

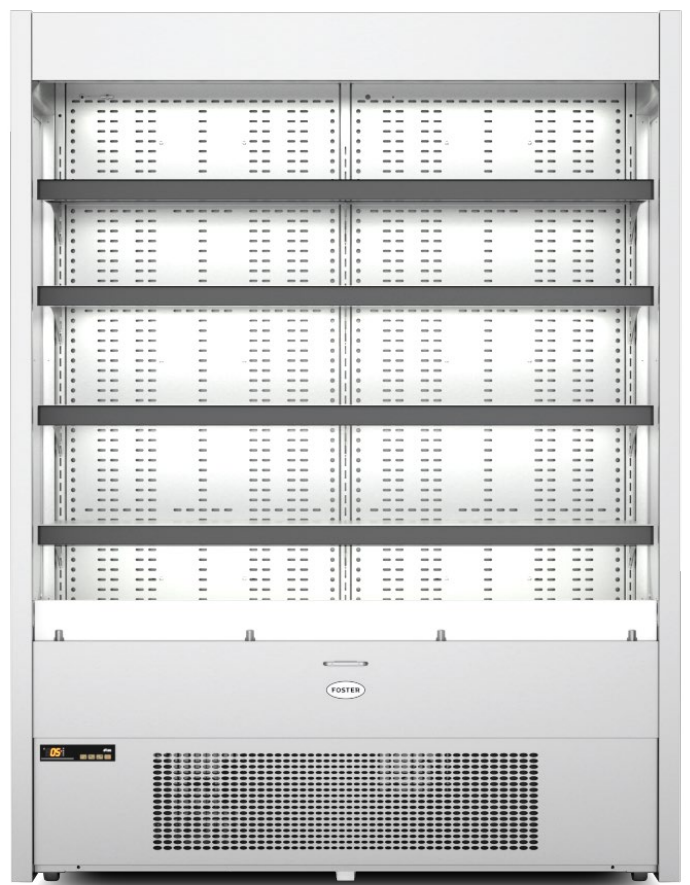


Service Manual

The Refrigeration Experts

Foster Multideck

FMPRO900NG, FMSLIM900NG, FMPRO1200NG, FMSLIM1200NG,
FMPRO1200B, FMPRO1500NG, FMSLIM1500NG, FMPRO1800NG,
FMSLIM1800NG, FMPRO900RF, FMSLIM900RF, FMPRO1200RF, FMSLIM1200RF,
FMPRO1500RF, FMSLIM1500RF, FMPRO1800RF, FMSLIM1800RF.



Three Steps

to maintain and service your appliance



The Refrigeration Experts

Welcome to your **interactive** Foster service manual.

Here's how it works:



To return to the contents at any point, click on the Foster logo at the bottom of every page.



Operating Instructions

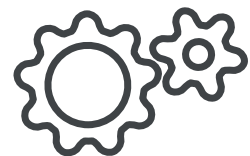


Service Function

- Parameters
- Alarm Indicators
- Probe Data
- Wiring Diagrams



Maintenance



General Information



All installations must conform to local and municipal regulations and directives. In the case of doubt contact a Foster authorised dealer or the Foster Technical Department. The information contained in this manual is current at the time of publication and is subject to change without notice.

Climate Class

Climate class indicated on the serial plate shows the ambient temperature & humidity at which this appliance has been tested, for the purposes of establishing values in line with European standards.

Climate Class	Temperature	Relative humidity
3	25°C	60%

General Safety

- Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.
- Keep all ventilation openings in the appliance or in the structure of a built in unit clear of any obstructions.
- Do not use electrical appliances inside the storage compartment.
- Do not use steam cleaners, pressure washers or other jets/sprays of water on or around the appliance.
- This appliance is heavy. When moving the appliance care should be taken and correct safe practices followed. The appliance should not be moved over uneven surfaces.
- The emitted sound level of this appliance is not greater than 70dB(A).
- To ensure stability the appliance should be located on a flat, level surface, correctly loaded.
- Do not use mechanical devices to accelerate the defrost process.
- Care should be taken not to damage the refrigeration circuit and/or system.
- If the supply cord is damaged, it must be replaced by the manufacturer, it's service agent or similarly qualified persons in order to avoid hazards.
- Care should be taken to avoid prolonged contact with cold surfaces with unprotected body parts, correct PPE to be used at all time.



Disposal Requirements

This appliance contains components and materials which can be harmful to the environment if not disposed of correctly. Disposal of this appliance should be carried out by a suitably licensed waste contractor in accordance with national laws and regulations which may be in force at the time.



Electrical Safety


This equipment shall be connected to an electrical supply protected by a Residual Current Device (RCD). This may include a residual current circuit breaker (RCCB) type socket, or through a Residual Current Circuit Breaker with overload protection (RCBO) supplied circuit.


Should it be necessary to replace the fuse, the replacement fuse must be of the value stated on the serial label for the appliance.





Locating the appliance


After unpacking, clean (cleaning directions supplied within this manual) and allow the appliance to stand for 60 minutes before turning on.

