



# *Instruction Manual*

## **Model 275E** *Extractive Gas Sample Probe*



**AMETEK**<sup>®</sup>

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# Receiving and Storage

The UAI 275E Extractive Gas Sample Probe is a complete pre-installed unit. No assembly is necessary when received on-site.

Carefully inspect the product and any special accessories included with it immediately on arrival by removing them from the packing and checking for missing articles against the packing list!

Check the items for any damage in transit and, if required, inform the shipping insurance company immediately of any damage found!

Storage Location should be protected from the elements. Although all components provided are designed to resist corrosion, additional protection from heat (>140°F/ 60°C) and humidity is recommended.

# Definition of Symbols



WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR HAZARDOUS AREA INSTALLATION.

THE SUPPLY POWER CIRCUIT MUST INCLUDE AN OVERPROTECTION DEVICE WITH A MAXIMUM RATING OF 20 A. A DISCONNECT SWITCH MUST BE LOCATED IN CLOSE PROXIMITY TO THE PROBE.

IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED PER CLAUSE 5.4.4(i) IN STANDARD EN 61010-1

CAUTION, RISK OF DANGER SYMBOL INDICATES INJURY MAY OCCUR IF MANUFACTURER'S INSTRUCTIONS ARE NOT ADHERED TO. PLEASE READ MANUAL CAREFULLY WHEN SYMBOL IS DISPLAYED



CAUTION, HOT SURFACE SYMBOL INDICATES EXPOSED SURFACE TEMPERATURE CAN CAUSE BURNS OR PERSONAL INJURY. CARE SHOULD BE TAKEN WHEN CONTACT IS REQUIRED.



CAUTION, RISK OF ELECTRICAL SHOCK SYMBOL INDICATES ELECTRICAL SHOCK MAY OCCUR. CAUTION SHOULD BE TAKEN BEFORE DISCONNECTING OR CONTACTING ANY ELECTRICAL CONNECTIONS.



PROTECTIVE CONDUCTOR TERMINAL SYMBOL INDICATES THE TERMINAL LOCATION FOR THE PROTECTIVE CONDUCTOR. FAILURE TO CONNECT TO THE PROTECTIVE CONDUCTOR TERMINAL MAY RESULT IN A SHOCK HAZARD.

# Specifications

<b>OPERATING SPECIFICATIONS</b>	
<b>Sample Flow Rate</b>	0 to 20 l/m
<b>Calibration Gas Requirement</b>	Sample flow rate plus 10%
<b>Operating Pressure Drop at 10 l/m</b>	12" Water column
<b>Maximum Gas Temperature at Inlet</b>	700°F (370°C)
<b>Temperatures:</b>	
Filter Oven	From 340°F (171°C)
Enclosure Heater	225°F / 110°C
<b>Dimensions (Enclosure Only)</b>	19" H x 17" W x 15" D 19" H x 17" W x 19" D (with optional isolation valve)
<b>Weight (Minus Probe Tube)</b>	50 Pounds
<b>Input Voltage Requirement</b>	115/230VAC, 50/60 Hz
<b>Input Amp Requirement</b>	
Filter Heater	5 Amp @115VAC / 3 Amp @ 230VAC
With Enclosure Heater	7 Amp @ 115VAC / 4 Amp @ 230VAC
<b>Operating Connections Provided</b>	Sample outlet (3/8" t) Blowback air inlet (1/4" t) Isolation valve air (1/4" t) Calib. gas inlet (1/4" t)
<b>Blowback Tank Volume</b>	0.7 scf @ 100 psig
<b>Blowback Duration (Suggested)</b>	2 seconds
<b>Blowback Timer Period</b>	
Without Timer Card	Ext. control
With Timer Card	15 min. to 24 hr.
<b>Blowback Solenoid Valve Voltage</b>	
Voltage With Timer Card	24VDC or 115/230VAC 115/230VAC
<b>Filter Element</b>	9" 2 µm woven SS
<b>Heater Types</b>	
Filter Oven	(2) Rod heater, 125 watt (1) Rod heater, 250 watt
Enclosure	250 watt strip heater (optional)
<b>Insulation Material:</b>	
Filter Oven	Fiberglass wrap
Enclosure	1/2" thick solimide (with enclosure heater option)
Filter Chamber Material	316SS

# Description and Principle of Operation

## APPLICATION

The Universal Analyzers Model 275E Extractive Gas Sample Probe Assembly is designed to be used on stacks where the filter needs to be changed on a regular basis. It can accommodate a higher dust loading, from 5 g to 20 g per cubic meter at up to 5 l/m.

