



PRODUCT DATA & INSTALLATION

Bulletin T30-TLV-PDI-27

Part # 1073478



PRODUCT SUPPORT

web: t-rp.com/tlv

email: evaps@t-rp.com

call: 1-844-893-3222 x520

scan:



TLV Low Velocity Evaporators

60
Hz

High Temperature

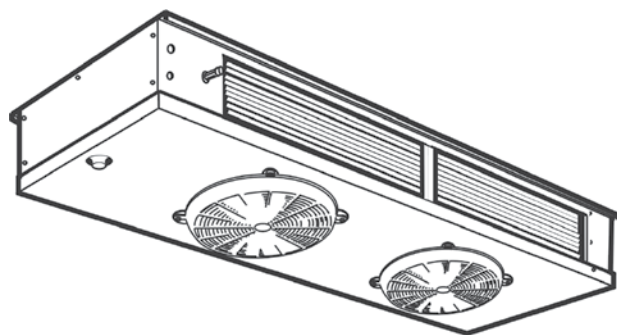
35°F (2°C) or Above Box Temperature and

Medium Temperature

28°F to 34°F Box Temperature (-2°C to 1°C)

Defrost Types:

Air, Electric or Hot Gas Defrost



SMARTSPEED™

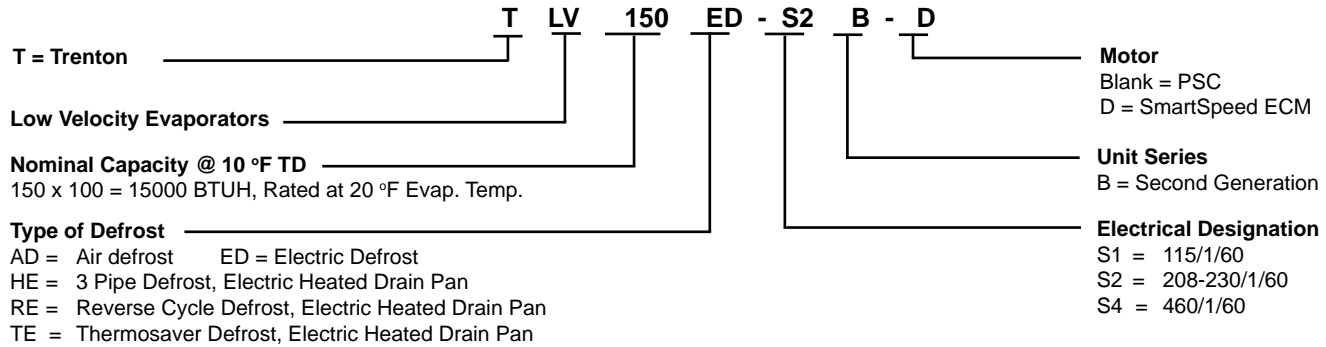
FAN MOTOR TECHNOLOGY

See Page 14 for details



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NOMENCLATURE



STANDARD FEATURES

- Compatible with Low GWP Refrigerants
- Heavy gauge textured aluminum cabinet construction resists scratches/corrosion and minimizes weight for shipment, installation and service.
- High-efficiency PSC motors.
- Specially designed for quiet operation - ideal for prep. rooms.
- Capacity up to 37,000 BTUH nominal.
- Dual refrigeration coils with two-way air distribution reduces air velocities to minimize product dehydration.
- Reduced operating charge with 3/8" OD tubing
- Spacious end compartment allows for easy component installation.
- Attractive and durable high-density polypropylene fan guards.
- Hinged drain pan provides convenient access for cleaning.
- Terminal board allows for easy electrical connections.

OPTIONAL FEATURES

- Factory mounted solenoid valve, TXV and thermostat.
- EC motors with patented SmartSpeed® Technology. See page 14
- Painted cabinet
- Corrosion protection: alternate fin materials and coatings
- Additional options available, please contact factory

High Temp. Model TLV			060AD	090AD	120AD	150AD	180AD	220AD	270AD	300AD	340AD	370AD
Electric Defrost Model TLV			060ED	090ED	120ED	150ED	180ED	220ED	270ED	300ED	340ED	370ED
Hot Gas Defrost Model TLV			060 [†]	090 [†]	120 [†]	150 [†]	180 [†]	220 [†]	270 [†]	300 [†]	340 [†]	370 [†]
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A	5700	8550	11400	14250	17100	20900	25700	28500	32300	35200
		R448A	(1669)	(2503)	(3338)	(4172)	(5007)	(6120)	(7511)	(8345)	(9458)	(10292)
		R407C	5400	8100	10800	13500	16200	19800	24400	27100	30700	33400
			(1581)	(2372)	(3163)	(3953)	(4744)	(5798)	(7115)	(7906)	(8960)	(9751)
		R404A	6000	9000	12000	15000	18000	22000	27000	30000	34000	37000
		R507	(1757)	(2635)	(3514)	(4392)	(5271)	(6442)	(7906)	(8784)	(9956)	(10834)
	R22	5700	8550	11400	14250	17100	20900	25700	28500	32300	35200	
		(1669)	(2503)	(3338)	(4172)	(5007)	(6120)	(7511)	(8345)	(9458)	(10292)	
	R134a	5400	8100	10800	13500	16200	19800	24300	27000	30600	33300	
		(1581)	(2372)	(3163)	(3953)	(4744)	(5798)	(7115)	(7906)	(8960)	(9751)	
Air Flow	CFM (L/s)		850 (401)	1120 (529)	1500 (708)	2000 (944)	2530 (1194)	2785 (1314)	3400 (1605)	4000 (1888)	4370 (2062)	4840 (2284)
Refrigerant ** Charge R407A		Lbs (Kg)	2.6 (1.2)	4.4 (2.0)	6.5 (2.9)	7.3 (3.3)	7.9 (3.6)	10.1 (4.6)	9.9 (4.5)	11.9 (5.4)	15.2 (6.9)	15.2 (6.9)
Std. Unit Net Weight (w/o Refrigerant)		Lbs (Kg)	90 (41)	105 (48)	139 (63)	158 (72)	220 (100)	235 (107)	257 (117)	270 (123)	280 (127)	290 (132)

[†] Refer to Hot Gas Defrost nomenclature and insert appropriate code

NOTE: Defrost heaters can be field converted to operate on 208-230/3/60

Capacities rated using 10°F (5.6°C) TD & 100°F (38°C) liquid temperature.

Capacities at other TD within a range of 8 to 15 °F (4.4 to 8.3°C) are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.

For capacities at TD outside of range 8 to 15 °F (4.4 to 8.3°C), or liquid temperature lower than 75°F (24°), consult factory.

Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.

For R449A, use R448A data.

** REFRIGERANT CHARGE CONVERSION FACTORS

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

Air Defrost Models - 115/1/60

Model TLV	No. of Fans	Standard PSC Motor				Optional EC Motor			
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP
060AD	1	1.1	1.4	90	15	0.8	1.0	55	15
090AD	1	1.1	1.4	130	15	1.6	2.0	95	15
120AD	2	2.2	2.5	180	15	1.6	1.8	110	15
150AD	2	2.2	2.5	260	15	3.2	3.6	190	15
180AD	3	3.3	3.6	270	15	2.4	2.6	165	15
220AD	3	3.3	3.6	390	15	4.8	5.2	285	15
270AD	3	3.3	3.6	390	15	4.8	5.2	285	15
300AD	4	4.4	4.7	520	15	6.4	6.8	380	15
340AD	4	4.4	4.7	520	15	6.4	6.8	380	15
370AD	5	5.5	5.8	650	15	8.0	8.4	475	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Air Defrost Models - 208-230/1/60

Model TLV	No. of Fans	Standard PSC Motor				Optional EC Motor			
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP
060AD	1	0.5	0.6	90	15	0.5	0.6	55	15
090AD	1	0.5	0.6	130	15	1.0	1.3	95	15
120AD	2	1.0	1.1	180	15	1.0	1.1	110	15
150AD	2	1.0	1.1	260	15	2.0	2.3	190	15
180AD	3	1.5	1.6	270	15	1.5	1.6	165	15
220AD	3	1.5	1.6	390	15	3.0	3.3	285	15
270AD	3	1.5	1.6	390	15	3.0	3.3	285	15
300AD	4	2.0	2.1	520	15	4.0	4.3	380	15
340AD	4	2.0	2.1	520	15	4.0	4.3	380	15
370AD	5	2.5	2.6	650	15	5.0	5.3	475	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Air Defrost Models - 460/1/60

Model TLV	No. of Fans	Standard PSC Motor			
		FLA	MCA*	Watts	MOP
060AD	1	0.3	0.4	90	15
090AD	1	0.3	0.4	130	15
120AD	2	0.6	0.7	180	15
150AD	2	0.6	0.7	260	15
180AD	3	0.9	1.0	270	15
220AD	3	0.9	1.0	390	15
270AD	3	0.9	1.0	390	15
300AD	4	1.2	1.3	520	15
340AD	4	1.2	1.3	520	15
370AD	5	1.5	1.6	650	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity

MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Electric Defrost Models - 115/1/60

Model TLV	No. of Fans	Fan Motors								Defrost Heaters			
		Standard PSC Motor				Optional EC Motor							
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP	Watts	FLA	MCA*	MOP
060ED	1	1.1	1.4	90	15	0.8	1.0	55	15	1880	16.4	20.4	25
090ED	1	1.1	1.4	130	15	1.6	2.0	95	15	1880	16.4	20.4	25

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Electric Defrost Models - 208-230/1/60

