



Liebert MC Condenser Warranty Inspection Check Sheet

The following information must be completed and forwarded to your local Liebert sales office to establish your equipment warranty.

Installer _____ Address _____

Owner _____ Address _____

Owner e-mail address _____

Date of Installation: _____

Was the unit received in good condition? Yes No

If no, was the freight carrier notified? Yes No

Have the manuals been kept in the units? Yes No

PRE-START-UP

Evaporator Serial Number: _____

Evaporator Model Number: _____

Condenser Serial Number: _____

Condenser Model Number: _____



WARNING

Arc flash and electric shock hazard. Open all local and remote electric power disconnect switches, verify with a voltmeter that power is off and wear personal protective equipment per NFPA 70E before working within the electric control enclosure or any hazardous voltage electric connection enclosure. Failure to comply can cause serious injury or death.

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With the electric power to the unit OFF check the following items as noted:

- Remove all debris from unit area.
- Clearance around condenser for proper airflow
- All piping secured and isolated for vibration reduction.
- Equipment is level and mounting fasteners are tight.
- Control wiring interlock connections completed between indoor evaporator and condenser.
- Has a CAN cable been installed between the indoor evaporator and condenser?
- Check all that all high and low voltage wiring is tight and secure.
- Confirm that unit is properly grounded to an earth ground.
- Control transformer setting matches incoming power.

START-UP



WARNING

Risk of electric shock, contact with high speed moving parts and hot surfaces, can cause serious injury or death. Use extreme caution when working inside the unit cabinet of an energized unit near bare live hazardous voltage terminals, high speed moving parts such as EC fan blades and hot surfaces such as motors and hot gas lines.

1. Check voltage at disconnect and record below.
2. **L1-L2** _____ **L2-L3** _____ **L3-L1** _____
3. Close all local and remote electric power disconnect switches. Verify with a voltmeter that power is on and the supply voltage matches the marked unit voltage rating.



WARNING

Arc flash and electric shock hazard. Wear personal protective equipment per NFPA 70E before working within the electric control enclosure or any hazardous voltage electric connection enclosure. Use extreme caution when checking the status of live hazardous voltage circuits. Failure to comply can cause serious injury or death.

4. Record condenser control board software version. (If Applicable) _____
5. Check and record control voltage transformers for proper output. (Secondary voltage should not be under 23 VAC or exceed 27 VAC under load, change tap if necessary).

T1 _____ Volt

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6. Check fan rotation during condenser operation. The fan(s) should be rotating counter clockwise when viewing from the fan guard.
7. Check and record Fan Amps.

Fan #1	L1 _____	L2 _____	L3 _____
Fan #2	L1 _____	L2 _____	L3 _____
Fan #3	L1 _____	L2 _____	L3 _____
Fan #4	L1 _____	L2 _____	L3 _____

Condensers w/ Lee-Temp Receivers

1. On each receiver at the condenser there are two refrigerant-level sight glasses. Refrigerant level will vary with outside temperature. Check refrigerant level after the system has been on for at least 15 minutes. Record Ambient Temperature and Refrigerant level below.

Ambient Temperature _____

Sight Glass Level (Mark box)

- 40°F (4.5°C) and lower—bottom sight glass is 3/4 full
- 40 to 60°F (4.5 to 15.5°C)—bottom sight glass is full
- 60°F (15.5°C) and higher—top sight glass is 3/4 full

2. Check Voltage at Lee-Temp Heater Pad and record below. (If Applicable):

Circuit 1 _____

Circuit 2 _____

Condensers w/o Lee-Temp Receivers

Liebert MC Condensers are charge-sensitive and require accurate calculation of the system charge to avoid overcharging. To avoid overcharge, additional guidelines are recommended to ensure trouble-free operation.

- When charging system in an outdoor ambient below 50°F (10°C), recheck the subcooling against **Table 15** when the ambient temperature is above 60°F (15.6°C)
- The indoor space should be maintained at 70-80°F (21-26.7°C) return air before final charge adjustments are made.
- Charging a unit at temperatures above 80°F (26.7°C) return air may result in the unit being overcharged.
- Charge by subcooling measurement at the indoor unit. See **Table 15** for target subcooling temperatures.

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1. Attach pressure and temperature instruments to the liquid line of the indoor unit. Measure the initial subcooling and continue to add charge until reaching the recommended subcooling for the current outdoor ambient temperature (see **Table 15**). The outdoor ambient can be read from the Liebert MC Condenser control menu ID F02 or at parameter A812 in the Global Condenser Menu (if CANbus has been connected between the indoor and outdoor unit).

