MASTER-BILT®
Refrigeration Solutions

TEL / TEM

Installations & Operations Manual

LAE Electronic control

Master-Bilt Products
908 Highway 15 North
New Albany, MS 38652
Phone: (800) 684-8988

6/16 Rev. D 57-02506

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INTRODUCTION

Thank you for purchasing a Master-Bilt® cabinet. This manual contains important instructions for installing, using and servicing a Master-Bilt® **TEL/TEM** Top Coil Endless Case. A parts list is included in with this manual. Read all these documents carefully before installing or servicing your equipment.

NOTICE

Read this manual before installing your cabinet. Keep the manual and refer to it before doing any service on the equipment. Failure to do so could result in personal injury or damage to the cabinet.

DANGER

Improper or faulty hook-up of electrical components of the refrigeration units can result in severe injury or death.

NEVER use an extension cord to power these units. **All electrical wiring hook-ups must be done in accordance with all applicable local, regional or national standards.**

NOTICE

Installation and service of the refrigeration and electrical components of the cabinet must be performed by a refrigeration mechanic and/or a licensed electrician.

The portions of this manual covering refrigeration and electrical components contain technical instructions intended only for persons qualified to perform refrigeration and electrical work.
This manual cannot cover every installation, use or service situation. If you need additional information, call or write us:

Customer Service Department
Master-Bilt Products
Highway 15 North
New Albany, MS 38652
Phone (800) 684-8988
Fax (866) 882-7629

WARNING LABELS AND SAFETY INSTRUCTIONS

This symbol is the safety-alert symbol. When you see this symbol on your cabinet or in this manual, be alert to the potential for personal injury or damage to your equipment.

Be sure you understand all safety messages and always follow recommended precautions and safe operating practices.

NOTICE TO EMPLOYERS

You must make sure that everyone who installs, uses or services your cabinet is thoroughly familiar with all safety information and procedures.

Important safety information is presented in this section and throughout this section and throughout the manual. The following signal words are used in the warnings and safety messages:

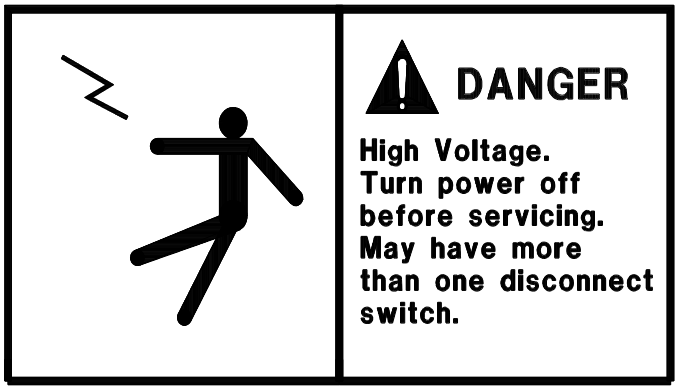
DANGER: Severe injury or death will occur if you ignore the message.

WARNING: Severe injury or death can occur if you ignore the message.

CAUTION: Minor injury or damage to your cabinet can occur if you ignore the message.

NOTICE: This is important installation, operation or service information. If you ignore the message, you may damage your cabinet.

The warning and safety labels shown throughout this manual are placed on your Master-Bilt® **Products cabinet at the factory. Follow all warning label instructions. If any warning or safety labels become lost or damaged, call your customer service department at (800) 684-8988 for replacements.**



This label is located on top of the electrical control panel and on the wiring channel.

PRE-INSTALLATION INSTRUCTIONS

INSPECTION FOR SHIPPING DAMAGE

You are responsible for filing all freight claims with the delivering truck line. Inspect all cartons and crates for damage as soon as they arrive. If damage is noted to shipping crates or cartons or if a shortage is found, note this on the bill of lading (all copies) prior to signing.

If damage is discovered when the cabinet is uncrated, immediately call the delivering truck line and follow up the call with a written report indicating concealed damage to your shipment. Ask for an immediate inspection of your concealed damage item. Crating material must be retained to show the inspector from the truck line.

INSTALLATION INSTRUCTIONS

GENERAL INSTRUCTIONS

1. Be sure the equipment is properly installed by competent service people.

2. Keep the equipment clean and sanitary so it will meet your local sanitation codes. Wipe up all spills, clean with water and a mild detergent, then rinse with clean water.

3. Rotate your stock so that older stock does not accumulate. This is especially important for ice cream. A "First-In, First-Out" rotation practice will keep the products in good sellable condition.

4. Do not place product in the case when it is soft or partially thawed. Also, product should not be put in the case for at least 6 hours after it is started.

5. Stock cases as quickly as possible, exposing only small quantities to store temperatures for short periods of time.

6. When replacing burned flourescent bulb/LED light bar, be sure that the electrical power to the lighting circuit is turned off.

To comply with N.S.F. requirements, this cabinet must be sealed to the floor with NSF listed silicone sealant. Before moving cabinet into place, route cabinet plumbing with P-trap to store drain line or install optional condensate pan.

STORE CONDITIONS

The Master-Bilt® **TEL/TEM** cases are designed to operate in the controlled environment of an air conditioned store. The store temperature should be at or below 75°F and a relative humidity of 55% or less. At higher temperature or humidity conditions, the performance of these cases may be affected and the capacity diminished. It is not uncommon in a newly constructed store for the temperature and humidity to be above design conditions. These excessive conditions may produce sweating in the case until the store is operational and the ambient environment is more desirable.

LOCATION

The Master-Bilt® **TEL/TEM** should not be positioned where it is directly exposed to rays of the sun or near a direct source of radiant heat or air flow.

Cabinet should not be built into an enclosed area. If this case is to be located against a wall there should be at least a 4" space between the wall and the back of the case, with 4" open space at top and one or both ends. This space will allow for the circulation of air behind the case which will prevent condensation on the exterior surfaces.

Make sure that the floor that will support this equipment is of adequate strength to prohibit sagging. After confirming the dimensions of case with the blueprint measure off and mark on the floor the exact location of the cases for the entire lineup. Snap chalk lines where the base skids of the case are to be located as shown in **Figure 1**.

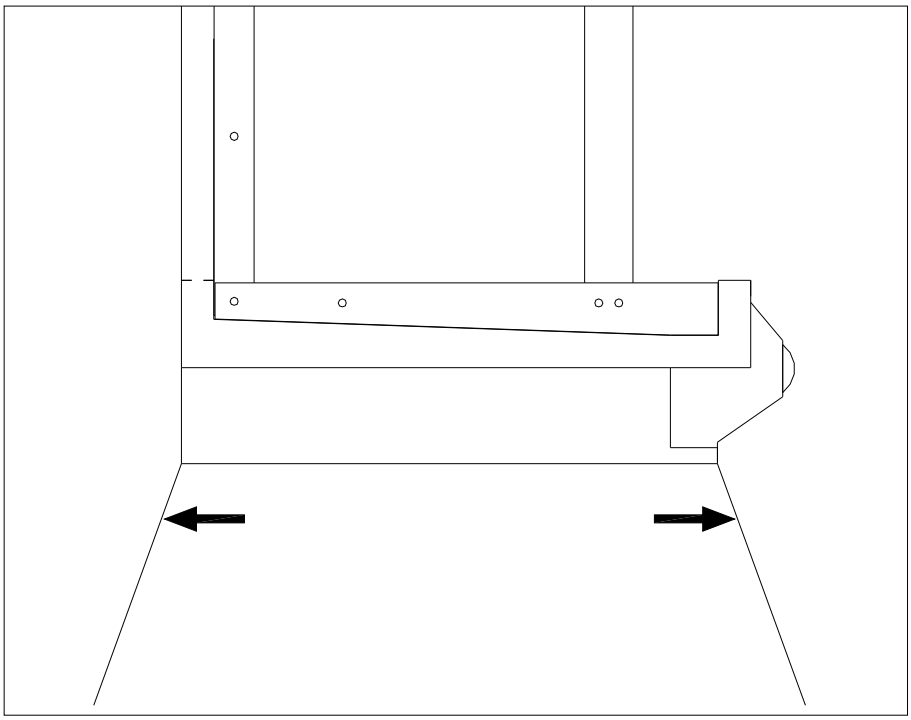
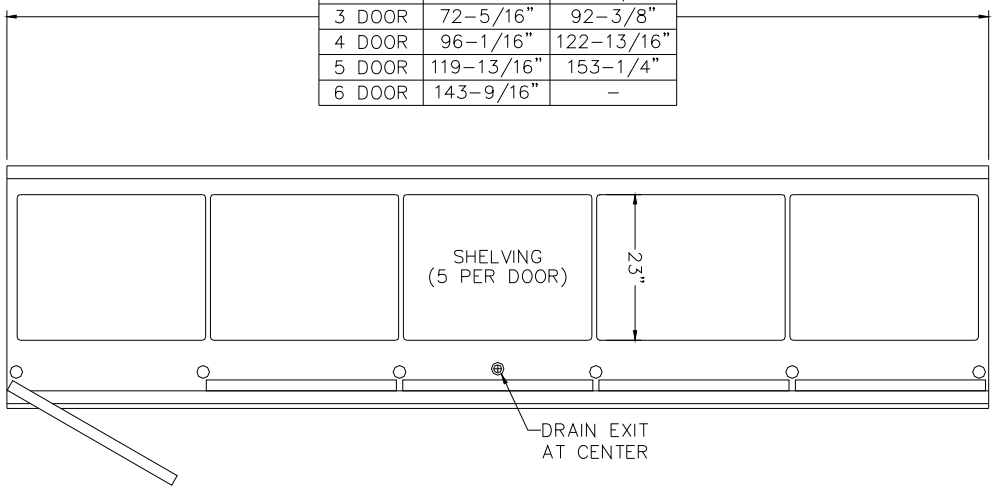


