

# SPIHEROS

**ONE PIECE TRANSPORT REFRIGERATION UNIT FOR SMALL  
TO MEDIUM SIZED TRUCKS**

## **KOOLVAN**

**560i/660i/760i/860i**



## **Operators Manual**

**ADVANCED TECHNOLOGY – YOU CAN RELY ON.**

# KOOLVAN 560i/660i/760i/860i

## OWNERS DETAILS

Company Name	
Physical Address	
	Code
Postal Address	
	Code

Tel No. (H)											
Tel No. (W)											
Cell No.											

## VEHICLE/FRIDGE DETAILS

Registration No:
Date of Sale:
Model/series:
Unit serial No:
Refrigeration gas type:
PCB Model & Rev:
Software version:

## CONTENTS

This operator's manual is for the Koolvan 60 series units.

The manual includes service intervals, safety information, trouble shooting and other information to assist in the operation and maintenance of the equipment.

Following the correct maintenance program will avoid costly down time. It is essential that during the warranty or contract period (should there be a service contract in place) the unit is serviced and maintained by an authorised Spheros South Africa dealer only.

Should you require further information, do not hesitate to contact your nearest Spheros South Africa dealer.

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## SAFETY GUIDE

### INSTALLATION

When installing or removing the unit correct lifting equipment should always be used. Do not stand beneath a unit that is being lifted.

### SERVICE AND MAINTENANCE

The unit has many moving parts. Covers and gills have been fitted with customer safety in mind. Always stop the unit before carrying out service and maintenance. This includes pre-trip inspections.

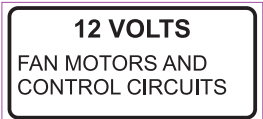


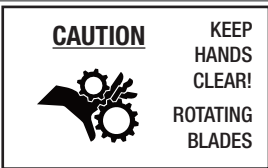



### REFRIGERANTS

It is recommended, in line with current legislation for the refrigeration industry, only persons who have completed the Safe Handling of Refrigerants course and are registered with ACRICSA (The Governing Body), carry out services on your refrigeration system. Contact your nearest Spheros South Africa Dealer.

### ELECTRICAL

Relatively high voltages are used for the electric motor standby drive. Inside the control box there are a combination of low voltage DC for the control circuits and high voltage AC components for switching the electric motor on and off. It is therefore recommended that only personnel who have had the correct factory training carry out service and repairs on the electrical system. Contact your nearest Spheros South Africa Dealer.

IMPORTANT SYMBOLS ON SPHEROS SA UNITS

	Voltage indication.
	Warning sign, electric shock hazard.
	Type of refrigerant used
	Warning sign, moving machinery hazard
	Type of compressor oil to be used
	Direction of fan rotation
	Oil level indication

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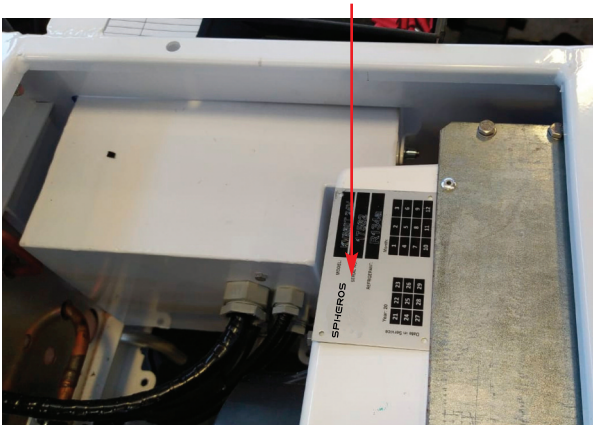
## UNIT IDENTIFICATION

Each unit is identified with a nameplate containing the relevant serial number.

The serial number contains the year, month and day the unit was manufactured.

		MODEL:				
<b>SPHEROS</b>		SERIAL NO:				
www.transfrig.co.za +2711 608 0462		REFRIGERANT:				
Date in Service	Year: 20			Month:		
	21	22	23	1	2	3
	24	25	26	4	5	6
	27	28	29	7	8	9
				10	11	12

Position of plate on unit under cover



The serial number and model type must always be used in the event of warranty claims and spares purchase.

## FEATURES

### ◆ Application

The refrigeration system will refrigerate insulated bodies as tabulated.

