FOSTER

Service Manual

The Refrigeration Experts

XTRA Cabinets

BY FOSTER

XR600H, XR600L, XR1300H, XR1300L.

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.

1

Operating Instructions

2

Service Function

- Parameters
- Alarm Indicators
- Probe Data
- Relay Test
- Factory Reset
- Wiring Diagrams

3

Maintenance

General Information

These instructions should be retained and made readily accessible by personnel using the appliance. The instructions should be read thoroughly prior to appliance installation. The information contained in this manual is intended to use by trained, competent personnel only. Failing to follow the advice contained in this manual may result in damage to the appliance and personal injury to the operator.

All installations **must** conform to local and municipal regulations and directives. In case of doubt contact your Foster authorised distributor 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.

CAREFUL – DANGER
Ignoring this sign and remarks may result in personal danger.

CAREFUL – DANGER
Ignoring this sign and remarks may result in damage to your appliance.

INFORMATION
Useful hints to make the best use of your appliance.

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
4	30˚C	55%
5	40˚C	40%

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.
- The appliance is air tight when the door is closed therefore under no circumstances should any living body be stored or 'locked in' 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.

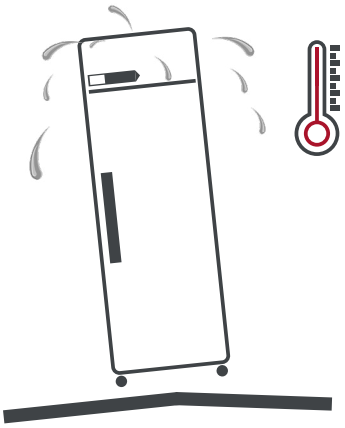
Electrical Safety

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.

Start-Up and Test Sequence

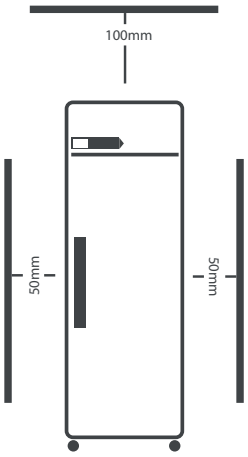
After unpacking, clean (cleaning directions supplied within this manual) and allow the appliance to stand for 60 minutes before turning on.



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.

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

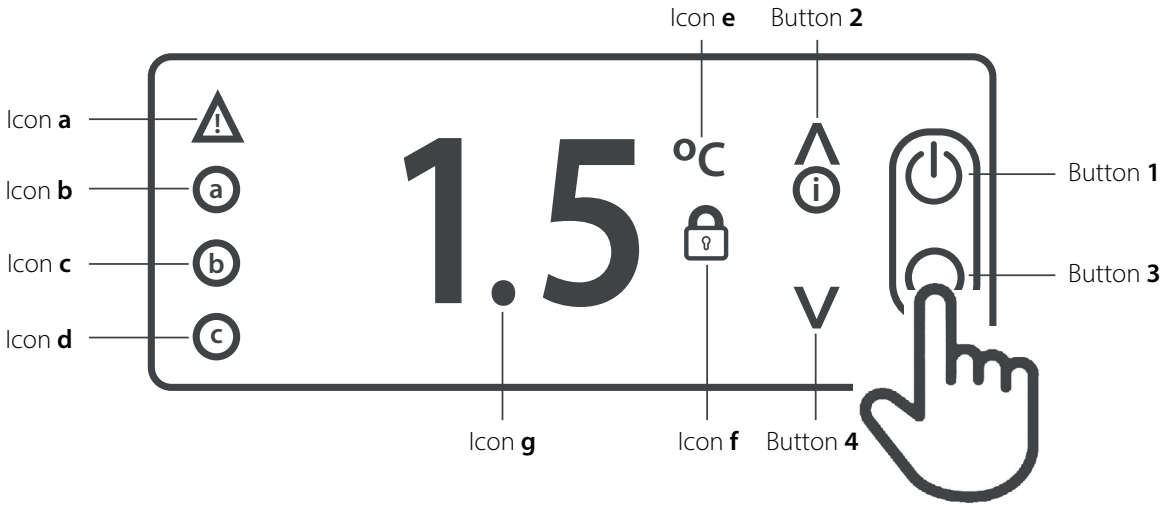


Connect the appliance to a suitable power supply. Do not connect or disconnect the appliance with wet hands. The appliance will turn on automatically displaying the actual internal temperature of the appliance and 'PF'. To cancel the alarm press button 1. If this does not happen and the display shows ' - ' press and hold button 1 for 3 seconds to turn on the appliance.

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	
a	Compressor on / Alarm	**1**	On / Off / Standby
b	Evaporator fans on	**2**	Up / Increase value
c	Defrost on	**3**	Back / Exit
d	2nd operating function on	**4**	Down / Decrease value
e	°C / User menu active		
f	Keypad locked / Service function active		
g	Decimal point / Defrost active		

Note - Icons a, b, c, d are only visible after pressing either buttons 1, 2, 3 or 4.

The appliance is designed for the storage of product at the appropriate temperature. It is not designed to chill or freeze product from a higher temperature. Using the appliance in this manner may result in malfunction, damage and invalidate the warranty.

Standby

Pressing button 1 for 3 seconds will turn the unit on or into standby. When in standby the display will only display ' - '. The remainder of the display will be blank. When operating normally, the display will show the internal temperature of the cabinet.

Set Point

To display the appliance Set Point, with the display showing the temperature, press button 2 for 3 seconds and the display will show 'SP'. Then press button 1 once to display the current set point.

Adjust the set point using button 2 to increase and button 4 to decrease. Press button 1 to save the new value and the display will show 'Loc'. If button 1 is not pressed the new value will not be stored. Exit by pressing button 3.

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

The display will resume normal operation after 30 seconds or if button 3 is pressed.

Keypad Security Settings

The keypad can be locked to prevent unauthorised adjustment of the appliance and it's operating temperature.

When the keypad is locked no adjustments can be made using the keypad and icon 'f' will be displayed.

To lock or unlock the keypad press and release button 2 for 3 seconds and the display will show 'SP'. Release the button and then press button 2 once and the display will show 'Loc'. Press button 1 to display the current keypad lock status. Adjust using button 2 and button 4 to set the value to 'Yes' to lock the keypad and 'no' to unlock the keypad. Press button 1 to save the new value. If button 1 is not pressed the new value will not be stored. The display will resume normal operation after 30 seconds or if button 3 is pressed.

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.

To start a defrost manually press and hold button 1 for 5 seconds. This will turn off the appliance. When this happens do not release the button and after 2 more seconds the display will indicate a defrost has commenced (dEF is briefly displayed) and the button can be released. The appliance set point temperature will be displayed during defrost and icon 'g' will flash to indicate a defrost is in progress.

The defrost will operate for it's full duration, it is not possible to cancel a defrost when it has started.

Keypad Sounds

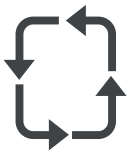
If the user does not require the keypad to indicate with a sound when a button is pressed this can be turned off. Press and hold button 2 for 3 seconds until the display shows 'SP'. Press button 2 until the display shows 'biP'. Press button 1 to display the current value. 'Yes' indicates keypad sounds are active and 'no' indicates keypad sounds are not active. Select the value required and press button 1 to save the new value. If button 1 is not pressed the new value will not be stored. Exit with button 3.

Shelves, Supports, Loading and Air Flow

The appliance is supplied with adjustable, removable trayslides and shelves.

