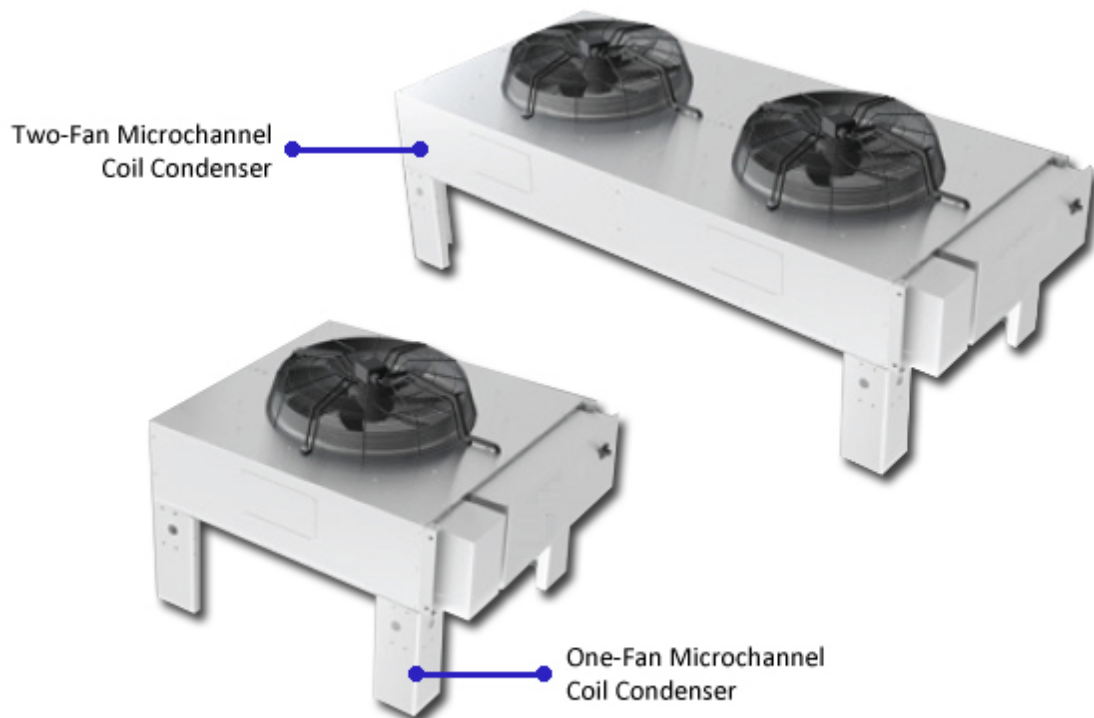


# Liebert MC (Microchannel Condensers)

## Parts Manual



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## 1. Product Description

The Liebert MC condenser is a low-profile, direct-drive propeller fan-type air-cooled unit suitable for mounting outdoors. It provides heat rejection for either one or two separate refrigeration circuits, matches the heat rejection capacity corresponding with the outdoor ambient temperature, and with each corresponding compressor heat rejection requirements. Constructed with an aluminium cabinet, galvanized steel frame and microchannel coil, the unit is quiet and corrosion resistant. The condenser is quickly and easily installed, because all internal wiring is completed at the factory with only electrical connections to be made at the job site. All electrical connections and controls are enclosed in an integral weatherproof section of the condenser.

### 1.1. Premium Efficiency Control/EC Fan

Premium Efficiency Controls and EC fans are matched to provide superior system energy efficiency. The premium control board allows CANbus communication with the indoor unit's Liebert iCOM® control. This communication feature provides compressor run signals, condenser operating mode changes, condenser alarm monitoring, simplified system charging procedures and outdoor ambient temperature monitoring. The EC fan is an integral assembly of an electronically commutated motor, quiet fan blade assembly and finger/hail guard. The fans are controlled by the premium control board using pressure transducer signals from the refrigerant circuit and factory programming to control the refrigerant head pressure. The premium control board uses inputs from the indoor unit, condenser refrigerant pressures and temperatures and ambient temperatures to modulate the EC fan motor speed from 0 to 100% RPM, maintaining refrigerant head pressure setpoints. PCB, EC fan(s) and transducer(s) are factory-wired. Multiple fan dual refrigeration circuit condensers adjust fan speed independently to match each circuit's head pressure conditions. Multiple fan single refrigeration circuit condensers adjust all fans to the same RPM to maintain head pressure. The control system provides refrigerant head pressure control for outdoor ambient temperatures as low as -20°F (-28.9°C) without Liebert Lee-Temp kit and -31°F (-35°C) with Liebert Lee-Temp kit.

### 1.2. Lee-Temp Refrigerant Control

The Liebert Lee-Temp™ head pressure control system utilizes head pressure control valve(s), extra refrigerant and insulated refrigerant receiver(s) with heater pads to assist system starting and to maintain proper operating head pressures in outdoor ambient temperatures below the rating point of the Liebert MC control type. The system works by flooding the condenser coil with liquid refrigerant to a level that balances the system condensing requirements with the condenser coil surface available to reject the system heat. During the summer, the system requires the entire condenser coil surface for heat rejection and most of the refrigerant is stored in the receiver. In the winter, the same amount of heat can be rejected by only a fraction of the coil surface. As head pressure begins to fall, the control valve restricts the flow of liquid refrigerant existing from the condenser. This extra liquid refrigerant reduces the effective condenser surface area available for heat transfer. The head pressure control valve also bypasses hot gas into the receiver to warm the liquid and maintain liquid pressure for proper operation of the expansion valve. Liebert Lee-Temp kit is optional for condensers and is field-installed. Condenser control boards are factory-configured for Liebert Lee-Temp if ordered with Liebert Lee-Temp receivers. They can be field-configured if Liebert Lee-Temp system is added later.



