



**electric reefer solutions**

955 76th St., SW

Byron Center, MI 49315

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[www.electricreefersolutions.com](http://www.electricreefersolutions.com)

# Specifications/Components

|  |   |
|--|---|
| Compressor                             | Copeland™ Scroll With Phase Detect.<br>Phase Detect Module - 208-230 V.A.C. only<br>Oil Capacity 140 oz. - Thermo King™<br>Part number 203-0514 ester oil.<br>Liquid Injection* |
| Refrigerant                            | 14 lbs-R404A  |
| Fan Motor                              | 2HP-208-230 V.A.C.<br>RPMS -1735<br>Fan cooled. Totally enclosed Motor<br>Rotation - Clockwise Facing Pulley  |
| Defrost Timer                          | Clock-208-230 V.A.C. / 460-480 V.A.C<br>Switch - 24 V.A.C. - Adjustable   |
| Voltage                                | 208-230 V.A.C. 3 Phase standard   |
| Optional                               | 460-480 V.A.C. 3 Phase<br>Note: Units cannot be switched for<br>high - low voltage  |
| Control Voltage                        | 24 V.A.C.   |
| High Pressure Cut Out                  | Normally closed<br>Opens at 470 PSI<br>Reset at 375 PSI   |
| Low Pressure Cut Out                   | Normally closed<br>Opens at 5 to 11 in vacuum<br>Resets at 4 to 7 psi   |
| Suction Pressure Regulator             | 30 PSI  |
| Defrost Air Switch                     | 1.0 inches of water column  |
| Supply Power Requirements              | 208-230 V.A.C. - 60 AMP<br>460 V.A.C.-30 AMP  |
| Compressor and Fan Overload Protection | Manual Reset  |
| Pilot Solenoid (3 way valve)           | 24 V.A.C.   |
| Liquid Injection Solenoid              | 24 V.A.C.   |

## Unit Description

The ER 230 / ER-460 is a one piece, self contained, all electric, refrigeration unit. It heats and cools with R404A Refrigerant.

The ER 230 / ER-460 starts and stops automatically to maintain temperature in cargo area.

Temperature control is fully adjustable in cool, heat, and null cycles. -20 degrees to 90 degrees Fahrenheit. Temperature is selectable in Celsius or Fahrenheit.

Phase Detect Module Monitors Compressor rotation and prevents compressor operation if incorrect (phase fault light will come on, fan motor and compressor will not run).

Defrost can be initiated in 3 ways: Manual switch, Air Differential Switch, and Timer. Defrost is terminated by an evaporator temperature switch. Defrost can be initiated only if evaporator temperature is below 37 Deg. F. Defrost timer clocks compressor run time (not time of day).

Fan Motor turns off in defrost cycle to keep heat in evaporator coil and drip pan. Length of defrost cycle is determined by quantity of Ice/Frost on coil and cargo temperature.

Compressor and Fan overload switches work together to: Protect compressor and or fan from high amp situation. Prevent Compressor operation if fan is disabled.

Liquid injection operates whenever compressor is running.

Control Voltage is supplied by a step down transformer in control box.

Control wiring Logic and identification is similar to transport refrigeration units.