Each shelf is capable of holding up to 40kg of product evenly distributed.

Do not block air vents with product. A minimum of 25mm should be maintained between the top of the product and the shelf above.



Do not place product directly on the base of the appliance.

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

Door Lock

To lock the door insert the key and turn 90°, turn in the opposite direction to unlock.

Alarms Notification

If an alarm condition occurs the appliance will indicate this with an audible signal, by illuminating icon 'a' and displaying a fault code from the list in the 'Troubleshooting' section of this manual . The audible notification can be muted temporarily by pressing button 1. While the fault is still present icon 'a' will continue to be illuminated and the display will cycle between the fault code and the appliance temperature.

2 Service Function

Controller Menu's

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

User Level Menu

To access user level settings, press button 2 for 3 seconds and the display will show 'SP'. Use buttons 2 and 4 to move through the parameter required. Press button 1 to display the current value. If it is required to amend the value use buttons 2 and 4 followed by button 1 to save the new value. The display will resume normal operation after 30 seconds or if button 3 is pressed.

User Level Parameters

Mnemonic	Description
SP	Appliance operating set point
biP	Enable the key audible feedback
rFP	Return controller to factory default parameters. Note - If the controller has not been programmed by Foster this function will load a standard high temperature cabinet parameter set.
dEF	Time to next defrost cycle
thi	Maximum temperature logged
tLo	Minimum temperature logged
tA	Actual air probe value
tE	Actual evaporator probe value (Not enabled on all models)
Loc	Keypad lock function

Service Level Menu

To access service level menu, press and hold buttons 2 and 4 for 5 seconds and the display will show 'MdL'. Icon 'f' will flash to indicate that the service function is active. Use buttons 2 and 4 to display the parameter required. Press button 1 to display the current value. If it is required to amend the value use buttons 2 and 4 followed by button 1 to save the new value. If button 1 is not pressed the new value will not be saved. Exit using button 3 or wait 30 seconds

Service Level Parameters

MNEMONIC:	DESCRIPTION:	
MDL	Temperature control mode.	'HY' - without frequency inverter / conventional hysteresis control
		'HEA' - Heated cabinet control / conventional hysteresis switching mode.
SPL	Minimum limit for 'Performance' mode SetPoint setting.	
SPH	Maximum limit for 'Performance' mode SetPoint setting.	
SP	Performance mode Setpoint.	Temperature value to be maintained in the product.
HY0	Thermostat OFF -> ON differential (in Cooling Mode - 'MDL' = 'HYS').	In Cooling Mode - 'MDL' = 'HYS'.
HY1	Thermostat ON -> OFF differential.	In Heating Mode - 'MDL' = 'HEA'.
CMD	Compressor start delay 'run' mode.	The time between mains power being applied and the compressor starting when in 'run' mode (i.e. following a mains power cut).
CRT	Compressor rest time.	Minimum time compressor is switched off following cycle operation (i.e. pull down, hot gas defrost).
CT1	Compressor/Heater (R1) output on time.	Followed by 'CT2' when probe Ta (T1) is faulty.
CT2	Compressor/Heater (R1) output off time	Followed by 'CT1' when probe Ta (T1) is faulty.
DFM	Defrost start mode.	'NON' - defrost function is disabled - no defrosts will occur.
		'TIM' - Time. Defrosting occurs on a time base determined by 'DFT', accumulated only in run mode.
		'FRO' - Frost Forming. The defrost time count is only increased when the conditions occur for frost to form on the evaporator.
		'DoD' - Defrost On Demand. When 'T2' = 'Yes', the 'Te' temperature is below 'DSP' for the time defined in 'DST', a defrost will be initiated.
		'TAD' - Time And Demand defrosting. Defrosting occurs in accordance with 'DFT', but additionally, if the 'Te' temperature is below 'DSP' for the time defined in 'DST' a defrost will be initiated.
DFT	Time interval between defrosts.	When this time has elapsed since the previous defrost (in run mode), a new defrost cycle is initiated.
DSP	Defrost suction temperature.	The sustained (based on 'DST' Time) temperature, below which 'Te' must remain in order to initiate a 'DoD' or TAD' defrost.
DST	Defrost suction time.	The time period that the measured temperature must be below 'DSP' in order to initiate a 'DoD' or TAD' defrost.
DMI	Defrost minimum interval.	The minimum time period between two 'DoD' or 'TAD' defrost periods.
DLI	Defrost end temperature.	
DTO	Maximum defrost duration.	
DTY	Defrost type.	'OFF' - Off cycle defrost (Compressor and Heater OFF).
		'ELE' - Electric defrost (Compressor OFF and Heater ON).
		'GAS ' - Hot gas defrost (Compressor and Heater ON).

DSY	Defrost start synchronization.	'OFF' - none. The defrost will occur without delay.
		'LO' - defrost start will be postponed to compressor cut-out (SOD = max delay).
		'HI' - defrost start will be postponed to compressor cut-in (SOD = max delay).
SOD	Timeout period for defrost start.	Using cycle synchronization ('DSY') to prevent no defrost through usage. When 'SOD' = '0' defrost will start immediately.
DPD	Evaporator pump down.	At the beginning of defrost, defrost outputs (determined by 'DTY') are 'OFF' for 'DPD' seconds.
DRN	Pause after defrost (evaporator drain down time).	
DDM	Defrost display mode.	'RT' - the real / actual temperature.
		'LT' - the last temperature displayed before defrost initiation.
		'SP' - the setpoint value.
		'dEF' - 'dEF'.
DDY	Display delay.	The display shows the information selected with parameter 'DDM' during defrost and for 'DDY' minutes after defrost termination.
FID	Evaporator Fans in defrost.	YES - Fans active during defrost and drain ('DRN') and recovery / NO - Fans off during defrost and drain ('DRN') and recovery (fan start based on 'FDD' or 'FTO' - whichever first).
FDD	Evaporator fan re-start temperature after defrost.	
FTO	Maximum evaporator fan stop after defrost.	
FMS	Fan Minimum stop time.	When the evaporator fan(s) stop(s), it/they remains off for at least 'FMS' seconds.
FSD	'Evaporator fan stop delay after door opens:	Time in seconds: '-1' = fan(s) do not stop / '0' = fan(s) stop instantaneously / '1'-'900' = fans stop after prescribed time elapses.
FCM	Thermostatic control fan mode.	'NON' - The fans remain ON all the time (subject to door switch operation and defrosts).
		'TMP' - Temperature-based control. The fans are ON when the compressor is ON. When the compressor is turned OFF, the fans remain ON as long as the temperature difference Te-Ta is greater than 'FDT'.
		'TIM' - Timed-based control. The fans are ON when the compressor is ON. When the compressor is OFF, the fans switch ON and OFF according to parameters 'FT1', 'FT2' and 'FT3'.
FDT	Evaporator fan compressor stop over-run.	Where Evaporator (Te) -Air (Ta) temperature difference for the fans to turn OFF after the compressor has stopped.
FDH	Temperature differential for fan re-start.	Example: 'FDT' = '-1' and 'FDH=3'. If compressor is stopped, the fans are OFF when Te> Ta '-1' ('FDT'), whereas the fans are ON when Te < Ta '-4' ('FDT'-'FDH').
FT1	Fan stop delay after compressor/ heater stop.	
FT2	Timed fan stop.	When 'FT2' = '0' the fans remain on all the time.
FT3	Timed fan run.	When 'FT3' = '0', and 'FT2' > '0', the fans remain OFF all the time.
ATM	Alarm threshold management.	'NON' - all temperature alarms are inhibited (the following parameter will be 'ACC').
		'ABS' - the values programmed in 'ALA' and 'AHA' represent the real alarm thresholds.
		'REL' - the alarm threshold is obtained by the sum of setpoint, thermostat differential and 'ALR' / 'AHR'.
ALA	Low temperature alarm threshold.	
AHA	High temperature alarm threshold.	
ALR	Low temperature alarm differential.	With 'ALR' = '0' the low temperature alarm is excluded.
AHR	High temperature alarm differential.	With 'AHR' = '0' the high temperature alarm is excluded.
ATI	Probe used for temperature alarm detection.	