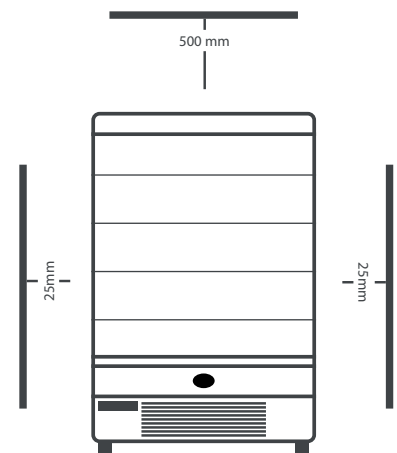
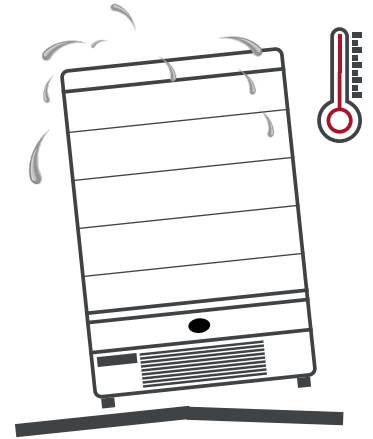
 Ensure the appliance is situated on a firm, level surface, away from both hot and cold air sources, as this will affect its performance.

 Place the appliance in a location so as not to exceed the maximum rated ambient temperature. Areas where air is projected directly into the front of the appliance (for example from air conditioning units) should also be avoided.

 The appliance produces warm air when operating normally and requires adequate ventilation. The dimensions indicated are a minimum.

 Connect the appliance to a suitable power supply. Do not connect or disconnect the appliance with wet hands. The appliance will turn on automatically displaying the actual internal temperature of the appliance. If this does not happen and button 3 is 'pulsing' press and hold button 3 for 3 seconds to turn on the appliance (see controller operation for button identification).

 As the operating temperature has been pre-set no adjustments are required. Allow the appliance to reach its normal operating temperature before loading with product.

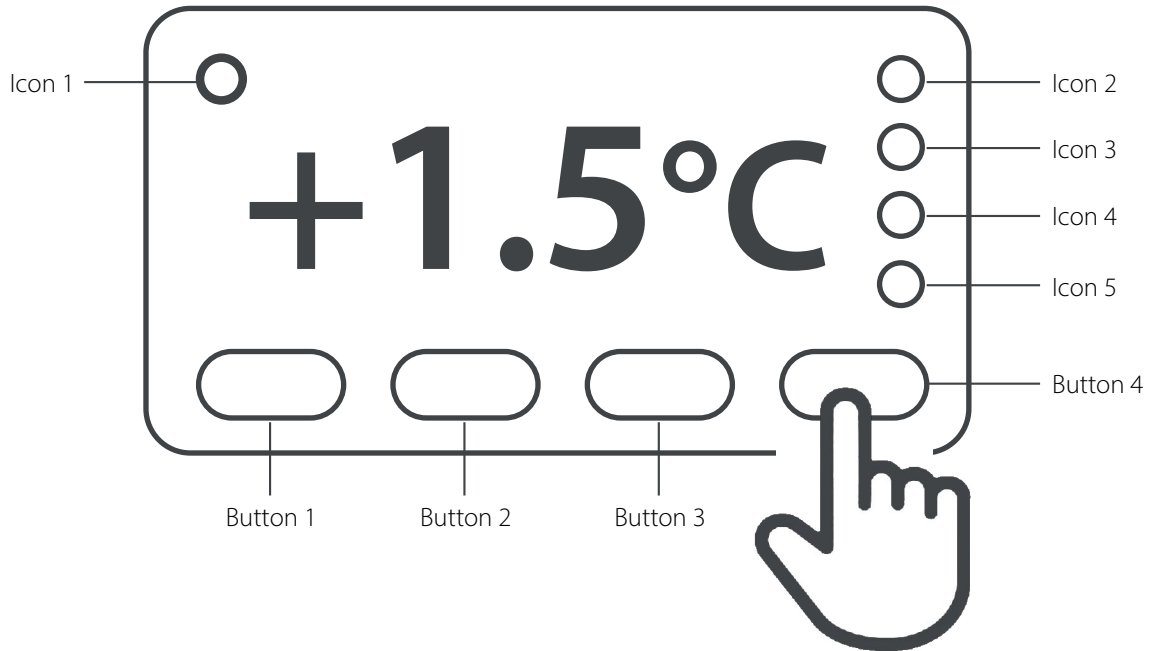


1

Operating Instructions



Display Icons and Buttons



Icon		Button	
1	Alarm Warning	1	Info & Set Point
2	Thermostat Output Active	2	Manual Defrost & Decrease Value
3	Fan Output Active	3	Increase Value / Lights On - Off
4	Defrost Output Active	4	Standby / Exit
5	2nd Parameter Set Active		

Standby

Pressing button 4 for 3 seconds will turn the unit on or into standby. When in standby, the display will show 'OFF'. When operating normally, the display will show the internal temperature.

Set Point

To display the appliance Set Point, with the display showing the temperature, press and hold button 1.

To amend the Set Point press and hold button 1, then while keeping button 1 pressed use buttons 2 and 3 to set the desired value.

If the Set Point cannot be adjusted to the value required please contact your authorised Foster dealer for advice

When button 1 is released the new value will be stored automatically.