**ER 230 VOLT**

| <b>QTY</b> | <b>PART#</b> | <b>DESCRIPTION</b>              |
|------------|--------------|---------------------------------|
| 1          | ER-22001     | COMPRESSOR 230V                 |
| 2          | ER-44001     | INDICATOR LIGHT RED             |
| 2          | ER-44002     | INDICATOR LIGHT GREEN           |
| 1          | ER-44003     | INDICATOR LIGHT AMBER           |
| 1          | ER-44005     | TIMER                           |
| 1          | ER-44006     | CONTACTOR 9 AMP                 |
| 1          | ER-44007     | CONTACTOR 25 AMP                |
| 1          | ER-44010     | OVERLOAD COMPRESSOR             |
| 1          | ER-44012     | OVERLOAD FAN                    |
| 1          | ER-44013     | MOTOR                           |
| 1          | ER-44015     | TEMPERATURE CONTROL             |
| 1          | ER-44016     | HPCO R404A                      |
| 1          | ER-44017     | SWITCH DEFROST                  |
| 1          | ER-44018     | SWITCH ON/OFF                   |
| 1          | ER-44019     | SWITCH DEFROST TERMINATION      |
| 1          | ER-44020     | BREAKER                         |
| 1          | ER-44021     | LPCO R404A                      |
| 5          | ER-44023     | CONNECTOR ELECTRICAL BOX        |
| 2          | ER-44024     | RELAY                           |
| 2          | ER-44025     | SOCKET RELAY                    |
| 1          | ER-44026     | 24V TRANSFORMER                 |
| 1          | ER-44027     | MOUNTING TRACK ELECTRICAL BOX   |
| 1          | ER-44028     | TERMINAL STRIP                  |
| 2          | ER-44029     | RESET SWITCH                    |
| 2          | ER-44030     | COIL SOLENOID VALVE             |
| 1          | ER-66001     | ROTOLOCK VALVE 1-3/8" OD        |
| 1          | ER-66002     | ROTOLOCK VALVE 1-1/8 OD         |
| 1          | ER-66003     | OIL POLYOLESTER                 |
| 1          | ER-66004     | KIT 3-WAY VALVE REBUILD         |
| 1          | ER-66005     | DRIER O-RING FACE SEAL          |
| 1          | ER-66006     | CAP 3-WAY VALVE                 |
| 1          | ER-66007     | EXPANSION VALVE SOLDER/FLARE    |
| 1          | ER-66008     | DRIER FLARE 1/2"                |
| 1          | ER-66009     | DRIER FLARE 1/2"-5/8"           |
| 1          | ER-66010     | CHECK VALVE                     |
| 1          | ER-66011     | RELIEF VALVE                    |
| 1          | ER-66012     | EXPANSION VALVE SOLDER/SOLDER   |
| 1          | ER-66013     | CAP TUBE KIT                    |
| 1          | ER-66014     | SUCTION PRESSURE REGULATOR      |
| 2          | ER-66015     | SOLENOID VALVE                  |
| 1          | ER-66016     | REDUCER 1-1/8" X 3/4" COPPER    |
| 2          | ER-66019     | 1-3/8" LONG RADIUS STREET ELBOW |
| 1          | ER-66022     | SWITCH AIR                      |
| 1          | ER-66023     | SUCTION FILTER                  |
| 1          | ER-66024     | TANK RECEIVER                   |
| 1          | ER-77001     | BUSHING ELECTRIC MOTOR          |
| 1          | ER-77003     | SHEAVE ELECTRIC MOTOR           |
| 1          | ER-77006     | BELT                            |
| 1          | ER-99001     | NAMEPLATE COMPRESSOR OIL        |
| 4          | ER-99002     | LATCH DOOR                      |
| 1          | ER-99004     | INT. PANEL                      |
| 1          | ER-99005     | MOTOR MNTG.BASE                 |
| 2          | ER-99007     | HINGE                           |
| 1          | ER-99009     | NEMA ENCLOSURE                  |
| 1          | ER-99011     | NAMEPLATE SWITCH                |
| 2          | ER-99012     | NAMEPLATE R404A                 |
| 2          | ER-99013     | CROME GRILLE ROAD AND CURB SIDE |
| 1          | ER-99014     | TOP CAP                         |
| 1          | ER-99015     | FRONT HOOD                      |
| 1          | ER-99016     | FRONT DOOR ROAD SIDE            |
| 1          | ER-99017     | FRONT DOOR CURBSIDE             |
| 1          | ER-99018     | PANEL CURBSIDE                  |
| 1          | ER-99019     | PANEL ROADSIDE                  |
| 1          | ER-99020     | CENTER BAND                     |
| 1          | ER-99021     | CENTER ACCENT STRIP             |
| 1          | ER-99022     | DECAL ELECTRIC REEFER           |
| 1          | ER-99023     | DECAL ER-230                    |
| 1          | ER-99025     | DECAL ZERO                      |

