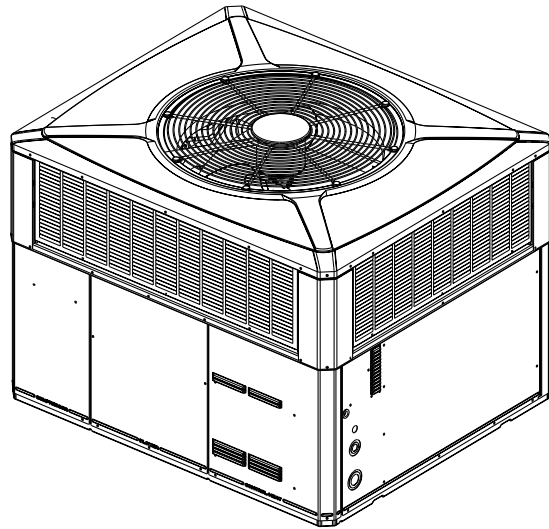


# Service Facts

## Single Packaged Cooling/Electric Heat

A5PA3042A1000A



*Note: "Graphics in this document are for representation only. Actual model may differ in appearance."*

### SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

# SAFETY SECTION

**Important:** This document contains a wiring diagram, a parts list, and service information. This is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

## **⚠ WARNING**

### **HAZARDOUS VOLTAGE!**

Failure to follow this Warning could result in property damage, severe personal injury, or death.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.

## **⚠ WARNING**

### **SAFETY AND ELECTRICAL HAZARD!**

Failure to follow this Warning could result in property damage, severe personal injury, or death.

These servicing instructions are for use by qualified personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that contained in these operating instructions unless you are qualified to do so.

## **⚠ CAUTION**

### **GROUNDING REQUIRED!**

Failure to inspect or use proper service tools may result in equipment damage or personal injury.

Reconnect all grounding devices. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

## **⚠ CAUTION**

### **SHARP EDGE HAZARD!**

Failure to follow this Caution could result in property damage or personal injury.

Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing.

## **⚠ WARNING**

### **UNIT CONTAINS R-454B REFRIGERANT!**

Proper service equipment is required. Failure to use proper service tools may result in equipment damage or personal injury.

## **⚠ WARNING**

### **SERVICE!**

USE ONLY R-454B REFRIGERANT AND APPROVED COMPRESSOR OIL.

## **⚠ WARNING**

### **LEAK DETECTION SYSTEM!**

LEAK DETECTION SYSTEM installed. Unit must be powered except for service.

## **⚠ WARNING**

### **SAFETY HAZARD!**

Children should be supervised to ensure that they do not play with the appliance.

## **⚠ WARNING**

### **SAFETY HAZARD!**

This appliance is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

## **⚠ WARNING**

### **SAFETY HAZARD!**

Operating the unit without the access panels properly installed may result in severe personal injury or death.

Do not operate the unit without the evaporator fan access panel or evaporator coil access panel in place.

## **⚠ WARNING**

### **RISK OF FIRE!**

Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

Dispose of refrigerant in accordance with federal and/or local regulations.

**⚠ WARNING**

**WARNING!**

This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**Important:** Wear appropriate gloves, arm sleeve protectors and eye protection when servicing or maintaining this equipment.