### **1.3. Sound Level**

Liebert MC condensers utilize low air resistance coil(s) and slower speed fan motors to yield the required heat rejection at significantly lower sound levels. EC fans are designed to yield the same maximum sound levels at summer design conditions to help your facility meet noise codes with moderate operating sound levels.

#### **1.3.1. Lower Sound Level**

Special match-ups of premium condensers are available for applications needing to meet even lower governmental sound regulations. Lower sound levels are achieved by over sizing the condenser, which will decrease the maximum airflow and sound level produced by the condenser at design outdoor air temperatures.

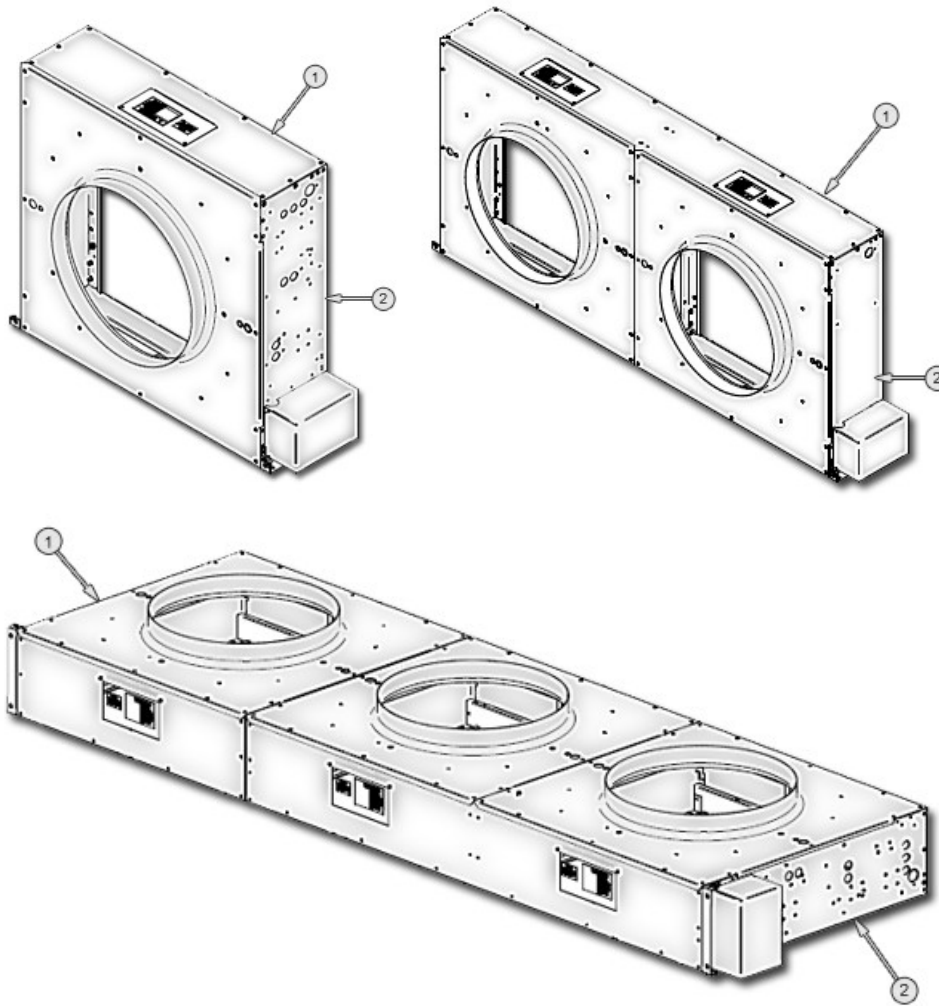
### **1.4. Surge Protection Device (Optional)**

An optional surge protection device (SPD) can be field-wired to provide the condenser with the highest level of protection from surges that threaten sensitive equipment in your critical facilities. The condenser's electrical panel provides a terminal block to allow the SPD to be wired. The Liebert ACV-CP SPD provides 65kA per mode and 130kA per phase of surge current protection. An illuminated green LED indicates the SPD is On and providing full protection. An illuminated red LED indicates that the device's protection may have been reduced and may require replacement. Both lights extinguished indicates there is no power to the condenser or the condenser disconnect is in the Off position.