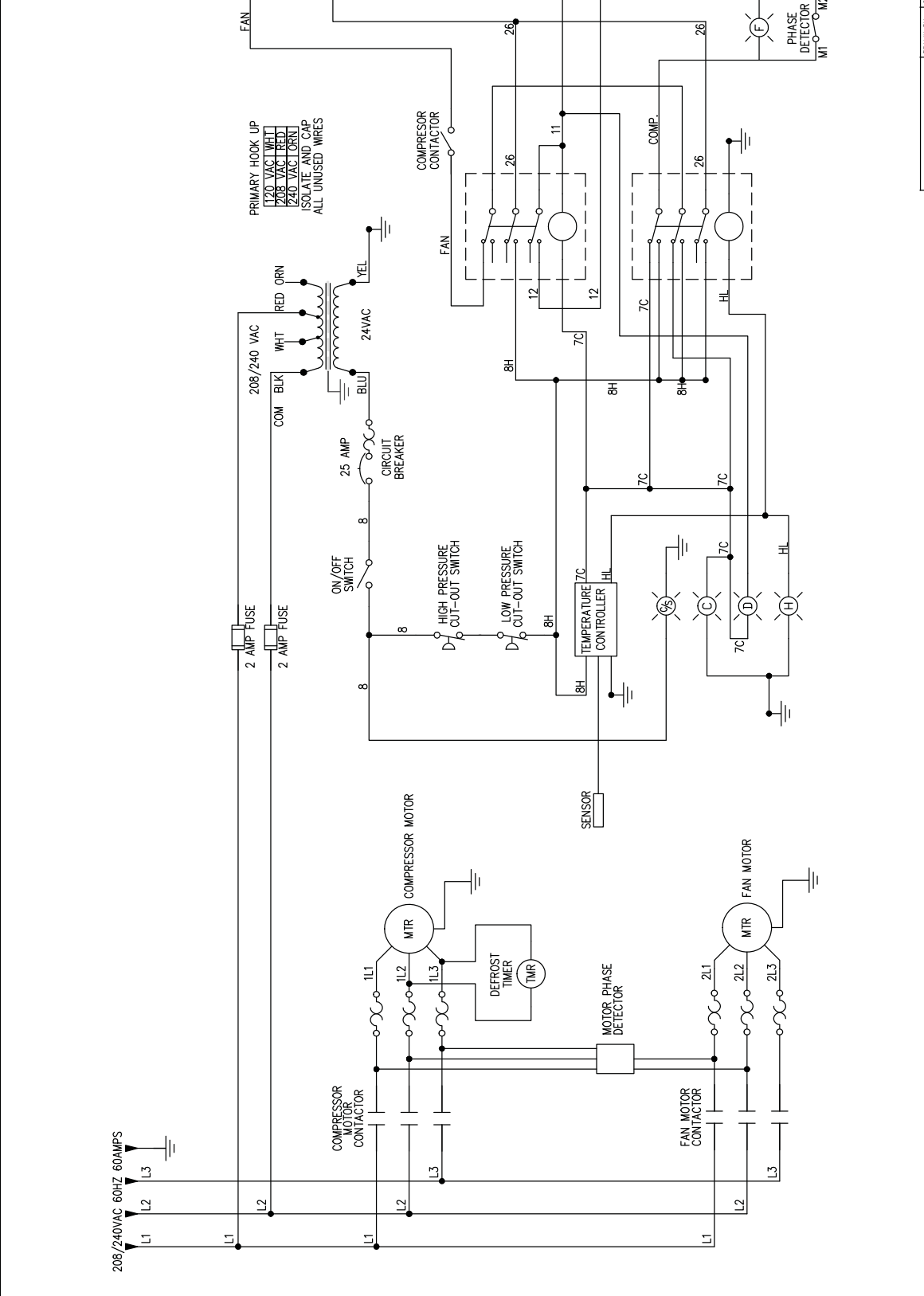
**ER 230 NARROW POST**

| <b>QTY</b> | <b>PART#</b> | <b>DESCRIPTION</b>                      |
|------------|--------------|---|
| 1          | ER-22001     | COMPRESSOR 230V                         |
| 2          | ER-44001     | INDICATOR LIGHT RED                     |
| 2          | ER-44002     | INDICATOR LIGHT GREEN                   |
| 1          | ER-44003     | INDICATOR LIGHT AMBER                   |
| 1          | ER-44005     | TIMER                                   |
| 1          | ER-44006     | CONTACTOR 9 AMP                         |
| 1          | ER-44007     | CONTACTOR 25 AMP                        |
| 1          | ER-44008     | OVERLOAD FAN                            |
| 1          | ER-44010     | OVERLOAD COMPRESSOR                     |
| 1          | ER-44014     | MOTOR                                   |
| 1          | ER-44015     | TEMPERATURE CONTROL                     |
| 1          | ER-44016     | HPCO R404A                              |
| 1          | ER-44017     | SWITCH DEFROST                          |
| 1          | ER-44018     | SWITCH ON/OFF                           |
| 1          | ER-44019     | SWITCH DEFROST TERMINATION              |
| 1          | ER-44020     | BREAKER                                 |
| 1          | ER-44021     | LPCO R404A                              |
| 5          | ER-44023     | CONNECTOR ELECTRICAL BOX                |
| 2          | ER-44024     | RELAY                                   |
| 2          | ER-44025     | SOCKET RELAY                            |
| 1          | ER-44026     | 24V TRANSFORMER                         |
| 1          | ER-44027     | MOUNTING TRACK ELECTRICAL BOX           |
| 1          | ER-44028     | TERMINAL STRIP                          |
| 2          | ER-44029     | RESET SWITCH                            |
| 2          | ER-44030     | COIL SOLENOID VALVE                     |
| 1          | ER-66001     | ROTOLOCK VALVE 1-3/8" OD                |
| 1          | ER-66002     | ROTOLOCK VALVE 1-1/8" OD                |
| 1          | ER-66003     | OIL POLYOLESTER                         |
| 1          | ER-66004     | KIT 3-WAY VALVE REBUILD                 |
