Climate RENTAL SOLUTIONS

SK650
SINGLE DOOR FRIDGE

OPERATING MANUAL

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

SPECIFICATIONS

1. Cabinet and Refrigeration Unit

Cabinet Construction	
Exterior/Interior:	White powdercoat on galvanised steel
Insulation:	50mm thick, polyurethane foam Cyclo-iso Pentane blowing agent: C_5H_{10}/C_5H_{12}
Dimensions	
Height:	2195mm
Width:	740mm
Depth:	700mm
Floor area:	0.52m2
Internal volume:	610 litres
Refrigeration Unit	
SKOPE top mounted integral Cyclone® refrigeration unit:	
Nominal capacity:	581 Watts
Compressor:	Electrolux GLY90RA
Refrigerant:	R134a / 450 grams
Electrical	
230-240 Volts a.c. 50 Hz, single phase power supply	
Run Amps:	2.77 Amps
Lighting	
Single or twin sidelights: 35 Watt T5 fluorescent tube (OSRAM FH 35W/860 Daylight) Ø16mm x 1450mm	
Illuminated Sign	
1 x 14 Watt T5 fluorescent tube (OSRAM FH 14W/860 Daylight) Ø16mm x 550mm	
Doors	
Self-closing, aluminium framed, double glazed, toughened safety glass	
Shelves	
5 x adjustable height, white plastic coated, steel wire shelves	

OPERATION

1. Safety Information

When using any electrical appliance, safety precautions should always be observed. Read these instructions carefully, and retain for future reference.

- When used by, or near, young children or infirm persons, close supervision is necessary. Young children should be supervised to ensure that they do not play with the appliance.
- Do NOT use this appliance for other than its intended use.
- Do NOT cover the grilles or block the entry or exhaust of airflow by placing objects up against the refrigeration unit.

- Do NOT probe any opening.
- Only use this appliance with voltage specified on the rating label.
- Ensure adequate ventilation of the SKOPE refrigeration unit.
- Be careful not to touch moving parts and hot surfaces.
- Regulations require that all electrical work be carried out by authorised persons. For your own safety, and that of others, ensure this is done.
- If the supply cord becomes damaged, it must be replaced by a SKOPE authorised service agent, or similarly qualified person, in order to avoid a hazard.
- If the refrigeration units are required to be installed or removed from the cabinet, ensure all necessary safety precautions are observed.

Warning: Do NOT overload power supply.

Caution: Disconnect the cabinet from the mains power supply before attempting any cleaning or maintenance.

2. Operation of Machine

Plug in the cabinet and check operation of the refrigeration unit, electronic controller and cabinet lights.

Refrigeration unit

The compressor and evaporator and condenser fans should all operate initially. This may be verified by listening for compressor switch on, and checking for air circulation inside the cabinet.

The compressor and condenser fan should switch off when the cabinet internal temperature reaches approximately +2°C, and on again at approximately +4°C. The internal cabinet air will continue to circulate at all times.

Electronic controller

The electronic controller will either display the internal cabinet temperature or the controller set point. The compressor ‘on’ LED will indicate that the compressor is operating (see Figure 2 on page 12).

Cabinet lights

The lights which illuminate the top sign and cabinet interior are initially on, and will stay on permanently. The lighting will require a period of time to stabilise following initial start up.

3. Loading

The shelves may be positioned at different heights to suit various products. Each shelf is held in place with four shelf clips. Always ensure that the shelf clips are securely engaged in each of the four shelf support strips. The support strips are marked with a ‘+’ for easy location of the shelf clips (see Figure 1 below).

When loading the shelves with product:

- ensure to allow air space around all packages etc, for even cooling and efficient operation.
- leave an airspace of at least 75mm (3”) above packages etc. on the top shelf.
- do not allow products to overhang the front of the shelf as this could prevent the door from shutting or cause glass breakage.

Figure 1: Shelf Clip

4. Cleaning

When necessary, wipe both interior and exterior of the cabinet with a damp cloth. Ensure the cabinet is disconnected from the mains power supply before cleaning the cabinet.

Do not wipe the sealant off the door gasket, as the sealant ensures the door gasket forms a good seal with the cabinet.

Periodic cleaning of the condenser coil is also recommended.

Condenser coil

The condenser coil MUST be kept clean for efficient and reliable operation. To ensure trouble free performance, it is recommended that on a regular basis the cabinet be isolated from mains power supply and a vacuum cleaner used to remove dust and fluff from the condenser coil.

