFTWARE)

Wintrac is a Windows based, simple to use, multilingual management software package designed to communicate and read data from all Thermo King temperature recorder devices. It provides quick and easy answers to all your questions in relation to the performance of the temperature control unit and the temperature of the produce while in transit.

8- TKDL (DATA CAPTURE)

- User-friendly temperature recorders for all makes of temperature-controlled equipment
- Simple data offload to PC
- Delivery and journey printouts at the touch of a button
- Approved to EN-12830, CE Mark and IP-65 standards
- Up to four independent sensors and 512K memory



9- FLEETWATCH



User-friendly software empowers fleet manager with automatic custom reporting.

- Provides seamless connection to collect and organise output from Thermo King's DAS and TKDL data recorders
- Automatically organises data recorder output data into simple, selectable reports useful to your operation
- Reports are easy to understand and user-friendly

10- TRACKING

Complete load monitoring and fleet tracking at your fingertips

- Monitors sensitive loads via the web
- Increases truck asset utilisation
- Reduces operating costs
- Enhances customer satisfaction
- Increases security and reduces insurance risk
- Tracking can be sold with a Total Kare service contract
- Tracking is compatible with all Thermo King dataloggers and trailer controllers
- www.tktracking.com



11- SPECTRUM™ CONTROLLER

- Simplified keypad to reduce incorrect operation of the system
- Visible set-point confirmation for load protection
- Enhanced temperature management
- Unit self-check for reduced down-time
- Alarm codes for simplified trouble-shooting
- Programmable features to tailor operating conditions to the load

12- AUTO PHASE CORRECTION

- Avoids reverse fan rotation while on electric stand-by
- Protects load

| Life Cost Management | |
|--|---|
| 1- Guaranteed Maintenance Contracts | ■ |
| 2- Cycle-Sentry start / stop control system | ● |
| 3- EMI 2000 extended maintenance | ● |
| 4- Thermo King High Performance Battery | ■ |
| 5- Warranty Coverage | ● |
| Data Capture & Communications | |
| 6- DAS (Data Acquisition System) | ○ |
| 7- Wintrac data analysis software | ■ |
| 8- TKDL data capture | ■ |
| 9- FleetWatch fleet management software | ■ |
| 10- TrackKing tracking and load monitoring | ■ |
| Load Protection | |
| 11- SPECTRUM™ Controller | ● |
| 12- Auto Phase Correction | ● |
| 13- Diesel/electric auto-switching | ● |
| 14- Door Switches | ■ |
| Environmental Protection | |
| 15- Low Decibel Sound Reduction System | ● |

● Standard Feature

○ Option : factory installed

■ Option : dealer supplied

13- DIESEL/ELECTRIC AUTO SWITCHING

- Automatically starts diesel engine if electric stand-by fails
- Manual override for ferry operation
- Protects the load automatically (without manual intervention)

14- DOOR SWITCHES

- Magnetic door switch minimises cargo temperature fluctuations
- Protects load

15- LOW DECIBEL SOUND REDUCTION SYSTEM

- Quieter operation and reduction of noise emissions
- Up to 40% quieter than previous models



Exclusive driver training software

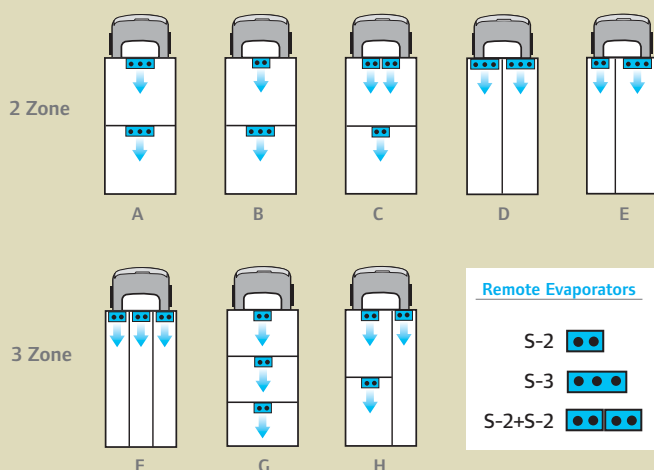
Thermo King's Tutor Series with "Professor Kool" provides rapid and effective interactive training to reduce driver error and ensure optimum equipment operation.

Total flexibility to meet your needs

Compartments or lanes, we have a system that will meet your requirements. Selection of the correct unit evaporators depends upon many variables. Our dealers are trained to help you choose the right equipment for your particular application.



A system to meet your requirements



Although shown at the front, evaporators can alternatively be placed at the back of a zone.

Scroll compressor

Technological ADVANTAGES:

High efficiency means:

- High capacity

Greater capacity means:

- Fast pulldown/recovery

87% fewer moving parts means:

- High reliability/long life

Lower fuel consumption means:

- More operating profit

Environmental ADVANTAGES:

Less fuel required means:

- Less fuel consumed

Less fuel consumed means:

- Lower diesel emissions

Quieter operation means:

- Lower noise emissions

Chlorine-free R-404A means:

- Zero ozone depletion



How the Scroll compressor works:



Compression in the scroll is created by the interaction of an orbiting spiral and a stationary spiral. Gas enters an outer opening as one of the spirals orbits.



