instructions for installation

Epta

COLISEUM 3

Bonnet Névé

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N° DOC. QSM000256E - 12/01/11 - rev. F

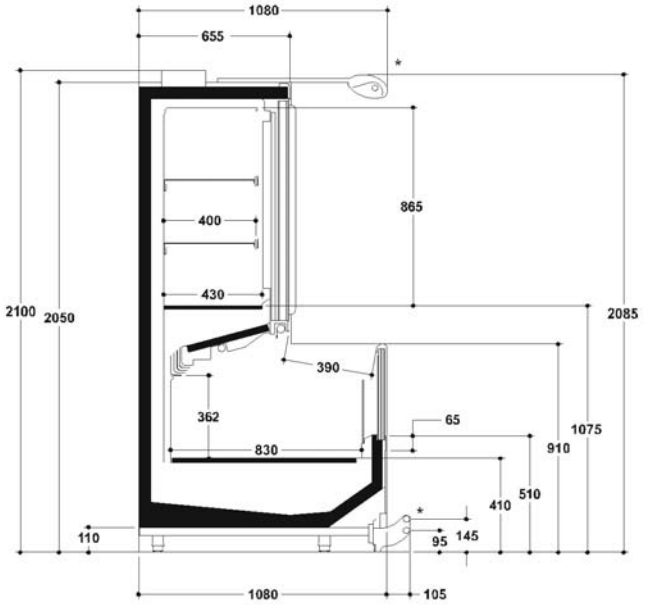
KEY

"-" First issue:

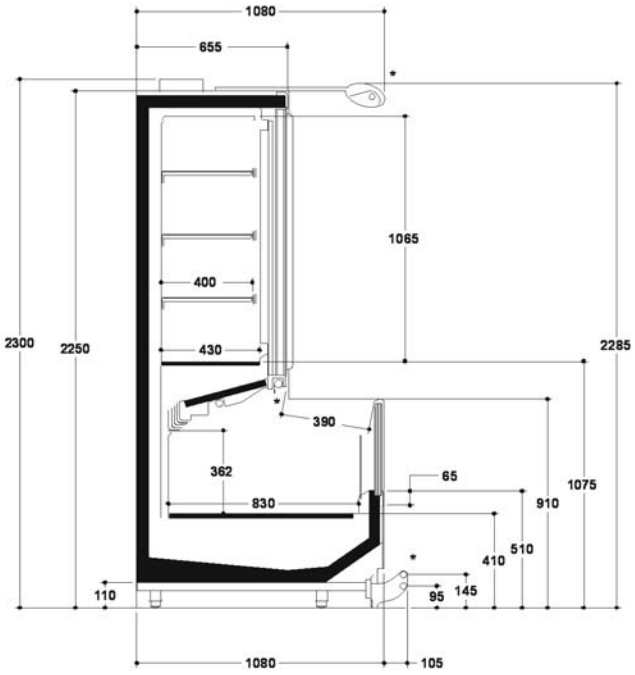
A, B, C..... revision index

SECTIONS - LINEAR CABINETS

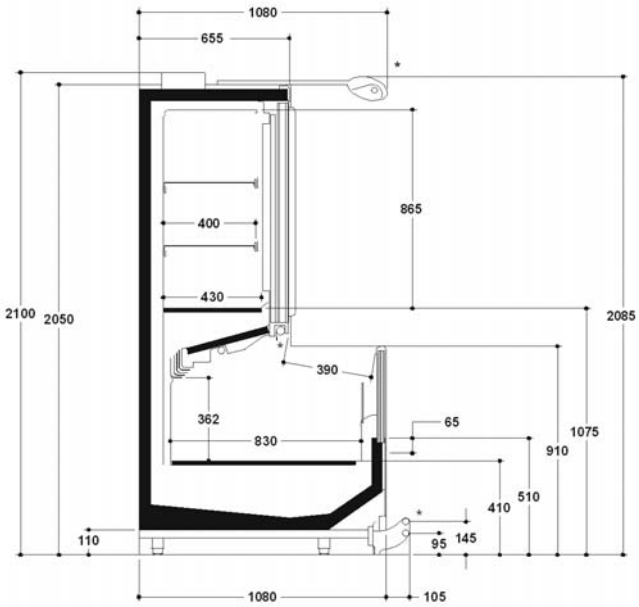
HG400 H2000



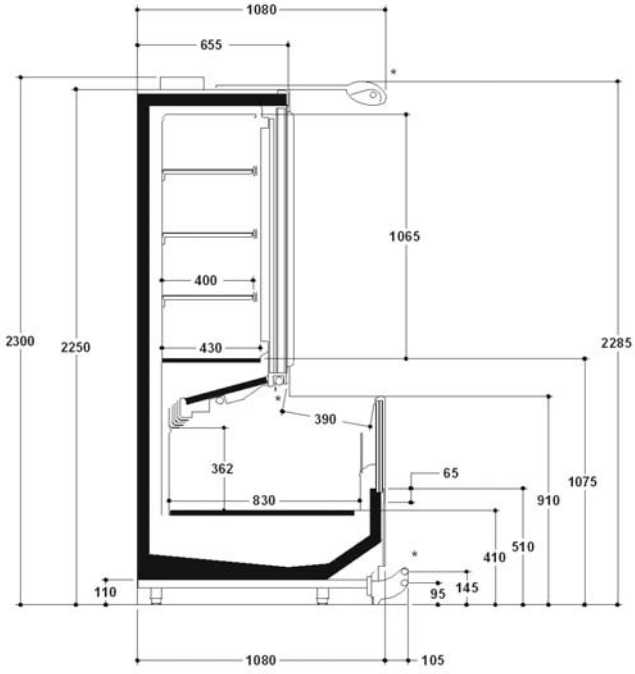
HG400 H2200



LG300 H2000



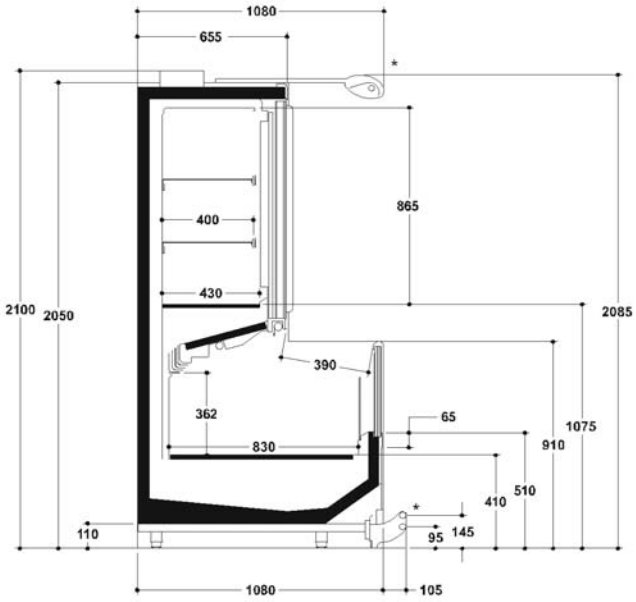
LG300 H2200



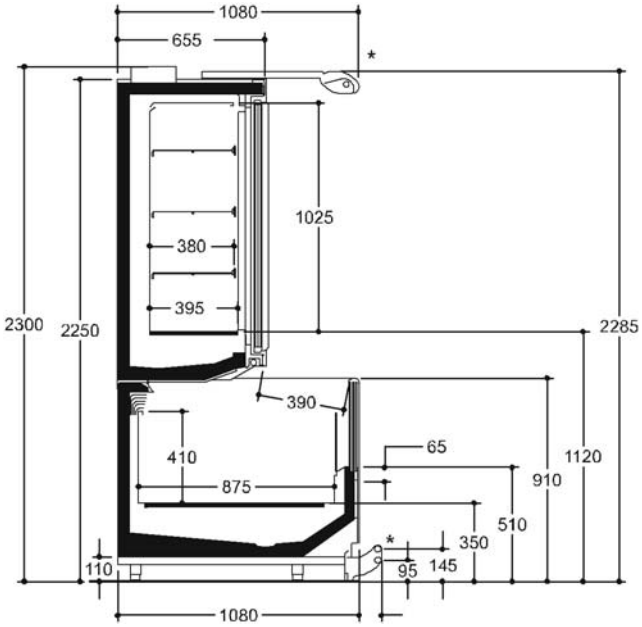
* optional
End thickness w/o bumper-rail = 50mm
End thickness with bumper-rail = 155mm

SECTIONS - TG HEAD CABINET

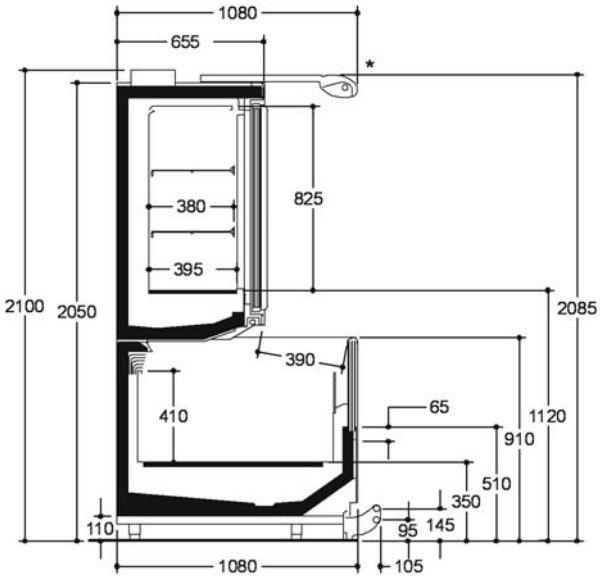
MT HG400 H2000



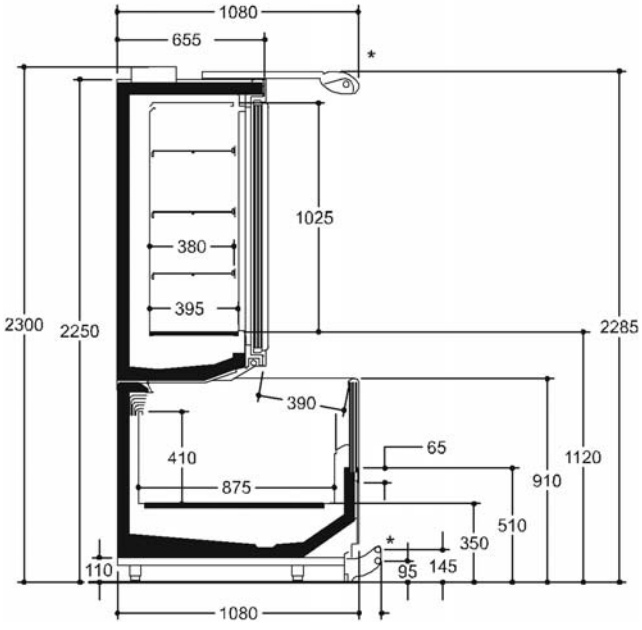
MT HG400 H2200

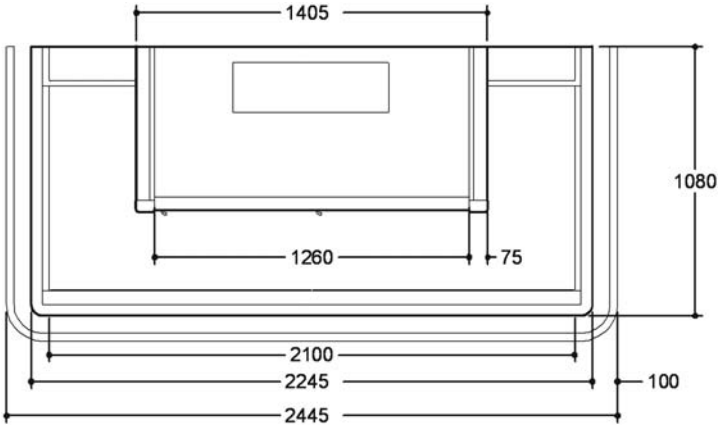


MT LG300 H2000



MT LG300 H2200

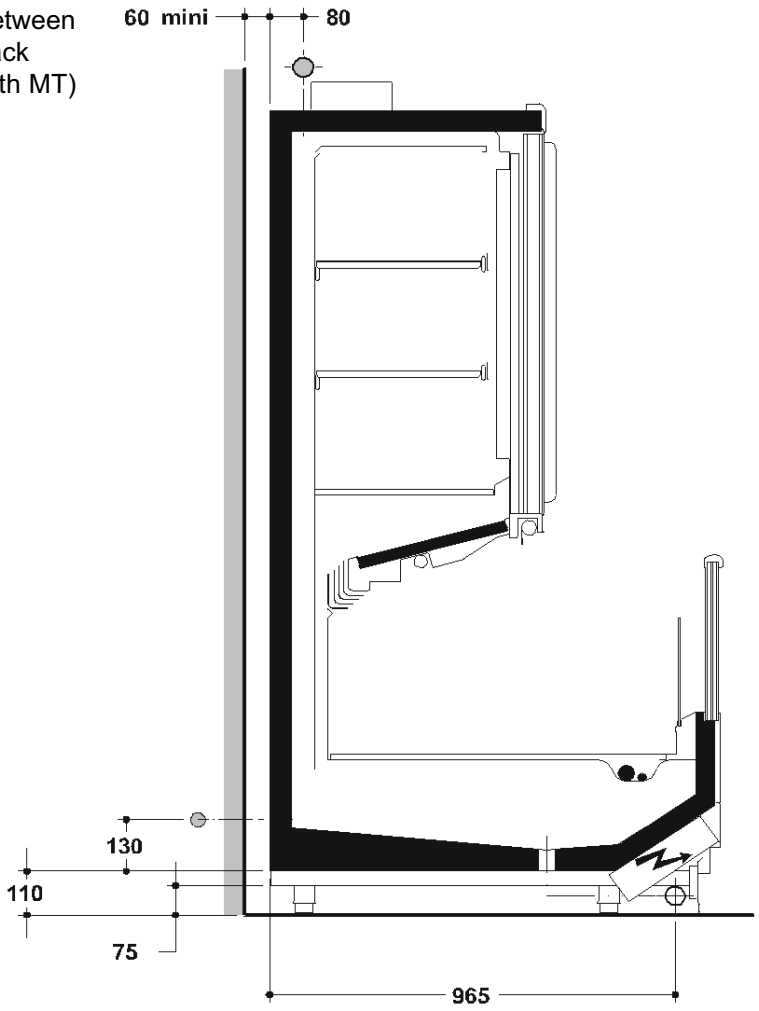




INSTALLATION DIAGRAMS

SECTION OF WATER AND REFRIGERATING CONNECTIONS

120mm between back to back (except with MT)



water drain Ø40

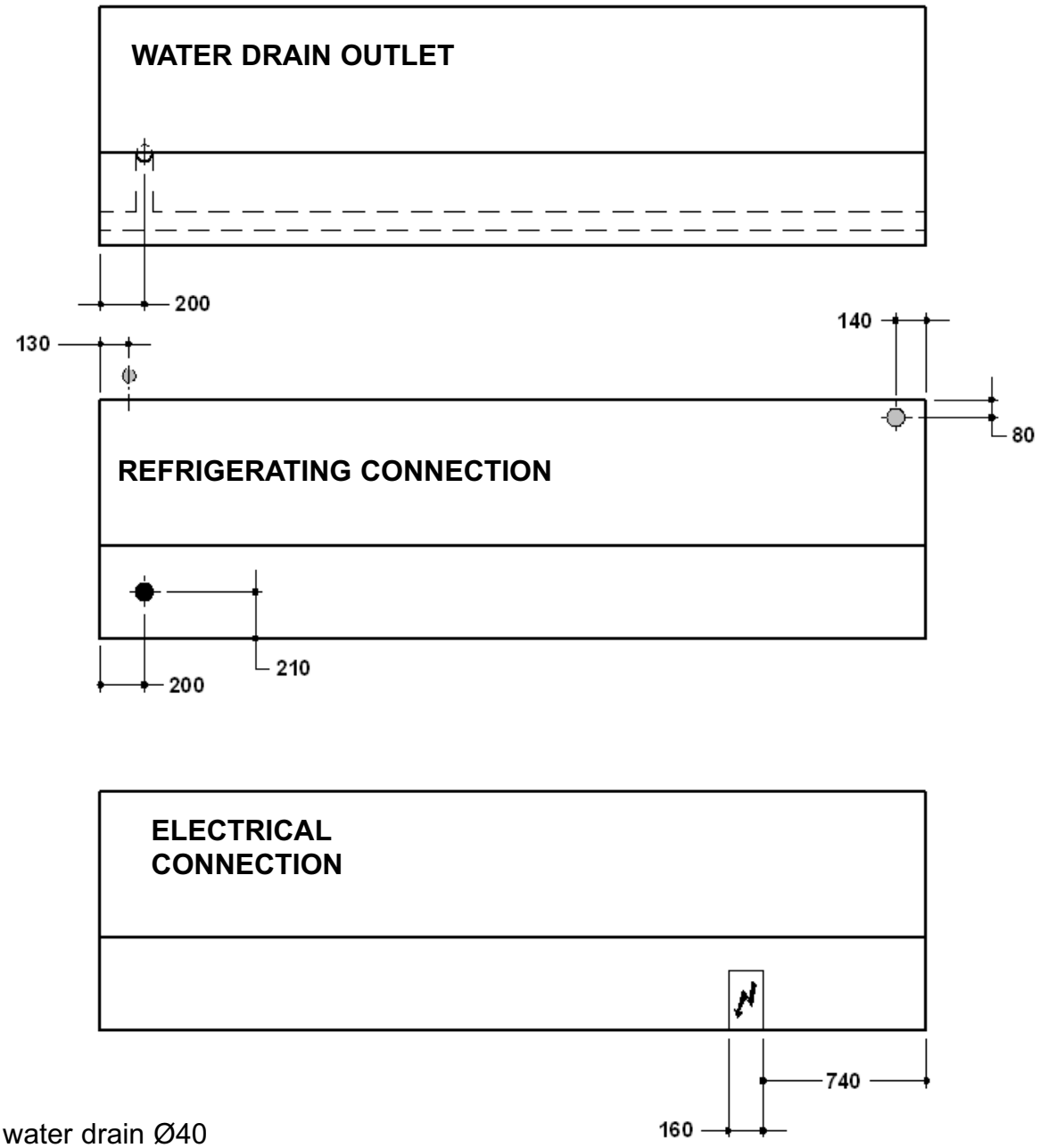
top refrigerating outlet

bottom refrigerating outlet

Position of slots for rear bottom outlet (max. Ø40 mm)

way in of refrigerating pipes (max. Ø54 mm)
NOTE: provide for one suction manifold per technical cabinet run

electrical board



water drain Ø40

top refrigerating outlet

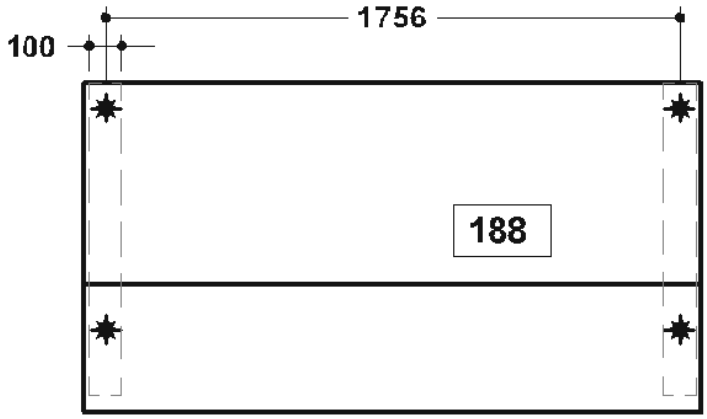
bottom refrigerating outlet

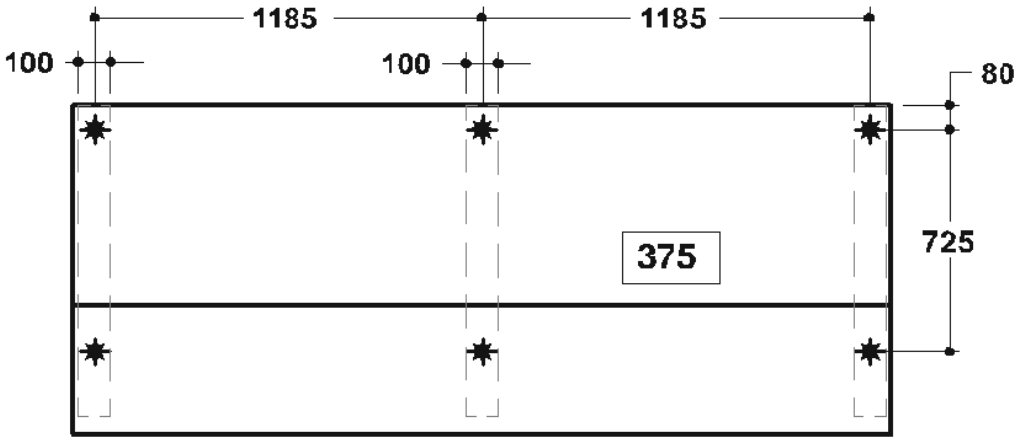
Position of slots for rear bottom outlet (max. Ø40 mm)

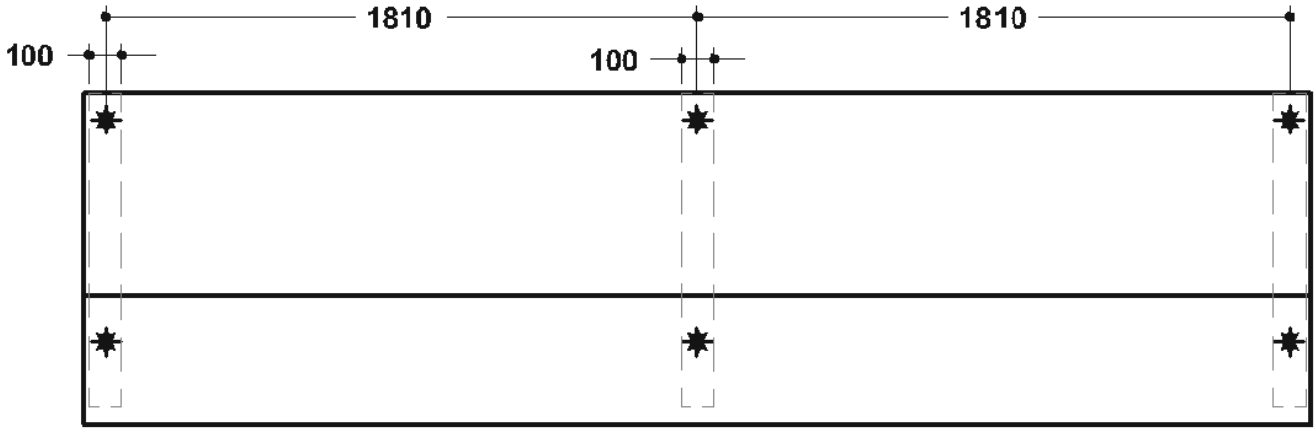
route of refrigerating pipes (max. Ø54 mm)
NOTE: provide for one suction manifold per technical cabinet run

electrical board

POSITION OF FEET







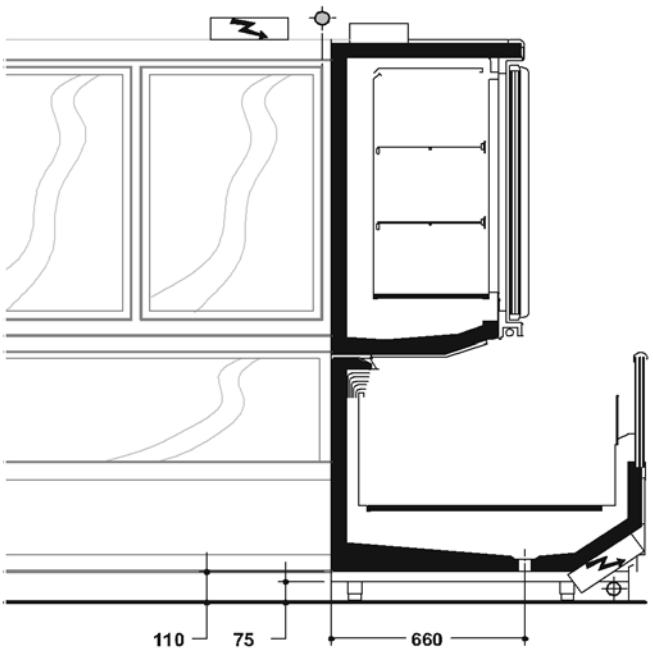
INSTALLATION DIAGRAMS TG HEAD CABINET

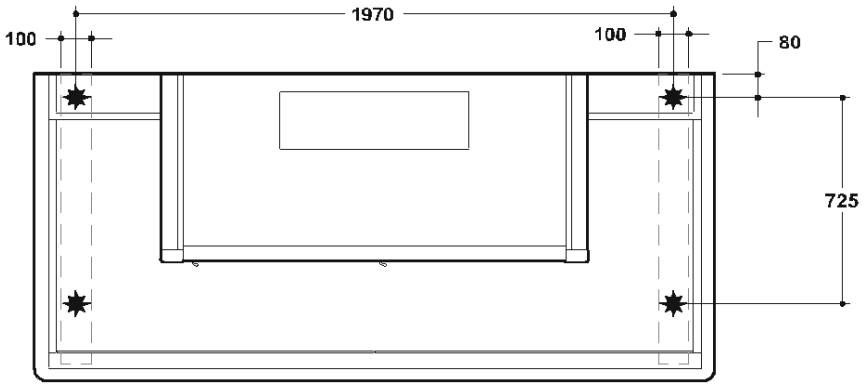
✸ feet

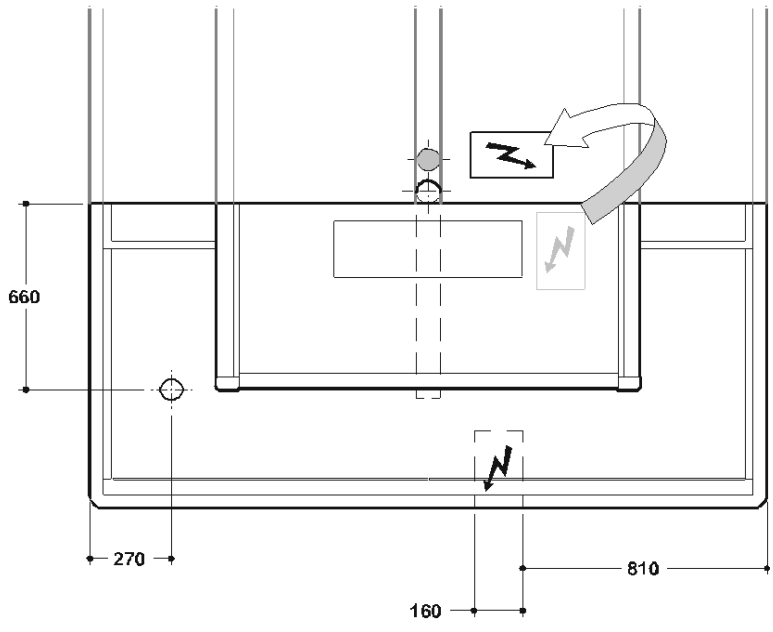
⌖ water drain Ø40

⌖ top refrigerating outlet

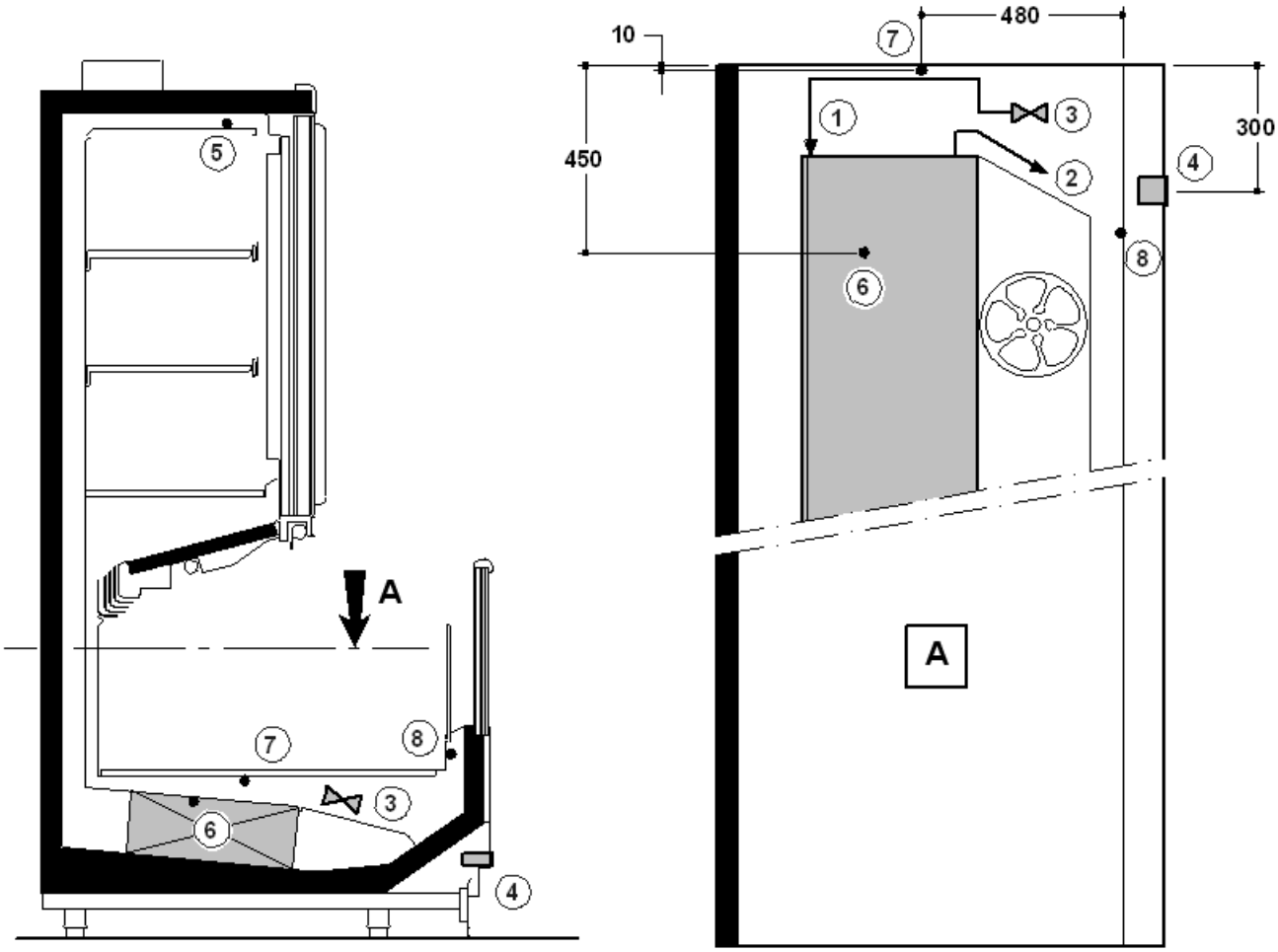
N electrical board







POSITION OF PROBES CONTROLLER - THERMOSTATIC VALVE



❶ evaporator in-going piping

❷ evaporator out-going piping

❸ thermostatic valve

❹ controller

❺ position of air outlet probe

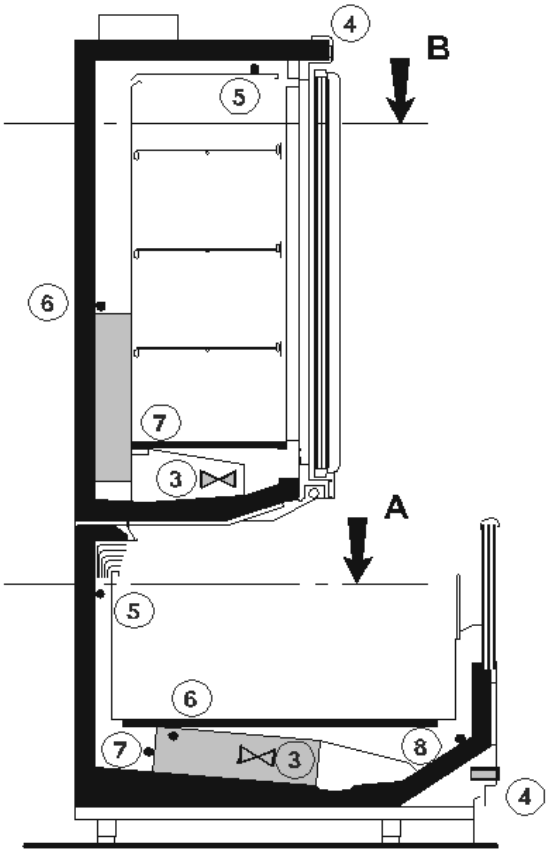
❻ position of defrost-end probe

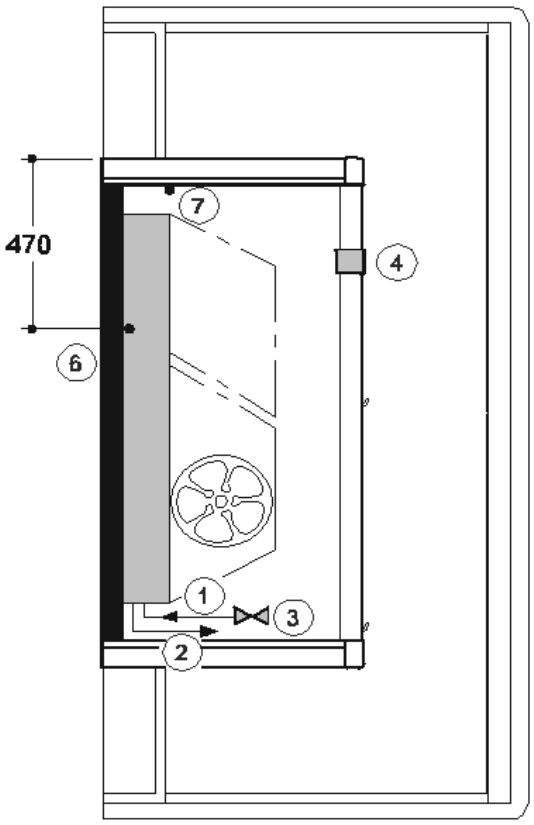
❼ safety thermostat

❽ position of air inlet probe

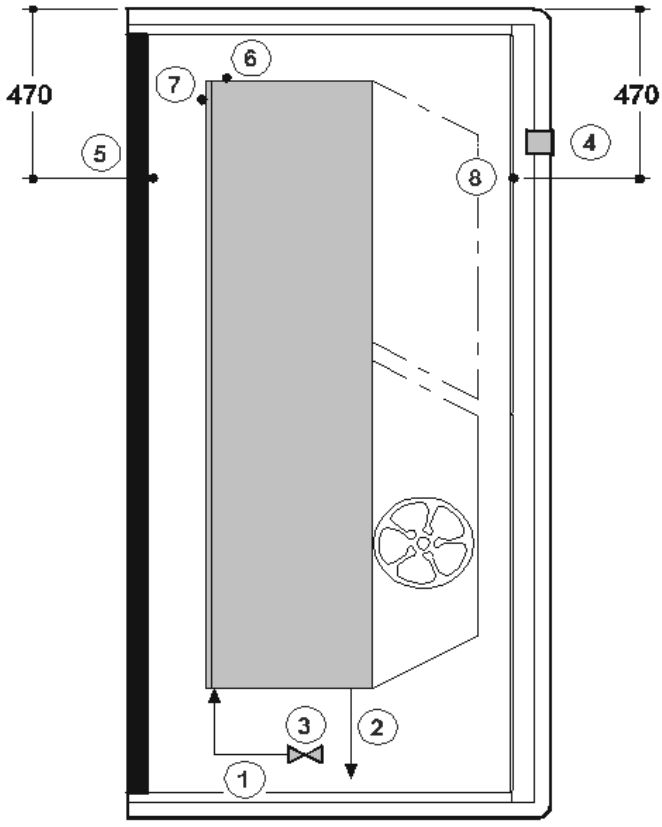
POSITION OF PROBES CONTROLLER - THERMOSTATIC VALVE
TG HEAD CABINET

❶ evaporator in-going piping
❷ evaporator out-going piping
❸ thermostatic valve
❹ controller
❺ position of air outlet probe
❻ position of defrost-end probe
❼ safety thermostat
❽ position of air inlet probe