Model TLV	No. of Fans	Fan Motors - 208-230/1/60								Defrost Heaters - 208/230/1/60				Defrost Heaters field converted to operate on 208-230/3/60			
		Standard PSC Motor				Optional EC Motor											
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP	Watts	FLA	MCA*	MOP	Watts	FLA	MCA*	MOP
060ED	1	0.5	0.6	90	15	0.5	0.6	55	15	1880	8.2	10.2	15	1880	4.9	6.1	15
090ED	1	0.5	0.6	130	15	1.0	1.3	95	15	1880	8.2	10.2	15	1880	4.9	6.1	15
120ED	2	1.0	1.1	180	15	1.0	1.1	110	15	3180	13.8	17.3	20	3180	8.5	10.6	15
150ED	2	1.0	1.1	260	15	2.0	2.3	190	15	3180	13.8	17.3	20	3180	8.5	10.6	15
180ED	3	1.5	1.6	270	15	1.5	1.6	165	15	4540	19.7	24.7	25	4540	12.1	15.1	20
220ED	3	1.5	1.6	390	15	3.0	3.3	285	15	4540	19.7	24.7	25	4540	12.1	15.1	20
270ED	3	1.5	1.6	390	15	3.0	3.3	285	15	4540	19.7	24.7	25	4540	12.1	15.1	20
300ED	4	2.0	2.1	520	15	4.0	4.3	380	15	4540	19.7	24.7	25	4540	12.1	15.1	20
340ED	4	2.0	2.1	520	15	4.0	4.3	380	15	5580	24.3	30.3	35	5580	14.9	18.6	20
370ED	5	2.5	2.6	650	15	5.0	5.3	475	15	5580	24.3	30.3	35	5580	14.9	18.6	20

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Hot Gas Defrost Models - 115/1/60

Model TLV	No. of Fans	Standard PSC Motor					Optional EC Motor				
		Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP	Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP
060 HE/RE	1	580	5.0	1.1	6.3	15	580	5.0	0.8	6.6	15
090 HE/RE	1	580	5.0	1.1	6.3	15	580	5.0	1.6	6.6	15
120 HE/RE	2	580	5.0	2.2	6.3	15	580	5.0	1.6	6.6	15
150 HE/RE	2	580	5.0	2.2	6.3	15	580	5.0	3.2	6.6	15
180 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	2.4	9.4	15
220 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	4.8	9.4	15
270 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	4.8	9.4	15
300 HE/RE	4	820	7.1	4.4	8.9	15	820	7.1	6.4	9.4	15
340 HE/RE	4	1020	8.9	4.4	11.1	15	1020	8.9	6.4	11.6	15
370 HE/RE	5	1020	8.9	5.5	11.1	15	1020	8.9	8	11.6	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Hot Gas Defrost Models - 208-230/1/60

Model TLV	No. of Fans	Standard PSC Motor					Optional EC Motor				
		Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP	Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP
060 HE/RE	1	580	2.5	0.5	3.2	15	580	2.5	0.5	2.9	15
090 HE/RE	1	580	2.5	0.5	3.2	15	580	2.5	1.0	2.9	15
120 HE/RE	2	580	2.5	1.0	3.2	15	580	2.5	1.0	2.9	15
150 HE/RE	2	580	2.5	1.0	3.2	15	580	2.5	2.0	2.9	15
180 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	1.5	4.1	15
220 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	3.0	4.1	15
270 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	3.0	4.1	15
300 HE/RE	4	820	3.6	2.0	4.5	15	820	3.6	4.0	4.1	15
340 HE/RE	4	1020	4.4	2.0	5.5	15	1020	4.4	4.0	5.1	15
370 HE/RE	5	1020	4.4	2.5	5.5	15	1020	4.4	5.0	5.1	15

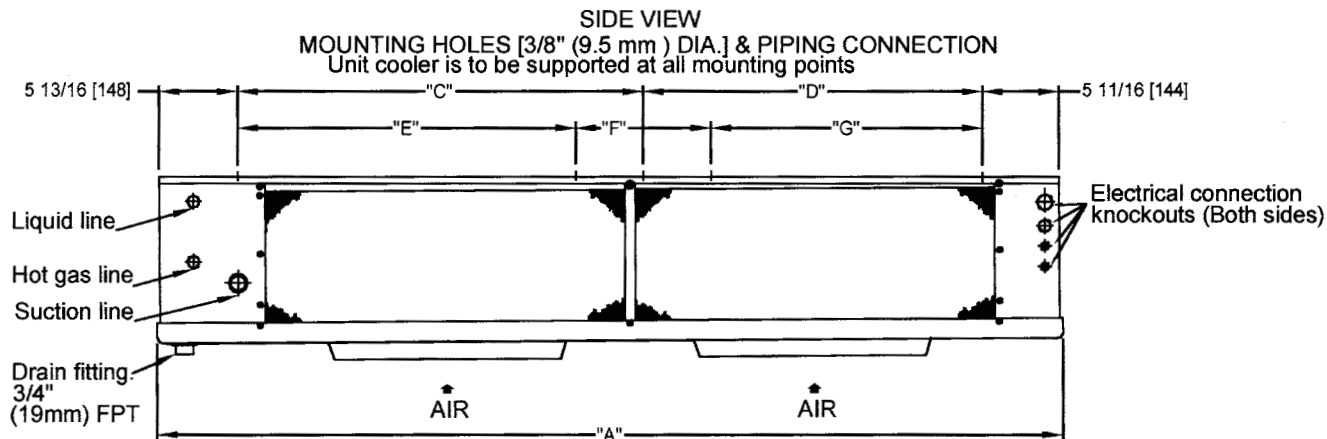
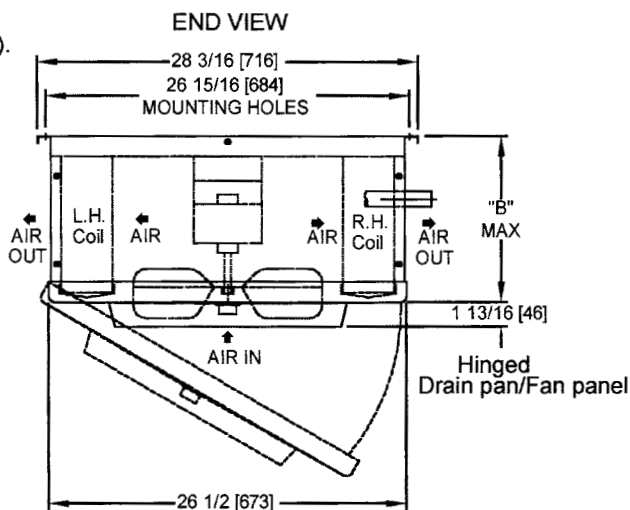
FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

NOTES: 1) Dimensions shown in inches & (mm). These are typical for Air, Electric and Hot gas defrost models.

2) Electrical connection end is opposite to the piping end on all models.

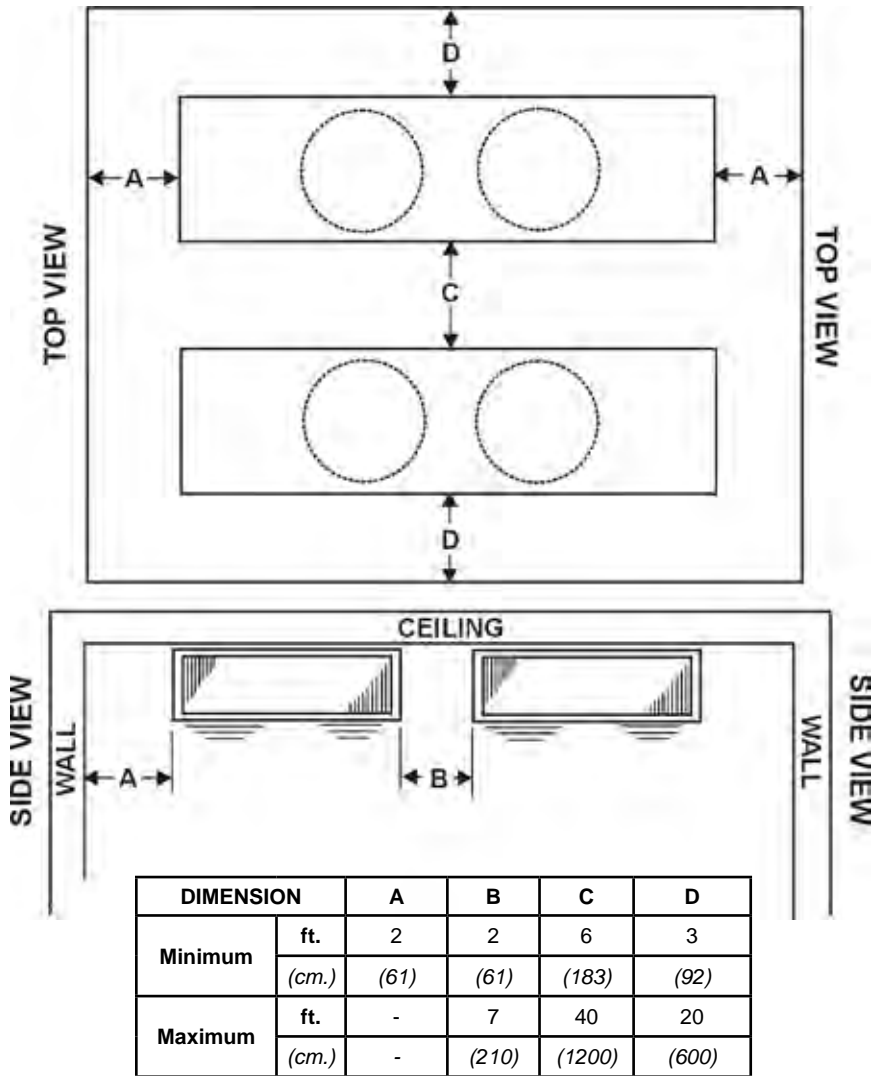
3) 1/4" (6 mm) O.D. external equalizer line and service access fitting included on all suction headers inside end compartment



MODEL TLV	No. of Fans	DIMENSIONAL DATA - INCHES (mm)									
		Suction Connection (OD)	Distributor Inlet (OD)	Hot Gas Side Conn. (OD)	A	B	Mounting Holes				
							C	D	E	F	G
060	1	5/8 (16)	1/2 (13)	1/2 (13)	66 7/8 (1699)	8 11/16 (221)	27 1/2 (699)	27 1/2 (699)	-	-	-
090	1	7/8 (22)	1/2 (13)	1/2 (13)	66 7/8 (1699)	9 9/16 (252)	27 1/2 (699)	27 1/2 (699)	-	-	-
120	2	7/8 (22)	1/2 (13)	1/2 (13)	66 7/8 (1699)	12 7/16 (316)	27 1/2 (699)	27 1/2 (699)	-	-	-
150	2	1 1/8 (29)	1/2 (13)	1/2 (13)	66 7/8 (1699)	14 15/16 (378)	27 1/2 (699)	27 1/2 (699)	-	-	-
180	3	1 1/8 (29)	1/2 (13)	1/2 (13)	92 7/8 (2359)	14 15/16 (378)	40 1/2 (1029)	40 1/2 (1029)	-	-	-
220	3	1 1/8 (29)	1/2 (13)	1/2 (13)	92 7/8 (2359)	14 15/16 (378)	40 1/2 (1029)	40 1/2 (1029)	-	-	-
270	3	1 1/8 (29)	* 7/8 (22)	5/8 (16)	92 7/8 (2359)	17 7/16 (443)	40 1/2 (1029)	40 1/2 (1029)	-	-	-
300	4	1 1/8 (29)	* 7/8 (22)	5/8 (16)	92 7/8 (2359)	17 7/16 (443)	40 1/2 (1029)	40 1/2 (1029)	-	-	-
340	4	1 3/8 (35)	* 7/8 (22)	5/8 (16)	112 7/8 (2867)	17 7/16 (443)	-	-	40 1/2 (1029)	20 (508)	40 1/2 (1029)
370	5	1 3/8 (35)	* 7/8 (22)	5/8 (16)	112 7/8 (2867)	17 7/16 (443)	-	-	40 1/2 (1029)	20 (508)	40 1/2 (1029)

* Reducer supplied to accommodate 1/2" or 7/8" TXV outlet connection.