*To determine subcooling measurement, a liquid line pressure reading (at the factory-installed Schrader tap) needs to be measured along with obtaining a temperature reading on the liquid line. Convert the liquid line pressure reading into a temperature by utilizing a Pressure-Temperature Guide or **Table 16**. The difference between this converted temperature and the actual temperature will determine the system's subcooling. For R-407C make sure to use the saturated liquid temperature to calculate subcooling.*

Table 15 Target subcooling for ambient outdoor temperature

Ambient Temp °F (C°)	Subcooling °F (C°)
0 (-17.8)	22 (12.0)
10 (-12.2)	22 (12.0)
20 (-6.7)	22 (12.0)
30 (-1.1)	22 (12.0)
40 (4.4)	22 (12.0)
50 (10.0)	21 (11.7)
60 (15.6)	19 (10.8)
70 (21.1)	17 (9.3)
80 (26.7)	13 (7.2)
90 (32.2)	9 (5.0)
95 (35.0)	7 (3.9)
100 (37.8)	5 (2.9)
105 (40.6)	3 (1.8)
110 (43.3)	1 (0.7)
125 (51.7)	0

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Table 16 Liquid pressures and temperatures

Pressure Psig (Bar)	R407C₁ °F (°C)	R410A₁ °F (°C)	R22 °F (°C)
170 (11.7)	81.5 (27.5)	59.8 (15.4)	90.6 (32.6)
180 (12.4)	85.1 (29.5)	63.1 (17.3)	94.3 (34.6)
190 (13.1)	88.6 (31.5)	66.3 (19.1)	97.9 (36.6)
200 (13.8)	92.0 (33.3)	69.5 (20.8)	101.4 (38.6)
210 (14.5)	95.2 (35.1)	72.5 (22.5)	104.7 (40.4)
220 (15.2)	98.3 (36.8)	75.4 (24.1)	108.0 (42.2)
230 (15.9)	101.4 (38.5)	78.2 (25.7)	111.1 (44.0)
240 (16.6)	104.3 (40.2)	80.9 (27.2)	114.2 (45.7)
250 (17.2)	107.2 (41.8)	83.6 (28.7)	117.1 (47.3)
260 (17.9)	109.9 (43.3)	86.2 (30.1)	120.0 (48.9)
270 (18.6)	112.6 (44.8)	88.7 (31.5)	122.8 (50.4)
280 (19.3)	115.3 (46.3)	91.1 (32.8)	125.5 (52.0)
290 (20.0)	117.8 (47.7)	93.5 (34.2)	128.2 (53.4)
300 (20.7)	120.3 (49.1)	95.8 (35.5)	130.8 (54.9)
310 (21.4)	122.8 (50.4)	98.1 (36.7)	133.3 (56.3)
320 (22.1)	125.2 (51.8)	100.3 (38.0)	135.8 (57.7)
330 (22.8)	127.5 (53.1)	102.5 (39.2)	138.2 (59.0)
340 (23.4)	129.8 (54.3)	104.6 (40.3)	140.6 (60.3)
350 (24.1)	132.1 (55.6)	106.7 (41.5)	142.9 (61.6)
360 (24.8)	134.3 (56.8)	108.7 (42.6)	145.2 (62.9)
370 (25.5)	136.4 (58.0)	110.7 (43.7)	147.4 (64.1)
380 (26.2)	138.6 (59.2)	112.7 (44.8)	149.6 (65.4)
390 (26.9)	140.6 (60.3)	114.5 (45.9)	151.8 (66.5)
400 (27.6)	142.7 (61.5)	116.4 (46.9)	153.9 (67.7)
500 (34.5)	161.3 (71.8)	133.5 (56.4)	173.1 (78.4)
600 (41.4)	177.4 (80.8)	148.1 (64.5)	189.5 (87.5)

1. Values are for saturated liquid.
2. Source: DPN002411, Rev. 7

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2. Record the following information from the condenser control board.

Circuit #1

Submenu ID	Parameters	Reading
F00	Condenser Pressure Circuit 1	
F02	Ambient Temperature	
F03	Condenser Temperature Circuit 1	
F10	Fan 1 Actual Speed	
F20	Fan 2 Actual Speed	
F30	Fan 3 Actual Speed	
F40	Fan 4 Actual Speed	

Circuit #2

Submenu ID	Parameters	Reading
F01	Condenser Pressure Circuit 2	
F02	Ambient Temperature	
F04	Condenser Temperature Circuit 2	
F10	Fan 1 Actual Speed	
F20	Fan 2 Actual Speed	
F30	Fan 3 Actual Speed	
F40	Fan 4 Actual Speed	

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Your Start-up is now complete.

Your input is important to us. Did you encounter any factory or field issues? If YES, please check the YES box and supply detailed description below. If NO, please check the NO box; however please feel free to provide any additional comments or suggestions.

YES

NO

Comments:

START-UP

PERFORMED BY: _____
(Please print name)

START-UP DATE: _____

COMPANY: _____

PHONE #: _____

IMPORTANT:

This form must be properly completed and returned to your local Liebert Sales Office. If you do not know who your local Liebert sales office is, call 1-800-LIEBERT or check our website at:

<https://www.vertivco.com/en-us/products/brands/liebert/>