**Important:** Air filters and media wheels or plates shall meet the test requirements in UL 900.

# Product Specification

| MODEL                                     | A5PA3042A1000A  |
|-------------------------------------------|-----------------|
| RATED Volts/Ph/Hz                         | 208-230/1/60    |
| Performance Cooling BTUH <sup>(a)</sup>   | 40000           |
| Indoor Airflow (CFM)                      | 1500            |
| Power Input (KW)                          | 3.53            |
| EER2/SEER2 (BTU/Watt-Hr.) <sup>(b)</sup>  | 10.6 / 13.4     |
| Sound Power Rating [dB(A)] <sup>(c)</sup> | 74.6            |
| <b>POWER CONN.</b> — V/Ph/Hz              | 208-230/1/60    |
| Min. Brch. Cir. Ampacity <sup>(d)</sup>   | 26              |
| Fuse Size — Max. (amps)                   | 40              |
| Fuse Size — Recmd. (amps)                 | 40              |
| <b>COMPRESSOR</b>                         | SCROLL          |
| VOLTS/PH/HZ                               | 208-230/1/60    |
| R.L. Amps — L.R. Amps                     | 14.7 / 109      |
| <b>OUTDOOR COIL — TYPE</b>                | SPINE-FIN       |
| Rows/F.P.I                                | 2 / 24          |
| Face Area (sq. ft.)                       | 15.63           |
| Tube Size (in.)                           | 3/8             |
| <b>INDOOR COIL — TYPE</b>                 | MCHE            |
| Rows/F.P.I                                | 2 / 16          |
| Face Area (sq. ft.)                       | 3.9             |
| Tube Size (in.)                           | 0.81            |
| Refrigeration Control                     | EXPANSION VALVE |
| Drain Conn. Size (in.)                    | 3/4 FEMALE NPT  |
| <b>OUTDOOR FAN — TYPE</b>                 | PROPELLER       |
| DIA. (IN.)                                | 28.3            |
| DRIVE/NO. SPEEDS                          | DIRECT / 1      |
| CFM @ 0.0 in. w.g. <sup>(e)</sup>         | 3400            |
| Motor — HP/R.P.M                          | 1/4 / 825       |

| MODEL                                    | A5PA3042A1000A      |
|------------------------------------------|---------------------|
| Volts/Ph/Hz                              | 208-230/1/60        |
| F.L. Amps/L.R Amps                       | 1.5 / 3.07          |
| <b>INDOOR FAN — TYPE</b>                 | CONSTANT TORQUE ECM |
| Dia. x Width (in.)                       | 10.62 X 10.62       |
| Drive/No. Speeds                         | DIRECT / 4          |
| CFM @ 0.0 in. w.g. <sup>(f)</sup>        | SEE FAN PERF TABLE  |
| Motor — HP/R.P.M.                        | 3/4 / 1050          |
| Volts/Ph/Hz                              | 208-230/1/60        |
| F.L. Amps                                | 6.0                 |
| <b>FILTER / FURNISHED</b>                | NO                  |
| Type Recommended                         | THROWAWAY           |
| Recmd. Face Area (sq. ft) <sup>(g)</sup> | 5.3                 |
| <b>REFRIGERANT</b>                       | R-4545B             |
| Charge (lbs.)                            | 7.3                 |
| <b>CHARGING SPECIFICATIONS</b>           |                     |
| Subcooling                               | 12° F               |
| <b>DIMENSIONS</b>                        | H X W X L           |
| Crated (in.)                             | 46 X 47 X 62        |
| <b>WEIGHT</b>                            |                     |
| Shipping (lbs.) / Net (lbs.)             | 564 / 460           |

<sup>(a)</sup> Rated in accordance with AHRI Standard 210/240.

<sup>(b)</sup> Rated in accordance with D.O.E. test procedure.

<sup>(c)</sup> Sound Power values are not adjusted for AHRI 270-95 tonal corrections.

<sup>(d)</sup> Calculated in accordance with currently prevailing Nat'l Electrical Code.

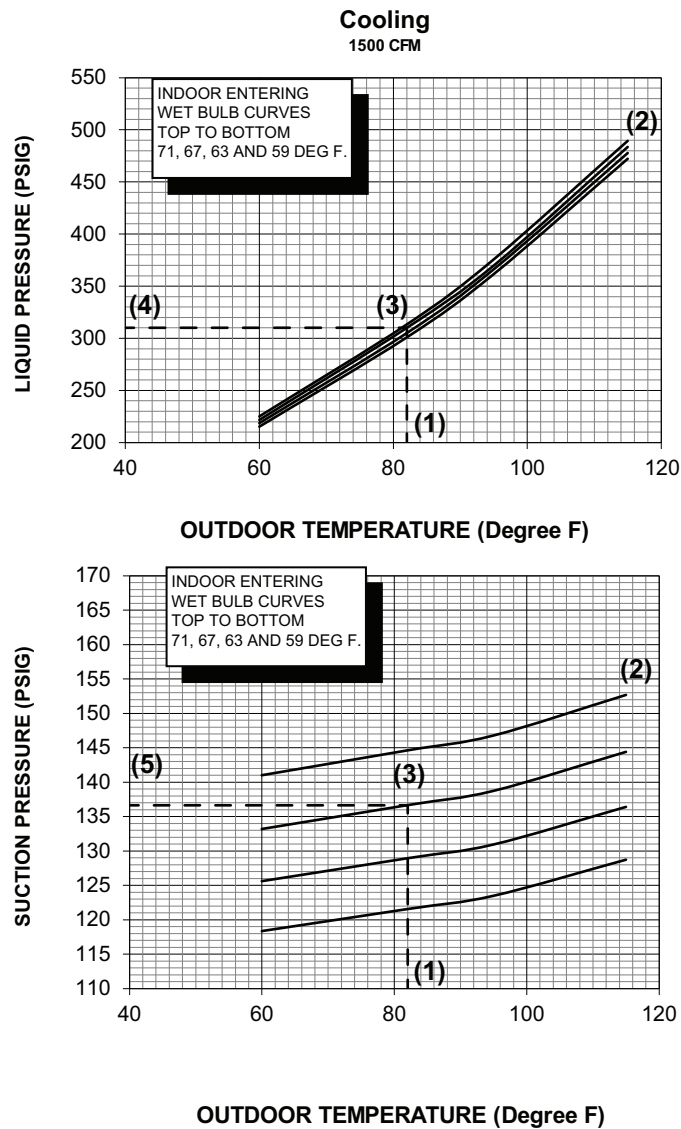
<sup>(e)</sup> Standard Air — Dry Coil — Outdoor.