The condenser coil should be brushed clean once a month, and blown clean by qualified service personnel, every six months. The condenser coil is situated behind the sign unit. To access the condenser coil:

1. Disconnect the cabinet from the mains power supply.
2. Loosen the sign retaining clip on the top of each side panel.
3. Lift the sign unit up, to disengage from the sign sides.
4. Disconnect the sign ENSTO plug from the electrical box socket, and remove the sign unit from the cabinet.

Caution: Disconnect the cabinet from the mains power supply before cleaning the condenser coil.

ELECTRONIC CONTROLLER

1. Controller Display

Figure 2: Controller Display

Item	Key	Function
1	SET	SET: Press to display target set point. In programming mode it selects a parameter or confirms an operation
2	❄	DEFROST: Press to start a manual defrost
3	▲	UP: Press to see the maximum stored temperature. In programming mode it browses the parameter codes, or increases the displayed value
4	▼	DOWN: Press to see the minimum stored temp. In programming mode it browses the parameter codes, or decreases displayed value
5	Compressor on LED indicator	
6	Defrost cycle on LED indicator	
7	Set Point displayed LED indicator	
8	Decimal point LED indicator	
Key Combinations:		
▲ + ▼	Press both keys simultaneously, to lock and unlock the keypad	
SET + ▼	Press both keys simultaneously, to enter the programming mode	
SET + ▲	Press both keys simultaneously, to return to room temperature display	

Meaning of LEDs

Each LED function is described in the following table:

LED	Mode	Function
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
❄	ON	Defrost enabled
❄	Flashing	Drip time in progress
❄ + ❄	Flashing	Programming mode (see page 15)
SP	ON	The Set Point is displayed

2. Controller Operation

The SKOPE electronic controller controls and displays the cabinet temperature. The preset temperature setting controls internal air temperature between 2°C and 4°C.

The electronic controller also signals and records temperature alarms, together with their duration and maximum value reached (see Table 5 on page 18).

To ensure efficient operation, the electronic controller has a built in minimum off cycle time of 3 minutes and features regular timed defrost cycles. During the defrost cycle, the compressor switches off and the evaporator fan stays on.

3. Programming Controller

The controller keypad must always be locked, to prevent unauthorised modification.

To unlock the keypad (to modify parameters)

Press both the **UP** and **DOWN** keys until ‘Pon’ is displayed.

How to lock the keypad

1. Press and hold both the **UP** and **DOWN** keys for more than 3 seconds.
2. The ‘PoF’ message will be displayed and the keypad will be locked. At this point it will be possible only to see the Set Point or maximum or minimum temperature stored.
3. If a key is pressed for more than 3 seconds, the ‘PoF’ message will be displayed.

To display the Set Point

Press, and immediately release the **SET** key. The display will show the Set Point value, and the Set

Point **LED** will be highlighted.

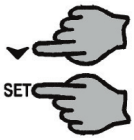
To change the Set Point

1. Push and hold the **SET** key for more than 2 seconds.
2. The value of the Set Point will be displayed, and the ❄ **LED** will start blinking.
3. To change the Set value, push the **UP** or **DOWN** keys.
4. To memorise the new Set Point value, push the **SET** key again or wait 15 seconds.

To start a manual defrost

Push and hold the **DEFROST** key for more than 2 seconds.

To change a parameter value



1. Enter the programming mode by pressing and holding both the **SET** and **DOWN** keys for 3 sec. (❄ and ❄ start flashing).
2. Select the required parameter.
3. Press the **SET** key to display the Set value (now only the ❄ **LED** is flashing).
4. Press the **UP** or **DOWN** keys to change the Set value.
5. Press the **SET** key to store the new value and move to the following parameter.
6. To exit: Press both the **SET** and **UP** keys, or wait 15 seconds without pressing any keys.
7. To lock in new parameter value: after one minute operation, disconnect and reconnect cabinet into the mains power supply.

NOTES:

1. The Set value is stored even when the procedure is exited by waiting for the time-out to expire.
2. Dependent on customer requirements, the SKOPE electronic controller has different parameter configurations. Parameter configuration 160 = Beverage, 170 = Food, and 200 = Set Point display (see ‘Controller Parameters’ in Table 4 on page 17). To establish correct controller parameter configuration, see label on controller housing (see Figure 3 on page 19).

To see the minimum temperature

1. Press and release the DOWN key.
2. The ‘Lt’ message will be displayed, followed by the minimum temperature.
3. Press the DOWN key again, or wait 5 seconds, to restore the normal display.