Keypad Security Settings

We advise that this function is used to prevent unauthorised adjustment of the appliance and it's operating temperature.

Press and release button 1 until the display shows 'Loc'. Then press and hold button 1 to show the current lock condition of the temperature controller. 'Yes' indicates locked, 'no' indicates unlocked. Using buttons 2 or 3 change the display to either lock or unlock the controller as required.

Release button 1 and wait 10 seconds or press button 4 once to resume normal operation.

Defrost

The appliance has an automatic defrost function and will defrost periodically each day without any user intervention. This process is normal and does not affect product stored in the appliance. During defrost the appliance can be used as normal.



Shelves, Supports, Loading and Air Flow

The appliance is supplied with adjustable, removable shelves.

Each shelf is capable of holding the weight corresponding to model below:

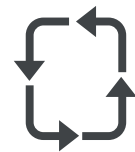


FMPRO900RF	61kg	FMSLIM700RF	40kg
FMPRO900NG	61kg	FMSLIM700NG	40kg
FMPRO1200RF	79kg	FMSLIM900RF	52kg
FMPRO1200NG	79kg	FMSLIM900NG	52kg
FMPRO1200B	79kg	FMSLIM1200RF	68kg
FMPRO1500RF	103kg	FMSLIM1200NG	68kg
FMPRO1500NG	103kg	FMSLIM1500RF	88kg
FMPRO1800RF	126kg	FMSLIM1500NG	88kg
FMPRO1800NG	126kg	FMSLIM1800RF	107kg
		FMSLIM1800NG	107kg

NOTE - In the event that this cabinet is intended to be tested against EN23953-2 it is strongly advised that additional reinforced shelf arms are to be used in place of the standard items. Please contact Foster U.K. for supply of these.

Do not block air vents with product. A minimum of 50mm should be maintained between the top of the product and the shelf above.

Always ensure air can circulate around/through the stored product. It is important that for optimal energy performance that adequate airflow is maintained around the perimeter of the shelves, and around all stored products.



Lockable Security Shutter

To lock the security shutter turn the key 90°, turn the opposite direction to unlock.



Internal Light

The light is operated using button 3. Press once to turn on the light and press again to turn off the light.



2

Service Function



Controller Menu's

The controller contains 2 menu levels, user level and service level.

User Level Menu

User level settings are accessed by pressing buttons 2 and 3. To view the selected parameter press and hold button 1. Where adjustment is required and is permitted use buttons 2 and 3 while continuing to hold button 1.

User Level Parameters

Mnemonic	Description
SP	Appliance Set Point
Loc	Keypad Lock State
t1	Actual air probe value
t2	Actual evaporator probe value
t3	Actual shelf temperature
tLo	Minimum air temperature
tHi	Maximum air temperature

Service Level Menu

To access the service menu press and hold button 4 followed by button 1. Both buttons should then be held for 5 seconds until the display indicates 'SCL'

Service Level Parameters

Mnemonic	Setting	Description:
SCL	2	Readout scale.
SPL	-1	Minimum limit for Temperature Set Point (SP)
SPH	5	Maximum limit for Temperature Set Point (SP)
SP	0	Temperature setpoint to be achieved.
C-H	REF	Temperature control mode.
HYS	3	Off / On thermostat differential.
CRT	2	Compressor rest time.
CT1	6	Compressor run time with faulty T1 probe.
CT2	2	Compressor off time with faulty T1 probe.
CSD	1	Compressor stop delay after door has been opened. (Only if DS = YES).
DFM	TIM	Defrost start mode.
DFT	4	Time interval between defrosts in hours
DFB	YES	Defrost timer clock.
DLI	10	Defrost end temperature (Only if T2 = YES).
DTO	15	Maximum defrost duration.
DTY	OFF	Defrost type.
DPD	0	Evaporator pump down. Timed pause at start of defrost.
DRN	1	Drain down period.
DDM	SP	Defrost display mode.
DDY	10	Defrost display delay period.
FID	YES	Evaporators Fans operate in defrost.
FDD	5	Evaporator fan restart temperature following defrost. (Only if T2 = YES).
FTO	2	Maximum evaporator fan stop period following defrost.
FCM	NON	Evaporator fan mode during thermostatic control.
FDT	-1	Te-Ta difference for fans to turn off after compressor stopped. (Only if T2 = YES and FCM = TMP).
FDH	3	Temperature differential for evaporator fan restart. (Only if T2 = YES and FCM = TMP).
FT1	15	Fan stop delay after compressor stop.
FT2	3	Timed fan stop following FT1. (With FT2 = 0 the fans remain on all the time).
FT3	2	Timed fan run following FT2. (With FT3 = 0 & FT2 > 0 the fans remain off all the time).
ATM	REL	Alarm threshold configuration.
ALA	-2	Low temperature alarm threshold.
AHA	8	High temperature alarm threshold.
ALR	-5	Low temperature alarm differential. (With ALR = 0 the low temperature alarm is excluded).
AHR	8	High temperature alarm differential. (With AHR = 0 the low temperature alarm is excluded).
ATI	T3	Alarm probe.
ATD	90	Delay before alarm temperature warning.
ADO	8	Delay before door open alarm warning.
AHM	ALR	Operation in case of high condenser alarm.
AHT	65	Condenser alarm temperature (T3 = CND).
ACC	0	Condenser cleaning period. (With ACC = 0 condenser cleaning is disabled).
IISM	NON	Switchover method to 'Mode 2'
IISL	1	Minimum limit for Mode 2 Temperature Set Point
IISH	1	Maximum limit for Mode 2 Temperature Set Point
IISP	1	Temperature setpoint to be achieved in 'Mode 2'.
IIHY	4	Off / On thermostat differential in 'Mode 2'.
IIFC	NON	Evaporator fan mode during 'Mode 2' thermostatic control.
HDS	3	Controller sensitivity for switch over between 'Modes' 1 and 2. (1 = minimum, 5 = maximum).
IIDF	6	Time interval between defrosts in 'Mode 2'.