Models	Approximate maximum body lengths @ given box temperatures		
	0°C	-18°C	-25°C
560i	4.2m	3.5m	3.2m
660i	4.5m	4m	3.5m
760i	6m	5.4m	4.5m
860i	6.5m	6m	5m

**Note:** In order to ensure the correct application, ambient temperature, body insulation and number of door openings must be taken into consideration. Please consult your Spheros South Africa dealer before final selection.

### ◆ General design concept

Over-road refrigeration is by means of a compressor which is driven directly off the vehicle crank shaft. The electric standby is provided by a reciprocating compressor. Available in 3 phase 380v for all model and 1 phase 220v for the 660 model only.

The roof or bulkhead mount condenser frame is fabricated from epoxy (coated 3cr12) and stainless steel and the evaporator from aluminium and stainless steel.

### ◆ Options

KV560i

Over road refrigeration only and over road refrigeration with electric standby  
N/A for mains electric refrigeration only

KV660i/760i

Over road refrigeration only

KV660i/760i/860iT

Over road refrigeration with electric standby

KV660i/760i/860iTE

Mains electric refrigeration only

### ◆ Air flow

A constant airflow is provided by electric evaporator fans.

### ◆ Defrost

Automatic defrost is initiated by means of pre set timer. A manual defrost facility is also provided.

### ◆ Simple operations

The required temperature is set on the thermostat. The control changes automatically to the over road system when the truck ignition is switched on and to the electric standby when the electric mains cable is plugged in and switched on.

### ◆ Refrigerant

Zero ODP R134a or R404A.

			KV 560i	KV 660i	KV 760i	KV 860i
<b>Cooling Capacity @30°C ambient (W) R404A</b>	<b>Road</b>	0°C	2300	3700	4200	4700
		-20°C	1500	2200	2800	3100
	<b>Electric</b>	0°C	2300	3700	4200	4700
		-20°C	1500	2200	2800	3100
<b>Air Volume Flow (m³/h)</b>			1500	2000	3000	3900
<b>Weight (kg)</b>	<b>Road only</b>		95	99	105	115
	<b>electric standby</b>		140	145	165	175
<b>Road Compressor</b>			TCCI QP7H15	TCCI QP7H15	TCCI QP7H15	TCCI QP7H15
<b>Semi-hermetic standby compressor</b>	<b>Type</b>		D1,5-9Y	D2-13Y	D3-16Y	D3-16Y
			<b>50Hz/60Hz</b>	<b>50Hz/60Hz</b>	<b>50Hz/60Hz</b>	<b>50Hz/60Hz</b>
	<b>Power (kW)</b>	380V 3Ph	2,2	3,3	5,4	5,4
		220V 1Ph	2,2	3,3	n/a	n/a
	<b>Current</b>	380V 3Ph	5,9	7,1	9,9	9,9
	<b>consumption (A)</b>	220V 1Ph	10,2	12,4	n/a	n/a

# KOOLVAN 560i/660i/760i/860i

## TECHNICAL SPECIFICATIONS

ITEM	560i	660i	760i	860i
<b>Refrigeration Settings</b>				
HP Cut Out	26 bar (377 psi)	26 bar (377 psi)	26 bar (377 psi)	26 bar (377 psi)
HP Cut In	20 bar (290 psi)	20 bar (290 psi)	20 bar (290 psi)	20 bar (290 psi)
LP Cut Out	0,2 bar (3 psi)	0,2 bar (3 psi)	0,2 bar (3 psi)	0,2 bar (3 psi)
LP Cut In	1,2 bar (18 psi)	1,2 bar (18 psi)	1,2 bar (18 psi)	1,2 bar (18 psi)
CPR valve (TE version only)	1,5 bar (22 psi)	1,5 bar (22 psi)	1,7 bar (25 psi)	1,7 bar (25 psi)
Refrigerant Type	R404A	R404A	R404A	R404A
Refrigerant Qty (Approx)	1,5kg	1,5kg	1,8kg	1,8kg
<b>Compressor</b>				
Compressor Oil (Emkarate)	200ml	200ml	200ml	200ml
<b>Add an extra 200 ml to system when installing and commissioning</b>				
Standby Compressor Semi Hermetic	FRASCOLD D1,59Y	FRASCOLD D2,13Y	FRASCOLD D3,16Y	FRASCOLD D3,16Y
Overload Compressor Swash Plate	TCC115	TCC115	TCC115	TCC115/TM21
220 Volt – 0/Load Setting	12,5 amps	19,6 amps	Not Available	Not Available
380 Volt – 0/Load Setting	4,6 amps	7,10 amps	9,9 amps	9,9 amps



## PRE TRIP INSPECTION



This inspection should be carried out prior to loading. If the following is strictly adhered to this should save costly downtime.

