Assembly and Installation Instructions

Display Series

SKF1300

SKOPE Top Mounted Vertical Freezer

PRN8044 Rev. 3.1 Mar. 2004 edition

SKOPE Refrigeration

ASSEMBLY INSTRUCTIONS

1. Lift the refrigeration freezer units onto the cabinet top. Steps or platform about 1 metre high are suggested.
   NOTE: Each refrigeration freezer unit weighs approx. 49 kg.
2. Remove the wooden packing from the units (where applicable).
3. Take care to avoid damaging sealing strips & cabinet supply flex.
4. Fix the units to the cabinet top by screwing the two fixing screws provided firmly down. The units should be flush with the back of the cabinet when positioned correctly.
5. Check seal against the cabinet top - ensure there are NO gaps!
6. Fit the side panels onto the cabinet by sliding the two slots under the screws on the cabinet top. These screws should be raised approx. 1.5mm off the cabinet top.
7. Fit each mains flex through the exit holes in the top of the sign back.
8. Clip the sign back into place and connect ‘cabinet’ and ‘sign’ plugs into the power supply sockets (where applicable).
9. Fit the microprocessor cable and four coloured cables into each processor (where applicable).
10. Connect the illuminated sign into the sign power socket. Clip the sign unit or plain facia panel into place.
11. Proceed with installation as outlined in ‘Positioning of Machine’ on the following page.

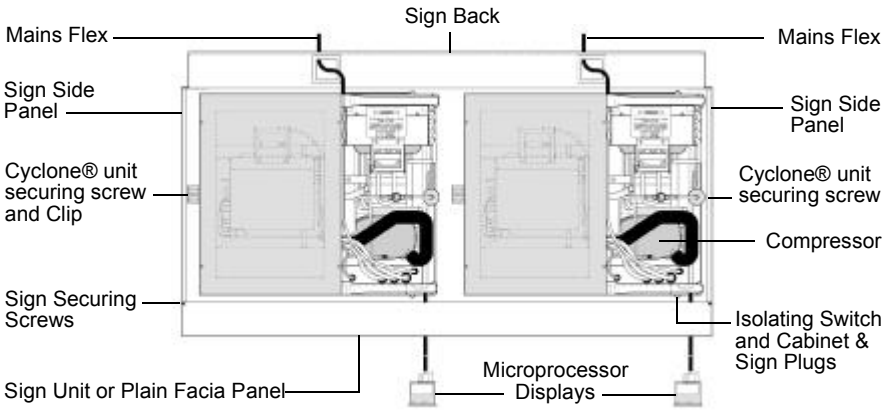

Figure 1: Top view of Cabinet

POSITIONING OF MACHINE

The mains flex exits below the rear panel behind the refrigeration unit. The flex should be retrieved before the machine is positioned, when walls and partitions may make access difficult.

When positioning the machine, a gap must be left between the top of the sign panels and ceiling of at least 200mm. Adequate ventilation must be provided above the SKOPE Cyclone ® unit for efficient operation. The air surrounding the unit must not exceed 40°C.

Avoid direct sunlight and warm draughts etc. When siting the machine, adequate allowance should be made for door opening. The doors have internal torsion bars which are pre-tensioned at the factory and the machine must be positioned on a level surface for the doors to shut and seal correctly and to prevent the condensate tray from overflowing.

The operation of this machine is controlled by a pre-programmed Microprocessor Controller. For more detailed service information please refer to the relevant SKOPE service manual.

VENTILATION

Adequate ventilation is essential. Freezer cabinet must have the Sign Back or Duct Kit fitted. This ensures that fresh air is drawn through the condenser. Failure to fit either of these components will void warranty.

Positioning the cabinet back closer than 100mm to wall will result in freezer unit failure.

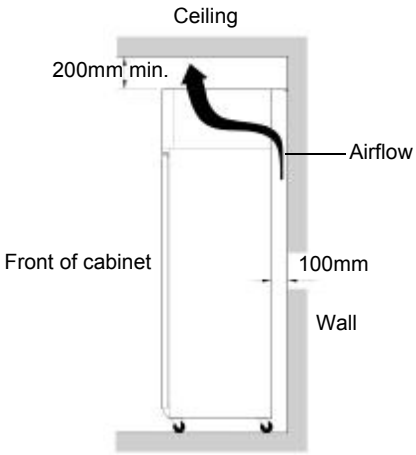

Figure 2: Ventilation

OPERATION OF MACHINE

Plug in machine flexes and check operation of refrigeration units and lights. The condenser fan runs continuously through out all operations of the machine. This may be verified by checking for air movement around the top right hand side of each unit. The compressor should switch off when cabinet internal air reaches the preset “set point” temperature.

