



**TECHNICAL TIP**

**FILE NO. T99-3**

**DATE: May 7, 1999**

**Subject: PGE(RPG)10/12 Ignition Control Enhancements**

(R)PGE10/12B(-2), (R)PGE10C(-5) series units now feature a new enhanced ignition control. Two new ignition controls are being used, Heatcraft Model GCI-2A (Armstrong P/N 44832-001) or United Technologies Model 1097-83-400A (Armstrong P/N 44990-001). This enhancement does not affect any accessory options.

These new combination circuit boards use a 6-pin molex connector plug, making wiring and accessibility even more simplified than before.

Armstrong P/N 43277-001, 002 may be replaced with Ignition Control Replacement Kit #RA-161 (see Table 1).

To reference the Sequence of Operation and Diagnostics of units using the new ignition control boards, see page 2 of this Technical Tip. For a copy of the wiring diagram of the new ignition controls, see page 3.

**Note: Do not connect (C) connections of thermostat except when required by the indoor thermostat. Refer to thermostat installation instructions.**

If you have any questions, call the Armstrong Technical Services Department at (419) 483-4840 ext. 2610.

<b>Model Variations</b>		
<b>Model</b>	<b>Original Ignition Control</b>	<b>Superceded By:</b>
(R)PGE10/12A*(-1,-2)	41521-001	N/A - use same as original
(R)PGE10/12A*(-3,-4)	43277-001	RA161
(R)PGE10C*(-4)	43277-001	RA161
(R)PGE10/12B*(-1)	43277-001	RA161
(R)PGE10/12B*(-2)	44990-001/44832-001*	N/A - use same as original
(R)PGE10C*(-5)	44990-001/44832-001*	N/A - use same as original

\* 44990-001 and 44832-001 control boards are interchangeable.  
 N/A - Not Available

**Table 1**

## OPERATION

The following applies to the unit after either the Heatcraft GCI-2A ignition control or the UTEC 1097 ignition control has been installed.

### Heating Sequence of Operation

The following sequence describes the operation of the gas heat section.

1. When the thermostat calls for heat, the draft motor is energized by the 24-volt relay in the blower ignition control which closes the 240V contact to the draft motor.
2. When the speed of the draft motor reaches the proper RPM, the pressure switch closes to power the ignition control.
3. When PSW on blower/ignition control is energized, a pre-purge time is initiated (30 seconds nominal).
4. When pre-purge has expired, the blower/ignition control energizes the main gas valve and spark electrode/flame sensor for a period of 10 seconds. The blower/ignition control sparks for the full 10 seconds regardless of establishing flame and then looks for a signal from the electrode/flame sensor that a flame has been established.
5. 30 seconds nominal after the initial trial for ignition, the circulation air blower starts. If the electrode/flame sensor does not sense that a flame has been established in the 10-second interval, the blower/ignition control opens the 24-volt contacts to the main gas valve, shutting it off.
6. The blower/ignition control is designed to repeat this "trial for ignition" a total of three times. If, at the end of the third trial, a flame still has not been established, then the blower/ignition control will try to light again one hour later. The one hour retry is indefinite. The blower/ignition control can be reset by interrupting the unit power or the thermostat circuit.
7. When the thermostat is satisfied, the draft motor and gas valve are de-energized. The blower motor continues to run for a short period after the furnace is shut down.

### Blower Delay - Heating

The on/off delay of the circulating air blower is controlled by a timing circuit in the integrated blower/ignition control. Timings are not adjustable. Blower "ON" delay is 30 seconds after the burners are lit and blower "OFF" timing is 120 seconds after shutting down the burners.

## DIAGNOSTICS

The following blower/ignition control board LED codes will indicate normal or abnormal operations:

- |   |   |
|---|---|
| a) <b>SLOW FLASH</b>  | Normal operation, no call for heat  |
| b) <b>FAST FLASH</b>  | Normal operation, call for heat   |
| c) <b>2 FLASH</b>   | System lockout - failed to detect or sustain flame                                  |
| d) <b>3 FLASH</b>   | Pressure switch open or closed, or auxiliary limit (located on blower housing) open |
| Note: This LED code will not appear until after the indoor blower has turned off (approx. 120 seconds). |   |
| e) <b>4 FLASH</b>   | High limit or rollout switch open   |
| f) <b>5 FLASH</b>   | Flame sensed and gas valve not energized  |
| g) <b>STEADY</b>  | Internal failure (micro-controller failure; self-check)                             |