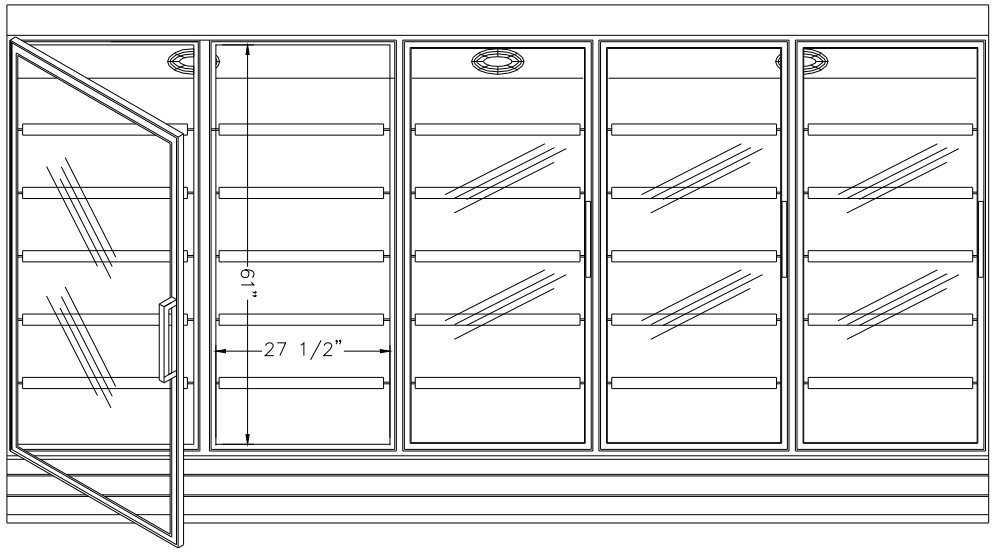
Figure 1 – Chalk lines at front and back edges of skids

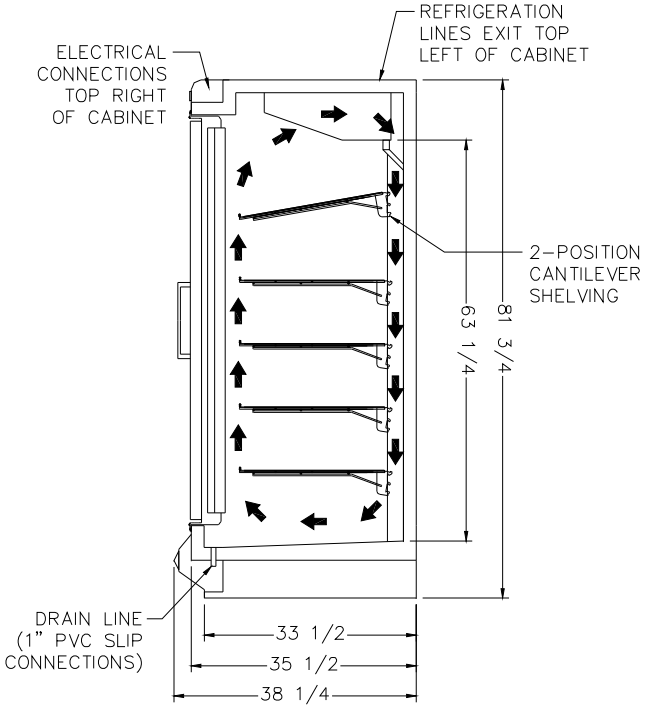
OVERALL LENGTH WITHOUT ENDS		
MODEL	24" DOORS	30" DOORS
2 DOOR	–	61–15/16"
3 DOOR	72–5/16"	92–3/8"
4 DOOR	96–1/16"	122–13/16"
5 DOOR	119–13/16"	153–1/4"
6 DOOR	143–9/16"	–



MB MASTER-BILT Refrigeration Solutions

TEM/TEL-24/30





LEVELING

It is very important that this equipment be perfectly level. This will allow for proper and complete drainage of the evaporator coil and for proper case alignment. A perfectly level area is generally not available where the equipment is to be installed. Mark the location of all case joining points front and back. Use a transit to locate the highest point on the chalk lines. This point will be a reference point for determining shim-pack heights. Using the reference point, mark the difference directly on the floor to each joining point front and back. Shim each joining point to equal the reference point as required. Tape all shims in place. If the installation is an entire lineup install the case that will be positioned at the highest point first. Check that the equipment in the lineup is level as the installation proceeds.

JOINING MULTIPLE SECTIONS

Remove the case from its shipping skid. Set the first case into its desired position with required shims in preparation for joining it with its adjacent case.

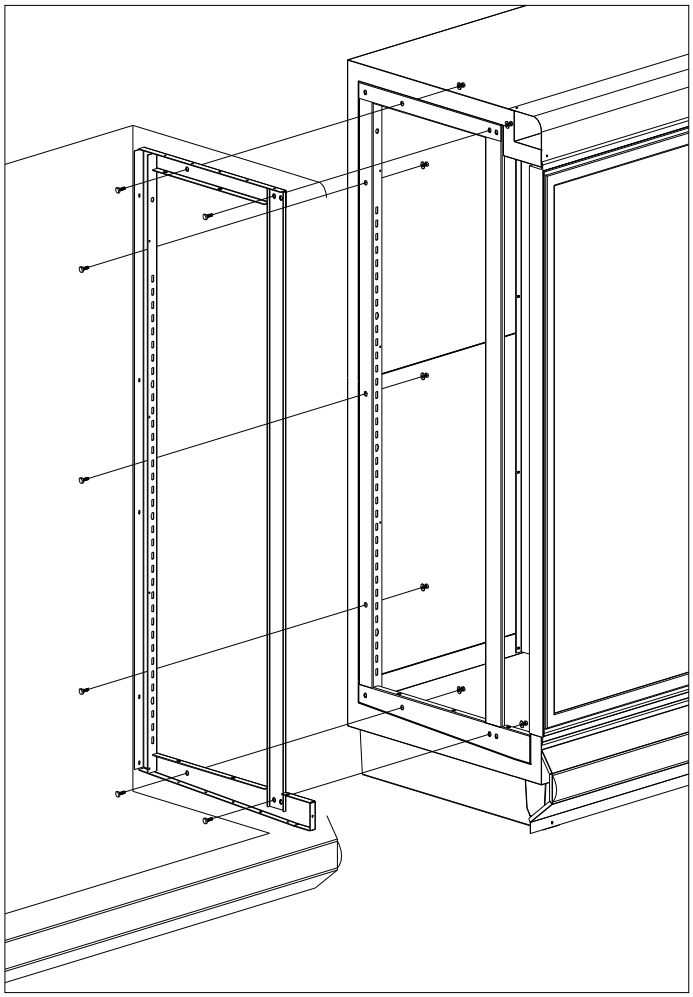


Figure 2 – Case joining detail

Cases joined together require an application of butyl caulking to provide an air-tight seal. Apply a generous bead to all exposed foam edges at the end of the case. Inspect the bead to make sure there are no gaps and that there is sufficient material to provide a complete seal. The cases are now ready to be joined together. Remove the second case from its shipping skid and move it into position against the end of the first case. Properly level the second case with the appropriate shims.

Bolt the cases together through the seven holes that are provided in the end frame as shown in **Figure 2**. Tighten the bolts until all seams are fully closed. Do not over tighten.

Bolt the included sex bolts through the door frame to secure the door frames together as shown in **Figure 3**. Make sure that the gasket strips on each frame are intact and free of damage to ensure a proper seal between the two frame sections. Repeat the above process for all other cases in the lineup.