## 2. Model Number Definition

Model Number – Part 1/2										Model Details											Part 2/2			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
M	C	M	0	4	0	E	1	A	D	0	A	0	V	U	0	0	0	0	0	0	A	*	*	*
<b>1-2. Unit Family; MC = Microchannel Condenser</b>										<b>13. Connection Pipe Unit of Measurement</b>														
<b>3. Platform Size</b>										0 = Inches (Std. ACR Copper)														
S = Small										<b>14. Legs Included</b>														
M = Medium										V = 18" Tall Legs (Std.)														
L = Large										X = 36" Tall Legs with Bracing														
<b>4-6. Nominal Condenser Capacity, kW</b>										Y = 48" Tall Legs with Bracing														
Example: 040 = 40kW @ 95°F(35°C) & 27°R (15°K) ITD										Z = 60" Tall Legs with Bracing														
<b>7. Control/Fan Type</b>										<b>15. Agency Certification</b>														
E = Premium & EC Fan										U = CSA Listed, Marked with CSA c-us logo														
<b>8. Refrigerant Circuits/System Refrigerant type</b>										1 = CSA listed, IBC/OSHPD Seismic Certification														
1 = Single Refrigerant Circuit, R-410A										0 = No Agency Listing														
2 = Dual Refrigerant Circuit, R-410A										<b>16. Sound Level</b>														
7 = Single Refrigerant Circuit, R-407C, R-22										0 = Standard Sound														
8 = Dual Refrigerant Circuit, R-407C, R-22										<b>17. Liebert Lee-Temp Configuration</b>														
<b>9. Power Supply</b>										0 = None (Standard)														
A = 460V / 3ph / 60Hz										1 = Factory Set for Liebert Lee-Temp Kits														
Y = 208/230V / 3ph / 60Hz										<b>18. Fusible Plug Kit</b>														
<b>10. Packaging</b>										0 = No Fusible Plug kit (Standard)														
D = Domestic, Non-Stackable (Horizontal Airflow Orientation)										1 = Fusible Plug Kit(s) Shipped With Condenser														
E = Export Crating - Non-Stackable (Horizontal Airflow Orientation)										<b>19-21. Undefined - Reserved For Future Use</b>														
<b>11. Coil Coating</b>										<b>22. Special Features</b>														
0 = None										A = No SFAs, Standard Unit														
E = E-Coat (Epoxy)										S = SFA included														
<b>12. Panel Material</b>										<b>23-25. Factory Configuration Number</b>														
A = Bright Aluminum																								

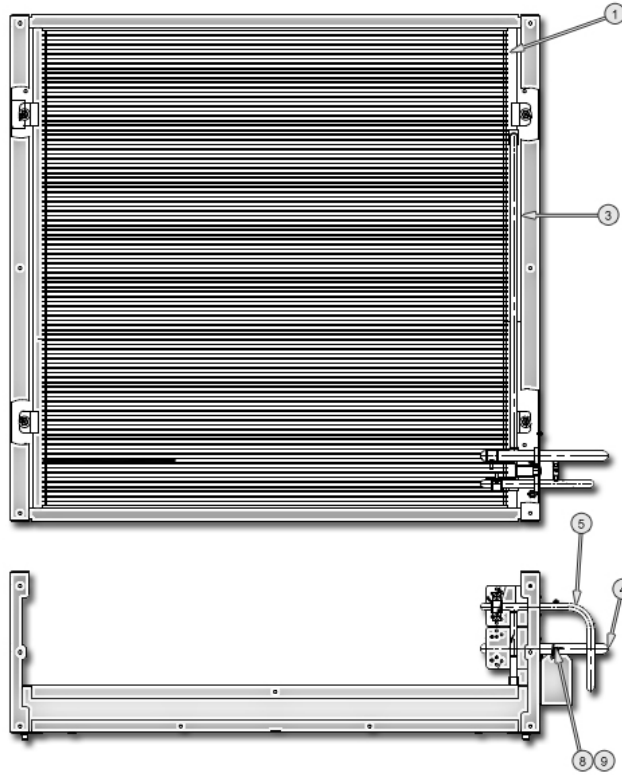
### 3. Cabinet Section



Item	Part Number	Description	1-Fan	2-Fan	3-Fan
1	199587P1	PANEL SIDE REAR COND MED GCP	1	1	1
	303356P1	PANEL SIDE REAR SM GCP	1		
2	199622G1	PANEL SIDE FRT ASSY MED GCP	1	1	1
	303355G1	PANEL SIDE FRT ASSY SM GCP	1		
	304695G1	SPECIAL PANEL FRT COND MED GCP			1