As each unit is controlled by a separate electronic controller, the switching of each compressor may at times be out of phase. However, the correct cabinet temperature will still be maintained.

The evaporator fans which circulate the cabinet air will not operate until the defrost thermostat bulb senses a temperature of -8°C. On initial start up the fan should come on after a delay of approximately 4 minutes (verified by air blowing out of the bottom duct and the green LED.

Defrost

The first defrost will occur in 6 hours. During a defrost cycle (indicated by the green defrost LED (item 7) on the control panel) the compressor and the evaporator fan will switch off. Four elements inside the evaporator box will then melt away any ice build up. The duration of a defrost cycle depends on the quantity of ice build up (usually about 10 minutes). A maximum of 20 minutes is preset. Defrost cycles are pre-programmed at 6 hour intervals.

During and after each defrost, the display will read the temperature detected before the defrost cycle. The display will then show the return air temperatures as the machine cycles during normal operation.

Defrosts should occur during off-peak periods to maximise the efficiency of the machine. This can be achieved by switching the power off, then on again, so that the subsequent 6 hourly cycle defrosts will not coincide with peak periods.

Notes:

- Each refrigeration unit can be plugged into a double plug or separate power outlet that has a 13 Amp fuse rating.
- A power isolating switch is fitted to the control box on each of the refrigeration units, allowing safe access to internal wiring.
- A power cut would reset the defrost cycles.

- Each refrigeration unit has an over temperature cut-out inside the refrigeration unit evaporator box. This is to safe guard the possibility of the defrost elements remaining on under fault conditions (set at 55°C).
- The lights which illuminate the top sign and cabinet interior are permanently on, where applicable.
- Ensure the door gaskets form a good seal with the cabinet.

LOADING

The cabinet shelves may be positioned at different heights to suit various products. Always ensure that the shelf clips are securely engaged in each of the shelf support strips. Support strips are marked '+' for easy location of shelf clips.

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

CLEANING

When necessary, wash both interior and exterior of cabinet with soapy water. The exterior of the cabinet may be waxed with automobile polish for extra protection.

Caution:

The machine must be disconnected from the mains supply before cleaning the condenser coils.

Important:

The condenser coils MUST be kept clean for efficient and reliable operation. Clean with a brush and vacuum cleaner regularly.

Access to the condenser coils is gained over the top of the sign or by removing the sign. To remove the sign, undo the two screws which hold the top of sign to the sign side panels. The sign unit can then be lifted vertically, unplugged and removed.

SERVICE INSTRUCTIONS

Servicing should be carried out by an authorized Service Agent. Brief instructions are located on top of the refrigeration units.

CAREL ELECTRONIC CONTROLLER

Display and Key Functions

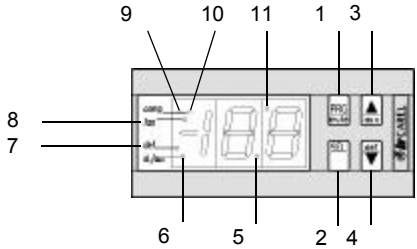

Figure 3: Controller Display

1	PRG	Silences alarm buzzer. Allows entry to frequent parameters section, if pressed for 5 seconds. Allows entry to configuration parameters section, if pressed simultaneously with 'SEL' for 5 seconds. Locks in new parameters, and exits parameter sections. Activates reset procedure.
2	SEL	Displays setpoint in run mode. Displays selected parameter in parameter mode. Allows entry to configuration parameters section if pressed simultaneously with 'PRG' for 5 seconds.
3	AUX	Adjustment locked out Alters parameters in parameter mode. Activates and deactivates continuous refrigeration mode with 'def' key.
4	def	Adjustment locked out Activates manual defrost cycle. Alters parameters in parameter mode. Activates and deactivates continuous refrigeration mode with 'aux' key.
5	Decimal point indicator.	
6	Unused.	
7	Defrost cycle on indicator	
8	Evaporator fan on indicator.	
9	Continuous refrigeration mode on indicator (fast freeze).	
10	Compressor on indicator.	
11	Remote controller indicator.	

CAREL ELECTRONIC CONTROLLER

Operation of Controller

The operation of this cabinet is controlled by a pre-programmed microprocessor. The Microprocessor display indicates the temperature of the cabinet ambient probe, except during a defrost where the temperature of the cabinet probe is locked in, and during an alarm condition.

The display also has LED indicators showing the activation of the compressor, the fan and the defrost. At alarm activation, the display indicates the type of alarm signal; and an audible alarm sounds. The alarm can be muted at the controller.

Controller Components

Component	Description
Microprocessor:	Located behind ventilated unit cover.
Controller Module:	Located in control box. Performs processor switching.
Module Connector Cable:	Flat black cable connecting module to microprocessor.
Probes:	2 x NTC probes are used.