B Placard



A Bac

REQUIRED HEAT EXTRACTION RATE - ADJUSTMENT

LEGEND

C	**Classification en température du meuble** ***Cabinet temperature class*** Temperaturklasse des Möbels	CLA	**Classe d'ambiance en chambre d'essai** ***Test room climate class*** Prüfraum Klasse
M	**Modèle** ***Model*** Modell	L	**Longueur** ***Length*** Länge
IF	**Aménagemens intérieurs** ***Internal fitting*** Einrichtung	HNLS	**Etagères horizontales non éclairées** ***Horizontal non lighted shelves*** Unbeleuchtende horizontale Etageren
MNLS	**Etagères inclinées non éclairées + miroir** ***Mirror + tilted non lighted shelves*** Beleuchtende schräge Etageren + Spiegel	TNLS	**Etagères inclinées non éclairées** ***Tilted non lighted shelves*** Unbeleuchtende schräge Etageren
Φ_o	**Bilan thermique** ***Heat extraction rate*** Kalte Leistung	T_O	**Température d'évaporation** ***Evaporating temperature*** Verdampfungstemperatur
T_{MIN}	**Température d'évaporation minimale donnée lorsque un fonctionnement cyclique est nécessaire en classe 3. Dans ce cas, pour raccordement sur groupe unitaire, multiplier Φ_o par 1,3.** ***Minimum evaporating temperature given when cycling running is required in class 3. In this case, for connection with single unit, multiply Φ_o by 1,3.*** Minimal Verdampfungstemperatur gegeben für einen zyklischen Lauf in Klasse 3. In diesem Fall, mit Einzelmaschine Φ_o mal 1,3		
Ctrl	**Régulation** ***Control*** Regulierung	S.L.C.	**Réglages en conditions de laboratoire classe 3** ***Settings in laboratory conditions class 3*** Regelungen in Prüfraum Klasse 3
Ci	**Température d'enclenchement** ***Cut-in temperature*** Einschalttemperatur	Co	**Température de coupure** ***Cut-out temperature*** Ausschalttemperatur
Def	**Dégivrage** ***Defrost*** Abtauung	min	**Minutes** ***Minutes*** Minuten
N/24 h	**Quantité / 24 h** ***Number / 24 h*** Anzahl / 24 h	nat	**Naturel** ***Natural (off cycle defrost)*** Umluft
t_d	**Durée du dégivrage en classe 3** ***Defrost duration in class 3*** Abtauzeit in Klasse 3	T° ter	**Température de fin de dégivrage** ***Defrost termination temperature*** Abtaubegrenzung
t_{egout}	**Temps d'égouttage** *Drip time* Abtröpfelnzeit	t_{ventil} :	**Temps de retard pour redémarrage de la ventilation** *Fan delay* Frist für den Ventilatorenstart

EN ISO 23953-2005 - CLA 3 : 25°C - 60% HR

M	IF	T_o °C	Φ_o (W)				
			W/m		L188 - 3P	L250 - 4P	L375 - 6P
COLISEUM 3 H2200	HNLS	-35	850		1600	2125	3190
COLISEUM 3 H2000	HNLS	-35	810		1525	2025	3040
COLISEUM 3 TG	HNLS	-35	**Bac** Chest Vasca		980		
			Placard H2200 Top H2200 Alzata H2200		780		
			Placard H2000 Top H2000 Alzata H2000		745		

S.L.C.									
M		IF	Ctrl		Def				
			Ci °C	Co °C	Type	N/24 h	T°ter °C	t_d min	t_{egout} min	t_{ventil} min
COLISEUM 3		HNLS	-27	-28	**Electrique** *Electric* Elettrico	1	5	40	10	5
					Gaz chaud *Hot gas* Gas caldo	1	5	20	10	5
TG	**Bac** Chest Vasca	HNLS	-31	-32	**Electrique** *Electric* Elettrico	2	5	30	0	0
	Placard Top Alzata		-28	-29		1	5	30	5	5

REFRIGERATION CAPACITY VARIATIONS WITH CLIMATE CLASS

CLA	*Dry bulb temperature* °C	*Relative humidity* %	*Correction factor for heat extraction rate* Φ_o	*Evaporating temperature* T_o	*Defrost* N / 24h
2	22	65	(Φ_o CLA 3) **x 0,96**	**Reference**	1
3	25	60	**Reference**		1
4	30	55	(Φ_o CLA 3) **x 1,2**		2
6	27	70			

REFRIGERATION CAPACITY VARIATIONS WITH CLIMATE CLASS

M	*Safety time for defrost*		*Alarm out of defrost time*				*Maxi air temperature at the air return out of defrost time*
			Threshold		*Delay time*	*Minimum time after defrost termination*	
	min		°C		min	min	°C
COLISEUM 3		60	Sout	-15	10	35	-18
	Hot gas	40	Sin	-10			

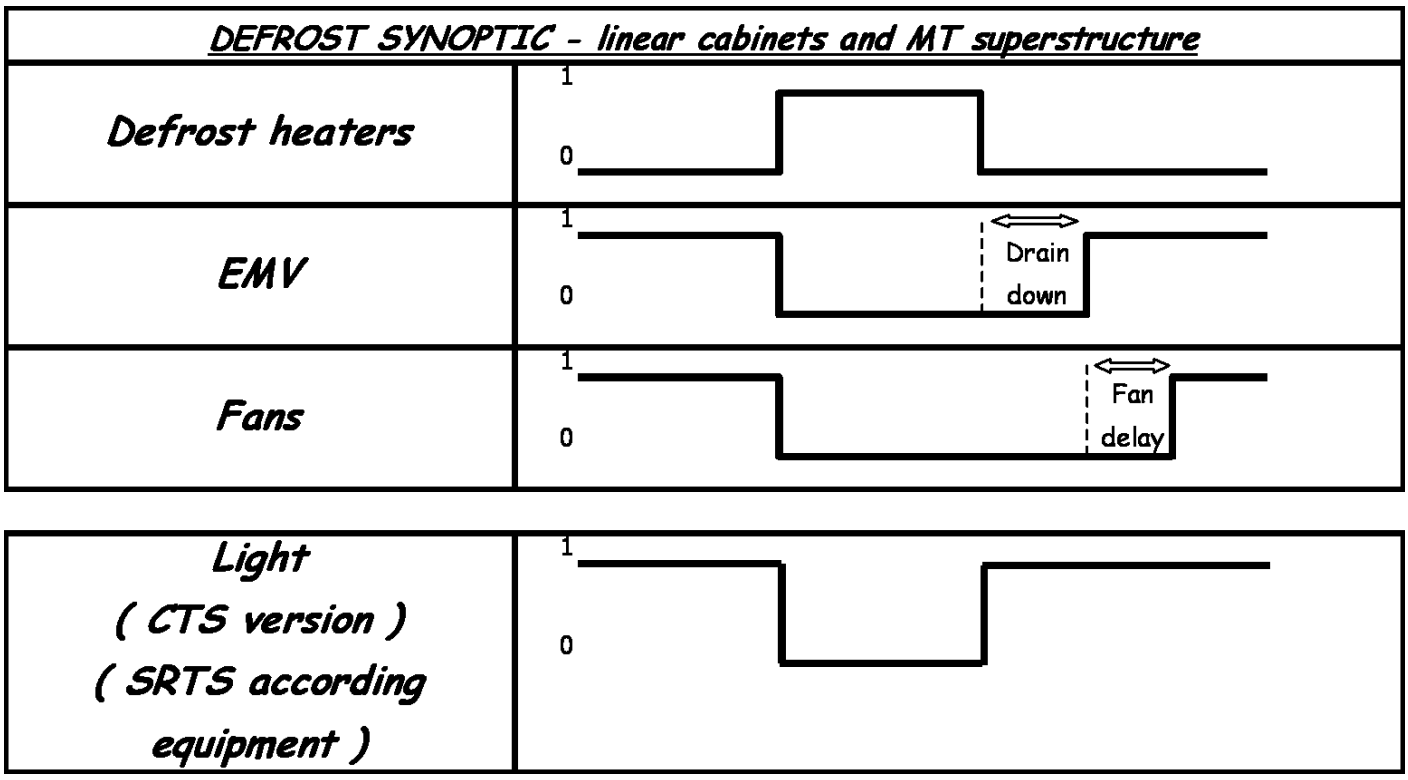
WITH NIGHT CURTAINS OR FOR OPERATION IN LOW ENVIRONMENT

For display cabinets fitted with or without night curtain an operational optimisation can be carried out to obtain better electrical energy savings by using the two sensors with the following settings :

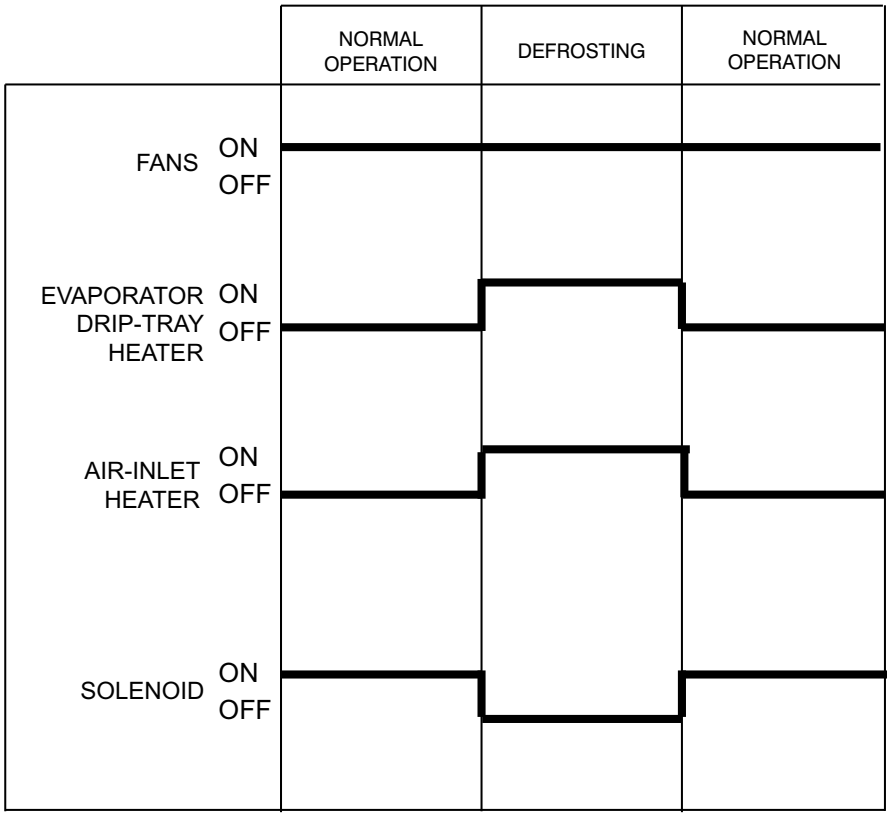
M	S out		S in	
	Ci °C	Co °C	Ci °C	Co °C
COLISEUM 3	-27	-28	-18	-20

Electrical energy savings on cold production amount to around 17% while the specify night curtain is installed.

DEFROST SYNOPTIC - linear cabinets and MT superstructure



PRICIPLE OF OPERATION MT CHEST



ELECTRICAL INPUT

Tension / *Tension* / Tensione : 230 V Mono 50 hz
Puissance / *Capacity* / Potenza : W (Watt)
Intensité / *Load* / Intensità : A (Ampère)

Eclairage compensé en standard / *Compensated lighting in standard* / Iluminazione standard rifasata **standard** : 0,9 < cos φ < 1

◆ α : **Ventilateur standard** / *Standard fan* / Ventilatore standard
β : **Ventilateur basse consommation d'énergie** / *Energy saving fan* / Ventilatore basso consumo

✸ **a : Lampe T5 Φ16mm + Ballasts électroniques** / *Electronic ballasts* / Reattori elettronici
b : Lampe T8 Φ26mm + Ballasts ferromagnétiques / *Ferromagnetic ballasts* / Reattori ferromagnetici
c : LED / *LED* / LED

MODELES / MODELS / MODELLE	L	Ventilateurs / *Fans* / Ventilatori				Cordons chauffants / *Heaters* / Antiappannanti				Eclairage / *Lighting* / Illuminazione							Dégivrage / *Defrost* / Sbrinamento		
						H2000		H2200			H2000		H2200		Fronton / *front* / *frontale*				
		230 V mono 50 Hz															400 V tri		
		◆	Nr	W	A	W	A	W	A	✸	W	A	W	A	W	A	Nr	W	A
COLISEUM 3	L188 / TG 3P	α	2	76	0.5	688	3.0	744	3.2	a	139	0.7	184	0.8	46	0.2	3	2891	4.2
		β	2	18	0.1					b	228	1.0	240	1.1	80	0.4			
										c	68	0.3	78	0.4					
	L250 4P	α	2	76	0.5	878	3.8	952	4.1	a	185	0.9	245	1.1	61	0.3	3	3996	5.8
		β	2	23	0.2					b	277	1.2	292	1.3	92	0.4			
										c	88	0.4	101	0.5					
	L375 6P	α	3	114	0.7	1302	5.7	1414	6.1	a	278	1.3	368	1.6	92	0.4	3	6246	9.0
		β	3	34	0.2					b	397	1.8	418	1.9	138	0.6			
										c	127	0.6	147	0.7					
	TG / MT Placard *Top* Alzata	α	2	76	0.5	603	2.6	661	2.9	a	93	0.4	123	0.5	63	0.3	3	1485	2.1
		β	2	15	0.1					b	157	0.6	166	0.8	106	0.5			
										c	49	0.2	56	0.3					
	TG / MT Bac *Chest* Vasca	α	2	80	0.5	185	0.8	185	0.8	Dégivrage / *Defrost* / Sbrinamento									
										gaz chaud / *hot gas* / gas caldo					électrique / *Electric* / Elettrico				
		β	2	11	0.1					230 V mono	Nr 1	620 W	2.7 A		400 V tri	Nr 3	2250 W	3.5 A	
- Joue avec face intérieure en couleur - *End panel with colour inside face* - Spalla con colore sul lato interno						16	0.07	16	0.07										

THERMOSTATIC VALVE FEATURES

FEATURES OF DANFOSS THERMOSTATIC VALVE
WITHOUT MOP - FITTING TO BE SOLDERED

Selection rules:
- effective heat extraction rate and evaporating temperature at lab conditions (25 °C 60% R.H. class 3);
- condensing pressure equivalent to a temperature of +35°C;
- undercooling 10 K.

			R404A	
			Gamme *Range* Gamma - B	
M	L		TYPE *MODEL* TYPO	ORIFICE *ORIFICE* ORIFICIO
COLISEUM 3				
	L250 - 4P		TES2	03
	L375 - 6P		TES2	04
	TG / MT	Placard Top Alzata	TS2	01
	TG / MT	Bac Chest Vasca	TES2	01

Refrigerating details refer to cabinets with thermostatic valves set to provide an undercooling value of 5K.

Ø LIQUID / SUCTION PIPING

DIRECT REFRIGERATION				
M		Ø (mm) ASPIRATION		Ø (mm) LIQUID *
		250	375	
COLISEUM 3	bottom outlet	22	22	10
	top outlet	18	22	

* Evaporator inlet without expansion valve : 12mm

THERMOSTATIC VALVE FEATURES

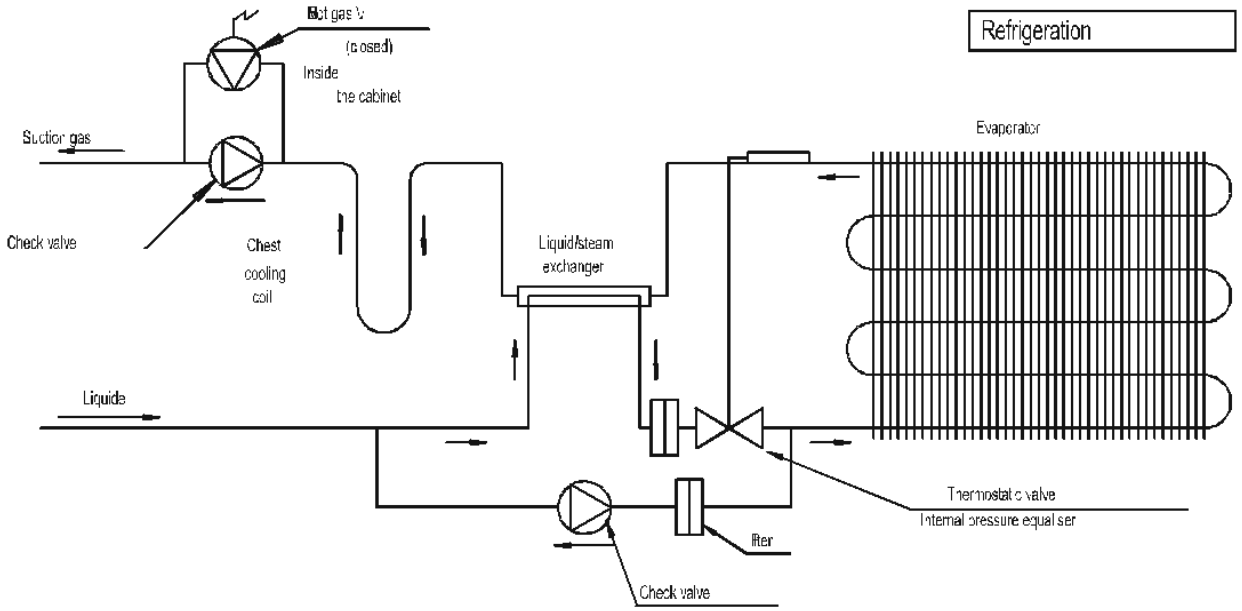
FEATURES OF DANFOSS THERMOSTATIC VALVE

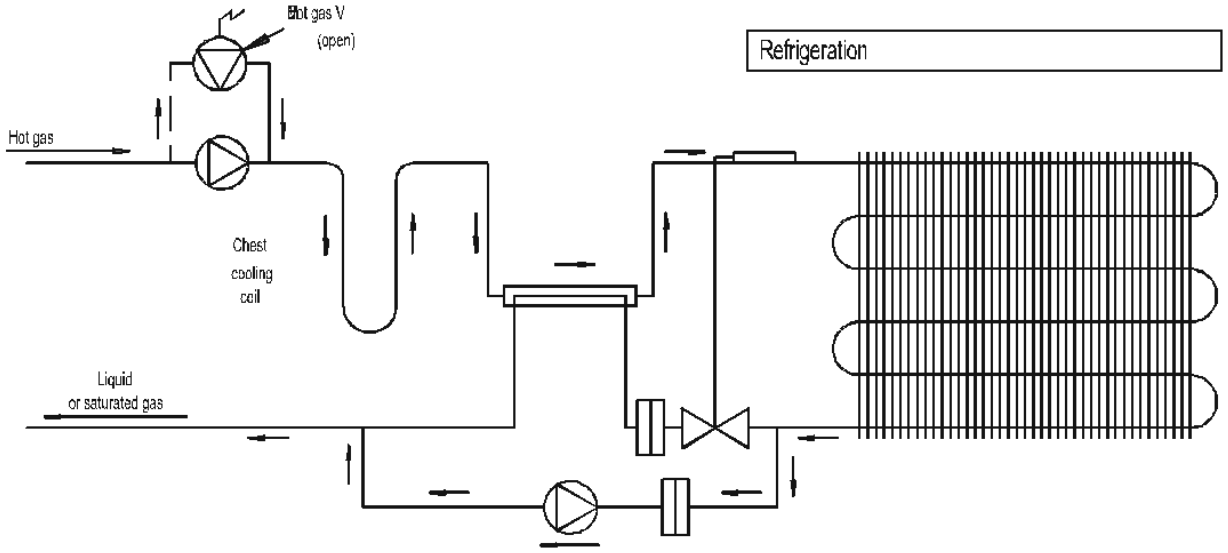
Selection rules:
- effective heat extraction rate and evaporating temperature at lab conditions (25 °C 60% R.H. class 3);
- condensing pressure equivalent to a temperature of +35°C;
- undercooling 10 K.
- Refrigerating details refer to cabinets with thermostatic valves set to provide an undercooling value of 5K.
- considering supercapacity as 25% and valve opening between 50 and 75%.

			R22	
M	**L**		**Type**	**Orifice** *Orifice* Düse
COLISEUM 3	**L188 - 3 P**		**AKV 10**	**3**
	L250 - 4 P			**3**
	L375 - 6 P			**4**
	TG	**Bac** Chest Vasca		**2**
	MT	**Placard** Top Alzata		**1**

Refrigerating details refer to cabinets with thermostatic valves set to provide an undercooling value of 5K.

HOT GAS DEFROST DIAGRAMS





CONTROLLER SETTINGS FOR EKC201C - 1/2

	Parameter function	Parameters of Danfoss Control	Controller Danfoss min. value	Danfoss Controller max. value	EC6 DANFOSS EKC201C
1.	Cut-out T° S4 / Sout *	Out	-50°C	50°C	-28
2.					
Thermostat parameters					
1.	Temperature unit (°C/°F)	r05	°C	°F	°C
2.	S4 / Sout Differential (r07 = cut-in T° * - cut-out T° Sout)	r07	0.1 K	20 K	1
3.	S3 / Sin Differential (r08 = cut-in T° * - cut-out T° Sin)	r08	0.1 K	20 K	1
4.	Correction of signal from S4 / Sout	r09	-20.0 K	20.0 K	0
5.	Correction of signal from S3 / Sin	r10	-20.0 K	20.0 K	0
6	Delta S in S out (reference S in)	r20	0 K	10,0 K	6
Alarm parameters					
1.	Temperature alarm timing *	A03	0	90 min	10
2.	Door alarm timing	A04	0	90 min	60
3.	Upper limit exceeded S4/ Sout (A05 = threshold * - Sout cut-out T°)	A05	0 K	50 K	13
4.	Lower limit exceeded S4/ Sout *	A06	-50 K	0 K	-50
5.	Upper limit exceeded S3/ Sin (A07 = threshold * - Sin cut-out T°)	A07	0 K	50 K	12
6.	Lower limit exceeded S3/ Sin	A08	-50 K	0 K	-50
7.	S3 / Sin alarm time-lag, with night covers on	A09	-50 K	50 K	0
VEM Parameters					
1.	Min. cut-in time	c01	0 min	15 min	0
2.	Interval between two starts	c02	0 min	15 min	0
3.	Cut-in frequency when sensor fails	c03	0%	100%	100
4.	Compressors off when door is open (yes/no)	c04	No	Yes	No
Defrost parameters					
1.	Compressor ON when defrosting	d01	No	Yes	No
2.	Defrost end T° * (automatic sensor selection following d10 setting)	d02	0	25 °C	5
3.	Interval between two defrosts (d03 = 24 / n° of defrosts/day*)	d03	OFF	48 h	24
4.	Safety time*	d04	0	180 min	60
5.	Defrost time-lag after power-up	d05	0	60 min	0
6.	Drip-off time	d06	0	20 min	10
7.	Delay for fan start after defrost	d07	0	20 min	5
8.	Fans start temperature (>25°C=OFF)	d08	-25	26°C	OFF
9.	Fans on when defrosting (yes no)	d09	No	Yes	No
10.	Defrost sensor	d10	OUT	DEF	DEF
11.	Alarm delay after defrost*	d11	0	200 min	35
12.	Duration of reading after defrost	d12	0	30 min	25
13.	Defrost start on power-up	d13	No	Yes	No

CONTROLLER SETTINGS FOR EKC201C - 2/2

	Parameter function	Parameters of Danfoss Control	Danfoss Controller min. value	Danfoss Controller max. value	EC6 DANFOSS EKC201C
Parameters for real time clock					
1.	1. Defrost start, hour	t01	OFF	23 h	
2.	1. Defrost start, minutes	t11	0	59 min	
3.	3. Defrost start, hour	t02	OFF	23 h	
4.	2. Defrost start, minutes	t12	0	59 mn	
5.	3. Defrost start, hour	t03	OFF	23 h	
6.	3. Defrost start, minutes	t13	0	59 min	
7.	4. Defrost start, hour	t04	OFF	23 h	
8.	4. Defrost start, minutes	t14	0	59 min	
9.	5. Defrost start, hour	t05	OFF	23 h	
10.	5. Defrost start, minutes	t15	0	59 min	
11.	6. Defrost start, hour	t06	OFF	23 h	
12.	6. Defrost start, minutes	t16	0	59 min	
13.	Adjustment of hour	t07	0	23 h	
14.	Adjustment of minutes	t08	0	59 min	
Ventilation parameters					
1.	Fans off on compressor cut-out	F01	No	Yes	No
2.	Fan stop timing	F02	0	15 min	0
3.	Fans off when door is open (yes/no)	F03	No	Yes	No
Other parameters					
1.	Timing for output signal on start-up	o01	0	600 sec	0
2.	Numeric input signals. OFF = not used; 1 = Bus 2 = Defrosting; 3 = Night; 4 = Main switch 5 = Syncronized Defrost with electric connections 6 = Door contact	o02	OFF	5	5
3.	Network address (from 0 to 60)	o03	0	990	0
4.	LON service pin	o04	OFF	100	OFF
5.	Access code	o05	OFF	100	OFF
6.	Type of probe used (Pt/PTC)	o06	Pt	PTC	Pt
7.	Synchronised defrost with electric connections 1 = not used; 2 = Master; 3 = Slave	o13	OFF	2	
8.	Selection of regulation sensor	o14	Aut	Out	Aut
9.	Temperature display scale	o15	No	Yes	Yes
10.	Max. delay after synchronised defrost	o16	1	30 min	15
11.	Select the display sensor signal	o17	Aut	In	In
12	Output manual command	o18	OFF	5	OFF
13.	Relay function (alarm/lighting)	o36	1	2	1

CONTROLLER SETTINGS FOR EKC414A - 1/2

	Parameter function	Parameters of Danfoss Control	Danfoss Controller min. value	Danfoss Controller max. value	EC6 DANFOSS EKC414A
Parameters for real time clock					**PGM73**
Set point *					**-28**
Thermostat					
1	Differential	r01	0.1K	10.0K	1
2	Max. limitation of thermostat setpoint	r02	-49°C	50°C	-25
3	Min. limitation of thermostat setpoint	r03	-50°C	49°C	-35
4	Temperature unit	r05	°C	°F	°C
5	Correction of the signal from S4 (Sout)	r09	-10.0K	10.0K	0
6	Correction of the signal from S3 (Sin)	r10	-10.0K	10.0K	0
7	Main switch for the controller	r12	OFF	ON	ON
8	Night Offset	r13	-20.0K	20.0K	0
9	Thermostat mode 1 = ON/OFF, 2 = Modulating	r14	1	2	1
10	Weighting of sensors for thermostat 100%=S4 (Sout), 0%=S3 (Sin)	r15	0	100	100
11	Time between melt periods	r16	0 h	10 h	0
12	Melt period	r17	0 min	10 min	0
Alarm					
1	Delay for temperature alarm	A03	0 min	120 min	10
2	Delay for door alarm	A04	0 min	90 min	60
3	Delay for Pulldown	A12	0 min	240 min	60
4	Hight temperature limit *	A13	-50°C	50°C	-15
5	Low temperature limit	A14	-50°C	50°C	-50
Compressor function					
1	Min. ON- time	c01	0 min.	50 min.	0
2	Min. OFF-time	c02	0 min.	50 min.	0
Defrost					
1	Defrost stop temperature	d02	0	25°C	5
2	Interval between defrost starts *	d03	OFF	48 h	24
3	Max. defrost duration	d04	0	180 min	60
4	Defrost time delay after power up	d05	0	240 min	0
5	Dripp-off time	d06	0	60 min	10
6	Delay for fan start after defrost	d07	0	60 min	5
7	Fan start temperature	d08	-15	0°C	-15
8	Fan cut in during defrost (yes/no)	d09	No	Yes	No
9	Defrost sensor 0=S4 (Sout), 1=S5 (Sdef), 2=none i.e. stop on time	d10	0	2	1
10	Defrost start at power up	d13	no	yes	No
Realtime clock					
1	1. Defrost start. Hours	t01	OFF	23hours	
2	1. Defrost start. Minutes	t11	0	59 min	
3	2. Defrost start. Hours	t02	OFF	23hours	
4	2. Defrost start. Minutes	t12	0	59 min	
5	3. Defrost start. Hours	t03	OFF	23hours	
6	3. Defrost start. Minutes	t13	0	59 min	
7	4. Defrost start. Hours	t04	OFF	23hours	
8	4. Defrost start. Minutes	t14	0	59 min	
9	5. Defrost start. Hours	t05	OFF	23hours	
10	5. Defrost start. Minutes	t15	0	59 min	
11	6. Defrost start. Hours	t06	OFF	23hours	
12	6. Defrost start. Minutes	t16	0	59 min	
13	Setting of Hours	t07	0	23hours	
14	Setting of Minutes	t08	0	59 min	
15	Start time day operation (0=constant day)	t17	0	23	
16	Start time night operation (0=constant day)	t18	0	23	
Injection control					
1	Max. limitation of superheat reference	n09	3.0 K	15.0 K	5
2	Min. limitation of superheat reference	n10	3.0 K	10.0 K	4
3	MOP Temperature	n11	-50.0°C	15°C/off	off
4	Period time AKV pulsing	n13	3 sec.	6 sec.	6
5	Adaptive inject off=injection parameters fixed on=injection parameters adjusted automatically	n14	OFF	ON	ON
6	AKV dimension	n16	10.0%	75.0%	30
7	Start OD%	n17	5.0%	70.0%	30
8	Stability	n18	0	10	0
9	Forced closing ON =Akv closed	n36	OFF	ON	OFF

CONTROLLER SETTINGS FOR EKC414A - 2/2

Fan control					
1	Fan stop on compressor cut out	**F01**	**No**	**Yes**	**No**
2	Delay for fan stop when compressor cuts out	**F02**	**0 min**	**30 min**	**0**
3	Temperature limit for fan stopped via S5 (Sdef) value	**F04**	**-50.0**	**50.0/off**	**OFF**
Miscellaneous					
1	Delay of output signal after start up	**o01**	**0 sec**	**600 sec**	**0**
2	DI control OFF=not used, 1=door alarm, 2=Defros start, 3=Night, 4=Main switch, 5=Slave defrost	**o02**	**OFF**	**5**	**5**
3	Network address	**o03**	**0**	**990**	**0**
4	ON/OFF Switch (service-pin message)	**o04**	**OFF**	**ON**	**OFF**
5	Access code	**o05**	**OFF**	**100**	**OFF**
6	Used sensor type (Pt/PTC)	**o06**	**Pt**	**PTC**	**Pt**
8	50/60 Hz	**o12**	**50**	**60**	**50**
9	DO output controls OFF=not used, 1=Def. Master, 2=Def. Slave	**o13**	**0**	**2**	
11	Max. standby time after defrost	**o16**	**1 min**	**30 min**	**15**
12	Display S4 % (Sout) 0%=S3 (Sin) 100%=S4 (Sout)	**o17**	**0**	**100**	**0**
13	Manual control of output via EKC	**o18**	**OFF**	**7**	**OFF**
14	Pressure Min. Value only EKC 414A	**o20**	**-1 bar**	**5 bar**	**-1**
15	Pressure Max. Value only EKC 414A	**o21**	**6 bar**	**36 bar**	**12**
16	ON input control	**o29**	**1**	**4**	**1**
17	Refrigerant setting ONLY for the use of R404A . WARNING : Wrong selection of refrigerant may cause damage to the compressor	**o30**	**0**	**30**	**19**
1	Only Reading Values	**u09 to u26**	**don't program**		

*** Parameter have to be adapted according to the food temperature class and the ambiant class**
*** Paramètres à adapter suivant classe de température denrées souhaitée**

H-

CARACTERISTIQUES DETENDEURS THERMOSTATIQUES MARQUE DANFOSS - SANS MOP - GAMME B - AVEC ADAPTATEUR A BRASER

THERMOSTATIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS - WITHOUT MOP - RANGE B - WITH BRAZING ADAPTER

CARATTERISTICHE DELLA VALVOLA TERMOSTATICA TIPO DANFOSS - SENZA MOP - GAMMA B - CON ADATTATORE A BRASARE

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température à + 35 °C ;**
- **sous-refroidissements de 10 K / 30 K.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcoolings 10 K / 30 K.*

Regole di selezione:

- Potenza frigorifera utile e temperatura di evaporazione in camera di prova a 25 °C 60% UR classe 3;
- Pressione di condensazione corrispondente alla temperatura di +35 °C;
- Sottoraffreddamenti di 10 K / 30 K.

		R404A			
		Gamme *Range* Gamma **- B**			
		10 K		***30 K***	
M	**L**	**TYPE** *MODEL* TIPO	**ORIFICE** *ORIFICE* ORIFICIO	**TYPE** *MODEL* TIPO	**ORIFICE** *ORIFICE* ORIFICIO
LEOPARD	**188**	**TES2**	**01**	*TES2*	*00*
	250		**01**		*01*
	375		**02**		*02*
	TG		**01**		*01*
WHALE 1000 G	**250**		**01**		*01*
	375		**03**		*02*
WHALE 1500 G	**250**		**02**		*01*
	375		**03**		*03*
WHALE 1500 NP	**250**		**02**		*01*
	375		**03**		*02*
WHALE 2000 G	**188**		**02**		*01*
	250		**03**		*02*
	375		**04**		*03*
	TG		**01**		*00*
WHALE 2000 G 2EV	**188**		**02**		*01*
	250		**03**		*02*
	375		**04**		*03*
	TG		**01**		*00*

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

.I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

H- (T°+)

CARACTERISTIQUES DETENDEURS THERMOSTATIQUES MARQUE DANFOSS - SANS MOP - GAMME N - AVEC ADAPTATEUR A BRASER

THERMOSTATIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS - WITHOUT MOP - RANGE N - WITH BRAZING ADAPTER

CARATTERISTICHE DELLA VALVOLA TERMOSTATICA TIPO DANFOSS - SENZA MOP - GAMMA N - CON ADATTATORE A BRASARE

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température à + 35 °C ;**
- **sous-refroidissement de 10 K.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K.*

Regole di selezione:

- Potenza frigorifera utile e temperatura di evaporazione in camera di prova a 25°C 60% UR classe 3;
- Pressione di condensazione corrispondente alla temperatura di +35°C;
- Sottoraffreddamento di 10K.

		R404A	
		Gamme *Range* Gamma **- N**	
M	**L**	**TYPE** *MODEL* TIPO	**ORIFICE** *ORIFICE* ORIFICIO
LEOPARD	**188**	**TES2**	**00**
	250		**00**
	375		**01**
	TG		**00**
WHALE 1000 G	**250**		**00**
	375		**01**
WHALE 1500 G	**250**		**00**
	375		**01**
WHALE 1500 NP	**250**		**00**
	375		**01**
WHALE 2000 G	**188**		**00**
	250		**01**
	375		**01**
	TG		**00**
WHALE 2000 G 2EV	**188**		**00**
	250		**01**
	375		**01**
	TG		**00**

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

CARACTERISTIQUES DETENDEURS ELECTRONIQUES MARQUE DANFOSS

H-

ELECTRONIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS

CARATTERISTICHE DELLA VALVOLA ELETTRONICA MARCA DANFOSS

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température de + 35 °C ;**
- **sous-refroidissement de 10 K / 30 K ;**
- **prise en compte de la surcapacité de 60% et du degré d'ouverture de la vanne compris entre 50 et 75% maxi conseillés par DANFOSS.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K / 30 K;*
- *provision for 60% of overcapacity and valve opening between 50 and 75% max as recommanded by DANFOSS.*

Regole di selezione :

- potenza frigorifera utile alla temperatura d'evaporazione in camera di prova a 25°C 60%UR classe3;
- pressione di condensazione corrispondente alla temperatura di 35°C;
- sottoraffreddamento 10 K / 30 K ;
- sovra capacità del 60% e grado di apertura compreso tra 50 e 75% massimo consigliato da DANFOSS.

		R404A		
M	L	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO	
			Sous-refroidissement *Subcooling* Sottoraffreddamento	
			10 K	*30 K*
LEOPARD	188	AKV 10	2	*2*
	250		3	*2*
	375		4	*3*
	TG		3	*2*
WHALE 1000 G	250		3	*2*
	375		4	*3*
WHALE 1500 G	250		3	*3*
	375		4	*4*
WHALE 1500 NP	250		3	*2*
	375		4	*3*
WHALE 2000 G	188		3	*3*
	250		4	*3*
	375		5	*4*
	TG		2	*2*
WHALE 2000 G 2EV	188		3	*3*
	250		4	*3*
	375		5	*4*
	TG		2	*2*

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

H- (T+)

CARACTERISTIQUES DETENDEURS ELECTRONIQUES MARQUE DANFOSS

ELECTRONIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS

CARATTERISTICHE DELLA VALVOLA ELETTRONICA MARCA DANFOSS

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température de + 35 °C ;**
- **sous-refroidissement de 10 K / 30 K ;**
- **prise en compte de la surcapacité de 25% et du degré d'ouverture de la vanne compris entre 50 et 75% maxi conseillés par DANFOSS.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K / 30 K;*
- *provision for 25% of overcapacity and valve opening between 50 and 75% max as recommanded by DANFOSS.*

Regole di selezione :

- potenza frigorifera utile alla temperatura d'evaporazione in camera di prova a 25°C 60%UR classe3;
- pressione di condensazione corrispondente alla temperatura di 35°C;
- sottoraffreddamento 10 K / 30 K ;
- sovra capacità del 25% e grado di apertura compreso tra 50 e 75% massimo consigliato da DANFOSS.

		R404A	
M	L	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO
LEOPARD	188	AKV 10	1
	250		1
	375		2
	TG		1
WHALE 1000 G	250		1
	375		2
WHALE 1500 G	250		2
	375		3
WHALE 1500 NP	250		2
	375		2
WHALE 2000 G	188		2
	250		3
	375		4
	TG		1
WHALE 2000 G 2EV	188		2
	250		3
	375		4
	TG		1

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

H-

CARACTERISTIQUES DETENDEURS THERMOSTATIQUES MARQUE DANFOSS - SANS MOP - GAMME B - AVEC ADAPTATEUR A BRASER

THERMOSTATIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS - WITHOUT MOP - RANGE B - WITH BRAZING ADAPTER

CARATTERISTICHE DELLA VALVOLA TERMOSTATICA TIPO DANFOSS - SENZA MOP - GAMMA B - CON ADATTATORE A BRASARE

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température à + 35 °C ;**
- **sous-refroidissemenst de 10 K / 30 K.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcoolings 10 K / 30 K.*

Regole di selezione:

- Potenza frigorifera utile e temperatura di evaporazione in camera di prova a 25 °C 60% UR classe 3;
- Pressione di condensazione corrispondente alla temperatura di +35 °C;
- Sottoraffreddamenti di 10 K / 30 K.

