C

MIURA

h = 2000 - 2200

instructions for installation

Document number: SM00332V
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The wiring diagrams and setting specifications are contained in the display case, together with the "Instructions for use"

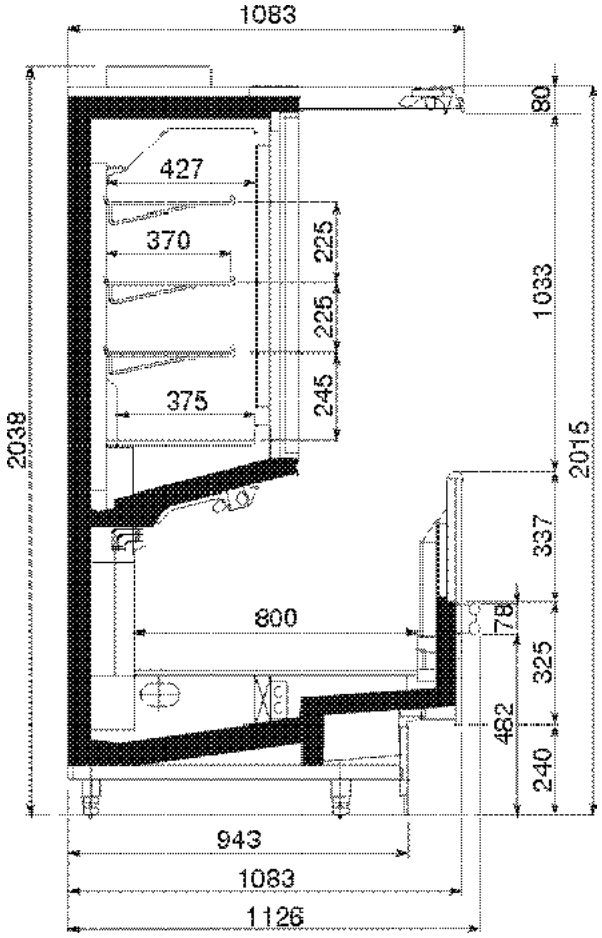
KEY

"-" First issue

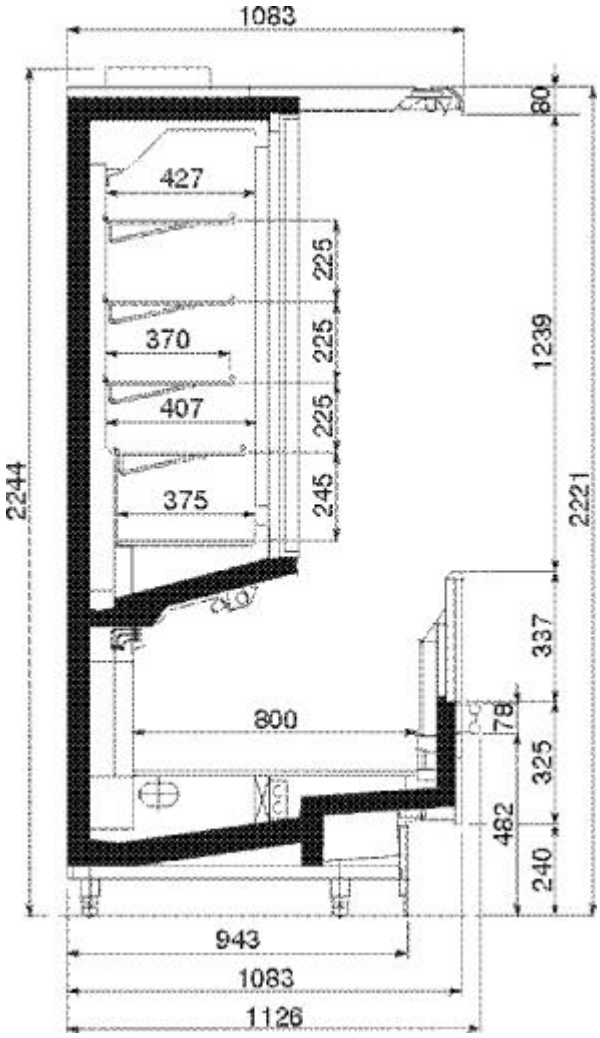
A, B, C..... Chapter revision index

AA, BB, CC.. General revision index of document

MIURA LG300 2000/2200
- cross sections -

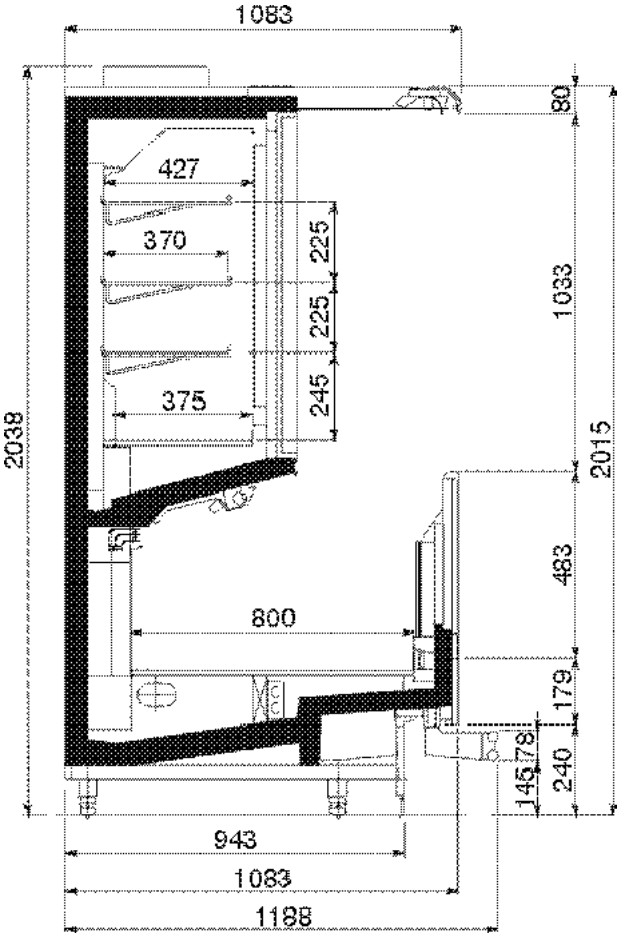


MIURA LG300
h = 2000

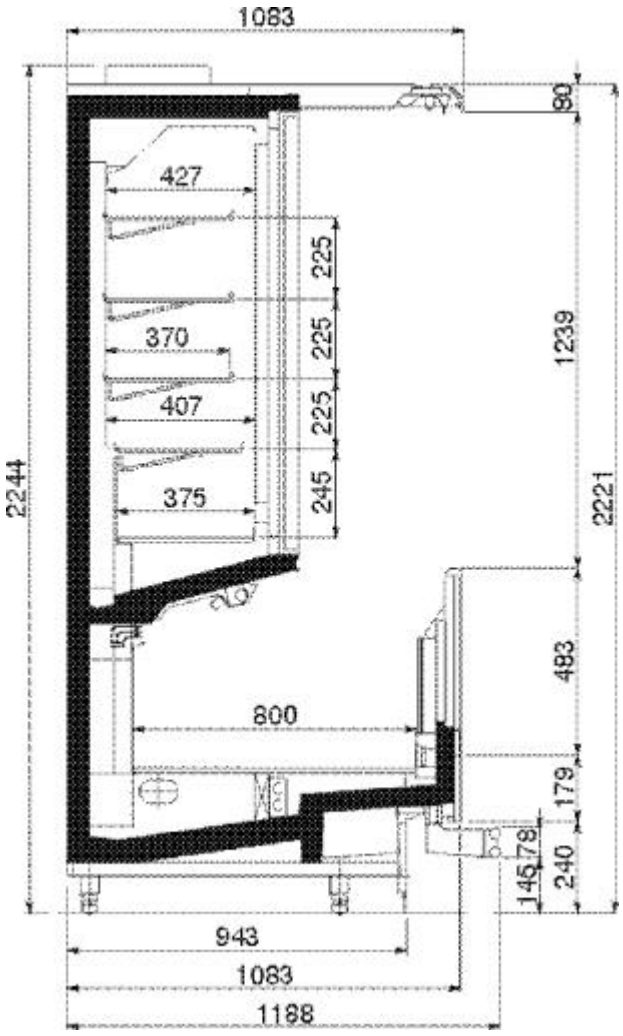


MIURA LG300
h = 2200

MIURA HG350 2000/2200
- cross sections -



MIURA HG350
h = 2000



MIURA HG350
h = 2200

FOREWORD: In accordance with the standards for electric systems, the appliance must be connected to a multipolar cutoff device with contact openings of at least 3 mm.

PRINCIPLE OF OPERATION OF TERMINAL-BOARD CASES

THE SHOWCASE MUST BE CONSIDERED AS FORMED BY TWO SEPARATE ELECTRIC SYSTEMS, BASE AND SUPERSTRUCTURE, WITH TWO SEPARATE REFRIGERANT SUPPLY SYSTEMS AND THEREFORE DIFFERENT ADJUSTMENT PARAMETERS.

The terminal-board models of MIURA refrigerated cabinets with horizontal and vertical display for the preservation of frozen food, are offered in two versions: with electric or gas defrost system. A pressure gauge connection mounted on the suction line, outside the cabinet and two pressure gauge valves on the evaporator suction line of base and superstructure are standard-supplied. A separate filter drier is also supplied, which is to be installed on the discharge line.

Evaporator fans: base evaporators must work at all times, on the contrary, superstructure evaporators stop during defrosting and restart with a certain delay after compressor cut-in.
NOTE: on HG350 versions, base evaporators remain off for ten minutes after defrosting, i.e. during operation of the defrost heating elements located at the air inlet (see diagram of next page).

Demist heating elements: they must work at all times, except for the demist heating elements of roof panels, which will go on when lights go off. These cabinets are actually provided with a roof heating system that works when lights are off (night time). This avoids frost building up due to frequent door opening.

Defrosting: electric for both base and superstructure. The remote electrical board causes defrosting by providing 12V ac to terminals 11 and 12 of the telethermostat (see running diagrams). Voltage is taken from the transformer that powers the thermostat.