<sup>(f)</sup> Standard Air — Dry Coil — Indoor

<sup>(g)</sup> Filters must be installed in return air stream. Square footages listed are based on 300 f.p.m. face velocity. If permanent filters are used size per manufacturer's recommendation with a clean resistance of 0.05" W.C.

# Pressure Curves

**Figure 1. Pressure Curves for A5PA3042**



**COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F.**

TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, DISCHARGE AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & ID W.B. (3); READ DISCHARGE OR SUCTION PRESSURE IN LEFT COLUMN (4).

EXAMPLE: (1) OUTDOOR TEMP. 82 F.  
(2) INDOOR WET BULB 67 F.  
(3) AT INTERSECTION  
(4) DISCHARGE PRESSURE @ 1500 CFM CFM IS 310 PSIG.  
(5) SUCTION PRESSURE @ 1500 CFM CFM IS 137 PSIG.

ACTUAL:  
DISCHARGE PRESSURE SHOULD BE +/- 10 PSI OF CHART  
SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

DWG.NO. A5PA3042

# Sequence of Operation

## General

Operation of the system cooling (and optional heating) cycles is controlled by the comfort control. Once the comfort control is set to either the HEAT or COOL, unit operation is automatic. The optional automatic changeover comfort control, when set to AUTO, automatically changes to heat or cool with sufficient room temperature change.

With the unit disconnect closed, voltage is supplied to the unit control transformer and the crankcase heater (if provided). On single phase units, the crankcase heater is an option that is field installed.

## Cooling Mode

With the comfort control set to COOL and the fan set to AUTO, the compressor contactor (CC) and the indoor fan motor (IDM) are energized.

The energized compressor contactor (CC) completes the circuit to the compressor (CPR) and a secondary circuit to the outdoor fan motor (ODM). If the compressor safety controls are closed, the compressor (CPR) will operate with the outdoor fan motor (ODM). The indoor fan motor (IDM) will operate. The comfort control will continue to cycle the compressor and fans to maintain the desired temperature.

With the fan switch set to ON, the indoor fan motor (IDM) will continue to run regardless of compressor and condenser fan operation. Continuous fan mode during cooling operation may not be appropriate in humid climates. If the indoor air exceeds 60% relative humidity or simply feels uncomfortably humid, it is recommended that the fan only be used in the AUTO mode.

## Heating Mode

Heating mode uses electric heaters, which are installed separately. Refer to the Supplemental Electric Heaters Installer's Guide for additional information.

On a call for heat, power from the comfort control is received at "W1," which energizes the "AH" contactor coil. The "AH" contactor closes, powering the heater provided all element limits are closed.

If two stages of heat are provided and additional heat is required, the comfort control's second stage "W2" circuit is energized powering the "BH" contactor coil.

**Note:** The comfort control must be configured to provide a "G" signal to energize the indoor fan during the heating mode.

