FOSTER GREEN PROCUREMENT

GUARANTEEING YOU THE GREENEST REFRIGERATION AVAILABLE

FOSTER REFRIGERATOR

Service Manual

Foster Low Level Counters with LF28 Controller

ISO 14001 ISO 9001

Re-Issued Version July 2010

Contents

Service Manual Information

The products and all information in this manual are subject to change without prior notice.
We assume by the information given that the person(s) working on these refrigeration units are fully trained and skilled in all aspects of their workings. Also that they will use the appropriate safety equipment and take or meet precautions where required.
The service manual does not cover information on every variation of this unit; neither does it cover the installation or every possible operating or maintenance instruction for the units.

Health & Safety Warnings and Information

	Make sure the power supply is turned off before making any electrical repairs.
	To minimise shock and fire hazards, please do not plug or unplug the unit with wet hands.
	During maintenance and cleaning, please unplug the unit where required.
	Care must be taken when handling or working on the unit as sharp edges may cause personal injury, we recommend the wearing of suitable PPE.
	Ensure the correct moving and lifting procedures are used when relocating a unit.
	Do NOT use abrasive cleaning products, only those that are recommended. Never scour any parts of the refrigerator. Scouring pads or chemicals may cause damage by scratching or dulling polished surface finishes.
	Failure to keep the condenser clean may cause premature failure of the motor/compressor which will NOT be covered under warranty policy.
	Do NOT touch the cold surfaces in the freezer compartment. Particularly when hands are damp or wet, skin may adhere to these extremely cold surfaces and cause frostbite.
	Please ensure the appropriate use of safety aids or Personnel Protective Equipment (PPE) are used for you own safety.

Environmental Management Policy for Service Manuals and Duets.

Product Support and Installation Contractors

Foster Refrigerator recognises that its activities, products and services can have an adverse impact upon the environment.
The organisation is committed to implementing systems and controls to manage, reduce and eliminate its adverse environmental impacts wherever possible, and has formulated an Environmental Policy outlining our core aims. A copy of the Environmental Policy is available to all contractors and suppliers upon request.

The organisation is committed to working with suppliers and contractors where their activities have the potential to impact upon the environment. To achieve the aims stated in the Environmental Policy we require that all suppliers and contractors operate in compliance with the law and are committed to best practice in environmental management.

Product Support and Installation contractors are required to:

1. Ensure that wherever possible waste is removed from the client's site, where arrangements are in place all waste should be returned to Foster Refrigerator's premises. In certain circumstances waste may be disposed of on the client's site; if permission is given, if the client has arrangements in place for the type of waste.
2. If arranging for the disposal of your waste, handle, store and dispose of it in such a way as to prevent its escape into the environment, harm to human health, and to ensure the compliance with the environmental law. Guidance is available from the Environment Agency on how to comply with the waste management 'duty of care'.
3. The following waste must be stored of separately from other wastes, as they are hazardous to the environment: refrigerants, polyurethane foam, and oils.
4. When arranging for disposal of waste, ensure a waste transfer note or consignment note is completed as appropriate. Ensure that all waste is correctly described on the waste note and include the appropriate six-digit code from the European Waste Catalogue. Your waste contractor or Foster can provide further information if necessary.
5. Ensure that all waste is removed by a registered waste carrier, a carrier in possession of a waste management licence, or a carrier holding an appropriate exemption. Ensure the person receiving the waste at its ultimate destination is in receipt of a waste management licence or valid exemption.
6. Handle and store refrigerants in such a way as to prevent their emission to atmosphere, and ensure they are disposed of safely and in accordance with environmental law.
7. Make arrangements to ensure all staff who handle refrigerants do so at a level of competence consistent with the City Guilds 2078 Handling Refrigerants qualification or equivalent qualification.
8. Ensure all liquid substances are securely stored to prevent leaks and spill, and are **not** disposed of to storm drains, foul drain, or surface water to soil.

Disposal Requirements

If not disposed of properly all refrigerators have components that can be harmful to the environment. All old refrigerators must be disposed of by appropriately registered and licensed waste contractors, and in accordance with national laws and regulations.

IMPORTANT MODEL & PARAMETER CHANGE INFORMATION

AS OF THE 14TH JANUARY 2010 THIS RANGE HAS HAD THE FOLLOWING CHANGES PUT INTO PLACE: THE LL2/2M MODEL HAS BEEN DELETED FROM THE RANGE.