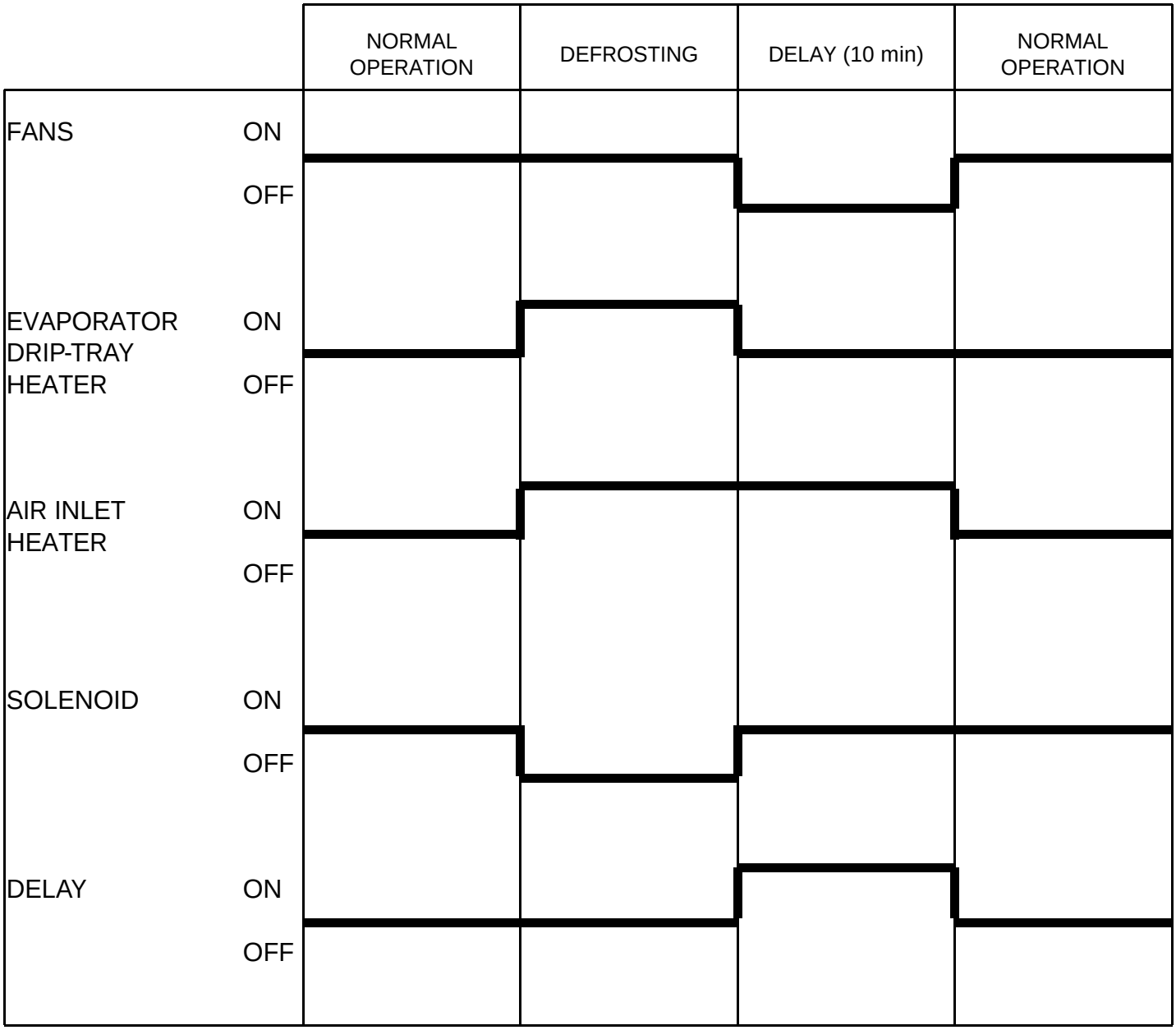
Control of functions

MIURA terminal-board versions include two DANFOSS telethermostats that govern the functions relating to temperature regulation, defrost-end and alarms of both base and superstructure. The superstructure telethermostat controls also fan operation. Ventilation is stopped during defrosting and it is started again as soon as the evaporator has reached the appropriate temperature.
The DANFOSS telethermostats control cabinet functions by the aid of three ptc probes: probe “T1” measures air temperature and acts in the main thermostatic cycle, probe “T2” measures evaporator temperature for the purposes of ruling the defrost cycles, whilst probe “T3”, which is located at the air inlet, measures and displays the temperature. The position of probe “T3” causes the display of the highest temperature inside the case.

Timer: it is advisable to set the timer following the information contained in the tables of chapter 060.10

Electrical connections: perform electrical connections following the running and terminal board diagrams appearing in this manual.

DELAY DIAGRAM FOR BASE HG350



PRINCIPLE OF OPERATION OF CABINETS WITH BUILT-IN MASTER / SLAVE ELECTRIC SYSTEM

1) MAIN REQUIREMENTS

Factory-cabled electric system with quick case-to-case connections.

Showcase runs may be supplied power through one single-phase or three-phase cable, subject to the climatic class of the appliance being M or L.
Temperature and defrost control through a DANFOSS telethermostat; local or remote-transmitted temperature alarm.
Serial connection for remote surveillance available.

2) CABINETS

Cabinets can be either MASTER or SLAVE. Cabinet runs are made up of MASTER + SLAVE appliances in any of the following configurations:

A) SINGLE MASTER
B) MASTER + SLAVE
C) MASTER + SLAVE + SLAVE (max. 3 cabinets).

MASTER CABINETS

Featuring a main electrical board complete with:

Mains switch, magnetothermal switch for the power line, magnetothermal switch for the lighting line, contactors and relays for the distribution of signals and commands, terminal board for the connection of the equipment. Thanks to its specifications and dimensions, the main electrical board can be installed aboard the MASTER cabinet.

DANFOSS telethermostat for the control of functions, including probes, terminal board for connection of the equipment to be fed, multipolar connectors for connection to the SLAVE cabinet.

SLAVE CABINETS

Featuring an electrical board complete with:

DANFOSS telethermostat for the control of functions, including probes, terminal board for connection of appliances to be fed, multipolar connector for connection to the MASTER cabinet.

3) CONNECTION BETWEEN MASTER AND SLAVE CABINETS

Available connection methods:

- through polarised connectors (i.e. that can be connected in one direction only, so that wrong connection is impossible).

- through address connections (signals between Master and Slave cabinets, by means of polarised plug-in terminals).

4) PROGRAMMING OF PARAMETERS AND MANAGEMENT OF A CABINET RUN

The basic cabinet parameters, e.g. number of defrost events, defrost method or thermostat differential, are factory-programmed.

NOTE: all MASTER-SLAVE CABINETS include a solenoid valve.

DANFOSS TELETHERMOSTAT

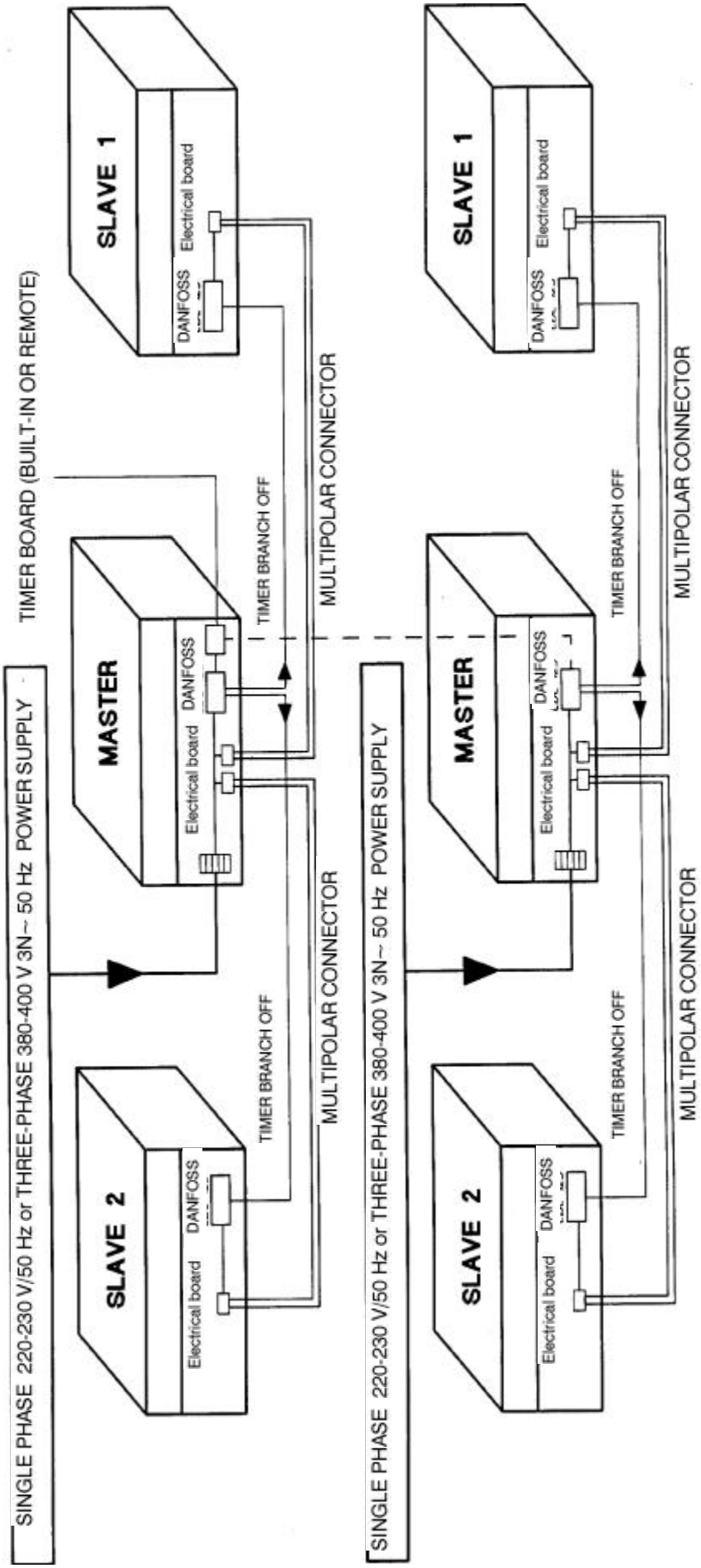
The MASTER-SLAVE electrical configuration for high and low-temperature applications envisages the use of a DANFOSS electronic controller, which is applied to all sections (either MASTER or SLAVE) and governs refrigeration, defrost-end (for electric and hot gas defrost) and temperature alarm by the use of three probes.

A probe termed “T1” measures air temperature and acts in the thermostatic cycle, a “T2” probe measures evaporator temperature for the regulation of defrost cycles and a “T3” probe gauges and reads the temperature in a certain position.

The defrost-start signal is transmitted simultaneously to the controllers belonging to MASTER and SLAVE sections from a unified timer board or similar device which as a rule is located on the MASTER section.

NO-UNIT CABINETS

MASTER-SLAVE SYSTEM DIAGRAM

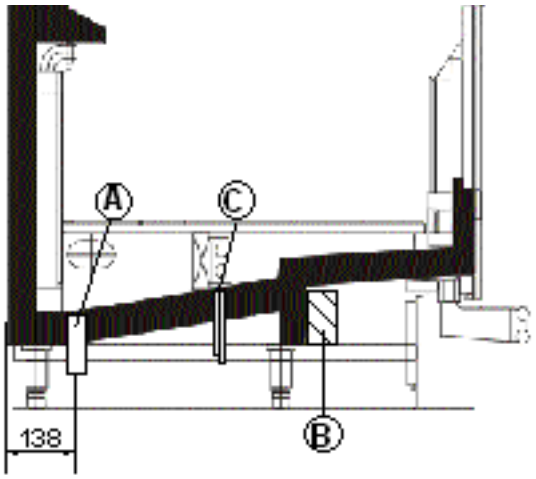


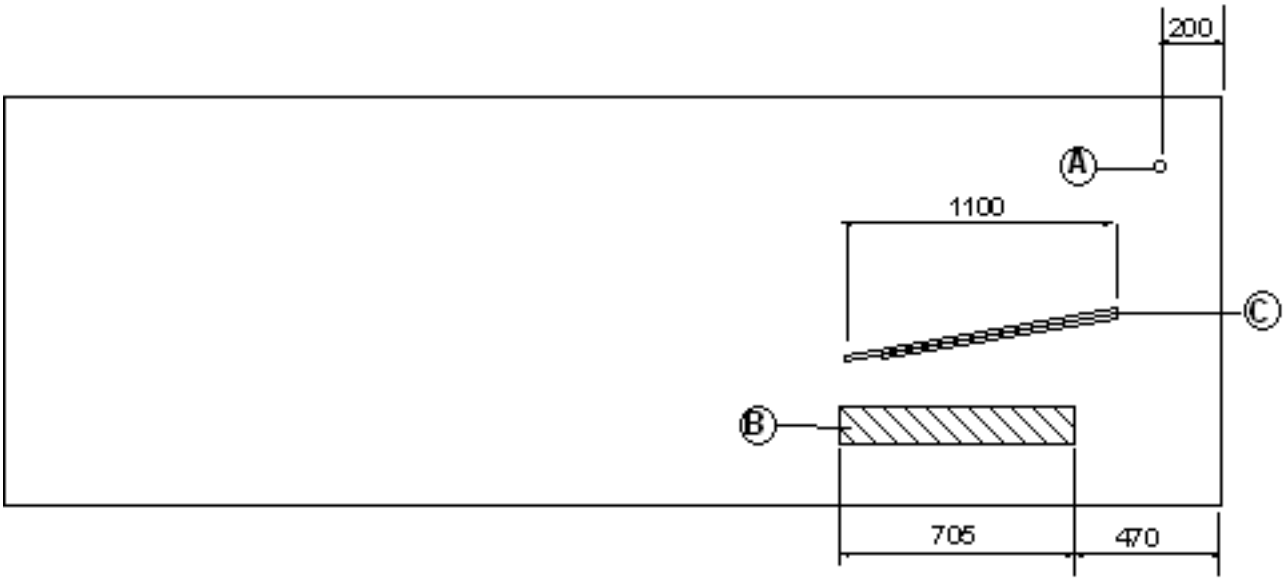
MIURA

A WATER DRAIN
B ELECTRIC CONNECTION
C FREON CONNECTION
(lead-in pipes ø=10 mm
lead-out pipes ø=20 mm)