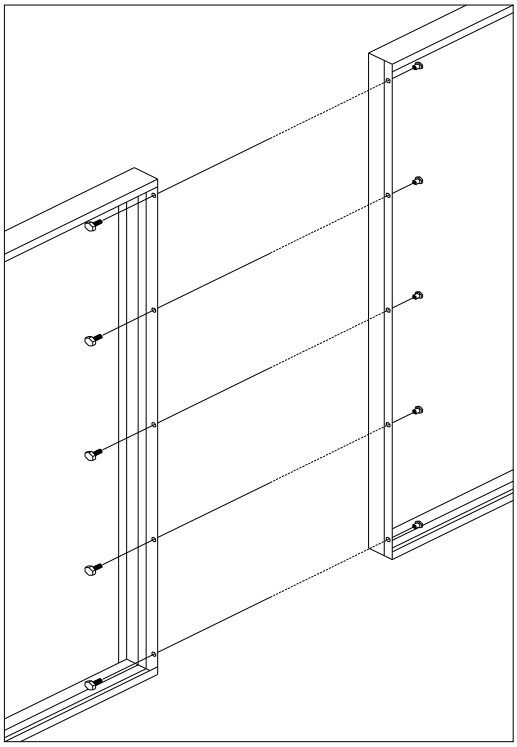


Figure 3 – Door frame joining detail

INSTALLING THE KICKPLATE

Install the kickplate by slipping the top flange of the kickplate into the kickplate retaining clip that is mounted on the front of the case. Secure the bottom of the kickplate by screwing through the pre-drilled holes into the front of the skids using the supplied #10x3/4" sheet metal screws. Refer to **Figure 4** for the placement of the kickplate.

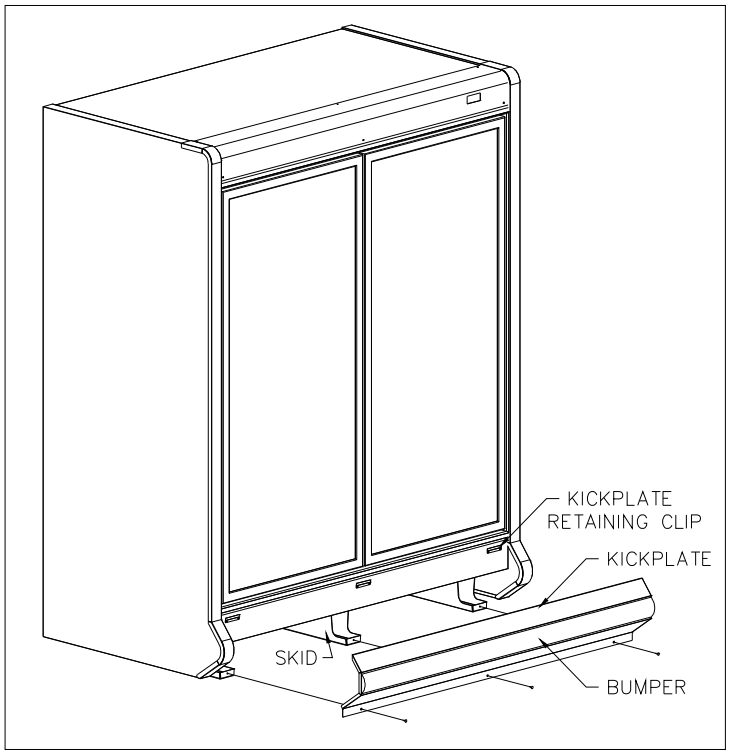


Figure 4 – Kickplate installation

INSTALLING JOINING TRIM

For the top joiner, the screws attaching the ends of the electrical raceway must be removed. The top screws can simply be taken out. To remove the front screws, the screw cap must be unhinged using a small flat-head screwdriver. Remove the screw and the cap and save for reinstallation. Position the joiner over the seam between the cabinets and align the pre-punched slots with the holes in the electrical raceway top and front. Reattached as shown in **Figure 5** using the screws removed from the top and the screws and caps removed from the front.

To install the kickplate joiner, first make sure that the bumper is removed and the bumper retainer is exposed. Loosen the screw closest to the edge holding the bumper retainer in place enough to enable the kickplate joiner trim to slide in behind the bumper retainer. Attach the kickplate retainer with the (4) #10x3/4" self-drilling sheet metal screws provided with the kit as shown in **Figure 5**. Rettach the bumper retainer and install the bumper by snapping onto the bumper retainer using a wood block or mallet.

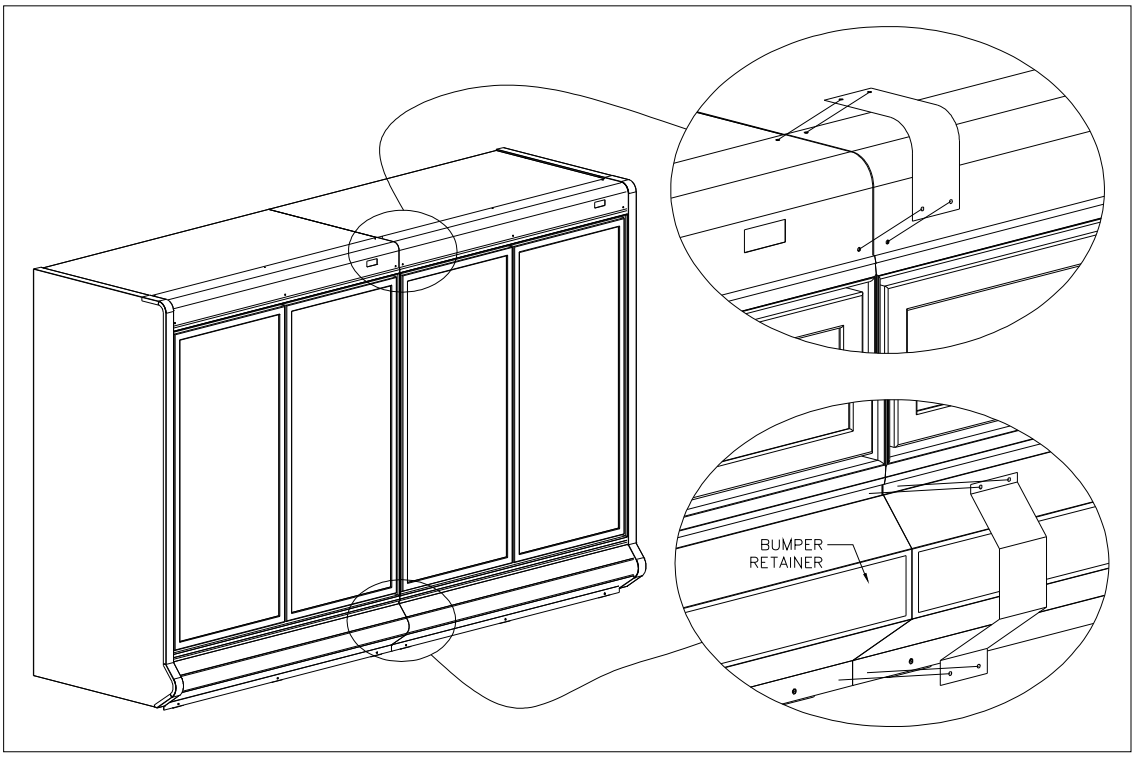


Figure 5 – Top joiner and kickplate joiner details

REMOVING AND REPLACING THE ENDS

The ends of a **TEL/TEM** are bolted to the ends of the cabinet itself. There are seven attachment points on each end as shown in **Figure 6**. Each attachment point uses a 5/16" hex head bolt and washer. The bolts are fed through the holes in the end frames and into threaded retainers in the end panel. Care should be taken not overtighten the bolts as this could lead to stripping of the threaded retainer. Consult the factory if it is necessary to remove or replace the end of a **TEL/TEM**.