PAD	Delay before alarm temperature warning at power on.	
ATD	Delay before alarm temperature warning.	
ACC	Condenser periodic cleaning.	When the compressor operation time, expressed in weeks, matches the 'ACC' value programmed, 'CL' flashes in the display. With 'ACC' = '0' the condenser cleaning warning is disabled.
IISM	Switchover method to second parameter set.	'NON' - the 2nd Temperature / Switched Output button primary function is inhibited (the following parameter will be 'DSM').
		'2ND' - when activated the controller will change to mainatin temperature / defrost in accordance with parameters 'IISL', 'IISH', 'IISP', 'IIHY', 'IIFC', and 'IIDF'.
		'LCM' - The Switch / 2nd temperature button [3] will operate as determined by parameter 'LCM'.
IISL	Minimum limit for 'IISP' setting.	
IISH	Maximum limit for 'IISP' setting.	
IISP	Temperature setpoint to be achieved in 'Mode 2'.	
IIHY	Off / On thermostat differential in 'Mode 2'.	
IIFC	Evaporator fan mode during 'Mode 2' thermostatic control.	
IIDF	Time interval between defrosts in 'Mode 2'.	
DSM	Door switch mode.	'NON' - when 'DI1'/'T3A' = 'DOR' there is no response to a state change.
		'ALR' - when 'DI1'/'T3A' = 'DOR' and the digital input is ON, an alarm is generated after 'DAD' minutes.
		'STP' - when 'DI1'/'T3A' = 'DOR'' and the digital input is ON, in addition to the alarm, the fans are stopped according to 'FSD' and the compressor is stopped after 'CSD' seconds.
DAD Delay before door open alarm warning.		
CSD	'Relay 1' de-energise delay after door open.	'0' … '900' - time in seconds ('-1' = 'Relay' does not de-energise / '0' = instantaneous / '1'-'900' = de-energises after prescribed time elapses).
DOT	Door stop overide.	If the door switch remains open for longer than 'DOT' minutes, the operating functionaity returns to normal thermostatic control, however the alarm will remain. When 'DOT' = '0', this function is disabled.
DI1	'DI1' digital input.	'NON' - Digital Input 1 not active.
		'DOR' - door input.
		'ALR' - when the input is activated (set by 'D1A') alarm 'Alr' alarm is generated, the compressor is stopped and the defrosts are suspended.
		'2ND' - when the input is 'ON' the controller will use '2ND' temperature parameters.
		'RDS' - when the input is 'ON' a defrost is started (by 'remote' control).
D1A	'DI1' activation.	'OPN' - on open.
		'CLS' - on close.
LCM		'MAN' - Output switched directly through 2nd / Switched operating button [3] when 'RL2' or 'RL3' = 'LGT'.
		'2ND' - Output activated/deactivated in line with '2ND' temperature state (on when '2ND' active, off when '2ND' is de-activeate).
		'DI1' - lights activated/deactivated following the 'DI1' state.
		'NI1' - lights activated/deactivated not following the 'DI1' state (as 'DI1' but operating in reverse).
		'DI2' - lights activated/deactivated following the 'DI2' state.
		'NI2' - lights activated/deactivated not following the 'DI2' state (as 'DI2' but operating in reverse).

RL2	Relay 2 output operation.	'NON' - Relay output disabled (always Off/Open).
		'LGT' - Output enabled for light control.
		'0-1' - Relay contacts follow the on/standby state of controller.
		'R1' - Relay output energised in synchronisation with Relay 1 (compressor / heater) incorporating delay '2CD'.
		'R1F' - Relay output energised in synchronisation with Relay 1 (compressor) except during defrost periods.
		'-R1' - Relay output energised in antiphase to Relay 1 (run mode only).
		'FAN' - Output enabled for evaporator fan switching.
		'-FAN' - Relay output energised in antiphase to FAN (run mode only).
		'DEF' - Output enabled for defrost switching.
		'-DEF' - Relay output energised in antiphase to DEF (run mode only).
		'PET' - Relay output energised for time defined in parameter 'PET' before Relay 1 (condensing system) energised.
		'ALO' - Contacts open when an alarm condition occurs.
		'ALC' - Contacts make when an alarm condition occurs.
		'ACP' - Auto Cycle Pattern - during run mode automatically switches relay on ('ACN') and off ('ACF') based on a regular time pattern independent of refrigeration cycle.
RL3	Relay 3 output operation.	Same operations and selection as 'RL2'.
ACN	'When 'RLx' = 'ACP', 'ACN' is the 'ON' time of the Auto Cycle Pattern.	
ACF	'When 'RL' = 'ACP', 'ACF' is the 'OFF' time of the Auto Cycle Pattern.	
PET	Pre-cCondensing system (RL1) energisation of relays 2 / 3 for re-start pressure equalisation. With 'PEt' = '0' RL1 is energised instantly (no delay), with 'PEt' = '0' … '900' RL1 is energised after the set delay. Relay set to 'PEt' is is de-energised with RL1.	
2CD	Auxiliary compressor start delay.	If 'RL1' or 'RL2' = 'R1' the output is switched on with a delay of '2CD' seconds after the main compressor ('RL1') has energised. Relays will be de-energised at the same time.
SDT	Service Countdown Function.	If 'Sdt' = '0' the countdown function is disabled. If 'Sdt' = '1' - '999' the countdown will reduce from the specified value.
SB	Stand-by button enabling.	
BOS	Button Operation Sounder	YES' provides positive feedback (i.e. 'beep') every time a display button is pressed, 'NO' sounder is silencer during display button operation.
RHC	Routine Health Check.	Time period between automatic initiation of Footprint test following a defrost. Used as part of IoT maintenance regime - timer resets on mains power removal ('0' - no health check … time to elapse).
OSA	Probe TAir (T1) offset.	
TE	Probe TEvaporator (T2) enabling.	
OS2	Probe TEvaporator (T2) offset.	