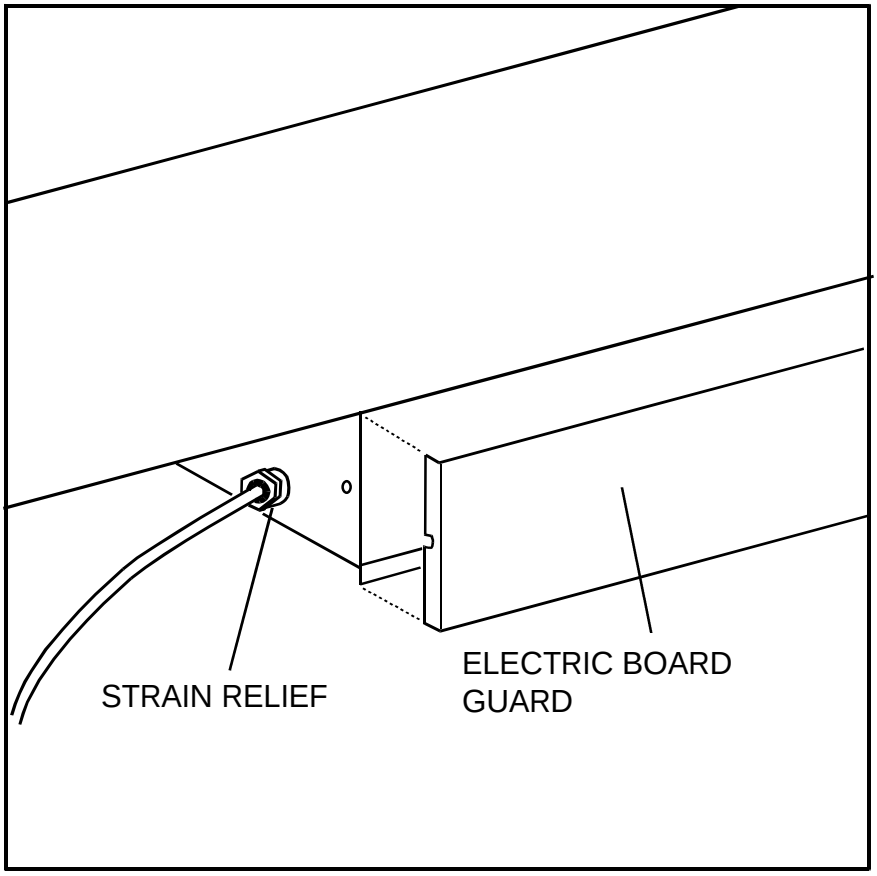
NOTE: MAKE SURE THAT THE FILTER DRYER SUPPLIED WITH THE FITTINGS BOX IS INSTALLED ON THE DISCHARGE PIPES.

IMPORTANT: BE SURE THAT THE AD-HOC SUPPLIED U-TRAP IS INSTALLED ON THE DRAIN. SHOULD IT BE UNAVAILABLE, INSTALL A PROPER U-TRAP THAT MAY ENSURE THAT AIR DOES NOT ENTER OR EXIT THE DRAIN PIPE.

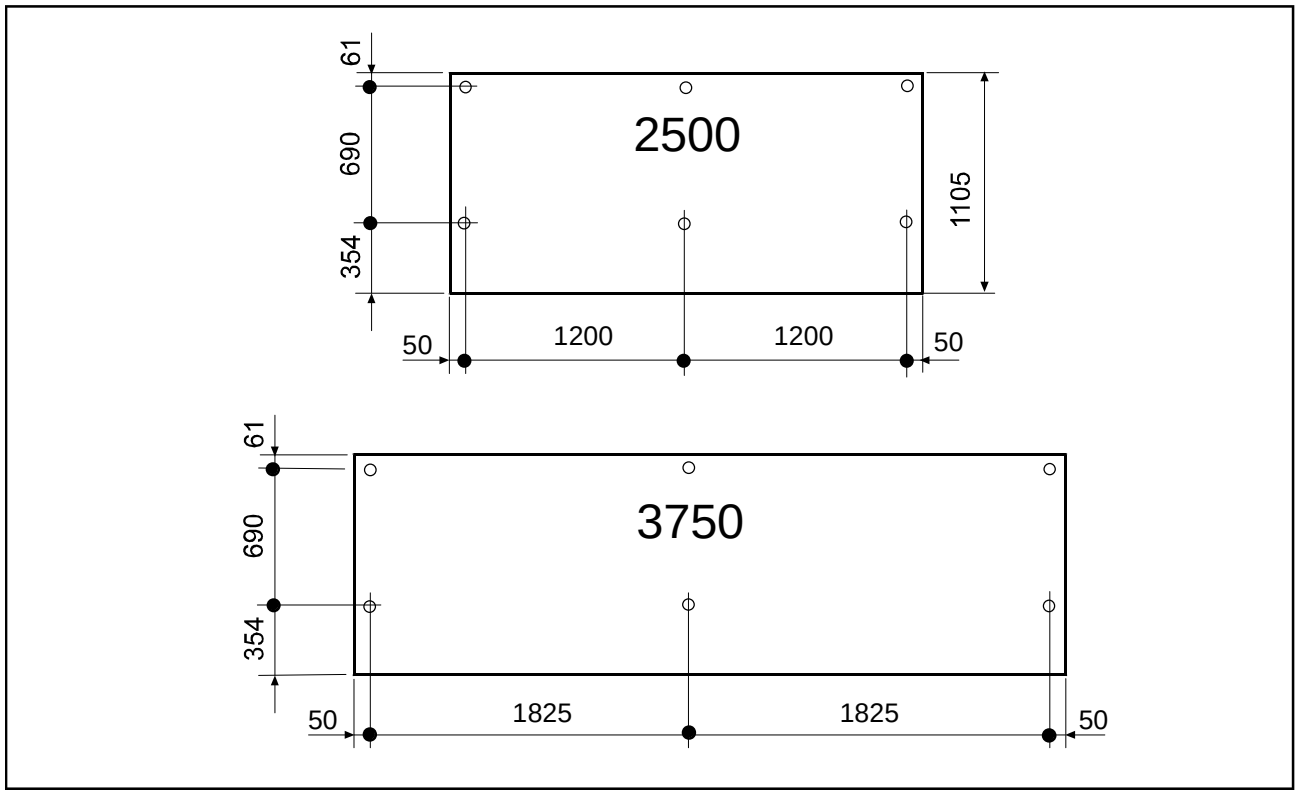




IMPORTANT: should there be a master electrical board, make sure that the electrical board guard is installed and that power supply cables are provided with a strain relief device and a seal whose size is adequate for the outer diameter of the cable.

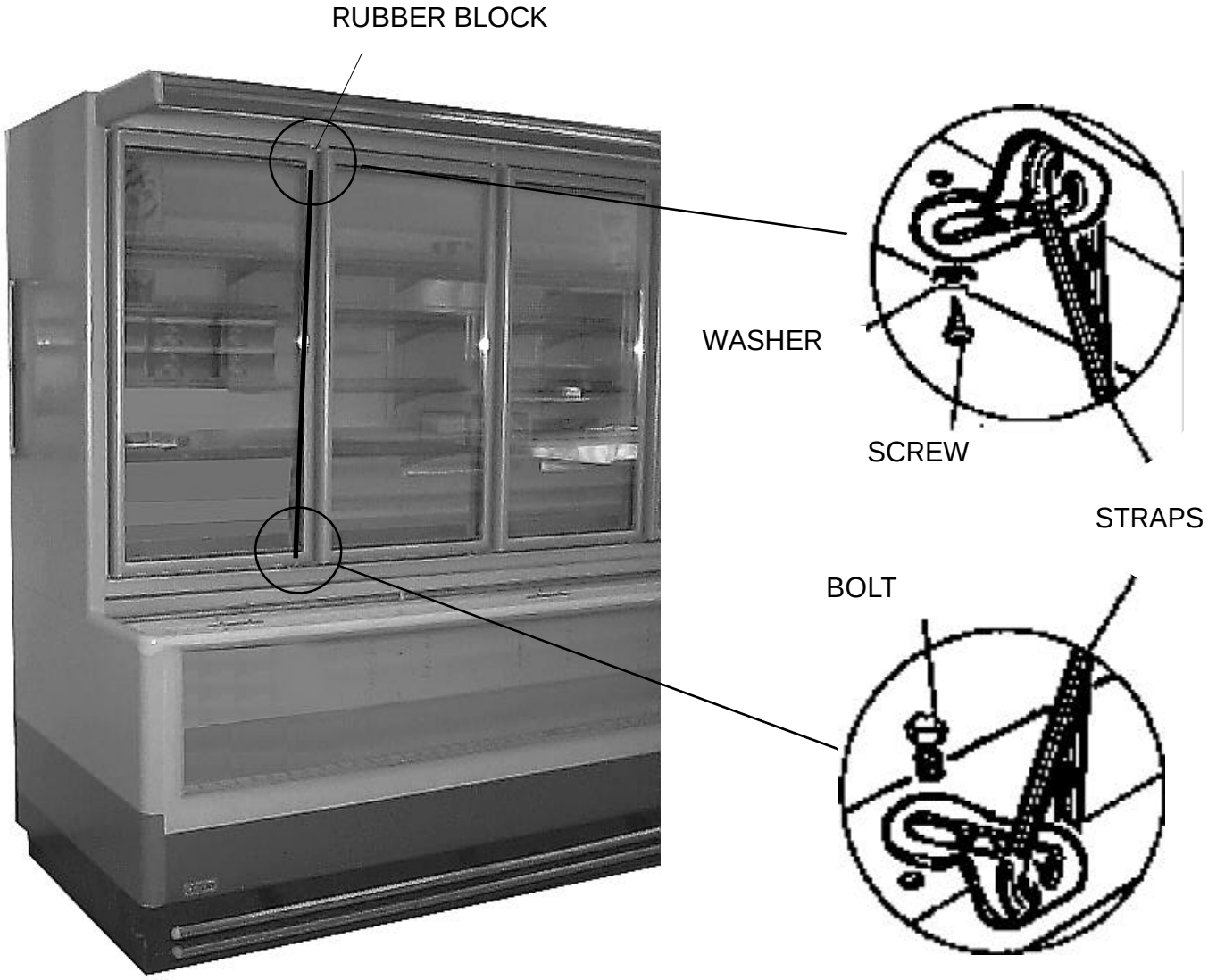


MIURA - POSITION OF FEET



HOW TO UNPACK THE DOORS

1) Cut all straps.
2) Remove the rubber blocks holding the upper part of the doors. Open the doors, find the transparent envelope containing the plastic plugs, which is stuck to the glazing inside the superstructure. Detach the envelope and put it aside.
3) Unscrew the bolts fastening the straps down low and place the plastic plugs in the holes.
4) Unscrew the screws fastening the straps at the top of the frame. Remove the straps and then put the screws back in their original position (they are aimed to fasten the frame too).
Note: In order not to jeopardise the stability of the frame, the above instructions must be carried by steps, removing a single screw and putting it back after the strap has been withdrawn and before another screw is removed.