## 4. Coil Section

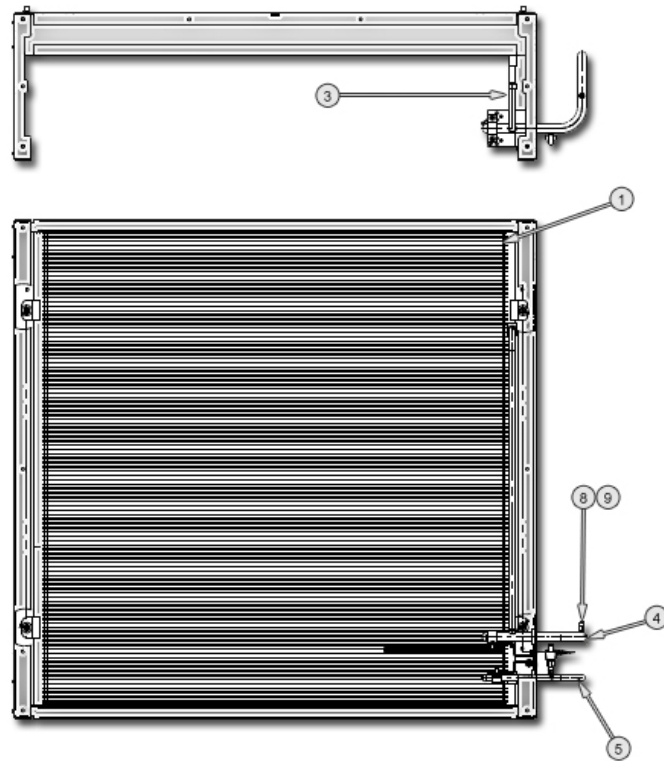
### 4.1. 28KW CKT



Item	Part Number	Description	Quantity
1	301464P1	COIL M-CHNL 28KW WELD	1
	307848P4	COIL M-CHNL 28KW E-COAT FINAL	1
3	303366P1	TUBE FORM CU 5/8 DSCH SM GCP	1
4	303365P1	TUBE DTL CU 7/8 DSCH SM GCP	1
5	199679P1	TUBE FORM CU 5/8 LQUD 1FAN	1
8	P02-0270	VALVE ACCESS BODY 1/4X SWT	2
9	P02-0290	VALVE CORE REFRIGERANT	2

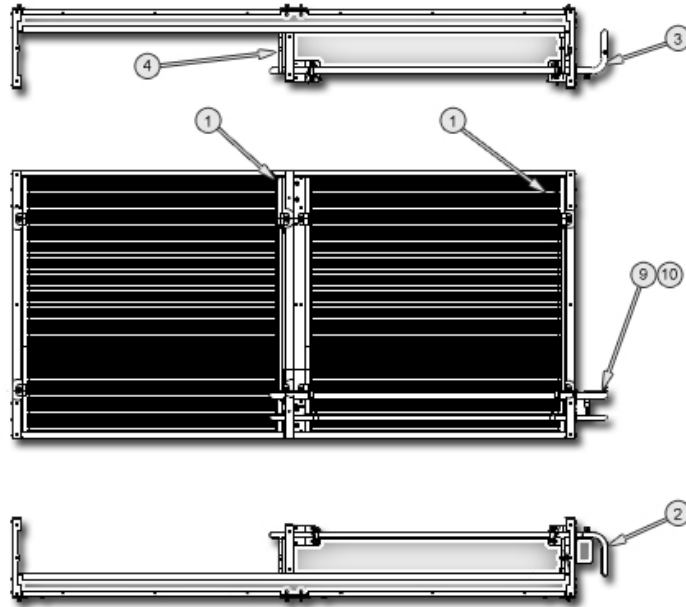


### 4.2. 40KW CKT



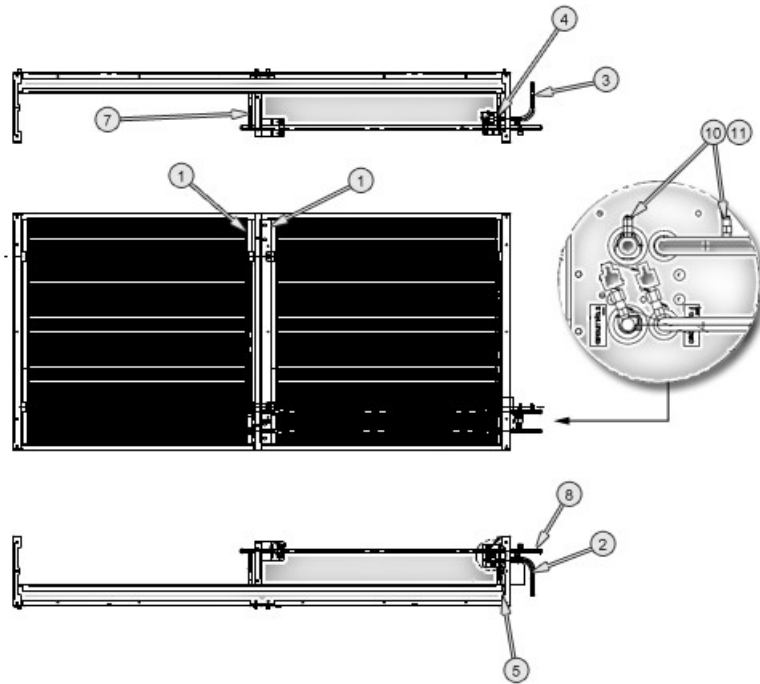
Item	Part Number	Description	Quantity
1	300343P1	COIL M-CHNL 40KW WELD	1
	307848P2	COIL M-CHNL 40KW E-COAT FINAL	1
3	198641P1	TUBE FORM CU 5/8 DSCH 1FAN	1
4	199678P1	TUBE FORM CU 7/8 DSCH 1FAN	1
5	199679P1	TUBE FORM CU 5/8 LQUD 1FAN	1
8	P02-0270	VALVE ACCESS BODY 1/4X SWT	2
9	P02-0290	VALVE CORE REFRIGERANT	2