T3A	DI2 / TAuxiliary Probe Enabling and Operation.	'NON' - DI2 / Auxiliary probe not fitted.
		'DSP' - Auxiliary Probe - general purpose temperature measurement (i.e. stored product temperature).
		'CND' - Condenser probe - if measure temperature exceeds value of 'AHT' controller will react as defined by 'AHM'.
		'2EU' - Evaporator second temperature probe.
		'DOR' - Digital Input 2 used for door switch operation.
		'ALR' - Digital Input 2, when the input is 'ON' a High Pressure ('HP') alarm is generated (if 'AHM' = 'STP' the compressor is stopped and the defrosts are suspended).
		'2ND' - Digital Input 2, when the input is 'ON' the controller will use '2nd' Mode parameters.
		'RDS' - Digital Input 2, when the input is 'ON' a defrost is started (by 'remote' control).
OS3	Auxiliary Probe 3 offset.	
D2A	'DI3' activation.	'OPN' - on open.
		'CLS' - on close.
AHM	Operation in alarm when 'T3A' = 'CND'.	'NON' - Audible and visual alarm is inhibited.
		'ALR' - when 'T3A' = 'CND' and temp. > 'AHT' condenser high temperature 'HC' alternates in the display and the alarm sounder is activated.
		'STP' - in addition to the alarm signal, the compressor is stopped and defrosts are suspended.
AHT	Condenser temperature alarm (referring to TAuxiliary probe).	
TLD	Delay for minimum temperature ('TLO') and maximum temperature ('THI') logging.	With 'TLD' = '0' the logging is disabled.
TDS	The temperature probe value to be displayed.	'TA' - actual Tair (T1) value.
		TAS' - actual Tair (T1) value slowed (rate of change toward setpoint = actual value, away from setpoint = mathematical algorithm applied).
		'A-E' - the AVG-weighted average between TAir (T1) and TEvaporator (T2) probes.
		'T3' - TAuxiliary (T3) probe value (when 'T3A' = 'DSP', 'CND' or '2EU').
SIM	Display slowdown.	Active when 'TDS' = 'TAS', the SIM value is the controlling arithmetical value.
AVG	The relative weight of T2 in respect of T1 (when 'TDS' = 'A-E').	
SCL	Readout scale.	'°C' with non adjustable resolution in User Function Menu
		'°C' with adjustable resolution in User Function Menu
		'°F' with non adjustable resolution in User Function Menu
		'°F' with adjustable resolution in User Function Menu
PRT	Modbus communication type.	RTL or ASCII
ADR	FD1-19 address for PC communication.	
RFP	Return to Factory Parameters.	Allow options through 'User Menu' to reset all controller parameters to factory production values (i.e. those programmed via UPS).

Parameter Setting

	Mnemonic:	Default	Single Section High Temperature	Single Section Low Temperature	Double Section High Temperature	Double Section Low Temperature
1	MDL	HY	HY	HY	HY	HY
2	SPL	1	1	-21	1	-21
3	SPH	3	3	-15	3	-15
4	SP	2	2	-21	2	-21
5	HY0	3	3	3	3	3
6	HY1	0	0	0	0	0
7	CMD	30	30	30	30	30
8	CRT	90	90	90	90	90
9	CT1	4	4	4	4	4
10	CT2	7	7	7	7	7
11	DFM	tiM	tiM	tiM	tiM	tiM
12	DFT	6	6	6	6	6
13	DSP	-12	-12	-12	-12	-12
14	DST	15	15	15	15	15
15	DMI	2	2	2	2	2
16	DLI	10	10	20	10	20
17	DTO	20	20	20	20	20
18	DTY	oFF	oFF	GAS	oFF	GAS
19	DSY	oFF	oFF	oFF	oFF	oFF
20	SOD	5	5	5	5	5
21	DPD	0	0	0	0	0
22	DRN	60	60	60	60	60
23	DDM	SP	SP	SP	SP	SP
24	DDY	2	2	2	2	2
25	FID	YES	YES	no	YES	no
26	FDD	0	0	0	0	0
27	FTO	2	2	2	2	2
28	FMS	0	0	0	0	0
29	FSD	0	0	0	0	0
30	FCM	non	non	non	non	non
31	FDT	0	0	0	0	0
32	FDH	2	2	2	2	2
33	FT1	0	0	0	0	0
34	FT2	0	0	0	0	0
35	FT3	0	0	0	0	0
36	ATM	rEL	rEL	rEL	rEL	rEL
37	ALA	-30	-30	-30	-30	-30
38	AHA	80	80	80	80	80
39	ALR	-5	-5	-5	-5	-5
40	AHR	8	8	8	8	8
41	ATI	t1	t1	t1	t1	t1
42	PAD	60	60	60	60	60

	Mnemonic:	Default	Single Section High Temperature	Single Section Low Temperature	Double Section High Temperature	Double Section Low Temperature
43	ATD	90	90	90	90	90
44	ACC	0	0	0	0	0
45	IISM	non	non	non	non	non
46	IISL	-21	-21	-21	-21	-21
47	IISH	-15	-15	-15	-15	-15
48	IISP	-21	-21	-21	-21	-21
49	IIHY	3	3	3	3	3
50	IIFC	non	non	non	non	non
51	IIDF	6	6	6	6	6
52	DSM	StP	StP	StP	StP	StP
53	DAD	2	2	2	2	2
54	CSD	90	90	90	90	90
55	DOT	0	0	0	0	0
56	DI1	dor	dor	dor	dor	dor
57	D1A	oPn	oPn	oPn	oPn	oPn
58	LCM	non	non	non	non	non
59	RL2	FAn	FAn	FAn	FAn	FAn
60	RL3	0-1	0-1	dEf	0-1	dEf
61	ACN	0	0	0	0	0
62	ACF	0	0	0	0	0
63	PET	0	0	0	0	0
64	2CD	0	0	0	0	0
65	SDT	0	0	0	0	0
66	SB	YES	YES	YES	YES	YES
67	BOS	YES	YES	YES	YES	YES
68	RHC	0	0	0	0	0
69	OSA	0	0	0	0	0
70	TE	NO	NO	YES	NO	YES
71	OSE	0	0	0	0	0
72	T3A	non	non	non	dor	dor
73	OS3	0	0	0	0	0
74	D3A	oPn	oPn	opn	oPn	opn
75	AHM	non	non	non	non	non
76	AHT	60	60	60	60	60
77	TLD	30	30	30	30	30
78	TDS	TAS	TAS	TAS	TAS	TAS
79	SIM	10	10	10	10	10
80	AVG	50	50	50	50	50
81	SCL	oCn	oCn	oCn	oCn	oCn
82	PRT	rtU	rtU	rtU	rtU	rtU
83	ADR	1	1	1	1	1
84	RFP	YES	YES	YES	YES	YES

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 it should be. Ensure that the door is closed and that the air flow inside is not obstructed by excesive or poor loading of product. The alarm will reset if the temperature falls to a normal level.

Lo - The internal temperature of the appliance is lower than it should be. Check to ensure that the appliance has not been loaded with product at a lower temperature than the normal appliance operating temperature.

dO - The appliance door is open. Close the door to cancel the alarm. Note - the door switch is a magnetic switch located in the bottom edge of the front cover. If the cover is hinged up or removed for access purposes, the door switch will not function and the door open alarm will be displayed.

tA - This indicates that the internal temperature probe has failed. During this time the appliance cannot maintain an accurate temperature and all product should be removed and the appliance switched off.

tE - This indicates that the evaporator probe has failed.

PF - The mains power has been removed from the appliance for a period of time and has now been restored. This may have resulted in a rise in appliance temperature. Caution should be taken when using products stored within to ascertain whether these products are suitable for use. Upon restoration of the power supply the appliance will resume normal operation and the PF can be cancelled by pressing button 1 once.

hc - The condenser temperature is higher than it should be. If the appliance is being subjected to particularly high ambient temperatures steps should be taken to reduce this.

Cnd - The condenser clean period has expired.