The open passage is sealed off as gas is drawn into the spiral.



As the spiral continues to orbit, the gas is compressed into an increasingly smaller pocket.



By the time the gas arrives at the centre port, discharge pressure has been reached.



Actually, during operation, all six gas passages are in various stages of compression at all times, resulting in nearly continuous suction and discharge.

SPECTRUM™ TS Specifications

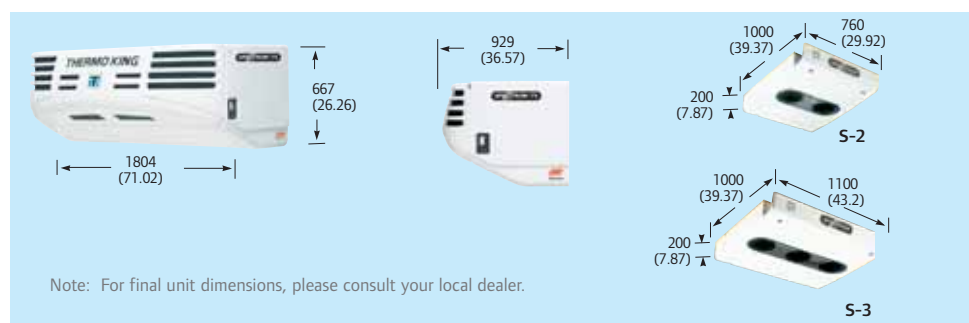


| | | SPECTRUM TS | |
|---|-----------|----------------|-------|
| SYSTEM PERFORMANCE | | | |
| Refrigeration capacity: System net cooling capacity under A.T.P. conditions at 30°C ambient | | | |
| Return Air To Evaporator | | 0°C | -20°C |
| Capacity on engine power | W (Up to) | 8,700 | 5,800 |
| Capacity on electric stand-by | W (Up to) | 5,500 | 3,700 |
| Airflow: on high speed engine operation | | | |
| Airflow volume @ 0 Pa static pressure | m³/hr | 3,430 | |
| Discharge Velocity (airthrow) | m/s | 7.9 | |
| Weight: includes Low Decibel package | | | |
| Model 30: cooling and heating on engine operation (Condenser only) | kg | 387 | |
| Model 50: cooling and heating on engine & electric stand-by operation (Condenser only) | kg | 446 | |
| Engine: Direct injection diesel, 3 cylinder, liquid cooled | | | |
| Model | | TK3.95 | |
| Rating | kW | 12.5 | |
| Maintenance Interval | hrs | 2000 | |
| Compressor: lightweight aluminium alloy, Scroll compressor | | | |
| Model | | TKO 6.0 scroll | |
| Displacement | cm³ | 98 | |
| Electric Stand-by Motor | | | |
| Voltage / phase / cycles | | 380/3/50 | |
| Rating | kW | 7.5 | |
| Refrigerant: R-404A zero Ozone Depletion Potential (ODP), internationally approved | | | |
| Charge | kg | 5.9 | |

INDIVIDUAL EVAPORATORS

| Refrigeration capacity: (NB: Capacities of host unit and individual evaporators not cumulative.) System net cooling capacity at 30°C ambient temperature under A.T.P. conditions | Return Air To Evaporator | S-2 | | S-2 + S-2 | | S-3 | |
|--|--------------------------|-------|-------|-----------|-------|-------|-------|
| | | 0°C | -20°C | 0°C | -20°C | 0°C | -20°C |
| Capacity | W (Up to) | 6,200 | 3,700 | 8,600 | 5,300 | 8,000 | 4,700 |
| Airflow | | | | | | | |
| Airflow volume @ 0 Pa static pressure | m³/hr | 1,130 | | 2,260 | | 1,715 | |
| Discharge Velocity (airthrow) | m/s | 9.1 | | 9.1 | | 7.9 | |
| Weight | | | | | | | |
| | kg | 45 | | 90 | | 55 | |

Dimensions: Millimetres (inches)



Warranty Summary

Specific terms of the Thermo King Ireland Ltd. 24 month limited warranty (TK 52506-9-CH) are available on request. Thermo King excludes liability in contract and tort (including strict liability and negligence) for any special, indirect or consequential damages by reason of the installation or use of any covered product or its mechanical failure.

Specifications are subject to change without notice.

ALWAYS INSIST ON GENUINE THERMO KING SPARE PARTS

Genuine Thermo King replacement parts are proven time after time to beat the competition in side-by-side testing. Engineered to provide optimal performance and maximum life, Thermo King service parts protect your investment and provide you peace of mind and confidence on the road. Insist on Genuine Thermo King Parts, every time!



www.thermoking.com



Providing equipment and services to manage controlled-temperature environments for food and other perishables, our Climate Control Technologies sector encompasses both transport and stationary refrigeration solutions. Our product brands include Thermo King®, a world leader in transport temperature control system and Hussmann®, a manufacturer of refrigeration and food merchandising equipment.

www.thermoking.com www.hussmann.com www.ingersollrand.com

For further information please contact:

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