**Table 1. Pressure Drop for Electric Heater**

| AIRFLOW<br>CFM          | NUMBER OF RACKS                  |      |
|-------------------------|----------------------------------|------|
|                         | 1                                | 2    |
|                         | AIR PRESSURE DROP<br>INCHES W.G. |      |
| 600                     | .003                             | -    |
| 800                     | .004                             | -    |
| 1000                    | .005                             | .007 |
| 1200                    | .006                             | .008 |
| 1400                    | .007                             | .009 |
| 1600                    | .008                             | .01  |
| 2000                    | .01                              | .02  |
| From Dwg. No. 21A730642 |                                  |      |

# Indoor Fan Performance (230v)

| A5PA3042A1                 |       | EXTERNAL STATIC PRESSURE (IN.WG) Horizontal Airflow [Cooling Down Airflow] |                |                |                |                |                |                |                |                |                |                |
|----------------------------|-------|----------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Motor Speed                |       | 0.0                                                                        | 0.1            | 0.2            | 0.3            | 0.4            | 0.5            | 0.6            | 0.7            | 0.8            | 0.9            | 1              |
| LOW                        | Watts | 224<br>[228]                                                               | 233<br>[238]   | 242<br>[247]   | 252<br>[257]   | 262<br>[267]   | -              | -              | -              | -              | -              | -              |
|                            | CFM   | 1358<br>[1345]                                                             | 1393<br>[1379] | 1348<br>[1334] | 1296<br>[1283] | 1253<br>[1241] | -              | -              | -              | -              | -              | -              |
| MED-<br>LOW <sup>(a)</sup> | Watts | 306<br>[312]                                                               | 316<br>[322]   | 327<br>[333]   | 337<br>[344]   | 348<br>[354]   | 359<br>[366]   | 369<br>[377]   | 382<br>[389]   | 395<br>[403]   | -              | -              |
|                            | CFM   | 1521<br>[1506]                                                             | 1490<br>[1475] | 1448<br>[1433] | 1391<br>[1377] | 1362<br>[1348] | 1338<br>[1325] | 1315<br>[1302] | 1307<br>[1293] | 1254<br>[1241] | -              | -              |
| MED-<br>HIGH               | Watts | -                                                                          | -              | -              | -              | 455<br>[464]   | 467<br>[477]   | 477<br>[487]   | 490<br>[499]   | 503<br>[513]   | 513<br>[523]   | -              |
|                            | CFM   | -                                                                          | -              | -              | -              | 1529<br>[1514] | 1491<br>[1476] | 1467<br>[1453] | 1425<br>[1411] | 1385<br>[1371] | 1345<br>[1331] | -              |
| HIGH                       | Watts | -                                                                          | -              | -              | -              | 490<br>[499]   | 502<br>[511]   | 514<br>[523]   | 527<br>[536]   | 540<br>[550]   | 554<br>[564]   | 568<br>[578]   |
|                            | CFM   | -                                                                          | -              | -              | -              | 1533<br>[1518] | 1505<br>[1490] | 1476<br>[1461] | 1447<br>[1433] | 1415<br>[1401] | 1383<br>[1369] | 1347<br>[1334] |

**Note:** Airflow must not exceed 1575 CFM due to condensate blowoff.

<sup>(a)</sup> Factory Default Setting.

# Charging in Cooling above 55°F OD Ambient

If servicing the equipment requires system evacuation, then re-charge the system to the weight specified on the nameplate. Verify the system subcooling using the Subcooling Charging Table and, if necessary, adjust the charge using the procedure below.

1. For best results — the indoor temperature should be kept between 70°F to 80°F. Add system heat if needed.
2. Whenever charge is removed or added, the system must be operated for a minimum of 20 minutes to stabilize before accurate measurements can be made.
3. Measure Liquid Line Temperature and Refrigerant Pressure at service valved in the compressor compartment.
4. Locate your liquid line temperature in the left column of the table, and the intersecting liquid line pressure under the subcool value column, Add

refrigerant to raise the pressure to match the table, or remove refrigerant to lower the pressure. Again, wait 20 minutes for the system conditions to stabilize before adjusting charge again.

**Note:** System charge shall never be more than 110% or less than 90% of nameplate charge. If specified subcooling cannot be achieved within those charge bounds, contact your Field Service Representative.