Mnemonic	Setting	Description:
SB	YES	Standby button operation.
DS	NO	Door switch operation.
DI2	NON	Configurable digital input operation.
LSM	MAN	Light control mode.
OA1	LGT	Auxiliary relay 1 operation.
OA2	ALO	Auxiliary relay 2 operation.
2CD	0	Auxiliary compresor start delay.
INP	SN4	Temperature sensor(s) type.
OS1	0	Air temperature probe (T1) offset.
T2	YES	T2 probe operation.
OS2	0	T2 probe temperature offset.
T3	DSP	T3 probe function.
OS3	0	T2 probe temperature offset.
TLD	10	Delay for min. (TLO) and max. (THI) temperature logging.
SIM	5	Display slowdown.
ADR	1	AD2-28 address for PC communication

Other Information

Alarms/Warnings:

During operation the current temperature inside the appliance will be displayed. At certain times this will change to indicate a particular appliance operation or fault. The indicators you may see are as follows:

The temperature alarms are either relative to the set point or an absolute value. This is controlled by the value of parameter 'ATM'. Where the alarms are relative the low alarm is the set point minus parameter 'ALR' and the high alarm is the set point plus 'AHR'. When the temperature has been outside this value for the value of 'ATD' the relevant indicator will be displayed.

hi - The internal temperature of the appliance is higher than described above. Ensure that the door is closed and that the air flow inside is not obstructed by excessive or poor loading of product. The alarm will reset if the temperature falls to a normal level. If this does not happen please contact your authorised dealer or Foster Service.

Lo - The internal temperature of the appliance is lower than described above. Check to ensure that the appliance has not been loaded with product at a lower temperature than the normal appliance operating temperature. If this is not the case please call your authorised dealer or Foster Service.

E1 - Air probe has failed.. Call your authorised dealer or Foster Service to arrange for this to be replaced. During this time the appliance cannot maintain an accurate temperature and all product should be removed and the appliance switched off.

E2 - Evaporator probe has failed. Call your authorised dealer or Foster Service to arrange for this to be replaced.

E3 - The shelf temperature probe has failed. Call your authorised dealer or Foster Service to arrange for this to be replaced.

dEF - Defrost in progress. This is normal and your appliance will carry out a defrost periodically through each 24 hours. The contents of the appliance will be unaffected by this operation.

While in an alarm condition icon 1 will also be illuminated.

(Some indications are only visible periodically during specific appliance operations such as defrost or when activated through use of the appliance).

Probe Function

T1 - Controls the compressor on/off cycle based on the Set Point value located in the air return close to the fans.

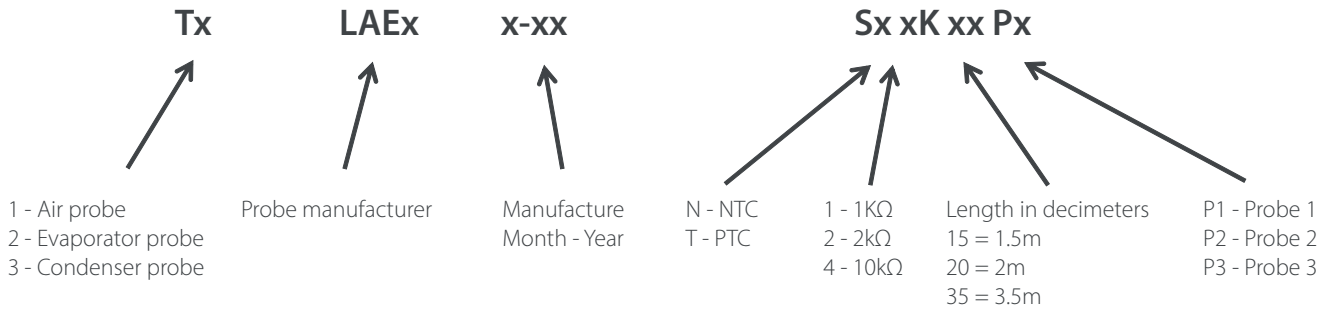
T2 - Evaporator probe for defrost control.

T3 - The temperature displayed on the controller. The response is delayed to prevent the display of large changes in the temperature. Over time the displayed temperature will move to align with the T1 temperature subject to product load and appliance use. The probe is located in front of the air duct at the top left corner.

Probe Information

The probe is a type 10k NTC. The probes are identical in characteristics with the T1 and T2 identification markings and different colours being for ease of identification and not for functional reasons. Please refer to the image below for probe identification.