| 1          | ER-66005     | DRIER O-RING FACE SEAL                  |
| 1          | ER-66006     | CAP 3-WAY VALVE                         |
| 1          | ER-66007     | EXPANSION VALVE SOLDER/FLARE            |
| 1          | ER-66008     | DRIER FLARE 1/2"                        |
| 1          | ER-66009     | DRIER FLARE 1/2"-5/8"                   |
| 1          | ER-66010     | CHECK VALVE                             |
| 1          | ER-66011     | RELIEF VALVE                            |
| 1          | ER-66012     | EXPANSION VALVE SOLDER/SOLDER           |
| 1          | ER-66013     | CAP TUBE KIT                            |
| 1          | ER-66014     | SUCTION PRESSURE REGULATOR              |
| 2          | ER-66015     | SOLENOID VALVE                          |
| 1          | ER-66016     | REDUCER 1-1/8" X 3/4" COPPER            |
| 1          | ER-66017     | 1-3/8" 45 DEGREE ELBOW                  |
| 2          | ER-66018     | 1-3/8" 45 STREET ELBOW                  |
| 1          | ER-66019     | 1-3/8" LONG RADIUS STREET ELBOW         |
| 1          | ER-66020     | 3/4" 90 DEGREE ELBOW                    |
| 1          | ER-66021     | 3/4" LONG RADIUS 90 DEGREE STREET ELBOW |
| 1          | ER-66022     | SWITCH AIR                              |
| 1          | ER-66023     | SUCTION FILTER                          |
| 1          | ER-77002     | BUSHING ELECTRIC MOTOR                  |
| 1          | ER-77004     | SHEAVE ELECTRIC MOTOR                   |
| 1          | ER-77005     | BELT                                    |
| 1          | ER-99001     | NAMEPLATE COMPRESSOR OIL                |
| 2          | ER-99002     | LATCH DOOR                              |
| 1          | ER-99003     | INT. PANEL                              |
| 1          | ER-99006     | MOTOR MNTG.BASE                         |
| 1          | ER-99008     | NEMA ENCLOSURE                          |
| 1          | ER-99010     | BRACKET DRIER                           |
| 1          | ER-99011     | NAMEPLATE SWITCH                        |
| 2          | ER-99012     | NAMEPLATE R404A                         |
| 1          | ER-99022     | DECAL ELECTRIC REEFER                   |