- A controlling probe located on a receptacle in the evaporator box, called a ‘Cabinet Ambient Probe’.
- An evaporator probe located within the evaporator coil, referred to as a ‘Defrost Probe’.

CAREL ELECTRONIC CONTROLLER

Alarms and Signals

Signal	Description
EO on	Indicates faulty ambient probe.
EI blinking	Indicates faulty defrost probe.
IA blinking	Indicates unit has high pressure fault. Note: At alarm initiation, check condenser radiator for blockage, and clean if necessary. To reset alarm, cabinet must be replugged into power supply.
LO blinking	Indicates low temperature alarm.
HI blinking	Indicates high temperature alarm.
EA, **EB** or **EE** blinking	Indicates data acquisition failure. The controller requires re-programming.
Ed blinking	Indicates defrost timed out.

Note:

Alarm **HI** may activate during cabinets initial pull down cycle, after being first powered up. The alarm will automatically reset when cabinet passes alarm setpoint. The alarm may be silenced by pressing the **mute** key.

Changing Controller Settings

To access the controller:

1. Press and hold the **PRG** and **SEL** keys simultaneously for more than 5 seconds, until '00' is displayed.
2. Press the **UP** (aux) key until '22' is displayed.
3. Press **SEL** to confirm selection. The first parameter **/C** is displayed.

To turn the controller keypad on:

1. Follow Access / Entry above, until the first parameter **/C** is displayed.
2. Press the **DOWN** (def) key two times, until 'H2' is displayed.
3. Press the **SEL** key to display the 'value' of the parameter.
4. Press the **UP** (aux) key to increase or **DOWN** (def) too decrease, until '01' is displayed.
5. Press the **SEL** key to accept the 'value'.
6. Press the **PRG** key to lock in the new value and to exit the program.

CAREL ELECTRONIC CONTROLLER

Setpoint

Factory setting:	-21°C
Maximum:	-18°C
Minimum:	-21°C

- Press the **SEL** key for 1 second and the 'Setpoint' will be displayed. On releasing the key, the display will flash.
- To alter the 'Setpoint', press the **UP** (aux) or **DOWN** (def) keys.
- Press **SEL** to lock in the value and return to cabinet temperature.

Manual Defrost

Press the **DOWN** (def) key for more than 5 seconds to manually initiate a defrost.

Continuous Refrigeration

Press the **UP** (aux) and **DOWN** (def) keys together, (**DOWN** key first) to initiate a 'Continuous Refrigeration' mode. The compressor will run without interruption to the parameter 'cc' (6 hours: SKOPE programme). The purpose is to achieve a fast product pull-down.

Display Function

During run mode, the display shows the value measured by the 'Cabinet Ambient Probe'. In alarm status, the display indicates the relative alarm code.

Buzzer Off

Press the **mute** key to silence the buzzer. The alarm display remains while the alarm condition exists.

Parameters

Warning:

- The following parameters (Table 1: pp.10,11) are set exclusively for the SKOPE freezer program, with its dedicated CAREL controller.
- Any alteration from this program may adversely effect the operation of the freezer.
- For full specifications, a detailed CAREL controller manual is available.