		R22			
		Gamme *Range* Gamma **- B**			
		10 K		***30 K***	
M	**L**	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO
LEOPARD	188	**TEX2**	**00**	*TEX2*	*00*
	250		**00**		*00*
	375		**01**		*01*
	TG		**00**		*00*
WHALE 1000 G	250		**00**		*00*
	375		**01**		*01*
WHALE 1500 G	250		**01**		*01*
	375		**02**		*02*
WHALE 1500 NP	250		**01**		*00*
	375		**02**		*01*
WHALE 2000 G	188		**01**		*01*
	250		**02**		*01*
	375		**03**		*03*
	TG		**00**		*00*
WHALE 2000 G 2EV	188		**01**		*01*
	250		**02**		*01*
	375		**03**		*03*
	TG		**00**		*00*

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

H- (T°+)

CARACTERISTIQUES DETENDEURS THERMOSTATIQUES MARQUE DANFOSS - SANS MOP - GAMME N - AVEC ADAPTATEUR A BRASER

THERMOSTATIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS - WITHOUT MOP - RANGE N - WITH BRAZING ADAPTER

CARATTERISTICHE DELLA VALVOLA TERMOSTATICA TIPO DANFOSS - SENZA MOP - GAMMA N - CON ADATTATORE A BRASARE

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température à + 35 °C ;**
- **sous-refroidissement de 10 K.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K.*

Regole di selezione:

- Potenza frigorifera utile e temperatura di evaporazione in camera di prova a 25°C 60% UR classe 3;
- Pressione di condensazione corrispondente alla temperatura di +35°C;
- Sottoraffreddamento di 10K.

		R22	
		Gamme *Range* Gamma - **N**	
M	**L**	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO
LEOPARD	188	TEX2	0X
	250		00
	375		00
	TG		0X
WHALE 1000 G	250		00
	375		00
WHALE 1500 G	250		00
	375		01
WHALE 1500 NP	250		00
	375		00
WHALE 2000 G	188		00
	250		00
	375		01
	T		0X
WHALE 2000 G 2EV	188		00
	250		00
	375		01
	TG		0X

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

CARACTERISTIQUES DETENDEURS ELECTRONIQUES MARQUE DANFOSS

H-

ELECTRONIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS

CARATTERISTICHE DELLA VALVOLA ELETTRONICA MARCA DANFOSS

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température de + 35 °C ;**
- **sous-refroidissement de 10 K / 30 K ;**
- **prise en compte de la surcapacité de 60% et du degré d'ouverture de la vanne compris entre 50 et 75% maxi conseillés par DANFOSS.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K / 30 K;*
- *provision for 60% of overcapacity and valve opening between 50 and 75% max as recommanded by DANFOSS.*

Regole di selezione :

- potenza frigorifera utile alla temperatura d'evaporazione in camera di prova a 25°C 60%UR classe3;
- pressione di condensazione corrispondente alla temperatura di 35°C;
- sottoraffreddamento 10 K / 30 K;
- sovra capacità del 60% e grado di apertura compreso tra 50 e 75% massimo consigliato da DANFOSS.

		R22		
M	L	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO	
			Sous-refroidissement *Subcooling* Sottoraffreddamento	
			10 K	*30 K*
LEOPARD	188	AKV 10	1	*1*
	250		2	*2*
	375		3	*3*
	TG		2	*1*
WHALE 1000 G	250		2	*2*
	375		3	*3*
WHALE 1500 G	250		3	*2*
	375		4	*3*
WHALE 1500 NP	250		2	*2*
	375		3	*3*
WHALE 2000 G	188		3	*2*
	250		3	*3*
	375		4	*4*
	TG		2	*1*
WHALE 2000 G 2EV	188		3	*2*
	250		3	*3*
	375		4	*4*
	TG		2	*1*

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

CARACTERISTIQUES DETENDEURS ELECTRONIQUES MARQUE DANFOSS

H- (T°+)

ELECTRONIC EXPANSION VALVES REQUIREMENTS TRADE MARK DANFOSS

CARATTERISTICHE DELLA VALVOLA ELETTRONICA MARCA DANFOSS

Règles de sélection :

- **puissance frigorifique utile et température d'évaporation en chambre d'essai à 25 °C 60% HR classe 3 ;**
- **pression de condensation correspondant à la température de + 35 °C ;**
- **sous-refroidissement de 10 K ;**
- **prise en compte de la surcapacité de 25% et du degré d'ouverture de la vanne compris entre 50 et 75% maxi conseillés par DANFOSS.**

Selection rules :

- *useful refrigeration capacity and test room evaporation temperature of 25 °C 60% RH class 3 ;*
- *condensation pressure corresponding to temperature of + 35 °C ;*
- *subcooling 10 K;*
- *provision for 25% of overcapacity and valve opening between 50 and 75% max as recommanded by DANFOSS.*

Regole di selezione :

- potenza frigorifera utile alla temperatura d'evaporazione in camera di prova a 25°C 60%UR classe3;
- pressione di condensazione corrispondente alla temperatura di 35°C;
- sottoraffreddamento 10 K;
- sovra capacità del 25% e grado di apertura compreso tra 50 e 75% massimo consigliato da DANFOSS.

		R22	
M	L	TYPE *MODEL* TIPO	ORIFICE *ORIFICE* ORIFICIO
LEOPARD	188	AKV 10	1
	250		2
	375		3
	TG		2
WHALE 1000 G	250		2
	375		3
WHALE 1500 G	250		2
	375		3
WHALE 1500 NP	250		2
	375		3
WHALE 2000 G	188		3
	250		3
	375		4
	TG		1
WHALE 2000 G 2EV	188		3
	250		3
	375		4
	TG		1

Les données frigorifiques sont établies pour des meubles ayant des détendeurs réglés pour obtenir une surchauffe de l'ordre de 5 K.

The data are given for cabinets having expansion valves adapted for having a superheat temperature of 5 K.

I dati frigoriferi fanno riferimento ai mobili con valvola termostatica regolata per avere un surriscaldamento di 5K

WIRING DIAGRAMS

linear cabinets chest
linear cabinets + MT superstructure

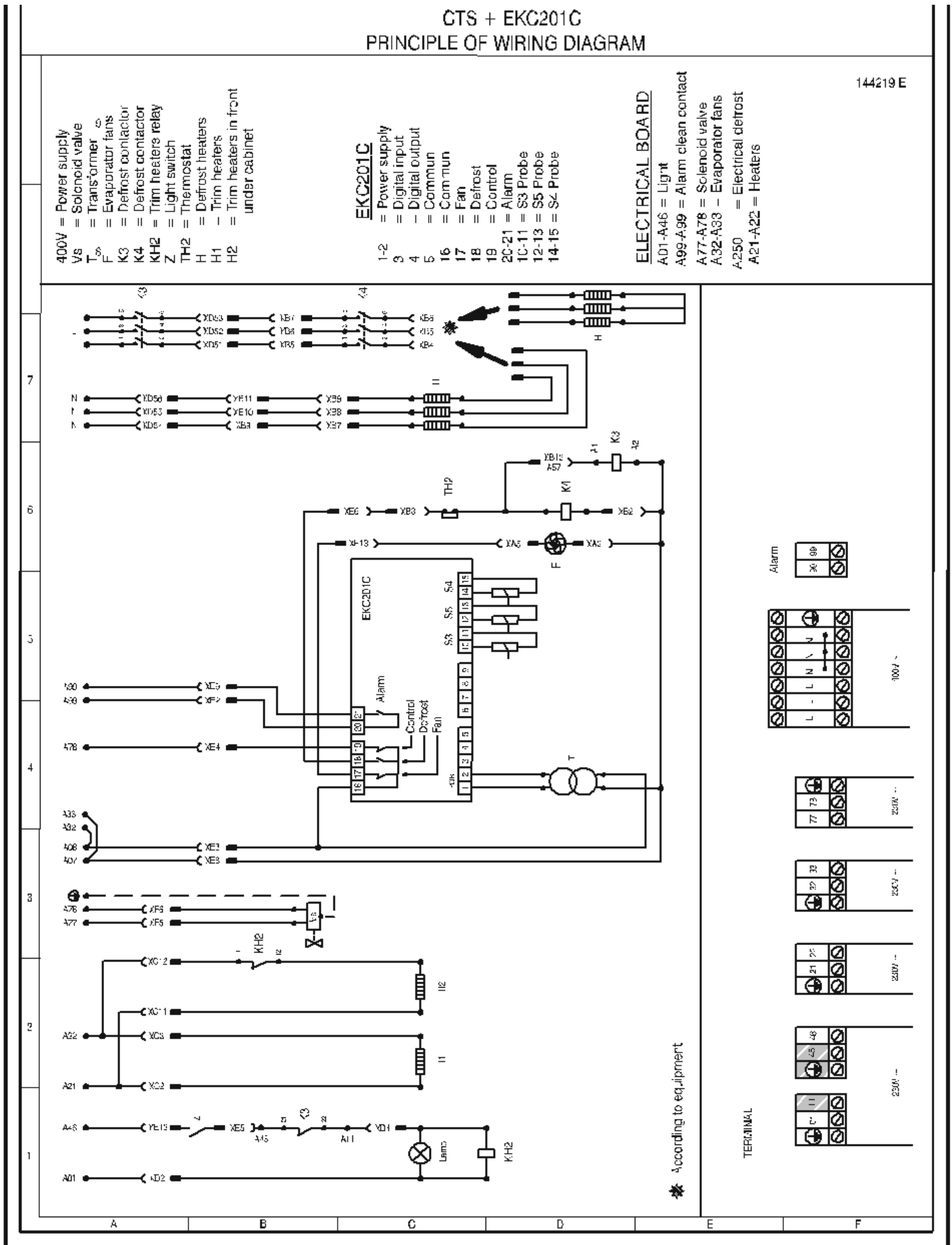
CTS + EKC201C
PRINCIPLE OF WIRING DIAGRAM

144219 E

400V = Power supply
Vs = Solenoid valve
T_S = Transformer
F = Evaporator fans
K3 = Defrost contactor
K4 = Defrost contactor
KH2 = Trim heaters relay
Z = Light switch
TH2 = Thermostat
H = Defrost heaters
H1 = Trim heaters
H2 = Trim heaters in front under cabinet

EKC201C
1-2 = Power supply
3 = Digital input
4 = Digital output
5 = Commun
16 = Commun
17 = Fan
18 = Defrost
19 = Control
20-21 = Alarm
10-11 = S3 Probe
12-13 = S5 Probe
14-15 = S4 Probe

ELECTRICAL BOARD
A01-A46 = Light
A99-A99 = Alarm clean contact
A77-A78 = Solenoid valve
A32-A33 = Evaporator fans
A250 = Electrical defrost
A21-A22 = Heaters



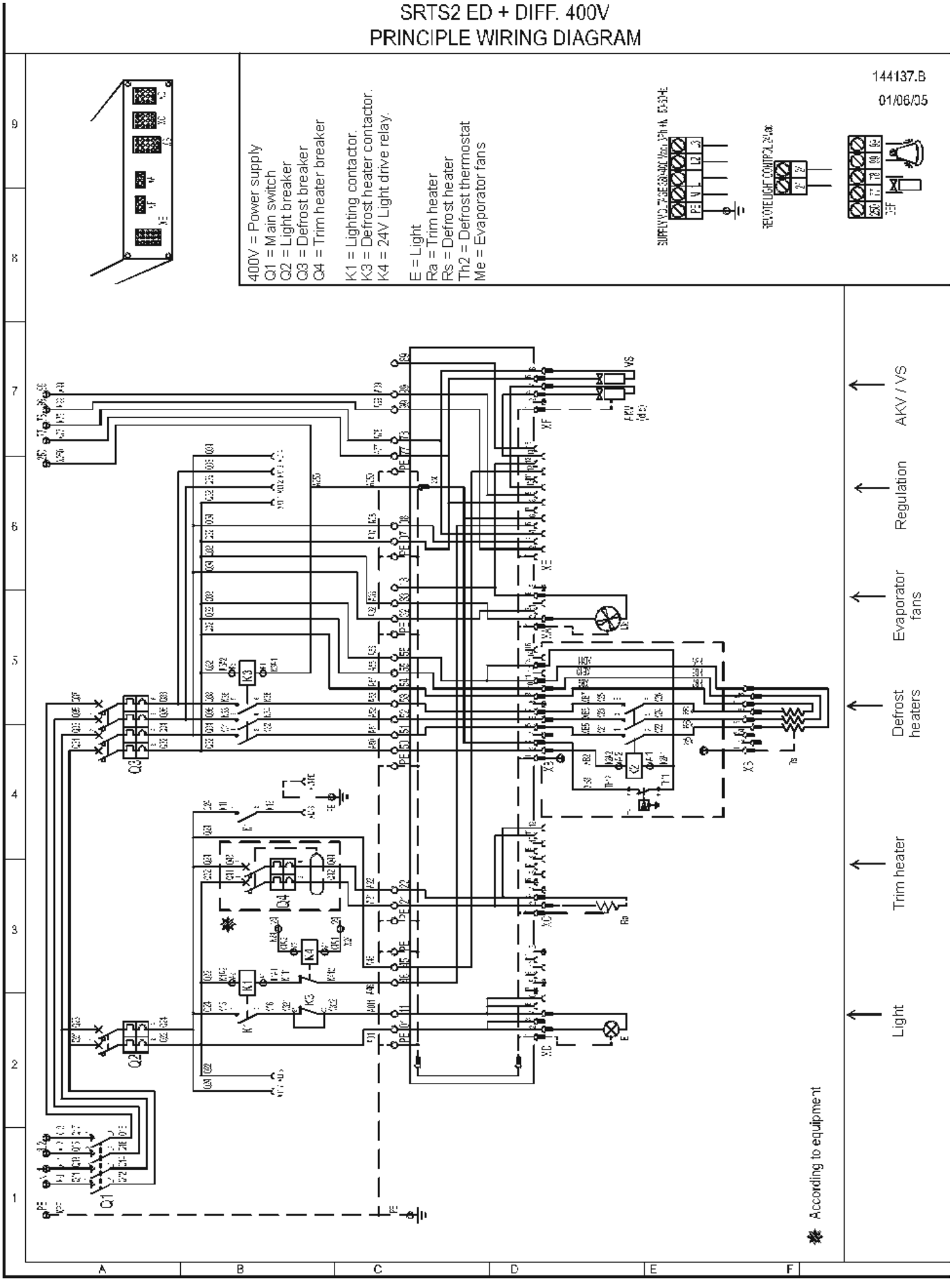
SRTS2 ED + DIFF. 400V
PRINCIPLE WIRING DIAGRAM

144137.B
01/06/05

400V = Power supply
Q1 = Main switch
Q2 = Light breaker
Q3 = Defrost breaker
Q4 = Trim heater breaker

K1 = Lighting contactor.
K3 = Defrost heater contactor.
K4 = 24V Light drive relay.

E = Light
Ra = Trim heater
Rs = Defrost heater
Th2 = Defrost thermostat
Me = Evaporator fans



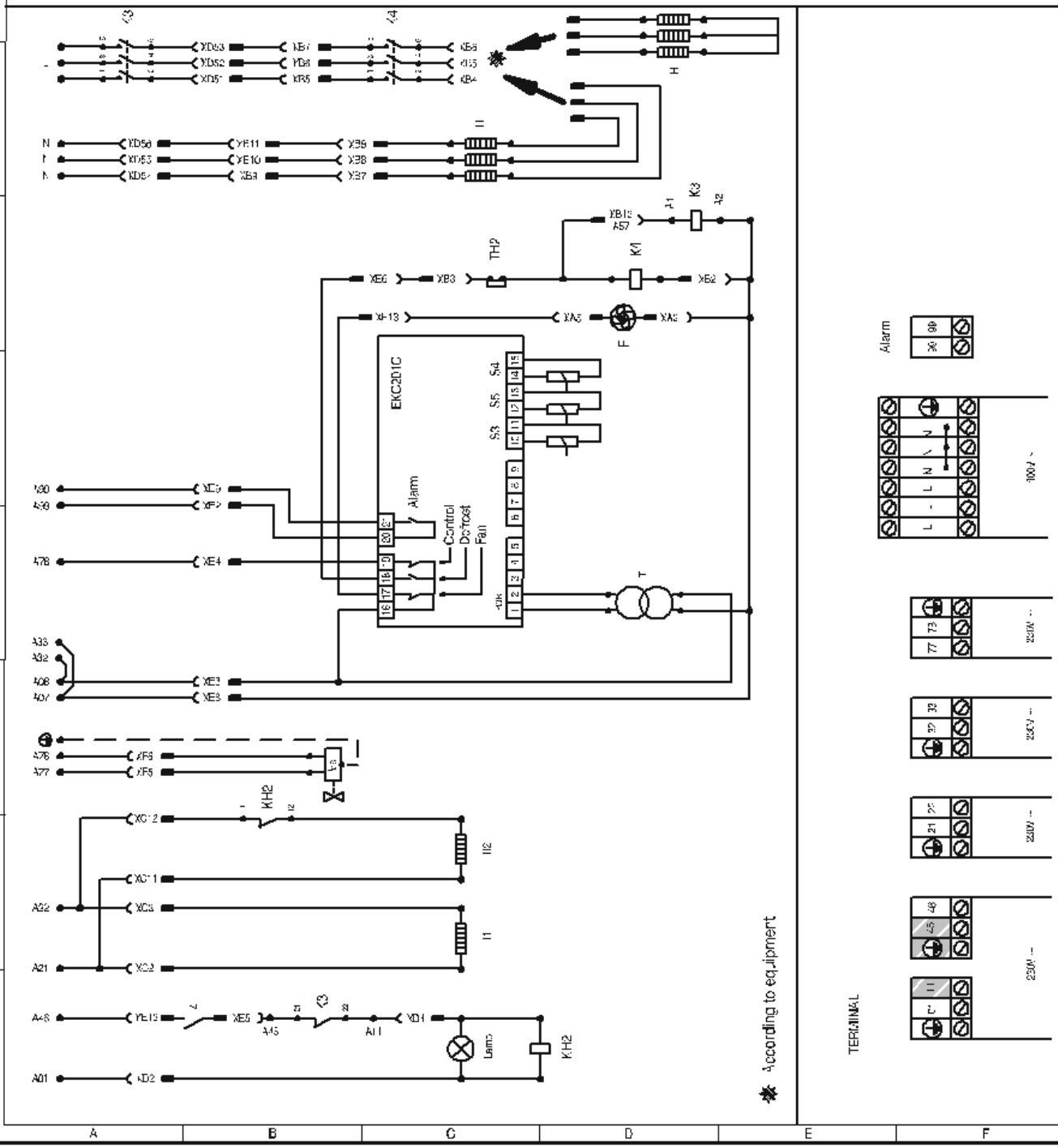
CTS + EKC201C
PRINCIPLE OF WIRING DIAGRAM

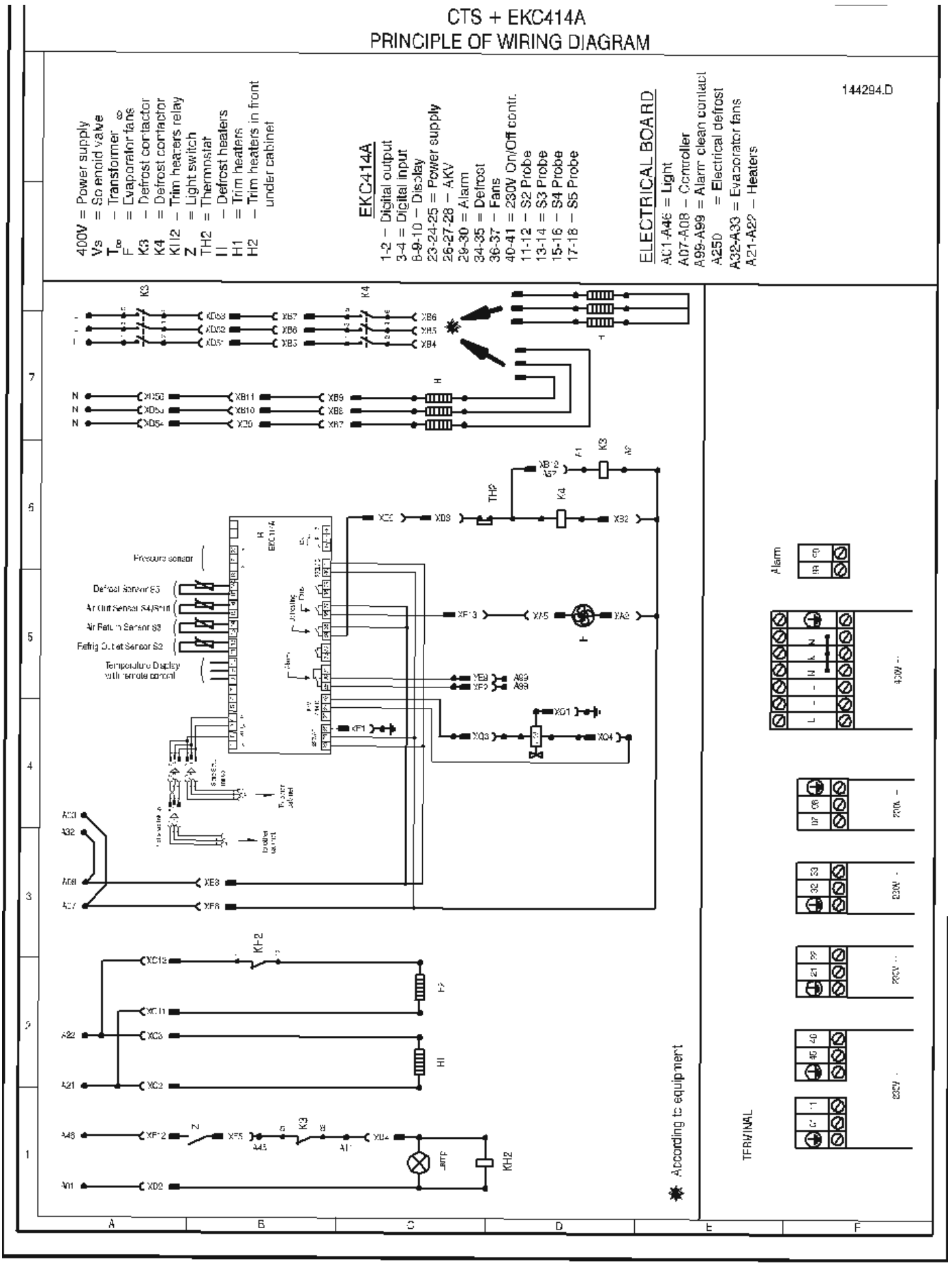
144219 E

400V = Power supply
Vs = Solenoid valve
T = Transformer
F = Evaporator fans
K3 = Defrost contactor
K4 = Defrost contactor
KH2 = Trim heaters relay
Z = Light switch
TH2 = Thermostat
H = Defrost heaters
H1 = Trim heaters
H2 = Trim heaters in front under cabinet

EKC201C
1-2 = Power supply
3 = Digital input
4 = Digital output
5 = Commun
16 = Commun
17 = Fan
18 = Defrost
19 = Control
2C-21 = Alarm
1C-11 = S3 Probe
12-13 = S5 Probe
14-15 = S4 Probe

ELECTRICAL BOARD
A01-A46 = Light
A99-A99 = Alarm clean contact
A77-A78 = Solenoid valve
A32-A33 = Evaporator fans
A250 = Electrical defrost
A21-A22 = Heaters




CTS + EKC414A
PRINCIPLE OF WIRING DIAGRAM
144294.D
400V = Power supply
Vs = Solenoid valve
T = Transformer
F = Evaporator fans
K3 = Defrost contactor
K4 = Defrost contactor
KH2 = Trim heaters relay
Z = Light switch
TH2 = Thermostat
H = Defrost heaters
H1 = Trim heaters
H2 = Trim heaters in front under cabinet
EKC414A
1-2 = Digital output
3-4 = Digital input
8-9-10 = Display
23-24-25 = Power supply
26-27-28 = AKV
29-30 = Alarm
34-35 = Defrost
36-37 = Fans
40-41 = 230V On/Off contr.
11-12 = S2 Probe
13-14 = S3 Probe
15-16 = S4 Probe
17-18 = S5 Probe
ELECTRICAL BOARD
A01-A46 = Light
A07-A08 = Controller
A99-A99 = Alarm clean contact
A250 = Electrical defrost
A32-A33 = Evaporator fans
A21-A22 = Heaters
According to equipment
TERMINAL
Alarm
Pressure sensor
Defrost Sensor S3
Air Outlet Sensor S4/Spare
Air Return Sensor S5
Refrig Outlet Sensor S2
Temperature Display with remote control
THP
KH2
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
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A15
A16
A17
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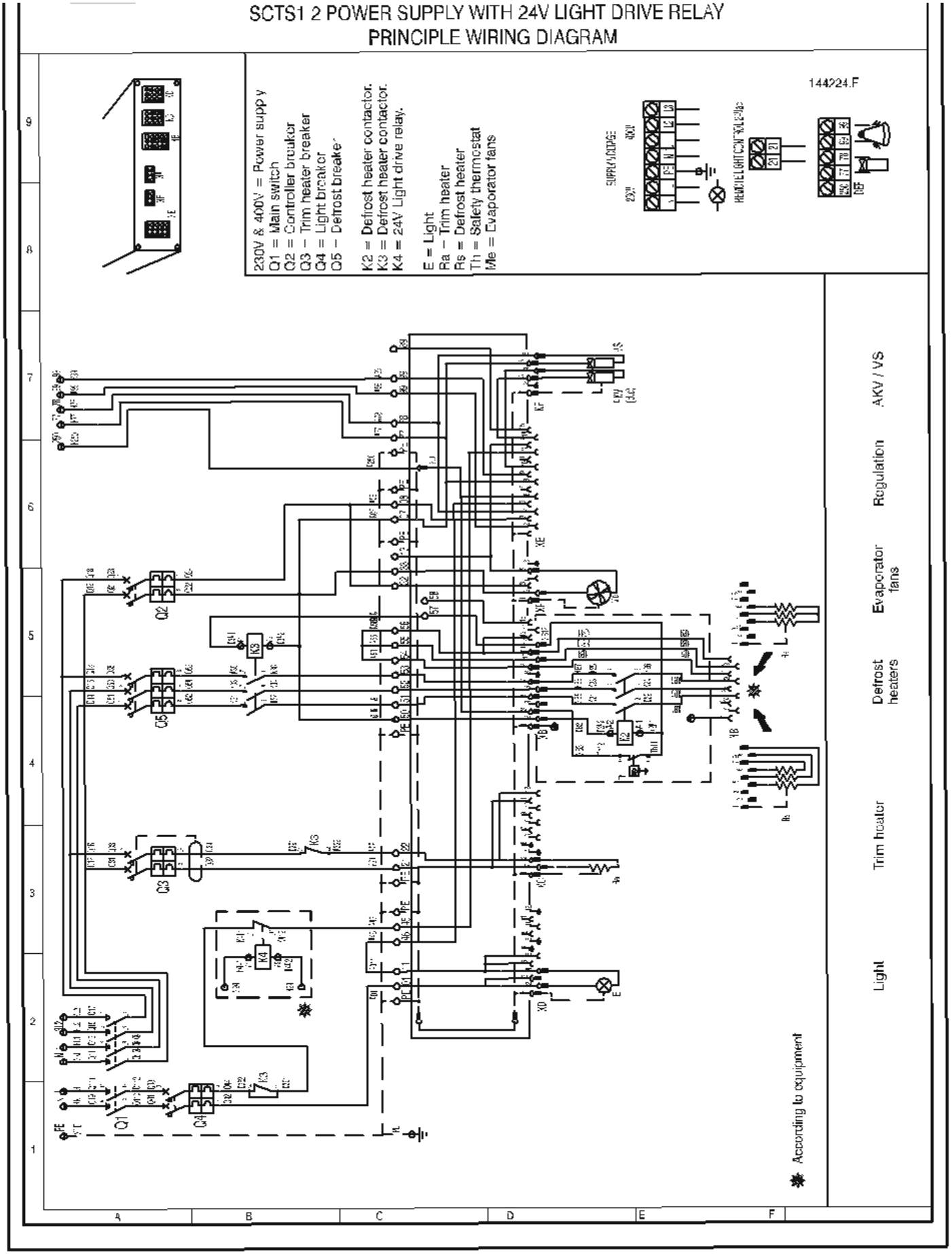
A100

SCTS1 2 POWER SUPPLY WITH 24V LIGHT DRIVE RELAY
PRINCIPLE WIRING DIAGRAM



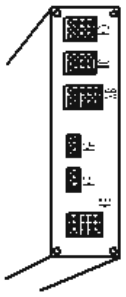
CTS PRINCIPLE WIRING DIAGRAM

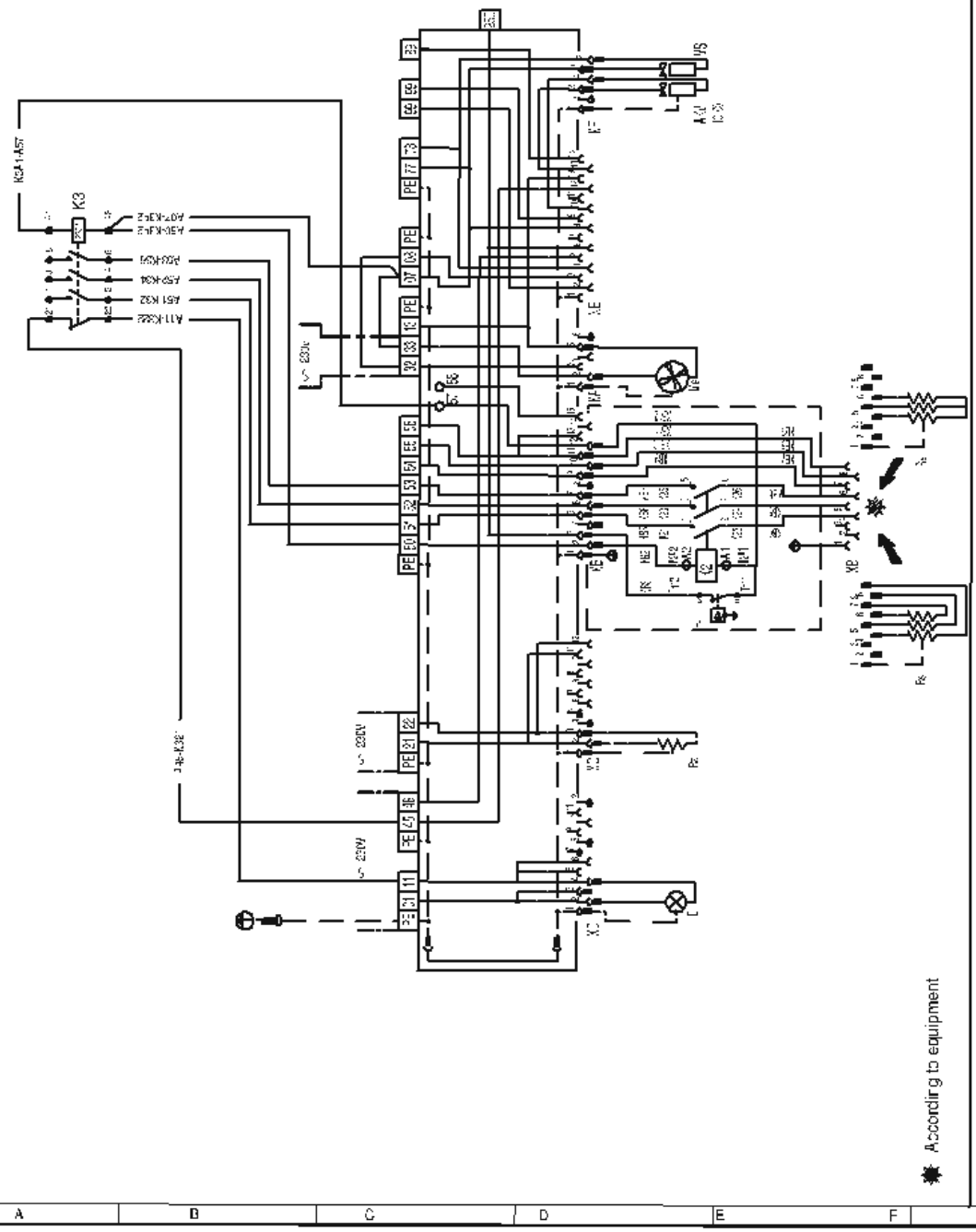
144441.B

400V – Power supply

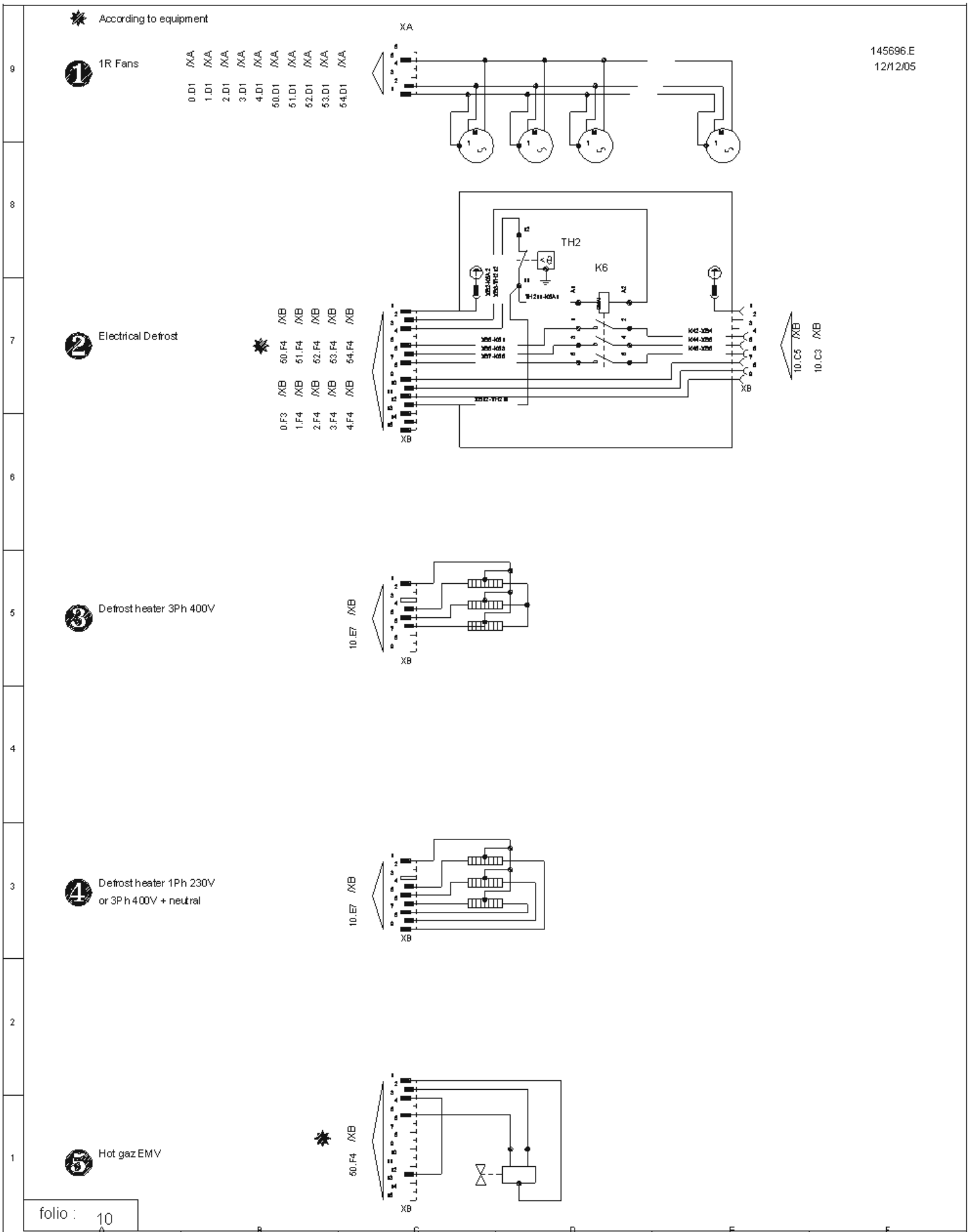
K2 – Defrost heater contactor.
K3 = Defrost heater contactor.