5. When system is correctly charged, you can refer to System Pressure Curves to verify typical performance.

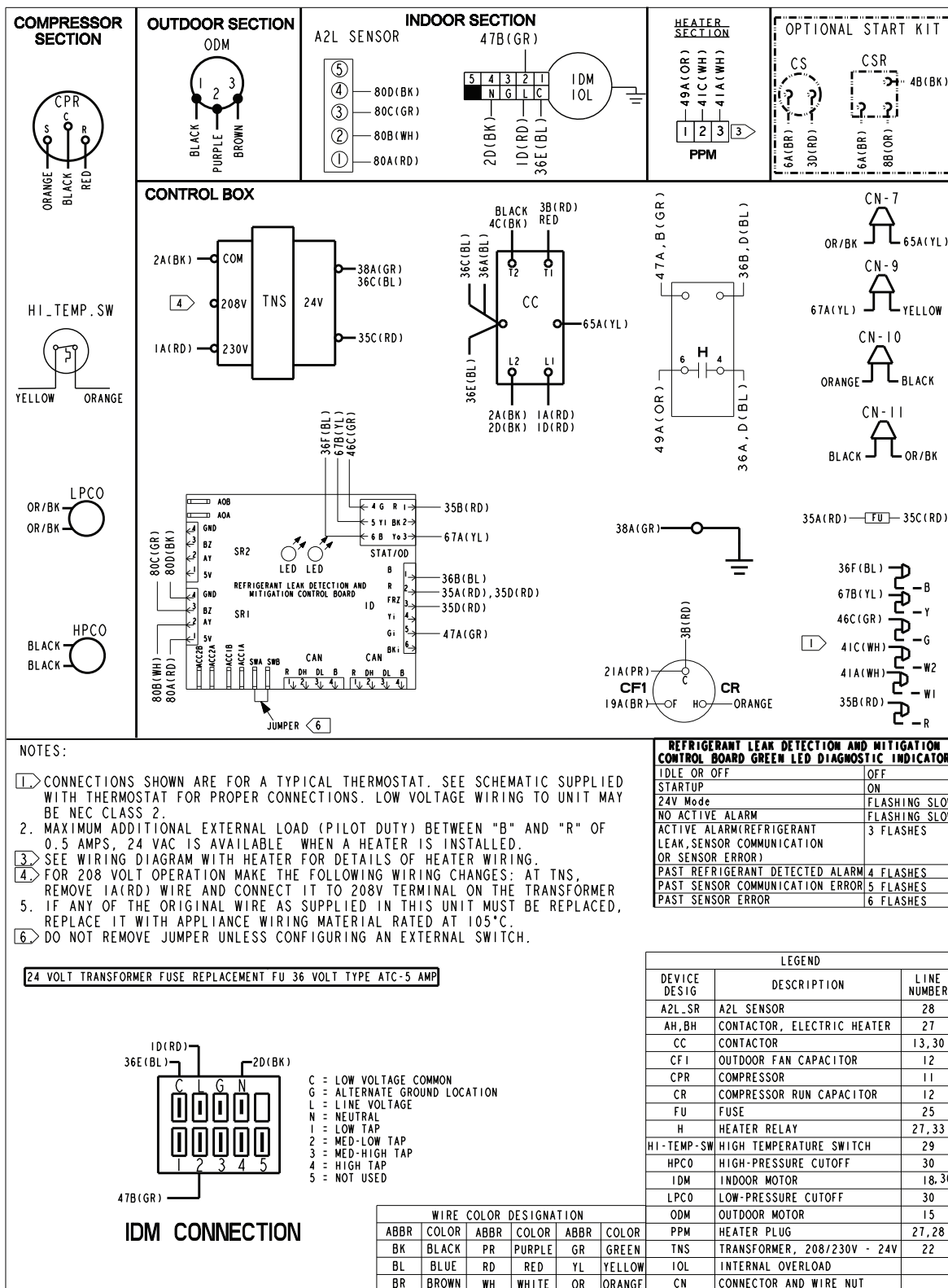
## CHARGING BELOW 55°F

Evacuate system and weigh in nameplate charge or use factory charge. Correct subcooling may be verified when the temperature is above 55°F.