To see the maximum temperature

1. Press and release the UP key.
2. The ‘Ht’ message will be displayed, followed by the maximum temperature recorded.
3. Press the UP key again, or wait 5 seconds, to restore the normal display.

To reset the maximum and minimum temperature

1. Press and hold the SET key for more than 3 seconds, while the maximum or minimum temperature is displayed. The ‘rSt’ message will be displayed.
2. To confirm the operation, the ‘rSt’ message starts flashing and the normal temperature will be displayed.

3. Parameters

Display	SKOPE Setting		Min	Max	Description of Parameter
SET POINT PARAMETERS					
Set	2	°C	LS	US	Set Point
Hy	2	°C	0.1°C	25.5°C	Differential
LS	-1	°C	-50°C	Set	Minimum Set Point
US	15	°C	Set	150°C	Maximum Set Point
PROBE PARAMETERS					
Ot	0.7	°C	-12°C	12°C	Thermostat probe calibration
OE	0 °C	°C	-12°C	12°C	Condenser probe calibration
CONTROL PARAMETERS					
OdS	0	Minutes	0	255	Outputs delay at start up
AC	3	Minutes	0	50	Anti-short cycle delay
DISPLAY PARAMETERS					
CF	°C	°C / °F	°C	°F	Temperature measurement unit
rES	dE	-	in	dE	Resolution
LoD	P1	-	P1, P2 or SP		Local display
DEFROST PARAMETERS					
IdF	6	Hours	1	120	Interval between defrost cycles
MdF	12	Minutes	0	255	Maximum length for defrost
dFd	dEF	-	rt, it	Set, DEF	Displaying during defrost
dAd	20	Minutes	0	255	Maximum display delay after defrost
ALARM PARAMETERS					
ALc	Ab	-	rE	Ab	Temperature alarms configuration
ALU	12	°C	-	150°C	Maximum temperature alarm
ALL	-2	°C	-50°C	ALU	Minimum temperature alarm
AtH	1	°C	0.1°C	25.5°C	Differential for temperature alarm in cabinet

ALd	240	Minutes	0	255	Temperature alarm delay
dAO	24	-	0 Mins	23.5 Hours	Delay of temperature alarm at start up
tbA	n	-	n	y	Alarm relay silencing
PA2	58	°C	-40°C	AU2	Condenser over temperature
AU2	65	°C	-40°C	110°C	AUE Condenser alarm temperature
ACH	5	°C	0.1°C	25.5°C	Differential for condenser alarm temp recovery
dL2	2	Minutes	0	255	Condenser alarm delay
dA2	0	hh:mm	0 Mins	23.5 Hours	Condenser alarm temperature delay at start up
AOP	CL	-	OP	CL	Alarm relay polarity
OTHER PARAMETERS					
dP1	-	°C	-	-	Thermostat probe read out
dP2	-	°C	-	-	Condenser probe read out
rEL	-	-	-	-	Software release
Ptb	-	-	-	-	Map code

4. Display Alarms

A flashing LED indicates an alarm. Possible alarm displays are:

Alarm	Description
	**Stage ONE** - Maintenance required: Immediately attend condenser (for auto alarm reset).
	**Stage TWO** - Refrigeration Shut-Down: Condenser over-temperature has shut-down system and cabinet lighting. Attend condenser. To reset alarm, cabinet must be replugged into power supply. For repeat alarms, contact an authorised service agent.
	Faulty Ambient probe (internal cabinet - return air)
	Faulty High Temperature probe (condenser)
	Internal cabinet - LOW temperature alarm
	Internal cabinet - HIGH temperature alarm

Note: The refrigeration system and cabinet lighting shut down with ‘P1’, ‘P2’ and ‘CSd’ alarms.

Alarm Recovery

- Condenser over temperature alarm ‘COH’ recovers when the condenser is either cleaned or cools down.
- Condenser alarm ‘CSd’ temperature recovers by replugging the cabinet power supply (or isolation switch). In this case, all the alarms are reset.
- Cabinet temperature alarms ‘LO’ and ‘HI’ automatically stop at temperature recovery.