E = Light
Ra – Trim heater
Rs = Defrost heater
Ih – Safety thermostat
Me = Evaporator fans

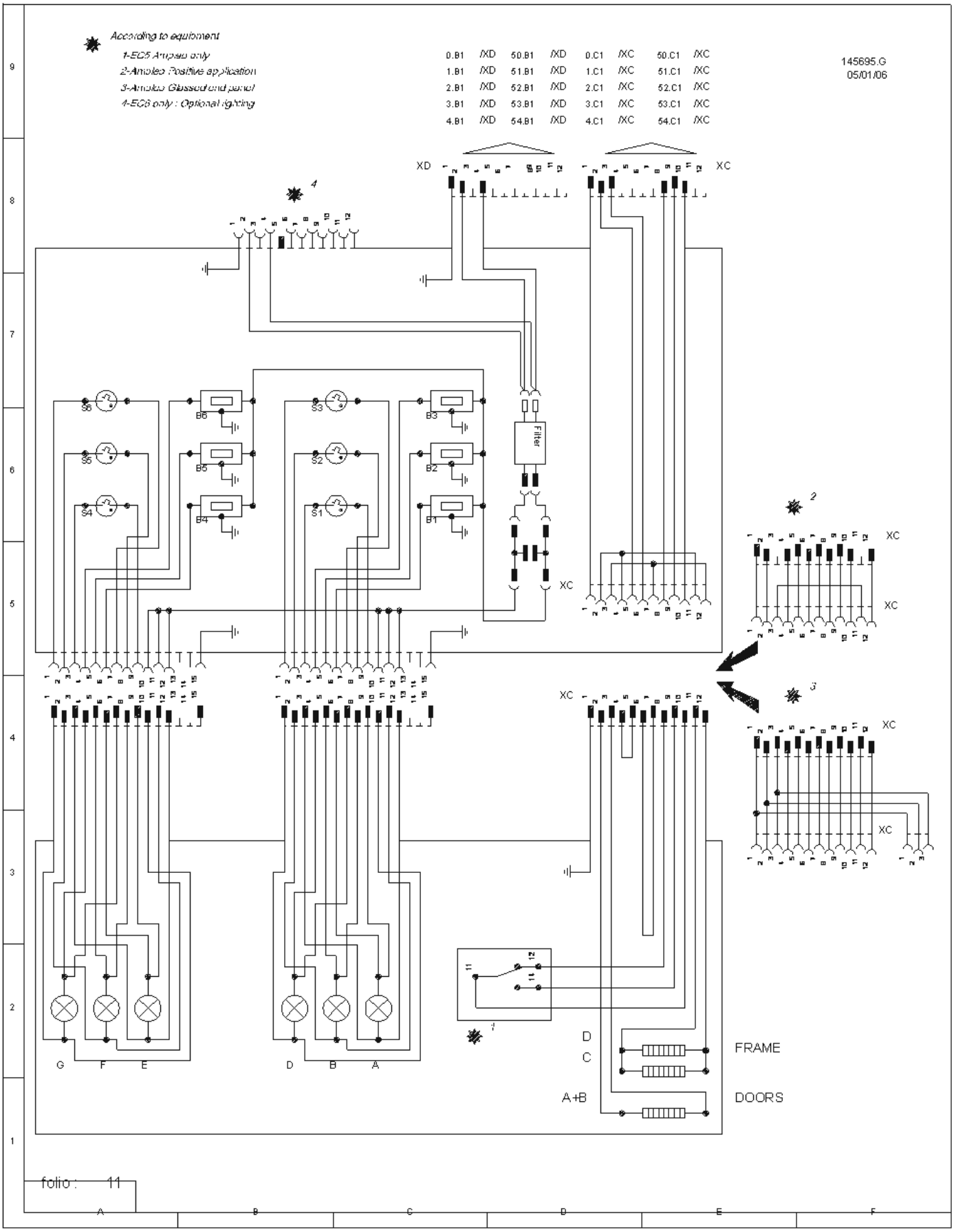




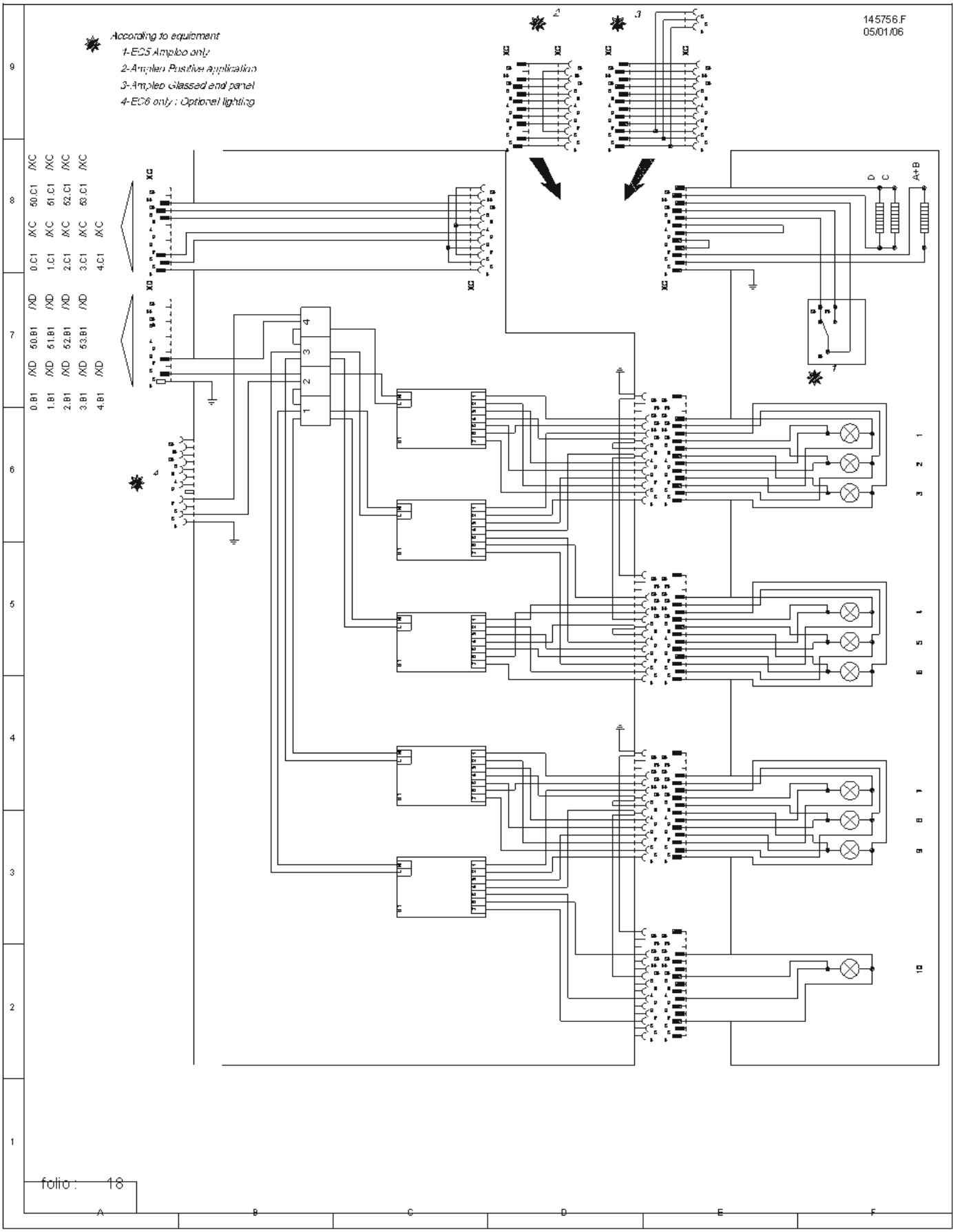
WIRING DIAGRAM (FANS/DEFROST/SAFETY THERMOSTAT)



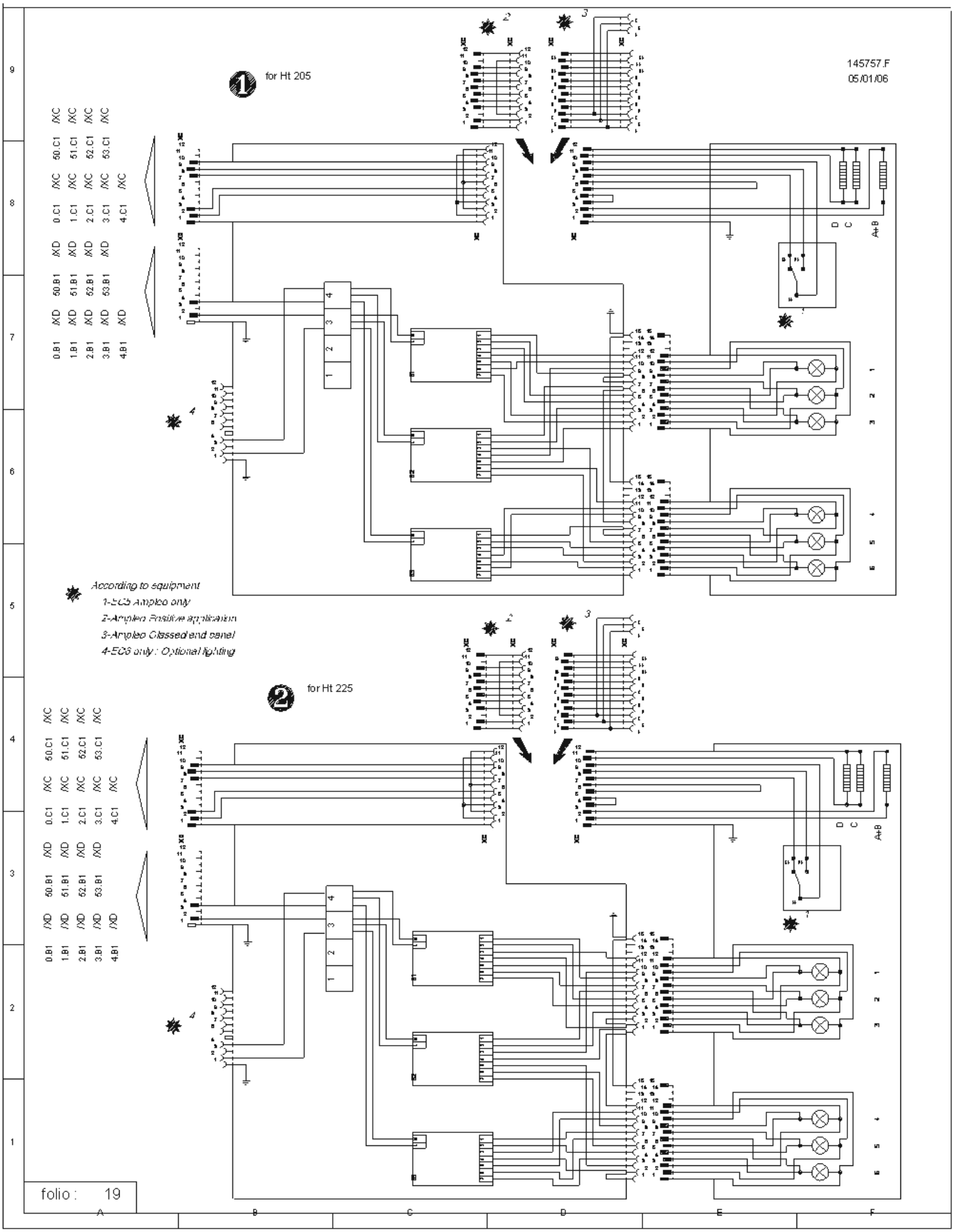
WIRING DIAGRAM (FRAME LIGHT Ø26 FERROMAGNETIC / HEATERS)



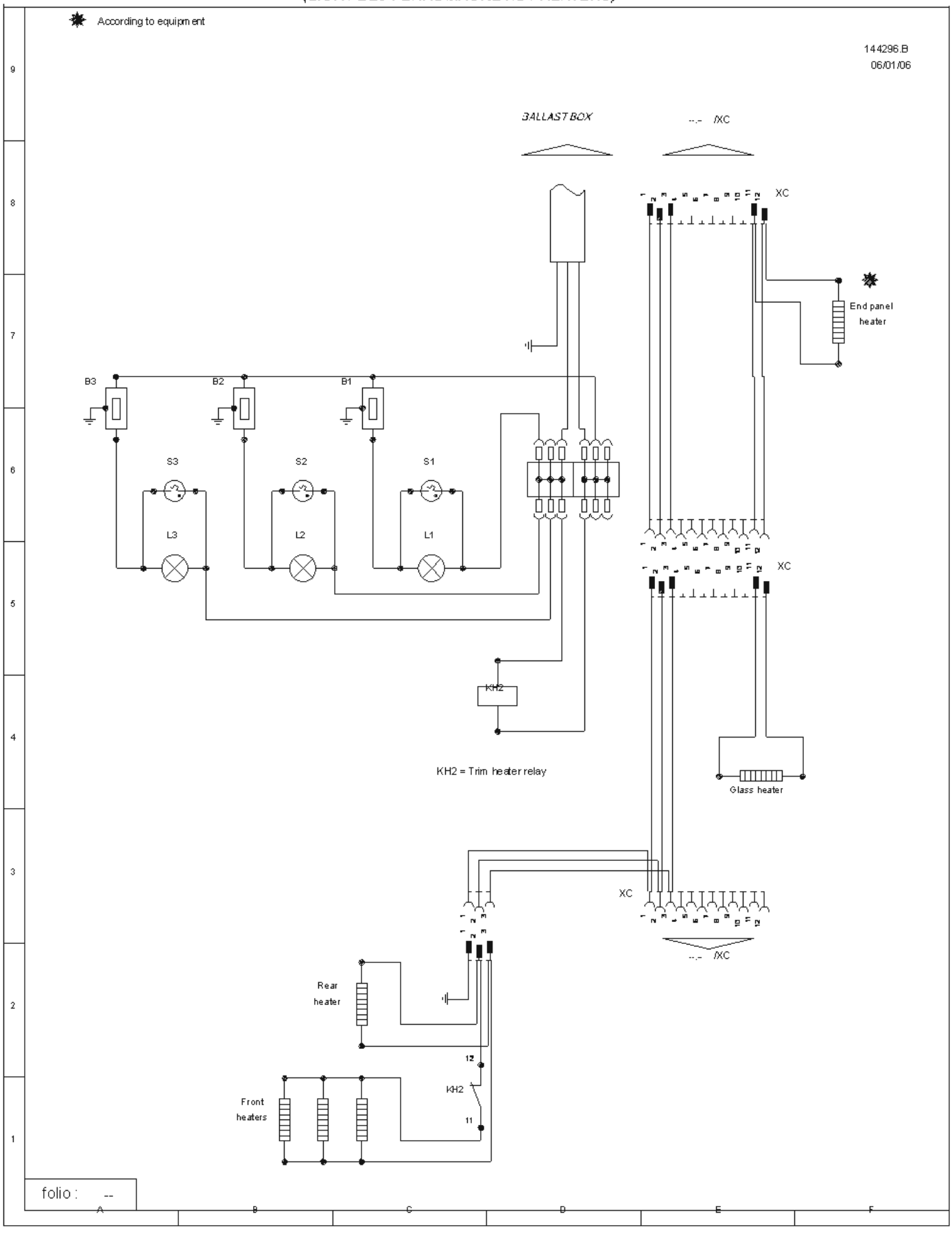
WIRING DIAGRAM (FRAME LIGHT Ø16 ELECTRONIC / HEATERS)



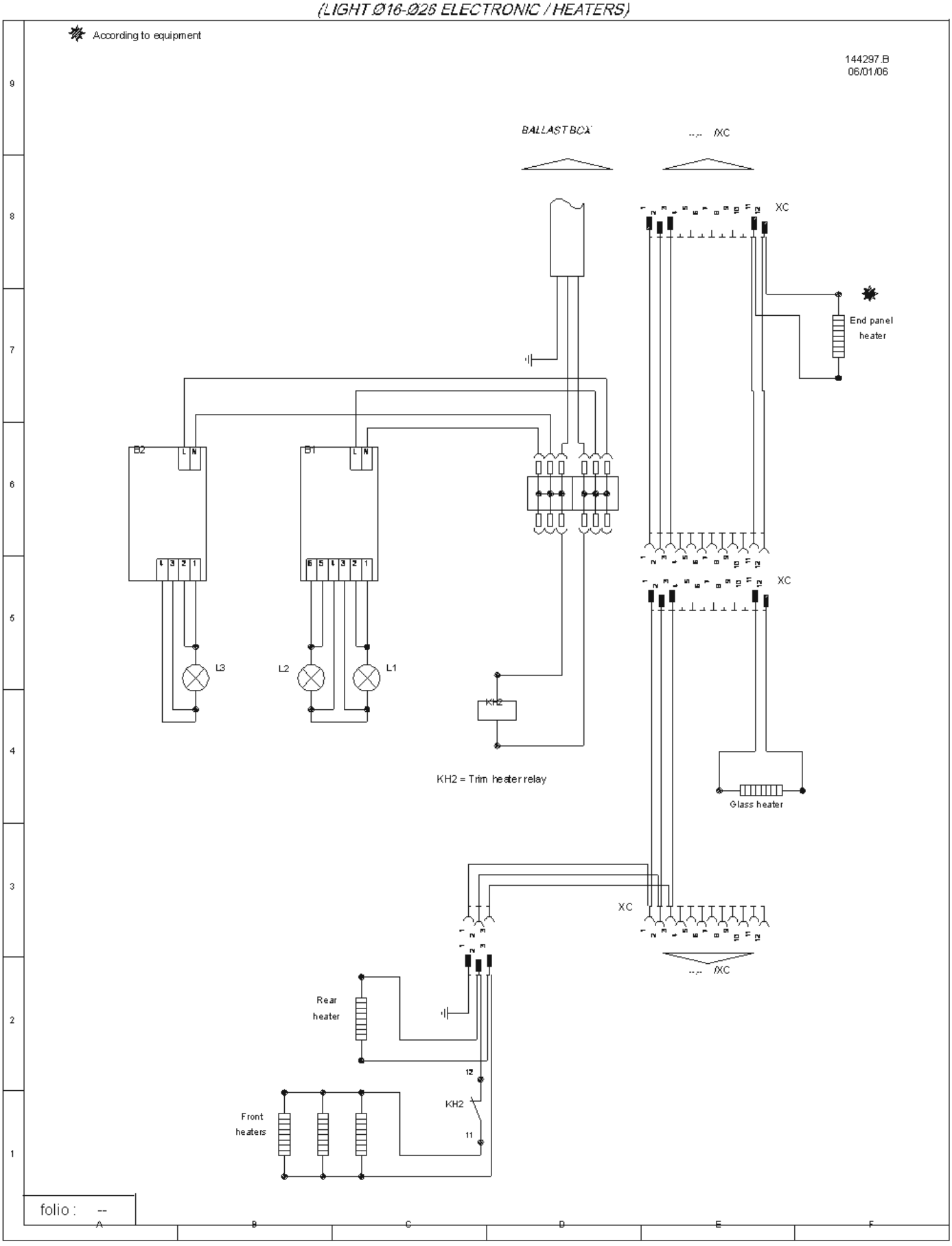
WIRING DIAGRAM (FRAME LIGHT Ø26 ELECTRONIC / HEATERS)



WIRING DIAGRAM UNDER TOP CABINET (LIGHT Ø26 FERROMAGNETIC / HEATERS)



WIRING DIAGRAM UNDER TOP CABINET (LIGHT Ø16-Ø26 ELECTRONIC / HEATERS)



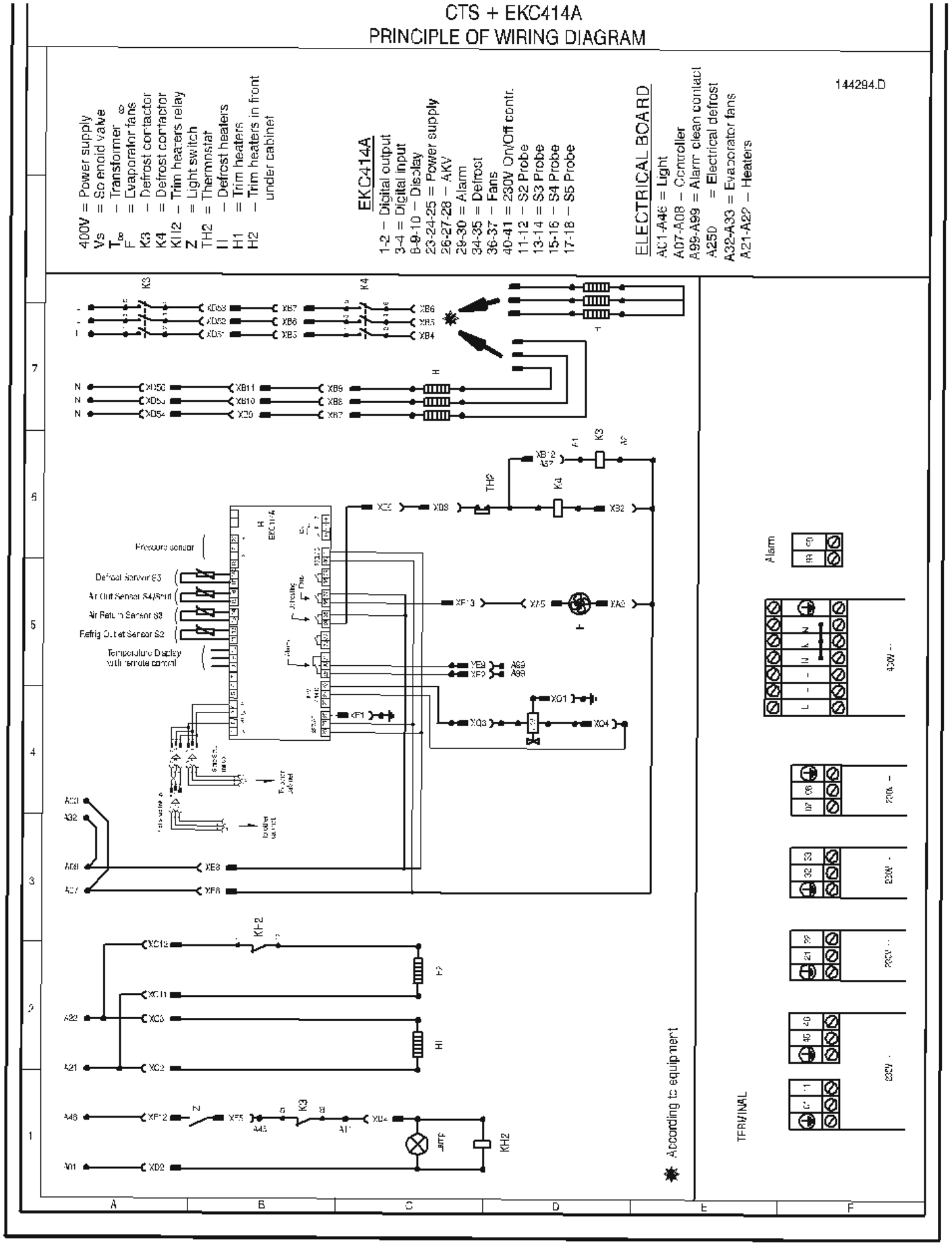
CTS + EKC414A
PRINCIPLE OF WIRING DIAGRAM

144294.D

400V = Power supply
Vs = Solenoid valve
T_R = Transformer
F = Evaporator fans
K3 = Defrost contactor
K4 = Defrost contactor
KH2 = Trim heaters relay
Z = Light switch
TH2 = Thermostat
I1 = Defrost heaters
H1 = Trim heaters
H2 = Trim heaters in front under cabinet

EKC414A
1-2 = Digital output
3-4 = Digital input
8-9-10 = Display
23-24-25 = Power supply
26-27-28 = 4KV
29-30 = Alarm
34-35 = Defrost
36-37 = Fans
40-41 = 230V On/Off contr.
11-12 = S2 Probe
13-14 = S3 Probe
15-16 = S4 Probe
17-18 = S5 Probe

ELECTRICAL BOARD
AC1-A46 = Light
A07-A08 = Controller
A95-A99 = Alarm clean contact
A25D = Electrical defrost
A32-A33 = Evaporator fans
A21-A22 = Heaters



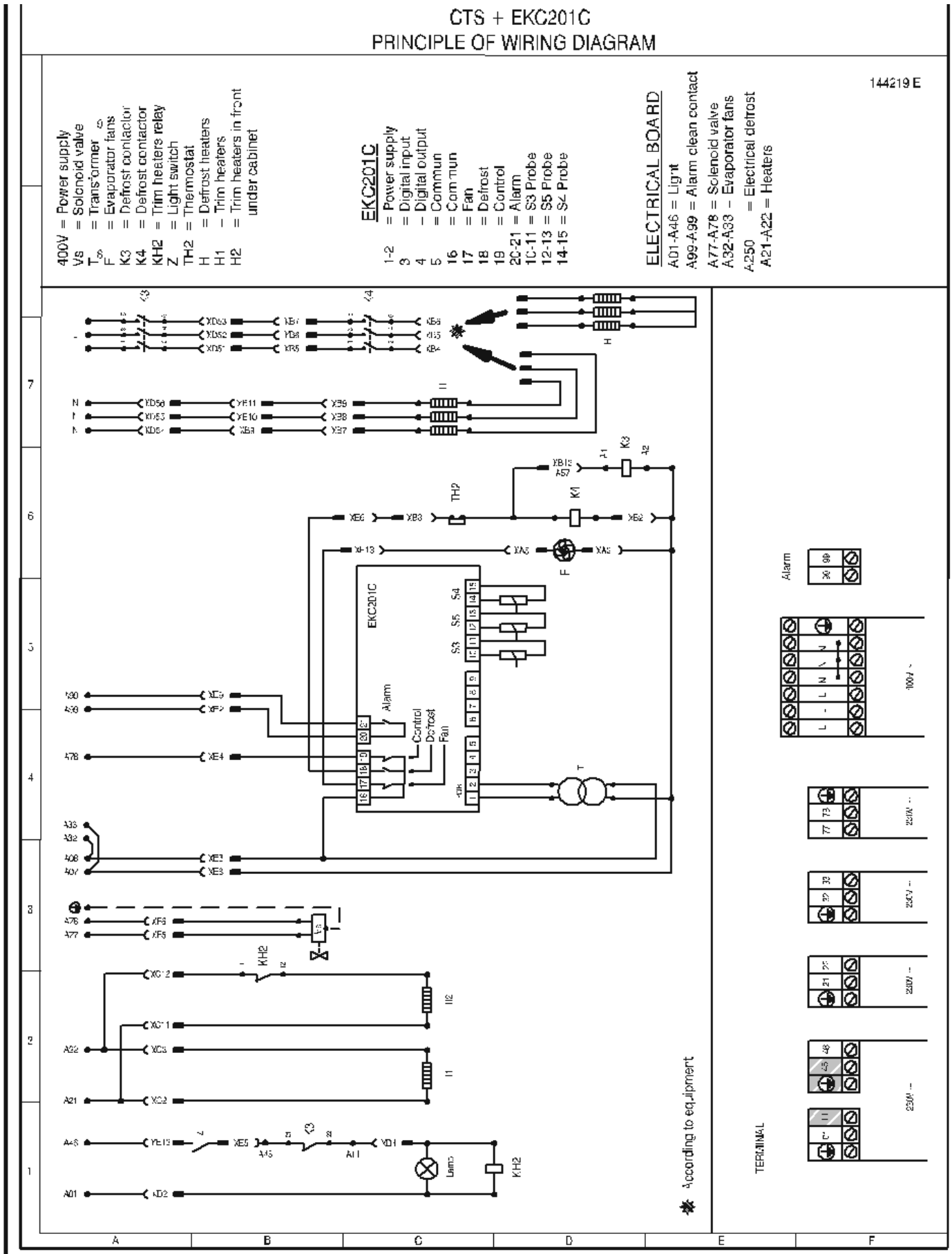
CTS + EKC201C
PRINCIPLE OF WIRING DIAGRAM

144219 E

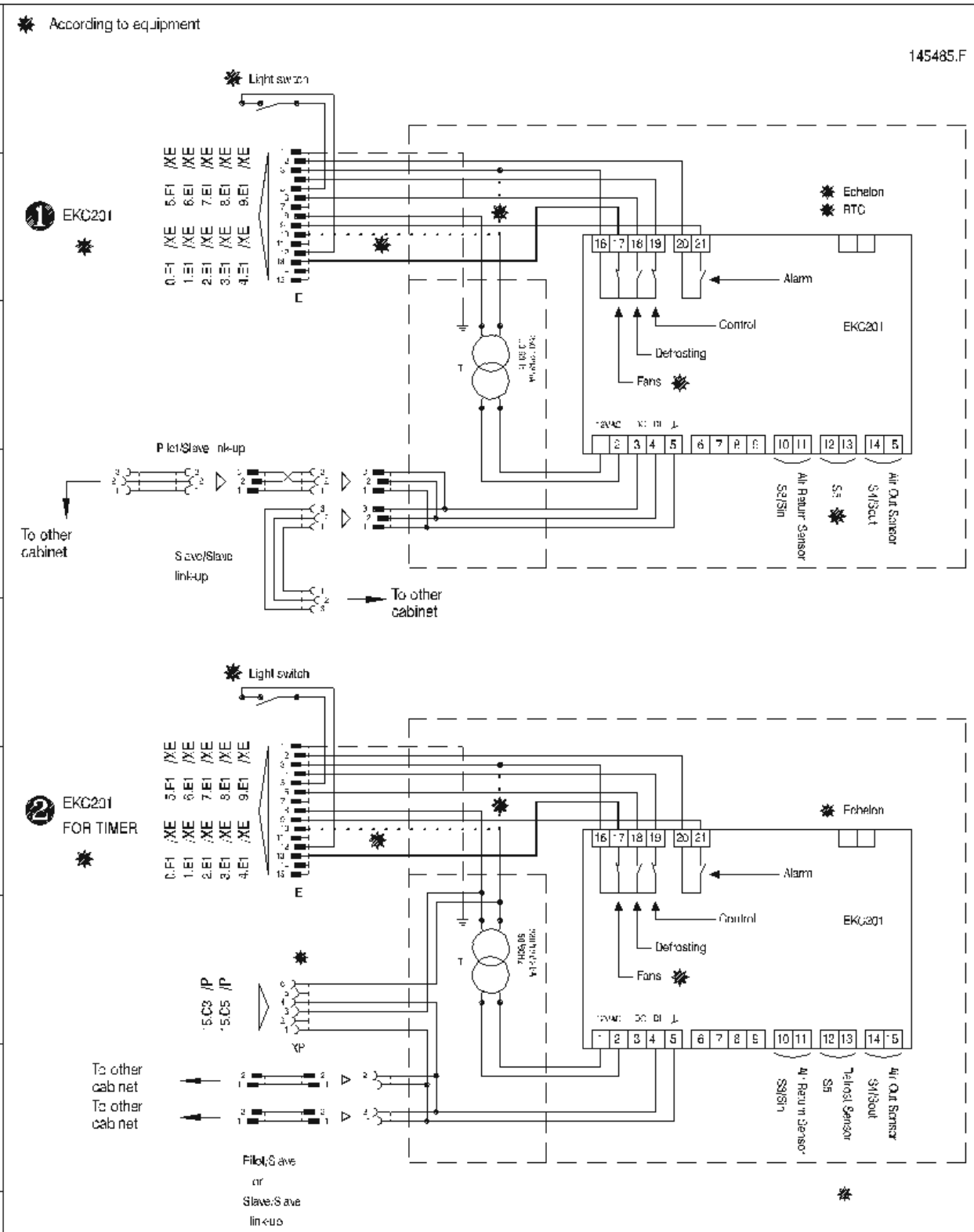
400V = Power supply
Vs = Solenoid valve
T_{ab} = Transformer
F = Evaporator fans
K3 = Defrost contactor
K4 = Defrost contactor
KH2 = Trim heaters relay
Z = Light switch
TH2 = Thermostat
H = Defrost heaters
H1 = Trim heaters
H2 = Trim heaters in front under cabinet

EKC201C
1-2 = Power supply
3 = Digital input
4 = Digital output
5 = Commun
16 = Commun
17 = Fan
18 = Defrost
19 = Control
20-21 = Alarm
10-11 = S3 Probe
12-13 = S5 Probe
14-15 = S4 Probe

ELECTRICAL BOARD
A01-A46 = Light
A99-A99 = Alarm clean contact
A77-A78 = Solenoid valve
A32-A33 = Evaporator fans
A250 = Electrical defrost
A21-A22 = Heaters

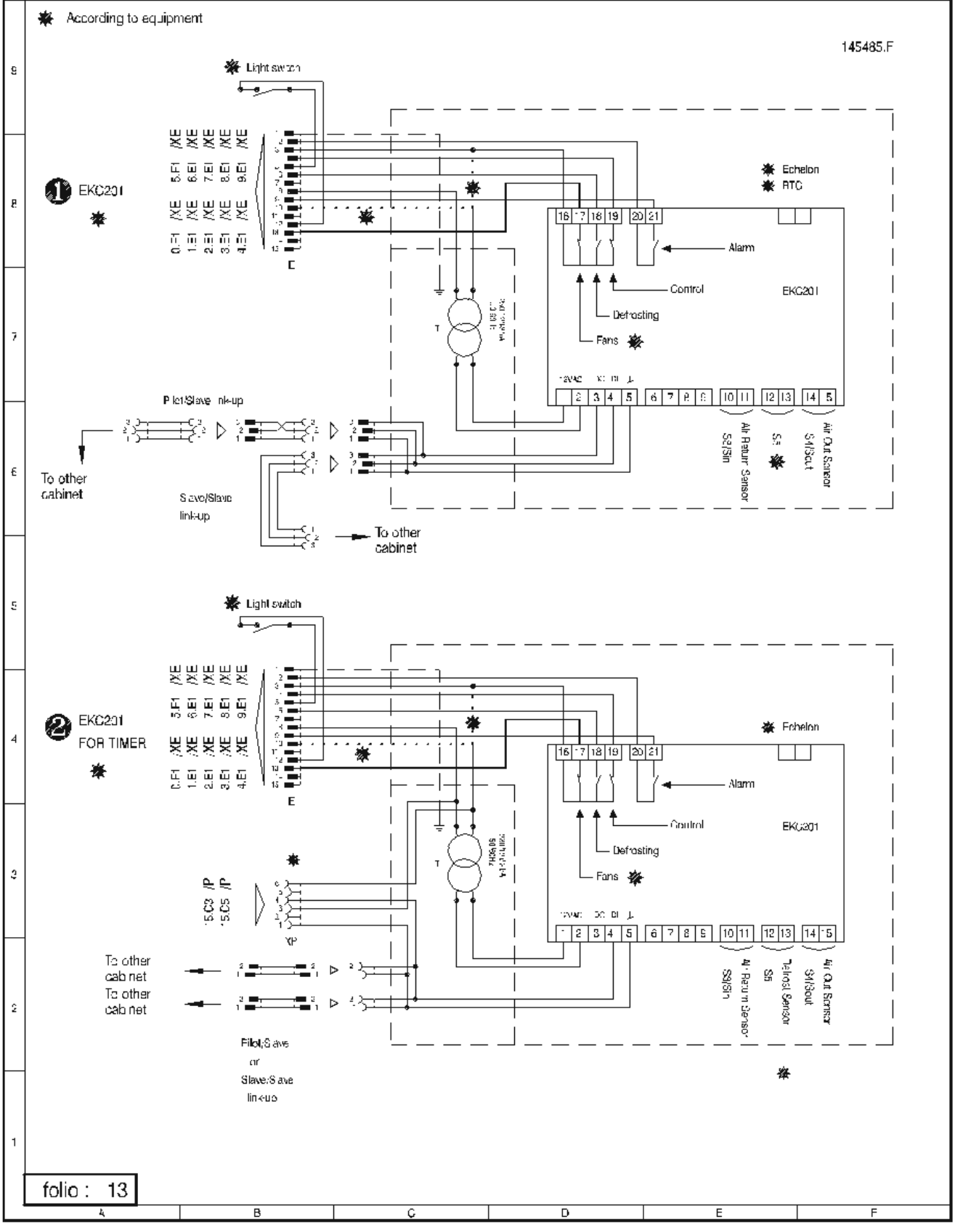


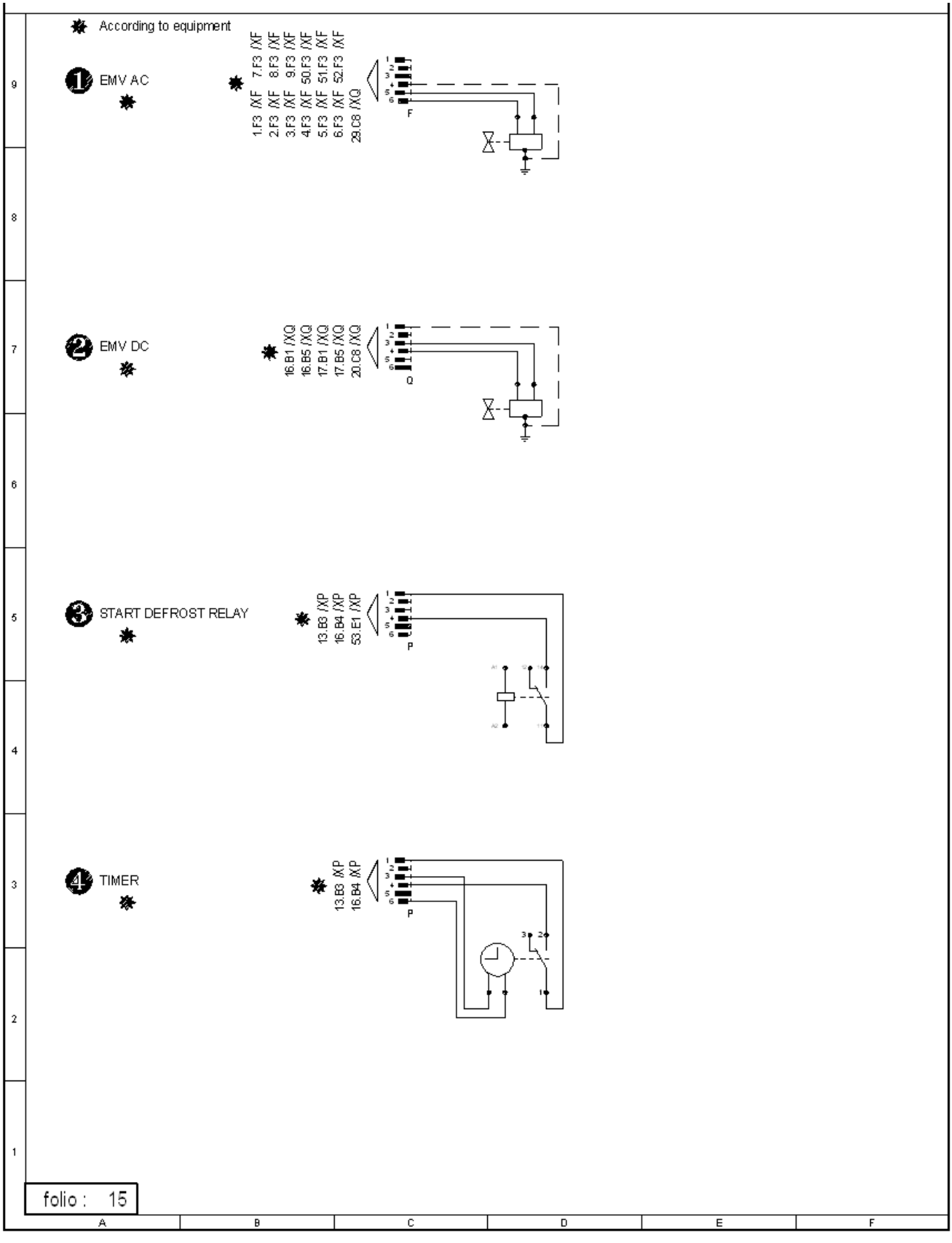
WIRING DIAGRAM (EKC201)



folio : 13

WIRING DIAGRAM (EKC201)