CAREL ELECTRONIC CONTROLLER

Parameters

SKOPE Parameters for CAREL Controller IR32POLBRO							
SETPOINT: -21°C (cycling -21°C to -18°C)							
SKOPE Settings			Type	Min	Max	Def	PARAMETER
PA	22		C	00	199	22	Password
							PROBE PARAMETERS
/0	0	NTC probe	n.a.	0	1	0	Type of probe used (NTC or PTC). Available after 'Reset Procedure'
/C	2.0	2°C	F	-20	20	0	Calibration offset for cabinet temperature display
/2	04	-	C	1	15	4	Probe reading stability (lower the number, faster the response)
/3	08	-	C	1	15	8	Probe reading speed (lower the number, slower the response)
/4	00	probe	C	0	100	0	Designation as controlling probe
/5	00	°C	C	0	1	0	Units of temperature measurement
/6	00	Yes	C	0	1	0	Decimal point display
							CYCLE PARAMETERS
rd	3.0	3°C	F	0.1	20	2	Refrigeration differential
r1	-26	-26°C	C	-40	r2	-40	Minimum allowable setpoint
r2	-16	-16°C	C	r1	199	90	Maximum allowable setpoint
r3	01	Yes	C	0	1	0	Enabling of ED alarm (defrost interrupted because maximum duration has been reached, parameter dP) 0=No, 1=Yes
r4	3.0	3	C	0	20	3	Not used. Must be 3
r5	01	Yes	C	0	1	0	Enabling of minimum / maximum temperature monitoring
rt	-	-	F	0	199	-	Actual interval in maximum / minimum temperature reading
rH	-	-	F	-50	+90	-	Maximum temperature reading in the 'rt' interval
rL	-	-	F	-50	+90	-	Minimum temperature reading in the 'rt' interval
							COMPRESSOR PARAMETERS
c0	01	1 minute	C	0	15	0	Compressor and evaporator fan start delay at power on
c1	03	3 minutes	C	0	15	0	Minimum time between compressor starts
c2	03	3 minutes	C	0	15	0	Minimum compressor OFF time
c3	00	0	C	0	15	0	Minimum compressor ON time
c4	99	99 minutes	C	0	100	0	Compressor backup for 'Ambient' probe failure (On for c4, off for 15 min)
cc	04	4 hours	C	0	15	4	Duration of 'Continuous Refrigeration Mode'
c6	02	2 hours	C	0	15	2	Duration of alarm override after 'Continuous Refrigeration Mode'
							DEFROST PARAMETERS
d0	00	Electric	C	0	1	0	Type of defrost
dI	06	6 hours	F	0	199	8	Time interval between defrosts
dt	12	12°C	F	-40	199	4	Defrost termination temperature
dP	22	22 minutes	F	1	199	30	Maximum defrost time
d4	00	No	C	0	1	0	Defrost at cabinet plug in
d5	00	No	C	0	199	0	Defrost delay at cabinet plug in
d6	01	Yes	C	0	1	1	Lock in temperature display during defrost
dd	03	3 minutes	F	0	15	2	Defrost drip time, before compressor and evaporator fan start
d8	01	1 hour	F	0	15	1	Continuation of d6 at defrost end (until setpoint or d8 elapses)
d9	00	No	C	0	1	0	Compressor protection times observed at defrost (c1, c2, c3)
d/	-	-	F	n.a	n.a	n.a	Evaporator temperature (via defrost probe) is displayed
dC	00	hrs / mins	C	0	1	0	Time basis for parameter 'dI' and 'dp'

Table 1: CAREL Controller Parameters - continued on next page

CAREL ELECTRONIC CONTROLLER

Parameters

SKOPE Parameters for CAREL Controller IR32POLBRO							
SETPOINT: -21°C (cycling -21°C to -18°C)							
SKOPE Settings			Type	Min	Max	Def	PARAMETER
							ALARM PARAMETERS
AO	1.0	1.0°C	C	0.1	20	0.2	Alarm and fan differential
AL	10	-32°C /-31°C	F	0	199	10	Low temp alarm (On=Setpoint -AL-A0) (Off=Setpoint -AL)
AH	09	-11°C /-12°C	F	0	199	10	High temp alarm (On=Setpoint +AH+A0) (Off=Setpoint +AH)
Ad	60	60 minutes	C	0	199	120	Alarm delay time
A4	01	On	C	0	5	0	Immediate external alarm i.e. High pressure switch trip*
A5	00	-	C	0	5	0	Not used. must be 0
A6	99	99 minutes	C	0	100	0	Compressor run lock time due to A4 function. Compressor will still cycle with HP switch
A7	00	-	C	0	199	0	Not used. must be 0
							FAN PARAMETERS
F0	02	On	C	0	1	0	Evaporator fan control type (controlled by Evaporator Defrost Probe). Must be 2
F1	14.0	-8°C /-7°C	F	0	20	5	Evaporator fan start temperature (On=Setpoint +F1 -A0) (Off=Setpoint +F1)
F2	00	No	C	0	1	1	Evaporator fan off while compressor is off
F3	01	Yes	C	0	1	1	Evaporator fan off during defrost
Fd	01	1 minute	F	0	15	1	Evaporator Fan delay after defrost
							OTHER SELECTIONS
H0	00	-	C	0	15	0	Serial address
H1	00	-	C	0	1	1	Not used. Must be 0
H2	00	No	C	0	3	1	Enable keypad & remote control (must be '01' to enable)
H3	00	00	C	0	199	0	Password for remote control

* High Pressure trip is maintained as alarm status by latching relay. To reset, the freezer must be unplugged and then replugged into the power supply.

Parameter Modification (if keypad is enabled)

1. Press the **UP** (aux) or **DOWN** (def) keys to show the code of the parameter that has to be changed.
2. Press the **SEL** key to display the selected parameter value.
3. Press the **UP** (aux) key or **DOWN** (def) key to increase or decrease the value.
4. Press **SEL** to temporarily confirm the new value, and display its code.
5. Repeat above procedures to alter further parameters.

Press the **PRG** key to lock in the new parameters and exit the parameter modification procedure.

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