Probe Identification



Probe Resistance

NTC10K Temperature Resistance Table

SN4K

TEMP. (°C)	R-low (KW)	R-mid (KW)	R-high (KW)
-30	109.522	113.347	117.294
-25	84.823	87.559	90.374
-20	66.27	68.237	70.255
-15	52.229	53.65	55.104
-10	41.477	42.506	43.557
-5	33.147	33.892	34.651
0	26.678	27.219	27.767
5	21.63	22.021	22.417
10	17.643	17.926	18.21
15	14.472	14.674	14.877
20	11.938	12.081	12.224
25	9.9	10	10.1
30	8.217	8.315	8.413
35	6.854	6.948	7.043
40	5.745	5.834	5.923

Refrigerant Charge

The refrigerant charge weight can be found on the serial label within the appliance. Where this is not available please refer to the table below. The information below is correct time of printing but is subject to change without prior notice.

FMSLIM700NG	R134a	550gms
FMSLIM900NG	R134a	600gms
FMSLIM1200NG	R134a	600gms
FMSLIM1500NG	R134a	1100gms
FMSLIM1800NG	R134a	600gms per system
FMSLIM700NG	R290	150gms
FMSLIM900NG	R290	150gms
FMSLIM1200NG	R290	150gms per system
FMSLIM1500NG	R290	150gms per system
FMSLIM1800RF	R290	150gms per system

Evaporator Fan Motors

The evaporator fan motors will continue to operate during defrost. This is normal and is required for the successful completion of the defrost operation.

Defrost Indication

During defrost icon 4 will be illuminated. The controller display will be determined by the value set in parameter 'DDM'.

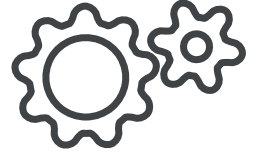
To start a defrost manually press and hold button 3 for 5 seconds. This will turn off the appliance. Continue to hold down button 3 after the appliance has turned off. After a further 2 seconds the display will indicate a defrost has commenced (icon 4 illuminated) and the button can be released. While the defrost function is operating the display will be determined by the value set in parameter DDM.

The defrost function will operate until either the time set in parameter DTO or the temperature set in parameter DLI is reached. Where parameter TE is set to NO defrost will function on a time basis only. Upon completion of the defrost cycle the appliance will resume normal operation with the current temperature displayed.

Note - On this appliance it is normal for the evaporator fans to continue to operate during a defrost cycle.