According to equipment
1 EMV AC
1.F3 /XF
2.F3 /XF
3.F3 /XF
4.F3 /XF
5.F3 /XF
6.F3 /XF
29.C8 /XQ
7.F3 /XF
8.F3 /XF
9.F3 /XF
50.F3 /XF
51.F3 /XF
52.F3 /XF
F
2 EMV DC
16.B1 /XQ
16.B5 /XQ
17.B1 /XQ
17.B5 /XQ
20.C8 /XQ
Q
3 START DEFROST RELAY
13.B3 /XP
16.B4 /XP
53.E1 /XP
P
4 TIMER
13.B3 /XP
16.B4 /XP
P
folio : 15
A
B
C
D
E
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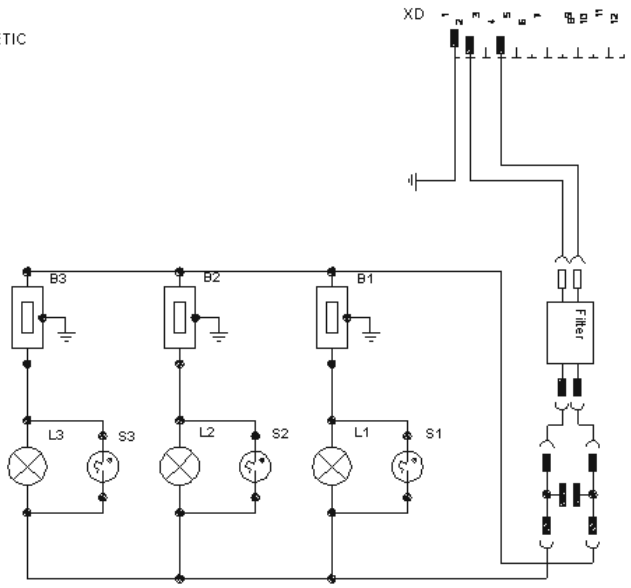
WIRING DIAGRAM OPTIONAL LIGHTING (LIGHT Ø16-Ø26)

According to equipment

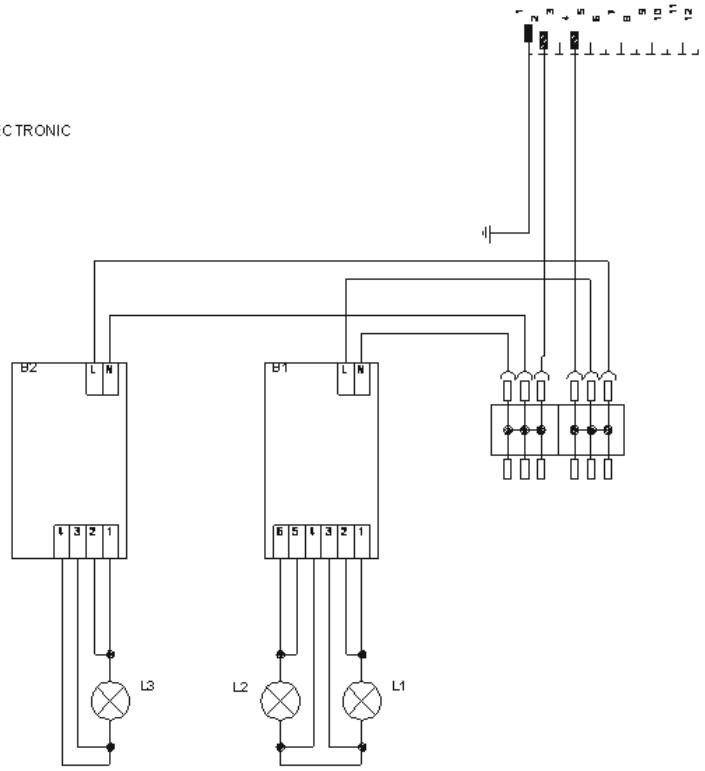
BALLAST BOX

1 LIGHT Ø26 FERROMAGNETIC



BALLAST BOX

2 LIGHT Ø16 ELECTRONIC



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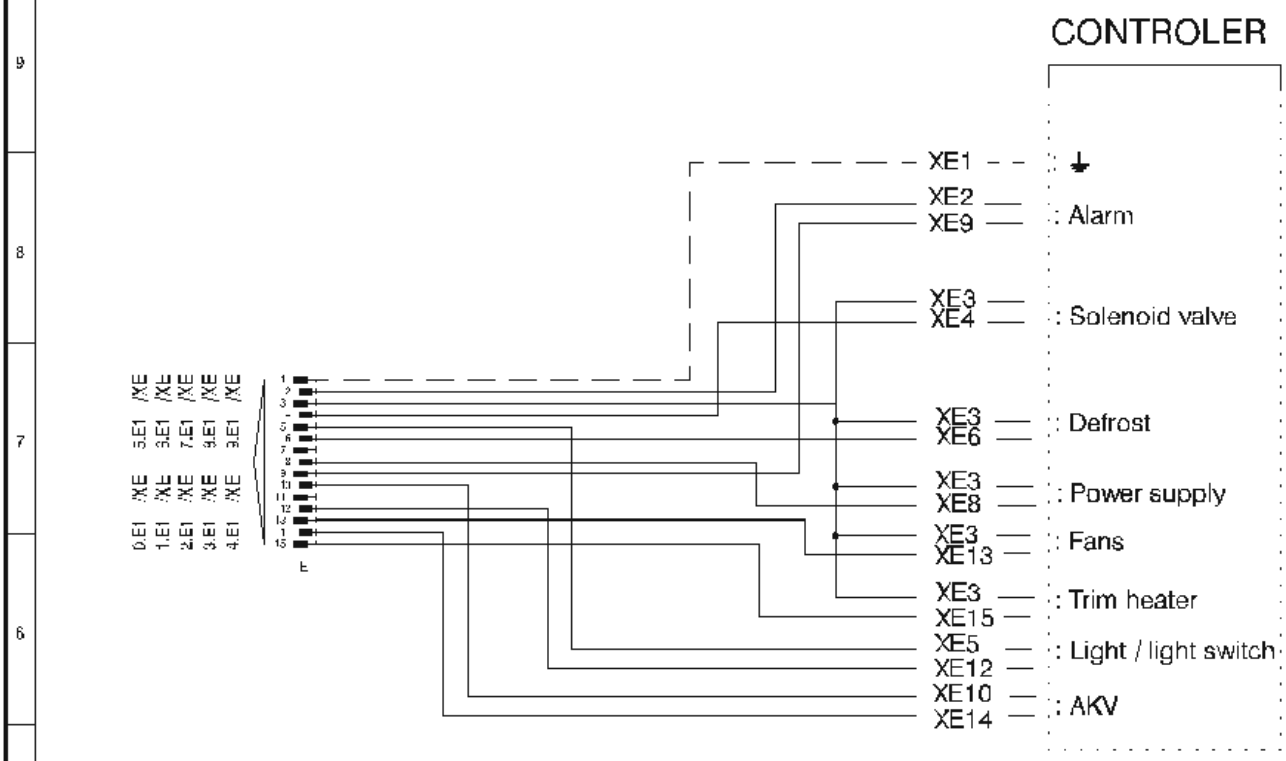
WIRING DIAGRAM WITHOUT CONTROLER



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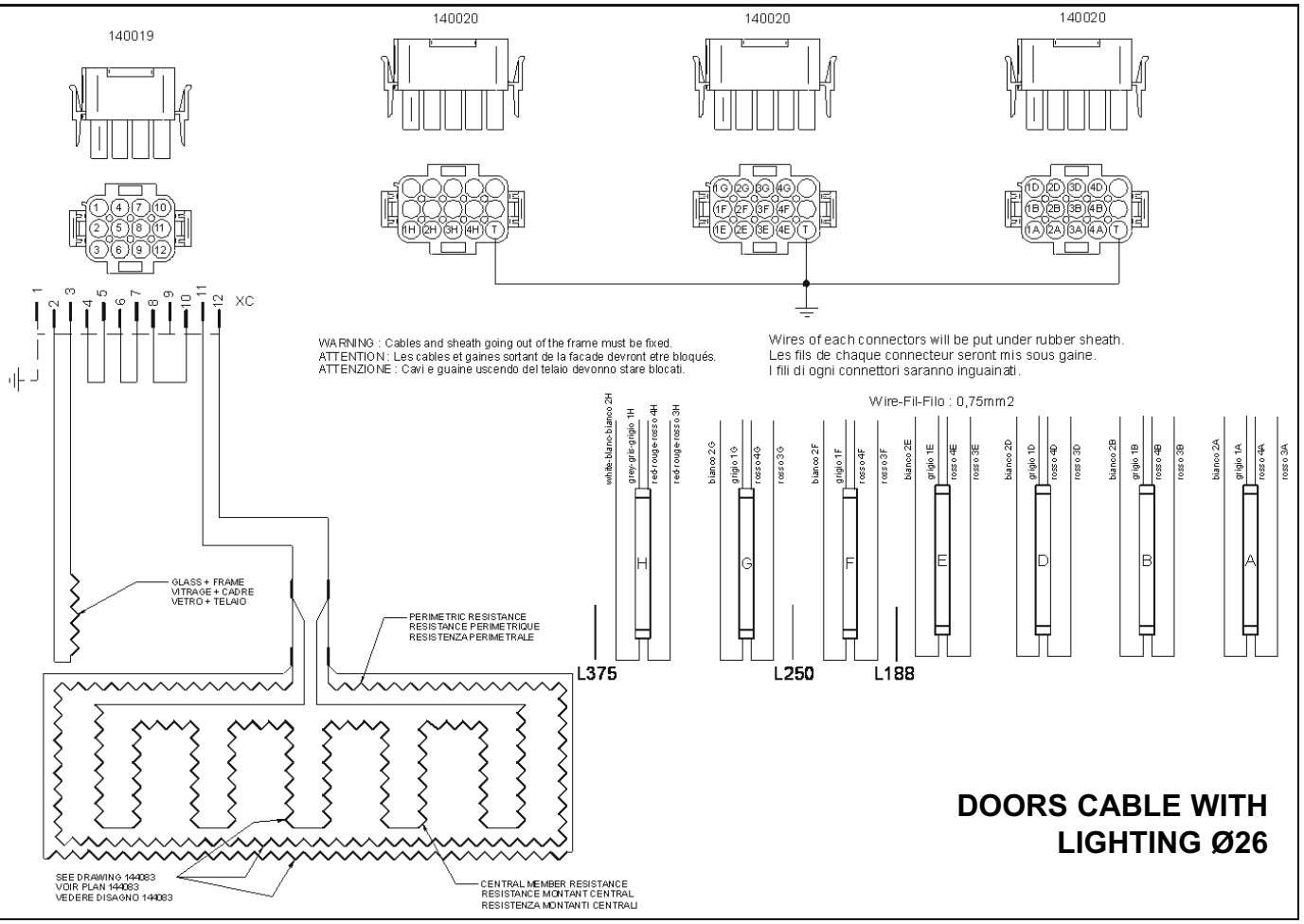
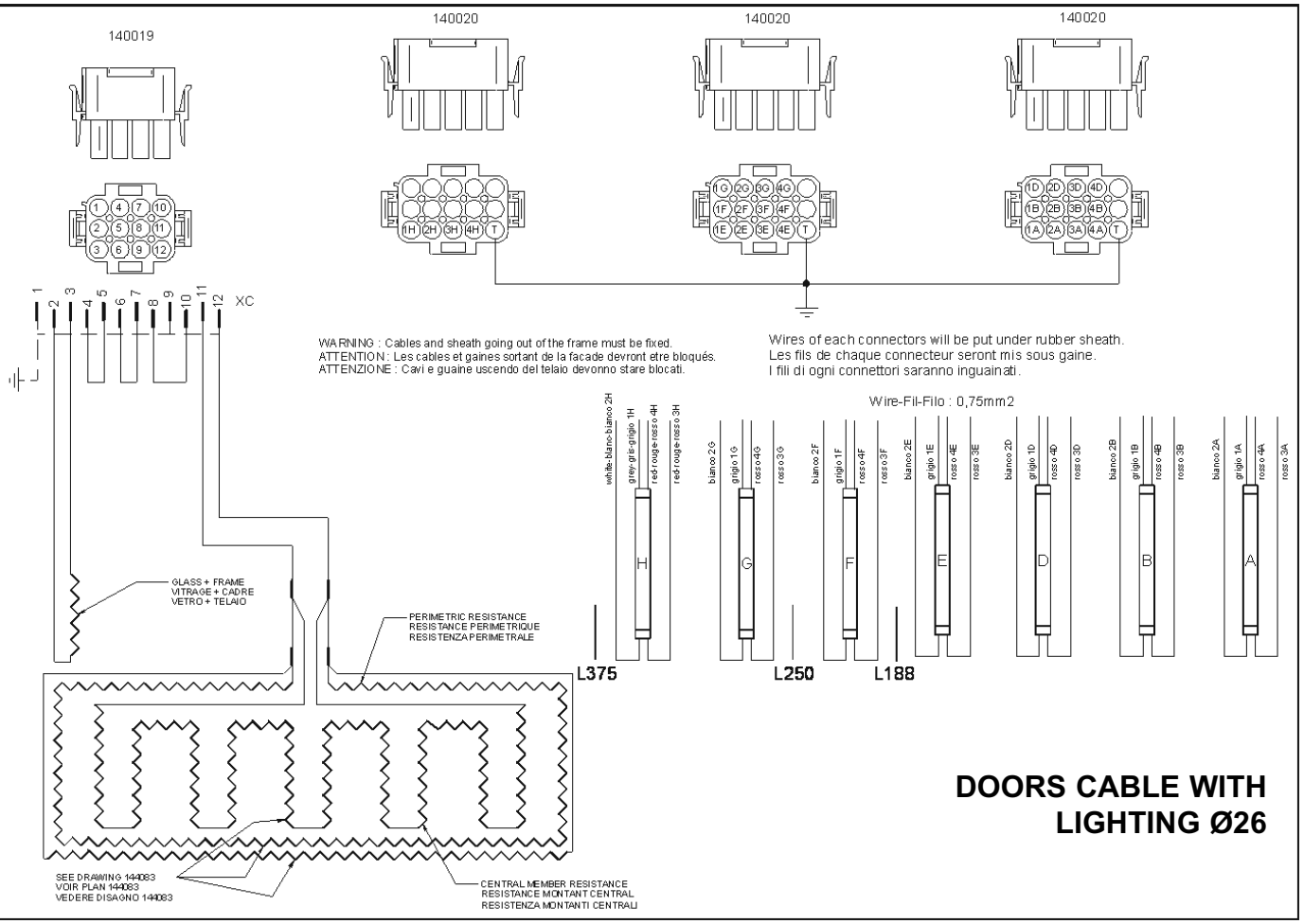


DOORS CABLE WITH LIGHTING Ø26

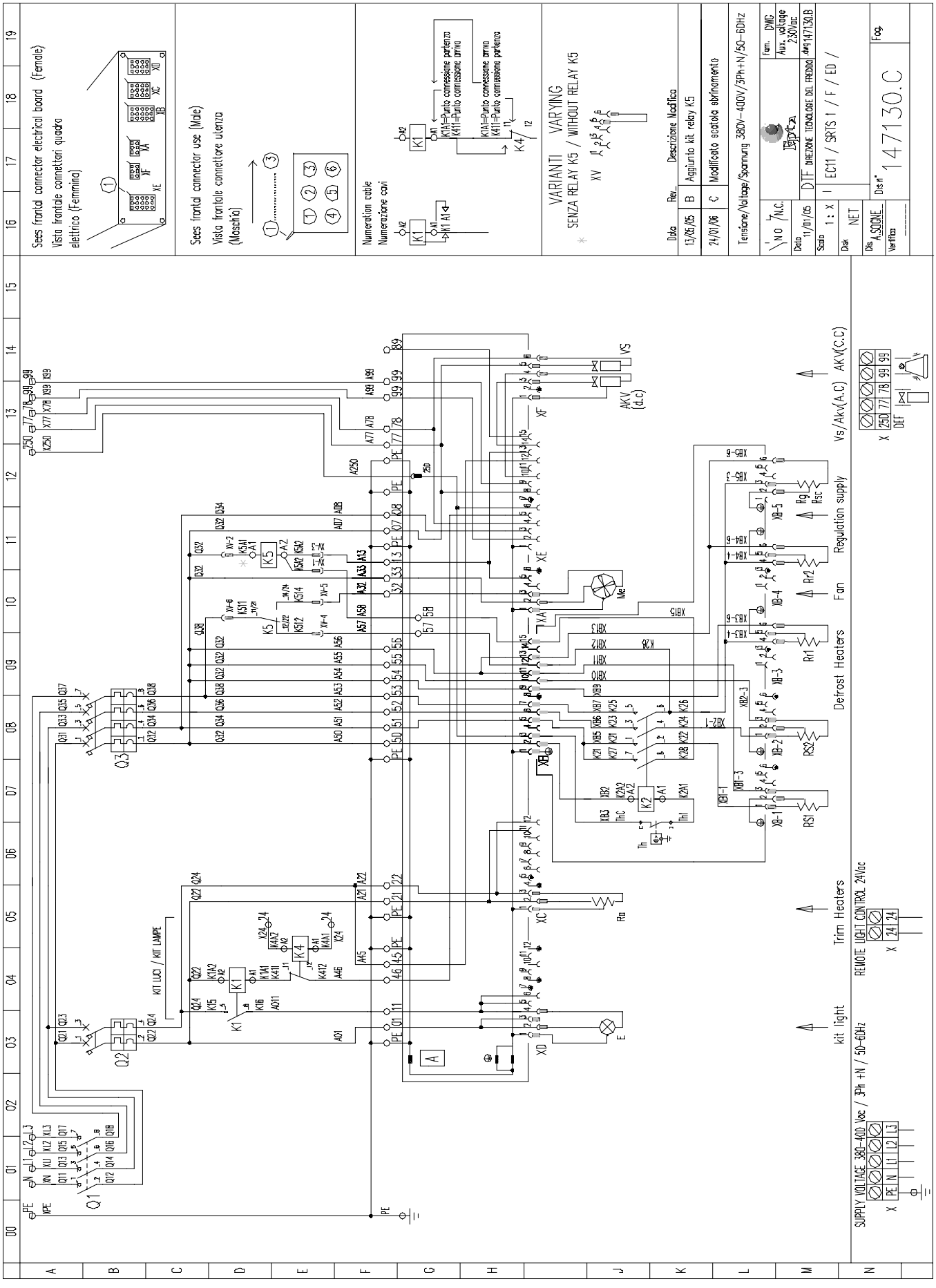


DOORS CABLE WITH LIGHTING Ø26

WIRING DIAGRAMS
CHEST OF HEAD CABINET

	KEY TO THE WIRING DIAGRAM
XM-XN	Master-Slave Connector
Q2...	Automatic switch
Q1...	Main switch
E	Lamp
L	Suppression filter
Z	Compressor
Mt	Motor night blind
Ra1.....9	Demist heaters
Rp	Panel heaters
Rpt	Roof panel heaters
Rc	Frame canopy heater
Rv	Door and glass heaters
Rm	Mullions heaters
Rs1...4	Coil defrost heaters
Rg	Drip-tray defrost heaters
Rsc	Drain defrost heater
Rr	Heaters on air inlet
Rt	Fan delay timer
S4	Air outlet probe
S5	Defrost end probe
S3	Air inlet probe
T	Transformer
Ts	Defrost thermostat
Tf	Themperature control thermostat
Th	Thermal protection
Tv	Fans delay thermostat
DS	Defrost timer
QMt	Night blind switch
Me	Evaporator fan/s
Mf	Front fans
Ml	Side fans
Mv	Top fan
Vs	Solenoid valve
Mc1	Condenser fan/s
QE	Light switch
K	Motor blind contactor
K1	Lighting contactor
K2-3A-3B	Defrost contactor
K3	Defrost starting relay
K4	Light remote control relay
K5-6	Evaporator fan delay relay
K7	Air inlet heater contactor
	TERMINAL BOARD
1-2	Defrost end
3-4	Thermostat signal
4 / 77-78	Thermostat signal
5-6	Lights power supply
7-8	Demist heater power supply
7a-8a	Fan+controller power supply
9-10R.S.T	Defrost heater power supply
14	Cooling signal
15	Defrost start signal
16/250	Defrosting signal
18-19	Fan delay beginning signal
30-31	Solenoid valve power supply
99-99	Alarm clean contact
J-C	Thermostat signal
N-L	Showcase power supply 230V-50Hz
N-R-S-T	Showcase power supply 380-400V /3P+N/50H
0-24V	Light remote control signal
a-a	Solenoid valve

TECHNICAL DOCUMENTATION	CHAPTER REVISION STATUS				SIGNED AS IN CONFORMITY WITH APPROVED ORIGINAL	PAGE: **2/7**
	ORD.	DATE	ORD.	DATE		
CABINET: **MIURA**	A		D			
CHAP. N° **9.1** DOC. N° **QSM000255E**	B		E			DATE of 1st ISSUE: **01.06.06**
CHAPTER: **WIRING DIAGRAMS CHEST HEAD CABINET**	C		F			



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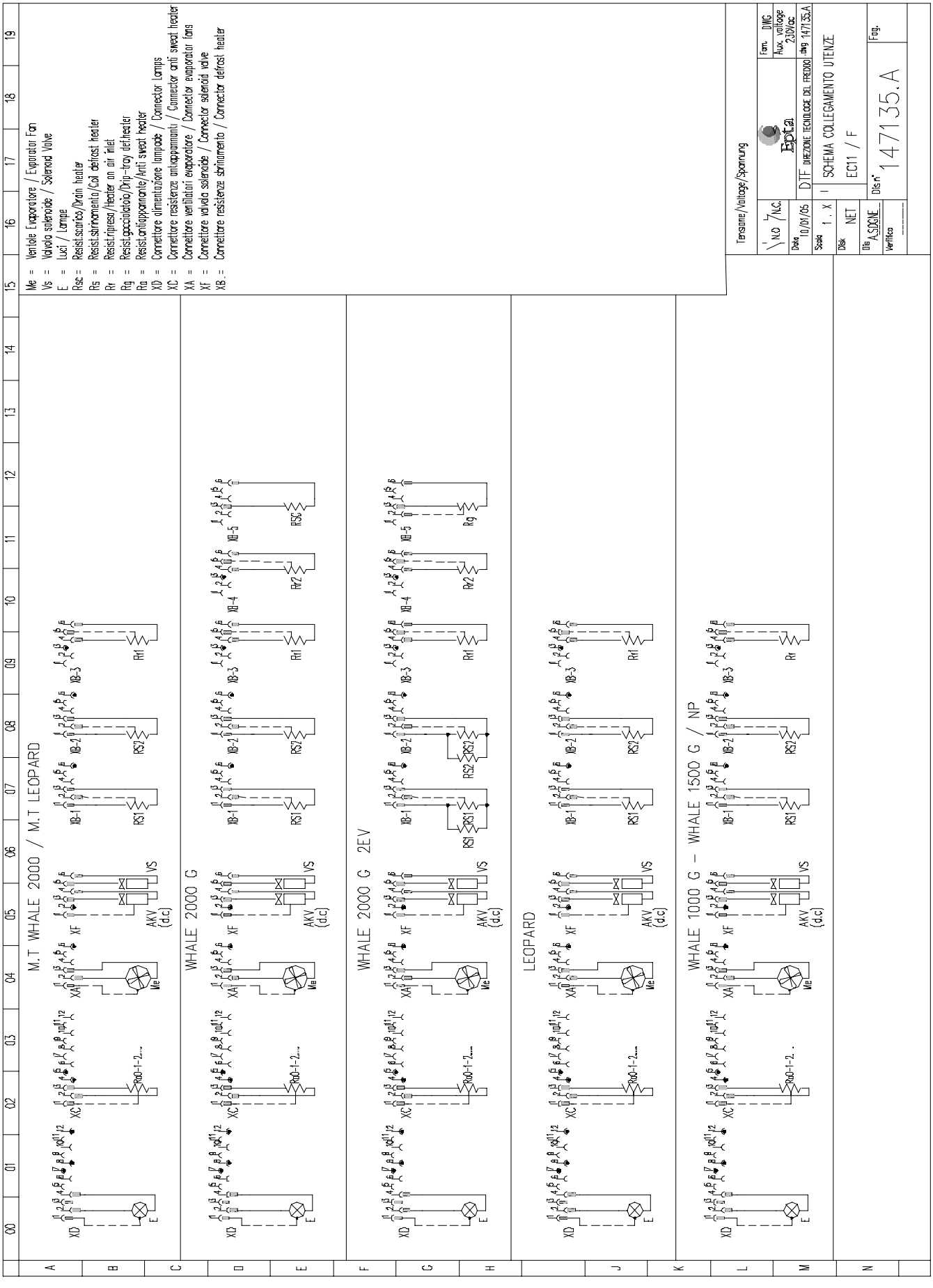
	ORD.	DATE	ORD.	DATE		
CABINET: **MIURA**	A		D			
CHAP. N° **9.1** DOC. N° **QSM000255E**	B		E			DATE of 1st ISSUE: **01.06.06**
CHAPTER: **WIRING DIAGRAMS CHEST HEAD CABINET**	C		F			



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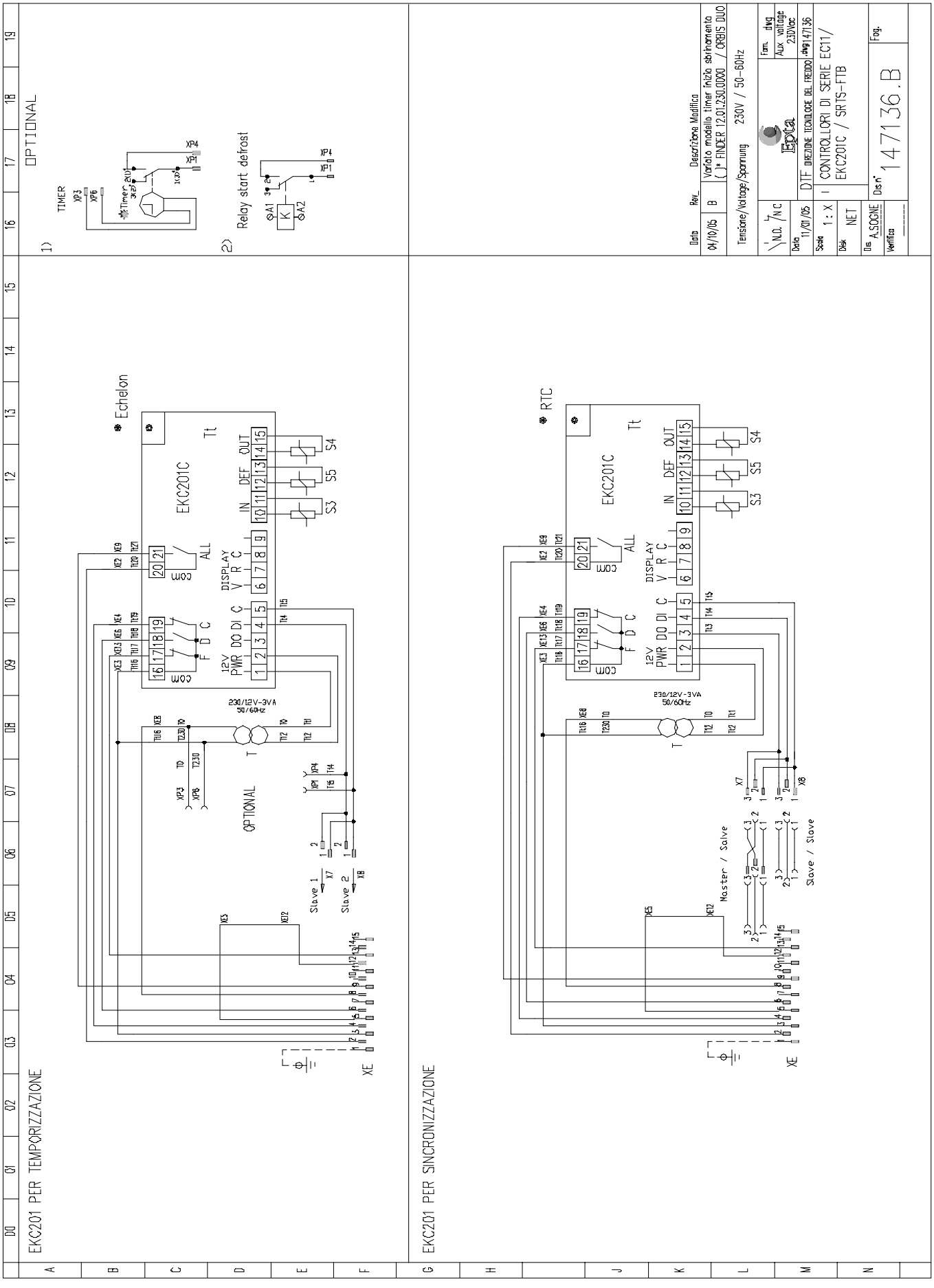
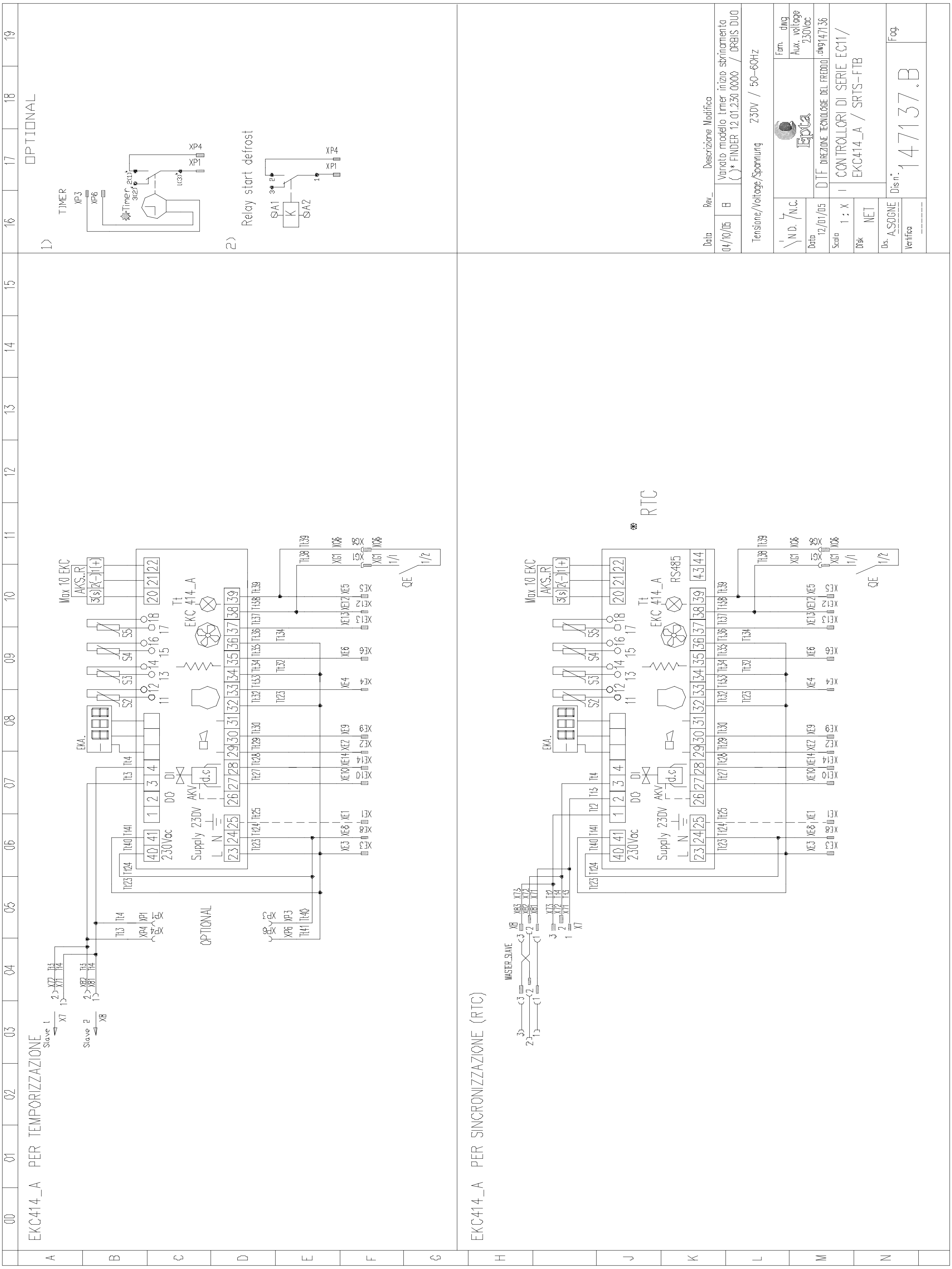
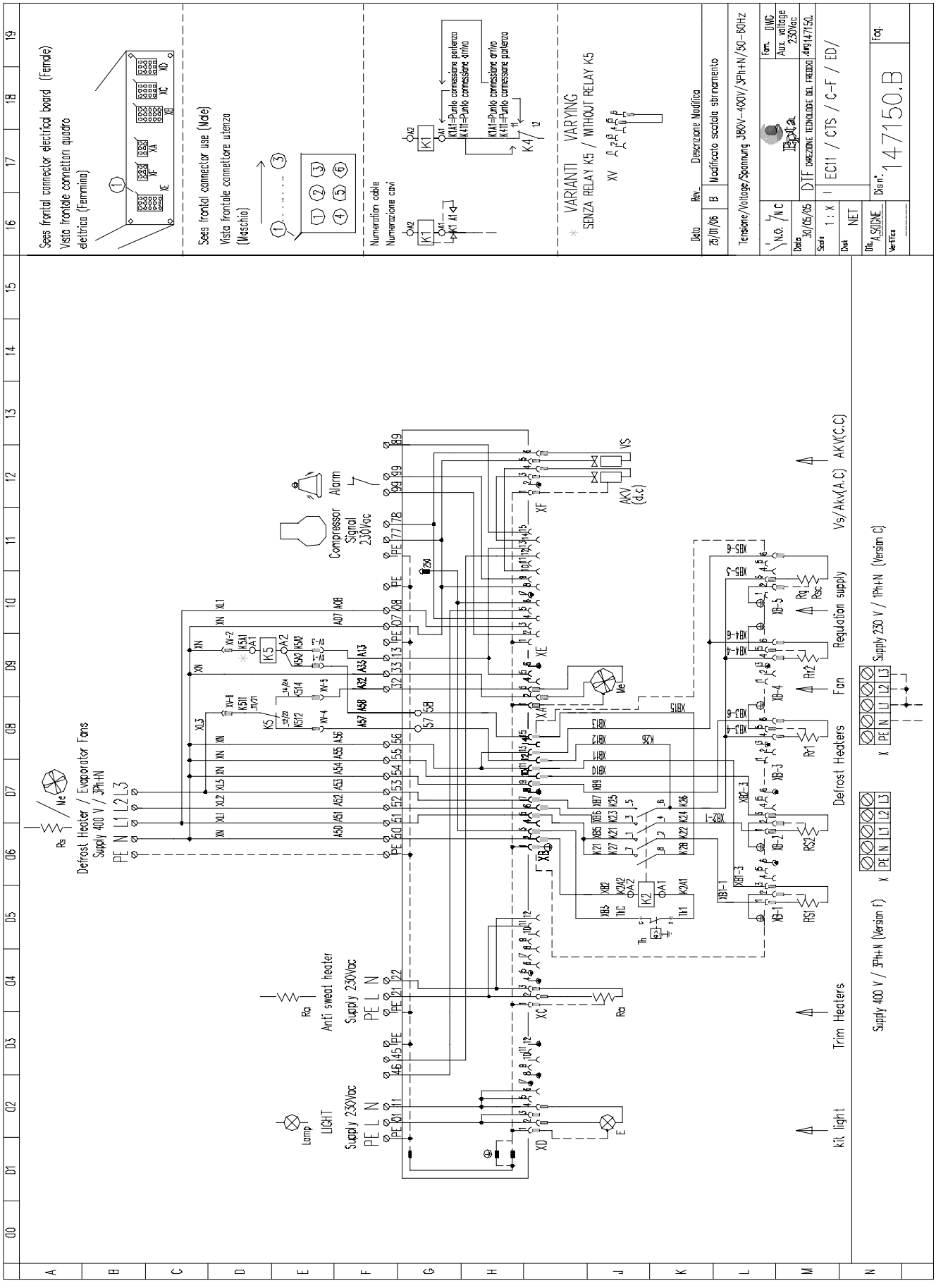
	ORD.	DATE	ORD.	DATE		
CABINET: **MIURA**	A		D			
CHAP. N° **9.1** DOC. N° **QSM000255E**	B		E			DATE of 1st ISSUE: **01.06.06**
CHAPTER: **WIRING DIAGRAMS CHEST HEAD CABINET**	C		F			