MULTIPLEXING AND COMPLETING LINEAR CABINETS

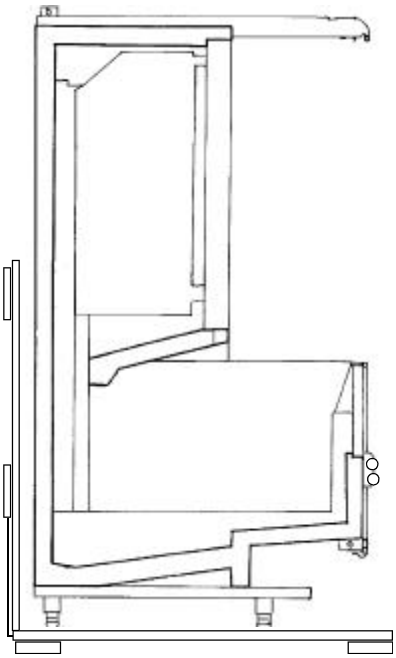
010 UNPACK THE CABINETS
020 REMOVE FRONT RISERS, REAR INNER PANELS AND BOTTOM PLATES
030 POSITION THE FIRST CABINET
040 APPLY SPONGE RUBBER
050 SILICONE THE SIDE THE SIDE TO BE MULTIPLEXED
060 BRING THE CABINET TO BE MULTIPLEXED NEAR THE FIRST CABINET
070 SECURE THE CABINETS TO ONE ANOTHER
080 INSTALL SUPERSTRUCTURE JOINT COVERS
090 MOUNT THE HANDRAILS
100 REASSEMBLE THE CABINETS
110 INSTALL BASE PLINTHS
120 SECURE BOTTOM PLATES
130 MOUNT GROUND BUMPER RAILS
140 MOUNT PLASTIC ONBOARD BUMPER RAILS

ATTENTION!

ALL MULTIPLEXING AND COMPLETING STEPS, AS WELL AS ALL MAINTENANCE OPERATIONS MUST BE CARRIED OUT WHILE WEARING PADDED HEAVY-DUTY GLOVES.

010 UNPACK THE CABINETS

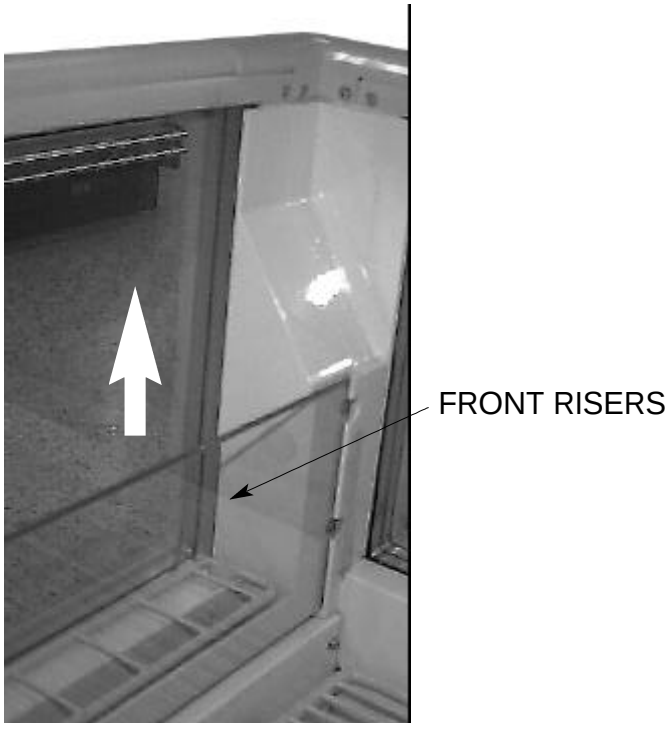
Unpack the cabinets with care in order to prevent scratching or denting them.

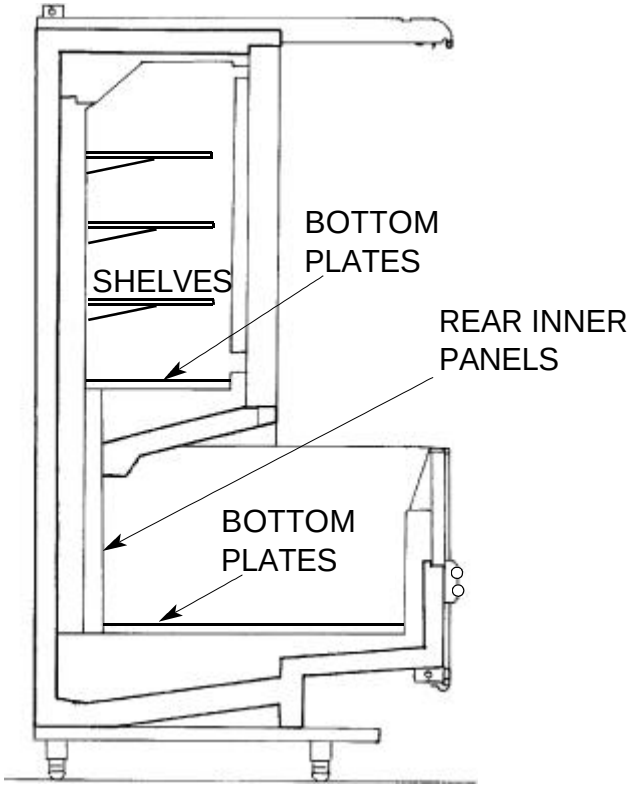


020 REMOVE FRONT RISERS, REAR INNER PANELS AND BOTTOM PLATES

Withdraw the front risers on the side to be multiplexed.

Remove rear inner panels and bottom plates from the chest side to be multiplexed. Again, on the multiplexing side, remove superstructure shelves.



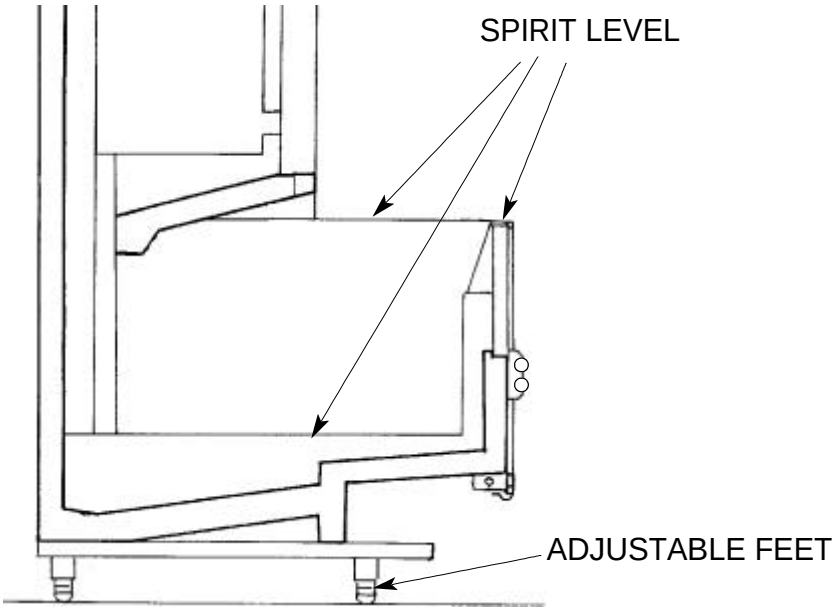


030 POSITION THE FIRST CABINET

Bring the cabinet wherever this is to be installed.

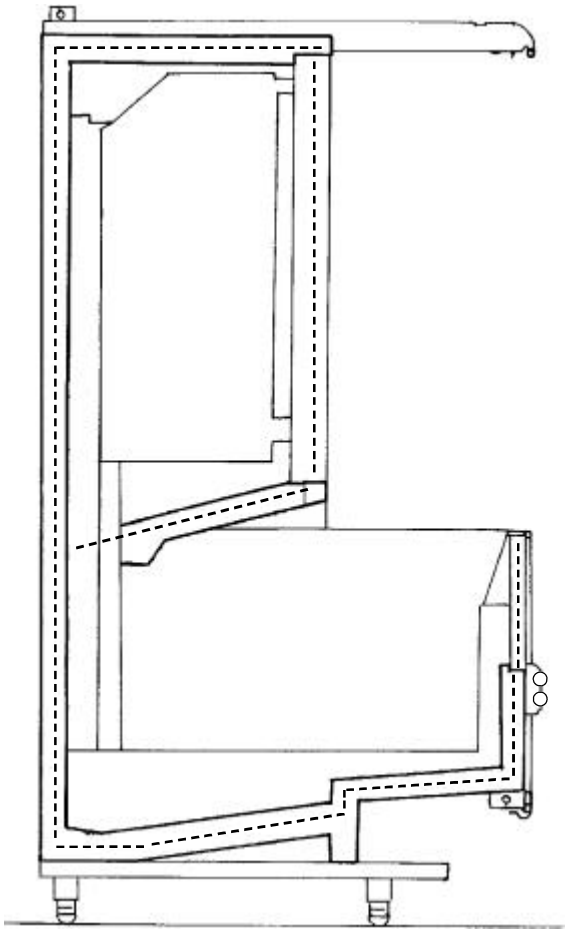
Control its alignment both lengthwise and crosswise with reference to a spirit level laid on the cabinet handrail and longitudinal elements.

Level the cabinet by applying a cylinder-section tool to the feet (Ø = 8 mm).



040 APPLY SPONGE RUBBER

Apply sponge rubber on the side of one of the cabinets to be multiplexed, as shown in the figure.

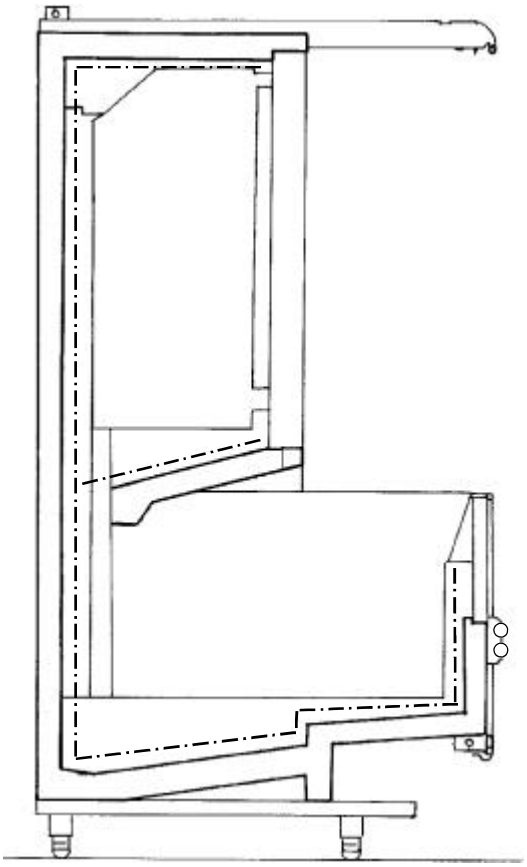


SPONGE RUBBER

050 SILICONE THE SIDE TO BE MULTIPLEXED

Apply a uniform silicone seam of approximately 5 mm as shown in the figure.

SILICONE



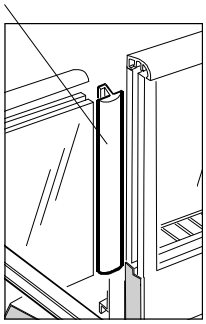
060 BRING THE CABINET TO BE MULTIPLEXED NEAR THE FIRST CABINET

Insert the plug for canopy alignment.