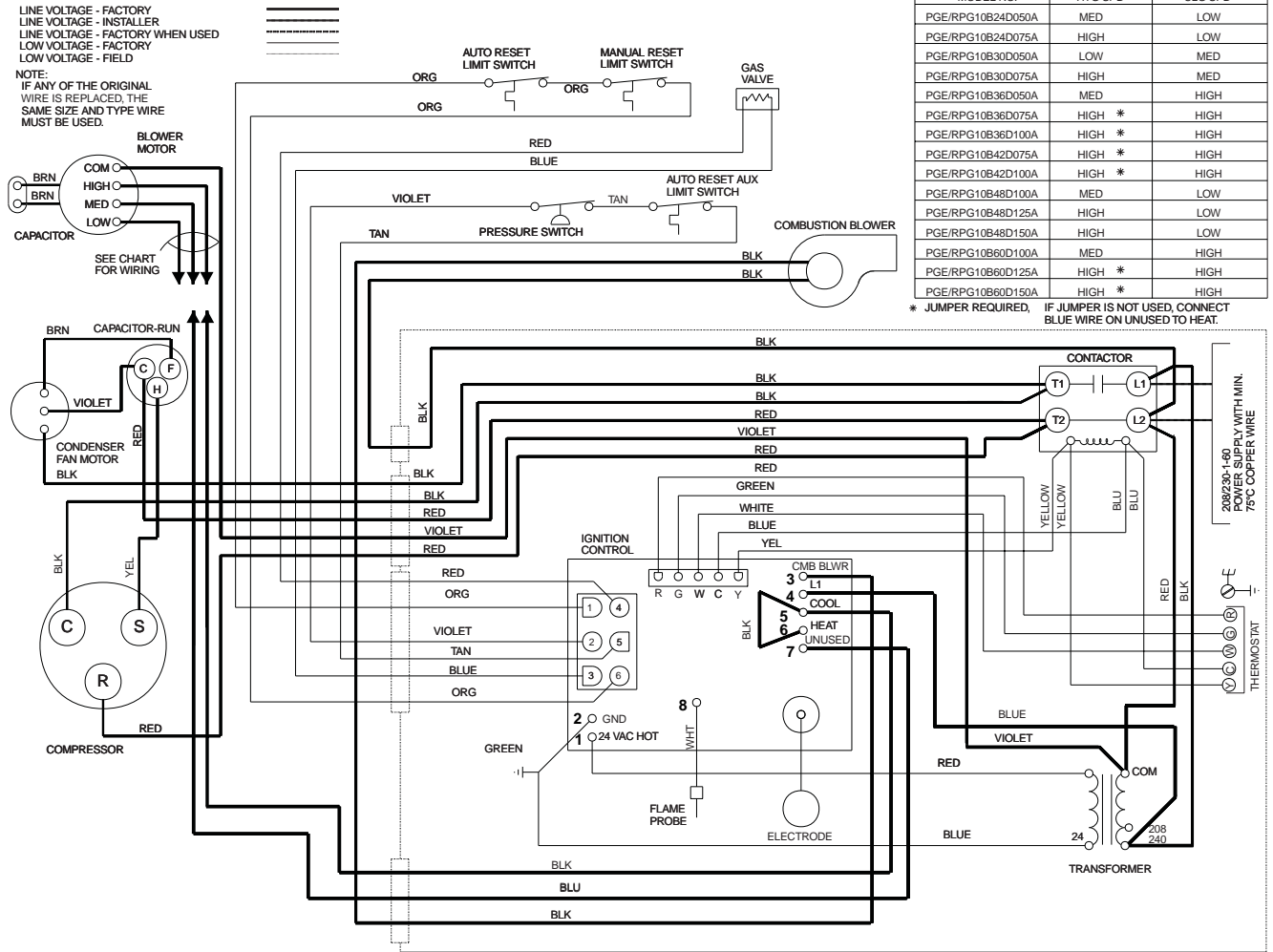
### Approximate Flashing Rate

- |                |   |
|----------------|---|
| <b>SLOW</b>    | One flash per second  |
| <b>FAST</b>    | Two flashes per second  |
| <b>2 FLASH</b> | Two flashes in one second with a one-second pause                 |
| <b>3 FLASH</b> | Three flashes in one and one-half seconds with a one-second pause |
| <b>4 FLASH</b> | Four flashes in two seconds with a one-second pause               |
| <b>5 FLASH</b> | Five flashes in two and one-half seconds with a one-second pause  |

# United Technologies Model 1097-83-400A Ignition Control\* (Armstrong P/N 44990-001)

LINE VOLTAGE - FACTORY  
 LINE VOLTAGE - INSTALLER  
 LINE VOLTAGE - FACTORY WHEN USED  
 LOW VOLTAGE - FACTORY  
 LOW VOLTAGE - FIELD

NOTE:  
 IF ANY OF THE ORIGINAL  
 WIRE IS REPLACED, THE  
 SAME SIZE AND TYPE WIRE  
 MUST BE USED.



### Quick Connect Terminal Descriptions

- 1 24 VAC HOT
- 2 GROUND = 24 VAC Return
- 3 CMB BLWR = Combustion Blower (Line Voltage)
- 4 LI = Line Voltage
- 5 ACB COOL = ACB Cool Speed (Line Voltage)
- 6 ACB HEAT = ACB Heat Speed (Line Voltage)
- 7 UNUSED (Park)
- 8 FLAME = Flame Probe

### Thermostat Input

R = 24 VAC to Thermostat (RED)  
 G = Manual Fan Input from Thermostat (GREEN)  
 W = Heat Demand Input from Thermostat (WHITE)  
 C = Common Ground to Thermostat (when required by thermostat; refer to thermostat installation instructions)  
 Y = Cool Demand Input from Thermostat (YELLOW)

### Heat Mode

- Pre-Purge: 30 seconds
- Inter-Purge: 30 seconds
- Post-Purge: 5 seconds
- Trial Time: 10 seconds
- # of Trials: Three
- Board to reset from lockout after 60 minutes

### Fan On Delay

- Cool: 5 seconds (Fixed)
- Heat: 30 seconds (Fixed)

### Fan Off Delay

- Cool: 90 seconds (Fixed)
- Heat: 120 seconds (Fixed)

\* This information also applies to the Heatcraft Model GCI-2A Ignition Control (Armstrong P/N 44832-001).