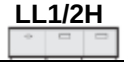
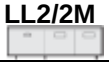
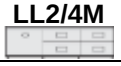
ALL MODELS ARE TO LABELLED AND ARE AVAILABLE AS THE FOLLOWING ONLY: LL2/4H, LL2/1HS, LL2/1HD AND LL2/1HDRW

BOTH MEAT AND HIGH TEMPERATURE PARAMETERS HAVE BEEN CHANGED AS SHOWN IN THIS MANUAL.

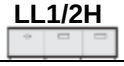
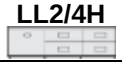
Low Level Counter Description

The range consists of a choice of 6 models with a choice of two or four drawers.
The cabinets are manufactured as a one piece foam shell with easy clean stainless steel exterior
The cabinets conform to current legislation and exceed the Montreal protocol using zero ODP refrigerants and insulation.
Temperature is controlled by a LAE microprocessor control with digital temperature display.
Easy accessible condensing unit fitted at the left hand side for ease of servicing.
The standard refrigeration system is integral with an air-cooled condensing unit with the refrigerant distribution into the evaporator controlled by capillary.
The cooled air is circulated through the evaporator, via the fan/s into the storage area.
Coated coils prevent corrosion and prolong refrigeration life.
Magnetic gaskets giving a positive door seal.

Temperature and Capacities – up until January 14th 2010

Model	**LL2/1MS** 	**LL2/1MD** 	**LL1/2H** 	**LL2/1MDRW** 	**LL2/2M** 	**LL2/4M** 
Storage Temperature	-2 to +2°C	-2 to +2°C	+1 to +4°C	-2 to +2°C	-2 to +2°C	-2 to +2°C
Dimensions (w x d x h) mm	1244x800x646	1244x800x646	1600x700x700	1030x 797x646	1900x800x646	1900x800x646
Internal Dimensions (w x d x h) mm	566x670x368	566x670x139	357x570x487	566x670x139	566x670x368	566x670x139
Nett Capacity (litres)	140	140	222	140	279	279
Number of Drawers	1	2	2	2	4	2
Maximum Weight Load per drawer	40kg	40kg	40kg	40kg	40kg	40kg
Pan Size	GN 2/1 (max 200mm deep)	GN 2/1 (max 100mm deep)	GN 2/1 (max 200mm deep)	GN 2/1 (max 100mm deep)	GN 2/1 (max 200mm deep)	GN 2/1 (max 100mm deep)
Number of Castors Supplied	3 x Swivel Braked (front) 3 x Swivel (rear)	3 x Swivel Braked (front) 3 x Swivel (rear)	3 x Swivel Braked (front) 3 x Swivel (rear)	2 x Swivel Braked (front) 2 x Swivel (rear)	4 x Swivel Braked (front) 4 x Swivel (rear)	4 x Swivel Braked (front) 4 x Swivel (rear)

After January 14th 2010

Model	**LL2/1HS** 	**LL2/1HD** 	**LL1/2H** 	**LL2/1HDRW** 	**LL2/4H** 
All temperature & capacities Information as above table					

NOTE
Maximum weight of griddle not to exceed 120kg ensuring the weight is evenly distributed across the worktop.
If the legs are positioned over the unit compartment please ensure the load is evenly distributed by mounting the griddle into heavy duty metal channels

Controller Operation

LF 28B2SE-B (00-555920) Controller (Fitted from May 2007)

Controller with the LCD 16 Display (00-555740) fitted to November 2007
Controller display LCD5s (00-555992) fitted as from November 2007

Operation Guidelines

Initial Start Up.

Start Up & self Test: -

The indication is only displayed during the first three seconds following the mains electrical power being applied to the unit. During this period the controller performs a self-check.

Once the self-check has been completed **OFF** will be displayed.

Press and hold for three seconds. The unit will start and the air temperature will be displayed.

Check temperature set point.

Important to note that the ability to increase and decrease the set point is not a function available to the user as the set point is fixed. To make adjustments to the set point it is necessary to access the parameter and alter SPL and SPH accordingly.

Check set point by pressing the button i set

To increase set point press i set + II until required temperature is displayed.

To decrease set point press i set + until required temperature is displayed.

Factory Temperature Set Point

'H' model +1 to +4°C.

'M' models 0°C to +2°C. (Temperature setting changed May 2008 because of customer issues with product freezing)

Exit from set up occurs after 10 seconds if no button is pressed.

Manual Defrost.

To initiate a manual defrost press and **dEF** hold will be displayed release.