RECOMMENDED
INSTALLATION CLEARANCES



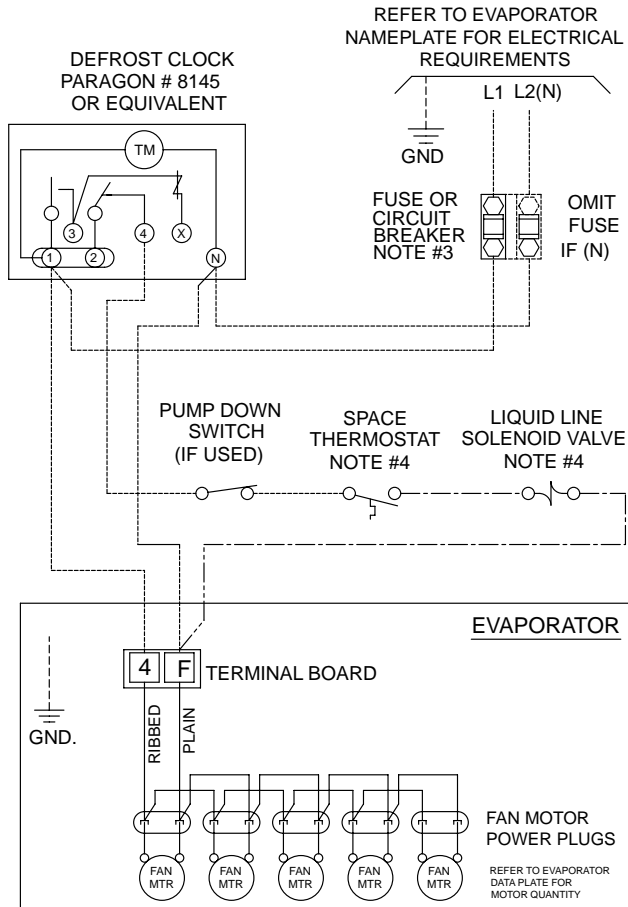
WIRING DIAGRAM

AIR DEFROST - 120V & 208-230V

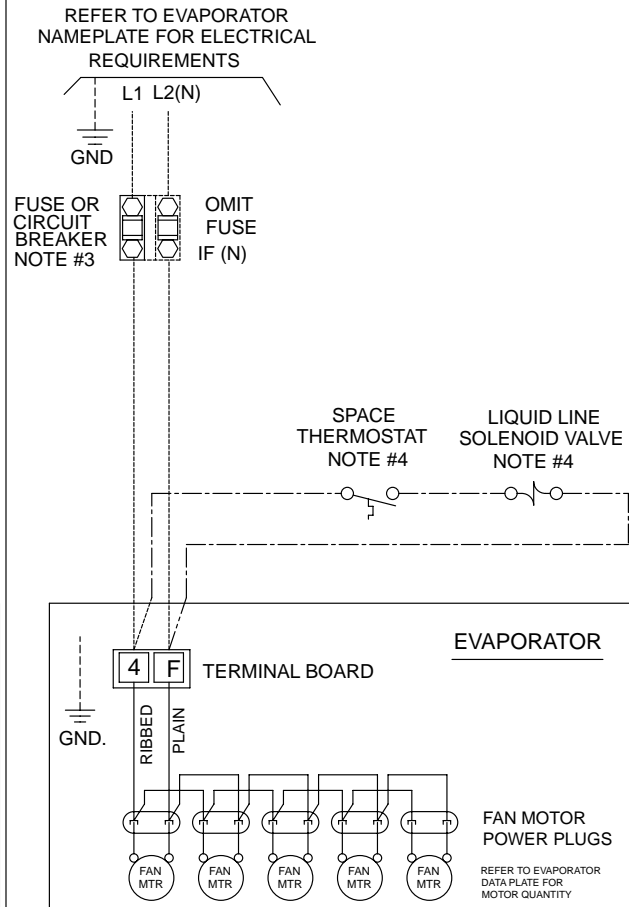
AIR DEFROST

TYPICAL WIRING: FOR MULTIPLE EVAPORATORS AND OTHER
ALTERNATIVE WIRING, SEE INSTALLATION MANUAL

WITH DEFROST TIME CLOCK



WITHOUT DEFROST TIME CLOCK



NOTES

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 75°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR
EVAPORATOR FAN MOTORS AND DEFROST
HEATERS MUST NOT EXCEED MAXIMUM
VALUE SHOWN ON EVAPORATOR NAMEPLATE.
- 4). MAY BE FACTORY INSTALLED-MOUNTED
AND WIRED ON EVAPORATOR
(PRE-ASSEMBLED MODELS)

TERMINALS

- DH - DRAIN PAN HEATER
- - COMPONENT TERMINAL - MARKED
- ◊ - COMPONENT TERMINAL - UNMARKED
(IDENTIFIABLE BY LOCATION)
- - COMPONENT TERMINAL - UNMARKED
(UNIDENTIFIABLE)
- - TERMINAL BLOCK TERMINAL
- - WIRE SPLICE

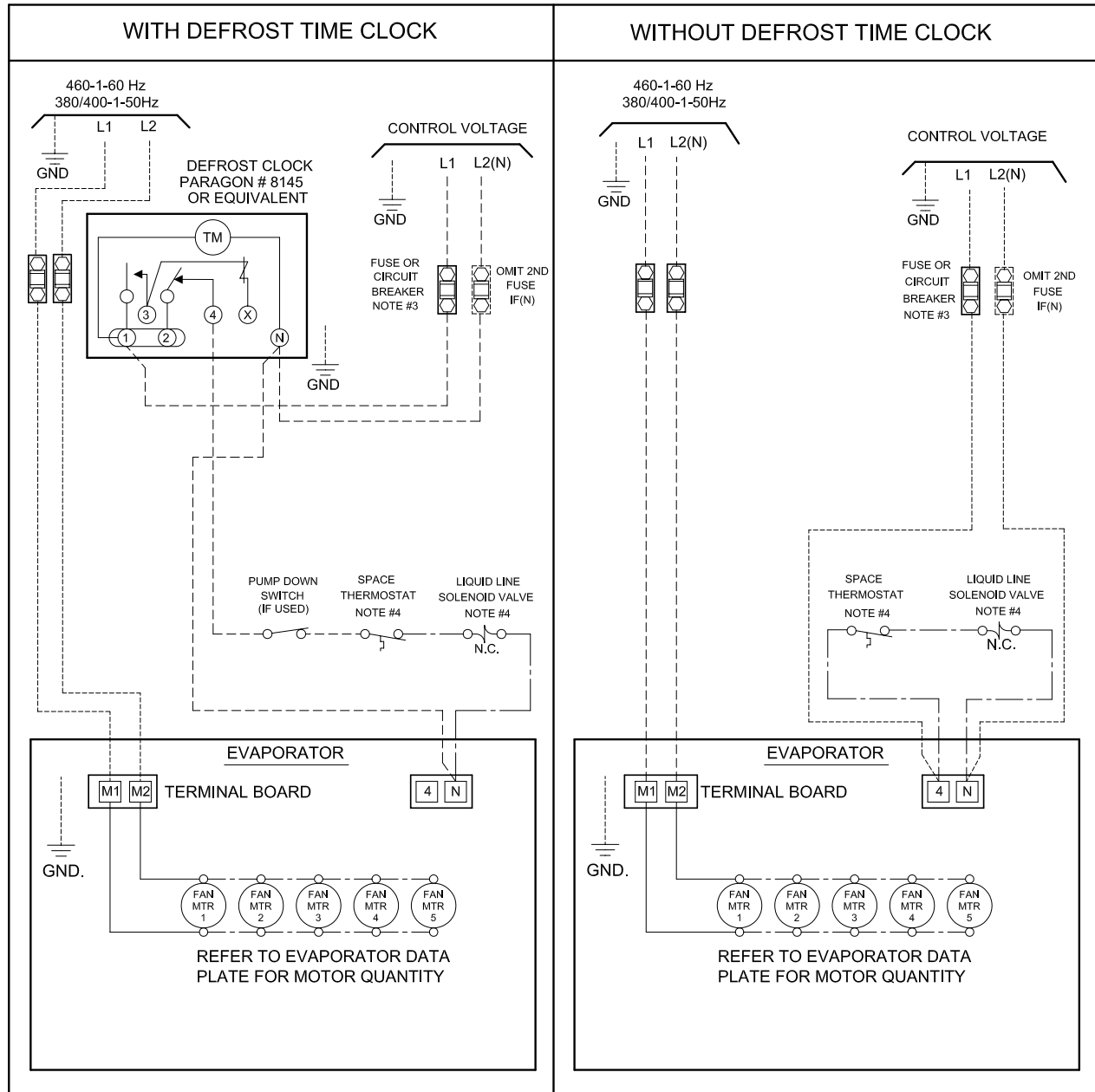
CONDUCTORS/WIRING

- FACTORY WIRING
- WIRING BY OTHERS
- OPTIONAL FACTORY OR
BY OTHERS

ALL FIELD WIRING MUST BE DONE IN
COMPLIANCE WITH ALL APPLICABLE LOCAL
AND NATIONAL CODES.