## PRE COOLING THE INSULATED BODY

- ◆ Prior to loading inspect the inside and outside of the insulation skin for delamination and holes. Inspect door seals and door closing mechanisms. Doors that will not close properly and punctures of the insulation material will affect the refrigeration unit's ability to maintain correct temperature. Check that loading materials such as cardboard and shrink-wrapping have not entered the evaporator, as this will cause damage to fan motors and fan blades.
- ◆ Switch the unit on and set the temperature controller to the desired set point (the temperature at which the product must be transported). This ensures that the empty box can achieve the correct temperature for the product being loaded.

# KOOLVAN 560i/660i/760i/860i

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## OPERATING THE UNIT

All Spheros South Africa “KV” series units are quipped with in-cab controls. This allows the driver to operate the unit from the driver’s seat and to be able to monitor temperature of the load at all times.



### ROAD START UP

1. Start vehicle engine.
2. Move toggle switch to “on” position.
3. Wait for the temperature controller display to indicate box temperature. Cooling will then commence.
4. Check temperature controller if set point is correct.  
(See set point instructions if adjustment is required) – [See page 11](#).

### ROAD SHUT DOWN

1. Move toggle switch to “off” position.
2. Switch vehicle ignition off.

### ELECTRIC START UP

1. The unit is supplied with a 10 metre electric cable (for TE only). Plug one end of the cable into the appliance inlet of the unit. Plug the other end into the external supply point.
2. Move toggle switch to “on” position.
3. Wait for the temperature controller display to indicate box temperature, cooling will then commence.
4. Check Temperature controller (Thermostat) if set point is correct.  
(See set point instructions if adjustment is required) – [See page 11](#).

## OPERATING THE UNIT CONTINUED

### ELECTRIC SHUT-DOWN

1. Move toggle switch to “off” position.
2. Remove electric cable.

### CHANGING SET POINT

Press and hold the **SET** button and hold for more than 2 seconds to change the set point value.

The value of the set point will be displayed and the °C will start flashing.

To change the set point value press the **up ↑** or the **down ↓** within 10 seconds.

To store the new set point value push the **SET** button again.

**To lock the keyboard**, press the **up ↑** and **down ↓** buttons together for more than 3 seconds. The **POF** message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point value if up or down buttons are depressed.

**To unlock the keyboard**, press the **up ↑** and **down ↓** buttons together for more than 3 seconds. The **PON** message will be displayed and the keyboard will be unlocked.

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## LOADING

Spheros South Africa Refrigeration units are designed to maintain and not reduce the temperature of the product. It is therefore imperative that the Driver/Operator checks that the product is at the correct temperature at the time of loading.

Care should be taken when loading the truck that airflow around the product is continuous, loading on pallets is recommended. Air is blown out of the evaporator and must be able to circulate through the load and return along the floor of the body in a continuous cycle.

Loading the product too high and blocking the return air ducts, may result in short cycling. This often freezes the top row of product.

## RECOMMENDED TEMPERATURE GUIDE

Below is a guide to recommended temperature settings for a few products. These are recommendations only. For further information on set point refer to customer/supplier.

PRODUCT	SET-POINT RANGE
Ice Cream	-25°C
Frozen Meats Vegetables and Seafood	-18° to -20°C
Dairy Products	+2° to +4°C
Fresh Meats	+2° to +5°C
Fresh Fruits and vegetables	+4° to +8°C

Door opening should be kept to a minimum, each time the doors are opened warm air and moisture enters the body. It is recommended during delivery cycles that the unit should be stopped whilst unloading.

## TROUBLE SHOOTING

Spheros South Africa strives to achieve the highest possible standards. Should problems arise with your unit, below is a general guide to help the operator carry out some basic checks prior to calling an Authorised Dealer for assistance.

PROBLEM	CAUSE	REMEDY
Unit switches on but doesn't cool down	Evaporator fans not working	Check fuses
	Evaporator iced up	Manual defrost
	Belt slipping	Adjust
	Refrigerant low	Contact Spheros SA agent
Unit doesn't switch on	Ignition fuse blown	Check fuse
	Units fuse blown	Check fuses



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## MAINTENANCE SCHEDULE – REQUIRED SERVICE

The recommended maintenance schedules are designed to give the maximum reliability and operation to your unit, thus ensuring trouble free usage.