On completion of the defrost **REC** will be displayed until the cabinet temperature is achieved and then it will revert to displaying the normal cabinet temperature.

Auto Defrost operation.

The defrost frequency is determined by the usage of the machine.

In the economy mode it may not perform a defrost as by monitoring the air temperature, evaporator temperature and door opening factor it may decide that there is insufficient ice build up on the evaporator so defrosting is not required.

The parameter DFR (defrost frequency) is set for 3. The cabinet will perform at least 1 defrost per day and with the setting at 3 it has the potential to initiate up to 2 additional defrost in the economy mode.

Should the cabinet experience constant usage the controller will switch automatically to the second parameter settings indicated by the controller LED adjacent to II illuminating, which could under circumstances of heavy usage initiate up to 6 defrosts per day.

The second parameter settings preceded by 11 will now be active,

It is important to note that during the first few days of operation the defrosting frequency may be at regular intervals but these will reduce as the controller monitors the operation.

Set Unit to Standby.

Press  **display shows** OFF

This indication is displayed while the unit is not operating but with mains power applied to the unit. This mode may be used for internal cleaning regimes and short periods when the unit is not required.
For extended periods of inactivity the mains supply should be isolated.

Alarm and Warnings

High temperature alarm

HI Will be displayed.
The alarm will sound but can be silenced by pressing any of the buttons, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.
Possible Causes: Evaporator fan not working. Restricted airflow through airduct. Evaporator iced up. Compressor not working.

Low temperature alarm.

LO Will be displayed.
The alarm will sound but can be silenced by pressing any of the buttons and the unit will continue to operate, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.
Possible Causes: Controller faulty (not switching compressor off). Compressor secondary relay will not de-energise (low temperature models).

Door Open Alarm. (*Only applies to cabinets fitted with door switches*.)

DO Will be displayed.
The alarm will sound but can be silenced by pressing. 
The display will continue to display the alarm message until cancelled by shutting the door.
If the alarm cannot be cancelled by doing this call your Foster Authorised Service Company.
Possible Causes: Faulty door switch. Door left open for more than 5minutes.

High Pressure Alarm (Only applies to machines fitted with a condenser probe).

HP Will be displayed
This alarm relate to the condenser which must be checked and cleaned at regular intervals the frequency being determined by site conditions.
The alarm will sound but can be silenced by pressing any of the buttons and the unit will continue to operate, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.
Possible Causes: Condenser fan not working. Condenser blocked/ dirty. Condenser obstructed.

Air Temperature Probe Failure.

E1 Will be displayed.
The alarm will sound but can be silenced by pressing any button.
There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate but have a reduced performance.
Action: Replace Probe.

Evaporator Temperature Probe Failure. (Automatic Defrost Cabinets Only)

E2 Will be displayed.
The alarm will sound but can be silenced by pressing any button.
There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate satisfactorily, but this failure will have an effect on the defrost and therefore efficiency if allowed to continue.
Action: Replace Probe.

Information Menu

Pressing and releasing  activates the information menu. From this menu you can display the temperature relating to T1 (air probe), T2 (evaporator probe, if fitted) and T3 (condenser probe, if fitted).
The maximum temperature (THI) and the minimum temperature (TLO) the cabinet has achieved since it was last re-set.
The total operating time of the condenser (CND), since it was last cleaned, and the keyboard status (LOC).

The information to be displayed can be selected sequentially by pressing  repeatedly or scrolling through the menu using the  or  buttons.

Once selected press  to display the value

Exit from the info menu by pressing  or is automatic after 6 seconds if no buttons are pressed.

To reset the temperature settings recorded in THI and TLO and the hours counted in CND, access the info menu by pressing  to display the value plus  simultaneously for resetting to be completed.

To check the LOC status scroll through to LOC, press to display status – YES to lock keys. – NO to leave keys accessible.
NOTE: with the keys locked it is not possible to turn the unit off or ON or to check the set point

Parameter Setting and Adjustment

It is strongly advised that before adjusting any Service Parameters a thorough understanding of the following instructions should be obtained.

The parameters are accessed by pressing the following keys in succession  +  and keeping them pressed for 5 seconds.

After this period the first parameter **'SCL'** will be displayed.

Press button  to pass from one parameter to the next and button  to go back.

Press  to display the value +  or  to change it.

