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1. Safety

Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting personal safety and preventing equipment problems. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to address practices not related to personal injury.
1. Safety

Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems that may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards, and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.

Install and Operate Electrical Equipment Properly

Electrical controls should be installed by a qualified electrician and must meet the standards set by the National Electrical Code and all local and state codes.

Disconnect and lock out all power sources before installing wires/cables or servicing equipment.
1. Safety

Install and Operate Gas-Fired Equipment Properly

Fuel supply should be installed by a qualified gas technician and must meet local and state codes for gaseous fuel supplies.

Disconnect and lock out all fuel sources before servicing equipment.

Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Wear Protective Clothing

Wear close-fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Tie long hair up and back.

Wear safety glasses at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

Wear steel-toed boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear a hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').
Tools you will need for this installation:

- Portable drill
- Phillips bit
- 7/8" Hole saw or step bit
- 1/8" Tip screwdriver
- 9/64" Drill bit
- Wirecutter
- Pipewrench

Figure 2A
3. Domestic (USA Models) UV Sensor Retrofit Installation for Portable Dryers

Installing the non-self check UV Sensor for Portable Dryers, Fans and Heaters, Top Dry Fenwal, Ansen and GSI (UVSCAN-1)

UVSCAN-1 Parts List

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Qty</th>
<th>Part #</th>
<th>Description</th>
<th>Qty</th>
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<tr>
<td>D03-1168</td>
<td>Sensor, Quanta Flame UV Non-Self Check</td>
<td>1</td>
<td>FH-1309</td>
<td>Lock Nut 1/2&quot; with Pipe Threads</td>
<td>3</td>
</tr>
<tr>
<td>HF-7621</td>
<td>Quanta Flame Cable: 5'</td>
<td>1</td>
<td>FH-1310</td>
<td>Connector, Cord Heyco #3231 Replace</td>
<td>1</td>
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<tr>
<td>THH-4129</td>
<td>Nipple, 1/2&quot; x 5&quot; SCH 40 Black</td>
<td>1</td>
<td>WR-18GRY</td>
<td>Wire, 18 Gauge Grey Stranded</td>
<td>1</td>
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<tr>
<td>D67-0005</td>
<td>Coupler, 1/2&quot; SCH 40 Black</td>
<td>1</td>
<td>WR-18RED</td>
<td>Wire, 18 Gauge Red Stranded 120-1</td>
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<td>007-1149-9</td>
<td>Bushing, Reducer 1/2&quot; x 1/8&quot; Hex Black</td>
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<td>WR-18WHT</td>
<td>Wire, 18 Gauge White Stranded</td>
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<tr>
<td>GT3-1181</td>
<td>Relay, Base 11 Pin Use with GT3-1182</td>
<td>1</td>
<td>HF-7630</td>
<td>Terminal, 0.25 Insul. Fem. CSA</td>
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<td>GT3-1182</td>
<td>Relay, Off Delay/One Shot DPDT 120VAC</td>
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<td>4144</td>
<td>Resistor, CF, 150K, 1/4W, 5%</td>
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<td>406-2293-8</td>
<td>Din Rail x 3&quot; (Special)</td>
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<td>PNEG-1928</td>
<td>UV Sensor Retrofit Installation Manual</td>
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<td>S-2786</td>
<td>Screw, TCSF #8-32 x 3/8&quot; PHP ZN</td>
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<td>BX-10X10X5</td>
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Product Description

The UV flame detection kit “UVSCAN-1” was designed to replace the flame rod or probe that is used on Vision dryer controls that utilize the HF-4624 fenwal flame control board. (See Figure 3A.) This flame controller uses a flame rectification circuit that in certain situations may not work reliably with certain gases.

Figure 3A Fenwal Flame Control (HF-4624) (HF-4624 not included)

The GSI part # D03-1168 UV flame relay sensor (See Figure 3B on Page 9) is more reliable since it picks up the UV light (in the 180-230 nm) that is naturally emitted in the flame when using LP, natural gas or propane as its fuel. It replaces the flame rod or probe located in the burner and re-produces the expected flame signal to the fenwal board.
This kit will include all the parts necessary to change the flame rectification sensing to a UV style flame sense.