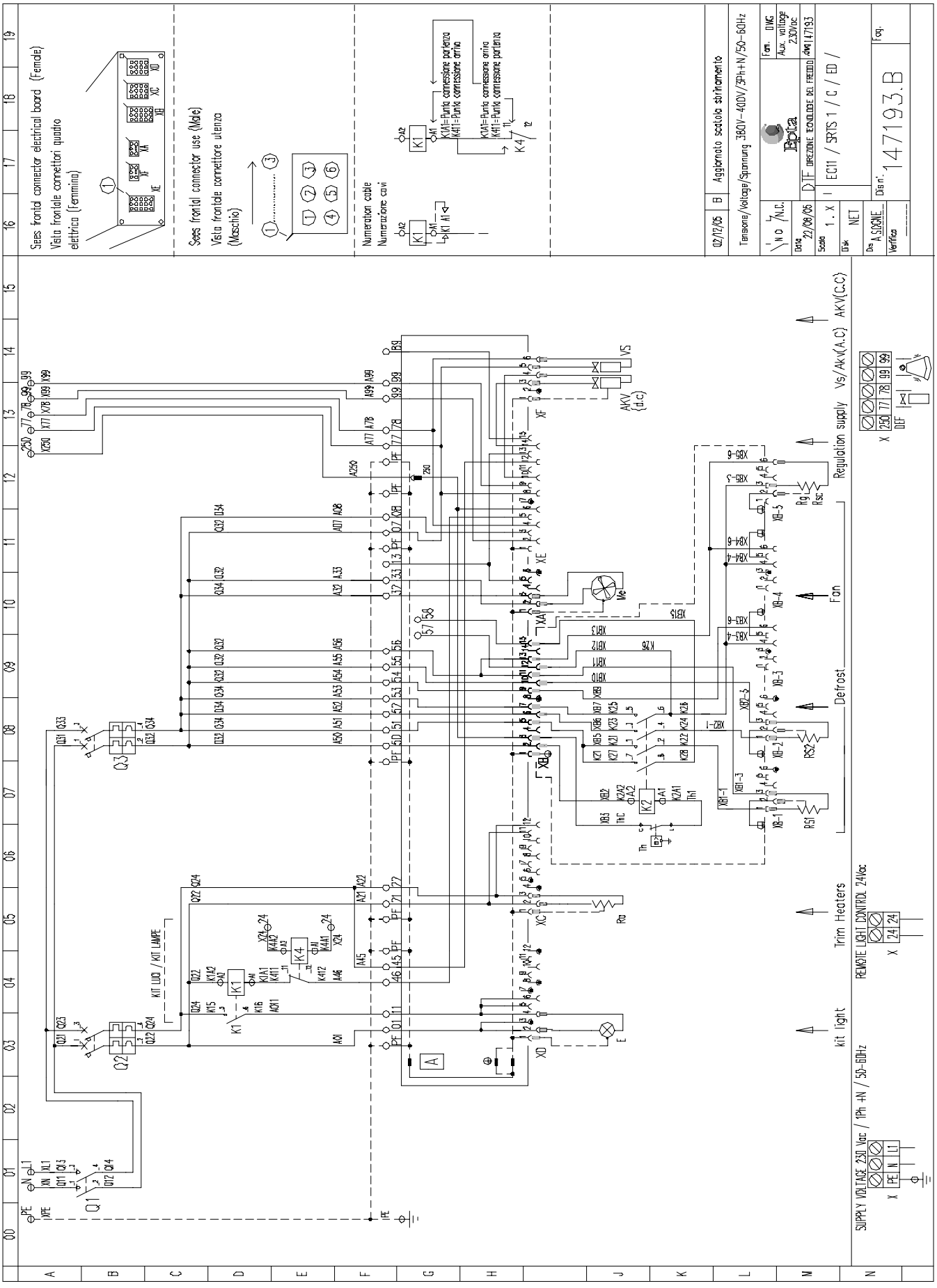


EKC414_A PER TEMPORIZZAZIONE
EKC414_A PER SINCRONIZZAZIONE (RTC)
OPTIONAL
1) TIMER
2) Relay start defrost
Max 10 EKC
AKS..R
EKC 414_A
Supply 230V
230Vac
RS485
RTC
Slave 1
Slave 2
MASTER_SLAVE
Data 04/10/05 Rev. B Descrizione Modifica: Variato modello timer inizio sbrinamento (*) FINDER 12.01.230.0000 / ORBIS DUO
Tensione/Voltage/Spannung 230V / 50-60Hz
Epta
DTF DIREZIONE TECNOLOGIE DEL FREDDO
CONTROLLORI DI SERIE EC11/ EKC414_A / SRTS-FTB
Data 12/01/05
Scala 1 : X
Disk NET
Ds. A.SOGNE
Dis n°. 147137.B

TECHNICAL DOCUMENTATION	CHAPTER REVISION STATUS				SIGNED AS IN CONFORMITY WITH APPROVED ORIGINAL	PAGE: **6/7**
	ORD.	DATE	ORD.	DATE		
CABINET: **MIURA**	A		D			
CHAP. N° **9.1** DOC. N° **QSM000255E**	B		E			DATE of 1st ISSUE: **01.06.06**
CHAPTER: **WIRING DIAGRAMS CHEST HEAD CABINET**	C		F			

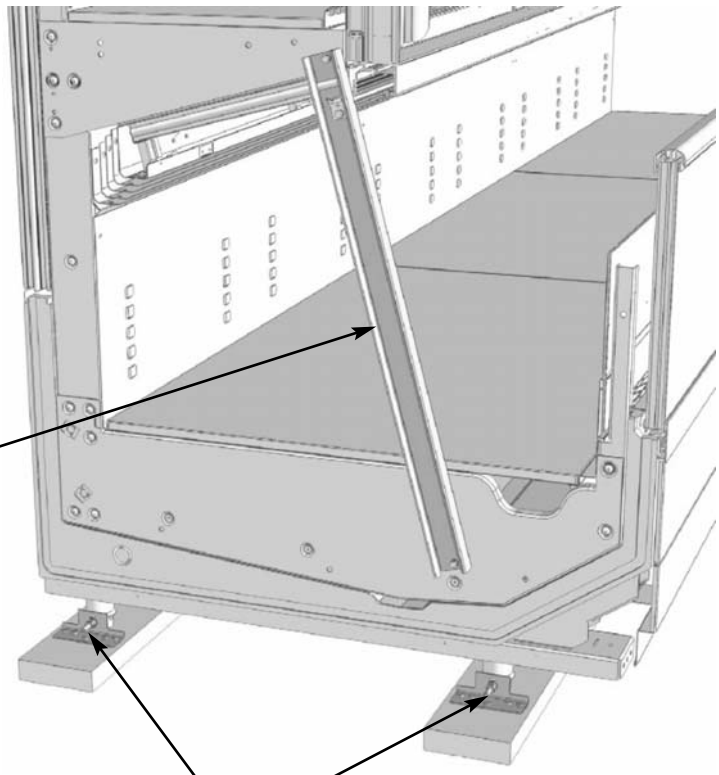


TECHNICAL DOCUMENTATION	CHAPTER REVISION STATUS				SIGNED AS IN CONFORMITY WITH APPROVED ORIGINAL	PAGE: **7/7**
	ORD.	DATE	ORD.	DATE		
CABINET: **MIURA**	A		D			
CHAP. N° **9.1** DOC. N° **QSM000255E**	B		E			DATE of 1st ISSUE: **01.06.06**
CHAPTER: **WIRING DIAGRAMS CHEST HEAD CABINET**	C		F			

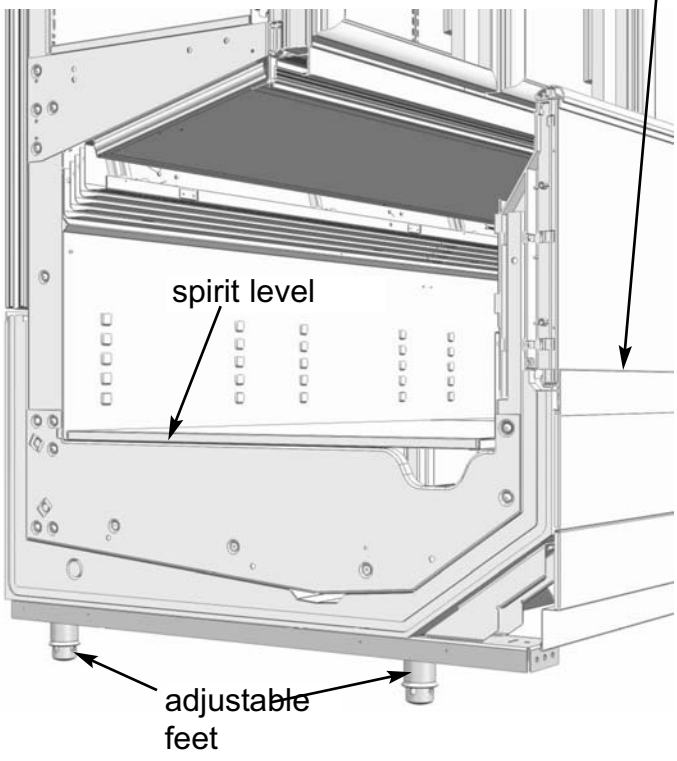


MULTIPLEXING CABINETS

UNPACK THE CABINETS AND PLACE THEM LEVEL



Remove front risers from the cabinet multiplexing side.
Remove rear interspace walls and bottom plates on the multiplexing side.
Bring the cabinets to their service position. **When mutiplexing includes an end cabinet, position the end cabinet first**.
Check that they are level both crossways and lengthways by laying a spirit level on the bumper rail profile and on the cabinet stringers.
Level the cabinet by applying a cylinder-section tool on the feet (Ø = 8 mm). Then lift the fore feet 3 mm so that the cabinet slants backwards thus making door-closing easier.

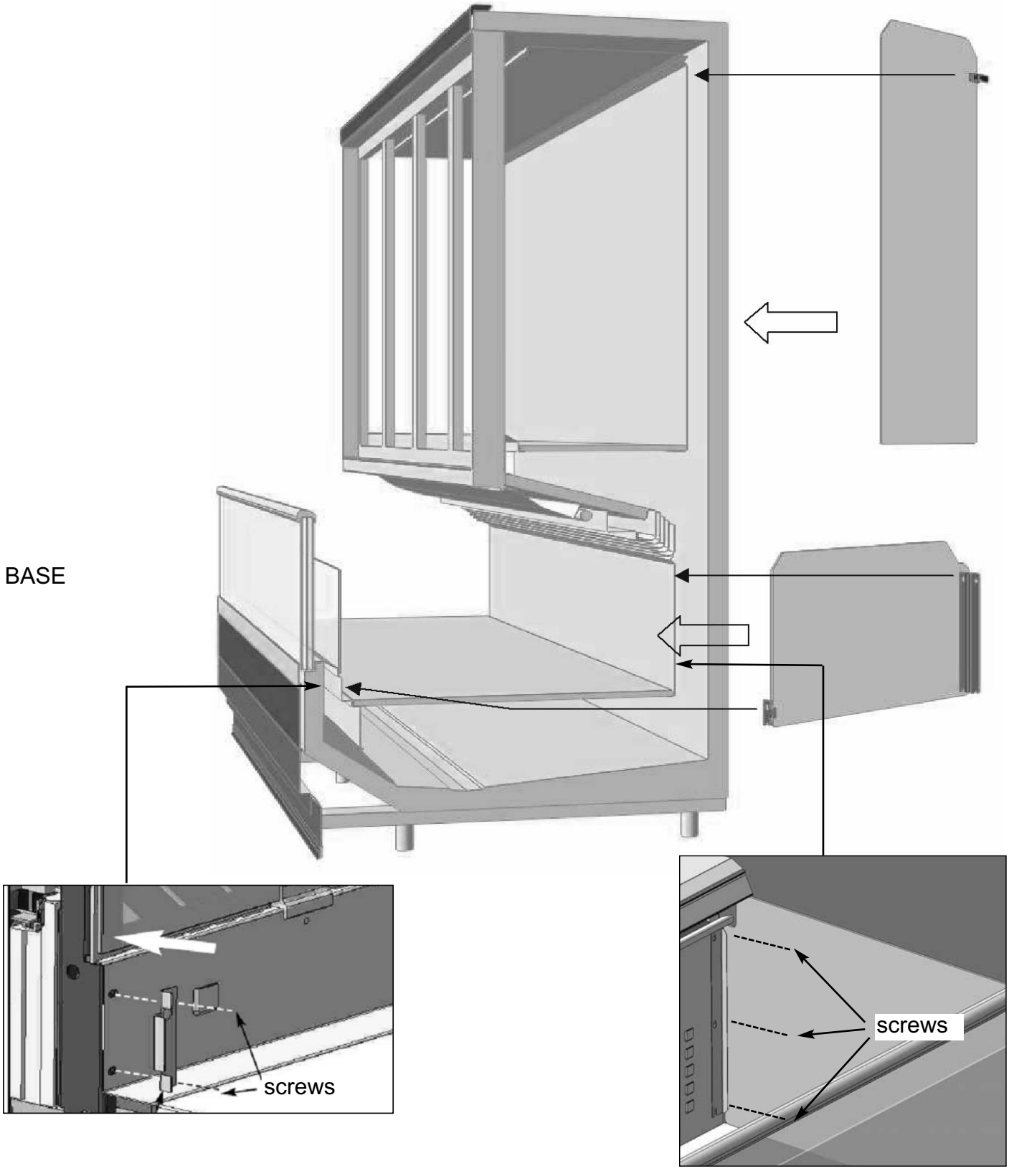


ASSEMBLY OF TRANSPARENT SCREENS

When two cabinets do not defrost simultaneously it is necessary to install Plexiglas transparent screens as shown in the figure.

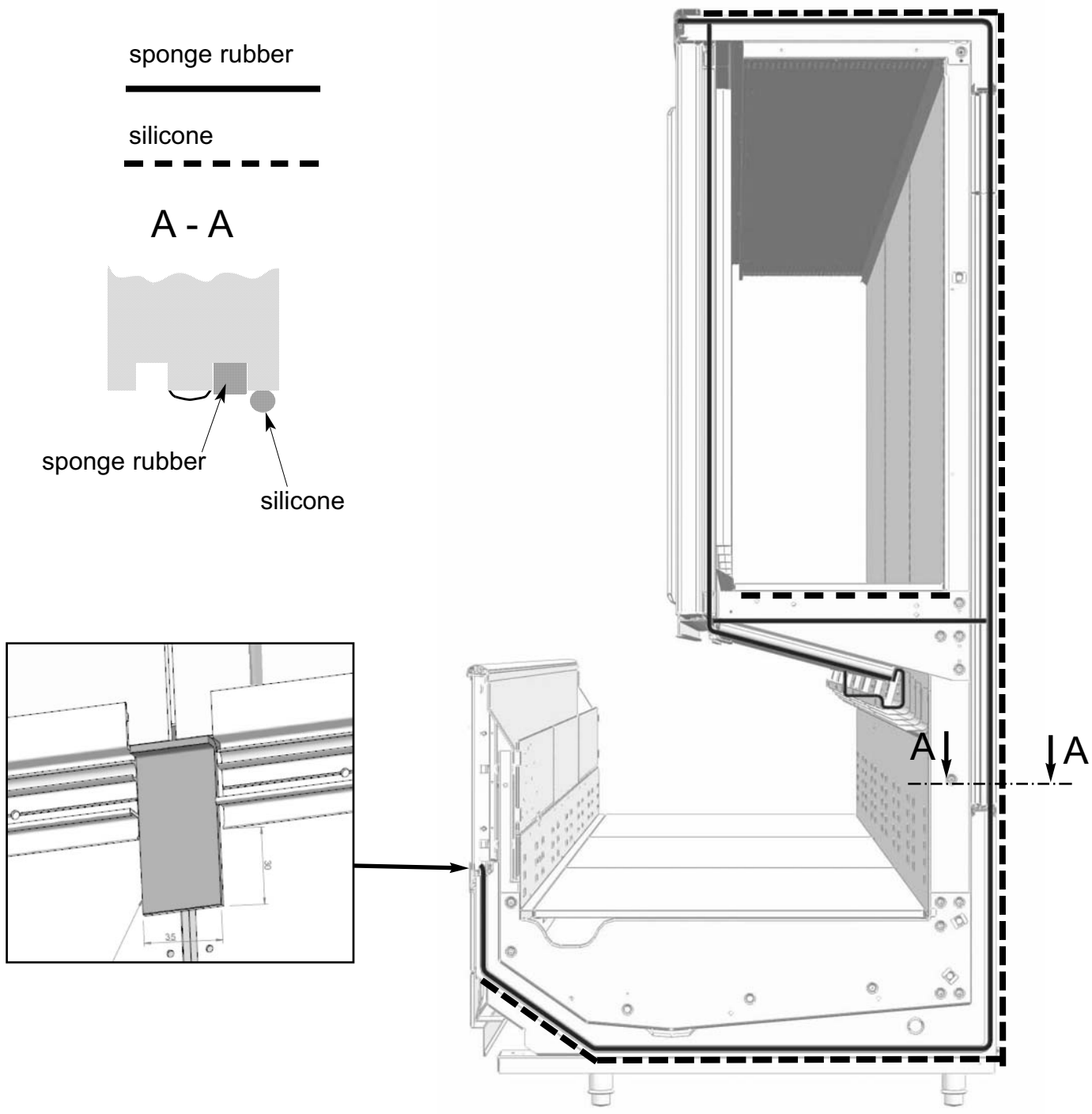
SUPERSTRUCTURE (to be done before multiplexing)

BASE



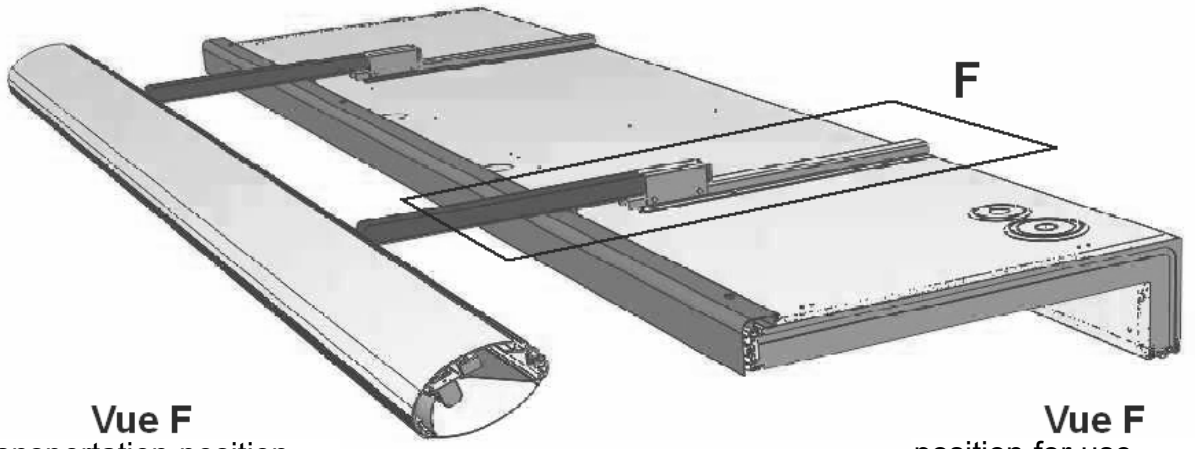
APPLY SPONGE RUBBER AND SILICONE

Apply sponge rubber and a smooth seam of silicone onto the side of one of the cabinets to be multiplexed following the instructions in the figure.



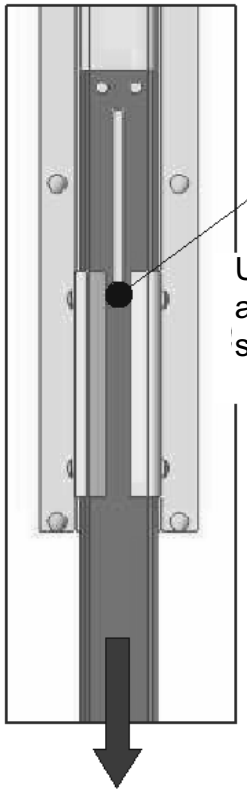
OPTIONAL ILLUMINATED CANOPY

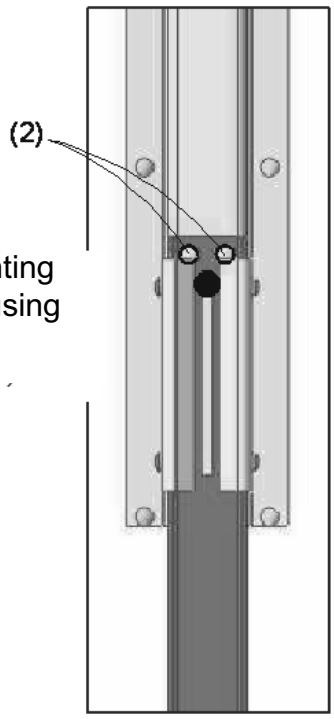
Adjustment to be done before multiplexing



Vue F
transportation position

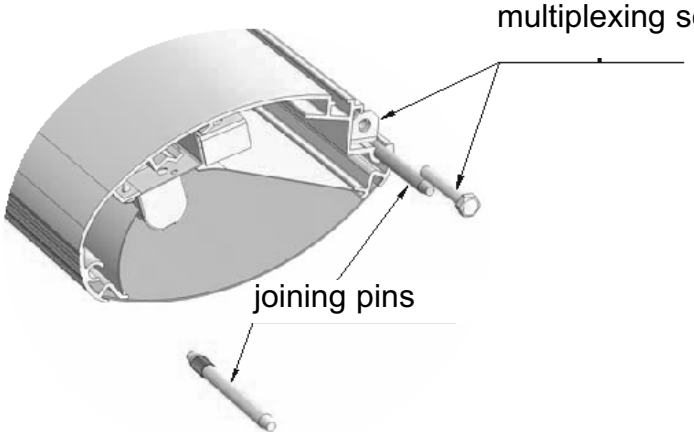
Vue F
position for use





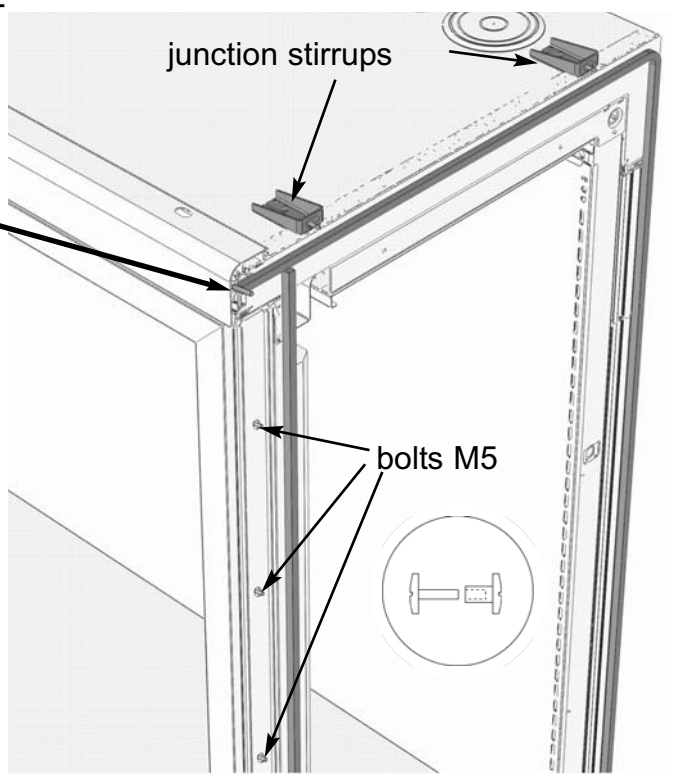
Unscrew the lockscrew (1), then slide the lighting assembly up to the end. Secure the lighting using screws (1 and 2).

Preparations to be done before multiplexing

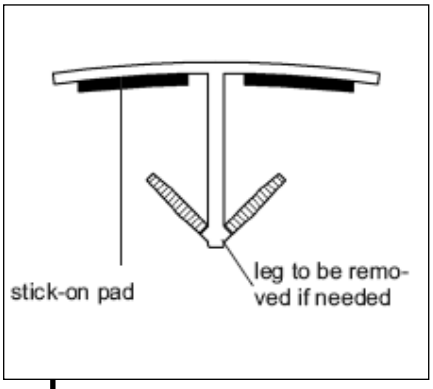


BRING THE CABINETS TOGETHER AND JOIN THEM

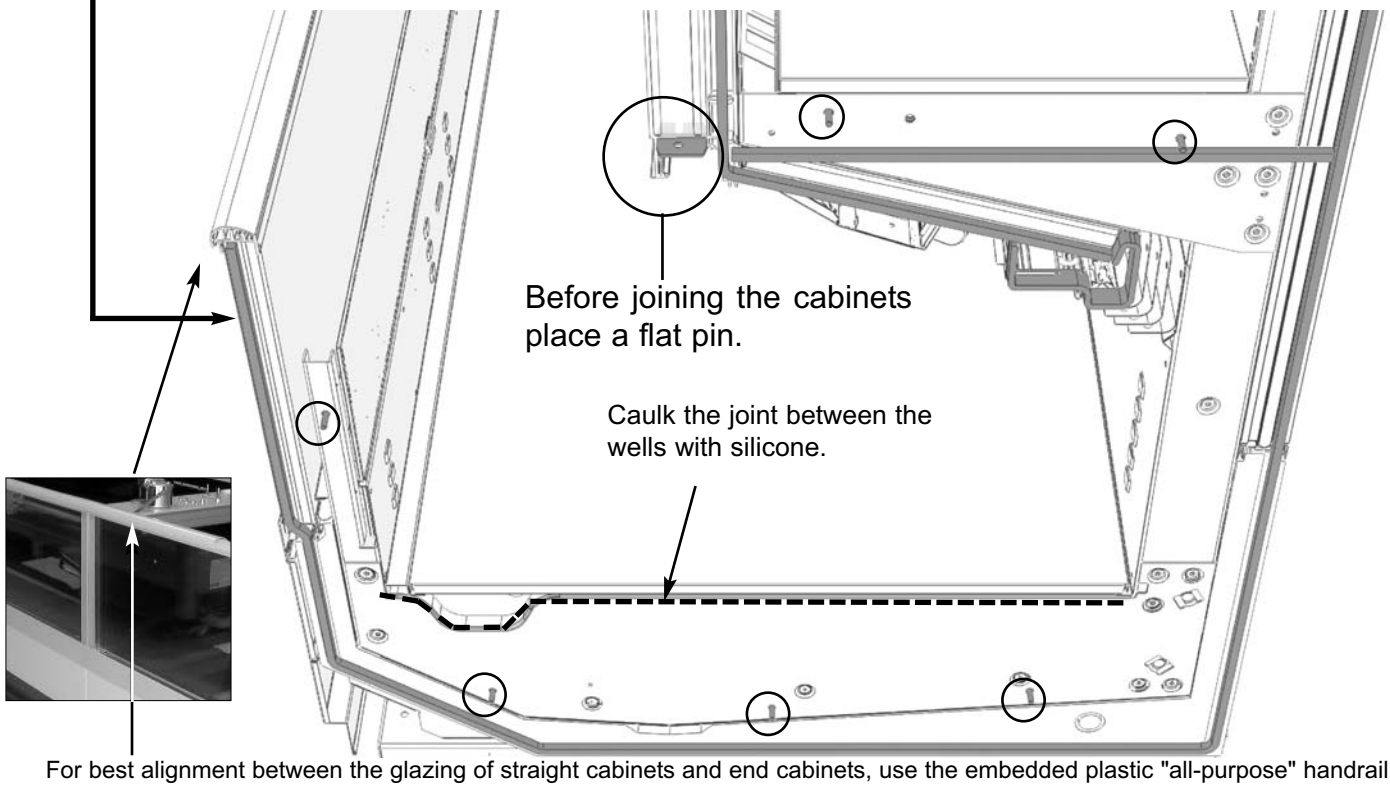
When mutiplexing includes an end cabinet, position the end cabinet first. Place the pins and the glazing joint cover. Join the upper parts of the cabinets at the two junction stirrups by hex-head screws M8x30 and the appropriate nuts, at the doors by M5 bolts.



CAUTION:
Before joining the cabinets place the stick-on glazing front joint-cover.

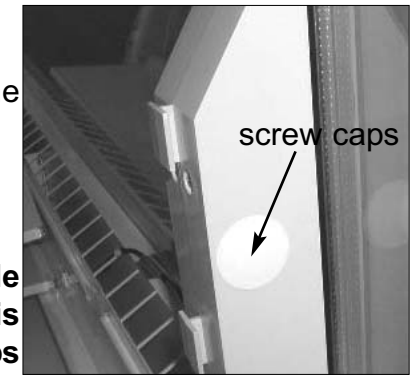


Join the cabinets at the two bottom points marked in the drawing with hex-head screws M8x90 and the relevant nuts.



For best alignment between the glazing of straight cabinets and end cabinets, use the embedded plastic "all-purpose" handrail pieces when multiplexing the cabinets. Place them on their respective supports when it comes to aligning the glazings. Once the cabinets have been multiplexed, remove the "all-purpose" handrail-piece, which will later be used for the assembly of handrails, as explained further on in this document.

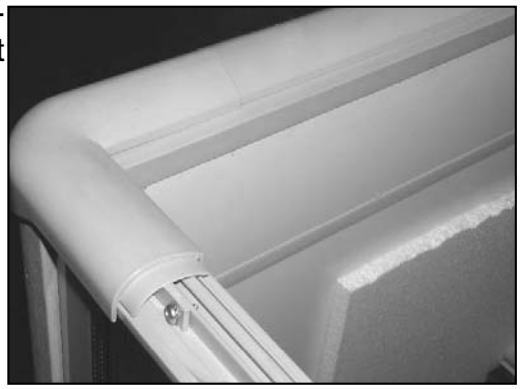
PLACE SCREW CAPS

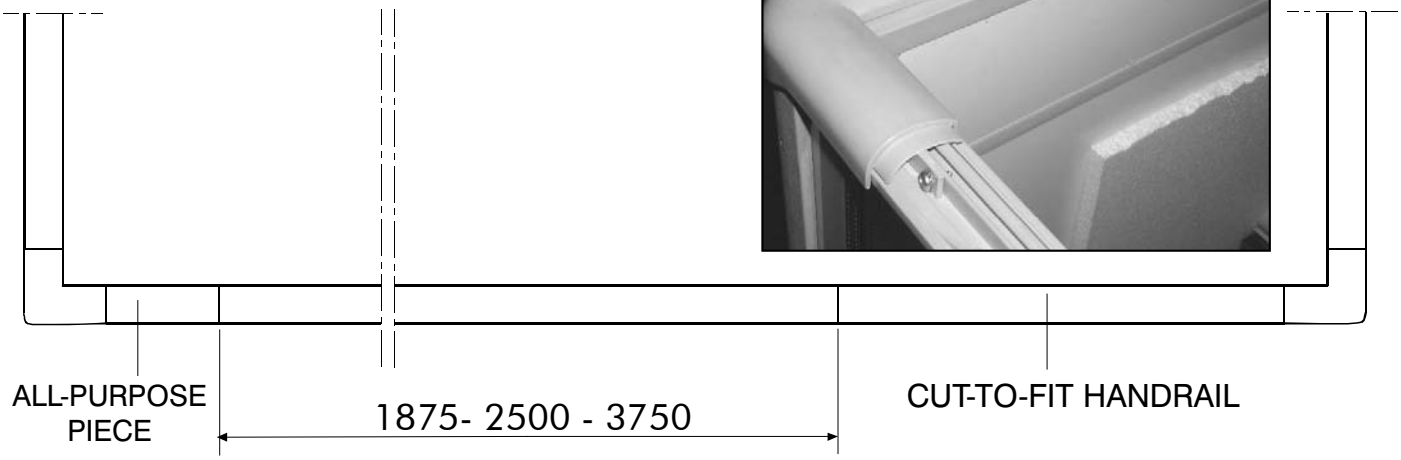


Once the cabinets have been multiplexed, place the screw caps on the screws on the well front.

INSTALL HANDRAILS

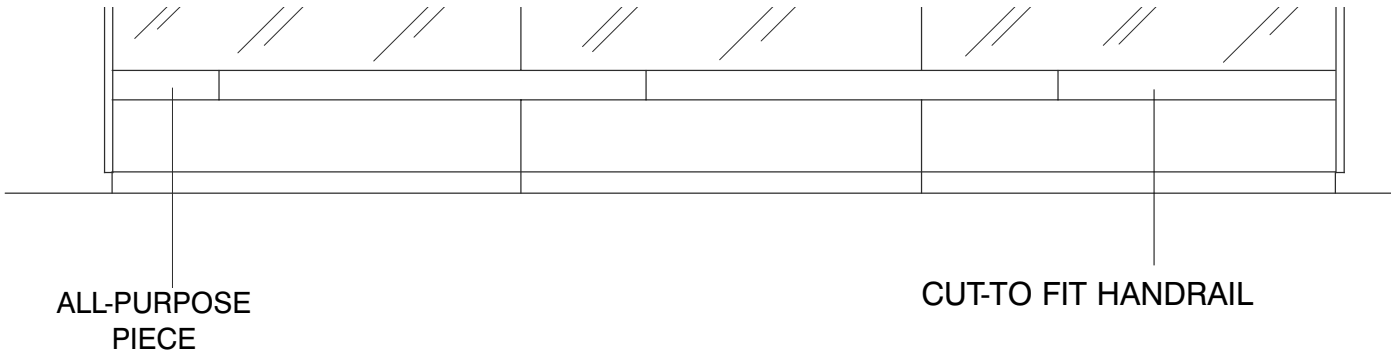
Side handrails and corner pieces are factory-assembled. **The side handrails of end cabinets are mounted on the cabinet instead. This is why it is necessary to remove them prior to executing the steps described below for the "all purpose" handrail piece.**
To enable a perfect alignment of the handrails on the front of multiplexed cabinets, some pieces of the effective cabinet length (1880, 2500 or 3750 mm) plus an all-purpose piece are attached.
Before being mounted, the handrails need to be properly cooled inside the base deck of the cabinet for some time. Then place the all-purpose handrail flush to one of the corner pieces on the profiles, and then all the others but the last likewise. Determine the remaining length, cut the last handrail to fit and install it on the profile.





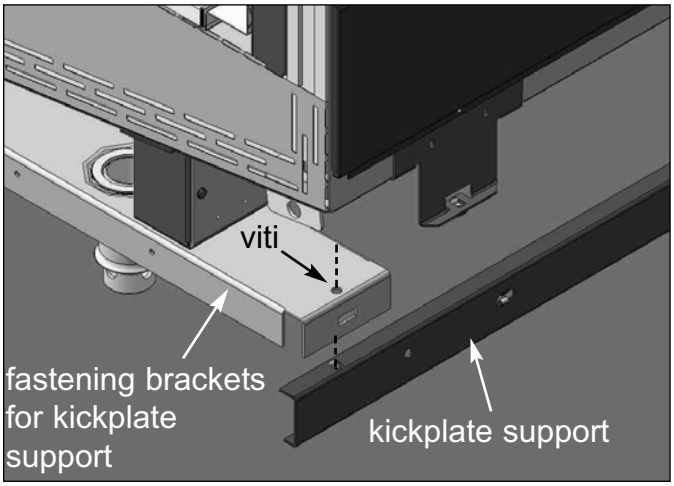
PLACE THE INTEGRAL BUMPER RAIL

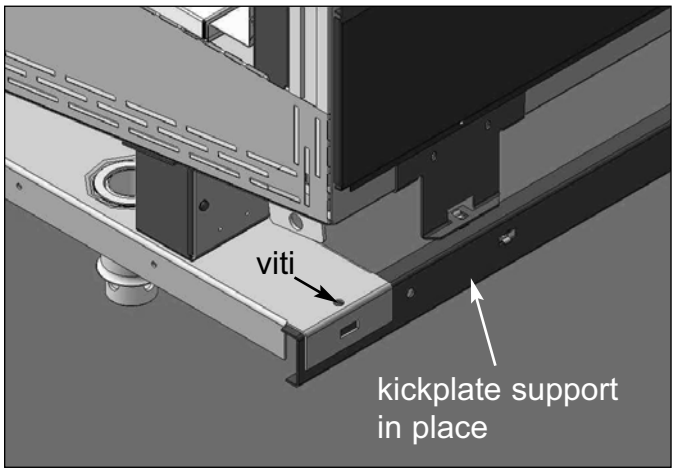
To enable a perfect alignment of the plastic bumper rails integral with the cabinet, an extra "all-purpose" piece, which is to be used to bring bumper rails back or forward. Mount the all-purpose handrail flush to one of the endwalls on the supports, and then all the others but the last likewise. Determine the remaining length, trim the last bumper rail to fit and secure it to the support.