Exit from set up is by pressing  or is automatic if no buttons are pressed for 30 seconds

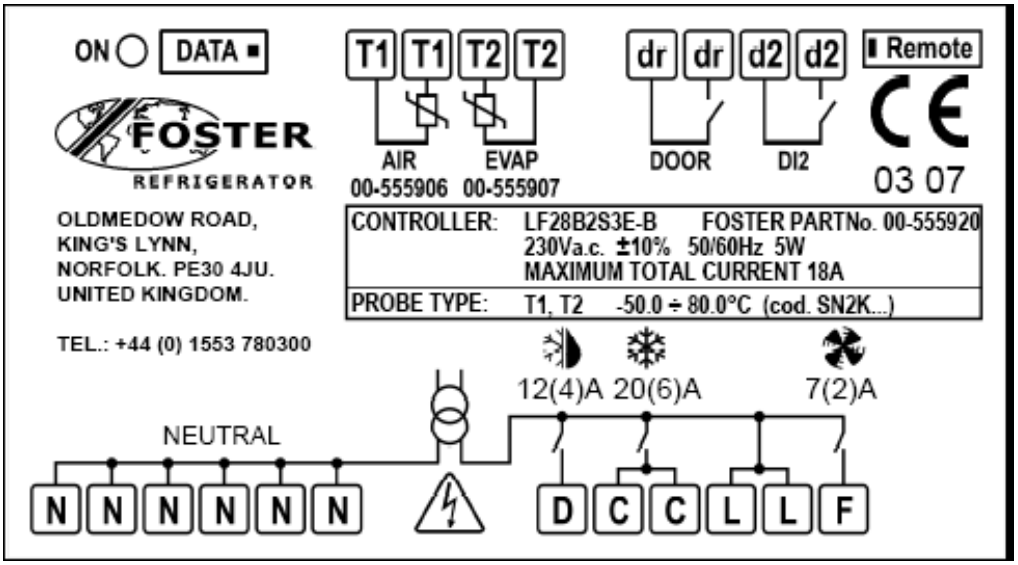
Fuzzy Logic.

These are settings that maintain the temperature of the cabinet in a more energy efficient manner.
It works by controlling the evaporator fan/s, defrost and temperature in low usage times by transferring the operation to a second set of economy parameters.
When the cabinet is first switched On the economy settings control the operation of the temperature and will remain at those settings until the controller, by monitoring the door opening frequency and the air and evaporator temperatures, identifies a higher usage and switches over to the 11SM (2nd parameter set management).
When the economy settings are activated the cabinet temperature is allowed to rise to the setting (SP) set point [1]. This is set to a higher temperature setting to allow the air temperature to rise without having much of an impact on the product temperature.
In addition the fan/s will modulate (cycle for 30 seconds) as set in (FPC) evaporator fan On / Off Ratio.
The parameter is set at 1.
Changing the setting to 0 will have the fan running with the compressor. Set to 1 the fan will run for 30 seconds on and 60 seconds off. Set to 2 the fan will run for 60 seconds on and 60 seconds off and set to 3 the fan will run for 90 seconds on and 60 seconds off.
With FPC set to 1, 2 or 3 the fans will generate less heat into the cabinet therefore reduce the requirement of the condensing system.
NOTE:
Parameter FPC will only function with the parameter FTC set for YES. With FTC set to NO the fan will run all of the time apart from during defrost when it will be off during electric and hot gas defrost but on during a timed off cycle defrost.

Fan Operation.
The evaporator fan/s will run normally when the compressor is running but will commence cycling when the compressor is in the off cycle mode.

The fans will run without the compressor during timed off cycle defrost but will not run during hot gas or electric defrost.
For models that don't have door switches fitted the fuzzy logic will not function as the controller is unable to monitor door opening factors.

Controller Electrical Connections



Probes

Air and Evaporator Probes

The air and evaporator probes are the same and are identified as T1 Air Probe and T2 Evaporator Probe. These are the K2 NTC thermistor type and are fully enclosed to make it completely waterproof and resilient to temperature variation within the limits of rapid cycling. The probe is capable of measuring temperature in excess of -30°C and 50°C with 1°K accuracy at 1°C and no more than 2°K at the upper and lower temperature ranges.

Probe temperature resistance values

°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm
-25	19.402	-15	11.644	5	4.571	15	2.987	25	2
-20	14.961	-10	8.133	10	3.682	20	2.437	40	1.143

NOTE: Probe values are the same for both models of controller

LF 28B2SE-B (00-555920) Controller Parameter lists
Parameters up until 14th January 2010
Note: For model LL2/1MD (RW) defrosting is by means of electric defrost heaters.
For all models adjust parameter 'DS' to NO as door switches are not fitted to these models.