**Sight Tube Assembly Instructions**

Locate 1/2" x 5" nipple (C) and attach the 1/2" coupler (B) to one end of this nipple. Then attach the 1/2" to 1/8" reducer bushing (A) into the 1/2" coupling as shown in Figure 3C. (No sealant is necessary.)
3. Domestic (USA Models) UV Sensor Retrofit Installation for Portable Dryers

Sensor Mounting

The location to mount the sensor is critical in providing reliable flame sense. The sensor needs to have a constant view to the flame of the burner during all burner modes and operations. Typically the best location is just to the right of the inspection window plate as shown in Figure 3D. The sensor tube needs to be pointing between the burner veins as shown in Figure 3E. It is best if the sensor points slightly downward to allow any moisture that may be present to drain away from the UV sensor component.

Once you have determined the sensors location drill a 7/8" hole into the side of the can and attach the UV sight tube assembly into the hole using two (2) 1/2" lock nuts included with kit. Be sure to leave plenty of thread sticking through the burner can to mount the UV sensor.

Once UV sensor has been mounted to sight tube then attach the five (5) pin cable to sensor. Route the cable through the black plastic heyco cord connector (FH-1310) then through either an existing hole in the fan/heater control box or drill a new 7/8" hole. Try to keep the cable entrance location close to the relay and fenwal board.

Find a location to mount the 3" aluminum din rail and relay base inside the fan/heater control box. Drill two (2) 9/64" holes that will be used to mount the din rail to the heater back panel. Use the two (2) supplied self-tapping phillip screws (S-2786) in the drilled holes to mount the din rail. Once the din rail is secure snap the relay base to the din rail as shown in Figure 3F.
Wiring Instructions

Disconnect power and lock out prior to performing this service.

The factory and the UV wirings diagram are included (Figure 3H on Page 12 and Figure 3K on Page 14) which will help show the difference between the current and modified versions.

1. Cut the supplied red wire into two (2) equal pieces. Strip the insulation off both ends of each wire. Attach one wire between terminals 10 and 11. Attach the other wire between terminals 5 and 6.

2. Locate the V1 wire on the fenwal board as shown in Figure 3G. Leave the wire connected to the fenwal board and follow it to the terminal strip. Disconnect the wire which will be in terminal number 21 on the terminal strip.

3. Re-locate the grey wire to the relay base terminal 11 which will also contain a jumper wire between terminals 10 and 11.

4. Strip the insulation off both ends of the supplied grey wire. Attach one end of the grey wire to the terminal number 21 on the terminal strip (where you removed the grey wire above) and attach the other end to the relay base terminal 9.

Figure 3G Locating the V1 grey wire on the fenwal board and terminal 21.
3. Domestic (USA Models) UV Sensor Retrofit Installation for Portable Dryers

Figure 3H Wires to be Moved in Stock Fan/Heater Box (Original Wiring)
5. Disconnect the flame probe or sensor wire from terminal S1 which is shown in Figure 3I. It is the thin red 18 gauge high temperature wire (Teflon) and tie it back out of the way. Attach the red wire from the UV sensor cable with the spade terminal attached to the S1 terminal of the fenwal. (You may need to peel back more of the grey sheathing of the UV cable to gain more length of the wire conductors to reach all the connection points.)

6. Strip the insulation off both ends of the supplied white wire and insert one end into either terminal 22 or 24 (whichever of the white terminals that contains a single wire) and the other end into terminal 2 of the relay base.

7. Attach the black wire from the UV sensor cable into terminal 2 of the relay base. This will provide the grounding path to the flame signal through neutral.

8. Attach the yellow wire from the UV sensor cable into terminal 1 (black terminal) of the terminal strip in the fan/heater box.

9. Attach the orange wire from the UV sensor cable into terminal 2 (white terminal) of the terminal strip in the fan/heater box.

10. Insert time delay relay into its socket and set the timer using the settings as shown in Figure 3J.
3. Domestic (USA Models) UV Sensor Retrofit Installation for Portable Dryers

Figure 3K UV Sensor and Relay Wiring
3. Domestic (USA Models) UV Sensor Retrofit Installation for Portable Dryers

Operation

The UV sensor is highly sensitive to only UVC light that is present in flame. It can detect a small flame from a lit match over 6' away. Because the particular wavelength “C” band of UV light this sensor is sensitive to (180-230 nm) is normally absorbed by the ozone present in our atmosphere the sensor will not be affected by normal sunlight.