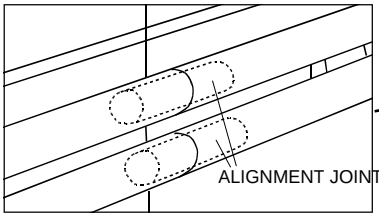
Bring the cabinets against each other and secure them in the points shown in the figure using screws TE M8x40 and M8 washers and nuts. Check cabinet levelness with reference to the handrails and longitudinal elements and align using the adjustable feet.

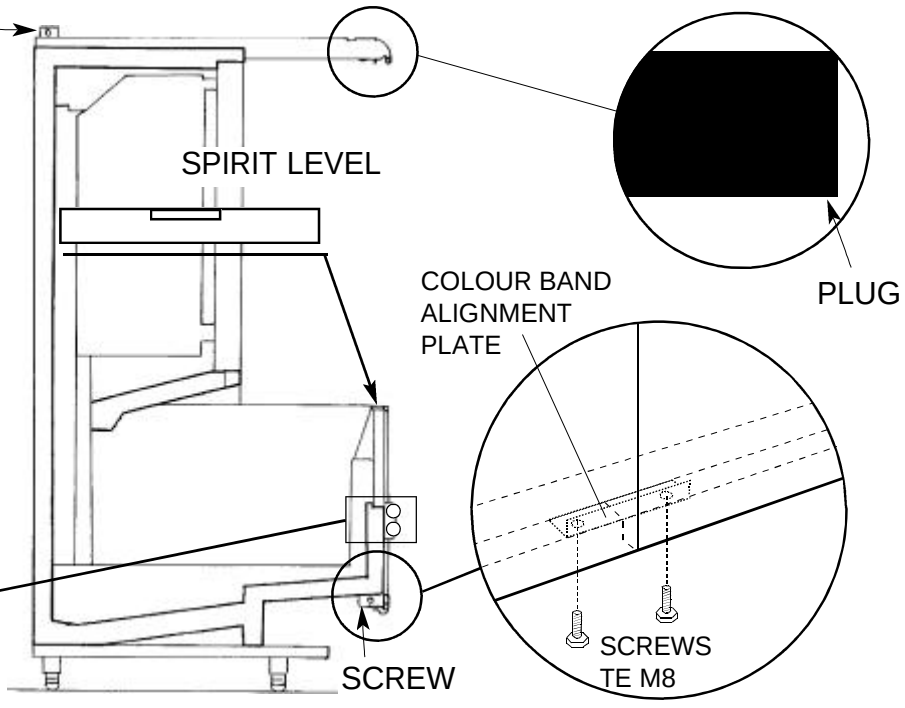
Align colour bands and fasten the ad-hoc plates with screws (see figure). Insert the pvc joint cover in between glazing panes. On LG300 versions including onboard bumper rails, align bumper rails by the aid of the specific plastic joints.

GLAZING JOINT COVER FOR BASE HG350



HANDRAIL FOR BASE LG300

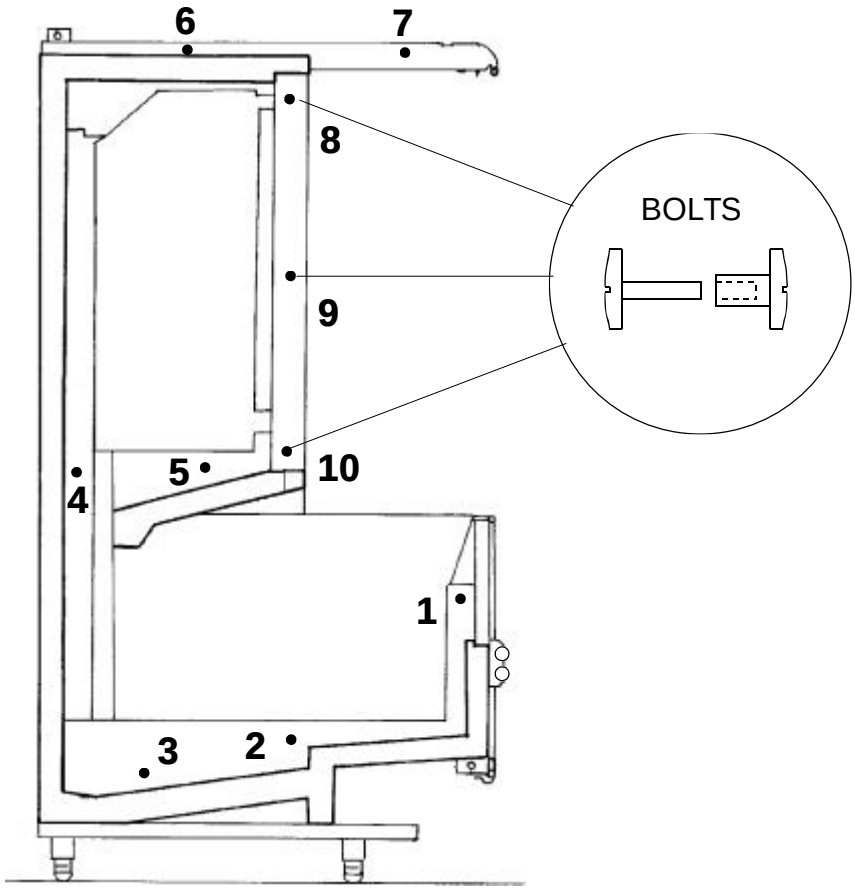




070 SECURE THE CABINETS TO ONE ANOTHER

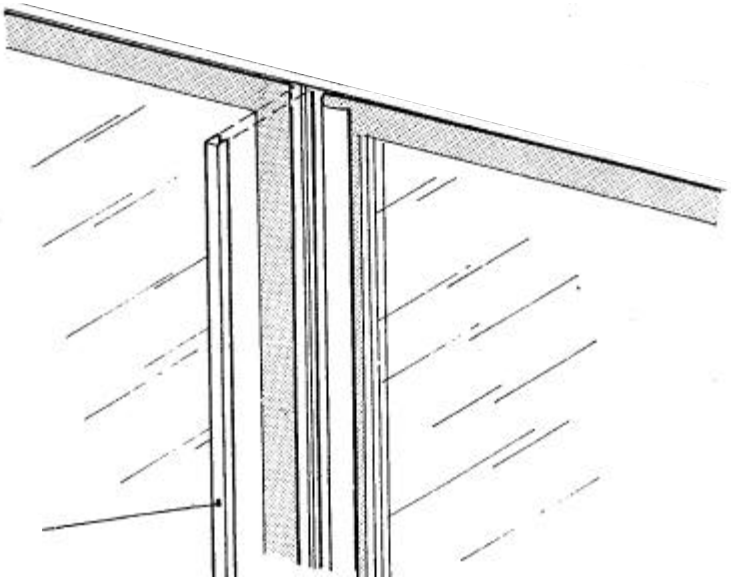
Secure the cabinets to each other in the points corresponding to positions 1-2-3-4-5-6-7 by the use of screws TE M8x30 and their M8 nuts. Then fasten them in points 8-9-10 using M5 chromium-plated bolts.

ATTENTION: Fastening points 2-3-4-5 require a washer of diameter 8.4x24



080 INSTALL SUPERSTRUCTURE JOINT COVERS

Fasten the joint cover to the splice between the superstructures using silicone.



JOINT COVER

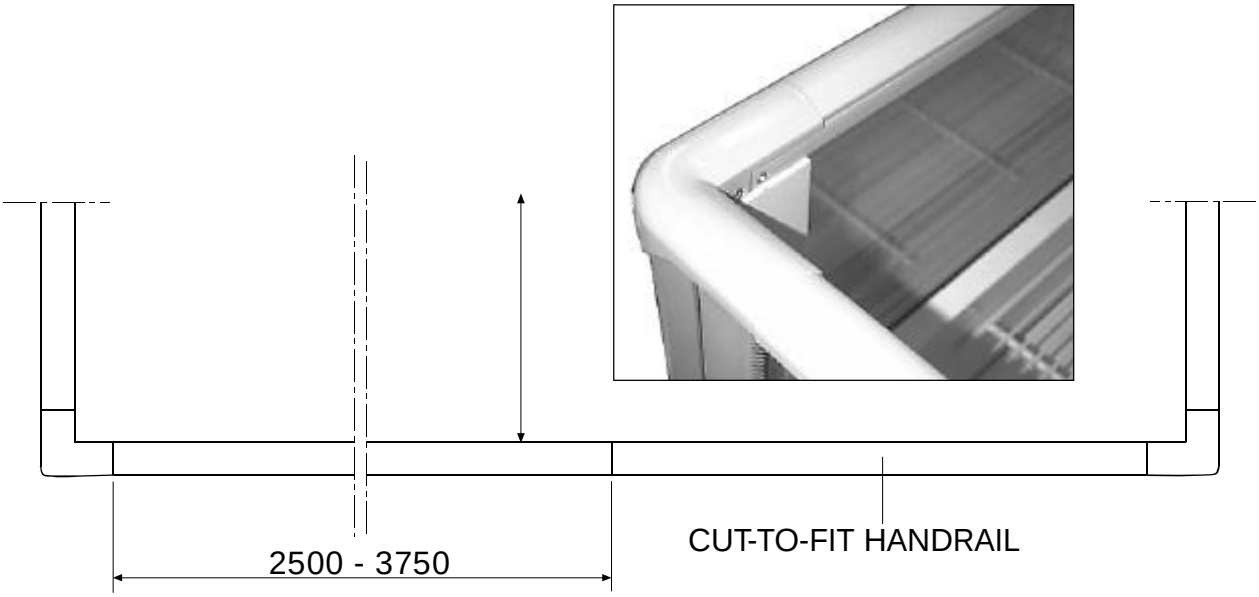
090 MOUNT THE HANDRAIL

Side handrails and corner pieces are factory-assembled.

For perfect alignment of front handrails on multiplexed cabinets, handrail portions suiting the effective cabinet length are supplied (2500 or 3750 mm).

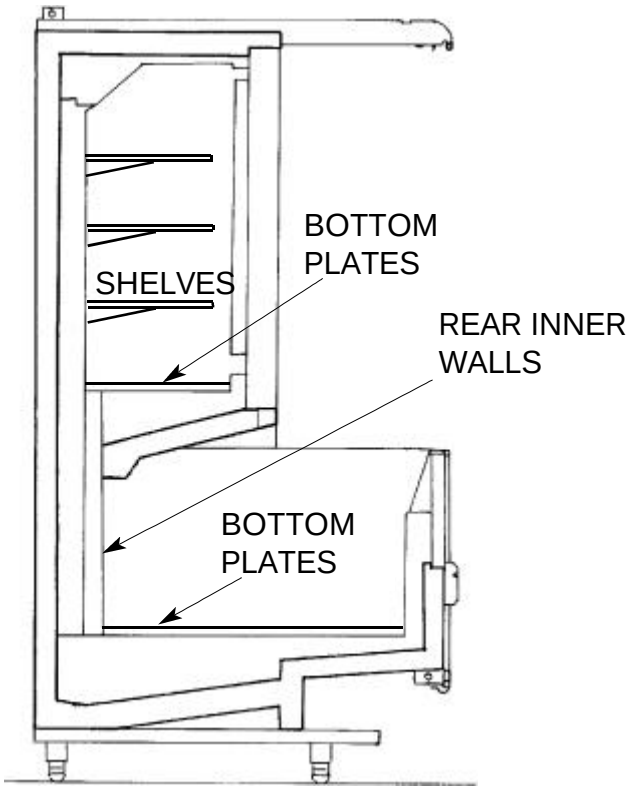
Place the first handrail on its profile, flush to one of the corner pieces and then all the others but the last.