Mnem.	Definition	Min.	Max	Default	Dim.	H models	M models
SCL	Readout scale	1°C; 2°C; °F		2	flag	2	2
SPL	Minimum set point [I]	-40	SPH	1	°C	1	0
SPH	Maximum set point [I]	SPL	40	3	°C	3	2
SP	Set point [I]	SPL	SPH	2	°C	2	0
HYS	Thermostat hysteresis [I]	0.1	10	3	°K	3	2
CRT	Minimum compressor rest time	0	30	2	min.	2	2
CT1	Compressor run with T1 failure	0	30	7	min.	7	7
CT2	Compressor stop with T1 failure	0	30	3	min.	3	3
2CD	Start delay 2nd compressor	0	120	0	sec.	0	0
DFR	Defrost frequency / 24h	0	24	2	1/24h	2	4
DLI	Defrost end temperature	-40	40	20	°C	20	20
DTO	Maximum defrost duration	1	120	20	min.	20	20
DTY	Defrost type	OFF; ELE; GAS		OFF	flag	OFF	GAS
DRN	Drain down time	0	30	2	min.	2	2
DDY	Defrost display control	0	60	10	min.	10	10
FID	Fan activity during defrost	NO	YES	YES	flag	YES	NO
FDD	Fan re-start delay temperature	-40	40	0	°C	0	0
FTO	Evaporator fan maximum time-out	0	120	3	min.	3	3
FTC	Evaporator fan timed control	NO	YES	YES	flag	YES	YES
FT1	Fan stop delay	0	180	15	sec.	15	15
FT2	Timed fan stop	0	30	2	min.	2	3
FT3	Timed fan run	0	30	1	min.	1	1
ATL	Low alarm differential	-12	0	-5	°K	-5	-5
ATH	High alarm differential	0	12	5	°K	5	5
ATD	Alarm Temperature Delay	0	120	90	min.	90	90
AHT	Condenser Alarm Temperature	0	75	60	°C	60	60
AHM	Condenser high temp. alarm operation	NON; ALR; STP		NON	flag	NON	NON
ACC	Condenser cleaning period	0	52	0	wks	0	0
HDS	Sensitivity function eco / heavy duty	1	5	3	flag	3	3
IISM	2nd parameter set switching mode	NON; MAN; HDD; DI2		HDD	flag	HDD	HDD
IISL	Minimum 2nd temp. set	-40	IISH	1	°C	1	0
IISH	Maximum 2nd temp. set	IISL	40	3	°C	3	2
IISP	Effective 2nd temperature set point	IISL	IISH	1	°C	1	0
IIHY	Hysteresis 2nd temperature set	0.1	10	3	°K	3	2
IIFT	Evap. fan timed control in mode 2	NO	YES	NO	flag	NO	NO
IIDF	Defrost Frequency / 24h in mode 2	0	24	4	1/24h	4	4
SB	Button 0/1 enabling	NO	YES	YES	flag	YES	YES
DS	Door switch enabling	NO	YES	YES	flag	NO	NO
CSD	Compressor stop delay from door opening	0	30	1	min.	1	1
ADO	Door alarm delay	0	30	8	min.	8	8
D12	Function digital input D12	NON; HPS; IISM; RDS		NON	flag	NON	NON
LSM	Light switch mode	NON; MAN; DOR		NON	flag	NON	NON
OAU	Control of AUX output	NON; 0-1; LGT; 2CU; 2EU; ALR		NON	flag	NON	NON
OS1	T1 (air) probe offset	-12	12	0	°K	0	0
T2	T2 (evap.) probe enabling	NO	YES	NO	flag	NO	YES
OS2	T2 (evap.) probe offset	-12	12	0	°K	0	0
T3	T3 (cond.) probe enabling	NO	YES	NO	flag	NO	NO
OS3	T3 (cond.) probe offset	-12	12	0	°K	0	0
T4	T4 (aux.) probe enabling	NON; 2CU; 2EU		NON	flag		NON
OS4	T4 (aux.) probe offset	-12	12	0	°K	0	0
TLD	Delay for min./max. temp storage	1	30	5	min.	5	5
SIM	Display slowdown	0	100	3	exp.	3	3
ADR	Unit peripheral address	1	255	1	exp.	1	1