## TECHNICAL TIPS

FILE NO. T97-3

DATE: 2/24/97

### **Subject: PGE/RPG Continuous Blower Operation**

Discussion: Armstrong/Concord PGE/RPG packaged units utilize a continuous air terminal option. This terminal is labeled (CONT). Only use this terminal if you want a constant low speed blower operation. The blower will come on immediately upon hook up of 230 volt power. When a call for heat comes the unit will go through a pre-purge. When the burner ignites the blower will time on in 45 seconds. Since the blower is already operating it will shift to the speed that is connected to the heat terminal. The CONT terminal will deenergize at this time. This same sequence applies to the cooling mode of operation except the cool terminal comes into play instead of the heat terminal.

Two wires are routed from the circulating air blower motor. One is black, one is blue. These two wires are there so you have the option to run 2- different speeds between heating and cooling. Example: Black on heat plug into high speed on motor will result in high speed for heat operation. Blue on cool terminal plugged into medium on motor will result in medium speed for cooling operation. No speed connected to continuous results in no blower operation between heating and cooling cycles. If the same speed is required on heating as is on cooling, a jumper wire must be used between the heat and cool terminals. When this is done the blower speed needed should be plugged into either the heat or cool terminal with the jumper. This will leave one wire left over. (Either the black or blue depending on which one was put on the heat cool jumper circuit). If you put the left over wire on the CONT terminal the blower will run all the time. If this is not wanted, wire nut off the unused motor lead, then tape and secure out of the way.



**TECHNICAL TIPS**

**FILE NO. T97-10**

**DATE: April 30, 1997**

**Subject: SCU10, 12 & 13 SEER, PGE, & SHP Compressors**

**Purpose:** Armstrong has been receiving calls requesting compressor information.

**Discussion:** Armstrong uses a variety of Copeland, Tecumseh, and Bristol compressors on the SCU10-3 current production units. The SCU12 and 13, PGE, and SHP use the Copeland scroll compressor.

Attached is a compressor listing identifying the compressor, supplier and capacitor.

UNIT	ARMSTRONG PART#	DESCRIPTION	VENDOR	SUPERSEDE # CAP/COMP	CAPACITOR #
SCU10A12A-3	39008C003	RK5512E	TECUMSEH		38514D002 25/5 370V
SCU10A18A-3	40905-001	H23B153ABCA	BRISTOL	/42520-001	38514D002 25/5 370V
SCU10A24A-3	42520-002	CR22KF-PFV-130	COPELAND		38514D003 30/5 370V
SCU10A30A-3	42520-003	CR28KF-PFV-130	COPELAND		38514D004 35/5 370V
SCU10A36A-3	42520-004	CR34KF-PFV-130	COPELAND		38514D018 50/5 370V
SCU10A42A-3	39594C005	CR38K6-PFV-230	COPELAND		38514D006 40/5 440V
SCU10A48A-3	38867B002	AVB5549EXN	TECUMSEH		38514D011 45/5 370V
SCU10A60A-3	38867B005	AVB5558EXN	TECUMSEH		38514D011 45/5 370V

SCU10A30A-4	35136C001	ZR28K1PFV	COPELAND		38514D004 35/5 370V
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SCU10A12A-2	39008C003	RK5512E	TECUMSEH		38514D002 25/5 370V
SCU10A18A-2	41343-001	RA16B1SA-A	ALLIANCE	38514D2/38862C001	38514D001 20/5 370V
SCU10A24A-2	41343-002	RA22B1SA-A	ALLIANCE	38514D3/38863C001	38514D005 40/5 370V
SCU10A30A-2	41195-001	CR26K6PFV	COPELAND		38514D004 35/5 370V
SCU10A36A-2	38867B008	AVB5533EXN	TECUMSEH		38514D008 45/7.5 440V
SCU10A42A-2	39594C004	CR38K6PFV	COPELAND		38514D007 40/7.5 440V
SCU10A48A-2	41347-001	RA4761SA-A	ALLIANCE	38514D8/38867B002	38514D012 55/7.5 440V
SCU10A60A-2	41347-004	RA5961SA-A	ALLIANCE	38514D18/38867B005	38514D019 50/7.5 440V

SCU10A12A-1	39008C003	RK5512E	TECUMSEH		38514D002 25/5 370V
SCU10A18A-1	41343-001	RA16B1SA-A	ALLIANCE	38514D2/38862C001	38514D001 20/5 370V
SCU10A24A-1	41343-002	RA22B1SA-A	ALLIANCE	38514D3/38863C001	38514D005 40/5 370V
SCU10A30A-1	41195-001	CR26K6-PFV	COPELAND		38514D004 35/5 370V
SCU10A36A-1	38867B008	AVB5533EXN	TECUMSEH		38514D008 45/7.5 440V
SCU10A42A-1	39594C004	CR38K6-PFV	COPELAND		38514D007 40/7.5 440V
SCU10A48A-1	41347-001	RA47G1SA-A	ALLIANCE	38514D8/38867D008	38514D012 55/7.5 440V
SCU10A60A-1	41347-004	RA59G1SA-A	ALLIANCE	38514D18/38867B005	38514D019 50/7.5 440V