3

Maintenance

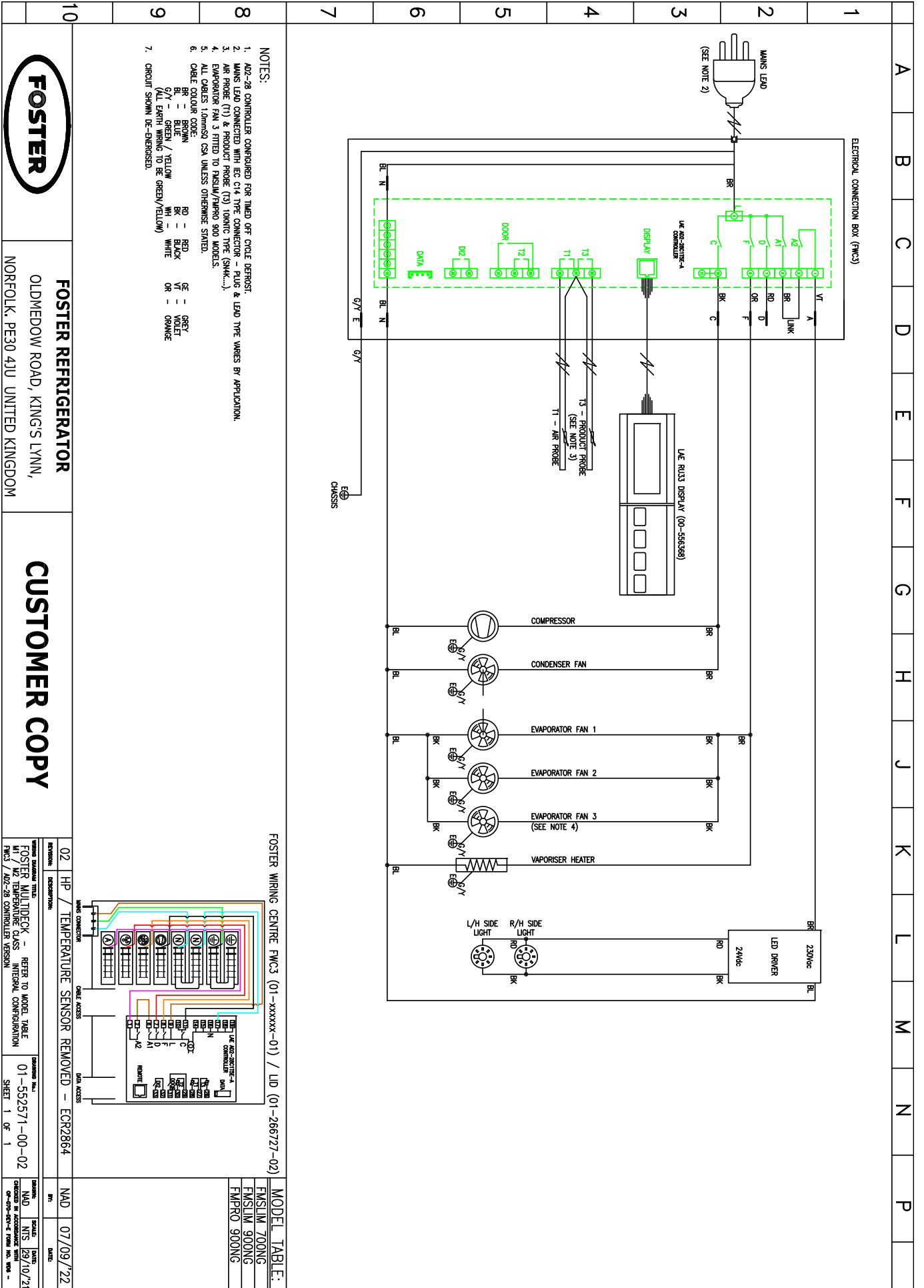


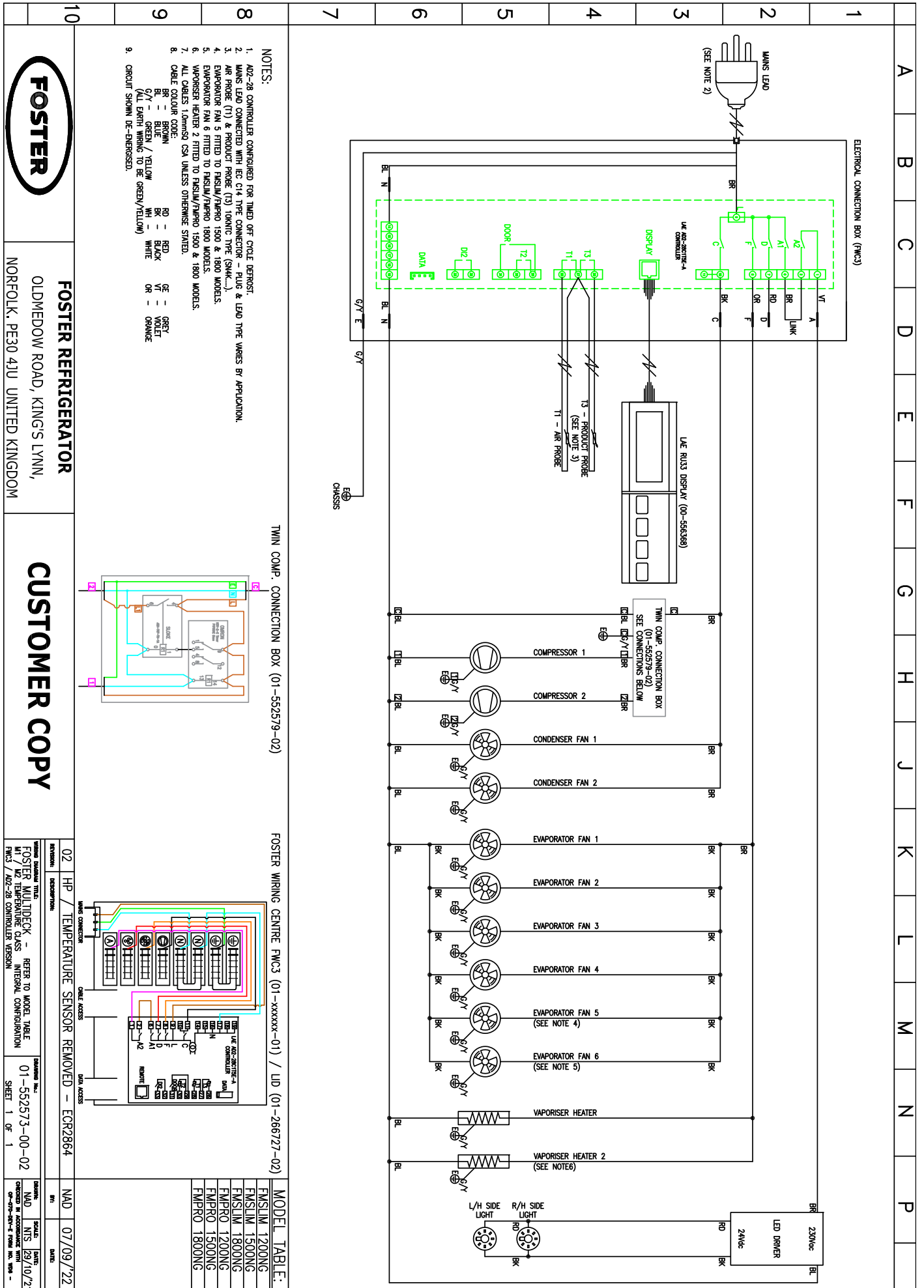
Condenser Cleaning

The condenser is a Stayclear condenser which does not require cleaning as regularly as a traditional finned condenser may. Care should be taken when cleaning the condenser. Never use a wire brush, abrasive or corrosive materials to clean the condenser.

Wiring Diagrams

FMPRO700NG, FMSLIM700NG, FMPRO700NG, FMPRO900NG.