**4.3. 80KW 1CKT**



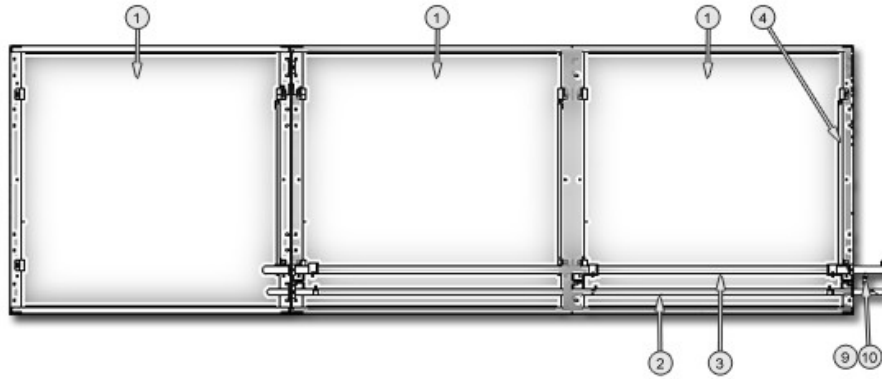
Item	Part Number	Description	Quantity
1	300343P1	COIL M-CHNL 40KW WELD	1
	307848P2	COIL M-CHNL 40KW E-COAT FINAL	1
2	199683P1	TUBE FORM CU 7/8 LQUD 2FAN	1
3	199680P1	TUBE FORM CU 1-1/8 DSCH 2FAN	1
4	198641P1	TUBE FORM CU 5/8 DSCH 1FAN	2
9	P02-0270	VALVE ACCESS BODY 1/4X SWT	2
10	P02-0290	VALVE CORE REFRIGERANT	2

**4.4. 80KW 2CKT**



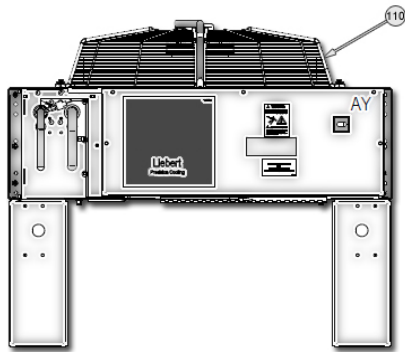
Item	Part Number	Description	Quantity
1	300343P1	COIL M-CHNL 40KW WELD	1
	307848P2	COIL M-CHNL 40KW E-COAT FINAL	1
2	199679P1	TUBE FORM CU 5/8 LQUID 1FAN	1
3	199678P1	TUBE FORM CU 7/8 DSCH 1FAN	1
4	302187P1	TUBE FORM CU 5/8 DSCH DUAL CKT	1
5	302188P1	TUBE FORM CU 1/2 LQUID DUAL CKT	1
7	302186P1	TUBE FORM CU 5/8 LQUID DUAL CKT	1
8	302185P1	TUBE FORM CU 7/8 DSCH DUAL CKT	1
10	P02-0270	VALVE ACCESS BODY 1/4X SWT	2
11	P02-0290	VALVE CORE REFRIGERANT	2

**4.5. 105KW/120KW 1CKT**

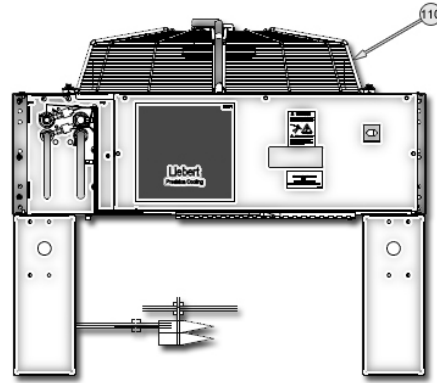


Item	Part Number	Description	Quantity
1	300343P1	COIL M-CHNL 40KW WELD	3
2	304611P1	TUBE FORM CU 7/8 LIQUID 3 FAN	1
3	304610P1	TUBE FORM CU 1-3/8 HOTGAS 3FAN	1
4	198641P1	TUBE FORM CU 5/8 DSCH 1FAN	3
9	P02-0270	VALVE ACCESS BODY 1/4X SWT	2
10	P02-0290	VALVE CORE REFRIGERANT	2