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TYPICAL WIRING: FOR MULTIPLE EVAPORATORS AND OTHER
ALTERNATIVE WIRING, SEE INSTALLATION MANUAL



NOTES

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 90°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR
EVAPORATOR FAN MOTORS
MUST NOT EXCEED MAXIMUM VALUE
SHOWN ON EVAPORATOR NAMEPLATE.
- 4). MAY BE FACTORY INSTALLED-MOUNTED AND
WIRED ON EVAPORATOR .
- 5). REFER TO EVAPORATOR DATA PLATE
FOR MOTOR QUANTITY

KTM AD 06/16

TERMINALS

- -COMPONENT TERMINAL
- -TERMINAL BLOCK TERMINAL

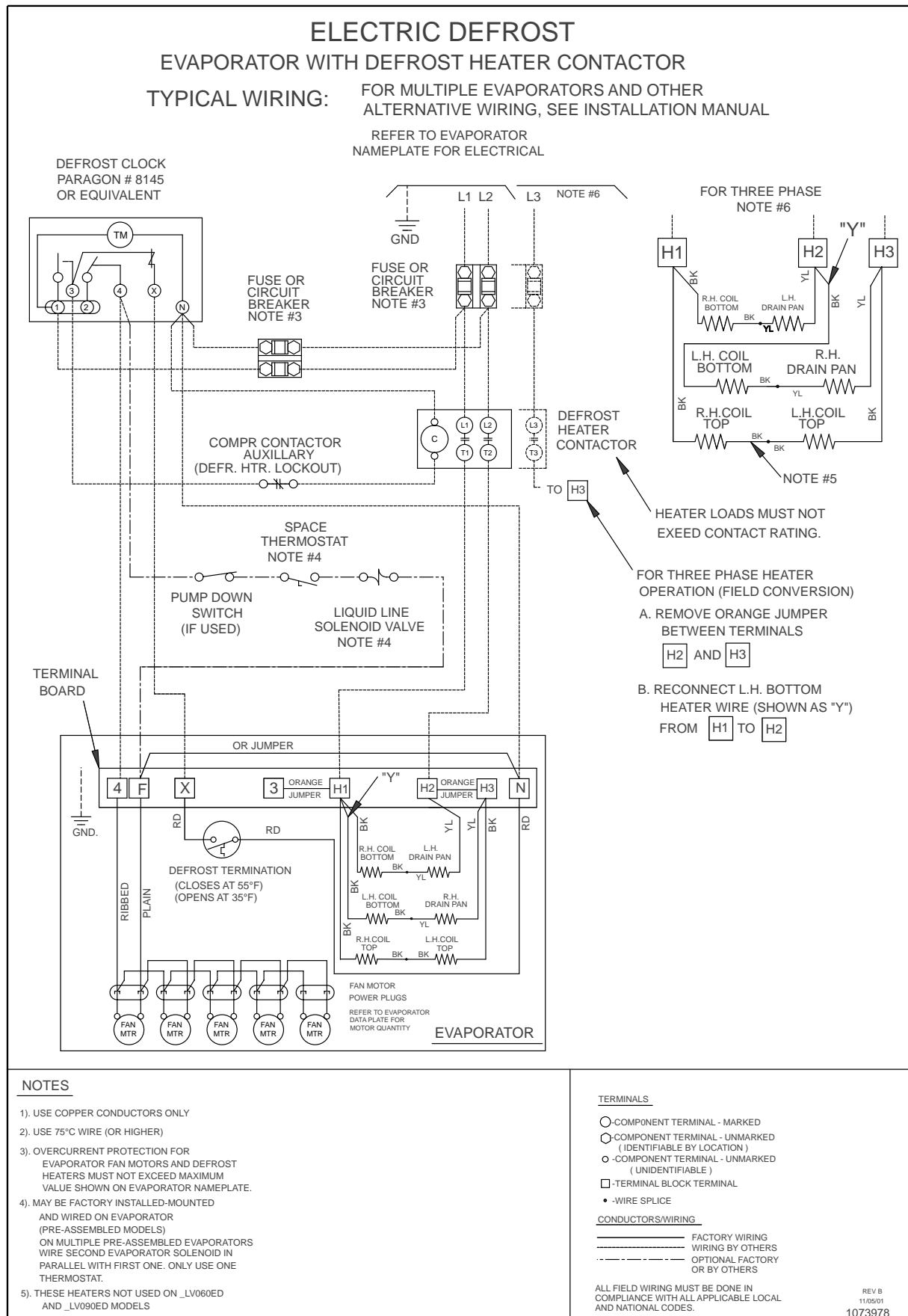
CONDUCTORS/WIRING

- FACTORY WIRING
- WIRING BY OTHERS
- OPTIONAL FACTORY OR
BY OTHERS

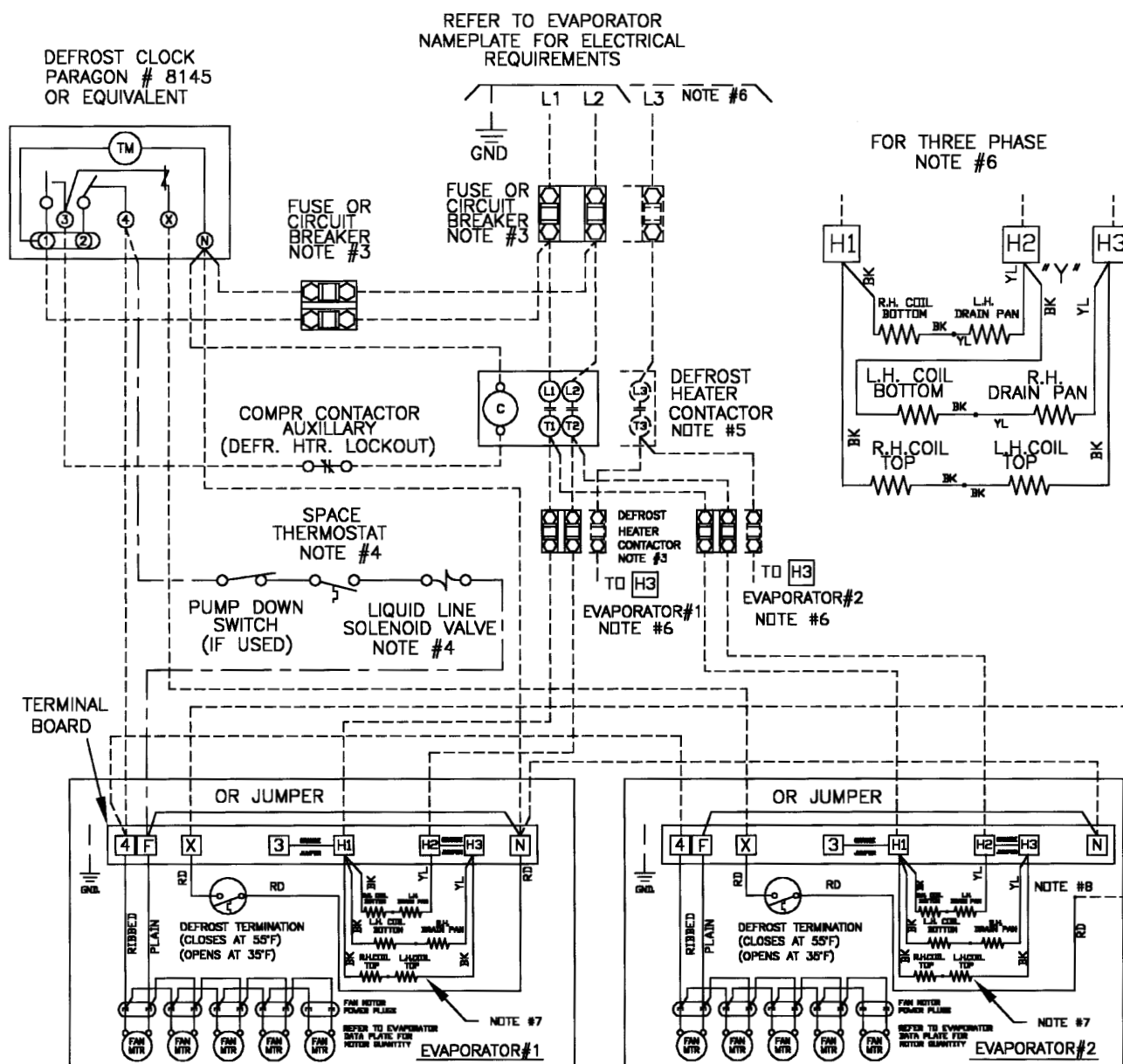
ALL FIELD WIRING MUST BE DONE IN
COMPLIANCE WITH ALL APPLICABLE LOCAL
AND NATIONAL CODES.

WIRING DIAGRAM

ELECTRIC DEFROST - SINGLE EVAPORATOR



FOR ALL MODELS USING DEFROST HEATER CONTACTOR



NOTES

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 60°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR EVAPORATOR FAN MOTORS AND DEFROST HEATERS MUST NOT EXCEED MAXIMUM VALUE SHOWN ON EVAPORATOR NAMEPLATE.
- 4). MAY BE FACTORY INSTALLED-MOUNTED AND WIRED ON EVAPORATOR (PRE-ASSEMBLED MODELS)
ON MULTIPLE PRE-ASSEMBLED EVAPORATORS WIRE SECOND EVAPORATOR SOLENOID IN PARALLEL WITH FIRST ONE. ONLY USE ONE THERMOSTAT.

53. HEATER LOADS MUST NOT EXCEED CONTACT RATING.
63. FOR THREE PHASE HEATER OPERATION (FIELD CONVERSION)
- A. REMOVE ORANGE JUMPER BETWEEN TERMINALS
- ☐ H2 AND ☐ H3
- B. RECONNECT L.H. BOTTOM HEATER WIRE (SHOWN AS "Y") FROM ☐ H1 TO ☐ H2
73. TOP HEATERS NOT USED ON MODELS _LV060ED & _LV090ED
83. REMOVE RD WIRE FROM TERMINAL AND SPlice AS SHOWN

TERMINALS

- - COMPONENT TERMINAL - MARKED
- - COMPONENT TERMINAL - UNMARKED
(IDENTIFIABLE BY LOCATION)
- o - COMPONENT TERMINAL - UNMARKED
(UNIDENTIFIABLE)
- - TERMINAL BLOCK TERMINAL
- - WIRE SPLICE

CONDUCTORS/WIRING

- _____

- FACTORY WIRING
WIRING BY OTHERS
OPTIONAL FACTORY
OR BY OTHERS

ALL FIELD WIRING MUST BE DONE IN COMPLIANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES.