FOSTER REFRIGERATOR
 OLDMEDDOW ROAD, KING'S LYNN,
 NORFOLK, PE30 4JU UNITED KINGDOM

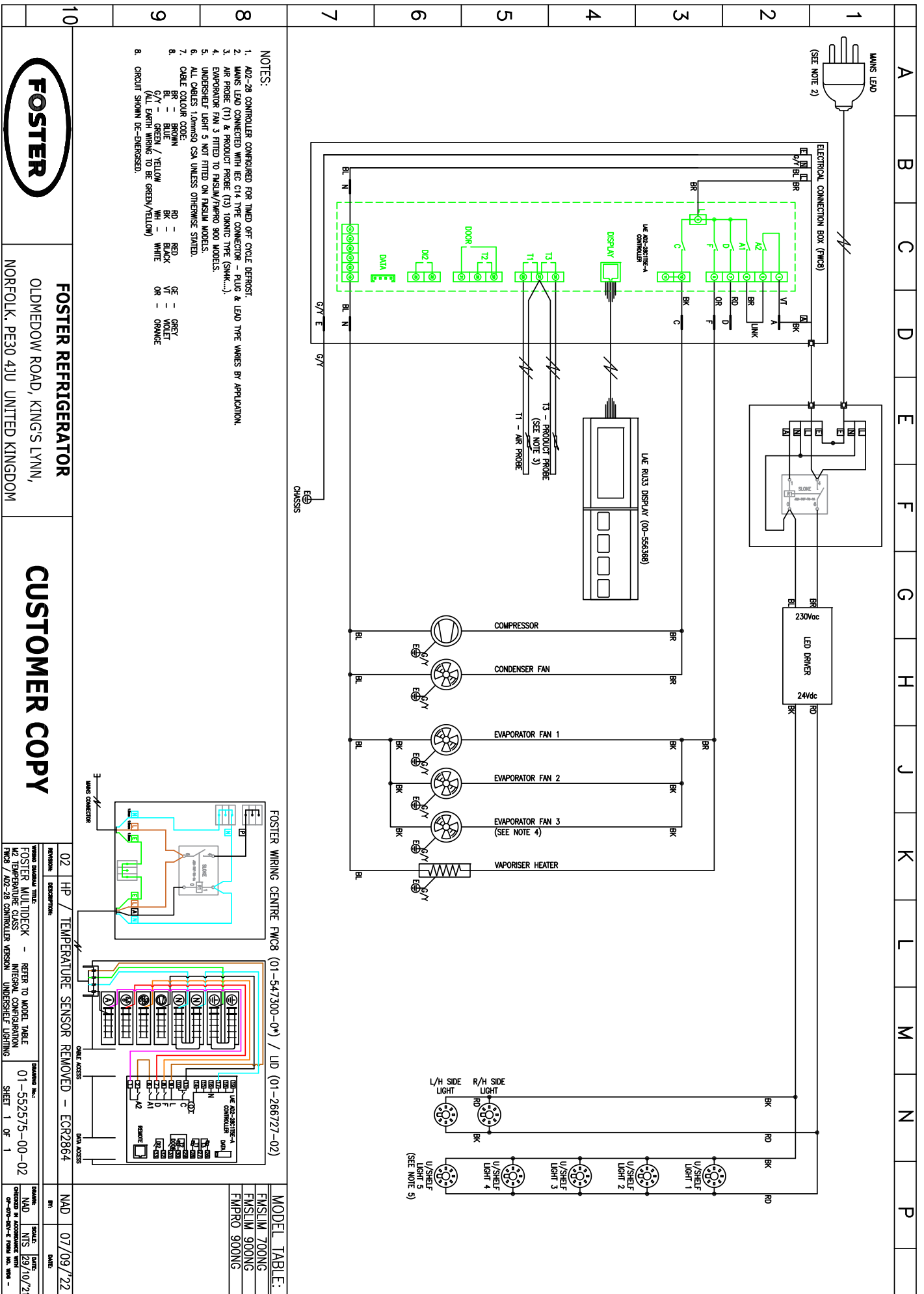
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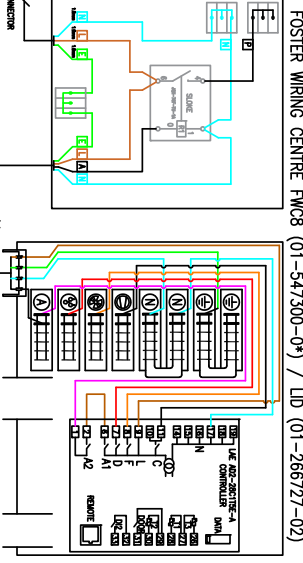
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 ISSUED BY: MAD
 SCALE: 07/09/22
 DATE:

DRAWING TITLE: FOSTER MULTIDECK - REFER TO MODEL TABLE
 M/T / M2 TEMPERATURE CLASS INTERNAL CONFIGURATION
 FWC3 / A02-28 CONTROLLER VERSION
 DRAWING NO: 01-552573-00-02
 SHEET 1 OF 1