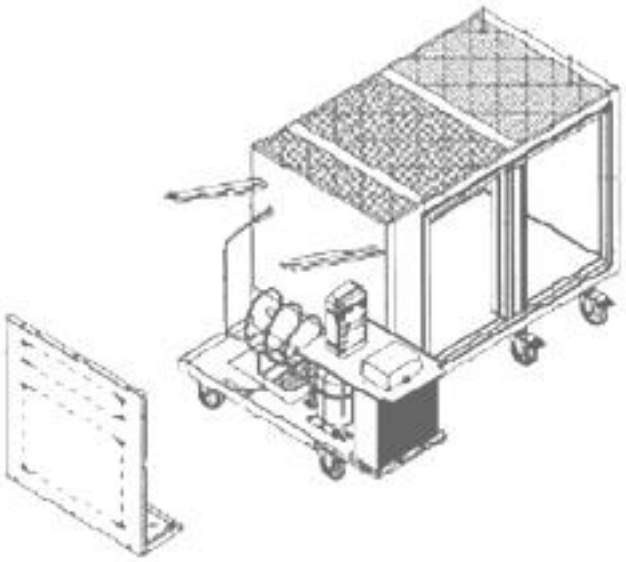
Grey highlights differences from default parameter

Parameters after January 14th 2010

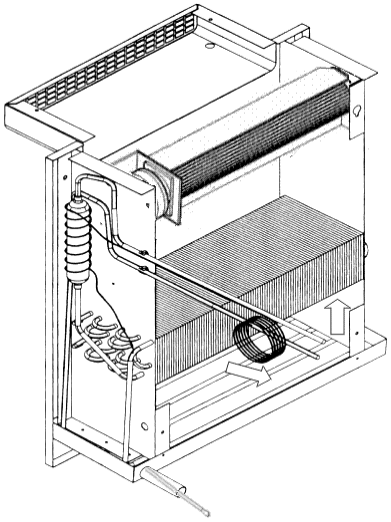
Mnem.	Definition	Min.	Max	Default	Dim.	LL2/1HD (RW)	LL1/2H	LL2/4H LL2/1HD LL2/1HS
SCL	Readout scale	1°C; 2°C; °F		2	flag	2	2	2
SPL	Minimum set point [I]	-40	SPH	1	°C	1	1	1
SPH	Maximum set point [I]	SPL	40	3	°C	1	3	1
SP	Set point [I]	SPL	SPH	2	°C	1	2	1
HYS	Thermostat hysteresis [I]	0.1	10	3	°K	3	3	3
CRT	Minimum compressor rest time	0	30	2	min.	2	2	2
CT1	Compressor run with T1 failure	0	30	7	min.	7	7	7
CT2	Compressor stop with T1 failure	0	30	3	min.	3	3	3
2CD	Start delay 2nd compressor	0	120	0	sec.	0	0	0
DFR	Defrost frequency / 24h	0	24	2	1/24h	4	2	4
DLI	Defrost end temperature	-40	40	20	°C	20	20	20
DTO	Maximum defrost duration	1	120	20	min.	20	20	20
DTY	Defrost type	OFF; ELE; GAS		OFF	flag	ELE	OFF	GAS
DRN	Drain down time	0	30	2	min.	2	2	2
DDY	Defrost display control	0	60	10	min.	10	10	10
FID	Fan activity during defrost	NO	YES	YES	flag	NO	YES	NO
FDD	Fan re-start delay temperature	-40	40	0	°C	0	0	0
FTO	Evaporator fan maximum time-out	0	120	3	min.	3	3	3
FTC	Evaporator fan timed control	NO	YES	YES	flag	YES	YES	YES
FT1	Fan stop delay	0	180	15	sec.	15	15	15
FT2	Timed fan stop	0	30	2	min.	3	2	3
FT3	Timed fan run	0	30	1	min.	1	1	1
ATL	Low alarm differential	-12	0	-5	°K	-5	-5	-5
ATH	High alarm differential	0	12	5	°K	5	5	5
ATD	Alarm Temperature Delay	0	120	90	min.	90	90	90
AHT	Condenser Alarm Temperature	0	75	60	°C	60	60	60
AHM	Condenser high temp. alarm operation	NON; ALR; STP		NON	flag	NON	NON	NON
ACC	Condenser cleaning period	0	52	0	wks	0	0	0
HDS	Sensitivity function eco / heavy duty	1	5	3	flag	3	3	3
IISM	2nd parameter set switching mode	NON; MAN; HDD; DI2		HDD	flag	NON	HDD	NON
IISL	Minimum 2nd temp. set	-40	IISH	1	°C	0	1	-2
IISH	Maximum 2nd temp. set	IISL	40	3	°C	2	3	0
IISP	Effective 2nd temperature set point	IISL	IISH	1	°C	0	1	-2
IIHY	Hysteresis 2nd temperature set	0.1	10	3	°K	2	3	2
IIFT	Evap. fan timed control in mode 2	NO	YES	NO	flag	NO	NO	NO
IIDF	Defrost Frequency / 24h in mode 2	0	24	4	1/24h	4	4	4
SB	Button 0/1 enabling	NO	YES	YES	flag	YES	YES	YES
DS	Door switch enabling	NO	YES	YES	flag	NO	NO	NO
CSD	Compressor stop delay from door opening	0	30	1	min.	1	1	1
ADO	Door alarm delay	0	30	8	min.	8	8	8
D12	Function digital input D12	NON; HPS; IISM; RDS		NON	flag	NON	NON	NON
LSM	Light switch mode	NON; MAN; DOR		NON	flag	NON	NON	NON
OAU	Control of AUX output	NON; 0-1; LGT; 2CU; 2EU; ALR		NON	flag	NON	NON	NON
OS1	T1 (air) probe offset	-12	12	0	°K	0	0	0
T2	T2 (evap.) probe enabling	NO	YES	NO	flag	YES	NO	YES
OS2	T2 (evap.) probe offset	-12	12	0	°K	0	0	0
T3	T3 (cond.) probe enabling	NO	YES	NO	flag	NO	NO	NO
OS3	T3 (cond.) probe offset	-12	12	0	°K	0	0	0
T4	T4 (aux.) probe enabling	NON; 2CU; 2EU		NON	flag	NON	NON	NON
OS4	T4 (aux.) probe offset	-12	12	0	°K	0	0	0
TLD	Delay for min./max. temp storage	1	30	5	min.	5	5	5
SIM	Display slowdown	0	100	3	exp.	3	3	3
ADR	Unit peripheral address	1	255	1	exp.	1	1	1