**ER 460 VOLT**

| <b>QTY</b> | <b>PART#</b> | <b>DESCRIPTION</b>              |
|------------|--------------|---------------------------------|
| 1          | ER-22002     | COMPRESSOR 460V                 |
| 2          | ER-44001     | INDICATOR LIGHT RED             |
| 2          | ER-44002     | INDICATOR LIGHT GREEN           |
| 1          | ER-44003     | INDICATOR LIGHT AMBER           |
| 1          | ER-44004     | TIMER                           |
| 1          | ER-44006     | CONTACTOR 9 AMP                 |
| 1          | ER-44007     | CONTACTOR 25 AMP                |
| 1          | ER-44009     | OVERLOAD COMPRESSOR             |
| 1          | ER-44011     | OVERLOAD FAN                    |
| 1          | ER-44013     | MOTOR                           |
| 1          | ER-44015     | TEMPERATURE CONTROL             |
| 1          | ER-44016     | HPCO R404A                      |
| 1          | ER-44017     | SWITCH DEFROST                  |
| 1          | ER-44018     | SWITCH ON/OFF                   |
| 1          | ER-44019     | SWITCH DEFROST TERMINATION      |
| 1          | ER-44020     | BREAKER                         |
| 1          | ER-44021     | LPCO R404A                      |
| 1          | ER-44022     | TRANSFORMER 24V                 |
| 5          | ER-44023     | CONNECTOR ELECTRICAL BOX        |
| 2          | ER-44024     | RELAY                           |
| 2          | ER-44025     | SOCKET RELAY                    |
| 1          | ER-44027     | MOUNTING TRACK ELECTRICAL BOX   |
| 1          | ER-44028     | TERMINAL STRIP                  |
| 2          | ER-44029     | RESET SWITCH                    |
| 2          | ER-44030     | COIL SOLENOID VALVE             |
| 1          | ER-66001     | ROTOLOCK VALVE 1-3/8" OD        |
| 1          | ER-66002     | ROTOLOCK VALVE 1-1/8 OD         |
| 1          | ER-66003     | OIL POLYOLESTER                 |
| 1          | ER-66004     | KIT 3-WAY VALVE REBUILD         |
| 1          | ER-66005     | DRIER O-RING FACE SEAL          |
| 1          | ER-66006     | CAP 3-WAY VALVE                 |
| 1          | ER-66007     | EXPANSION VALVE SOLDER/FLARE    |
| 1          | ER-66008     | DRIER FLARE 1/2"                |
| 1          | ER-66009     | DRIER FLARE 1/2"-5/8"           |
| 1          | ER-66010     | CHECK VALVE                     |
| 1          | ER-66011     | RELIEF VALVE                    |
| 1          | ER-66012     | EXPANSION VALVE SOLDER/SOLDER   |
| 1          | ER-66013     | CAP TUBE KIT                    |
| 1          | ER-66014     | SUCTION PRESSURE REGULATOR      |
| 2          | ER-66015     | SOLENOID VALVE                  |
| 1          | ER-66016     | REDUCER 1-1/8" X 3/4" COPPER    |
| 2          | ER-66019     | 1-3/8" LONG RADIUS STREET ELBOW |
| 1          | ER-66022     | SWITCH AIR                      |
| 1          | ER-66023     | SUCTION FILTER                  |
| 1          | ER-66024     | TANK RECEIVER                   |
| 1          | ER-77001     | BUSHING ELECTRIC MOTOR          |
| 1          | ER-77003     | SHEAVE ELECTRIC MOTOR           |
| 1          | ER-77006     | BELT                            |
| 1          | ER-99001     | NAMEPLATE COMPRESSOR OIL        |
| 4          | ER-99002     | LATCH DOOR                      |
| 1          | ER-99004     | INT. PANEL                      |
| 1          | ER-99005     | MOTOR MNTG.BASE                 |
| 2          | ER-99007     | HINGE                           |
| 1          | ER-99009     | NEMA ENCLOSURE                  |
| 1          | ER-99011     | NAMEPLATE SWITCH                |
| 2          | ER-99012     | NAMEPLATE R404A                 |
| 2          | ER-99013     | CROME GRILLE ROAD AND CURB SIDE |
| 1          | ER-99014     | TOP CAP                         |
| 1          | ER-99015     | FRONT HOOD                      |
| 1          | ER-99016     | FRONT DOOR ROAD SIDE            |
| 1          | ER-99017     | FRONT DOOR CURBSIDE             |
| 1          | ER-99018     | PANEL CURBSIDE                  |
| 1          | ER-99019     | PANEL ROADSIDE                  |
| 1          | ER-99020     | CENTER BAND                     |
| 1          | ER-99021     | CENTER ACCENT STRIP             |
| 1          | ER-99022     | DECAL ELECTRIC REEFER           |
| 1          | ER-99024     | DECAL ER-460                    |
| 1          | ER-99025     | DECAL ZERO                      |