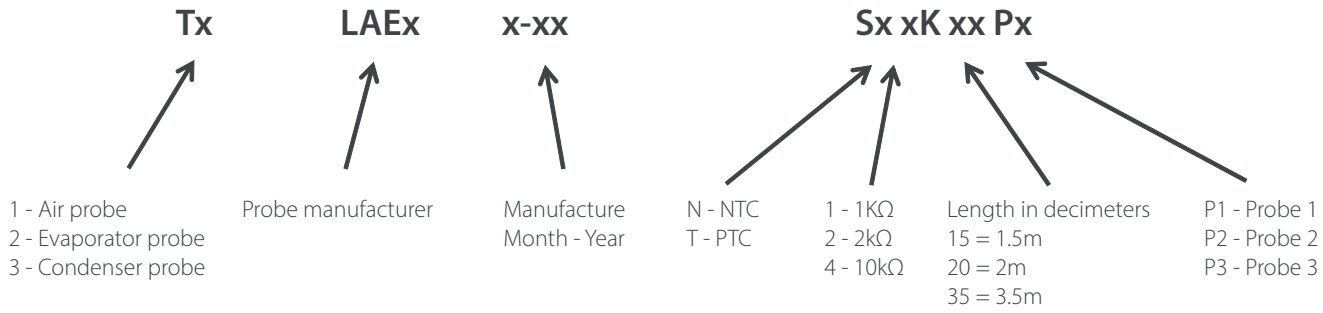
While in an alarm condition icon 'a' will also be illuminated. The audible alarm can be muted temporarily by pressing button 1.

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

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 Indentification



Probe Resistance

NTC10K Temperature Resistance Table **SN4K**

TEMP. (°C)	R-low (kΩ)	R-mid (kΩ)	R-high (kΩ)
-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.

XR600H	117gms
XR600L	120gms
XR1300H	150gms
XR1300L	150gms

Door Switch

The appliance is fitted with a magnetic door switch located in the underside of the front cover. Where the door switch is open and following the time set in parameter 'DAD', the controller will indicate 'do' and an alarm will sound. At the point the door is opened the evaporator fan(s) will stop and following the time set in parameter 'cSd' relay 1 will open until such time as the door is closed.

Defrost Indication

During defrost icon 'c' 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 1 for 5 seconds. This will turn off the appliance. Continue to hold down button 1 after the appliance has turned off. After a further 2 seconds the display will indicate a defrost has commenced (icon 'c' illuminated) and the button can be released. While the defrost function is operating icon 'c' will be illuminated and icon 'g' will flash.

Where parameter 'tE' is set to 'YES' the defrost will operate until the temperature set in parameter 'dLi' or the time set in parameter 'dto' is reached. Where parameter 'tE' is set to 'no' the defrost will operate until the time set in parameter 'dto' is reached. Upon completion of the defrost cycle the appliance will resume normal operation with the current temperature displayed.

The defrost will operate for it's full duration, it is not possible to cancel a defrost when it has started.

Relay Test

The controller contains a relay test function to enable the service engineer to operate individual relays, or a combination of relays for diagnostic purposes.

To access the relay test:

Press and hold buttons 2 and 4 for 5 seconds untilt he display shows 'rL1'. Note - after 3 seconds the display will show 'MdL', continue to hold the buttons while this is displayed.

The controller is now in relay test mode.

Select the relay to test by using buttons 2 and 4. When relay 1 is selected the display will show 'rL1' and icon 'a' will flash. This is repeated for relays 2 and 3 with icons 'b' and 'c'.
To activate relay 1 press button 1. Icon 'a' will illuminate. To deactivate relay 1 press button 1 again and icon 'a' will flash.
To activate the selected relay press button 1. To deactivate the selected relay press button 1 again.
When a relay is active the relevant icon (a, b or c) will be illuminated.

Multiple relays can be activated simultaneously to enable diagnostics.

Relay function:

Relay 1 - Icon 'a' - Compressor.
Relay 2 - icon 'b' - function determined by parameter 'rL2'. Evaporator Fan.
Relay 3 - icon 'c' - function determined by parameter 'rL3'. Where appliance has an active defrost rL3 to will be set to 'dEF'.

To exit the relay test function press button 3 once.

If no buttons are pressed for 30 seconds the controller will exit the relay test function and return to normal operation.

Factory Reset

Where the controller was originally programmed by Foster and is dedicated to a specific appliance type it is possible to return the setting to they're original programmed state. If the controller was not programmed by Foster this function will return the parameters to the values in the original factory settings.

To reset the parameters:

- Press and hold button 2 for 3 seconds until the display shows 'SP'.
- Press button 4 twice to display 'rFP'.
- Press button 1 once and 'rFP' will flash.
- Press and hold buttons 2 and 4 for 3 seconds until the display shows 'End' and the display returns to the displaying the current temperature.

The original parameters as described above have now been restored.

If at any point the sequence of button operations and display indications are not completed the controller will, after 30 seconds resume operation with no changes to the parameters having been made.

3 Maintenance

Cleaning

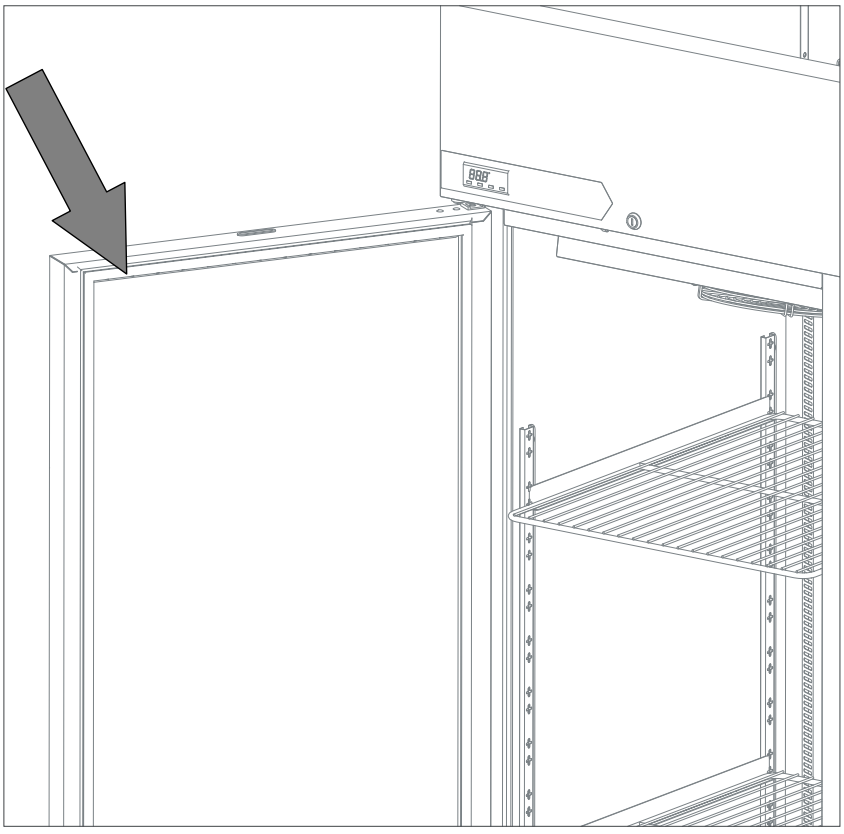
Condenser

Regular cleaning of the condenser (located behind the front cover) increases energy efficiency and prolongs the life of your appliance.

Never use a wire brush, abrasive or corrosive materials to clean the condenser. This should be carried out periodically, by a competent engineer as outlined in the Regular Maintenance section of this manual.

Gasket

All door gaskets should be inspected on a regular basis and replaced as necessary if damaged. To clean, wipe with a warm damp soapy cloth followed by a clean damp cloth. Finally dry thoroughly.