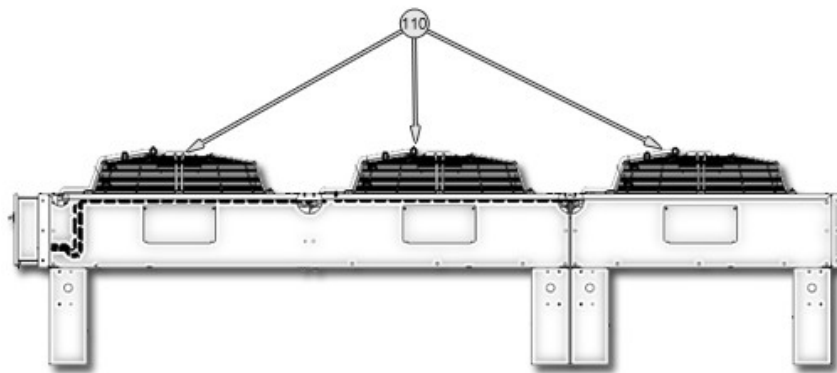
## 5. EC Fan Section



Single Circuit Unit



Dual Circuit Unit

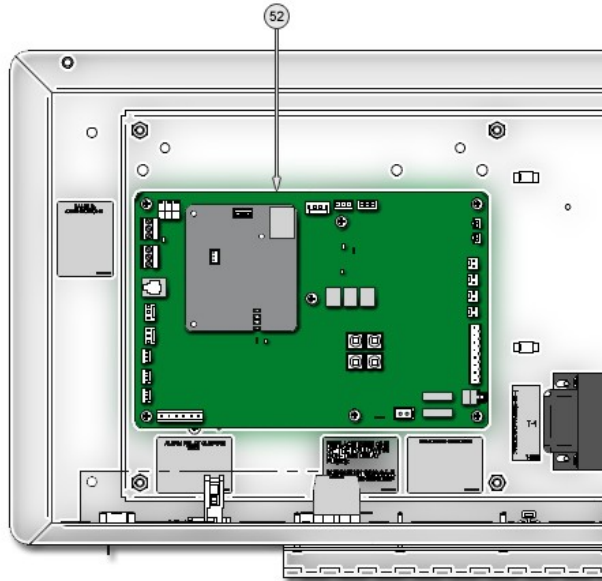


3-Fan Unit

Item	Part Number	Description	Single	Dual	3-Fan
110	300106P1	FAN EC 710 208-230V/3/60HZ	1	2	3
	301675P1	FAN EC 710 380-460V/3/50-60HZ	1	2	3
	303448P1	FAN EC 630 380-460V/3/50-60HZ	1		
	303449P1	FAN EC 630 208-230V/3/50-60HZ	1		

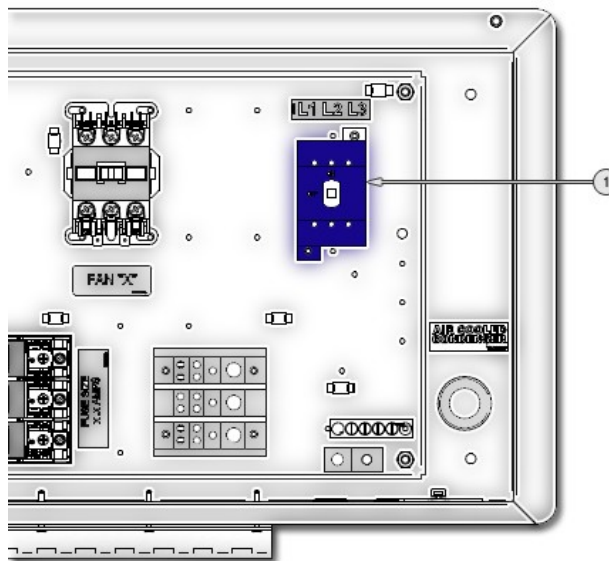
## 6. Electrical Section

### 6.1. Controls



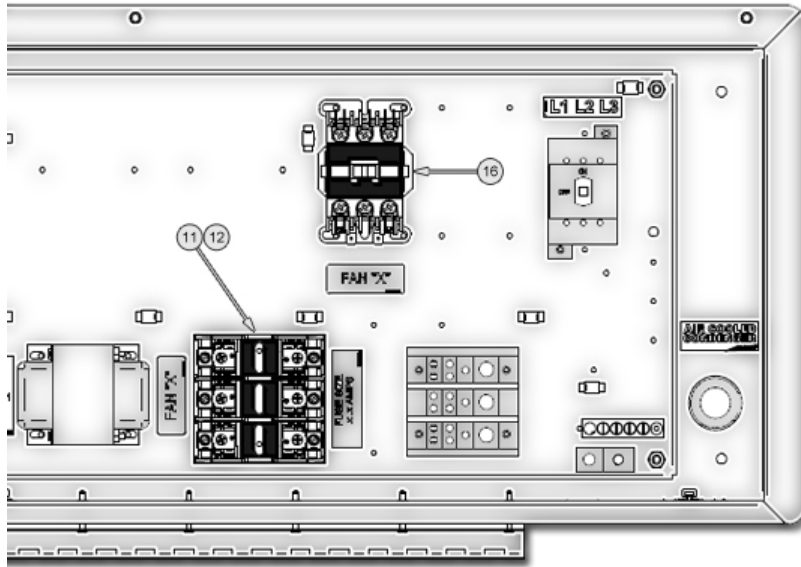
Item	Part Number	Description	Voltage	Quantity
52	301471P1MC	CONTROL BOARD PCB GCP	All	1