Measure the remaining length, cut the last handrail to fit and install it on the relevant profiles.



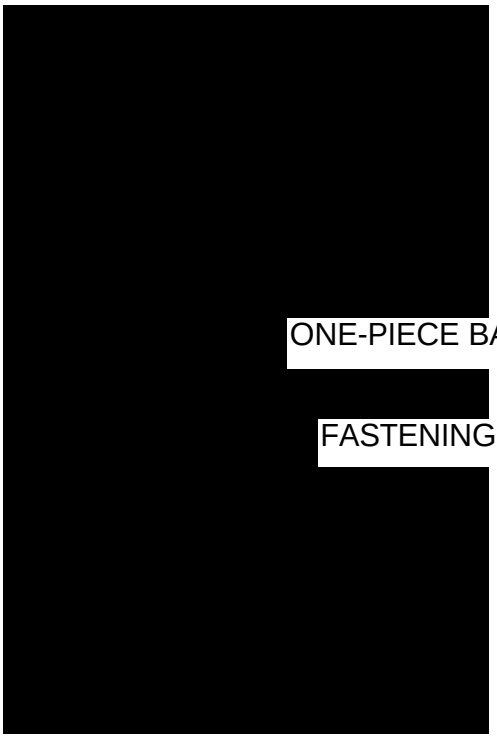
100 REASSEMBLE THE CABINET

Put front risers, bottom plates, rear inner walls and superstructure shelves back in place by reversing the disassembling steps.



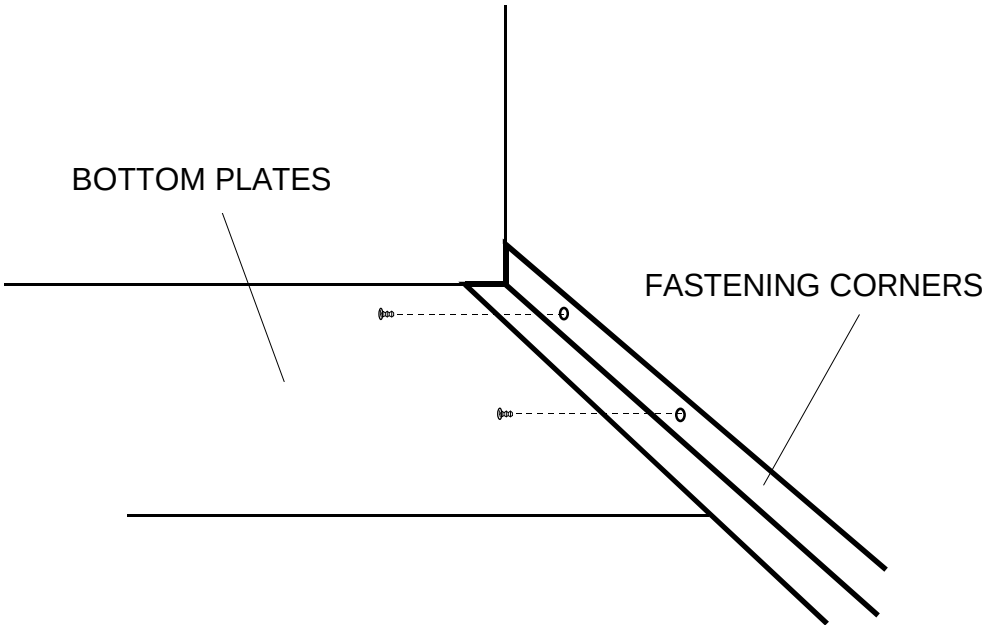
110 INSTALL BASE PLINTHS

Fasten base plinths to the front and sides, as shown in the figure below.



120 FASTEN BOTTOM PLATES

Fasten cabinet bottom plates by the aid of the appropriate fastening corners and self threading screws.

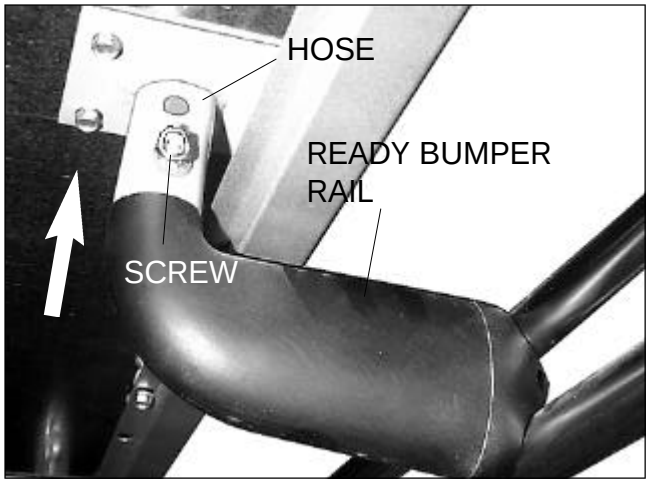


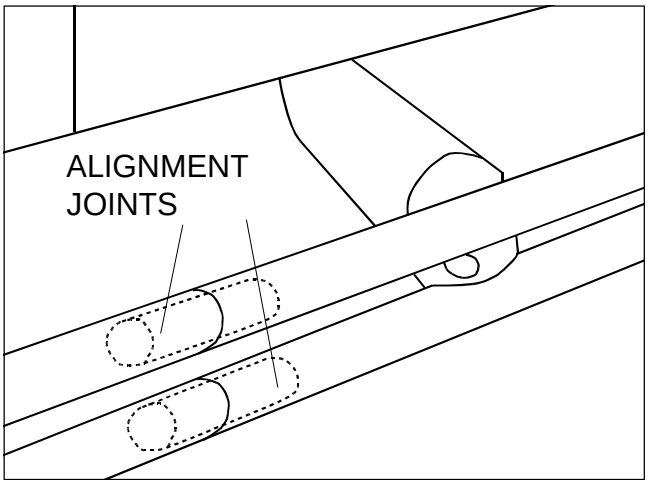
130 MOUNT GROUND BUMPER RAILS (standard on HG350, optional for LG300)

Insert bumper rail supports, which are already assembled to the bumper rails when delivered, into the appropriate hoses located on the bottom of the chest and fasten them by screws TE M10 using the lowest hole.

Align bumper rails by the aid of the ad-hoc plastic joints.

ATTENTION: for these versions it is also necessary to mount coloured front strips (whose lower portion must be fastened using self-threading TE M8 screws - see section of preceding page, step 110).



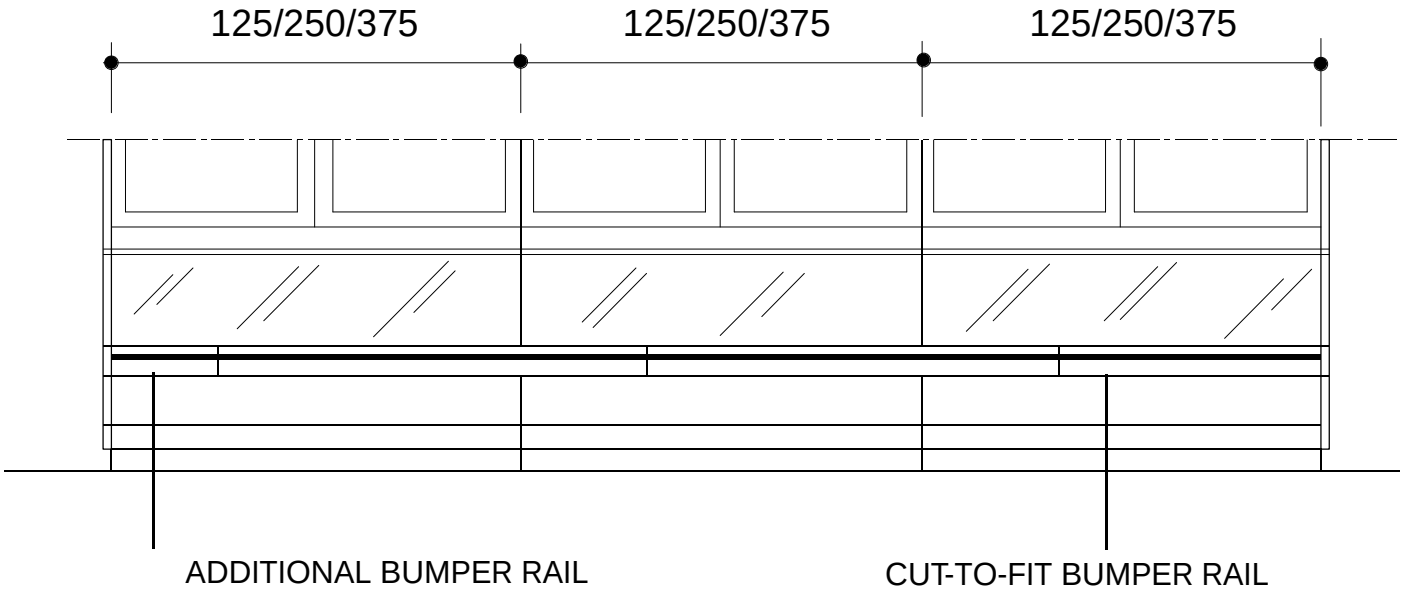


Complete bumper rail installation by adding the side sections, which must be fastened to the lateral ends of the cabinet using 5.5 self-threading screws as shown in the figure below.

Align side bumper rail bends with front bumper rails, again using the plastic joints.

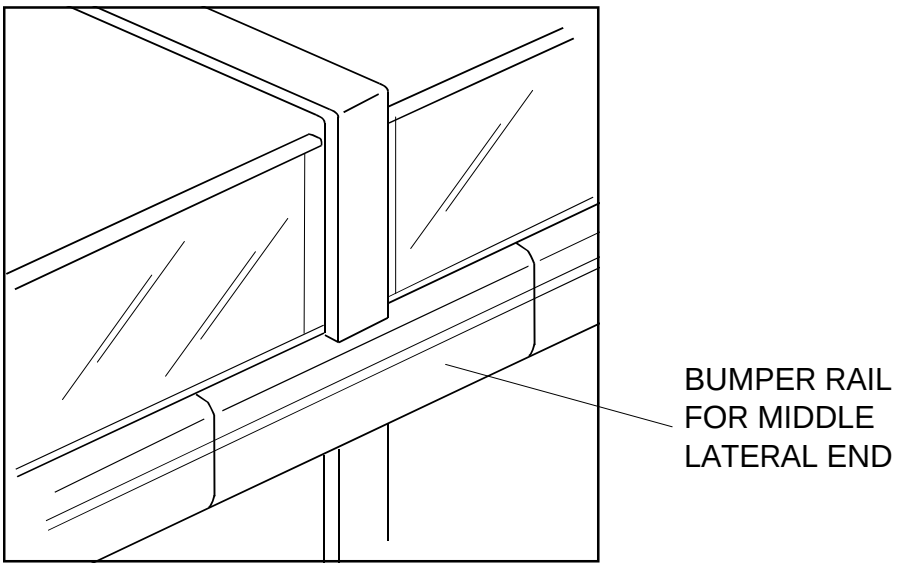
140 MOUNT ONBOARD PLASTIC BUMPER RAILS F2000 (optional extra for LG300)

An additional bumper rail is supplied, which must be mounted flush with the lateral end in order to allow perfect alignment of plastic bumper rails of type F2000 (available on request).
Place all bumper rails except the last on their support.
Measure the remaining length, cut the last bumper rail accordingly and snap it fast on its support.



When multiplexing envisages a middle lateral end, a specially shaped bumper rail cut must be used, which guarantees continuity of the plastic bumper rail (see figure).

ATTENTION: Plastic bumper rails must be screwed to their support.