The UV sensor is powered up whenever the dryer controls are energized (orange and yellow wires). The rectified output (black and red wires) of the UV flame sensor is only active when the sensor senses flame through an internal relay. This is provided to the fenwal flame board between terminal S1 and the burner ground or AC Neutral.

The time delay relay provides a means of self checking to test whether or not the sensor has possibly burned in a flame sense state. Or in other words the sensor has locked itself up by sensing UV flame even when flame is not present. So every ten (10) hours the timer will open up the internal contacts that provide the flame signal to the Vision Flame board J1-01. This interruption will force the controls to cycle power to the fenwal board in an attempt to relight the burner.

Normally, if the UV sensor stops sensing flame then the fenwal will resume by relighting the burner. This will cause a brief interruption in burner flame which will last for about five (5) seconds or so until the next timer relay cycle (ten (10) hours).

If the UV sensor has burned in and continues to sense flame even with no flame present then the fenwal board will go into a fault condition and will not allow the burner to relight. If the fenwal has a fault condition then the LED will repeatedly flash two (2) times then pause then flash two (2) times again until power is lost to the fenwal or the controls system shuts down with an error. This will occur after three (3) failed relight attempts to the burner.

Life expectancy of the UV sensor is rated for approximately 10000 hours of continuous operation which should provide many years of reliable use.

Testing

The sensor contains two (2) red LED lamps that will aid in troubleshooting flame sensing issues. One is labeled “FLAME STATUS” and the other “FLAME RELAY”.

FLAME STATUS indicates the strength of the flame signal. The brighter the LED, the stronger the flames signal.

FLAME RELAY turns on once the FLAME STATUS becomes strong enough. This is what activates the flame rectification circuit going to the fenwal board used in the Vision control system.

If the sight tube is positioned too close to the spark or the reducing bushing is not used then the flame sensor will falsely sense flame and activate the flame relay. This can be tested by dry firing the burner with the gas turned OFF. You may rarely see the FLAME STATUS light flicker briefly during this test but it should never be strong enough for the flame relay to become active.

If everything is working correctly the burner should attempt to relight three (3) times then controls will shut the system down with an ignition failure warning on the screen.

NOTE: The ignition source (spark) is very rich in Ultraviolet light. This can cause the UV sensor to sense flame if it can see the light that is emitted from the spark. This is the reason we choked the sight tube down to a 1/8" NPT opening is to reduce this effect.

Do not reverse the Yellow and Orange wires on the UV sensor when hooking it up to 120 VAC. The sensor is polarity sensitive and reversing these wires can destroy the sensor.
4. UV Sensor Retrofit Installation for CSA/CE Portable Dryers

Installing the CSA/CE self checking UV Sensor for Portable Dryers, Fans and Heaters, Top Dry Fenwal, and Pactrol (UVSCAN-2)

UVSCAN-2 Parts List

<table>
<thead>
<tr>
<th>Part #</th>
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<tr>
<td>HF-7620</td>
<td>Sensor, Quanta Flame UV</td>
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<td>HF-7621</td>
<td>Quanta Flame Cable: 5’</td>
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<td>THH-4117</td>
<td>Nipple, 1” Close SCH 40 Black</td>
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<td>GT3-0254</td>
<td>Lock Nut 1”</td>
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<td>THH-4138</td>
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<td>THH-4129</td>
<td>Nipple, 1/2” x 5” SCH 40 Black</td>
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<tr>
<td>D67-0005</td>
<td>Coupler, 1/2” SCH 40 Black</td>
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<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
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<td>007-1149-9</td>
<td>Bushing, Reducer 1/2” x 1/8” Hex Black</td>
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<td>FH-1309</td>
<td>Lock Nut 1/2” With Pipe Threads</td>
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<tr>
<td>FH-1310</td>
<td>Connector, Cord Heyco #3231 Replace</td>
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<tr>
<td>HF-7630</td>
<td>Terminal, 0.25 Insul Fem CSA</td>
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<tr>
<td>PNEG-1928</td>
<td>UV Sensor Retrofit Installation Manual</td>
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<tr>
<td>BX-10X10X5</td>
<td>Box, 10X10X5 (Stock Box)</td>
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</table>