SHP10C18A-3	35136C004	ZR18K1-PFV	COPELAND		38514D003 30/5 370V
SHP10C24A-3	35136C005	ZR23K1-PFV	COPELAND		38514D003 30/5 370V
SHP10C30A-3	41579-008	ZR30K3-PFV030	COPELAND		38514D004 35/5 370V
SHP10C36A-3	42811-004	ZR36KC	COPELAND		38514D005 40/5 370V
SHP10C42A-3	41738-009	ZR45KC	COPELAND		38514D005 40/5 370V
SHP10C48A-3	41738-001	ZR49KC-230	COPELAND		38514D015 45/5 440V
SHP10C60A-3	41738-003	ZR61KCPFV230	COPELAND		38514D016 60/5 370V

SHP10B18-1	35125C006	AWC5517EXD	TECUMSEH		38514D004 35/5 370V
SHP10B24-1	35125C007	AWC5522EXD	TECUMSEH		38514D004 35/5 370V
SHP10B30-1	35125C008	AWC5528EXD	TECUMSEH		38514D008 45/7.5 440V
SHP10B36-1	40057B001	AVB5533EXD	TECUMSEH		38514D008 45/7.5 440V
SHP10B42-1	39594C001	CR38K6PFV	COPELAND		38514D007 40/7.5 440V
SHP10B48-1	40286-001	H25A460CBCA	BRISTOL		38514D012 55/7.5 440V
SHP10B60-1	40324-005	H25A620CBCA	BRISTOL		38514D013 60/7.5 370V

\*ZR=SCROLL COMPRESSOR

UNIT	ARMSTRONG PART#	DESCRIPTION	VENDOR	SUPERSEDE # CAP/COMP	CAPACITOR #
SHP10A18A-1	35125C006	AWC5517EXD	TECUMSEH		38514D004 35/5 370V
SHP10A24A-1	35125C007	AWC5522EXD	TECUMSEH		38514D004 35/5 370V
SHP10A30A-1	35125C008	AWC5528EXD	TECUMSEH		38514D011 45/5 370V
SHP10A36A-1	40057B001	AVB5533EXD	TECUMSEH		38514D011 45/5 370V
SHP10A42A-1	39594C001	CR38K6PFV260	COPELAND		38514D007 40/7.5 440V
SHP10A48A-1	40286-001	H25A460CBCA	BRISTOL		38514D012 55/7.5 440V
SHP10A60A-1	40324-005	H25A620CBCA	BRISTOL		38514D013 60/7.5 370V

SHP12B24A-2	35136C005	ZR23K1	COPELAND		38514D003 30/5 370V
SHP12B30A-2	41579-001	ZR28K3	COPELAND		38514D011 45/5 370V
SHP12B36A-2	41579-003	ZR34K3	COPELAND		38514D019 50/7.5 440V
SHP12B42A-2	41579-003	ZR36K3	COPELAND		38514D019 50/7.5 440V
SHP12B48A-2	40478-005	ZR46K3	COPELAND		38514D013 60/7.5 370V
SHP12B60A-2	40478-011	ZR54K3	COPELAND		38514D013 60/7.5 370V

SHP12A24A-1	35136C005	ZR23K1PFV	COPELAND		38514D003 30/5 370V
SHP12A30A-1	35136C001	ZR28K1PFV	COPELAND		38514D004 35/5 370V
SHP12A36A-1	35136C002	ZR34K1PFV	COPELAND		38514D009 35/7.5 440V
SHP12A42A-1	35136C003	ZR40K1PFV	COPELAND		38514D009 35/7.5 440V
SHP12A48A-1	40478-005	ZR463PFV	COPELAND		38514D013 60/7.5 370V
SHP12A60A-1	40478-006	ZR57K3PFV	COPELAND		38514D014 80/7.5 370V

SHP13A24A-1	41579-005	ZR22K3PFV	COPELAND		38514D005 40/5 370V
SHP13A30A-1	41579-006	ZR26K3PFV	COPELAND		38514D005 40/5 370V
SHP13A36A-1	41579-002	ZR34K3PFV	COPELAND		38514D019 50/7.5 440V
SHP13A42A-1	41579-003	ZR36K3PFV	COPELAND		38514D019 50/7.5 440V
SHP13A48A-1	40478-005	ZR46K3PFV	COPELAND		38514D013 60/7.5 370V
SHP13A60A-1	40478-011	ZR54K3PFV	COPELAND		38514D014 80/7.5 370V