SERVICE INSTRUCTIONS

1. Troubleshooting

COMPLAINT	POSSIBLE CAUSE	REPAIR
1. Cabinet not operating - lights etc not going.	Loss of power supply. High pressure switch cut-out, due to over heating.	Check power supply. Check, and clean condenser. Check unit operation, and reset pressure switch (see p.7).
2. Compressor will not start - no hum.	Fuse removed or blown. No power. Overload protector tripped. Thermostat stuck in open position. Thermostat off, due to cold location. Wiring improper, or loose.	Replace fuse. Check reason. Refer to electrical section. Repair or replace control. Relocate control. Check wiring against diagram.
3. Compressor will not start - hums but trips on overload protector.	Improperly wired. Low voltage to unit. Start capacitor defective on CSIR or CSR motor. Run capacitor defective on PSC motor. Relay failing to close. Compressor motor has a winding open or shorted. Internal mechanical trouble in com¬pressor.	Check wiring against diagram. Determine reason and correct. Determine reason and replace. Determine reason and replace. Determine reason and correct. Replace if necessary. Check resistance values. Replace compressor if neces¬sary. Replace compressor.
4. Compressor starts, but does not switch off- startswinding.	Improperly wired. Low voltage to unit. Relay failing to open, due to welded contacts or relay incorrectly mounted. Run capacitor defective on CSR motor. Excessively high discharge pres¬sure. Compressor motor has winding open or shorted. Check continuity and resistance. Internal mechanical trouble in com¬pressor (tight). May be lubrication.	Check wiring against diagram. Determine reason and correct. Determine reason and correct. Replace if necessary. Determine reason and replace. Clean condenser. Check power input. Possible overcharge, insufficient condenser cooling, or non-condensible gasses. Replace compressor if faulty. Replace compressor.
5. Compressor starts and runs, butshort cycles on overload protector (relay may chatter on RSIR, CSIR and CSR motors).	Additional current passing through overload protector. Low voltage to unit. Overload protector defective. Run capacitor defective on CSR motor. Excessive discharge pressure. Suction pressure too high. Compressor too hot - insufficient suction gas cooling. Comp'r motor has a winding shorted.	Check wiring diagram. Check for added fan motors etc., connected to wrong side of protector. Determine reason and correct. Check current, replace protector. Determine reason and replace. Check condenser, check ventilation, check for restrictions in refrigeration system. Check for possibility of misapplication. Check refrigerant charge (fix leak), add if necessary. Check return vapour temperature and suction superheat. Replace compressor.

6. Unit runs OK, but short cycles.	Overload protector. Thermostat: requires adjustment or incorrectly positioned. Incorrect refrigerant charge.	See section 4 on p.21. Adjust or relocate thermostat. Adjust refrigerant charge.
7. Unit operates long or continu-ously.Unsatisfactory cabinet tem¬perature.	Short of refrigerant. Overcharge of refrigerant. Thermostat not cooling correctly. Freezer has excessive load. Evaporator coil iced. Restriction in refrigeration system. Dirty condenser. Inadequate air circulation. Compressor not pumping efficiently. Filter dirty (if applicable). Faulty fan motor.	Fix leak, and add charge. Remove refrigerant to correct charge. Adjust thermostat (clockwise colder), and check thermostat bulb location. If necessary, replace thermostat. Establish load within limits. Defrost evaporator, check refrigeration. Check thermostat. Check door closing, seals etc. Determine location and clear restriction. Flush with dry nitrogen. Replace component if blockage will not clear. Clean condenser. Advise client how to regularly clean condenser. Internal: Improve air movement, alloe airflow around stock.External: Remove any restrictions to condensing ventilation. Replace compressor. Clean or replace. Check rotation. Replace if necessary.
8. Start capacitor open, shorted or blown.	Relay contact not opening properly. Prolonged operation on start cycle due to:(a) Low voltage to unit.(b) Improper relay. Excessive short cycling. Improper capacitor.	Clean contacts, or replace relay if necessary. (a) Determine reason and correct.(b) Replace relay. Determine reason for short cycling (see section 5 on p.21), and correct. Determine correct size and replace.
9. Relay defective or burned out.	Incorrect relay. Line voltage too high or too low. Excessive short cycling. Relay being influenced by loose vibrating mount.	Check and replace. Determine reason and correct. Determine reason (see section 5 on p.21), and correct. Remount rigidly.
10. Suction line frosted.	Evaporator fan not running. Overcharge of refrigerant capillary systems.	Determine reason and correct. Correct charge.
11. Unit noisy.	Loose parts or mountings. Tubing rattle. Bent fan blade causing vibration. Fan motor bearing worn.	Find and tighten. Reform to be free of contact. Replace blade. Replace motor.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