Product Description

The UV flame detection kit “UVSCAN-2” was designed to replace the flame rod or probe that is used on Vision dryer controls that utilize the HF-4624 fenwal flame control board used on CSA dryers or D03-0846 Pactrol control used on CE dryers. (See Figure 4A.) These flame controllers uses a flame rectification circuit that in certain situations may not work reliably with certain gases.

Figure 4A Fenwal Flame Control (HF-4624) (HF-4624 not included)

The GSI part # HF-7620 UV flame relay sensor (See Figure 4B on Page 17) is more reliable since it picks up the UV light (in the 180-230 nm) that is naturally emitted in the flame when using LP, natural gas or propane as its fuel. It replaces the flame rod or probe located in the burner and re-produces the expected flame signal to the fenwal board.
This kit will include all the parts necessary to change the flame rectification sensing to a UV style flame sense.

**Sight Tube Assembly Instructions**

Locate 1/2" x 5" nipple (C) and attach the 1/2" coupler (B) to one end of this nipple. Then attach the 1/2" to 1/8" reducer bushing (A) into the 1/2" coupling as shown in Figure 4C. (No sealant is necessary.)
4. UV Sensor Retrofit Installation for CSA/CE Portable Dryers

Sensor Mounting

The location to mount the sensor is critical in providing reliable flame sense. The sensor needs to have a constant view to the flame of the burner during all burner modes and operations. Typically the best location is just to the right of the inspection window plate as shown in Figure 4D. The sensor tube needs to be pointing between the burner veins as shown in Figure 4E. It is best if the sensor points slightly downward to allow any moisture that may be present to drain away from the UV sensor component.

Once you have determined the sensors location drill a 7/8" hole into the side of the can and attach the UV sight tube assembly into the hole using two (2) 1/2" lock nuts included with kit. Be sure to leave plenty of thread sticking through the burner can to mount the UV sensor.

Once UV sensor has been mounted to sight tube then attach the five (5) pin cable to sensor. Route the cable through the black plastic heyco cord connector (FH-1310) then through either an existing hole in the fan/heater control box or drill a new 7/8" hole. Try to keep the cable entrance location close to the relay and fenwal board.
Wiring Instructions

Disconnect power and lock out prior to performing this service.

The factory and the UV wirings diagram are included (Figure 4G on Page 20 and Figure 4H on Page 21) which will help show the difference between the current and modified versions.

1. Disconnect the flame probe or sensor wire from terminal S1 which is shown in Figure 4F. It is the thin red 18 gauge high temperature wire (Teflon) and tie it back out of the way. Attach the red wire from the UV sensor cable with the spade terminal attached to the S1 terminal of the fenwal (CSA models) or to neutral bar of Pactrol control (CE models). (You may need to peel back more of the grey sheathing of the UV cable to gain more length of the wire conductors to reach all the connection points.)

2. Strip the insulation off both ends of the supplied white wire and insert one end into either terminal 22 or 24 (whichever of the white terminals that contains a single wire) and the other end into terminal 2 of the relay base.

3. Attach the black wire from the UV sensor cable into neutral terminal #24. This will provide the grounding path to the flame signal through neutral.

4. Attach the yellow wire from the UV sensor cable into terminal 1 (black terminal) of the terminal strip in the fan/heater box.

5. Attach the orange wire from the UV sensor cable into terminal 2 (white terminal) of the terminal strip in the fan/heater box.

Disconnect power and lock out prior to performing this service.

DANGER
4. UV Sensor Retrofit Installation for CSA/CE Portable Dryers

**Figure 4G CE UV Sensor Wiring**
4. UV Sensor Retrofit Installation for CSA/CE Portable Dryers

Figure 4H CSA UV Sensor Wiring
Operation

The UV sensor is highly sensitive to only UVC light that is present in flame. It can detect a small flame from a lit match over 6’ away. Because the particular wavelength “C” band of UV light this sensor is sensitive to (180-230 nm) is normally absorbed by the ozone present in our atmosphere the sensor will not be affected by normal sunlight.