ELECTRIC DEFROST - (For optional use on models 060ED and 090ED operating on 208-230/1/60)

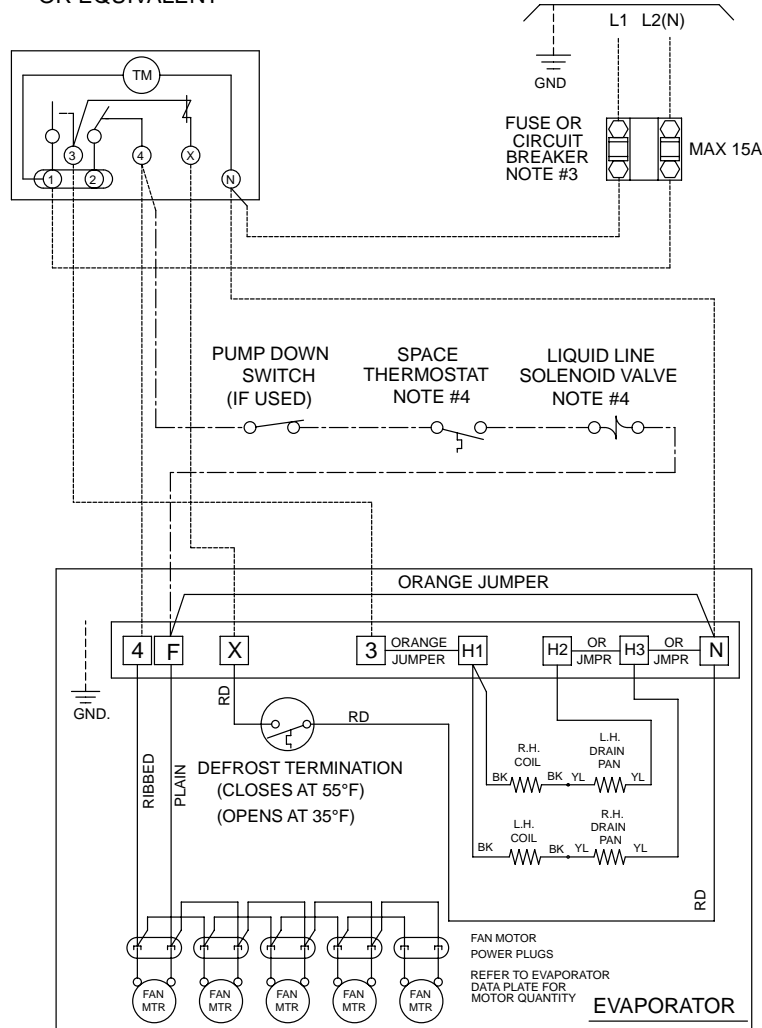
ELECTRIC DEFROST

EVAPORATOR WITHOUT DEFROST HEATER CONTACTOR USING MAX 15A HEATER OVERCURRENT PROTECTION

TYPICAL WIRING: FOR MULTIPLE EVAPORATORS AND OTHER
ALTERNATIVE WIRING, SEE INSTALLATION MANUAL

DEFROST CLOCK
PARAGON # 8145
OR EQUIVALENT

REFER TO EVAPORATOR
NAMEPLATE FOR ELECTRICAL
REQUIREMENTS



NOTES

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 75°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR
EVAPORATOR FAN MOTORS AND DEFROST
HEATERS MUST NOT EXCEED MAXIMUM
VALUE SHOWN ON EVAPORATOR NAMEPLATE.
- 4). MAY BE FACTORY INSTALLED-MOUNTED
AND WIRED ON EVAPORATOR
(PRE-ASSEMBLED MODELS)
ON MULTIPLE PRE-ASSEMBLED EVAPORATORS
WIRE SECOND EVAPORATOR SOLENOID IN
PARALLEL WITH FIRST ONE. ONLY USE ONE
THERMOSTAT.

TERMINALS

- - COMPONENT TERMINAL - MARKED
(IDENTIFIABLE BY LOCATION)
- - COMPONENT TERMINAL - UNMARKED
(UNIDENTIFIABLE)
- - TERMINAL BLOCK TERMINAL
- - WIRE SPLICE

CONDUCTORS/WIRING

- FACTORY WIRING
- WIRING BY OTHERS
- OPTIONAL FACTORY
OR BY OTHERS

ALL FIELD WIRING MUST BE DONE IN
COMPLIANCE WITH ALL APPLICABLE LOCAL
AND NATIONAL CODES.

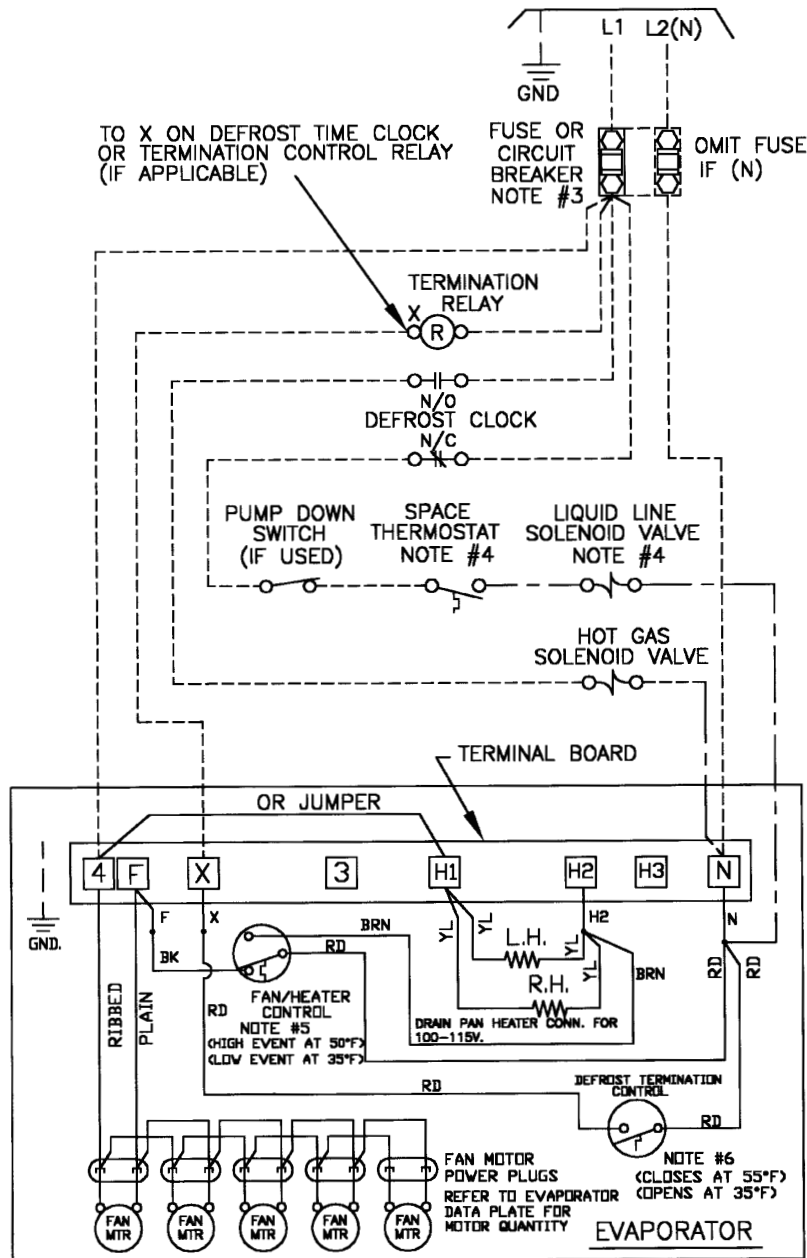
1074180
REV-A

WIRING DIAGRAM

HOT GAS DEFROST - 120V & 208-230V

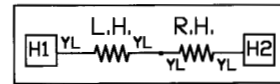
REVERSE CYCLE AND 3-PIPE HOT GAS DEFROST

REFER TO EVAPORATOR
NAMEPLATE FOR ELECTRICAL
REQUIREMENTS



*FOR 3-PIPE SEE NOTES #5 & 6

DRAIN PAN HEATER CONN.
FOR 200-230V



NOTES

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 60°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR EVAPORATOR FAN MOTORS AND DEFROST HEATERS MUST NOT EXCEED MAXIMUM VALUE SHOWN ON EVAPORATOR NAMEPLATE.
- 4). MAY BE FACTORY INSTALLED-MOUNTED AND WIRED ON EVAPORATOR (PRE-ASSEMBLED MODELS).
- 5). FAN/HEATER CONTROL IS INSTALLED ON THE SUCTION LINE LOCATION FOR REVERSE CYCLE AND MUST BE MOVED TO THE DISTRIBUTOR SIDE PORT LOCATION FOR 3-PIPE HOT GAS DEFROST.
- 6). DEFROST TERMINATION CONTROL IS INSTALLED AT THE DISTRIBUTOR SIDE PORT LOCATION FOR REVERSE CYCLE AND MUST BE MOVED TO THE SUCTION LINE LOCATION FOR 3-PIPE HOT GAS DEFROST.

TERMINALS

- DH - DRAIN PAN HEATER
- - COMPONENT TERMINAL - MARKED
- - COMPONENT TERMINAL - UNMARKED (IDENTIFIABLE BY LOCATION)
- - COMPONENT TERMINAL - UNMARKED (UNIDENTIFIABLE)
- - TERMINAL BLOCK TERMINAL
- - WIRE SPLICE

CONDUCTORS/WIRING

- FACTORY WIRING
- WIRING BY OTHERS
- OPTIONAL FACTORY OR BY OTHERS

ALL FIELD WIRING MUST BE DONE IN COMPLIANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES.