PGE10A24-3	42520-002	CR22KF-PFV	COPELAND		38514D003 30/5 370V
PGE10A30-3	42520-003	CR22KF-PFV	COPELAND		38514D004 35/5 370V
PGE10A36-3	42520-004	CR34KF-PFV	COPELAND		38514D018 50/5 370V
PGE10A42-3	39594C004	CR38K6-PFV	COPELAND		38514D004 40/5 440V
PGE10A48-3	38867B002	AVB5549EXN	TECUMSEH		38514D015 45/5 440V
PGE10A60-3A	38867B005	AVB5558EXN	TECUMSEH		38514D015 45/5 440V
PGE10A60-3B	40478-006	ZR57K3-PFV	COPELAND		38514D017 80/5 370V
PGE10A24-2A	38863C001	CR22K6PFV	COPELAND		38514D003 30/5 370V
PGE10A30-2A	38864C002	CR28K6PFV	COPELAND		38514D004 35/5 370V
PGE10A36-2A	38867B009	AVB5533	TECUMSEH		38514D011 45/5 370V
PGE10A42-2A	39594C004	CR38K6PFV	COPELAND		38514D006 40/5 440V
PGE10A48-2A	38867B002	AVB5549	TECUMSEH		38514D015 45/5 440V
PGE10A60-2A	38867B005	AVB5558	TECUMSEH		38514D015 45/5 440V

\*ZR=SCROLL COMPRESSOR

UNIT	ARMSTRONG PART#	DESCRIPTION	VENDOR	SUPERSEDE # CAP/COMP	CAPACITOR #
PGE10A24-1	38863C002	CR22K6PFV	COPELAND		38514D003 30/5 370V
PGE10A30-1	38864C003	CR28K6PFV	COPELAND		38514D004 35/5 370V
PGE10A36-1	38867B008	AVB5533EXN	TECUMSEH		38514D011 45/5 370V
PGE10A42-1	39594C001	CR38K6PFV	COPELAND		38514D006 40/5 440V
PGE10A48-1	38867B002	AV5549G	TECUMSEH		38514D015 45/5 440V
PGE10A60-1	38867B005	AV5558G	TECUMSEH		38514D015 45/5 440V

PGE12A24-1A	41579-005	ZR22K3-3	COPELAND		38514D005 40/5 370V
PGE12A30-1A	41579-001	ZR28K-3	COPELAND		38514D015 45/5 440V
PGE12A36-1A	41579-002	ZR34K-3	COPELAND		38514D018 50/5 370V
PGE12A42-1A	41579-007	ZR40K-3	COPELAND		38514D020 55/5 370V
PGE12A48-1A	40478-005	ZR46K-3	COPELAND		38514D016 60/5 370V

PLE24A-2A	38863C001	CR22K6PFV	COPELAND		38514D003 30/5 370V
PLE30A-2A	38864C002	CR28K6PFV	COPELAND		38514D004 35/5 370V
PLE36A-2A	38867B009	AVB5533EXN	TECUMSEH		38514D011 45/5 370V
PLE42A-2A	39594C004	CR38K6PFV	COPELAND		38514D006 40/5 440V

PHP12A24A-1A	41579-005	ZR22K3PFV	COPELAND		38514D005 40/5 370V
PHP12A30-1A	41579-001	ZR28K3PFV	COPELAND		38514D015 45/5 440V
PHP12A36-1A	41579-002	ZR34K3PFV	COPELAND		38514D018 50/5 370V
PHP12A42-1A	41579-007	ZR40K3PFV	COPELAND		38514D020 55/5 370V
PHP12A48-1A	40478-005	ZR46K3PFV	COPELAND		38514D016 60/5 370V

PHP10A24-2A	38863C002	CR22K6-PFV	COPELAND		38514D003 30/5 370V
PHP10A30-2A	38864C003	CR28K6-PFV	COPELAND		38514D004 35/5 370V
PHP10A36-2A	38867B008	AVB5533EXN	TECUMSEH		38514D011 45/5 370V
PHP10A42-2A	39594C001	CR38K6-PFV	COPELAND		38514D006 40/5 440V
PHP10A48-2A	41738-001	ZR49KC-PFV	COPELAND		38514D015 45/5 440V
PHP10A60-2A	41738-003	ZR61KC-PFV	COPELAND		38514D016 60/5 370V

PHP10A24-1	38863C002	CR22K6-PFV	COPELAND		38514D003 30/5 370V
PHP10A30-1	38864C003	CR28K6-PFV	COPELAND		38514D004 35/5 370V
PHP10A36-1	38867C008	AVB5533EXN	TECUMSEH		38514D011 45/5 370V
PHP10A42-1	39594C001	CR38K6PFV-260	COPELAND		38514D006 40/5 440V
PHP10A48-1	41738-001	ZR49KC-PFV	COPELAND		38514D015 45/5 440V
PHP10A60-1	41738-003	ZR49KC-PFV	COPELAND		38514D016 60/5 440V

\*ZR=SCROLL COMPRESSOR





**TECHNICAL TIPS**

**FILE NO. T97-14**

**DATE: MAY 6, 1997**

**Subject: PGE, PHP, PCE, & PLE Filter Size**

Discussion: Armstrong packaged series units are supplied with an internal filter clip. This is located in the indoor coil compartment attached to the side of the unit's drain pan. The top of the filter rests against the unit cabinet. Refer to table below for filter sizes. Filters are field supplied.