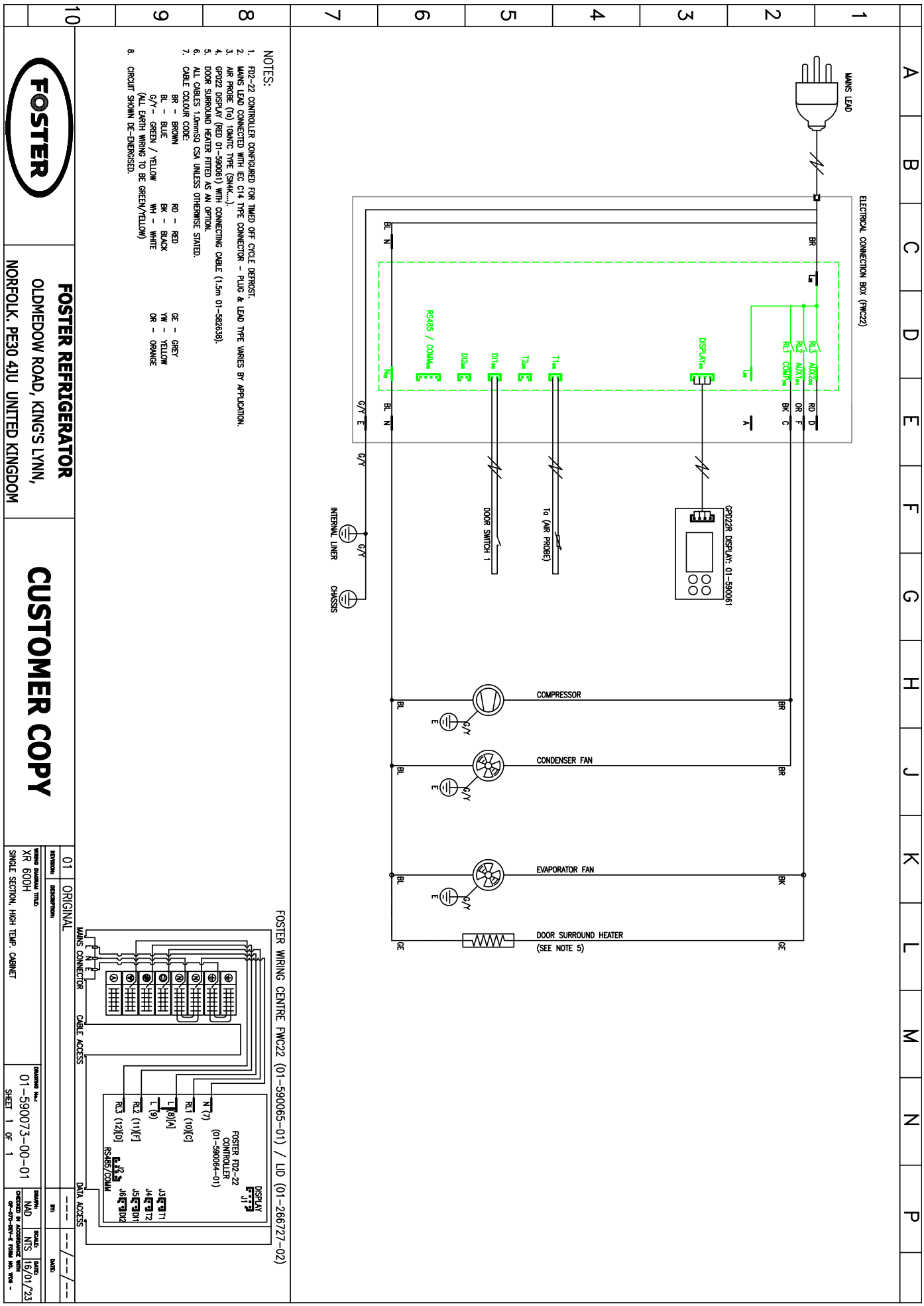


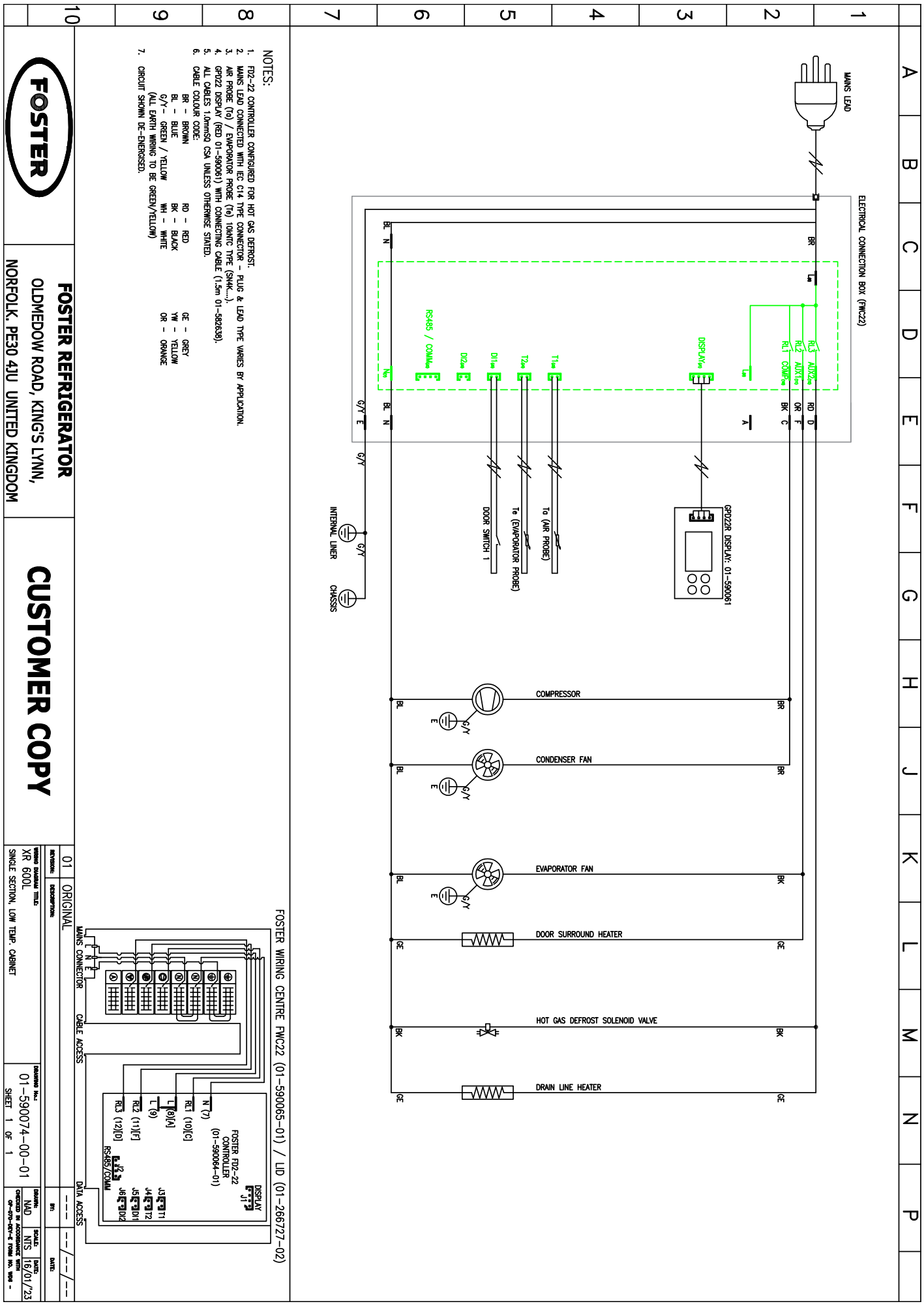
Shelves and Trayslides

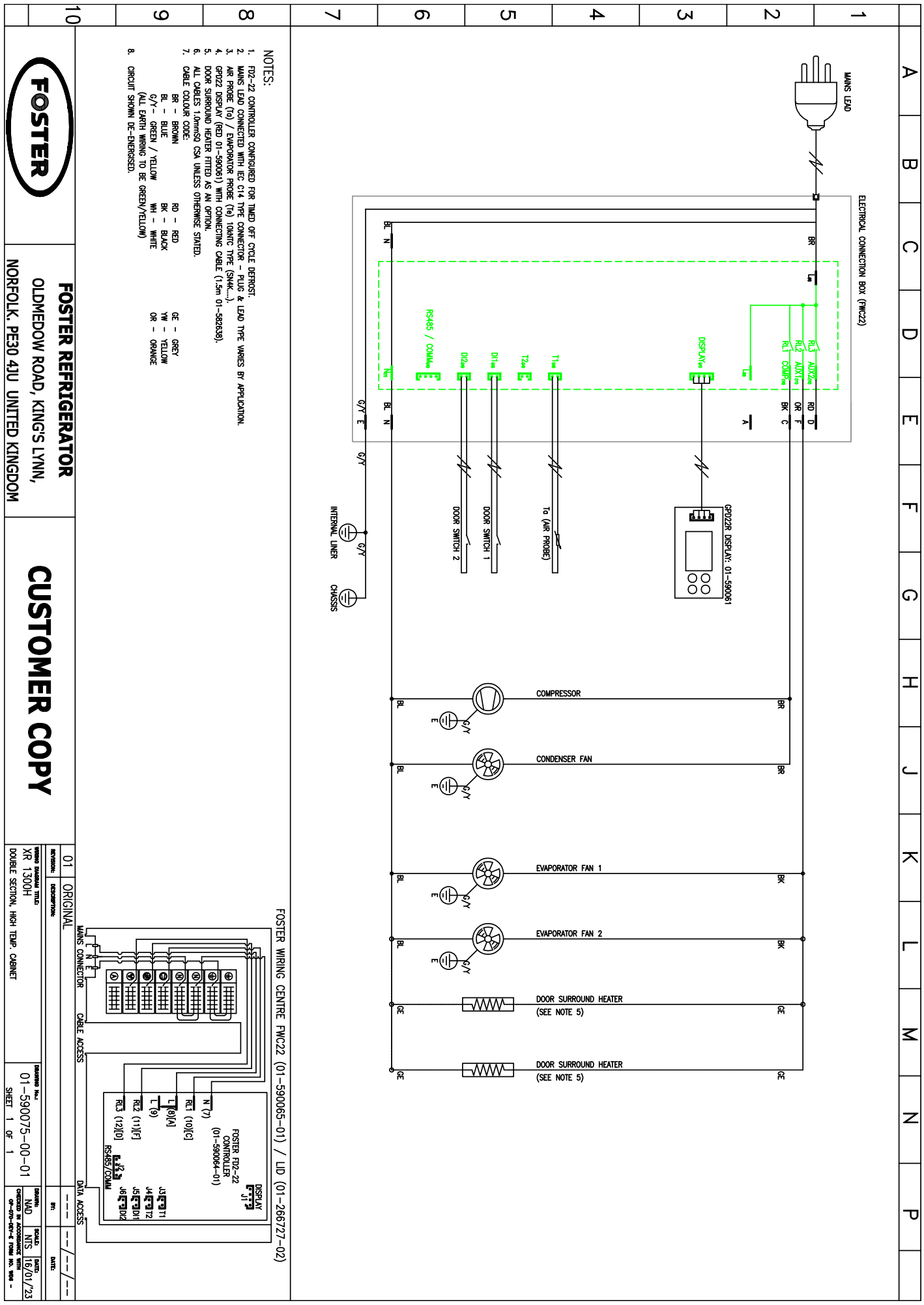
The shelves and trayslides in the appliance can be removed for cleaning. The shelves are dishwasher safe however the vertical supports and trayslides should be cleaned with warm soapy water then rinsed and dried.