CHECKED IN ACCORDANCE WITH
 OF-07-01-01 FROM NO. 01-



- NOTES:
- AD-28 CONTROLLER CONFIGURED FOR TUNED OFF CYCLE DEFROST.
 - MAINS LEAD CONNECTED WITH IEC C14 TYPE CONNECTOR - PLUG & LEAD TYPE VARIES BY APPLICATION.
 - AIR PROBE (T1) & PRODUCT PROBE (T3) TOKINIC TYPE (SMK,...).
 - EVAPORATOR FAN 3 FITTED TO FMSLIM/FMPRO 900 MODELS.
 - UNDERSHELF LIGHT 5 NOT FITTED ON FMSLIM MODELS.
 - ALL CABLES 1.0mm² CSA UNLESS OTHERWISE STATED.
 - CABLE COLOUR CODE:
 - BR - BROWN
 - BL - BLUE
 - G/Y - GREEN / YELLOW
 - WH - WHITE
 - RD - RED
 - BK - BLACK
 - VF - VIOLET
 - OR - ORANGE
 - GR - GREY
 - GY - GREY / YELLOW
 - WT - WHITE
 - OR - ORANGE



MODEL TABLE:

FMSLIM 700NG
FMSLIM 900NG
FMPRO 900NG

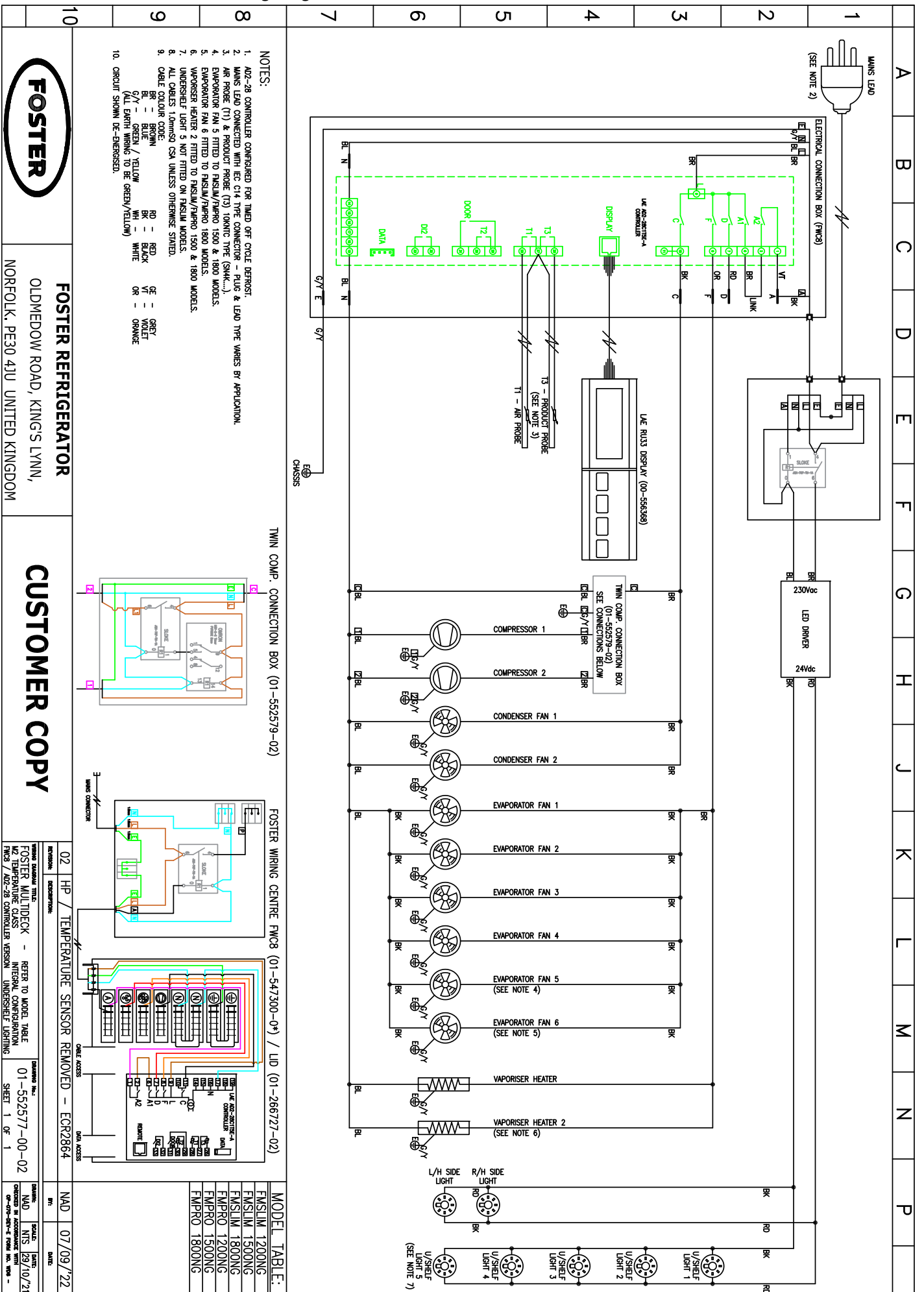
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BY:	MAD	
SCALE:	1:1	
DRAWN BY:	NIS	25/10/21
CHECKED BY:	WJS	25/10/21
DATE:	25/10/21	
SHEET:	1 OF 1	





By Appointment to
Her Majesty Queen Elizabeth II
Suppliers of Commercial Refrigeration
Foster Refrigerator, King's Lynn



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