### 6.2. Disconnect

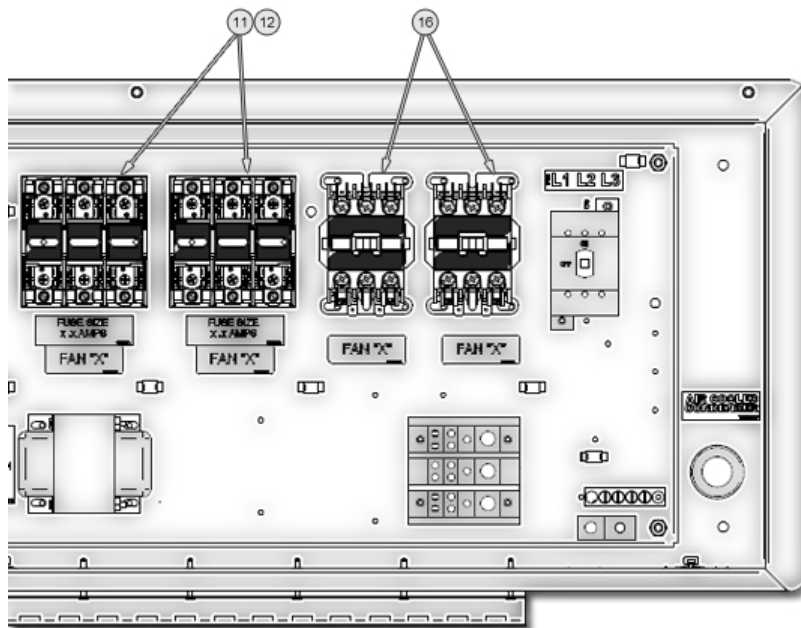


Item	Part Number	Description	Voltage	Quantity
1	300308P2	DISC 600V 40A IEC	All	1

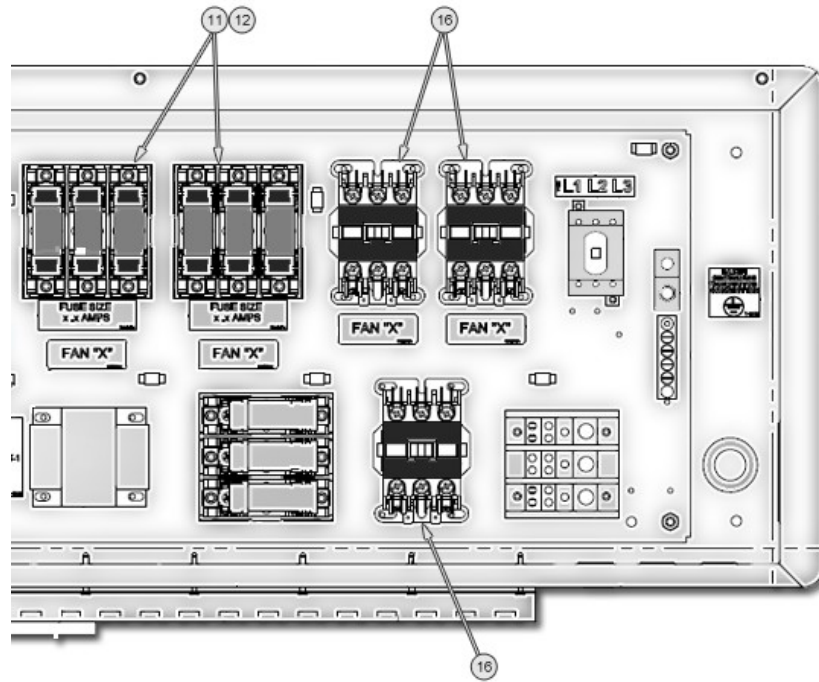
### 6.3. Motor



1-Fan Unit



2-Fan Unit

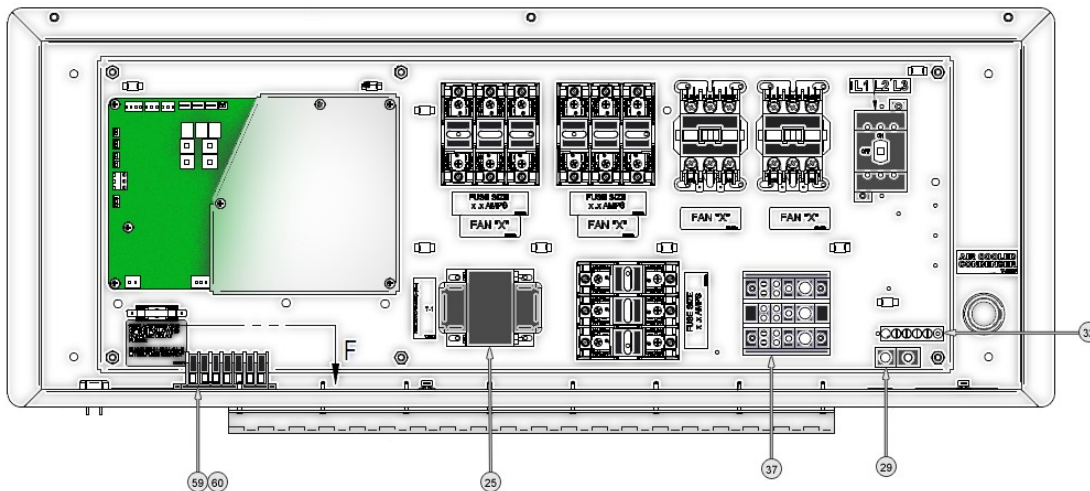


3-Fan Unit

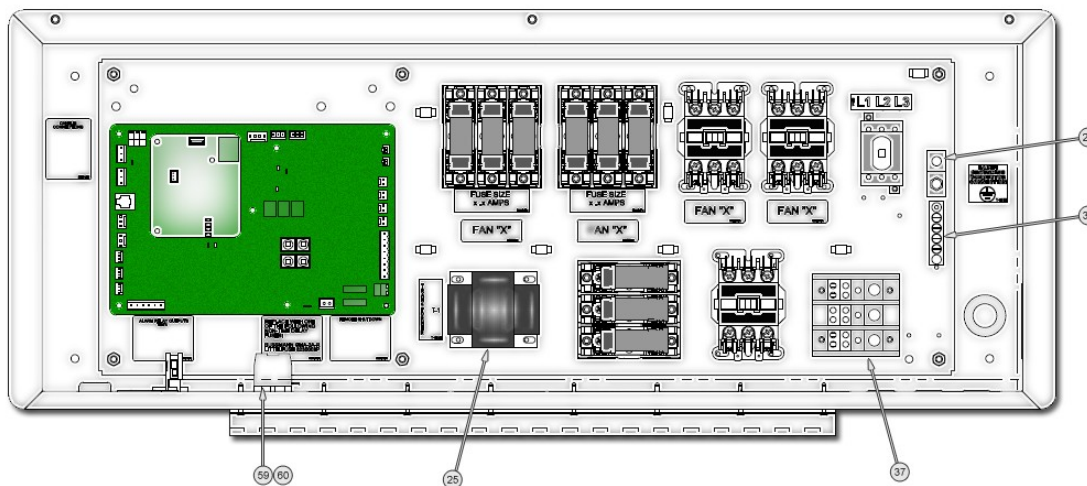
Item	Part Number	Description	Voltage	1-Fan	2-Fan	3-Fan
11	136821P5	FUSE DUAL ELMNT "J" 600V 3.0A	460V	3	6	9
	136821P7	FUSE DUAL ELMNT "J" 600V 5.0A	208/230V	3	6	9
12	136811P1	FUSEBLOCK CLASS "J" 600V 30A 3P	All	1	2	3
16	E-0110	CONTACTOR 3PL 24VCOIL 25/30AMP	All	1	2	3