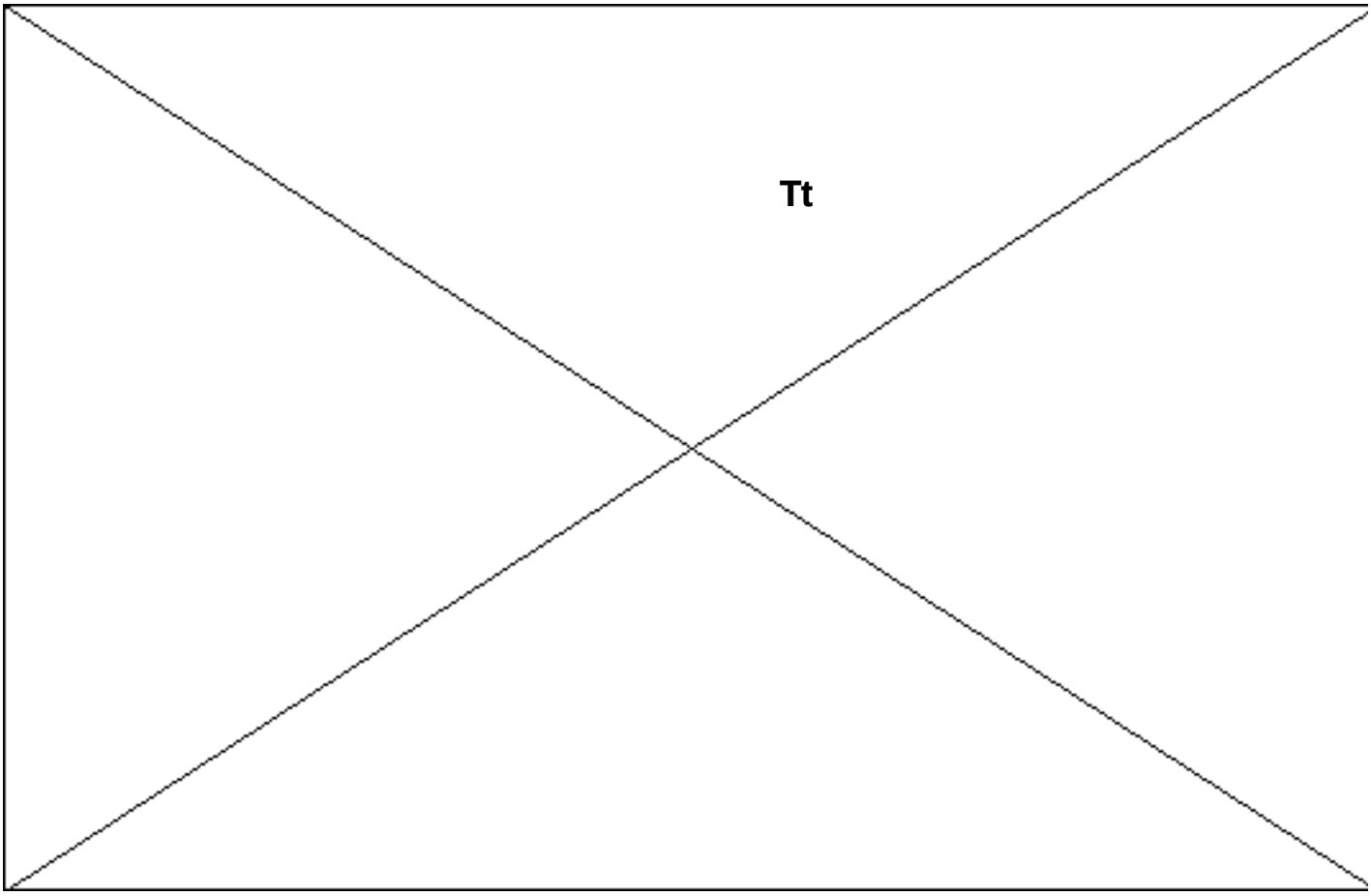
ELECTRICAL AND REFRIGERATING CONTROLS AND SETTINGS

MIURA h=2000/2200 - class L
Ambient conditions: 25°C - 60% R.H.

MIURA - 2000/2200	BASE	SUPERSTR.
Defrosting	electric	electric
Evaporation temperature	- 36 °C	- 36 °C
Temperature setting	- 32 °C	- 32 °C
Temperature differential	4 °C	4 °C
Number of defrosts*	2 (3)	2 (3)
Max. defrost duration	50 min	50 min
Defrost end temperature	+ 5 °C	+ 5 °C

(*) For R.H. higher than 60%, use the number of defrost events and the defrost duration values appearing in brackets.
NOTE: Thermostats are factory-set.

RUNNING DIAGRAM FOR MIURA BASE h=2000 - 2200 - class L terminal-board cabinets



E	Timer
K	Compressor contactor, condenser fans
K2	Defrost contactor
K4	Defrost-start relay
P	Pressure switch (high and low pressure)
Ra - Rp	Glazing and bottom panel demist heating elements
Rs - Rg - Rr	Defrost heating elements
T	Transformer
Th	Safety thermostat
Tt	Running, defrost-end and alarm telethermostat
Ve	Evaporator fans
Vs	Solenoid valve

Note 1: running and terminal-board diagrams refer to glazed version LG300.
On HG350 versions, evaporator fans remain off for ten minutes after defrosting, i.e. during operation of the air-inlet defrost heating elements. See diagram of chapter 30.010 - page 2/2.

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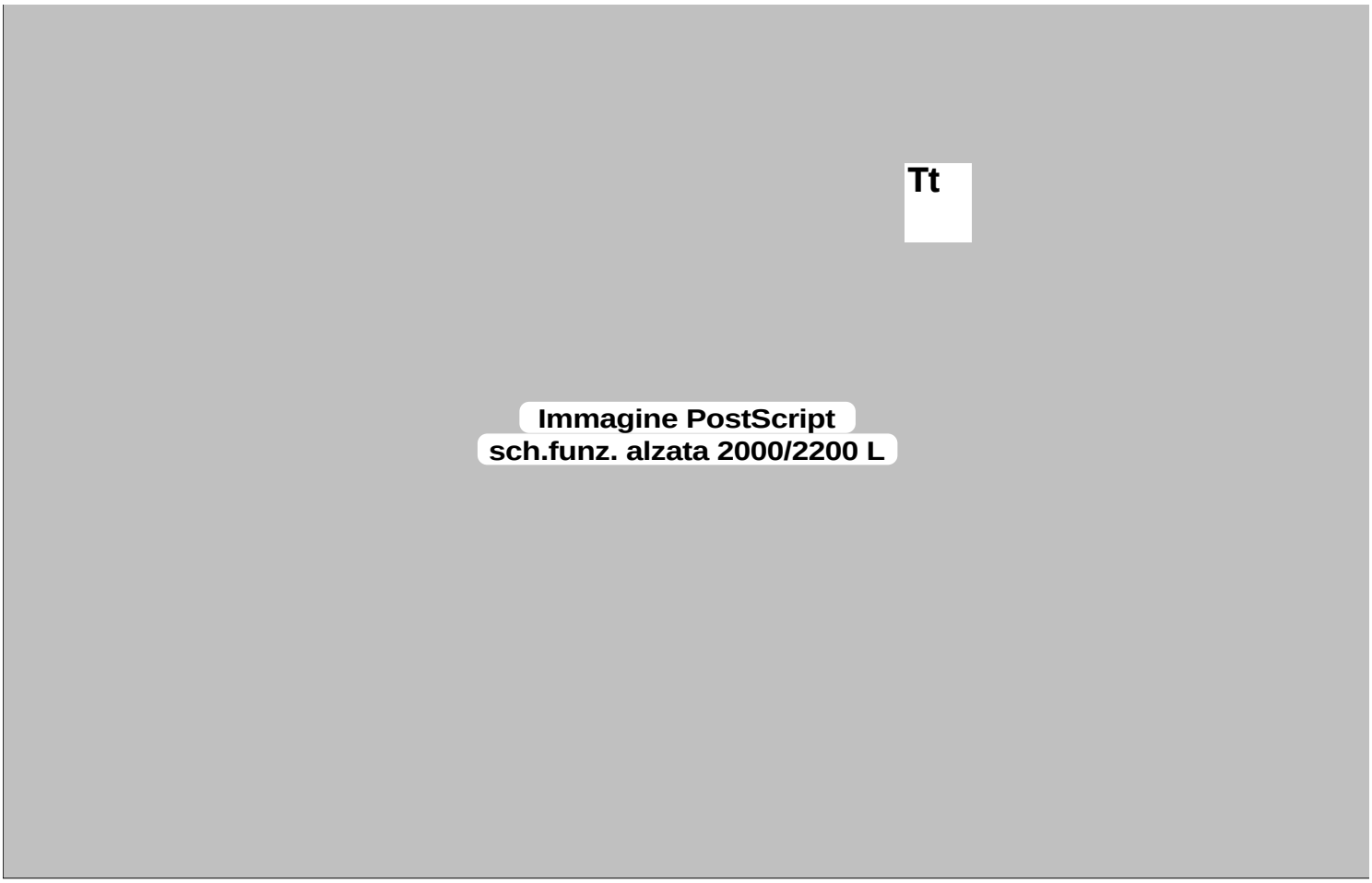
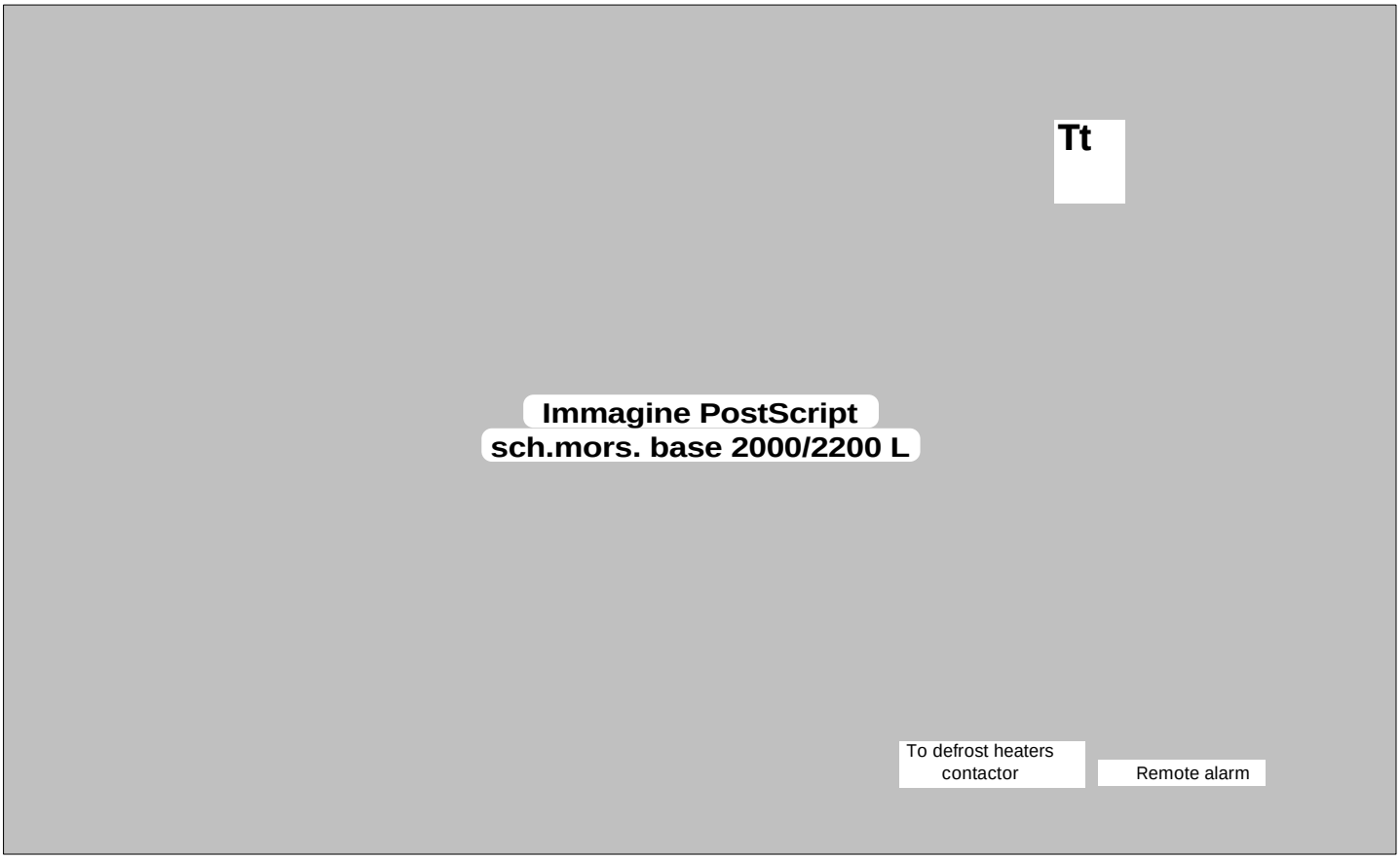
RUNNING DIAGRAM FOR MIURA SUPERSTRUCTURE h=2000 - 2200 - class L terminal-board cabinets