The UV sensor is powered up whenever the dryer controls are energized (orange and yellow wires). The rectified output (black and red wires) of the UV flame sensor is only active when the sensor senses flame through an internal relay. This is provided to the fenwal flame board between terminal S1 or Pactrol terminal 1 and the burner ground or AC Neutral.

If the UV sensor has burned in and continues to sense flame even with no flame present then the self checking feature of the UV sensor will detect this issue and stop sensing flame and shut down the dryer.

Life expectancy of the UV sensor is rated for approximately 10000 hours of continuous operation which should provide many years of reliable use.

Testing

The sensor contains two (2) red LED lamps that will aid in troubleshooting flame sensing issues. One is labeled “FLAME STATUS” and the other “FLAME RELAY”.

FLAME STATUS indicates the strength of the flame signal. The brighter the LED, the stronger the flames signal.

FLAME RELAY turns on once the FLAME STATUS becomes strong enough. This is what activates the flame rectification circuit going to the fenwal board used in the Vision control system.

If the sight tube is positioned too close to the spark or the reducing bushing is not used then the flame sensor will falsely sense flame and activate the flame relay. This can be tested by dry firing the burner with the gas turned OFF. You may rarely see the FLAME STATUS light flicker briefly during this test but it should never be strong enough for the flame relay to become active.

If everything is working correctly the burner should attempt to relight three (3) times then controls will shut the system down with an ignition failure warning on the screen.

NOTE: The ignition source (spark) is very rich in Ultraviolet light. This can cause the UV sensor to sense flame if it can see the light that is emitted from the spark. This is the reason we choked the sight tube down to a 1/8” NPT opening is to reduce this effect.

Do not reverse the Yellow and Orange wires on the UV sensor when hooking it up to 120 VAC. The sensor is polarity sensitive and reversing these wires can destroy the sensor.
5. UV Sensor Retrofit Installation for Tower Dryers

Removing the Flame Probe

1. Remove the flame probe (A) from the burner. (See Figure 5A.)

![Figure 5A](image)

2. Cut the wire, leaving enough wire to connect to the new sensor.

3. Install the 1/2" nipple (B) in the location where the flame probe (A) was on the burner. (See Figure 5B.)

![Figure 5B](image)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>A</td>
<td>Flame Probe</td>
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<tr>
<td>B</td>
<td>1/2&quot; Nipple</td>
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</table>
Installing the Honeywell UV Sensor

1. Remove the flame probe. (See removing the flame probe on Page 23.)
2. Install the purple Honeywell sensor onto the 1/2" nipple.
3. Install the terminal spade onto the white ground wire on the sensor.
4. Loosen the bolt connecting the current ground wire on the burner.
5. Slide the terminal spade on the sensor ground wire underneath the ground wire on the burner.
6. Re-tighten the bolt.
7. Use the orange connector to connect the blue wire from the sensor to the sensing signal wire that is connected to the control board.
8. Replace the flame sensing amplifier with the UV sensing amplifier.

Figure 5C

Honeywell Sensor - Vision T and F Series and Modular Tower Dryers (UVSCAN-3)

<table>
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<td>056-2281-6</td>
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<td>B</td>
<td>056-2279-0</td>
<td>Honeywell Amplifier Module - UV</td>
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<td>C</td>
<td>THH-4061</td>
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<td>E</td>
<td>1EL0534</td>
<td>Terminal, Spade Panduit #P10-10F-D</td>
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</table>
Installing the Seimens UV Sensor

1. Remove the flame probe. (See removing the flame probe on Page 23.)
2. Install the 3/4" reducer onto the 1/2" nipple.
3. Install the silver Seimens sensor onto the 3/4" reducer.
4. Install the terminal spade onto the white ground wire on the sensor.
5. Loosen the bolt connecting the current ground wire on the burner.
6. Slide the terminal spade from the ground wire under the ground wire on the burner.
7. Re-tighten the bolt.
8. Use the orange connector to connect the orange wire from the sensor to the sensing signal wire that is connected to the control board.
9. On the Seimans board, the signal sensing wire must be moved from terminal X10-05-2 to X10-06-1. The burner ground wire must be moved from X10-05-1 to X10-06-2.