### 6.4. Panel



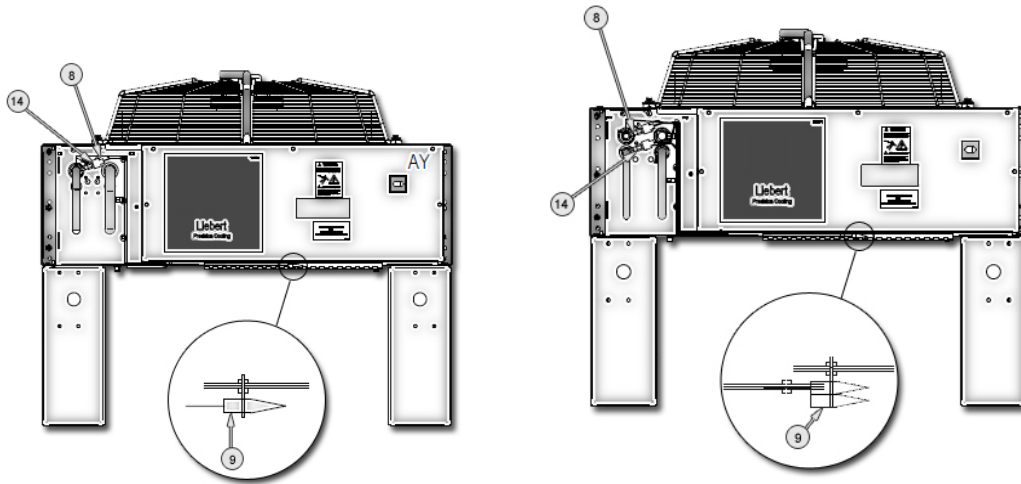
Panel



3-Fan Unit

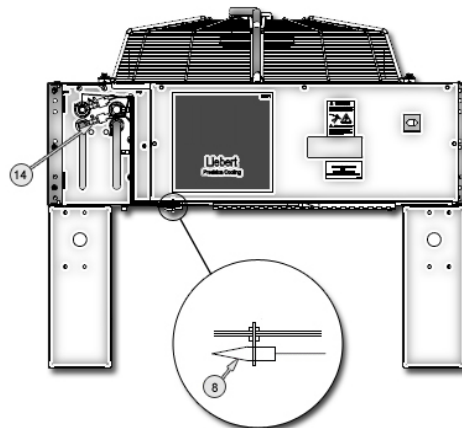
Item	Part Number	Description	Voltage	Quantity
25	E-007A	XFMR 075VA 60 230-24	208/230V	1
	E-007B	XFMR 075VA 60 460-24	460V	1
29	E-362B	TERM LUG MECH #14-2/0 1/4"	All	1
32	300297P1	GROUND LUG STRIP 4POS SCRTRM	All	1
37	310007P1	TERMBLK 3PL 1)2:14 X 4)10:18	All	1
	E13-0040	TERMBLK 3PL 1)2:0:14 X 4)4:14	All	1
59	132487P1	TERMLSTRIP SECTION 1 POS	All	6
60	132487P2	TERMLSTRIP SECTION END BARRIER	All	2

**6.5. Sensor**



Single Circuit Unit

Dual Circuit Unit



3-Fan Unit

Item	Part Number	Description	Voltage	Single	Dual	3-Fan
8	309072P1	THERMISTOR NTC 10K +/-1C	All	1	1	1
	300316G1	THERMST REFRIGERANT LMC	All	1	1	
9	300310P1	THERMISTOR PROBE 10K J CURVE	All	1	1	
14	181388P3	TRANSDUCER 0-650 PSIS 0.5-4.5V	All	1	2	2

## 7. Parts Gallery

### Cabinet Section

199587P1	199622G1


### Coil Section

198641P1	199678P1	199679P1	199680P1
199683P1	300343P1	301464P1	302185P1
302185P1	302187P1	302188P1	303365P1
303366P1	P02-0270	P02-0290	

### EC Fan Section

300106P1

**Electrical Section**

			
132487P1	132487P2	136811P1	136821P5
			
E-007A	E-0110	E-362B	301471P1
			
300308P2	181388P3	309072P1	300310P1

## 8. Revision History

Revision Date	Modification	Details
08/2013	Electrical Section	Changed part number 301471P1 to 301471P1MC
01/2013	-	BOM Information Update
09/2012	-	Parts Manuals Release