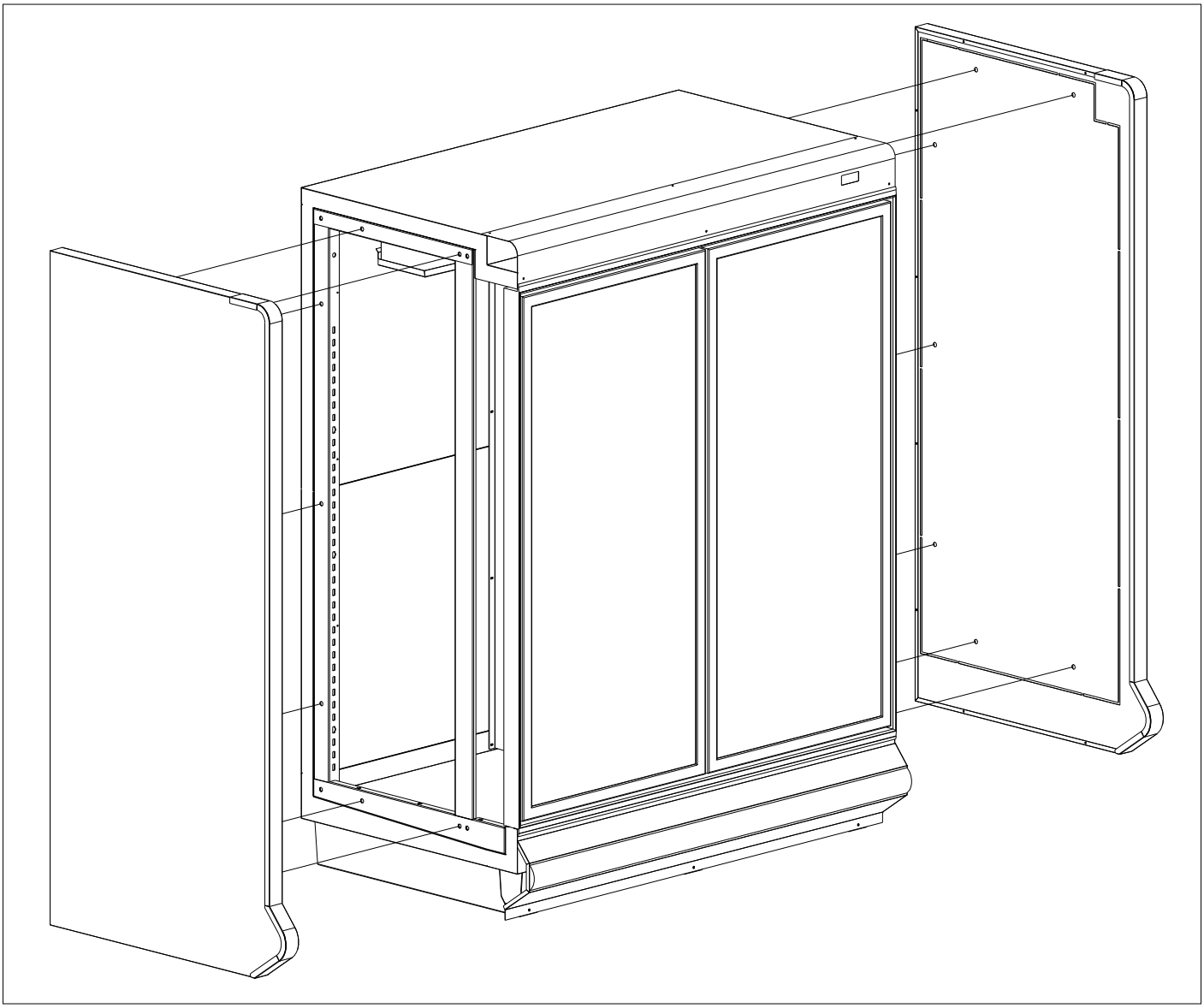


Figure 6 – End panel detail

PLUMBING

The **TEL/TEM** is equipped with a condensate drain that is piped out the middle front of the cabinet. This drain line is 1" PVC pipe that must be have a P-trap installed. It is very important that this trap be installed as it will result in diminished performance of the case without it. There is also a 1" cleanout drain in the middle front of the bottom the cabinet. The kickplate will need to be removed to see the piping for the cleanout drain.

1. Always install drains in accordance with local codes.
2. Use largest possible size pipe for drains, one inch minimum is recommended.
3. Provide as much downhill slope as possible.
4. Prevent drains from freezing. Do not install drains in contact with uninsulated suction lines.

NOTICE TO STORE OWNERS / MANAGERS

Moisture or liquid around or under the cabinet is a potential slip/fall hazard for persons walking by or working in the general area of the cabinet. Any cabinet malfunction or housekeeping problem that creates a slip/fall hazard around or under the cabinet should be corrected <u>immediately</u>.

If moisture or liquid is observed around or under a Master-Bilt® cabinet, an immediate investigation should be made by qualified personnel to determine the source of the moisture or liquid. The investigation should determine if the cabinet is malfunctioning or if there is a drain pipe leaking.

ELECTRICAL

WARNING

Before servicing electrical components in the case or the doors or door frames make sure all power to case is off. Always use a qualified technician.

It is very important that full voltage and overcurrent protection requirements for condensing units, defrost heaters, fans, door and frame heaters, etc. be provided at installation. Wire sizing must be adequate to maintain full voltage under amperage loads specified in the charts are in this manual.

PIPING

The piping connections for a **TEL/TEM** are piped out of the cabinet to the customer's specifications.These lines have been capped and should be cut with a tubing cutter so as not to introduce copper shavings into the system. Only clean, dry, sealed refrigeration grade AC hard copper tubing should be used. Be sure to install a suction line oil trap or 'P-trap for both the **TEL/TEM's**. It is recommended that all brazed joints be made with silver alloy-type solders. For roof top condensing units, an inverted P-trap must be installed in the suction line where the refrigeration lines exit onto the roof. For vertical line runs of more than 20 ft., a riser trap must be installed at the approximate center of the riser. The condensing unit should be located as closely as possible to the cabinet. Keep the refrigeration lines as short as possible and use as few fittings as practicable, being especially careful not to "kink" the lines. Keep the layouts as simple as possible and properly support the piping to absorb vibratioin and the normal expansion and contraction caused by temperature changes. All suction lines should be well-insulated to minimize heat absorption and control condensate which could form on the suction line. If tubular insulation is used, the ends, joints, and any other open areas (including slits necessary to fit the tubing over installed piping) should be sealed with insulation glue. A minimum amount of flux should be used as needed and a small amount of dry nitrogen should be fed into the tubing during brazing to minimize formation of scale and oxidation inside the tubing. Leak check all joints with an electronic leak detector or halide torch. If leaks are found relieve the pressure and make repairs as necessary and recheck. Thoroughly caulk or foam all refrigeration line entry holes. All openings for wiring should be sealed with NSF listed sealant to prevent air leaks and unwanted condensation.

REFRIGERATION SYSTEM EVACUATING AND CHARGING

1. Blow out all refrigerant lines with dry nitrogen or carbon dioxide to eliminate the possibility of dirt, scale, etc. remaining inside.

2. Connect all lines and leak test all connections.

3. Connect a good high vacuum pump to both the low and high side evacuation valves.

4. Operate the pump until a vacuum of 1500 microns (0.06 inches of mercury) absolute pressure is obtained. At this point, the vacuum should be broken by the introduction of refrigerant into the system, through a drier, until the pressure is brought up to zero pounds gauge. Repeat this procedure two more times. During the final evacuation, a vacuum of **500** microns (**0.02** inches of mercury) absolute pressure should be obtained. After this vacuum is reached, the system can be fully charged with refrigerant.

MASTER-BILT® ELECTRONIC REFRIGERATION CONTROL

OPERATION

Display Lay-out

INDICATIONS

- Thermostat output
- Fan output
- RL3 Auxiliary output
- II° Activation of 2nd parameter set
- Alarm

- i Info / Setpoint button.
- Manual defrost / Decrease button.
- M Increase / manual activation button.
- Exit / Stand-by button.

OPERATION

DISPLAY

During normal operation, the display shows either the temperature measured or one of the following indications:

- dEF Defrost in progress
- oFF Controller in stand-by
- cL Condensor clean warning
- do Door open alarm
- hc Condenser high temperature alarm
- hP Condenser high pressure alarm
- hI Room high temperature alarm
- Lo Room low temperature alarm
- E1 Probe T1 failure
- E2 Probe T2 failure
- E3 Probe T3 failure

INFO MENU

The information available in this menu is:

- t1 Instant probe 1 temperature
- t2 Instant probe 2 temperature
- t3 Instant probe 3 temperature
- thi Maximum probe 1 temperature recorded
- tLo Minimum probe 1 temperature recorded
- cnd *Compressor working weeks
- Loc Keypad state lock

Compressor / Solenoid valve When power is first turned on to the control, the LED indicator for the relay output will go through the start-up delay. After a one-minute delay the Solenoid valve will clicks on. The LED indicator stays on while compressor relay is energized. Display will show actual box temperature. Picture above is the display layout. The compressor will be cycled off when the actual box temperature reaches its set point. The cooling relay output indicator will be off.

Fan The fans will run constantly for TEM cooler application and off during a defrost for the TEL freezer application. The Evaporator fan will also cut off when the evaporator temp is above the fan stop temperature setting.

When the TEL freezer is in defrost mode; the fan is off until the end of the defrost and the 2 minute drip time has passed. There is 2 minute delay after a defrost before the fan comes on. If the Evaporator temperature is 35 ºF or below the controller will override the fan delay. FAN LED indicator is on while FAN relay is energized.

Defrost The control uses time defrost with 4 defrosts per day for the TEL freezer and off cycle defrost for the TEM cooler. The TEL time defrost scheme can be re-set the for special applications. During defrost the display will show dEF and REC for recovering after the defrost. The control begins timing the defrost when power is turned on. Four defrost per day means it will occur every 6 hours. To have defrost occur at 8am, 2pm, 8pm, and 2am then power up at one of these four times.

MANUAL DEFROST

Defrosting my also be induced manually by keeping the defrost button for 5 seconds. Once defrost has started, the defrost will go through a defrost and drip time pull down cycle.

HOW TO CHANGE THE SETPOINT

SETPOINT (display and modification of desired temperature value)

- Press button ⇕ for at least half second, to display the setpoint value.
- By keeping button ⇕ pressed, use button ▼ or ▲ to set the desired value (adjustment is within the minimum **SPL** and the maximum **SPH** limit).
- When button ⇕ is released, the new value is stored.