| REV. | CHANGE                     | BY  | DATE |
|------|----------------------------|-----|------|
| A    | RELEASED                   | MAB | 8/09 |
| B    | FUSED CONTROL PWR X-FORMER | MAB | 7/10 |
|      |                            |     |      |
|      |                            |     |      |
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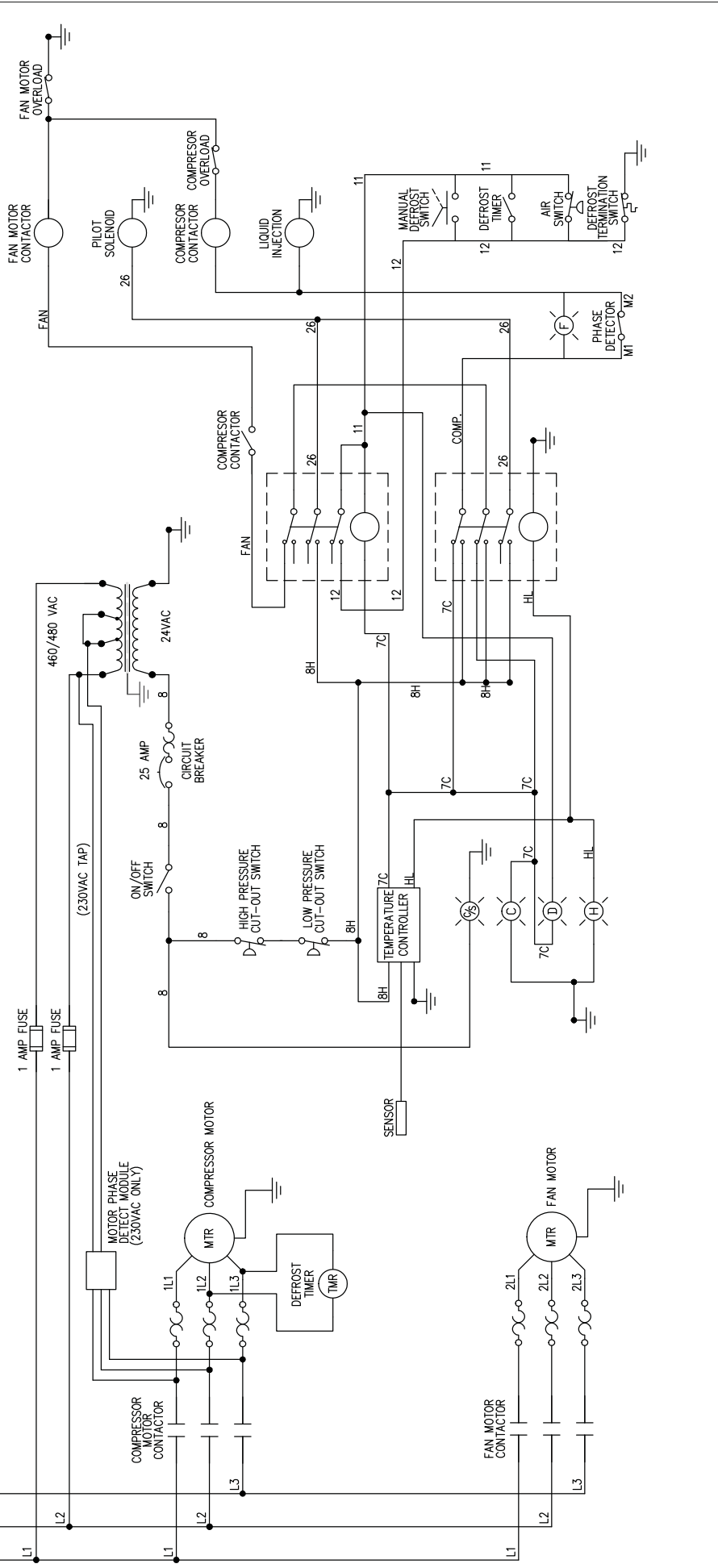
| DESIGNED BY       | APP'VAL | ELECTRIC REEFER ELECTRICAL SCHEMATICS |
|-------------------|---------|---------------------------------------|
| MAB               |         |                                       |
| DATE              | DATE    | SCALE                                 |
| 8/09              |         |                                       |
| DRAWING FILE NAME |         | SHEET #                               |
| A563-55-020-S01   |         |                                       |