**Minimum Required Surface Area  
 for Disposable Filters**

<b>COOLING BTU/HR</b>	<b>FILTER AREA</b>
24,000 (2 TON)	480 SQ IN
30,000 (2-2 1/2 TON)	600 SQ IN
36,000 (3 TON)	600 SQ IN
42,000 (3 1/2 TON)	650 SQ IN
48,000 (4 TON)	800 SQ IN
60,000 (5 TON)	900 SQ IN

<b>UNIT MODEL</b>	<b>INTERNAL FILTER SIZE</b>
24 - 36	24" X 25"
42	28" X 25"
48-60	30 x 30

**ARMSTRONG**

**TECHNICAL TIPS**

**FILE NO. T96-1**

**DATE: March 12, 1996**

**Subject: PGE, PCE and PHP Low Voltage Common Wire**

PGE, PCE and PHP units incorporate a (C) common wire. This wire is only intended for field use if the application calls for its use.

Uses would be for a power stealing programmable stat, common for indicator lights on a stat or commons for zone dampers, etc. If this does not fit your application, do not use the (C) common wire. Install a wire nut and leave blank in the cabinet.

JLR:hz

**ARMSTRONG**

**TECHNICAL TIPS**

**FILE NO. T96-3**

**DATE: March 28, 1996**

Subject: PGE, PHP, and PCE Roof Curbs

PGE, PHP and PCE units require a roof mounting frame (curb) for certain applications. ACURB142-1 is for the 24-42 sizes. ACURB152-1 is for the 48-60 sizes. These curbs incorporate a platform cover which extends from the raised duct opening to the outside edges. A platform is required on this section due to the drain holes for rainwater located in the condenser section of the unit.

When fabricating your own curbs YOU MUST FABRICATE A PLATFORM to sit on the curb. Failure to do so will result in rain water leakage into the interior of the curb thus leaking into the building.

JLR:hz

# ARMSTRONG

## TECHNICAL TIPS

FILE NO. T95-5

DATE: November 6, 1995

Subject: Packaged Unit Roof Curbs (ACURB 142, 152)

PGE, PCE, and PHP units will now incorporate additional base rails on the units. When using an old curb such as ACURB 142, 152-1 with a unit with base rails, the base rails will have to be removed to be set on the curb. The two support blocks supplied with the curb will be used to support the platform end of the unit. If a unit without base rails is used with a new curb (ACURB 142, 152-2) two support blocks will be supplied with the new curbs for a limited time to make this combination adaptable. When using the unit with base rails and a new (ACURB 142, 152-2) the base rail will support the platform end. The duct connection end base rail shall be removed.

JLR:hz

FILE NO. SVB04-1

DATE: January 9, 2004

**PURPOSE:** Hand gas valve requirements

**DISCUSSION:** The use of a 1/8" NPT plugged tap as shown in the gas piping section of our installation instructions is not mandatory unless required by local codes (see Figure 1). However, the furnace must be isolated from the gas supply piping system by closing the individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2 psig (3.5 kPa) or 14" W.C. If the piping system is to be tested at pressure in excess of 1/2 psig (3.5 kPa), the furnace and its appliance main gas valve must be disconnected from the gas supply piping system.