STAND-BY

Button ⏻, when pressed for 3 seconds, allows the controller to be put on a standby or output control to be resumed (with **SB**=YES only).

CONFIGURATION PARAMETERS

- The setup menu is accessed by pressing button X+i for 5 seconds.
- With button ▼ or ▲ select the parameter to be modified.
- Press button i to display the value.
- By keeping button i pressed, use button ▼ or ▲ to set the desired value.
- When button i is released, the newly programmed value is stored and the following parameter is displayed.
- To exit from the setup, press button X or wait for 30 seconds.

LIST OF PARAMETERS

Here is a list of the parameters the value of which can be changed in the programming mode, as well as their ranges.

Display Symbol	Parameters	Range	Factory Setting TEM	Factory Setting TEL
SP	Temperature Set Point	SPL…SPH	35°F	-10°F
HYS	Temperature Differential	1…10°	5°	7°
SPL	Minimum Temperature limit setpoint	-50°…SPH	20	-30
SPH	Maximum Temperature limit setpoint	SPL…120°	50	20
DFR	Number of Defrost Cycle per 24hr	0…24	Air	6
DLI	Defrost Termination Temperature	-50…120°	Off Cycle	55°F
ALA	Low Temperature Alarm	-50…120°	0°F	-35°F
AHA	High Temperature alarm	-50…120°	55°F	32°F
ATD	Temperature Alarm Delay	0…120min	30min	30min
DTO	Maximum Defrost Duration	1…120min	30min	30min

**This is a standard setting; climates with extreme humidity may require more defrost times or longer fail safe settings*

****for any other parameters and setting please consult factory for more details and instructions***

INSTALLATION

- Insert the controller through a hole measuring 71x29 mm.
- Make sure that electrical connections comply with the paragraph "wiring diagrams". To reduce the effects of electromagnetic disturbance, keep the sensor and signal cables well separate from the power wires.
- Fix the controller to the panel by means of the suitable clips, by pressingly gently; if fitted, check that the rubber gasket adheres to the panel perfectly, in order to prevent debris and moisture infiltration to the back of the instrument.
- Place the probe T1 inside the room in a point that truly represents the temperature of the stored product.
- Place the probe T2 on the evaporator where there is the maximum formation of frost.

SENSOR PROBE TEMPERATURE AND RESISTANCE

NTC10K Temperature - Resistance

Temp (ºC)	**Temp (ºF)**	R-low (Kohm)	R-center (Kohm)	R-high (Kohm)
-30	**-22**	109.522	113.347	117.294
-25	**-13**	84.823	87.559	90.374
-20	**-4**	66.270	68.237	70.255
-15	**5**	52.229	53.650	55.104
-10	**14**	41.477	42.506	43.557
-5	**23**	33.147	33.892	34.651
0	**32**	26.678	27.219	27.767
5	**41**	21.630	22.021	22.417
10	**50**	17.643	17.926	18.210
15	**59**	14.472	14.674	14.877
20	**68**	11.938	12.081	12.224

STARTING PROCEDURE

1. Check the temperature holding range against the control setting.
2. Check the defrost control system to see that all ice is removed from the coil during each defrost cycle.
3. Check pressures.
4. Check EPR Valve for proper pressure when applicable.
5. Condensing Unit Low Pressure Control
   a. TEL Cut in 20 lbs: diff. 18 lbs.
   b. TEM cut in 35 lbs: diff 25lbs.
6. Condensing Unit High Pressure Control
   a. TEL 400 lbs.
   b. TEM 380 lbs.

FINAL CHECK LIST

A. Check high-low pressure control settings.

B. Check operating pressure.

C. Check electrical requirements of unit to supply voltage.

D. Check setting of thermostatic expansion valve for proper operation. Approx. 10°F superheat.

E. Check sight glass for proper refrigerant charge.

F. Check condensing unit for vibrating or rubbing tubing. Dampen and clamp as required.

G. All valves should be completeley open counter-clockwise.

H. Check packing nuts on all service valves.

I. Replace all service valve caps and latch unit covers.

J. Check refrigeration line for proper P-traps and proper locations.

K. Check drain for proper P-traps and proper locations.

DOOR PLASTIC (GASKET RETAINER) REPLACEMENT

Starting in corner, gently pull the rubber gasket away from the door plastic. With gasket removed, insert a flat-head screwdriver under the outside edge of the plastic, and gently pry up. At either end of the plastic run the screwdriver the complete length and width of the door rail. With the outside edge of the plastic released, push the plastic towards the glass to remove. To replace, insert the edge of the plastic into the inside door rail groove. Snap the outside edge of the plastic cover over the outside edge of the door rail.

DOOR GASKET REPLACEMENT

Remove the old gasket by starting in the corner, gently pulling gasket away from the plastic. To replace the gasket, remove the top and bottom door plastic, and slide the gasket up the two verticals. Slide the top and bottom plastic onto the gasket, and replace the top and bottom plastic on the door rail. Tuck in the corners of the gasket with a flat-head screwdriver.

LED DRIVER REPLACEMENT, TEL/TEM

For a **TEL/TEM**, the LED Drivers are located inside the door mullions and can be accessed from the front of the door frame. Remove the door that hinges on the mullion where the ballast will be replaced. From the front of frame, remove contact plate & retainer by inserting a flat-head screwdriver under back edge of black contact plate retainer, and gently pull to unsnap retainer from the mullion. Repeat for the other side, and remove the contact plate. With the ballast now exposed, remove the screw on the top end of the ballast. Loosen the screw on the bottom of the driver.

Disconnect all lead wires by separating the connectors. If cut, leave enough lead wire to re-connect the new driver with a wire nut. Insert the bottom of the new ballast in the punched tabs and re-install the top screw in the top end of the driver. Tighten both screws. Re-connect new driver's lead wires following the wiring diagrams provided.

DOOR HEATER REPLACEMENT

Remove door gasket and plastic. Remove the center side access plate located on the side of the door. The wiring for the door is done in the center side of the hinge rail. To remove the heater, unplug the solid lead wires: Black or Red, White, and Green/Yellow (ground). If the glass is heated, unplug the Black and White solid wires from the glass. Heater wire lies in track on the back outside edge of door. Pull the heater out. Reverse instructions to replace the door heater. Plug in Black or Red lead wire from hinge pin to Black or Red lead wire from heater, White lead wire from hinge pin to White heater lead, and Green/Yellow lead from hinge pin to ground.
Note: If glass is heated, plug in Black and White lead wires coming off heater loom to Black and White lead wires from glass. Replace side access plate. Replace the door plastic and gasket.

SERVICE INSTRUCTIONS (Trouble Shooting Guide)

1. High head pressure and high back pressure:

   A. Condenser coil clogged or restricted.
   B. Condenser fan motor defective.

2. Low back pressure and low head pressure:

   A. Restriction in system.
   B. Refrigerant undercharged.
   C. Leak in system.

3. Pressures normal – cabinet warm:

   A. Coil blocked with frost or ice (see #4).
   B. Refrigerant undercharged.
   C. Control set too warm.
   D. Air screen disturbance.

4. Coil blocked with frost or ice:

   A. Defective temperature control.
   B. Time clock not operating properly.
   C. Improper time clock setting.
   D. Ambient conditions above 75°F/55% RH.
   E. Defrost heater not operating.
   E. P-trap in drain not installed.
   F. Doors aren't sealing when closed.
   G. Air screen disturbance.
   H. Evaporator fan motor defective.
   I. Low voltage.

5. Compressor starts and runs – but cycles on overload:

   A. Low voltage.
   B. Dropped phase (3 phase).
   C. Overload protector defective.
   D. High head pressure (see#1).

6. Compressor will not start – hums, but cycles on overload:

   A. Low voltage.
   B. Relay defective.
   C. Overload defective.
   D. High head pressure (see #1).

7. Special service situations:

   If moisture or liquid is observed around or under a Master-Bilt® cabinet, an immediate investigation should be made by qualified personnel to determine the source of moisture or liquid. The investigation made should determine if the cabinet is malfunctioning or if there is a simple housekeeping problem.

   Moisture or liquid around or under a cabinet is a potential slip/fall hazard for persons walking by or working in the general area of the cabinet.
   Any cabinet malfunction or housekeeping problem that creates a slip/fall hazard around or under a cabinet should be corrected immediately.

MASTER-BILT® PART NUMBERS

The table below gives Master-Bilt part numbers for use when ordering replacement parts for your **TEL/TEM** cases.