REV 11/05/01

NOTE: DURING THE HOT GAS DEFROST CYCLE, THE FAN/HEATER CONTROL DE-ENERGIZES THE EVAPORATOR FANS AND ENERGIZES THE DRAIN PAN HEATERS, ANYTIME TEMPERATURE OF INCOMING REFRIGERANT GAS IS ABOVE 50°F

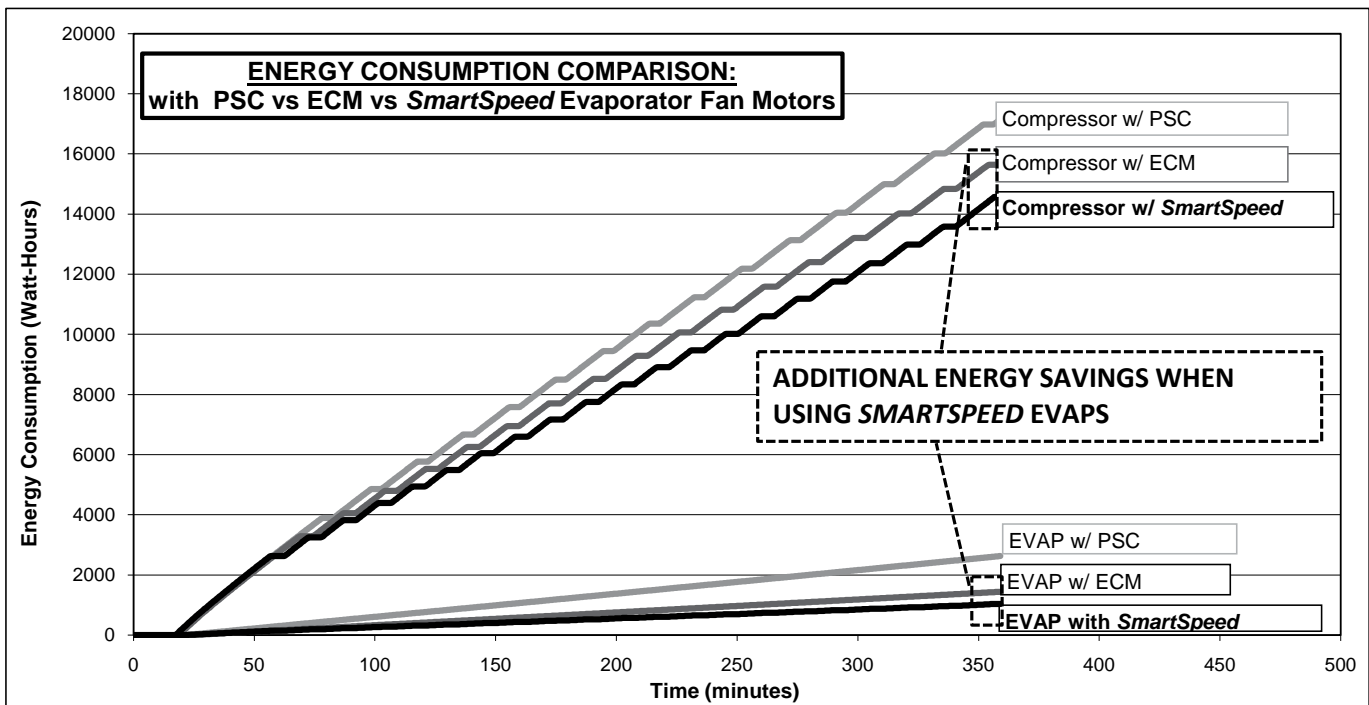
US Patents
8,635,883 &
9,151,525

DESIGN FEATURES

- Standard on all EC Motors
- NO special controls required.



- Refrigeration mode – EC motor operates at full speed.
Consumption 95 W per motor
- Off Cycle mode – EC motor operates at reduced speed.
Consumption 25 W per motor.
- Energy saving benefit on motor and compressor wattage consumption:



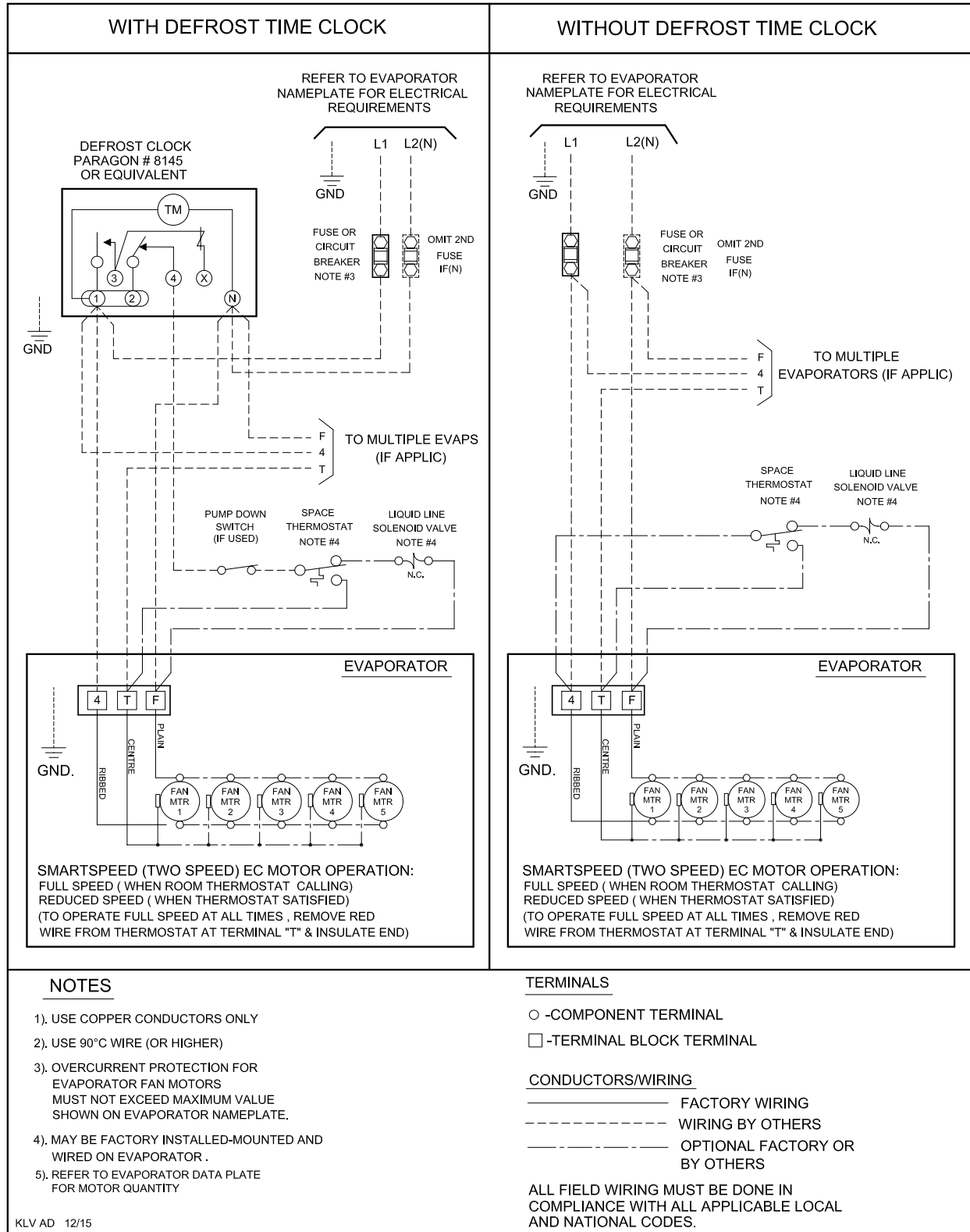
Note: Data collected on a typical freezer application with a 3HP low temp condensing unit and a 4 fan TLP evaporator. Similar results can be expected with TLV evaporators.

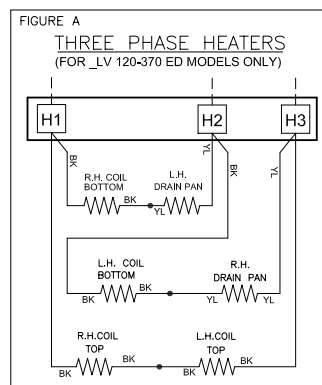
INSTALLATION NOTES

EC motors are factory wired for SmartSpeed operation on evaporators equipped with a factory installed thermostat.

For SmartSpeed operation on Evaporators without a factory installed thermostat, a field wired SPDT type thermostat is required.