- \***Note:** The unit must be serviced at a maximum interval of 3 months, or 10,000 vehicle kilometres.
- \***Note:** Compressor oil and Filter-dryer must be changed every 2000 hours or 12 Months.
- \***Note:** Free Post-delivery inspection (PDI) within 1 month of delivery to validate the warranty.

Koolvan												
Type of Service	PDI	A	A	A	B	A	A	A	B	A	A	A
Months	>1	3	6	9	12	15	18	21	24	27	30	33
Type of Service	B	A	A	A	B	A	A	A	B	A	A	
Months	36	39	42	45	48	51	54	57	60	63	66	

## SERVICE SCHEDULE

**\*NOTE: FREE POST-DELIVERY INSPECTION (PDI) WITHIN 1 MONTH OF DELIVERY TO VALIDATE THE WARRANTY**

- ◆ Check engine idler pulleys and bearings
- ◆ Check and adjust all belts
- ◆ Check refrigerant level
- ◆ Check all bolts, screws and unit mounting bolts for tightness.  
Tighten as required
- ◆ Check control box wiring and components for tightness
- ◆ Check defrost operation

### A SERVICE

- ◆ Check engine idler pulleys and bearings
- ◆ Check Temperature controller for calibrations
- ◆ Check CPR value setting
- ◆ Check and adjust all belts
- ◆ Check refrigerant level
- ◆ Check defrost operation

### B SERVICE

- ◆ Carry out A Service
- ◆ Clean evaporator and condenser coils
- ◆ Change filter drier
- ◆ Change compressor oil, road and electric
- ◆ Check compressor mounting bracket and bolts for tightness
- ◆ Check all bolts, screws and mounting bolts for tightness
- ◆ Check control box for wiring and loose components

# KOOLVAN 560i/660i/760i/860i

## DEALER NETWORK

## SPHEROS SA APPROVED SERVICE DEALER NETWORK

COMPANY	AREA	CONTACT
Cool Perfection	Bloemfontein	Geoff Stannard
Zero Temp (Updealers)	Botswana - FrancisTown	Vaughan Granville
Airtron	Botswana - Gaborone	Jeremy Babbage
Trans Fridge Botswana	Botswana - Gaborone	Louisa Barnard
E.R.T.S	Cape - George	Peter Carney
G.R.A	Cape - George	Danie Pio
Cool Tranz	Cape Town	Des Bradford
Cool Tranz	Cape Town	Shane Bradford
Maxicool	Cape Town	Ian Gilmour
Cool Perfection	Durban	Geoff Stannard
Fridgetranz	Durban	Christo Brown
Transfrig Border E.L.	East London	Adrian v.d. Merwe
Spheros	Gauteng - Linbro Park	Kobus van Rensburg
Spheros	Gauteng - Linbro Park	Kent Donaldson
RTS	Gauteng - Midrand	Daphne / Bonny
AC & R Refrigeration	Gauteng - Pretoria	Peter Griezel
Refsatrans	Gauteng - Vaal Triangle	Walther Ravyse
Cool Link Technics Ltd	Kenya	James Kamande
Specialised Fibre Glass	Kenya	Ross Field
Instant Service Repairs	Klerksdorp	Ruan
Topax Workshop	Klerksdorp	Jose Da Silva
Walvisbay Refrigeration	Namibia - Walvisbay	Allester Dronia
Cool Coenie Ref	Namibia - Windhoek	Conrad Stols
Cooltheron	Nelspruit	Eben Theron
Shivers cc	Polokwane	PJ Weir
Transfrig Eastern Cape (Queentek)	Port Elizabeth	Karel Wolmarans
Mother Cool	Swaziland	Ean Sauerman
SS Stander Herstelwerke	Upington	Fanie Stander
Repair	Zimbabwe - Bulawayo	Clive Hill
Cold Control	Zimbabwe - Harare	Theo da Fonseca



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+263 77 418 69 82 / 83	+263 77 418 69 82 / 83	theo@hms.co.zw

## WARRANTY

(This version of the above super cedes all previous written and/or implied policies issued by the company). Spheros South Africa (Pty) Ltd and its subsidiaries warrants each new unit for 12 months in respect of defective parts and workmanship effective from date of commissioning or 15 months from date of factory dispatch (whichever is the shorter) and spare parts for a period of 3 months from date of installation or 6 months from date of factory dispatch (whichever is shorter) providing that the unit or spare part is installed by an authorised Spheros South Africa distributor or dealer. Spheros South Africa's obligations under this warranty are limited to repairing or replacing, at its option, by an authorised Spheros South Africa distributor or dealer any part or parts found to be defective during the warranty period.