Description	TEL (Low Temp)	TEM (Med Temp)
Evaporator Coil	*Consult Factory*	
Expansion Valve	09-09634 Sporlan SBFSE-A-ZP	09-09631 Sporlan SBFVE-A-C
Defrost Heater	*Consult Factory*	N/A
Drain Line Heater	17-09063 230V / 6 ½ Watts	N/A
Heater Safety	*19-01307*	N/A
Electronic Control	19-14278	19-14243
Control Display	19-14273	N/A
Box Sensor	19-14244	19-14244
Evaporator Sensor	19-14245	N/A
Evaporator Fan Motor	13-13182	13-13181
Evaporator Fan Blade	15-13106	15-13106
Evaporator Fan Guard	25-01324	25-01324
Standard Shelf Wire Cantilever	33-01798 (30” Black) 33-01797 (30” White) 33-01605 (24” Black) 33-01474 (24” White)	33-01798 (30” Black) 33-01797 (30” White) 33-01605 (24” Black) 33-01474 (24” White)
Door Frame	*Consult Factory*	
Standard Door (Black)	31-03013 (30”) 31-03017 (24”)	31-03073 (30”) 31-02973 (24”)
LED Driver	23-01823	23-01823
LED Mullion light bar	23-01816	23-01816
Lamp Left Side light bar	23-01825	23-01825
Lamp Right Side light bar	23-01824	23-01824
Door Gasket	37-01385 (30”) 37-01386 (24”)	37-01385 (30”) 37-01386 (24”)
Torque-Master (Black)	35-01839	35-01839
Torque Rod	35-01840	35-01840
Top Hinge Pin	35-01842	35-01842
Door Frame Heaters	*Consult Factory*	

SALE AND DISPOSAL

OWNER RESPONSIBILITY

If you sell or give away your Master-Bilt® cabinet you must make sure that all safety labels and the Installation - Service Manual are included with it. If you need replacement labels or manuals, Master-Bilt will provide them free. Contact the customer service department at Master-Bilt at (800) 684-8988.

The customer service department at Master-Bilt should be contacted at the time of sale or disposal of your cabinet so records may be kept of its new location.

If you sell or give away your Master-Bilt® cabinet and you evacuate the refrigerant charge before shipment, Master-Bilt recommends that the refrigerant charge be properly recovered in complience with section 608 of the Clean Air Act effective November 1995 and in accordance with all applicable local, regional, or national standards.

MASTER-BILT
Refrigeration Solutions

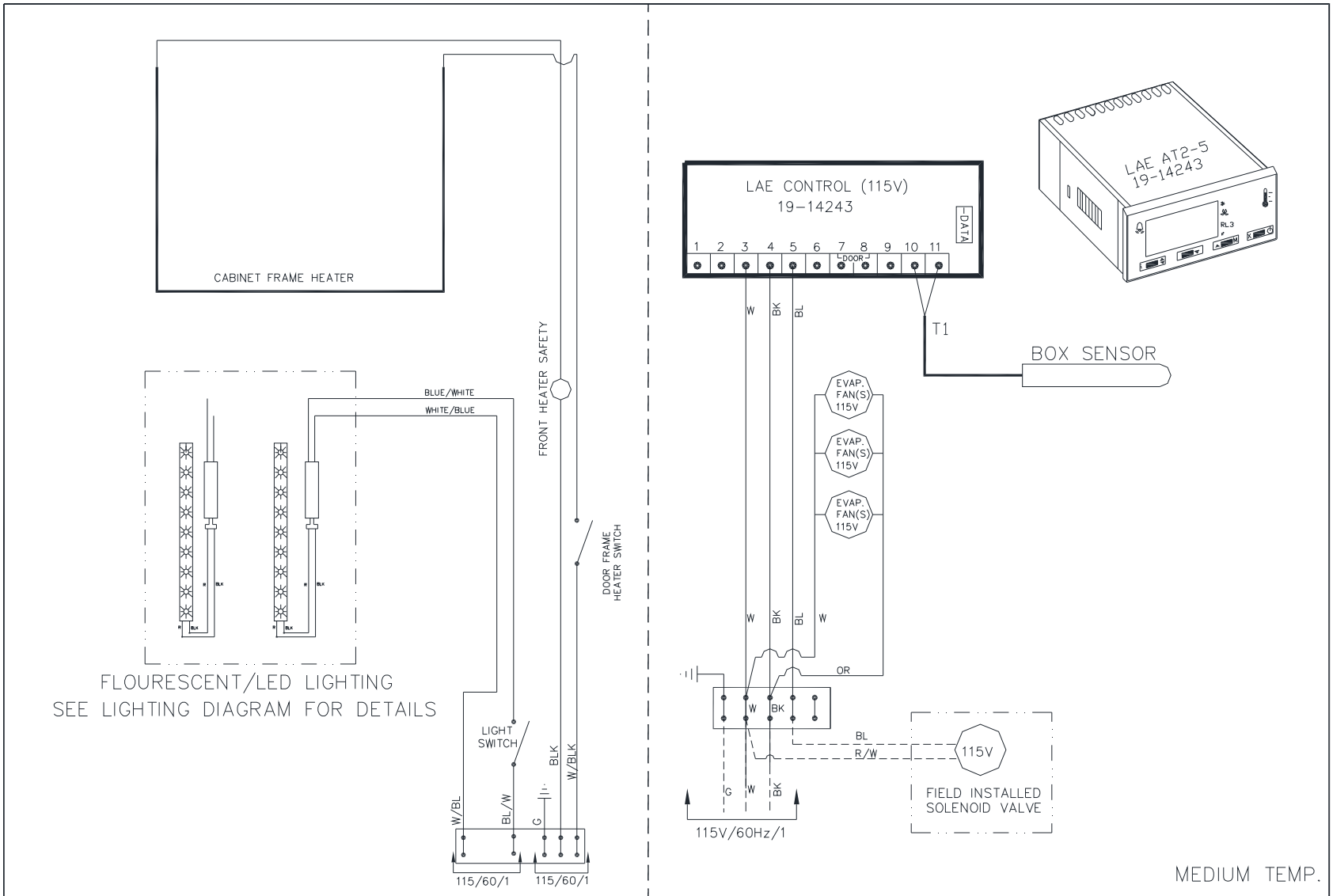
TEL/TEM 24" WIDE DOORS

NO. OF DOORS	+35°F BOX TEMP, +20°F SST 75°F AIR CONDITIONED STORE, 55% RH		0°F BOX TEMP, -10°F SST 75°F AIR CONDITIONED STORE, 55% RH		-10°F BOX TEMP, -20°F SST 75°F AIR CONDITIONED STORE, 55% RH	
	COND. UNIT REQ'D. FOR AMBIENT TEMP		COND. UNIT REQ'D. FOR AMBIENT TEMP		COND. UNIT REQ'D. FOR AMBIENT TEMP	
	100°F	110°F	100°F	110°F	100°F	110°F
3	MHHZ0041	MHHZ0041	MHLZ0051	MHLZ0071	MHLZ0071	MHLZ0091
4	MHHZ0071	MHHZ0071	MHLZ0071	MHLZ0071	MHLZ0091	MHLZ0091
5	MHHZ0081	MHHZ0081	MHLZ0071	MHLZ0091	MHLZ0091	MHLZ0121
6	MHHZ0081	MHHZ0111	MHLZ0091	MHLZ0091	MHLZ0121	MSLZ0151
7	MHHZ0111	MHHZ0131	MHLZ0091	MHLZ0121	MSLZ0151	MSLZ0151
8	MHHZ0111	MHHZ0171	MHLZ0091	MHLZ0121	MSLZ0151	MSLZ0151
9	MHHZ0131	MHHZ0171	MHLZ0121	MSLZ0151	MSLZ0151	MSLZ0181
10	MHHZ0171	MHHZ0191	MHLZ0121	MSLZ0151	MSLZ0181	MSLZ0181
11	MHHZ0171	MHHZ0191	MSLZ0151	MSLZ0151	MSLZ0181	MSLZ0181
12	MHHZ0191	MHHZ0221	MSLZ0151	MSLZ0181	MSLZ0181	MSLZ0221
13	MHHZ0191	MHHZ0251	MSLZ0151	MSLZ0181	MSLZ0221	MSLZ0221
14	MHHZ0221	MHHZ0251	MSLZ0181	MSLZ0181	MSLZ0221	BSLZ0750
15	MHHZ0221	MHHZ0301	MSLZ0181	MSLZ0221	MSLZ0221	BSLZ0750
16	MHHZ0251	MHHZ0301	MSLZ0181	MSLZ0221	BSLZ0750	BSLZ0750
17	MHHZ0251	MSHZ0301	MSLZ0221	MSLZ0221	BSLZ0750	BSLZ1000
18	MHHZ0301	MSHZ0301	MSLZ0221	BSLZ0750	BSLZ0750	BSLZ1000