Grey highlights differences from default parameter

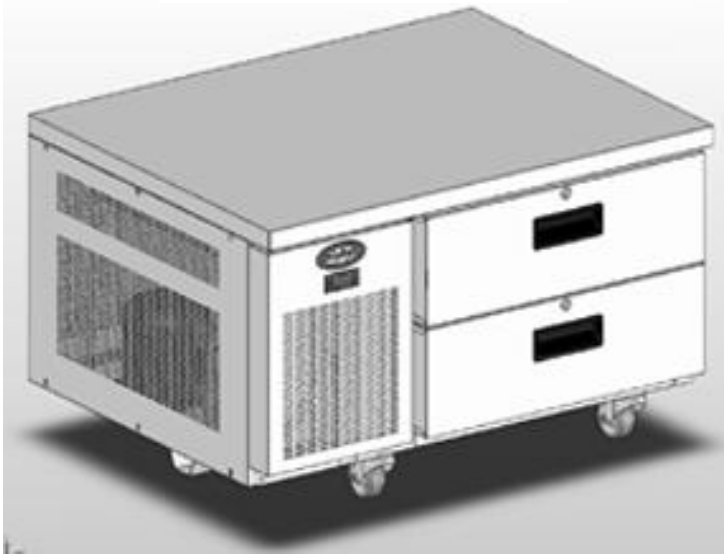
Standard Low Level Counter Condensing Unit Assembly



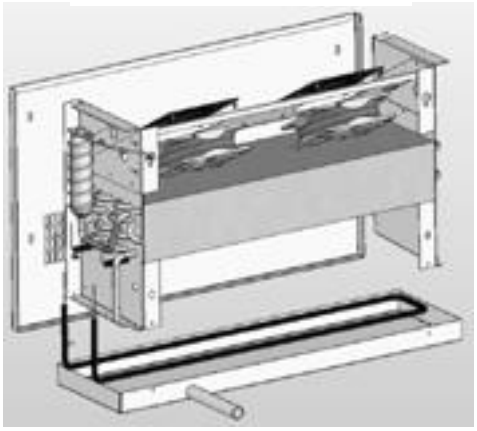
Standard Low Level Counter Evaporator Assembly