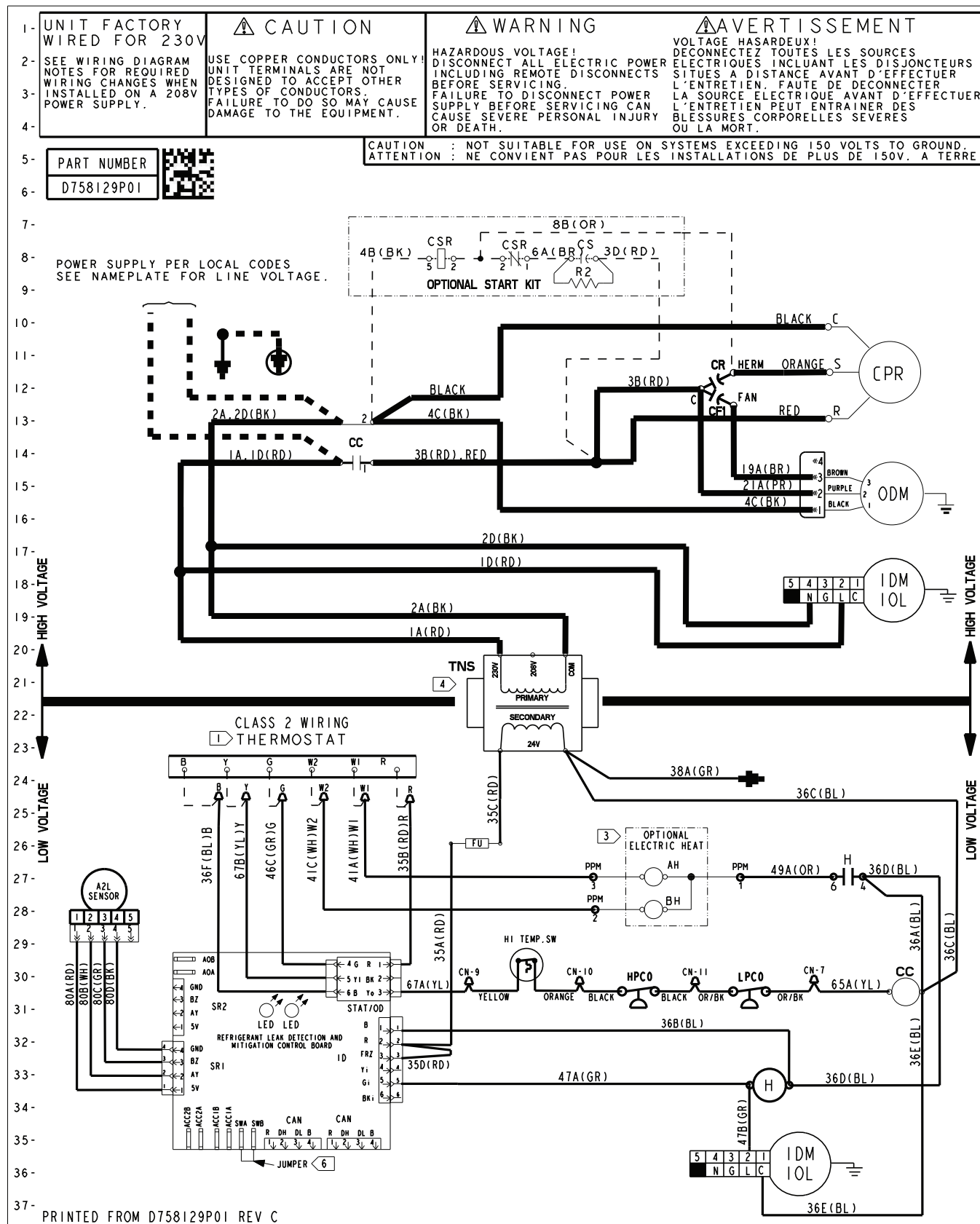
| R-454B REFRIGERANT CHARGING CHART |                            |     |     |     |     |     |     |     |     |
|-----------------------------------|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| LIQUID TEMP (°F)                  | DESIGN SUBCOOLING (°F)     |     |     |     |     |     |     |     |     |
|                                   | 6                          | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  |
|                                   | LIQUID GAGE PRESSURE (PSI) |     |     |     |     |     |     |     |     |
| 55                                | 164                        | 167 | 170 | 172 | 175 | 178 | 181 | 184 | 187 |
| 60                                | 178                        | 181 | 184 | 187 | 190 | 194 | 197 | 200 | 203 |
| 65                                | 193                        | 197 | 200 | 203 | 206 | 210 | 213 | 217 | 220 |
| 70                                | 210                        | 213 | 217 | 220 | 223 | 227 | 230 | 234 | 238 |
| 75                                | 227                        | 230 | 234 | 238 | 241 | 245 | 249 | 252 | 256 |
| 80                                | 245                        | 249 | 252 | 256 | 260 | 264 | 268 | 272 | 276 |
| 85                                | 264                        | 268 | 272 | 276 | 280 | 284 | 288 | 292 | 297 |
| 90                                | 284                        | 288 | 292 | 297 | 301 | 305 | 309 | 314 | 318 |
| 95                                | 305                        | 309 | 314 | 318 | 323 | 327 | 332 | 336 | 341 |
| 100                               | 327                        | 332 | 336 | 341 | 346 | 351 | 355 | 360 | 356 |
| 105                               | 351                        | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 |
| 110                               | 375                        | 380 | 385 | 390 | 396 | 401 | 406 | 412 | 417 |
| 115                               | 401                        | 406 | 412 | 417 | 422 | 428 | 433 | 439 | 445 |
| 120                               | 428                        | 433 | 439 | 445 | 450 | 456 | 462 | 468 | 474 |
| 125                               | 456                        | 462 | 468 | 474 | 480 | 486 | 492 | 498 | 504 |