WIRING DIAGRAM - 120V & 208-230V OPTIONAL EC MOTOR with SMARTSPEED™ AIR DEFROST MODELS





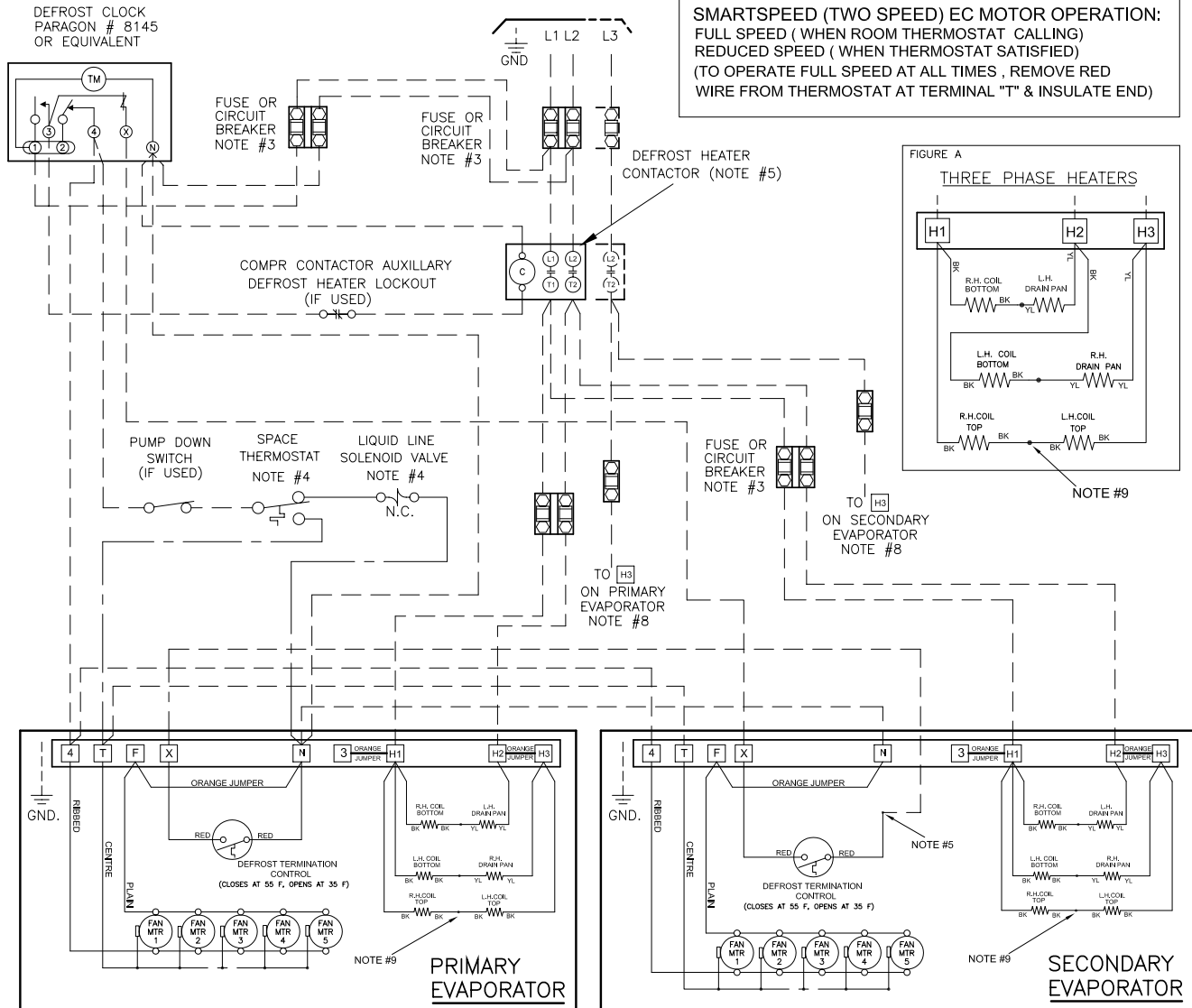
WIRING DIAGRAM - 208-230/1/60

OPTIONAL EC MOTOR with SMARTSPEED™

ELECTRIC DEFROST MODELS - MULTIPLE EVAPORATORS

FOR ALL MODELS USING DEFROST HEATER CONTACTOR

REFER TO EVAPORATOR NAMEPLATE FOR ELECTRICAL REQUIREMENTS

**NOTES**

- 1). USE COPPER CONDUCTORS ONLY
- 2). USE 90°C WIRE (OR HIGHER)
- 3). OVERCURRENT PROTECTION FOR EVAPORATOR FAN MOTORS AND DEFROST HEATERS MUST NOT EXCEED MAXIMUM VALUE SHOWN ON EVAPORATOR NAMEPLATE
- 4). MAY BE FACTORY INSTALLED-MOUNTED AND WIRED ON EVAPORATOR. (PRE-ASSEMBLED MODELS) ON MULTIPLE PRE-ASSEMBLED EVAPORATORS, WIRE SECOND EVAPORATOR SOLENOID IN PARALLEL WITH FIRST. USE ONLY ONE THERMOSTAT.
- 5). REMOVE RED WIRE FROM TERMINAL [N] AND SPLICE AS SHOWN
- 6). HEATER LOADS MUST NOT EXCEED CONTACTOR RATING
- 7). REFER TO EVAPORATOR DATA PLATE FOR MOTOR QUANTITY
- 8). FOR FIELD CONVERSION TO THREE PHASE HEATERS:
 - 8a). REMOVE ORANGE JUMPER BETWEEN TERMINALS [H2] AND [H3]
 - 8b). RECONNECT LH BOTTOM COIL WIRE FROM [H1] TO [H2]. AS SHOWN IN FIGURE A
- 9). TOP HEATER COILS ARE NOT INSTALLED ON _LV060ED & _LV090ED MODELS.

TERMINALS

- -COMPONENT TERMINAL
□ -TERMINAL BLOCK TERMINAL

CONDUCTORS/WIRING

- FACTORY WIRING
- - - WIRING BY OTHERS
- - - OPTIONAL FACTORY OR BY OTHERS

ALL FIELD WIRING MUST BE DONE IN COMPLIANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES.

KLV ED CONTACTOR MULTI 12/15

THERMOSTATIC EXPANSION VALVE SELECTION - SPORLAN

MODEL TLV	TD °F	R448A R407A R407C R22	R404A R507 *
060	10	SBFVE-AA-VC	SBFSE-AA-SC
	15	SBFVE-AA-VC	SBFSE-A-SC
090	10	SBFVE-AA-VC	SBFSE-A-SC
	15	SBFVE-A-VC	SBFSE-B-SC
120	10	SBFVE-A-VC	SBFSE-A-SC
	15	SBFVE-A-VC	SBFSE-B-SC
150	10	SBFVE-A-VC	SBFSE-B-SC
	15	SBFVE-B-VC	SBFSE-B-SC
180	10	SBFVE-A-VC	SBFSE-B-SC
	15	SBFVE-B-VC	SBFSE-C-SC
220	10	SBFVE-B-VC	SBFSE-B-SC
	15	SBFVE-B-VC	SBFSE-C-SC
270	10	SBFVE-B-VC	SBFSE-C-SC
	15	SBFVE-C-VC	SSE-4-C
300	10	SBFVE-B-VC	SSE-3-C
	15	SBFVE-C-VC	SSE-4-C
340	10	SBFVE-B-VC	SSE-3-C
	15	SVE-4-C	SSE-4-C
370	10	SVE-4-C	SSE-4-C
	15	SVE-4-C	SSE-6-C

SELECTIONS BASED ON 100°F(37.7°C) LIQUID

* FOR R507 REPLACE "S" WITH "P"

For R449A, use R448A data.

DISTRIBUTOR NOZZLE SELECTION

STANDARD NOZZLES FACTORY INSTALLED FOR ALL MODELS	
T.D.	8°F TO 12°F (4.4°C to 6.6°C)
EVAP. TEMP. RANGE	18°F TO 40°F (-7.7°C TO 4.4°C)
REFRIGERANT	R404A R507 R448A R407A R407C R22
060	L-3/4
090	L- 1
120, 150	L-1 1/2
180	L- 2
220	L-2 1/2
270	G- 2 1/2
300	G- 3
340, 370	G-4

SELECTIONS BASED ON 100 °F(37.7 °C) LIQUID

For R449A, use R448A data.

FAN/HEATER CONTROL AND DEFROST TERMINATION CONTROL POSITION

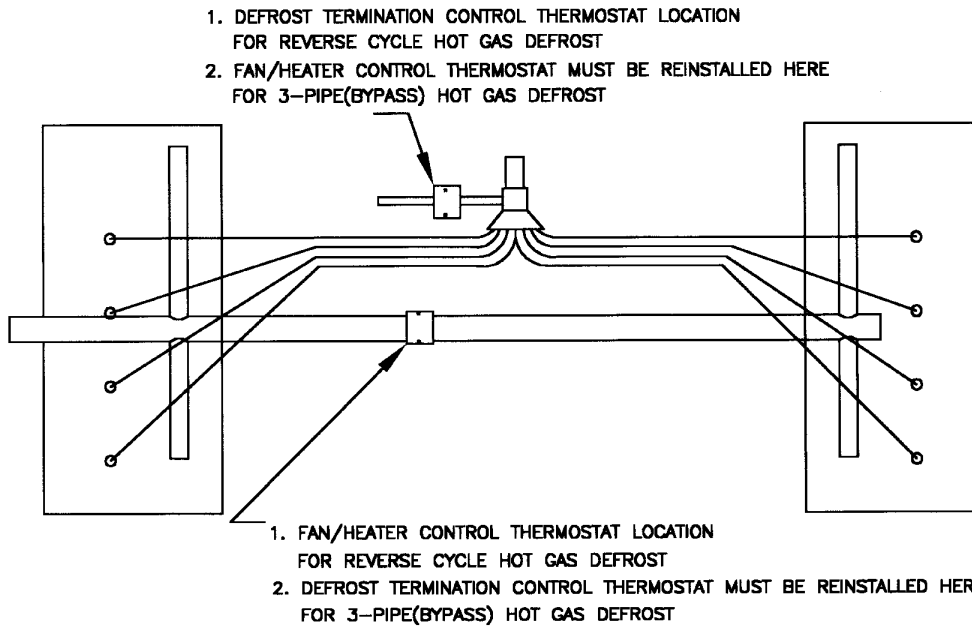


FIGURE 1

UNIT COOLER WILL LEAVE THE FACTORY WITH THE FAN/HEATER AND DEFROST TERMINATION CONTROL THERMOSTAT INSTALLED IN THE REVERSE CYCLE POSITION*

HOT GAS DEFROST (REVERSE CYCLE)

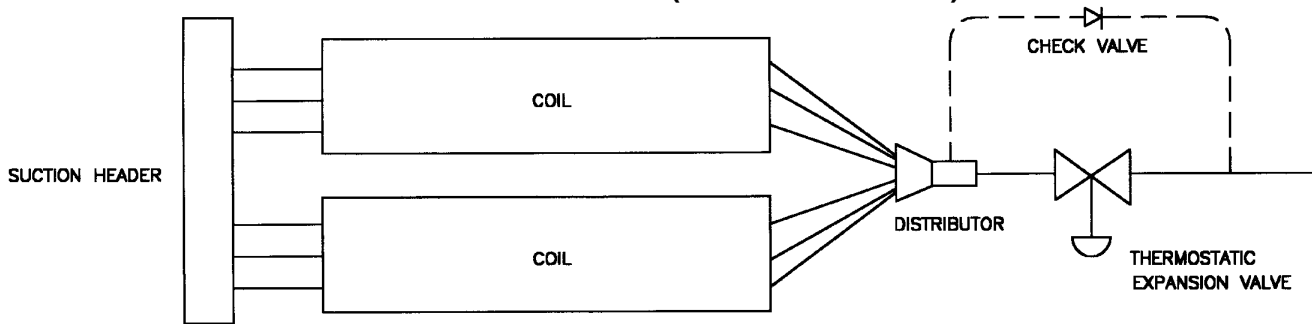


FIGURE 2

UNIT COOLER SHOWING HOT GAS LINE AND CHECK VALVE AROUND EXPANSION VALVE AS USED FOR REVERSE CYCLE HOT GAS DEFROST

HOT GAS DEFROST (3-PIPE OR BYPASS)

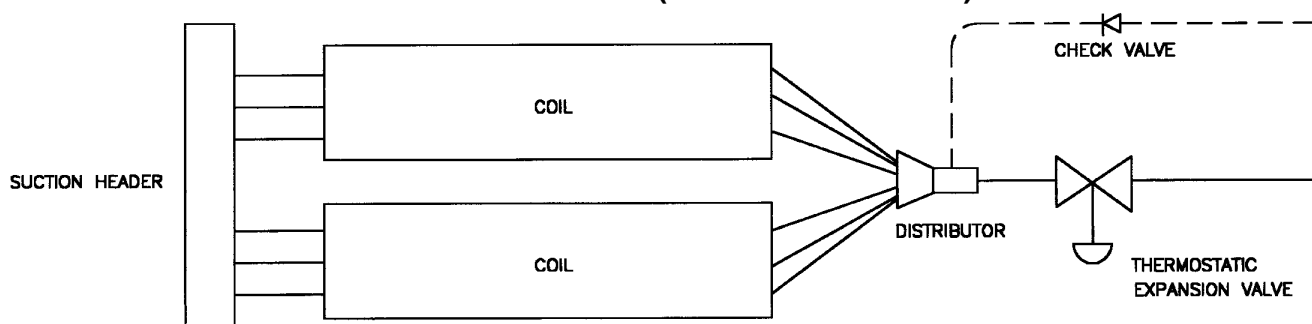


FIGURE 3

INSTALLATION

The installation and start-up of LV Evaporators should only be performed by qualified refrigeration mechanics.