### 1. EXCLUSIONS FROM THIS WARRANTY

- a) Any part or parts of products becoming defective as a result of negligence, accident or other casualty.
- b) Owner's failure to adhere to the Spheros South Africa recommended maintenance procedures to provide normal maintenance such inter alia, tightening of belts, cleaning coils, loss of refrigeration, drier replacement or improper voltage or electrical connections.
- c) Equipment failure due to specification error, guidelines for which are issued by Spheros South Africa from time to time.
- d) Operation in a manner contrary to Spheros SA printed or implied instructions.
- e) Compressor engine mount adapter kits and their installation if not supplied and installed by Spheros South Africa or approved and authorized distributor or dealer.
- f) Refrigerant leaks (other than caused by component failure) which occur in excess of 45 days after date of commissioning the equipment.
- g) Failure of equipment, which has been modified without specific Spheros South Africa approval.
- h) Wearing parts such as belts, filters, driers, fuses, which fail after 90 days from commissioning.
- i) All labour time outside of normal working hours.
- j) All traveling time and accommodation expenses.
- k) Any consequential costs in contract or tort including payment of any damages of whatever nature, whether general or special, which may be sustained by the purchaser in consequence of any defect of whatever nature as may be found to exist in, relation to, the equipment or any portion thereof.

## WARRANTY

### 2. CONDITIONS OF WARRANTY

- a) Spheros South Africa neither assumes nor authorizes any person to assume for it, any obligation or warranty other than stated in this warranty.
- b) Spheros South Africa reserves the right to make changes in design or improvements of its products or parts thereof without obligation to make or install such changes or improvements in or upon products covered in this warranty.
- c) Spheros South Africa approved dealers does not warrant the workmanship of the installer, other than Spheros South Africa and will not bear any cost due to faulty or incorrect installation or shipping damage or product loss.
- d) Spheros South Africa will not be liable for loss of time, labour, equipment rental or other expense while products are out of service. Free Post-delivery inspection (PDI) within 1 month of delivery to validate the warranty.

This is the sole and only warranty supplied by Spheros South Africa and no other condition of warranty will be recognised unless it is an official written document supplied by the said company.

# KOOLVAN 560i/660i/760i/860i

## SERVICE

(REFER TO MAINTENANCE SCHEDULE) – SEE PAGE 14

All maintenance should be performed by an authorised Spheros South Africa Dealer (as detailed in this book) and at the stipulated hours or time intervals.

<b>PDI SERVICE VALIDATES WARRANTY WITHIN 1 MONTH OF INSTALLATION</b>
<b>KM READING</b>
<b>DATE</b>
<b>DEALERS SIGNATURE/STAMP</b>

<b>SERVICE A</b>
<b>KM READING</b>
<b>DATE</b>
<b>DEALERS SIGNATURE/STAMP</b>

<b>SERVICE A</b>
<b>KM READING</b>
<b>DATE</b>
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<b>SERVICE A</b>
<b>KM READING</b>
<b>DATE</b>
<b>DEALERS SIGNATURE/STAMP</b>

<b>SERVICE B</b>
<b>KM READING</b>
<b>DATE</b>
<b>DEALERS SIGNATURE/STAMP</b>

<b>SERVICE A</b>
<b>KM READING</b>
<b>DATE</b>
<b>DEALERS SIGNATURE/STAMP</b>

**SERVICE**

(REFER TO MAINTENANCE SCHEDULE) – SEE PAGE 14

SERVICE A

KM READING

DATE

DEALERS SIGNATURE/STAMP

SERVICE A

KM READING

DATE

DEALERS SIGNATURE/STAMP

SERVICE B

KM READING

DATE

DEALERS SIGNATURE/STAMP

SERVICE A

KM READING

DATE

DEALERS SIGNATURE/STAMP

SERVICE A

KM READING

DATE

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# KOOLVAN 560i/660i/760i/860i

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## SERVICE

(REFER TO MAINTENANCE SCHEDULE) – SEE PAGE 14

SERVICE B

KM READING

DATE

DEALERS SIGNATURE/STAMP

SERVICE A

KM READING

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DEALERS SIGNATURE/STAMP

SERVICE A

KM READING

DATE

DEALERS SIGNATURE/STAMP

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**SERVICE**

(REFER TO MAINTENANCE SCHEDULE) – SEE PAGE 14

SERVICE A

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[www.transfrig.co.za](http://www.transfrig.co.za) – refer to [www.spheros-transfrig.com](http://www.spheros-transfrig.com)