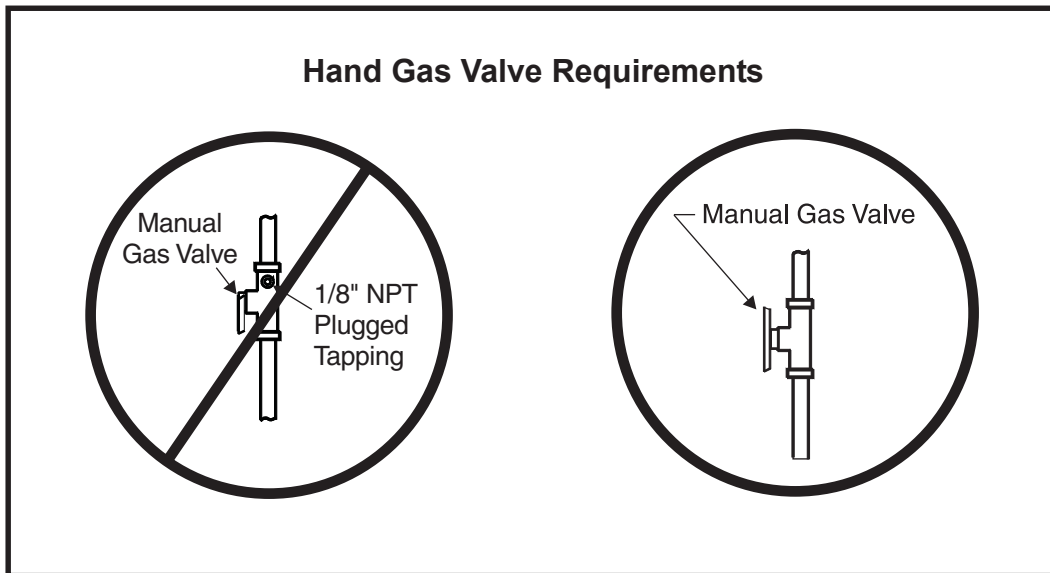


Figure 1

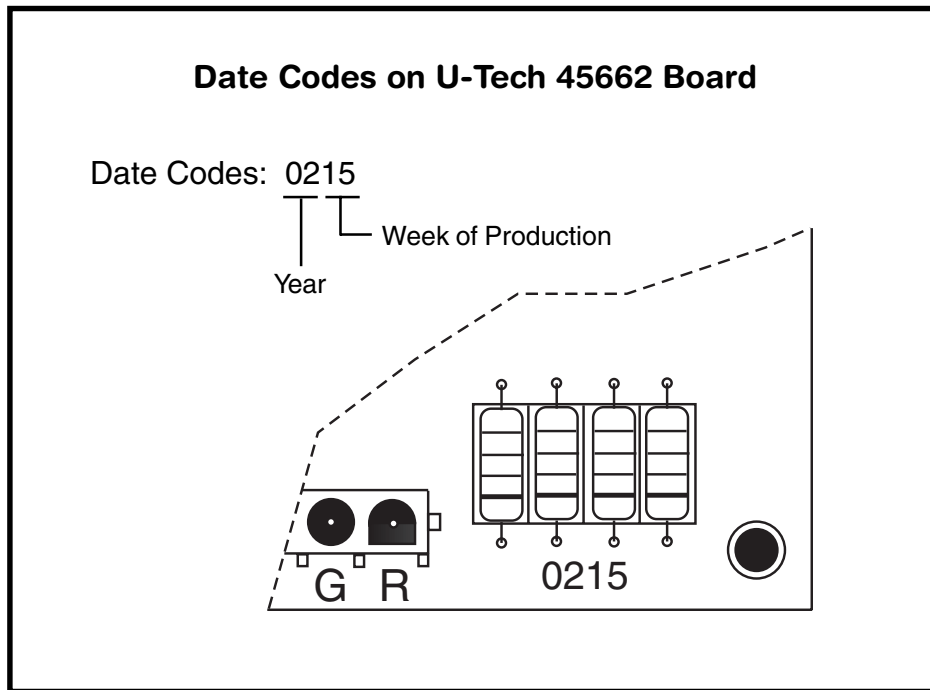
**PURPOSE:** To discuss ignition spark transformer failures with the U-Tech integrated ignition/blower control (P/N 1097-402) Armstrong P/N 45662 used on packaged gas electric PGE and HWC product.

**DISCUSSION:** PGE/HWC series units use a U-Tech integrated ignition/blower control board. Failures regarding the mounting of the ignition transformer to the circuit board have surfaced. Symptoms consist of one or more of the three tinning leads of the ignition transformer pulling loose from the solder connection beneath the circuit board surface, resulting in a “no ignition” effect. Occurrence rates of this are minimal but if it does happen it will occur in the early stages after installation.

Cause: Contamination in the manufacturing process is causing a lack of adhesion of the tinning leads of the ignition transformer to the solder. Also contributing to this is the three leg footprint design of the ignition transformer which allows for a rocking motion.

**FACTORY CORRECTIVE ACTION:** As of the 13<sup>th</sup> week of 2002, all 45662 U-Tech boards now use a new ignition transformer. Contamination issues and the new footprint have been corrected to eliminate this occurrence. These boards may be identified by looking at the date code on the board (see Figure 1). Date codes of 0213 and forward have the new ignition transformer.

**WARRANTY INFORMATION:** If this occurs on a product that uses this control, warranty for the part and \$50 in labor may be applied for. Be sure to mark SVB02-6 on the claim form in the comments section.



**Figure 1**



<b>Service Bulletin</b>
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**FILE NO. SVB00-3**

**DATE: March 7, 2000**

**PURPOSE:** To discuss lockout and spark integrity issues on PGE/RPG units.

**DISCUSSION:** (R)PGE10/12B-2, (R)PGE12B-2, and (R)PGE10C-5 units use the United Technologies integrated ignition/blower control circuit board. Recently, we have been receiving calls regarding the issues of lockouts and spark integrity on these units.

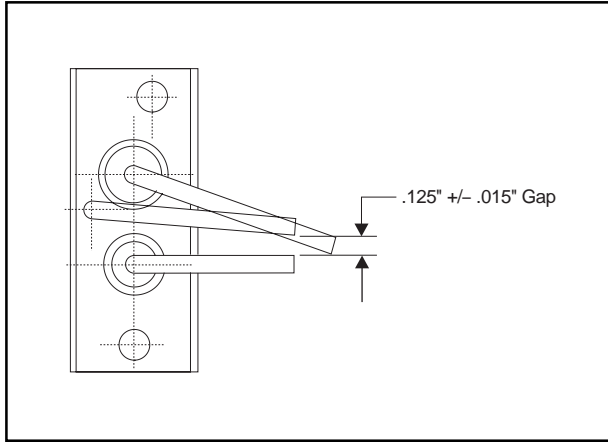
Symptoms generally consist of a “two flash” diagnostic code, which signifies “failure to detect or sustain flame.” A service technician can reset the lockout condition by cycling the thermostat or disconnecting and resetting the power supply. Performing this action will usually cause the unit to reset and re-ignite without incident of lockout or weak spark.

**FIELD CORRECTIVE ACTION:** A weak spark at the electrode will result in the “two flash” code if the burners do not ignite. We have identified several factors that could contribute to a weak spark condition. These factors are listed below along with the suggested corrective measures to fix the problem.