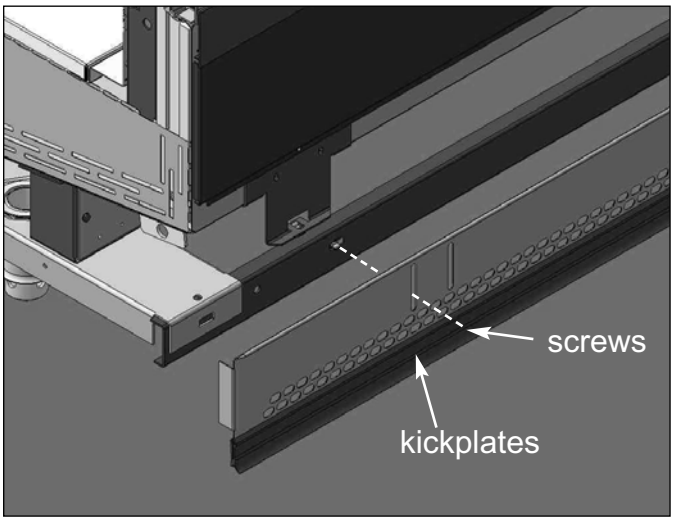
PLACE THE BASE PANEL AND THE KICKPLATES

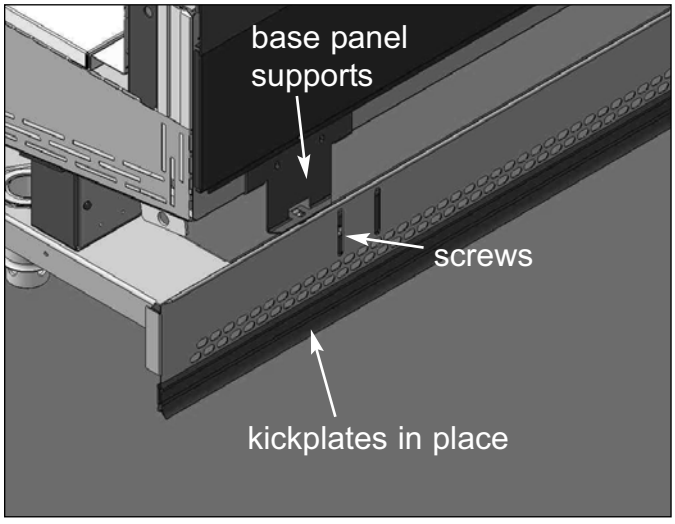
Place the kickplate support and screw it onto the appropriate supports using the screws attached, as shown in the figure.



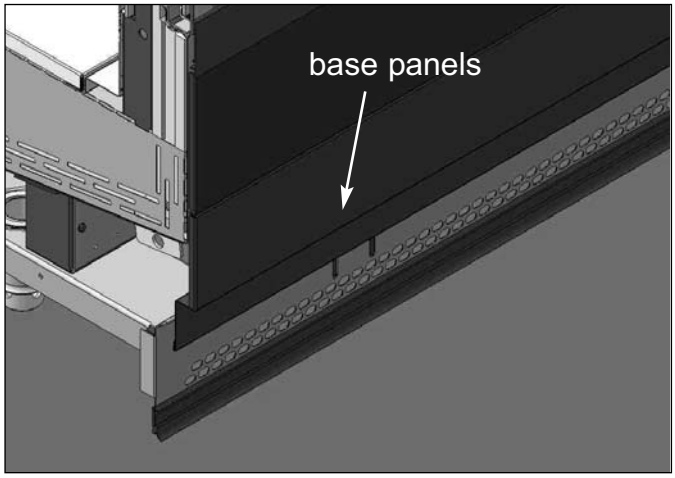


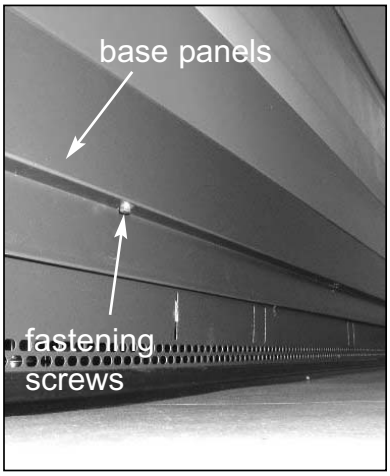
Place the kickplates onto the just installed supports by the screws supplied, as shown in the figures.





Lastly, install and fasten the base panels to their supports on the cabinet using the screws attached.



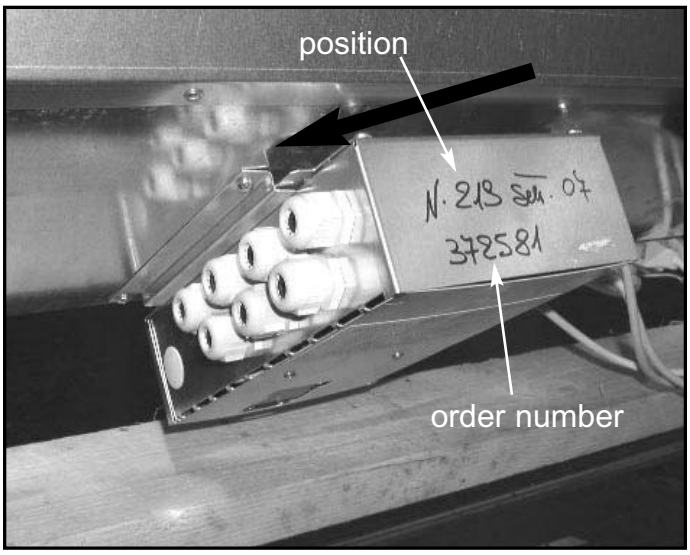


INSTALLATION OF ELECTRIC BOARD

The electrical board of many models is supplied separately in order to avoid damage during transportation. It is therefore necessary to install it on site.

How to identify the electrical board correctly: Electrical boards are marked with the order number and position. Using the production label attached to the cabinet it is possible to track down the electrical board of every cabinet with no margin for errors.

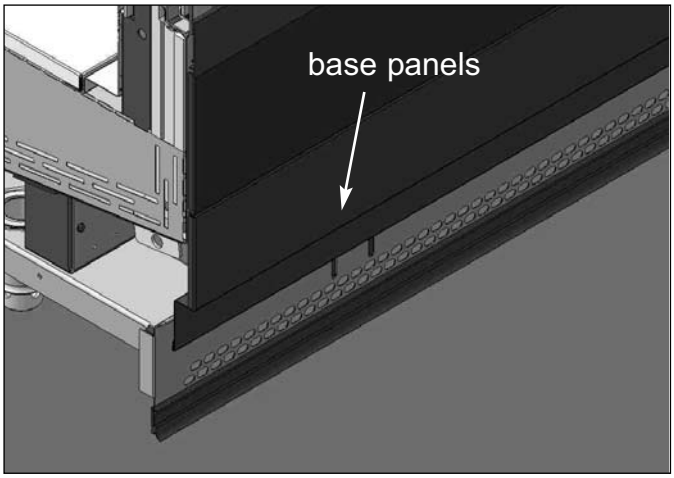
Place the electrical board in the respective runners under the cabinet, on the side opposite the drain.

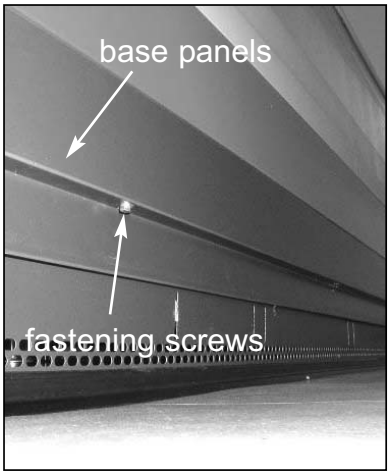


EXTRACTION OF ELECTRIC BOARD

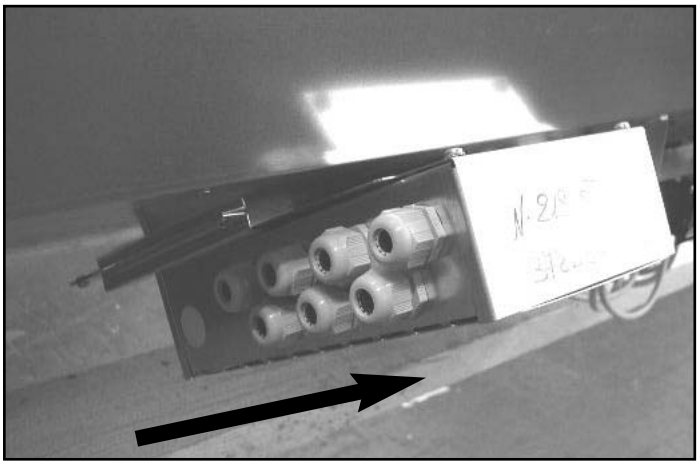
When it is necessary to perform jobs on the electrical board, proceed as explained below.

Unscrew and remove the base panel.

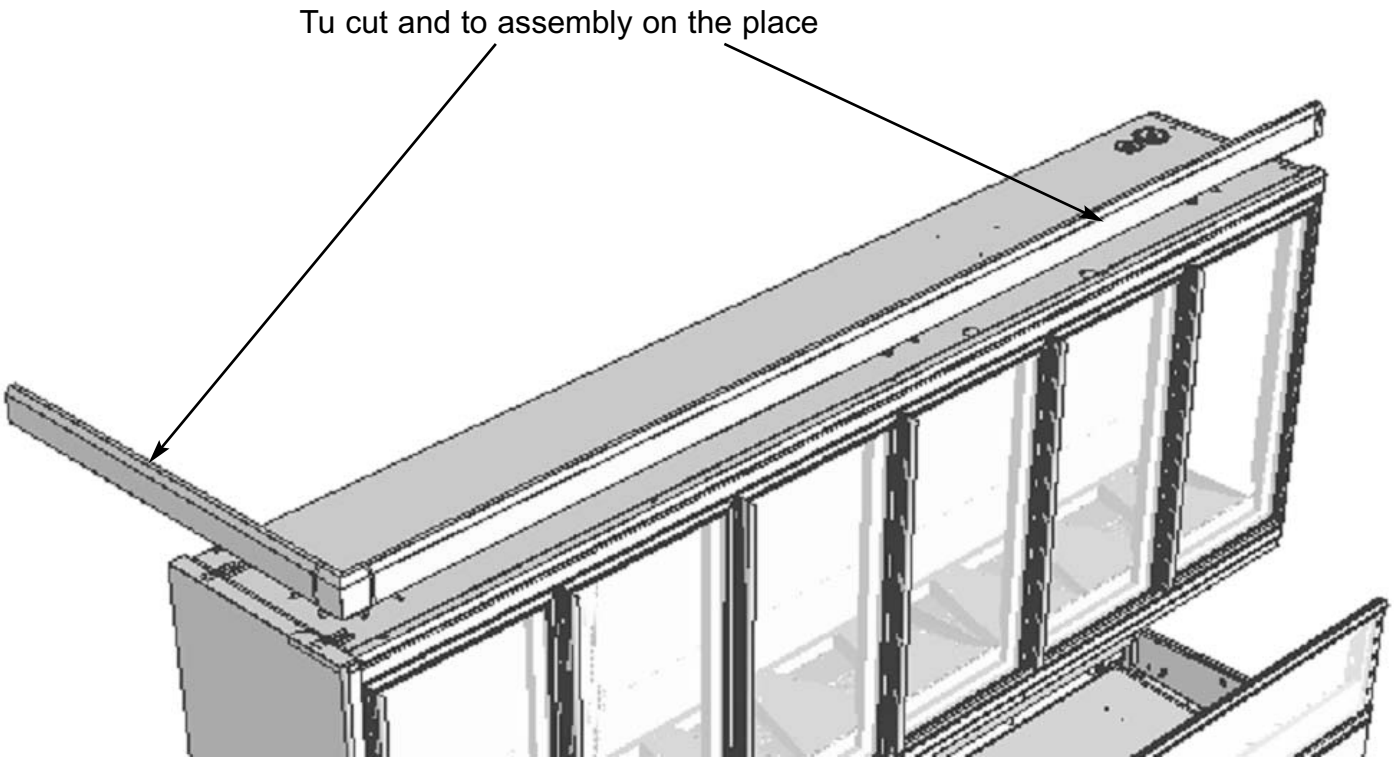




Pull the electrical board off the runner.



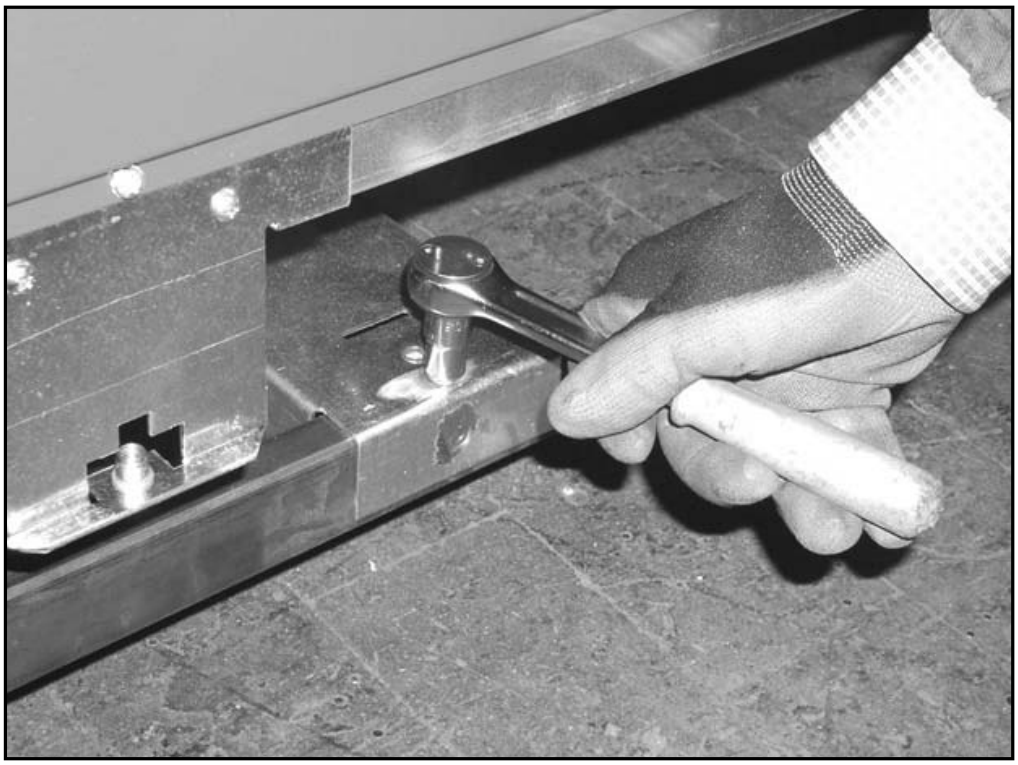
ASSEMBLY OF REFRIGERANT PIPES COVER (OPTIONAL)



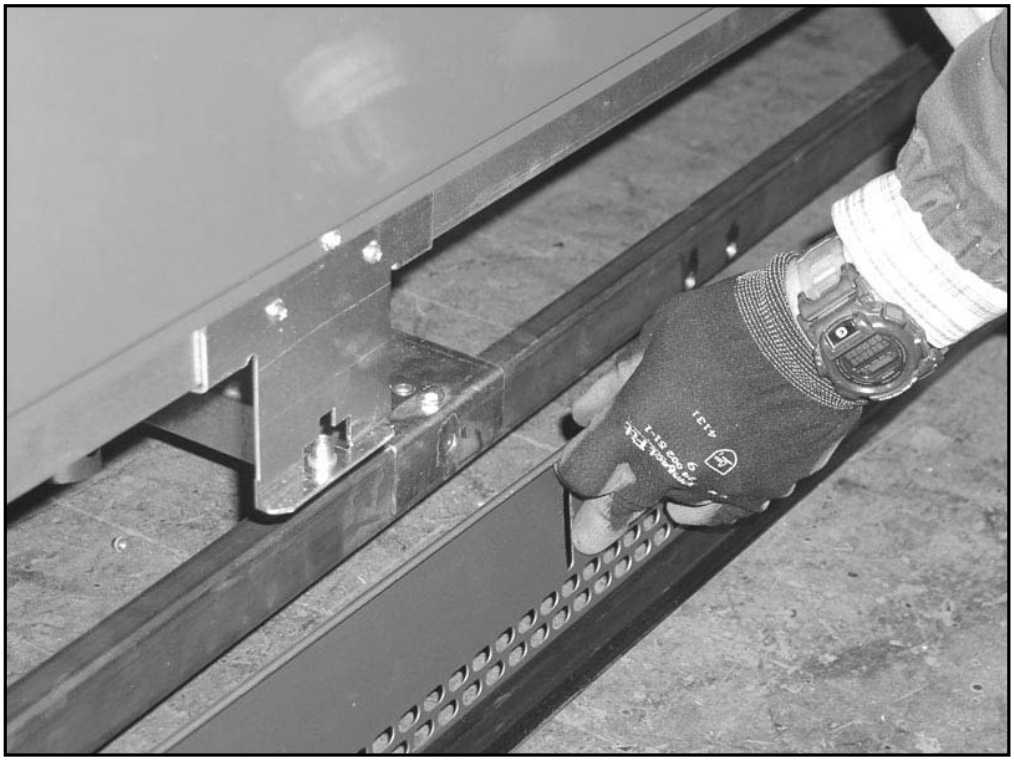
ASSEMBLY OF OPTIONAL STAINLESS-STEEL BUMPER RAIL

Place the stringer in the holding stirrups.

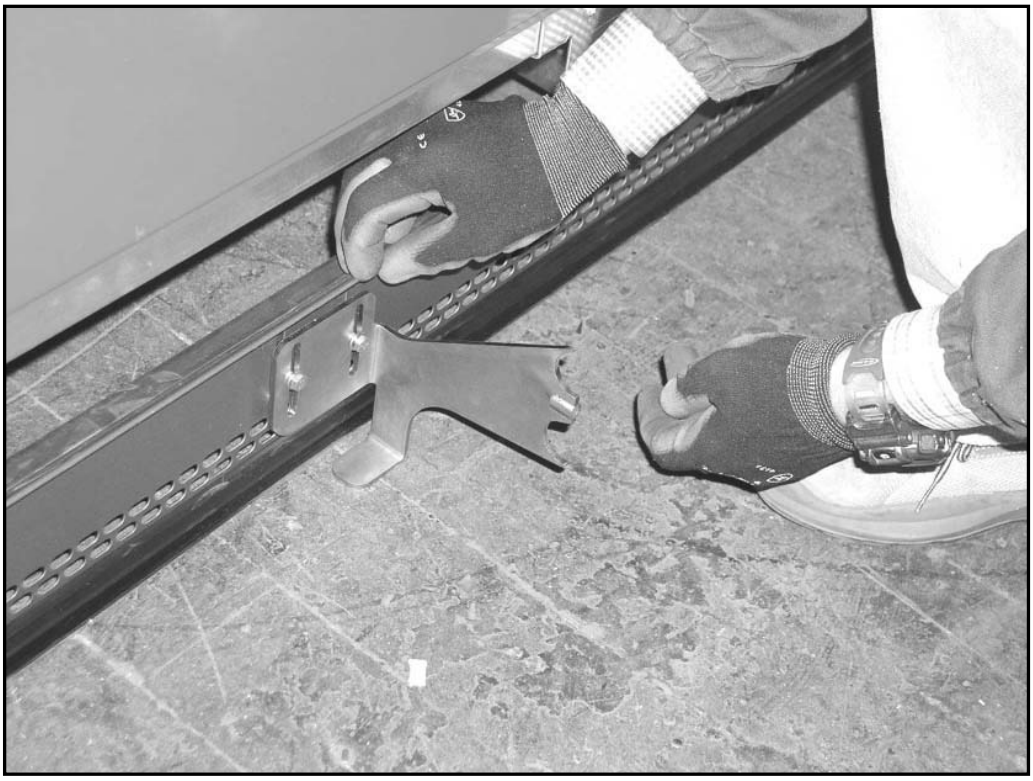
Fasten the stringers to the stirrups using the attached hex-head screws M6X20.



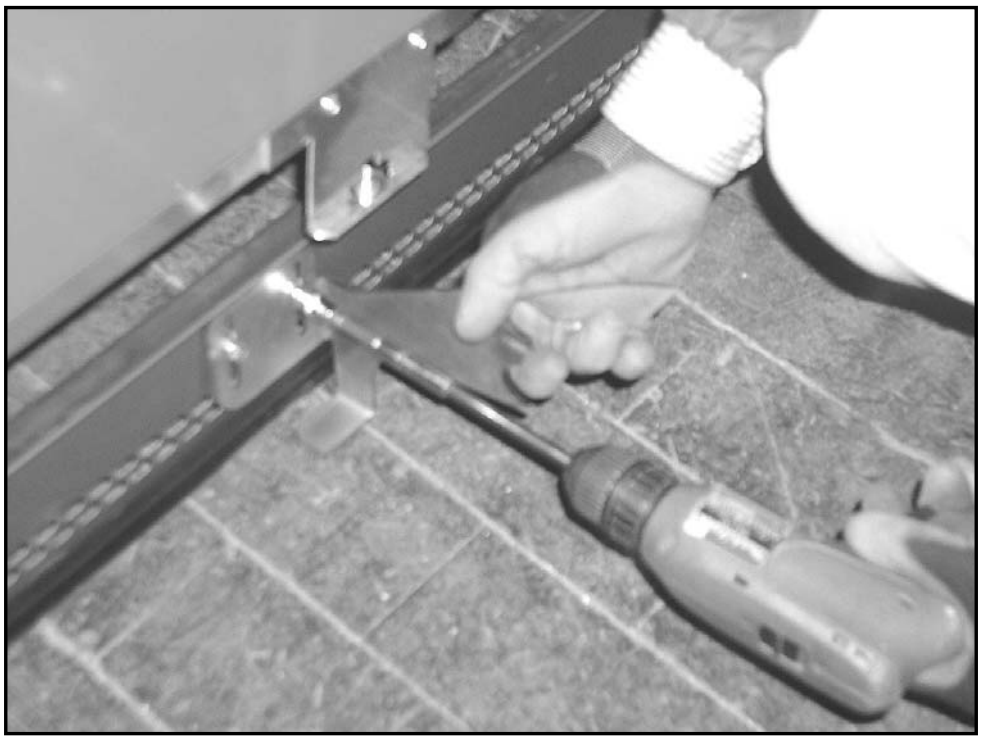
Rest the kickplates on the just-assembled stringer.



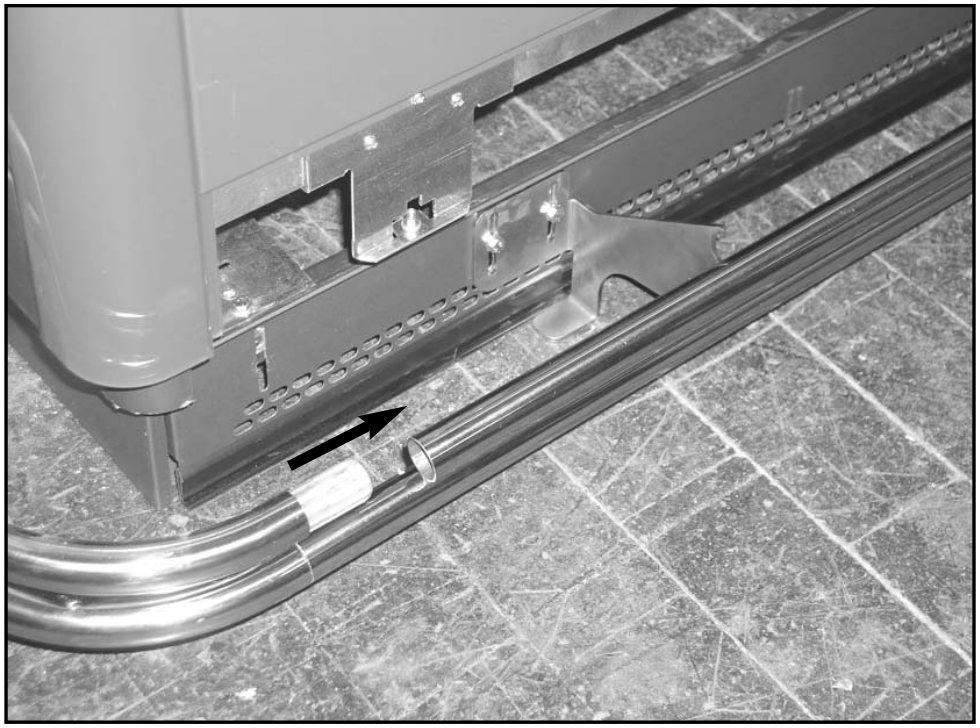
Place the bumper rail supports using the slots on the stringer and the slots on the bumper rail.



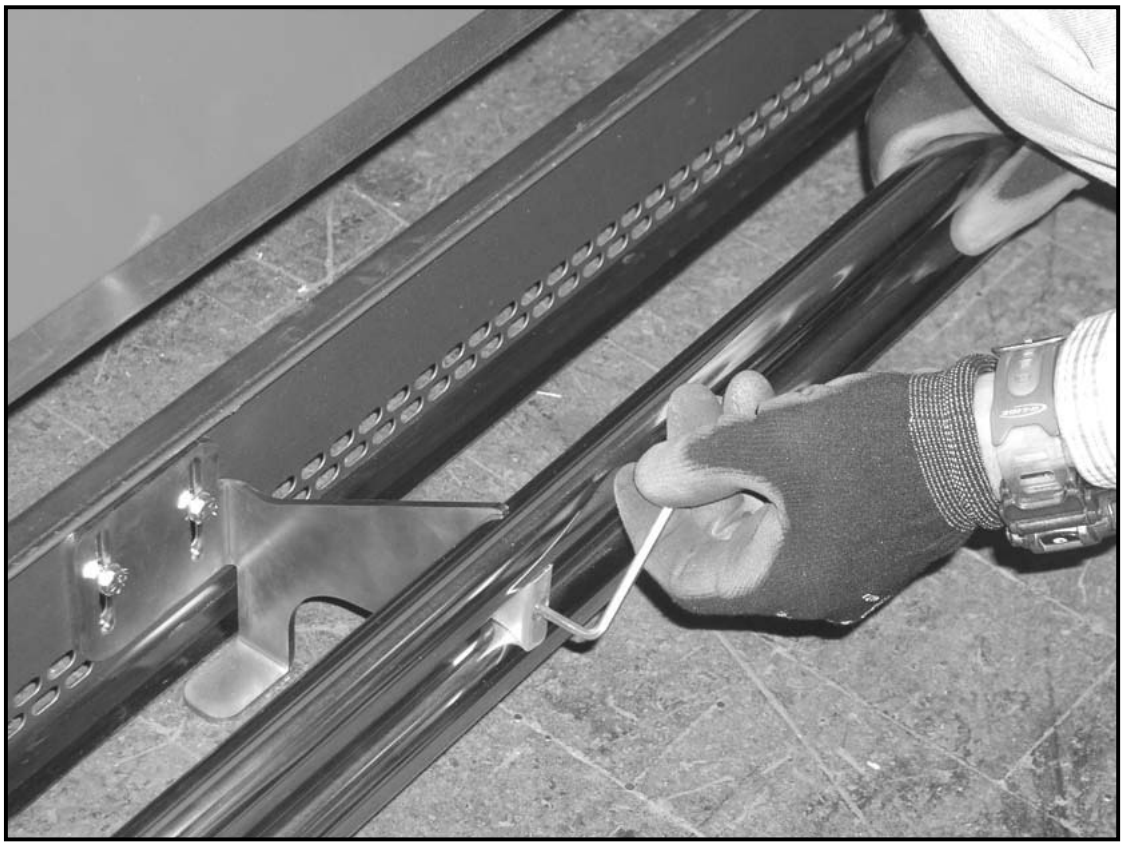
Fasten the bumper-rail supports using the appropriate hex-head M6x20 supplied; **ensure that the tip of the support is in direct contact with the floor.**



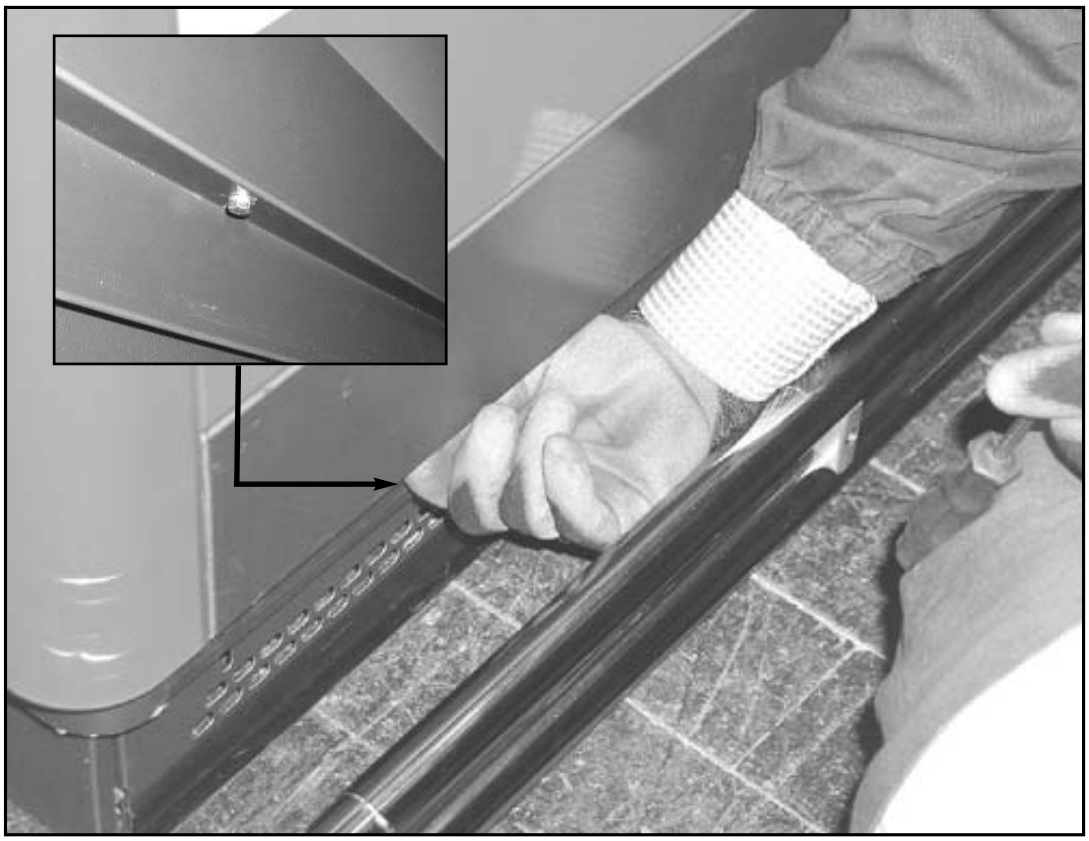
Place steel tubular bumper rails on their supports and insert side bumper rails with bends using the appropriate plastic joints.



Insert and fix the attached stop-blocks for the tubular bumper rails using the Allen screw supplied.

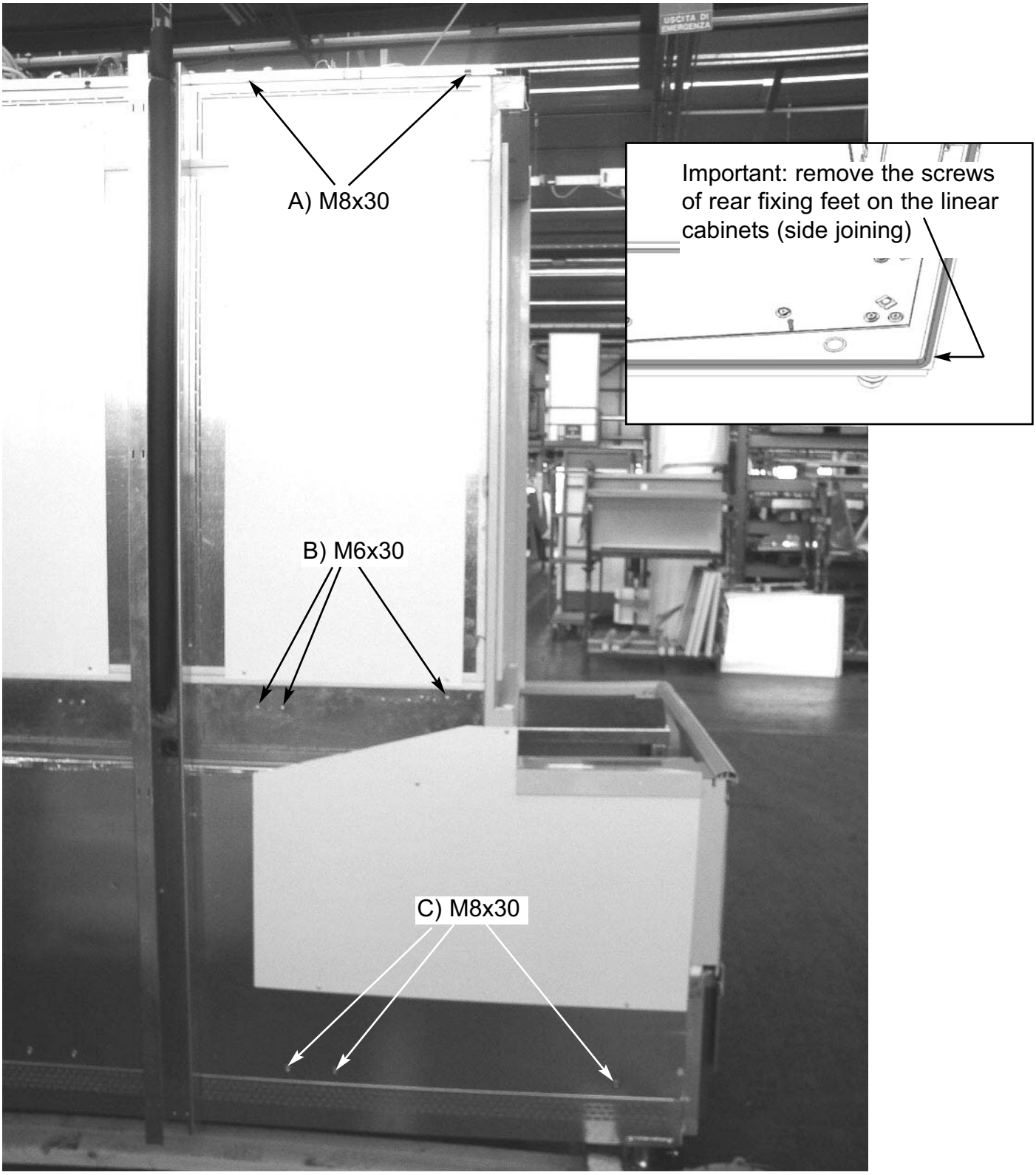


Lastly, mount base panels on their supports and secure their lower part with hex-head screws M4x15.



MULTIPLEXING OF HEAD CABINET

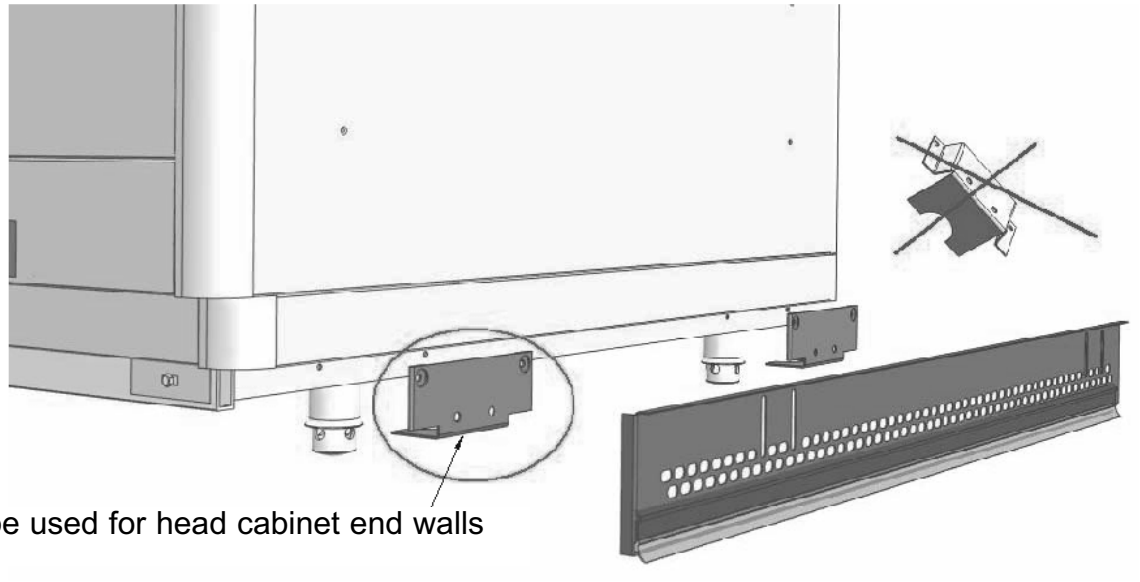
When mutiplexing includes an end cabinet, position the end cabinet first.
Check that they are level both crossways and lengthways by laying a spirit level on the bumper rail profile and on the cabinet stringers.
Join the cabinet **following the sequence A-B-C** as show in the figure.