MASTER-BILT Refrigeration Solutions

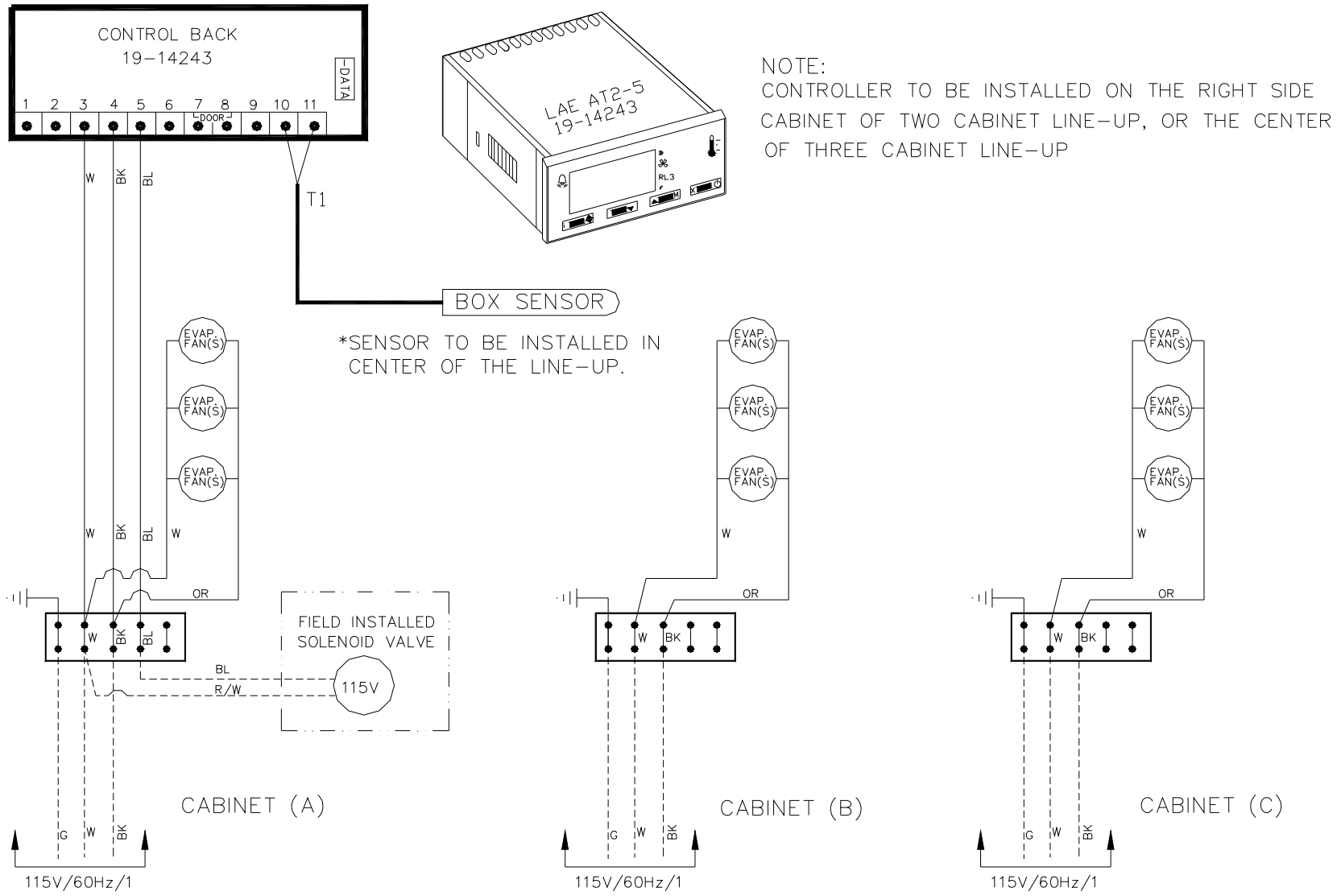
TEL/TEM 30" WIDE DOORS

NO. OF DOORS	+35°F BOX TEMP, +20°F SST 75°F AIR CONDITIONED STORE, 55% RH		0°F BOX TEMP, -10°F SST 75°F AIR CONDITIONED STORE, 55% RH		-10°F BOX TEMP, -20°F SST 75°F AIR CONDITIONED STORE, 55% RH	
	COND. UNIT REQ'D. FOR AMBIENT TEMP		COND. UNIT REQ'D. FOR AMBIENT TEMP		COND. UNIT REQ'D. FOR AMBIENT TEMP	
	100°F	110°F	100°F	110°F	100°F	110°F
2	MHHZ0041	MHHZ0041	MHLZ0051	MHLZ0071	MHLZ0071	MHLZ0071
3	MHHZ0071	MHHZ0071	MHLZ0071	MHLZ0071	MHLZ0091	MHLZ0091
4	MHHZ0081	MHHZ0081	MHLZ0071	MHLZ0091	MHLZ0091	MHLZ0121
5	MHHZ0111	MHHZ0111	MHLZ0091	MHLZ0091	MHLZ0121	MSLZ0151
6	MHHZ0111	MHHZ0131	MHLZ0091	MHLZ0121	MSLZ0151	MSLZ0151
7	MHHZ0131	MHHZ0171	MHLZ0121	MSLZ0151	MSLZ0151	MSLZ0181
8	MHHZ0171	MHHZ0191	MHLZ0121	MSLZ0151	MSLZ0181	MSLZ0181
9	MHHZ0171	MHHZ0221	MSLZ0151	MSLZ0151	MSLZ0181	MSLZ0221
10	MHHZ0191	MHHZ0221	MSLZ0151	MSLZ0181	MSLZ0221	MSLZ0221
11	MHHZ0221	MHHZ0251	MSLZ0181	MSLZ0181	MSLZ0221	BSLZ0750
12	MHHZ0221	MHHZ0301	MSLZ0181	MSLZ0221	MSLZ0221	BSLZ0750
13	MHHZ0251	MHHZ0301	MSLZ0181	MSLZ0221	BSLZ0750	BSLZ0750
14	MHHZ0251	MSHZ0301	MSLZ0221	MSLZ0221	BSLZ0750	BSLZ1000
15	MHHZ0301	MSHZ0301	MSLZ0221	BSLZ0750	BSLZ1000	BSLZ1000



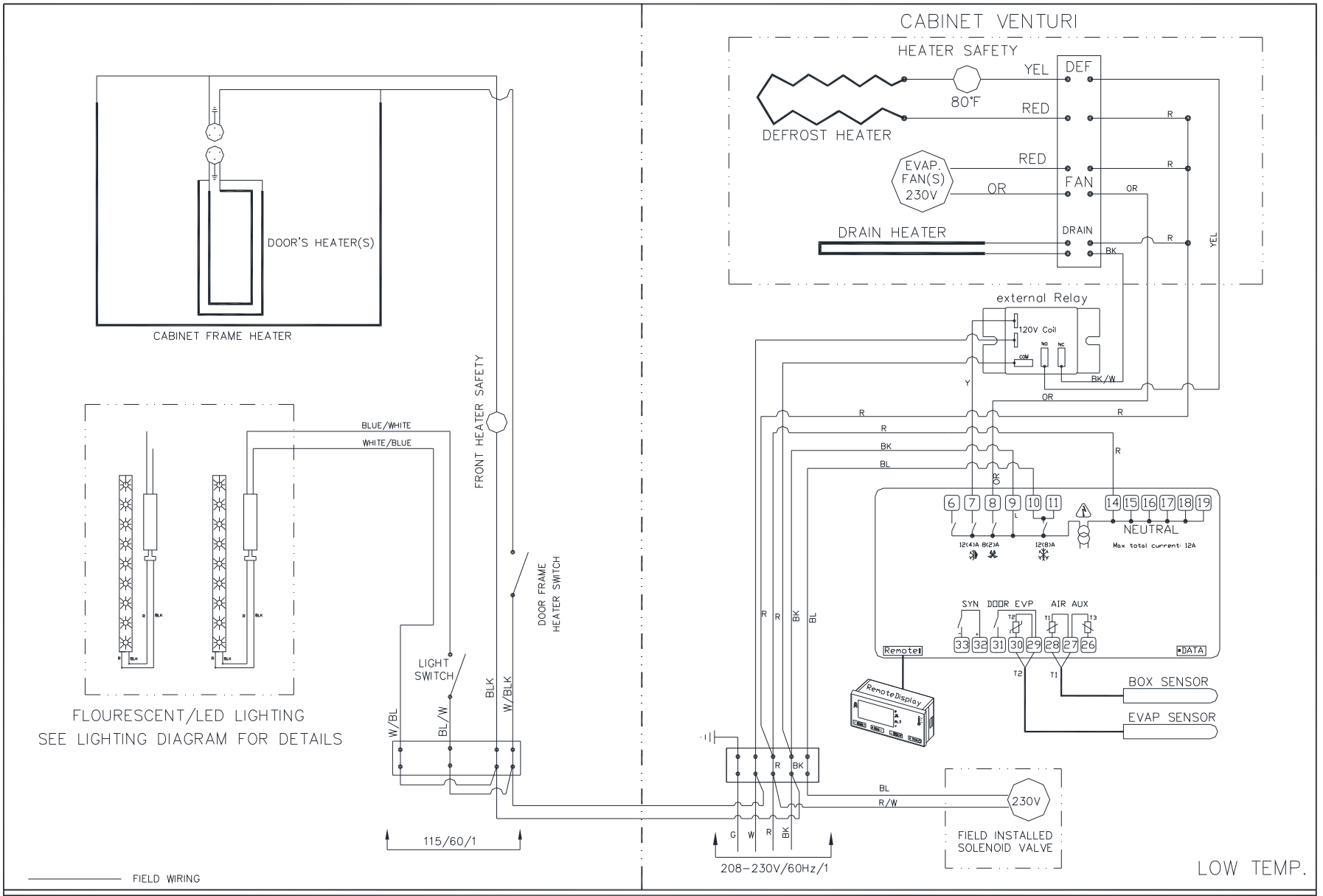
TEM-2, TEM-3, TEM-4, TEM-5, TEM-6
TEM WIRING DIAGRAM (LAE_AT2 CONTROLLER)