## Wiring Diagrams

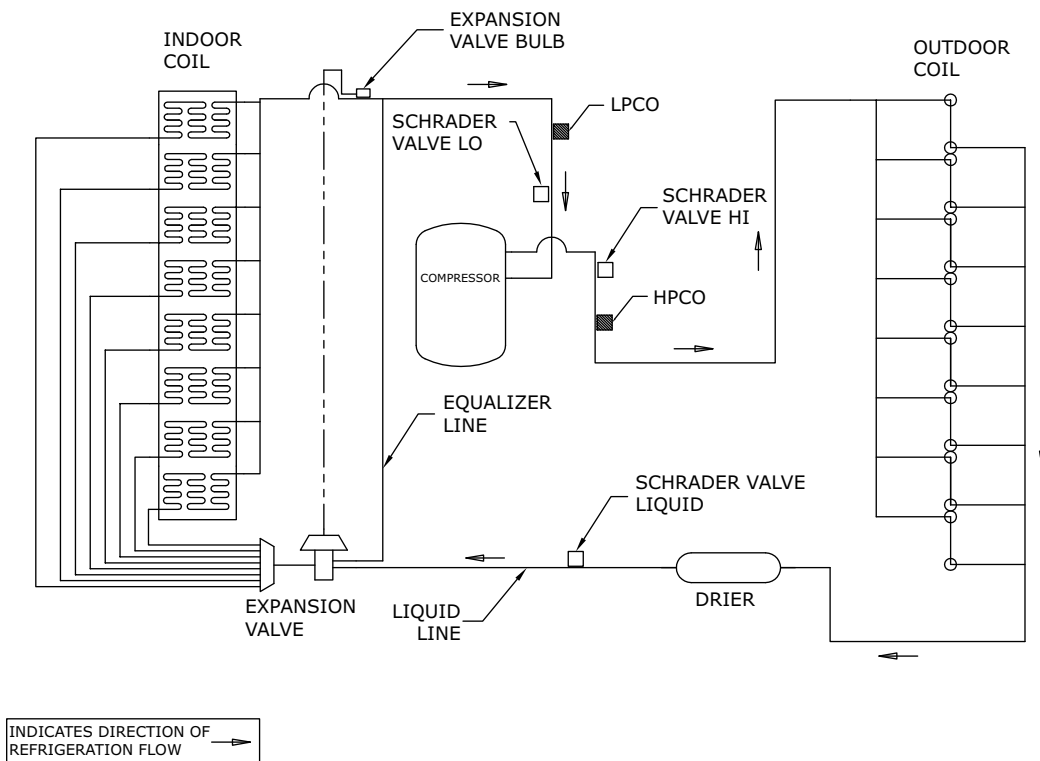
**Figure 2. A5PA3042**



**Figure 3. A5PA3042**



# Refrigerant Circuits



# Troubleshooting Chart

P-PRIMARY CAUSES / S-SECONDARY CAUSES

| SYSTEM FAULTS                               | Power Supply | High Voltage Wiring | Compr. IOL | Run Capacitor | Start capacitor | Start Relay | Contactors Contacts | Low Voltage Wiring | Control Transformer | Contactors Coil | Low Voltage Fuse | Stuck Compressor | Inefficient Compressor | Refrigerant Undercharge | Refrigerant Overcharge | Excessive Evap. Load | Noncondensables | Restricted O.D. Airflow | O.D. Air Recirculation | TXV Stuck Open | Low Superheat | High Superheat | Restricted I.D. Airflow | Ref. Circuit Restrictions | Mitigation System |
|---------------------------------------------|--------------|---------------------|------------|---------------|-----------------|-------------|---------------------|--------------------|---------------------|-----------------|------------------|------------------|------------------------|-------------------------|------------------------|----------------------|-----------------|-------------------------|------------------------|----------------|---------------|----------------|-------------------------|---------------------------|-------------------|
| <b>REFRIGERANT CIRCUIT</b>                  |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |
| Liquid Pressure too High                    |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        |                         | P                      |                      | S               | P                       | S                      |                |               |                |                         | S                         |                   |
| Liquid Pressure too Low                     |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  | S                      | P                       |                        |                      |                 |                         |                        | S              |               | S              |                         | S                         |                   |
| Suction Pressure too High                   |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  | S                      |                         | P                      | P                    |                 |                         |                        | S              | S             |                |                         |                           |                   |
| Suction Pressure too Low                    |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        | S                       |                        |                      |                 |                         |                        |                |               | S              | P                       | S                         |                   |
| Liquid Refrigerant Floodback (TXV System)   |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        |                         |                        |                      |                 |                         |                        | S              | S             |                | P                       |                           |                   |
| I.D. Coil Frosting                          |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        | P                       |                        |                      |                 |                         |                        |                | S             |                | P                       | S                         |                   |
| Compressor Runs Inadequate or No Cooling    |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  | S                      | P                       |                        | P                    | S               | S                       | S                      |                |               | S              | P                       | S                         |                   |
| <b>ELECTRICAL</b>                           |              |                     |            |               |                 |             |                     |                    |                     |                 |                  |                  |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |