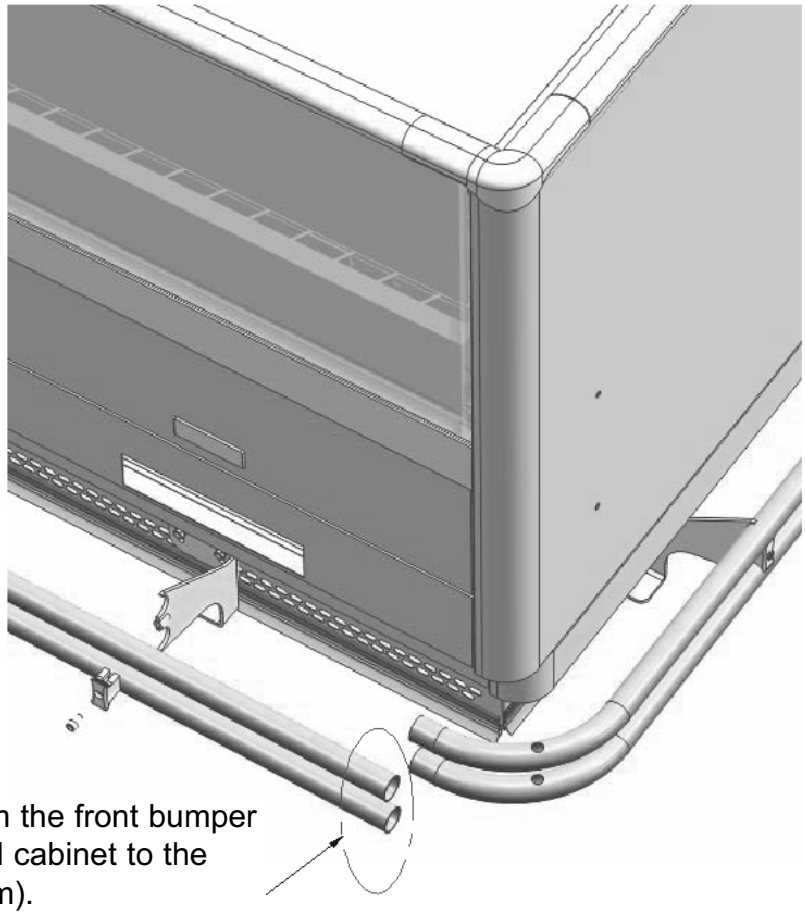
NOTE: The electrical board located on the roof needs to be positioned on the roof of the straight cabinet to be multiplexed.

After having joined the cabinets, unscrew and remove internal transportation guards.

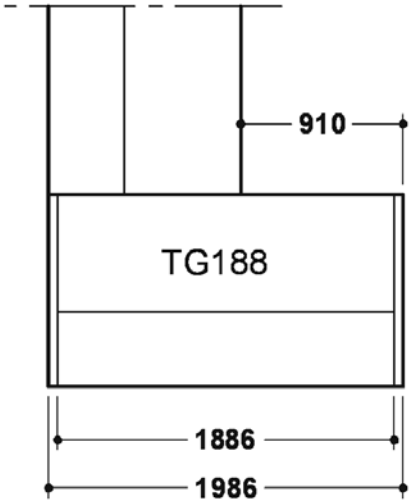
PLACEMENT OF KICKPLATES ON HEAD CABINET END-WALLS

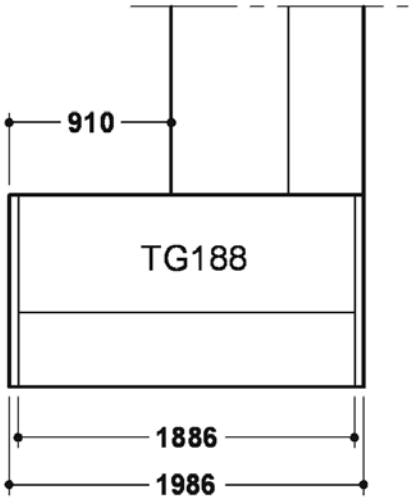


Parts to be used for head cabinet end walls

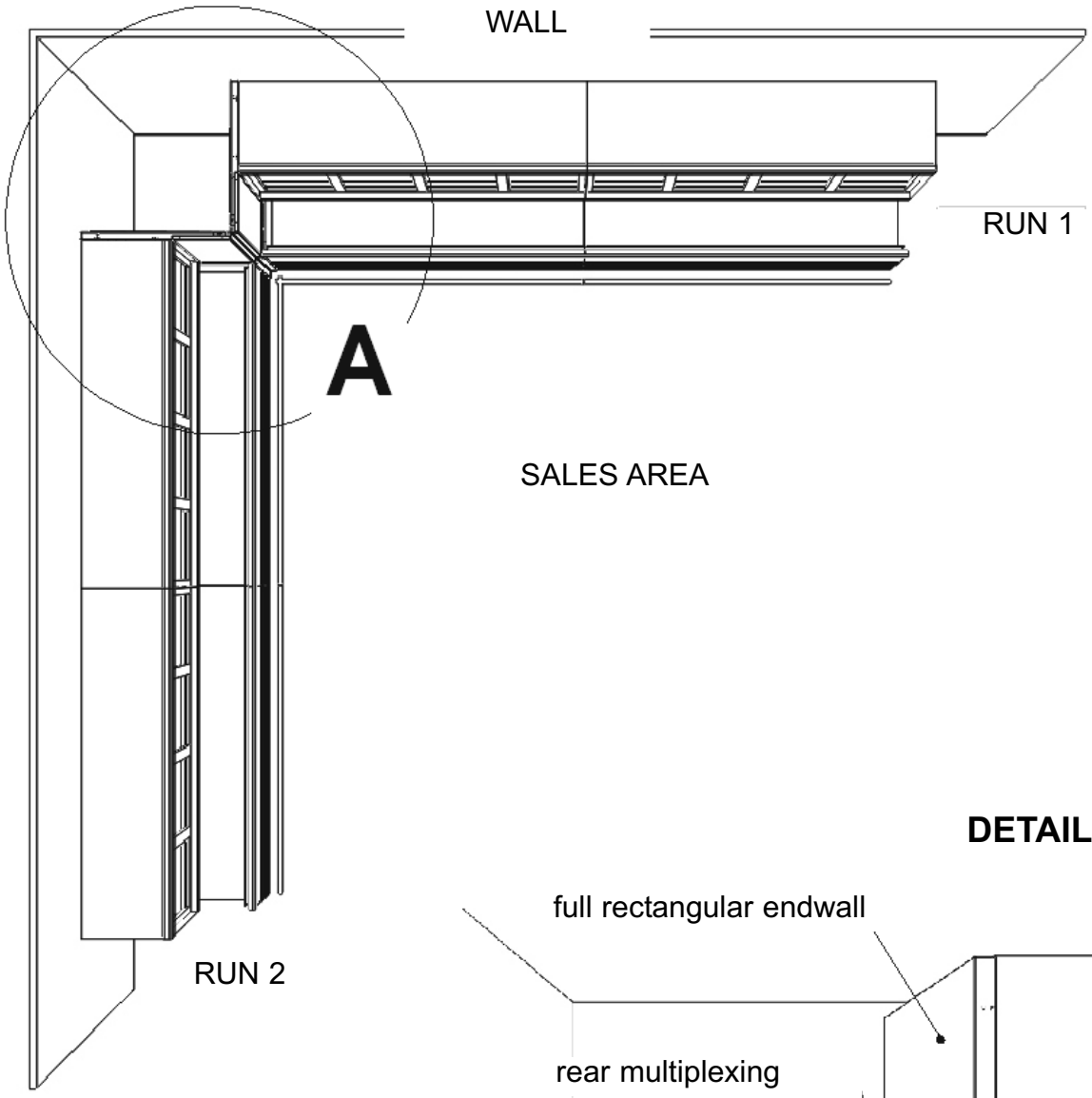


After multiplexing, trim the front bumper rail tubes on the head cabinet to the desired length (-20mm).

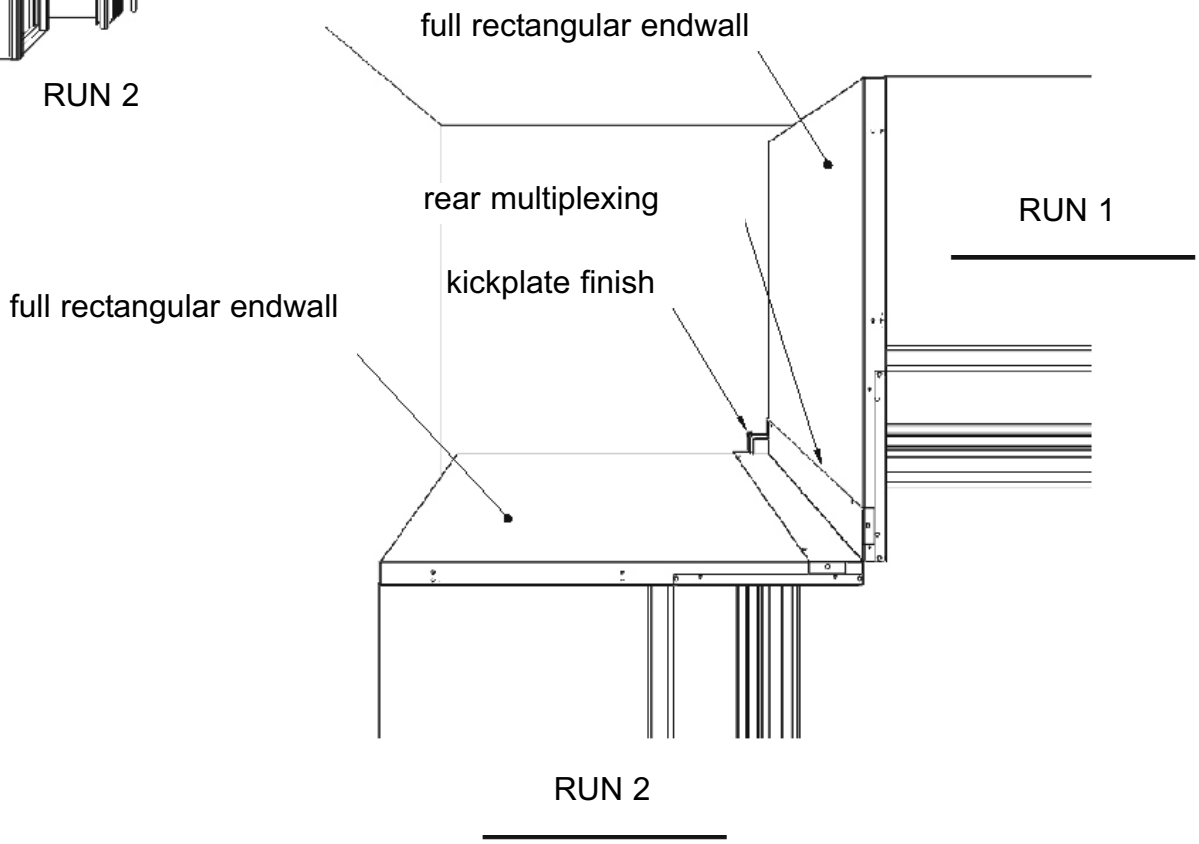

910
TG188
1886
1986


910
TG188
1886
1986

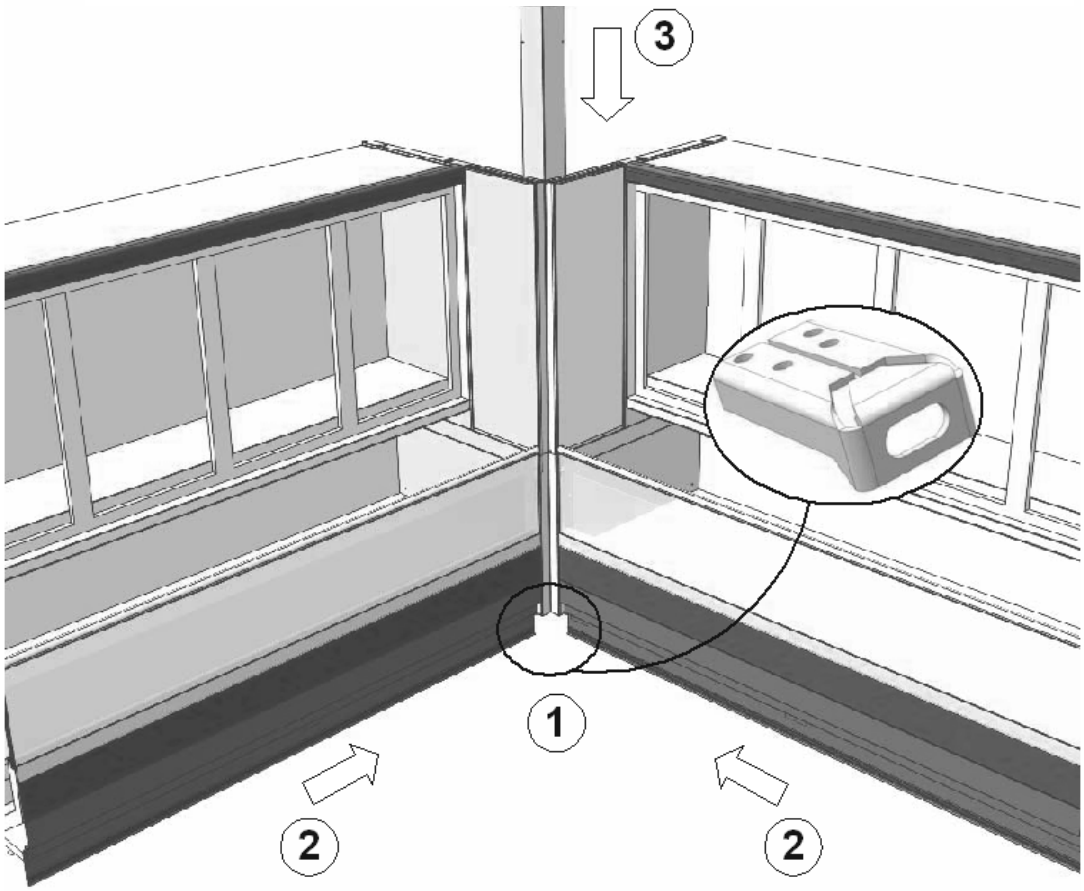
90° INSTALLATION OF RECTANGULAR ENDWALLS



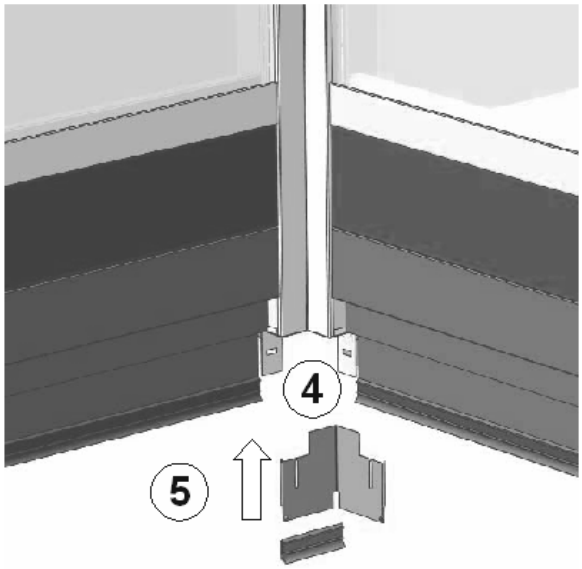
DETAIL A

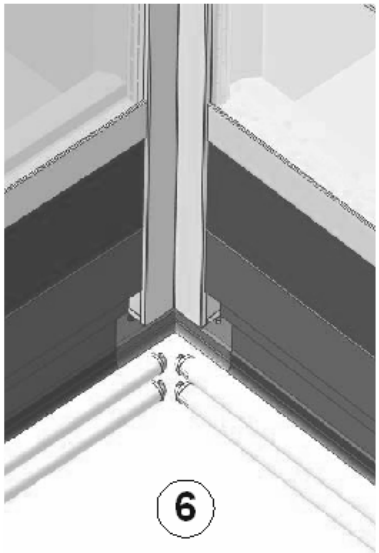


90° INSTALLATION OF RECTANGULAR ENDWALLS



1) Ensure that the supports are there (one per endwall).
2) Bring the cabinets side by side
3) Place the corner piece behind and fasten it at the top using screws.
4) Bend the lower rims of the end piece inwards
5) Place the plastic kickplates on their supports. Secure it all using the screws supplied.
6) Trim the bumper rail to fit (-65mm) and place the tips.

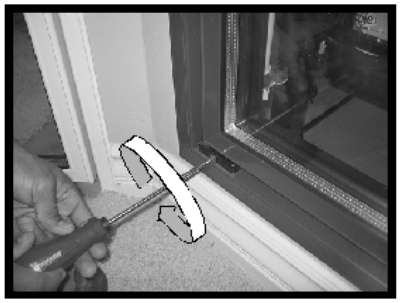




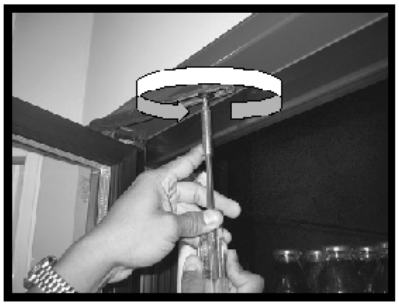
I. DOOR REMOVAL & REVERSAL

Removing the door assembly from the frame.

1. Using a flat-head screwdriver, loosen the tension on the door by turning the adjustment screw, located on the front of the torque-master, to the right or clockwise. (**A**)
2. Test the door by opening it, and confirm that the torque tension does not retract the door from open position.
3. If tension remains, continue adjusting the torquemaster until all tension has been removed from the door.
4. Open the door to access the hold open device then loosen and remove hold-open bolt, using a phillips-head screwdriver. (**B**)
5. Remove the hold open stud using a 7/16" hand wrench.
6. Retract the door to a near-closed position.
7. Insert the top half of the needle-nose pliers into the grip-hole, located in the hinge pin spring-clip, and the bottom half of the pliers beneath the hinge pin shroud. (**C**)
8. Squeeze the pliers to clamp down on the hinge pin spring clip, allowing the clip to release the hinge pin from the receptacle gib of the frame, while simultaneously pulling the top of the door away from the frame. This will release and pull the hinge pin out of the hinge pin receptacle and gib. (**D**)
9. Continue pulling the top of the door assembly away from the frame until the top door rail clears the frame.
10. Lift and remove the door from the torquemaster and carefully set the door aside. (**E**)



A



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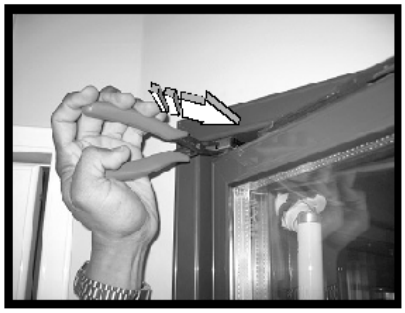
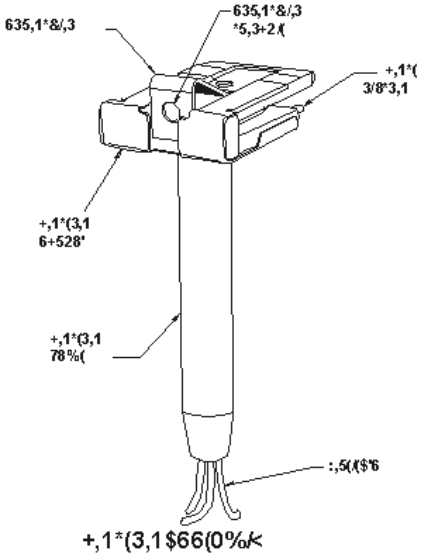


C



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D

E

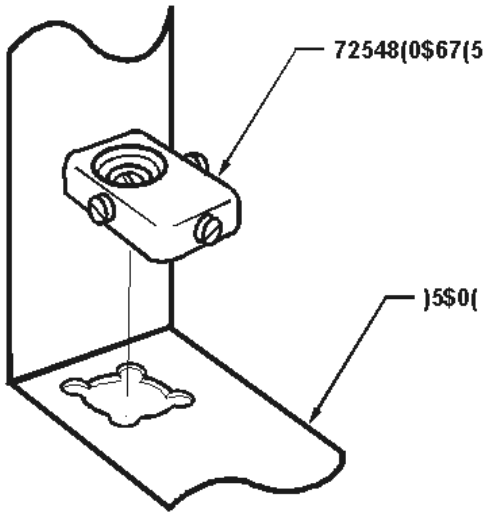
Reversing the Door Swing

1. Using a flat-head screwdriver, loosen the torquemaster from its mount by turning the center mounting screw counter-clockwise less than one-half (1/2) of a turn. (**A**)
2. Remove the Torquemaster, exposing the mounting hole in the bottom frame rail. (**B**)
3. Locate the mounting hole at the opposite side of the door opening.
4. Using the flat-head screwdriver, carefully pry underneath the plug cap and remove it. (**C**)
5. Place the Torquemaster on the newly opened mounting hole, aligning the flanged corners of the mounting tabs. (**D**)
6. Insert the Torquemaster mounting tabs onto the mounting hole with the hollow end of the Torquemaster against the door frame.
7. Confirm that the mounting flanges on the bottom of the torquemaster align with the corner mounting slots of the mounting hole in the frame.
8. Using a flat-head screwdriver, turn the Torquemaster mounting set-screw clockwise, for 1/2 a turn, to tighten the mount and lock it in place. Confirm that the torque-master mounting is flush with the door frame.
9. Using a 7/16" open-ended hand wrench, loosen and remove the hold-open detent bolt and standoff. (**E**)

A

B

C



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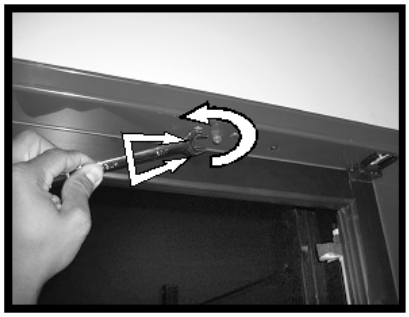


E

Reversing the Door Swing (cont'd)

10. Relocate and install the hold-open detent bolt and stand-off into the opposite hold-open mount of the same door frame (**F**-**G**)

NOTE: The standoff and screw will be switched from the door rail to the frame and the detent bolt and washer will be switched from the frame to the door.

11. Open the access portal to the hinge pin wire connections in the rail on the hinge side of the door assembly.
12. Disconnect the Hot, Neutral and Ground wires of the hinge pin from the heater wire circuit and the ground terminal. (**H**)
13. Loosen and completely remove the hinge pin assembly from the top door rail.

NOTE: Refer to theHinge Pin Replacement intructions in Section II for complete replaement procedures.

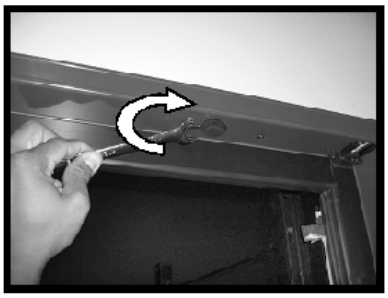
14. Using a plastic mallet and a flat-head screwdriver, remove the torque rod from the bottom of the door assembly. (**I**)

NOTE: Refer to the Removing and Replacing Torque Rod instructions in Section II for complete Torque Rod replacement instructions.

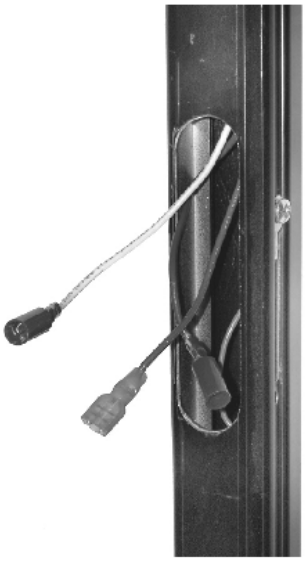
15. Swap placement of the Hinge Pin and Torque Rod to the other's original mounting hole in the door assembly hinge side rail.
16. Reinstall the hinge pin and the torque rod completely into the ends of the door assembly hinge rail.
17. If necessary, lightly tap on the hinge pin and torque rod with a plastic or rubber mallet until each is fully seated into the top and bottom of the door.
18. Reconnect the hinge in wires and confirm that all connections are secure.
19. Check and confirm torque rod and hinge pin are correctly and completely installed.
20. Reinstall the door into the frame.

NOTE: Refer to door replacement procedures in Section II for complete door installation instructions.

F



G



H

Removing the Hold-Open Assembly

1. Remove screws from the hold-open standoffs, which are located on the door rail and frame. (**A**)
2. Remove the hold open, standoffs and discard them.
3. When replacing the hold-open arm, reverse Step 1 by inserting the screw through the mounting hole in the arm and tightening it into the frame mounting hole using the #2 phillips head screwdriver. (**B**)

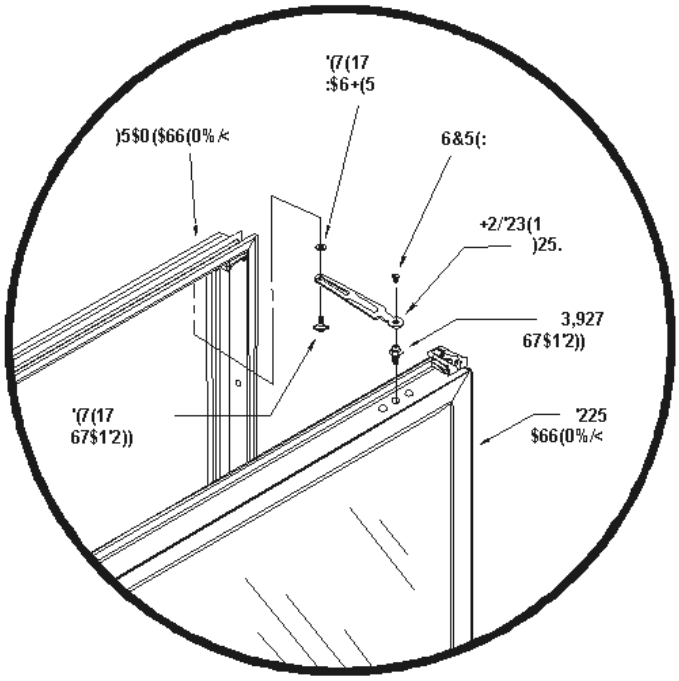
A

B

* Picture for orientation & reference only. Actual Hold-open assembly may differ from item shown.

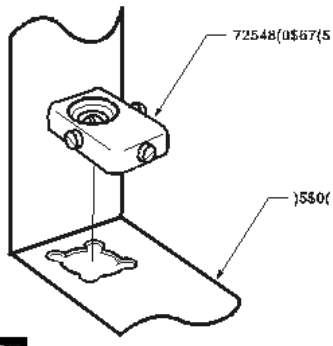
Replacing the Hold-Open Assembly

1. Insert the pivot standoff into door. Add Loctite #271 to threads. Torque to 100 in/lb.
2. Place the pivot hole of the new hold open over the pivot standoff that is closest to the hinge pin.
3. Retain with a new truss head screw and torque to 16 in/lb (approximately #2 clutch setting on a professional screw gun).
4. Remove the vinyl cap from the detent bolt.
5. Insert the bolt up thru the hold open slot and then thru the detent spacer (flat side against frame).
6. Add loctite #271 to threads. Use a 7/16 hex wrench and torque into frame to 100 in/lb.
7. Add small amount of grease to detent surface.
8. Insure the truss head screw is seated on the end of the standoff and not the hold open.



III. REPLACEMENT DOOR INSTALLATION

Installing the Door Assembly into the frame.

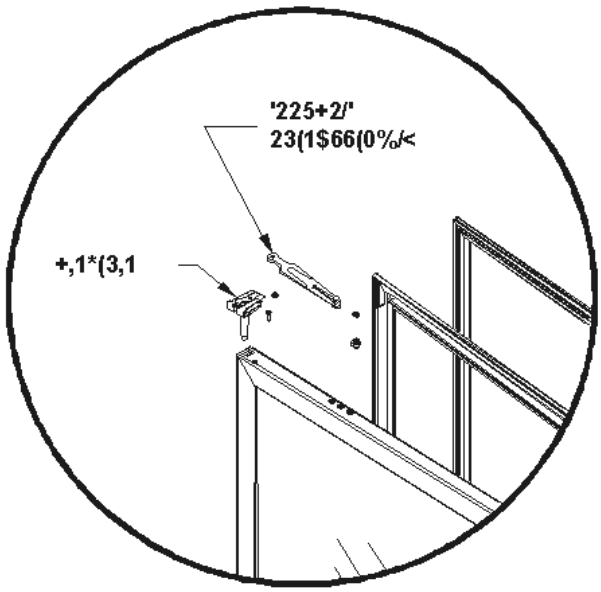


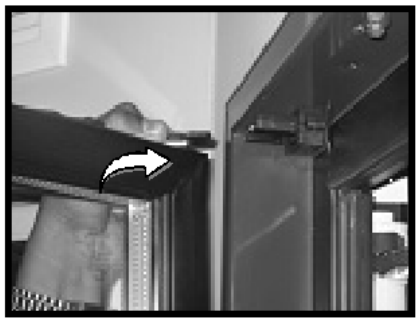
1. If replacing the Torquemaster, insert it with the hollowed end towards the frame corner. Align the mounting flanges on the bottom of the torquemaster with the divots in the corners of the mounting hole.
2. Using a flat-head screwdriver, turn the Torquemaster mounting screw clockwise to tighten the mount. Confirm that the torquemaster mounting is flush with the door frame. (**A**)
3. Handling the door carefully, install it into the frame by inserting the torque rod-end into the cavity of the Torquemaster. (**B**)
4. Tilt the top of the door up and toward the frame, inserting the hinge pin into the Gib, located in the top of the door frame. (**C**)
5. Extend the hold-open device towards the mounting hole in the top frame rail.
6. Insert the hold-open bolt through the elongated hold-open slot.
7. Install the washer and the hold-open bolt into the frame mounting hole and tighten the bolt. (**D**)

A

B

NOTE: Do not over-tighten the hold-open bolt. Be certain the hold-open does not bind while sliding along the hold-open bolt. Adjust as necessary.

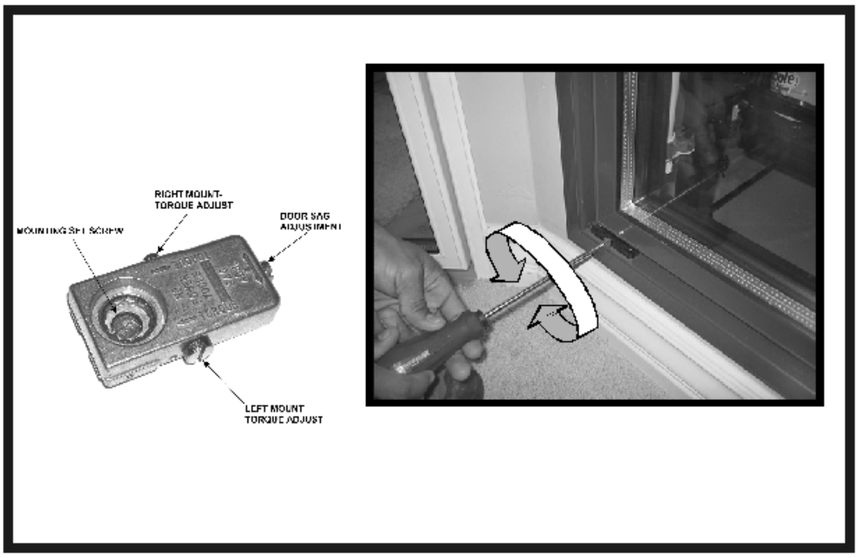




C

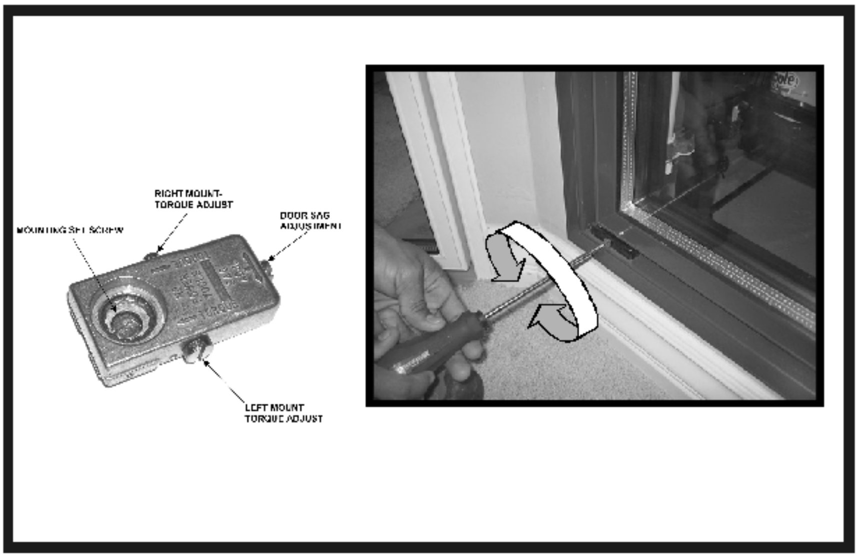
D

Open door
locking system



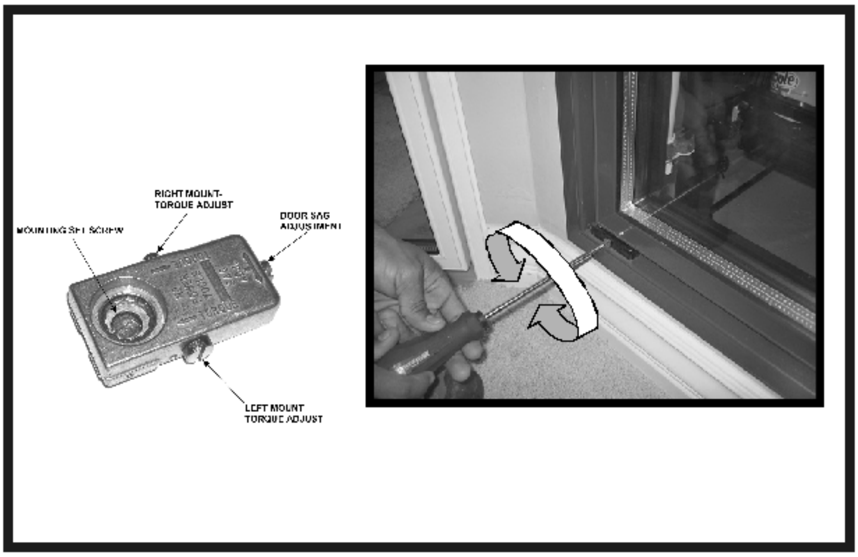
RIGHT MOUNT-
TORQUE ADJUST
DOOR SAG
ADJUSTMENT
MOUNTING SET SCREW
LEFT MOUNT
TORQUE ADJUST

Open door
locking system



RIGHT MOUNT-
TORQUE ADJUST
DOOR SAG
ADJUSTMENT
MOUNTING SET SCREW
LEFT MOUNT
TORQUE ADJUST

Open door
locking system



RIGHT MOUNT-
TORQUE ADJUST
DOOR SAG
ADJUSTMENT
MOUNTING SET SCREW
LEFT MOUNT
TORQUE ADJUST

IV. FRAME MAINTENANCE & PARTS PLACEMENT

Torquemaster Replacement

A

1. Using a large slot-head or flat-head screwdriver, loosen the installation mounting screw located in the center of the torque rod mounting socket of the Torquemaster. (**A**)
2. Remove the Torquemaster from the frame mount.
3. Replace the Torquemaster to the mount located on the frame.
   - If necessary, remove the plug cap located on the lower frame near the corner. Be certain to remove the plug cap that correlates with the side of the frame in which the door is to be installed. (**B**)

B

4. Place the torquemaster on the newly opened mounting pocket in the frame, with the hollowed end of the torquemaster towards the frame.
5. Align the mounting flanges on the bottom of the torquemaster with the divots or slots in the corners of the mounting hole. Be certain the Torquemaster is fully seated onto the frame. (**C**)
6. Turn the mounting set-screw clockwise to engage the mounting mechanism underneath the frame lining, then confirm that the Torquemaster is securely mounted.

C

NOTE: To adjust the Torquemaster settings, refer to the Torquemaster and Door Sag adjustment procedures.