E	Timer
K	Compressor contactor, condenser fans
K1	Lamps ON/OFF contactor
K3a	Defrost contactor
K3b	Defrost contactor
K4	Defrost-start relay
P	Pressure switch (high and low pressure)
L1	Outer lights
L2	Internal lights
Rs - Rg - Rsc	Defrost heating elements
Rv - Rm - Rc	Frame demist heating elements
Rpt	Roof panel heating elements
T	Transformer
Th	Thermal protector/safety thermostat
Tt	Running, defrost-end, alarm and fan delay telethermostat
Ve	Evaporator fans
Vs	Solenoid valve
Z	Lighting switch

NOTE 2: the running diagram depicts cabinet operation principle. The components shown are not necessarily included in the appliance.

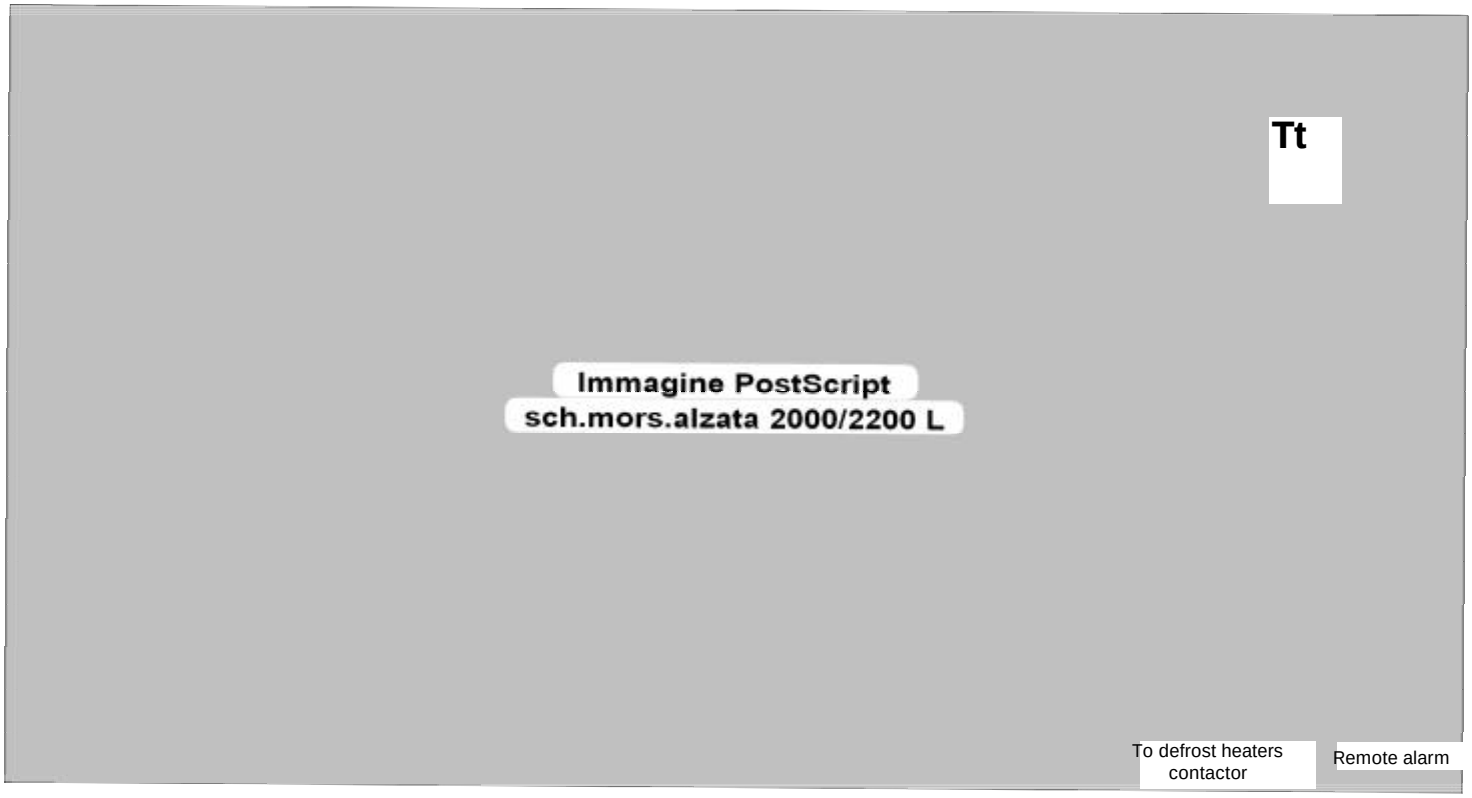
TERMINAL-BOARD DIAGRAM FOR MIURA BASE h=2000 - 2200 - class L



K4 = Defrost start relay
Ra = Glazing demist heating element
Rg = Drip-tray defrost heating element
Rp = Bottom panel demist heating element
Rr = Air inlet defrost heating element
Rs = Evaporator defrost heating element
T = Transformer
Th = Thermal protector
Tt = Running, defrost-end and alarm telethermostat
Ve = Evaporator fans
Vs = Solenoid valve

Note 1: running and terminal-board diagrams refer to glazed version LG300.
On HG350 versions, evaporator fans remain off for ten minutes after defrosting, i.e. during operation of the air-inlet defrost heating elements. See diagram of chapter 30.010 - page 2/2.

TERMINAL-BOARD DIAGRAM FOR MIURA SUPERSTRUCTURE h=2000 - 2200 class L



L1 = Internal lights
L2 = Canopy lights
K1 = Lighting contactor
K3b = Contactor of defrost heating elements
K4 = Defrost start relay
Rg = Drip-tray defrost heating element
Rpt = Roof panel demist heating element
Rs = Evaporator defrost heating element
Rsc = Drain defrost heating element
Rv Rm Rc = Frame demist heating elements
T = Transformer
Th = Thermal protector
Tv = Fan delay thermostat
Tt = Running, defrost-end, alarm and fan delay telethermostat
Ve = Evaporator fans
Vs = Solenoid valve
Z = Lighting switch

ELECTRICAL DETAILS OF COMPONENTS
MIURA BASE AND SUPERSTRUCTURE h=2000 - class L
with "TERMOFROST" frame

MIURA BASE CLASS L - Electrical input 230V/50Hz

ELECTRICAL INPUT (Watt) MIURA BASE			**2500**	**3750**
			electric defrost	electric defrost
Ve	Evaporator fans		54	72
L	Front lights		80	120
Rsc	Drain defrost heating elements		**-**	**-**
Rg	Drip-tray defrost heating elements		400	600
Rs	Evaporator defrost heating elements		2000	3000
Rr	Air-inlet defrost heating element		400	600
Ra	Demist heating element of bottom panel		225	330
Ra	Glazing demist heating element	HG350	60.4	85.4
		LG300	45.9	64.75
	Nominal power	HG350	**420**	**607**
		LG300	**405**	**587**
	Defrost power	HG350	**3220**	**4807**
		LG300	**3205**	**4787**

MIURA SUPERSTRUCTURE h = 2000 CLASS L - Electrical input 230V/50Hz (Termofrost)

COMPONENT		**2500**	**3750**
		W	W
Ve	Evaporator fans	72	108
Rpt	Demist heat. elem. of roof panels	180	270
Rc+Rm-+Rv	Demist heat. elem. of doors and frame	652	970
Rs	Evaporator defrost heating element	500	750
Rs	Evaporator defrost heating element	500	750
Rs	Rear evap. defrost heating element	270	400
Rg	Drip-tray defrost heating element	270	400
Rsc	Drain defrost heating element	46	46
L	Canopy lights	80	120
L	Lights of door uprights	100	140
*	**Nominal power***	**904**	**1338**
*	**Defrost power***	**2418**	**3576**

* Nominal power and defrost power with all lights on and Rpt heating elements off (maximum electrical input condition)

ELECTRICAL DETAILS OF COMPONENTS MIURA BASE AND SUPERSTRUCTURE h=2200 class L with "TERMOFROST" frame

MIURA BASE CLASS L - Electrical input 230V/50Hz

ELECTRICAL INPUT (Watt) MIURA BASE			**2500** electric defrost	**3750** electric defrost
Ve	Evaporator fans		54	72
L	Front lights		80	120
Rsc	Drain defrost heating elements		**-**	**-**
Rg	Drip-tray defrost heating elements		400	600
Rs	Evaporator defrost heating elements		2000	3000
Rr	Air-inlet defrost heating element		400	600
Ra	Demist heating element of bottom panel		225	330
Ra	Glazing demist heating element	HG350	60.4	85.4
		LG300	45.9	64.75
	Nominal power	HG350	**420**	**607**
		LG300	**405**	**587**
	Defrost power	HG350	**3220**	**4807**
		LG300	**3205**	**4787**

MIURA SUPESTRUCTURE h=2200 ref. L (Termofrost) - Electrical input

COMPONENT		**2500** W	**3750** W
Ve	Evaporator fans	72	108
Rpt	Demist heat. elem. of roof panels	180	270
Rc+Rm-+Rv	Demist heat. elem. of doors and frames	722	1094
Rs	Evaporator defrost heating element	500	750
Rs	Evaporator defrost heating element	500	750
Rs	Evaporator defrost heating element	270	400
Rg	Drip-tray defrost heating element	270	400
Rsc	Drain defrost heating element	46	46
L	Canopy lights	80	120
L	Lights of door uprights	150	210
Nominal power*		**1024**	**1532**
Defrost power*		**2538**	**3770**

* Nominal power and defrost power with all lights on and Rpt heating elements off (maximum electrical input condition)

REFRIGERATING CAPACITY REQUIREMENT

REQUIRED REFRIGERATING CAPACITY (Q0) - Watt -			Evaporating temperature (T0)	LENGTHS			
				2500		3750	
				BASE	SUPER.	BASE	SUPER.
MIURA BT h = 2000/2200	CLASS 3	STAND-ALONE	**- 36 °C**	**1000**	**1300**	**1500**	**2000**
	CLASS 3	MULTIPLEXED	**- 36 °C**	**950**	**1250**	**1400**	**1900**

Applicable correction factors: for different ambient cond.
climatic class 1 Famb = 0.8
climatic class 2 Famb = 0.95
climatic class 3 Famb = 1.0
climatic class 4 Famb = 1.2

Calculation of design evaporating temperature according to actual load:

Qeff = Q0 x Famb
Tef = T0 + (1 - Qeff/Q0) x 10 °C

Qeff and Teff being values to be considered for calculation purposes

(Qeff= actual load; Tef= actual temperature)