LL2/1 MD RW (Spirit Spec) Detail



LL2/1 MD RW (Spirit Spec) Evaporator Detail



Troubleshooting

Problem	Possible Cause	Solution
Compressor will not start	No voltage in socket	Use voltmeter to check
	Electrical conductor or wires may be cut	Use ohmmeter to check for continuity
	Defective electrical component: thermostat, relay, thermal protector etc	Replace defective component
	Compressor motor has a winding open or shorted	Measure ohmic resistance of main and auxiliary winding using ohmmeter. Compare with correct values
	Compressor stuck	Change compressor
	Temperature control contacts are open	Repair or replace the contacts
	Incorrect wiring	Check wiring diagram and correct
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker
	Power cord unplugged	Plug in power cord.
	Controller set too high	Set controller to lower temperature.
	Cabinet in defrost cycle	Wait for defrost cycle to finish
The temperature is too cold	Controller is set at a very cold position	Set to warmer position and check if the compressor stops according to controllers operating range.
	Controller does not disconnect the condensing unit	Check the insulation of the thermostat. If problem persists, change the thermostat
	Control contacts are stuck closed	Change the control. Check amperage load
	Defective or incorrect temperature control	Determine correct control and replace.
The temperature is not cold enough	Controller is set at a very warm position	Adjust to colder setting
	Condenser is dirty	Clean condenser
	The refrigerator has been placed at an inadequate location	The unit must not be near stoves, walls that are exposed to the sun, or places that lack sufficient air flow.
	Compressor is inefficient or there is a high pressure due to the air in the system	If there is air in the system, purge and recharge
	Iced up evaporator coil	Check temperature control, refrigerant charge, and defrost mechanism. Remove all ice manually and start over.
	Restriction in system	Locate exact point of restriction and correct
	The refrigerator has been used improperly	The shelves must never be covered with any type of plastic or other material that will block the circulation of cold air within the refrigerator.
	Too many door openings	Advise user to decrease if possible
	Excessive heat load placed in cabinet	Advise user not to put in products that are too hot.

	The refrigerator has been overcharged with the refrigerant gas	Check to see if condensation or ice crystals have formed on the suction line. If so, charge with the correct amount of gas.
	The refrigerant gas is leaking	Find the location of gas leak in order to seal and replace the defective component. Change the drier. Perform a good vacuum and recharge unit.
	The evaporator and/or condenser fans are not working	Check electrical connections and make sure that the fan blade isn't stuck. Replace the fan motor if it doesn't work.
	Blocking air flow	Re-arrange product to allow for proper air flow. Make sure there is at least four inches of clearance from evaporator.
	Fuse blown or circuit breaker tripped	Replace fuse or reset circuit breaker.
Electrical Shocks 	Wires or electrical components are in direct contact with metallic parts.	Check for appropriate insulation on the connections of each component.
Noise 	The refrigerator is not properly levelled	Check if the noise goes away after you level the refrigerator
	The condenser is not fastened correctly. Copper tubing is in contact with metal	While the compressor is working, check to see if metal parts are in contact with one another and/or if the screws that fasten the condenser are tightened.
	The evaporator and/or condenser fans are loose	Check if the fans are securely fastened. Also, check if the fan blades are loose, broken or crooked. If so, change the faulty blade.
	Compressor has an internal noise	If the noise persists after all other measures have been taken, it may be originating from the compressor.
	Loose part(s)	Locate and tighten loose part(s)
Extreme condensation inside the refrigerator	Controller is set at a very cold position	Set the controller to a warmer position & check to see if compressor stops as should.
	The outside environment's relative humidity is very high (over 75%)	This type of occurrence is caused by local climatic conditions and not by the refrigeration unit.
	The refrigerator door wont shut completely	Check the door and/or the magnetic gasket. Adjust the door hinges if needed; replace the gasket if broken.
	The refrigerator had been placed at an inadequate location	The unit must not be near sources that produce too much heat.
No illumination (Glass door models only)	The light switch is "off" position	Press the light switch to "on" position
	False contact on the light switch, the fluorescent tube, or the ballast	Inspect all connections
	Light switch, ballast and/or fluorescent tube are damaged	Replace the damaged component.
Condensing unit runs for long periods of time 	Excessive amount of warm product placed in cabinet	Advise user to leave adequate time for products to cool down

	Prolonged door opening or door ajar	Advise user to ensure doors are closed when not in use and to avoid opening doors for long periods of time.
	Door gasket(s) not sealing properly	Ensure gaskets are snapped in completely. Remove gasket and wash with soap and water. Check condition of gasket & replace if necessary
	Dirty condenser coil	Clean condenser coil
	Evaporator coil iced over	Unplug unit and allow coil to defrost. Make sure thermostat is not set too cold. Ensure that door gasket(s) are sealing properly. Select manual defrost and ensure system works.

Notes

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