LN_05/09/11



TEM MULTIPLE WIRING (LAE-AT2)

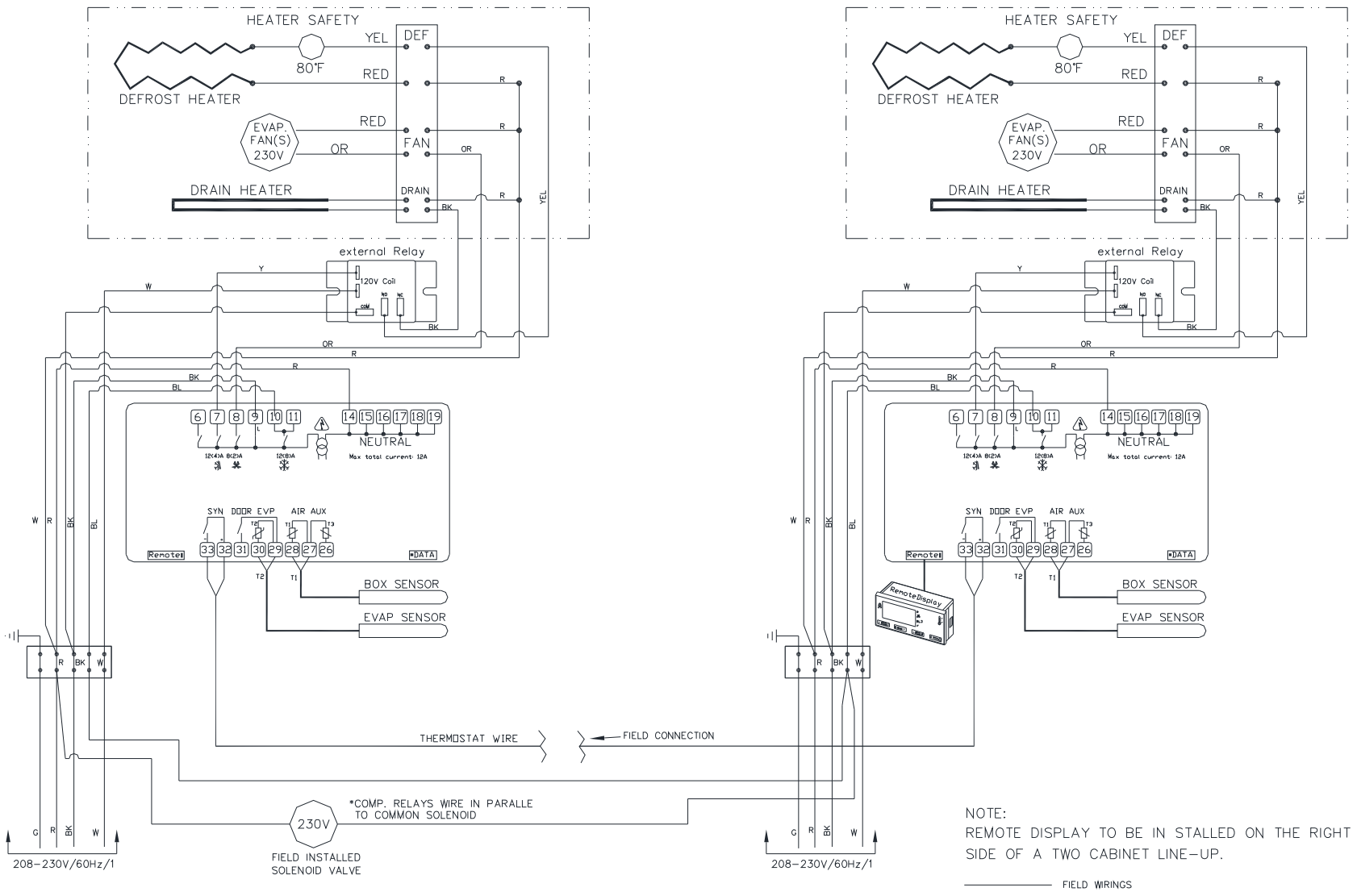
LN_5-11-11



MASTER-BILT

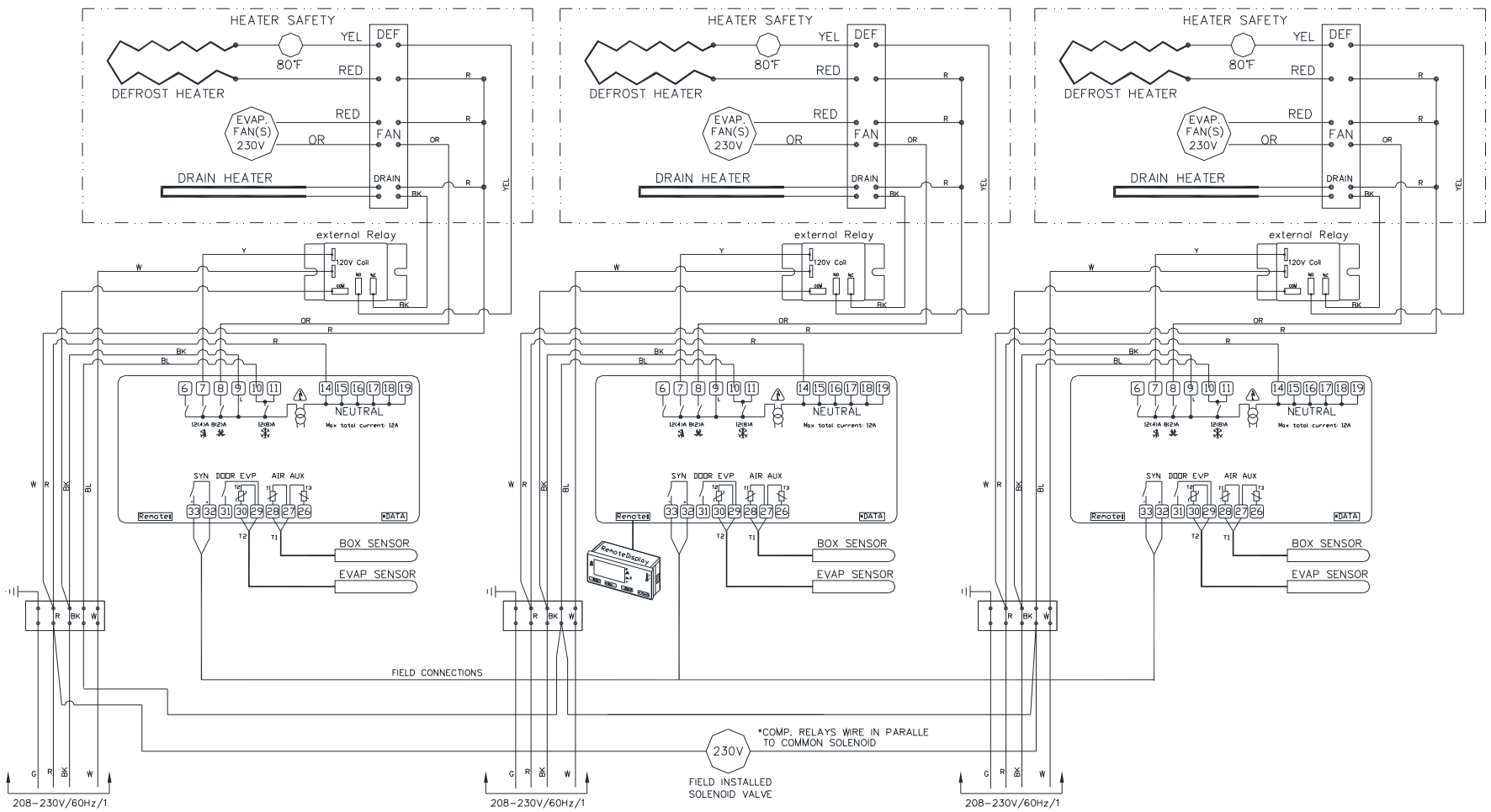
TEL-2, TEL-3, TEL-4, TEL-5
TEL WIRING DIAGRAM (LAE_AD2-28 CONTROLLER)

06/19/14



TEL 2 CABINET LINE-UP WIRING AD2-28

12-16-13



TEL 3 CABINET LINE-UP WIRING AD2-28

LN_12/13/13