| Compressor & O.D. Fan Do Not Start          | P            | P                   |            |               |                 |             | S                   | S                  | P                   | P               | P                |                  |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           | P                 |
| Compressor will not Start but O.D. Fan Runs |              | P                   | S          | P             | P               | P           |                     |                    |                     |                 |                  | S                |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |
| O.D. Fan will Not Start                     |              | P                   |            | P             |                 |             |                     |                    |                     |                 |                  |                  |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |
| Compressor Hums but will Not Start          |              | P                   |            | P             | P               | P           | S                   |                    |                     |                 |                  | S                |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |
| Compressor Cycles on IOL                    |              | P                   | S          | P             | P               | P           | S                   |                    |                     |                 |                  | P                | S                      | P                       | S                      | S                    | S               | S                       | S                      |                |               | S              |                         | S                         |                   |
| I.D. Blower willnot Start                   | P            | S                   |            |               |                 |             |                     | S                  | P                   |                 | P                |                  |                        |                         |                        |                      |                 |                         |                        |                |               |                |                         |                           |                   |

## MCB Code Table

| Condition                                                                    | Green LED  | Amber LED |
|------------------------------------------------------------------------------|------------|-----------|
| Idle or Off                                                                  | Off        | Off       |
| Startup                                                                      | On         | On        |
| No Active Alarm                                                              | Slow Flash | On        |
| Active Alarm (Refrigerant Leak, Sensor Communication Error, or Sensor Error) | 3 Flash    | On        |
| Past Refrigerant Detected Alarm                                              | 4 Flash    | On        |
| Past Sensor Communication Error                                              | 5 Flash    | On        |
| Past Sensor Error                                                            | 6 Flash    | On        |

# Important Product Information

Packaged Unit Serial Number\_\_\_\_\_

Packaged Unit Model Number\_\_\_\_\_

Date of Installation\_\_\_\_\_

Dealer\_\_\_\_\_

## **Service Information**

Call your installing dealer if the unit is inoperative. Before you call, always check the following to be sure service is required:

1. Be sure the main switch that supplies power to the unit is in the ON position.
2. Replace any burned-out fuses or reset circuit breakers.
3. Be sure the thermostat is properly set.

Service Phone\_\_\_\_\_





## About Trane and American Standard Heating and Air Conditioning

Trane and American Standard create comfortable, energy efficient indoor environments for residential applications. For more information, please visit [www.trane.com](http://www.trane.com) or [www.americanstandardair.com](http://www.americanstandardair.com).



The AHRI Certified mark indicates company participation in the AHRI Certification program. For verification of individual certified products, go to [ahridirectory.org](http://ahridirectory.org).

The manufacturer has a policy of continuous data improvement and it reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.