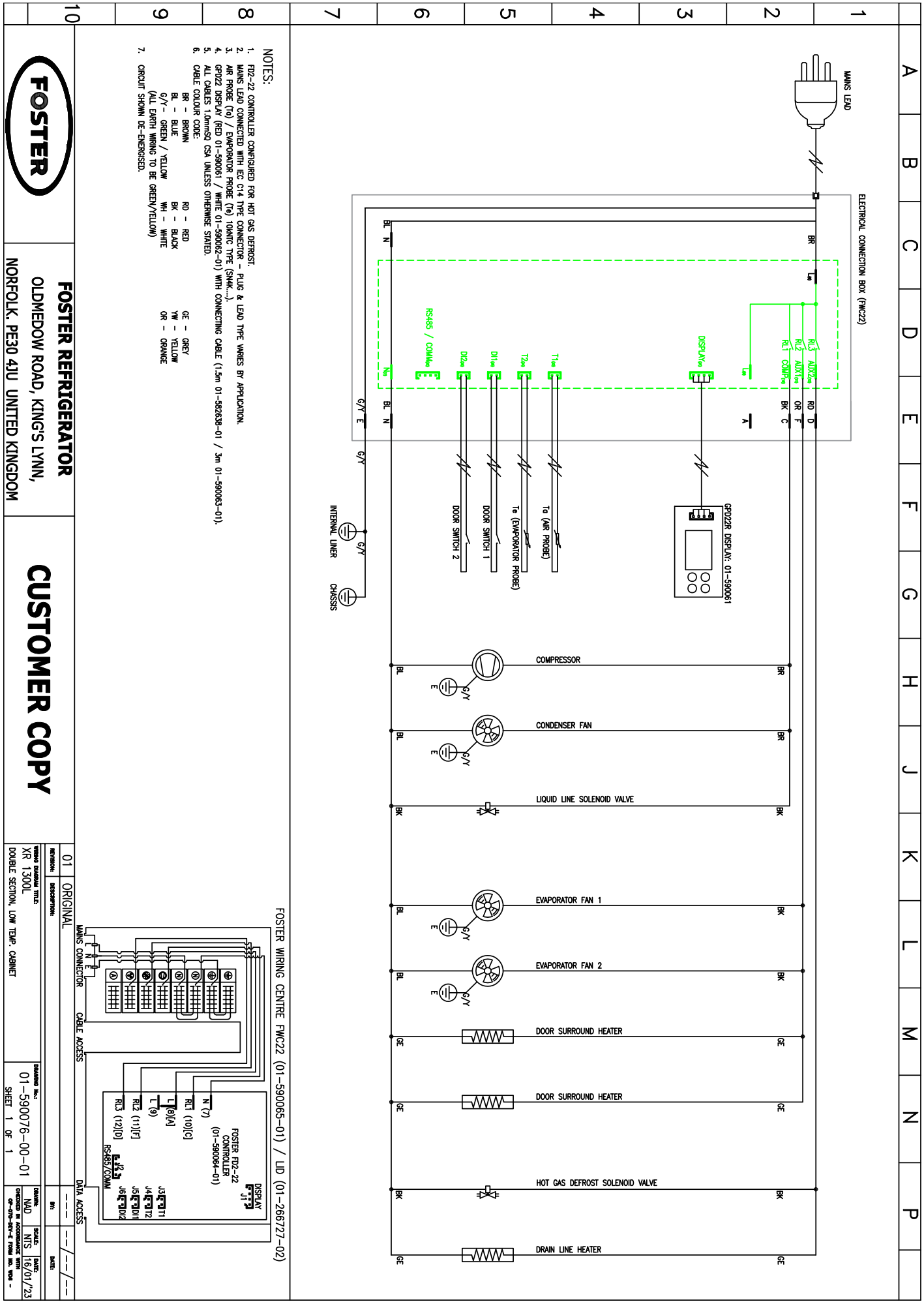
Wiring Diagrams

XR600H




MAINS LEAD
ELECTRICAL CONNECTION BOX (FWC22)
GPD22R DISPLAY: 01-590061
DOOR SWITCH 1
To (EVAPORATOR PROBE)
To (AIR PROBE)
INTERNAL LINER
CHASSIS
COMPRESSOR
CONDENSER FAN
EVAPORATOR FAN
DOOR SURROUND HEATER
HOT GAS DEFROST SOLENOID VALVE
DRAIN LINE HEATER
RS485 / COMM
NOTES:
1. FD2-22 CONTROLLER CONFIGURED FOR HOT GAS DEFROST.
2. MAINS LEAD CONNECTED WITH IEC C14 TYPE CONNECTOR - PLUG & LEAD TYPE VARIES BY APPLICATION.
3. AIR PROBE (To) / EVAPORATOR PROBE (Te) 10KNTC TYPE (SN4K....).
4. GPD22 DISPLAY (RED 01-590061) WITH CONNECTING CABLE (1.5m 01-582638).
5. ALL CABLES 1.0mmSQ CSA UNLESS OTHERWISE STATED.
6. CABLE COLOUR CODE:
BR - BROWN RD - RED
BL - BLUE BK - BLACK
G/Y - GREEN / YELLOW WH - WHITE
(ALL EARTH WIRING TO BE GREEN/YELLOW)
GE - GREY
YW - YELLOW
OR - ORANGE
7. CIRCUIT SHOWN DE-ENERGISED.
FOSTER WIRING CENTRE FWC22 (01-590065-01) / LID (01-266727-02)
MAINS CONNECTOR
CABLE ACCESS
DISPLAY J1
FOSTER FD2-22 CONTROLLER (01-590064-01)
RS485/COMM
DATA ACCESS
FOSTER REFRIGERATOR
OLDMEDOW ROAD, KING'S LYNN,
NORFOLK, PE30 4JU UNITED KINGDOM
CUSTOMER COPY
01 ORIGINAL
XR 600L
SINGLE SECTION, LOW TEMP. CABINET
01-590074-00-01
SHEET 1 OF 1
NTS
16/01/23


MAINS LEAD
ELECTRICAL CONNECTION BOX (FWC22)
GPD22R DISPLAY: 01-590061
DOOR SWITCH 2
DOOR SWITCH 1
To (AIR PROBE)
INTERNAL LINER
CHASSIS
COMPRESSOR
CONDENSER FAN
EVAPORATOR FAN 1
EVAPORATOR FAN 2
DOOR SURROUND HEATER
(SEE NOTE 5)
DOOR SURROUND HEATER
(SEE NOTE 5)
NOTES:
1. FD2-22 CONTROLLER CONFIGURED FOR TIMED OFF CYCLE DEFROST.
2. MAINS LEAD CONNECTED WITH IEC C14 TYPE CONNECTOR - PLUG & LEAD TYPE VARIES BY APPLICATION.
3. AIR PROBE (To) / EVAPORATOR PROBE (Te) 10KNTC TYPE (SN4K....).
4. GPD22 DISPLAY (RED 01-590061) WITH CONNECTING CABLE (1.5m 01-582638).
5. DOOR SURROUND HEATER FITTED AS AN OPTION.
6. ALL CABLES 1.0mmSQ CSA UNLESS OTHERWISE STATED.
7. CABLE COLOUR CODE:
BR - BROWN
BL - BLUE
G/Y - GREEN / YELLOW
(ALL EARTH WIRING TO BE GREEN/YELLOW)
RD - RED
BK - BLACK
WH - WHITE
GE - GREY
YW - YELLOW
OR - ORANGE
8. CIRCUIT SHOWN DE-ENERGISED.
FOSTER WIRING CENTRE FWC22 (01-590065-01) / LID (01-266727-02)
MAINS CONNECTOR
CABLE ACCESS
DISPLAY J1
FOSTER FD2-22 CONTROLLER (01-590064-01)
DATA ACCESS
RS485/COMM
FOSTER REFRIGERATOR
OLDMEDOW ROAD, KING'S LYNN,
NORFOLK. PE30 4JU UNITED KINGDOM
CUSTOMER COPY
01 ORIGINAL
XR 1300H
DOUBLE SECTION, HIGH TEMP. CABINET
01-590075-00-01
SHEET 1 OF 1
NAD
NTS
16/01/23


MAINS LEAD
ELECTRICAL CONNECTION BOX (FWC22)
GP022R DISPLAY: 01-590061
DOOR SWITCH 2
DOOR SWITCH 1
To (EVAPORATOR PROBE)
To (AIR PROBE)
INTERNAL LINER
CHASSIS
COMPRESSOR
CONDENSER FAN
LIQUID LINE SOLENOID VALVE
EVAPORATOR FAN 1
EVAPORATOR FAN 2
DOOR SURROUND HEATER
DOOR SURROUND HEATER
HOT GAS DEFROST SOLENOID VALVE
DRAIN LINE HEATER
NOTES:
1. FDZ-22 CONTROLLER CONFIGURED FOR HOT GAS DEFROST.
2. MAINS LEAD CONNECTED WITH IEC C14 TYPE CONNECTOR - PLUG & LEAD TYPE VARIES BY APPLICATION.
3. AIR PROBE (To) / EVAPORATOR PROBE (Te) 10KNTC TYPE (SN4K....).
4. GP022 DISPLAY (RED 01-590061 / WHITE 01-590062-01) WITH CONNECTING CABLE (1.5m 01-582638-01 / 3m 01-590063-01).
5. ALL CABLES 1.0mmSQ CSA UNLESS OTHERWISE STATED.
6. CABLE COLOUR CODE:
BR - BROWN
BL - BLUE
G/Y - GREEN / YELLOW
(ALL EARTH WIRING TO BE GREEN/YELLOW)
RD - RED
BK - BLACK
WH - WHITE
GE - GREY
YW - YELLOW
OR - ORANGE
7. CIRCUIT SHOWN DE-ENERGISED.
FOSTER WIRING CENTRE FWC22 (01-590065-01) / LID (01-266727-02)
MAINS CONNECTOR
CABLE ACCESS
DISPLAY J1
FOSTER FDZ-22 CONTROLLER (01-590064-01)
RS485/COMM
DATA ACCESS
FOSTER
FOSTER REFRIGERATOR
OLDMEDOW ROAD, KING'S LYNN,
NORFOLK. PE30 4JU UNITED KINGDOM
CUSTOMER COPY
01 ORIGINAL
WIRING DIAGRAM TITLE:
XR 1300L
DOUBLE SECTION, LOW TEMP. CABINET
DRAWING No.:
01-590076-00-01
SHEET 1 OF 1
DRAWN:
NAD
SCALE:
NTS
DATE:
16/01/23

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

FOSTER
The Refrigeration Experts

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