This equipment should be installed in accordance with all applicable codes, ordinances and local by-laws.

INSPECTION

Inspect all equipment before unpacking for visible signs of damage or loss. Check shipping list against material received to ensure shipment is complete.

IMPORTANT: Remember, you, the consignee, must make any claim necessary against the transportation company. Shipping damage or missing parts, when discovered at the outset, will prevent later unnecessary and costly delays.

If damage or loss during transport is evident, make claim to carrier, as this will be their responsibility, not the manufacturer's.

Should carton be damaged, but damage to equipment is not obvious, a claim should be filed for "concealed damage" with the carrier.

IMPORTANT: The electrical characteristics of the unit should be checked at this time to make sure they correspond to those ordered and to electrical power available at the job site.

Save all shipping papers, tags and instruction sheets for reference by installer and owner.

APPLICATION

LV Unit Coolers are designed for use with a variety of popular refrigerants. At room temperatures above 34°F (1.1°C) (and evaporating temps no lower than 24°F (-4.4°C)) positive coil defrosting (Electric or Hot Gas) is not required. (The air flowing through the coil will accomplish the defrost). At room temperatures of 34°F (1.1°C) and below, positive defrosting is required (either Electric (ED) or Hot Gas (HE, RE, TE) in model nomenclature). These models require the use of (1) Time Clock or equivalent (to initiate and terminate the defrost cycle), and (2) Defrost Termination Control (to prevent unnecessary prolonged heating and steaming of the coil once all the ice and frost has melted), (3) Hot Gas models also utilize a Fan/Heater drain pan control.

The coil must not be exposed to any abnormal atmospheric or acidic environments. This may result in corrosion to the cabinet and possible coil failure (leaks). (Consult manufacturer for optional baked on phenolic protective coatings).

LOCATION

The unit location in the room should be selected to ensure uniform air distribution throughout the entire space to be refrigerated. Be sure that the unit does not draw air in, or blow directly out, through an opened door and that the product does not obstruct the free circulation of air. Allow a minimum of 24" clearance at each end. LV Evaporators draw air through the fans and discharge air through both coils.

Consideration should be given to the coil location in order to minimize the piping run length to the condensing unit and floor drain.

EXPANSION VALVE (TXV) SELECTION

All units require the use of an **externally equalized** expansion valve. (A 1/4" (6 mm) O.D. equalizer line has been provided on the coil) TX valves should **not** be selected strictly by their nominal ton rating. (This rating is based at a specific pressure differential and entering liquid temperature). Since applications will differ it is suggested the following selection procedure be followed.

1. Determine actual unit cooler BTUH or KW (thermal).
The nominal rating is based at 10 °F T.D. (5.5°C) (Room Temp. minus Evap. Temp.). Note that a higher / lower operating T.D. will increase / decrease this capacity rating by their direct ratio.
2. Determine the pressure drop across the valve by subtracting the suction (evaporating) pressure from the high side liquid pressure. Note: Also subtract the distributor pressure loss (use approx. 25 psig (1.1 bar) for R134a and 35 psig (2.4 bar) for R404A/R507/R22/R407A/R448A).
3. Estimate entering liquid temperature. Temperatures lower than 100°F (37.7°C) increase valve capacity ratings. Refer to valve manufacturer's specs for details.
4. Select valve from the valve manufacturer selection charts for the appropriate refrigerant, evaporating temp and pressure drop.
5. After following the manufacturer's installation instructions and after the room has reached the desired temperature the valve superheat should be checked. This will confirm that the evaporator is operating properly and performing to maximum efficiency. The superheat should be around 5 to 8 °F (2.7 to 4.4°C) for a 10 to 12°F (5.5 to 6.6°C) T.D. Too high or low a superheat will result in unsatisfactory system performance and possible compressor problems.

NOZZLE INSTALLATION

All LV Evaporators have nozzles installed at factory. For nozzle selection refer to selection table. In case it is required to install the nozzle at some point in the future, the nozzle retainer clip (in distributor) must be removed before inserting nozzle. Re-install clip ensuring nozzle is properly in place.

MOUNTING

Refer to dimensional drawing for recommended mounting arrangements. Formed mounting channels are provided for flush mounting to the ceiling. Ensure adequate clearance (at least 24" (600 mm)) is provided at each end (to enable access to the electrical and refrigerant compartments).

Ensure that the ceiling is level since the drain pan has been sloped for drainage during the defrost cycle.

DRAIN LINE

The drain line should be run from the drain connection, sloping at least 1/4" (6 mm) per foot. A trap in a warm area outside the room will allow proper draining through the tubing. Connection should be made to proper drainage facilities that comply with local regulations.

To prevent freeze-up when the temperature of the refrigerated space is 35 °F (1.7 °C) or lower, the drain line should be heated along its run inside the cold room. The heated drain line should be insulated. It is recommended that the heater be energized at all times. A heat input of 20 watts per foot in a 28°F (-2.2°C) room, is satisfactory. Drain line heaters are not required for constant room temperature above 35°F (1.6°C).

Ensure that the drain line has sufficient slope for proper drainage (prevention of ice build up/blockage in pan).

PIPING

Refrigerant line sizes are important and **may not** be the same size as the coil connections. Consult "Recommended refrigerant line sizes" charts in any standard reference book for proper line sizing.

Refrigerant piping and control system should be designed to prevent possible liquid slugging (from oil or refrigerant) of the compressors on start-up after the defrost cycle. On Hot Gas Defrost Systems the suction accumulator should be at least 2.5 times the coils operating charge.

See Dimensional data for line locations. For Reverse Cycle and Hot Gas models and 3-Pipe - see fig. 2 & 3 respectively on page 12 for typical unit piping. These models include a check valve (unmounted) packaged along with the nozzle in the refrigerant connection compartment end panel.

WIRING

Wire system in accordance with governing standards and local codes. See data and wiring diagrams on pages 6 to 10 for wiring arrangement. Electrical wiring is to be sized in accordance with minimum circuit ampacity rating (MCA).

For ease of identifying the proper wiring terminal, unit wiring is color coded and terminal block connections are identified.

SYSTEM CHECK**Before Start-Up:**

1. All wiring should be in accordance with local codes.
2. Refrigerant lines should be properly sized.
3. Off cycle defrost and electric defrost systems preferably must include a liquid line solenoid valve and suction accumulator.
4. Thorough evacuation and, dehydration has been performed.
5. The suction, discharge, and receiver service valves must be open.
6. The system preferably must include a liquid line drier moisture indicator and suction filter.
7. Pour enough water into the drain pan to allow a good check on drainage and seal the trap.

After Start-Up:

1. Check the oil level to be sure the oil charge is correct.
2. On initial start up the fans do not start until coil temperature is pulled down to approximately 35°F (1.7°C) on the hot gas coil. Also, it is normal for the fans to cycle a few times until the room temperature is pulled down.
3. Fan/Heater control and defrost termination control is factory installed for reverse cycle defrost operation. Refer to Fig. 1 on page 14.
4. If coil is to be used for 3-pipe (bypass) Hot Gas Defrost, Fan/Heater must be moved from suction line to hot gas inlet line and the defrost termination control moved to the suction line. Refer to Fig. 1 on page 14.
5. In general, evaporators running with a TD of 10°F should have a superheat reading of 5 to 8 °F (2.7 to 4.4°C). For evaporators with a higher TD, the superheat should be 8 to 12°F (4.4 to 6.6 °C).
6. Heavy moisture loads are usually encountered when starting the system for the first time. This will cause a rapid build-up of frost on the unit cooler. During the initial pull down, we suggest that the frost build-up be watched and defrosted manually as required. This may be done by rotating the inner dial on the timer until the pin in the outer dial is directly opposite the timer pointer. (Paragon 8145-20 Timer by others).
7. Observe that the system goes through at least one complete DEFROST CYCLE.

MAINTENANCE

The unit should be periodically inspected for any dirt or build-up on the fin surface and cleaned if necessary with a soft whisk or brush. Also ensure coils inner and outer drain pans do not have any ice build-up from improper defrost operation. When replacing heater elements first remove heater retainer brackets and heater clips.

PROJECT INFORMATION

System	
Model Number	Date of Start-Up
Serial Number	Service Contractor
Refrigerant	Phone
Electrical Supply	E-Mail



PRODUCT SUPPORT

web: **t-rp.com/tlv**
email: **evaps@t-rp.com**
call: **1-844-893-3222 x520**



TROUBLESHOOTING

email: **troubleshooting@t-rp.com**
call: **1-844-893-3222 x529**



SERVICE PARTS

web: **t-rp.com/parts**
email: **parts@t-rp.com**
call: **1-844-893-3222 x501**



WARRANTY

web: **t-rp.com/warranty**
email: **warranty@t-rp.com**
call: **1-844-893-3222 ext. 501**



ORDERS

email: **orders@t-rp.com**
call: **1-844-893-3222 x501**



SHIPPING

email: **shipping@t-rp.com**
call: **1-844-893-3222 x503**

“AS BUILT” SERVICE PARTS LIST

Service Parts List
Label
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