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UNLESS SPECIFIED OTHERWISE SPECIFIED  
 1/8" DEC = 2 DEG  
 3/16" DEC = 2 DEG  
 1/4" DEC = 2 DEG  
 3/8" DEC = 2 DEG  
 1/2" DEC = 2 DEG  
 3/4" DEC = 2 DEG  
 1" DEC = 2 DEG  
 ALL ANGLES UNLESS SPECIFIED = 30°/45°

| DESIGNED BY       | APP'VAL | ELECTRIC REEFER ELECTRICAL SCHEMATICS |
|-------------------|---------|---------------------------------------|
| MAB               |         |                                       |
| DATE              | DATE    | SCALE                                 |
| 8/09              |         |                                       |
| DRAWING FILE NAME |         | SHEET #                               |
| A563-55-020-S01   |         |                                       |

| REVISIONS |                            |          |
|-----------|----------------------------|----------|
| REV.      | CHANGE                     | DATE     |
| 1         | RELEASED                   | 5/10     |
| 2         | FUSED CONTROL PWR X-FORMER | MAB 7/10 |
|           |                            |          |
|           |                            |          |
|           |                            |          |
|           |                            |          |
|           |                            |          |
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| DESIGNED BY |      | CHECKED BY |      | APPROVED BY |                 |
|-------------|------|------------|------|-------------|-----------------|
| MAB         | MAB  | MAB        | MAB  |             |                 |
| DATE        | DATE | DATE       | DATE | SCALE       | SHEET #         |
| 5/10        | 5/10 | 5/10       | 5/10 |             | A563-55-021-S01 |

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# 460/480VAC

| DIMENSIONS SPECIFIED |       | UNLESS SPECIFIED |       |
|----------------------|-------|------------------|-------|
| DR. DEC = 25         | SCALE | UNLESS SPECIFIED | SCALE |
| SPL. DEC = 25        | SCALE | UNLESS SPECIFIED | SCALE |
| ANGLES               | SCALE | UNLESS SPECIFIED | SCALE |
| ±0° 30'              | SCALE | UNLESS SPECIFIED | SCALE |
| ±0° 30'              | SCALE | UNLESS SPECIFIED | SCALE |
| ±0° 30'              | SCALE | UNLESS SPECIFIED | SCALE |