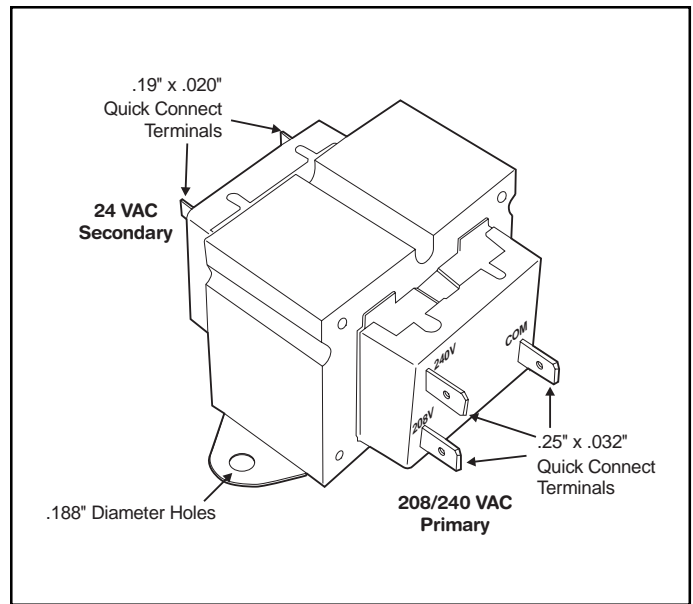
- 1. Insufficient spark gap** - Electrode part #42446-001 (see Figure 1 on page 2) has a specified spark gap of 1/8" (.125"). If the spark gap is less than this, reduced spark intensity and surface area will result thus contributing to possible lack of ignition. The electrode spark gap should be checked and corrected if necessary.
- 2. Incorrect transformer connections** - Power supply to the unit is rated at 208-230 volts. The low voltage transformer contains two tap locations (208- and 240-volt) for the varied input voltages (see Figure 2). We have found cases where a power supply of 208 was present with the transformer tap connected to the 240-volt terminal. The transformer primary connection points should be checked and set for the proper voltage coming in to the unit.
- 3. Weak spark caused by action(s) upon the ignition cable** - Ignition cable part #41520-002 is a high voltage suppression cable. A combination of pressure, movement, high resistance and/or low voltage applied to the ignition cable's connection point at the circuit board can result in a weak spark symptom. A low intensity spark may not ignite the burners, resulting in a failure to detect or sustain flame. Units experiencing this should have the ignition cable replaced with a low resistance cable. Contact your participating distributors to obtain these cables.

**FACTORY CORRECTIVE ACTION:**

**WARRANTY:** Fill out a standard warranty claim form. A standard labor allowance of 1 hour will be allowed for installed units.



**Figure 1**



**Figure 2**



**FILE NO. SVB00-16**

**DATE: September 22, 2000**

**SUBJECT:** Clearance specifications in PGE/RPG installation instructions.

**DISCUSSION:** It has been discovered that certain wording pertaining to unit clearances to combustible materials in the PGE/RPG installation instructions is unclear in its meaning and may be potential misleading to field technicians.

The phrase in question appears in the **Clearances** section of the PGE/RPG installation instructions (see Figure 1). Included in this **Clearances** section is a **Minimum Clearances to Combustibles** table, which also contains potentially misleading information.

The installation instructions state "Clearance to combustibles below the unit is 10" since the flue points down." In addition, the table provided in the instructions also shows 10" as the clearance required below the unit. Both of these statements can be misleading. Clearance to combustible material **below the flue is 10"** to allow proper dissipation of flue gasses and temperatures. Clearance **below the unit is 0"** (as the paragraph following the table implies). The field technician should not be misled to believe that they must provide 10" of clearance to combustibles below the entire base of the unit. Instead, the 10" refers to the amount of clearance to combustibles that must be maintained from the termination of the flue outlet to combustible materials.

The PGE/RPG installation instructions are being changed to clear up the misleading wording.

If you have any questions, call the Armstrong Technical Services Department at 800.448.5872 ext. 2610.

**Clearances Section – PGE/RPG Instructions**

**Clearances**

All units require certain clearances for proper operation and service. Refer to Table 2 for the minimum clearances to combustibles required for construction, servicing, and proper unit operation.

Clearance to combustibles below the unit is 10" since the flue points down.

**Do not permit overhanging structures or shrubs to obstruct condenser air discharge outlet, combustion air inlet, or vent outlet.**

**Minimum Clearances to Combustibles**

Front of Unit	24"
Back of Unit (with Economizer)	36"
Back of Unit (without Economizer)	2"
Furnace Sides	12"
Below Unit	10"

**Table 2**

In the U.S., units may be installed on combustible floors made from wood or class A, B, or C roof covering material. In Canada, units may be installed on combustible floors. Units must be installed outdoors.

**Figure 1**



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**SERVICE BULLETIN**

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**FILE NO. SVB97-3**

**DATE: April 30, 1997**

**SUBJECT: Submerged and Water Damaged HVAC Equipment**

**Purpose:** To insure the safe operation, reliability and performance of heating and air conditioning equipment it is recommended that units that have suffered excessive water damage be replaced.

**Discussion:** The safety and performance of either indoor or outdoor equipment that has been submerged and/or exposed to excessive water damage cannot be verified. And, it is recommended that such equipment be removed from service and scrapped.

A determination of excessive water damage should be made by a qualified technician.

Equipment that has been submerged should always be removed from service and scrapped.

**Warranty:** Armstrong warranty does not cover flood/water damage.