Figure 5D

Seimens Sensor - Vision T and F Series Tower Dryers (UVSCAN-4)

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<td>B</td>
<td>D07-0028</td>
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<td>THH-4061</td>
<td>Nipple, 1/2&quot; x 3-1/2&quot; SCH 40 Black</td>
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<tr>
<td>D</td>
<td>401176</td>
<td>Connector, Type Orange Ideal-73B</td>
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<tr>
<td>E</td>
<td>1EL0534</td>
<td>Terminal, Spade Panduit #P10-10F-D</td>
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</tr>
</tbody>
</table>
5. UV Sensor Retrofit Installation for Tower Dryers

Installing the Protectifier UV Sensor

1. Remove the flame probe. (See removing the flame probe on Page 23.)
2. Install the 3/4" reducer onto the 1/2" nipple.
3. Install the green Protectifier sensor onto the 3/4" reducer.
4. Install the terminal spade onto the yellow ground wire on the sensor.
5. Loosen the bolt connecting the current ground wire on the burner.
6. Slide the terminal spade from the yellow ground wire under the ground wire on the burner.
7. Re-tighten the bolt.
8. Use the orange connector to connect the purple wire from the sensor to the sensing signal wire that is connected to the control board.
9. On the Protectifier board, move the signal sensing wire from the bottom connection disk labeled “E” to the middle connection disk labeled “UV”.

---

Figure 5E

Protectifier Sensor - Commercial PLC Tower Dryers (UV SCAN-5)

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Part #</th>
<th>Description</th>
<th>Qty</th>
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<tbody>
<tr>
<td>A</td>
<td>GT3-0535</td>
<td>Scanner, UV P-C II W W/1/2&quot; Str. Liquid-Tite Connector</td>
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<td>B</td>
<td>D07-0028</td>
<td>Bushing, Reducer 3/4&quot; x 1/2&quot; Hex SCH 40 Black</td>
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<td>Nipple, 1/2&quot; x 3-1/2&quot; SCH 40 Black</td>
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<td>D</td>
<td>401176</td>
<td>Connector, Type Orange Ideal - 73B</td>
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<tr>
<td>E</td>
<td>1EL0534</td>
<td>Terminal, Spade Panduit #P10-10F-D</td>
<td>1</td>
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</table>
GSI Group, LLC Limited Warranty

The GSI Group, LLC (“GSI”) warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user’s sole remedy (and GSI’s only obligation) is to repair or replace, at GSI’s option and expense, products that in GSI’s judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

The Limited Warranty period is extended for the following products:

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Warranty Period</th>
</tr>
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<tbody>
<tr>
<td>AP Fans and Flooring</td>
<td>Performer Series Direct Drive Fan Motor 3 Years</td>
</tr>
<tr>
<td></td>
<td>All Fiberglass Housings Lifetime</td>
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<tr>
<td></td>
<td>All Fiberglass Propellers Lifetime</td>
</tr>
<tr>
<td>AP and Cumberland</td>
<td>Flex-Flo/Pan Feeding System Motors 2 Years</td>
</tr>
<tr>
<td>Cumberland</td>
<td>Feeder System Pan Assemblies 5 Years **</td>
</tr>
<tr>
<td>Feeding/Watering</td>
<td>Feed Tubes (1-3/4&quot; and 2.00&quot;) 10 Years *</td>
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<tr>
<td>Systems</td>
<td>Centerless Augers 10 Years *</td>
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<tr>
<td></td>
<td>Watering Nipples 10 Years *</td>
</tr>
<tr>
<td>Grain Systems</td>
<td>Grain Bin Structural Design 5 Years</td>
</tr>
<tr>
<td>Grain Systems</td>
<td>Portable and Tower Dryers 2 Years</td>
</tr>
<tr>
<td>Farm Fans</td>
<td>Portable and Tower Dryer Frames and Internal Infrastructure † 5 Years</td>
</tr>
</tbody>
</table>
| Zimmerman          | † Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

9101239_1_CR_rev8.DOC (revised January 2014)
This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.