Filter changes can be made in less than one minute.

The 275E filter will mount by means of a pipe flange to a mating flange on the stack. The size of the flange can be specified by the user and can include 2", 3", 4", 6" or DIN type. A 1/2" NPT female threaded connection is provided for the sample probe to mount inside the mounting flange. Stack temperatures and corrosive gases will determine the material and design of the probe to be used.

Sample flow rates of up to 20 l/m can be extracted and filtered through the Model 275E with a minimal amount of pressure drop.

## GENERAL DESCRIPTION

The Model 275 Extractive Gas Sample Probe is designed to minimize the cooling of the sample at the inlet in order to avoid condensation of the water vapor in the sample. Two 125 watt and one 250 watt heaters are mounted inside the Filter Heater Tube halves. This heater tube assembly holds the temperature of the filter at 340°F with a bi-metallic thermal switch. Another option for temperatures above 400°F is to control using a digital temperature controller with a Type K thermocouple. An optional independent RTD Temperature Sensor can be provided as a means to measure and transmit or record the temperature of the filter.

The "LOW TEMP" terminals are connected to a dry circuit thermal switch mounted on the outside of the filter heater tube. This may be connected to an external alarm to indicate a low temperature condition within the filter.

The blowback accumulators are 7" diameter stainless steel spheres. They are designed to be pressurized to a maximum pressure of 125 psig compressed air. At that pressure there is 1/2 ft<sup>3</sup> of air stored to flush the particulate matter out of the filter and through the probe tube into the stack.

Compressed air is used to clean the filter element. This air supplied to the Blowback assembly needs to be clean and dry. Instrument quality air is preferred. The pressure should be as high as possible, up to 125 psig. High pressure air fills the accumulator and provides a substantial blast when the solenoid valve opens. This loosens the particles on the filter surface and forces them back through the probe tube into the stack. The period of time between blowback cycles should occur before the pressure drop across the filter begins to increase. This should be selected to be as often as every fifteen minutes but no less frequently than once per day. The time period between blowback cycles can be based on a calculation to estimate the amount of sample required to deposit from twenty grams of solids in the filter element.

Instrument air usage is minimal and smoothed by the fact that the air accumulator is charged over a period of time through a 1/4" instrument air line. The recharge time could be extended with a restriction in the air line if it were desired to reduce the pressure pulses on the instrument air supply and to consume instrument air more slowly.

The Model 275E uses a 2 µm woven stainless steel filter. It is also available with a 0.1 µm coating inside for finer filtration, or with a Silconert 2000 coating for corrosion resistance or to minimize gas adsorption.

The Model 275 is to be mounted to the stack flange. The length of the probe should be selected to extend into the center of the stack; or if the stack diameter is greater than 12', at least 6' into that stack.

The calibration gas connection is located to allow calibration gas to be injected into the chamber ahead of the filter. This is close to the sample source as is required by many EPA officers. For installations where the cal gas control valves are not located close to the filter, it is suggested that calibration gasses pass through a Back Pressure Check valve (set at 3 to 5 psig) in order to avoid the possibility that calibration gas leaks into the sample while the sample is being drawn.

# Installation

Each stack where the Model 275E is to be mounted should have a Stack Sample Flange installed. This flange should be mounted so the Probe Tube when installed is level or pointing slightly downward to allow any entrained liquid to drain back into the stack.

A Heated Sample Line (HSL) should be supported close to the Model 275E. Connect the sample line to the 3/8" tubing fitting sample filter. The non-heated portion of the sample line should be kept short and insulated to avoid condensation within the line between the 275E and the HSL. Connect the cal gas line through a back pressure check valve to the 1/4" tubing fitting. Connect instrument air to the blowback assembly using the 3/8" tube connection.

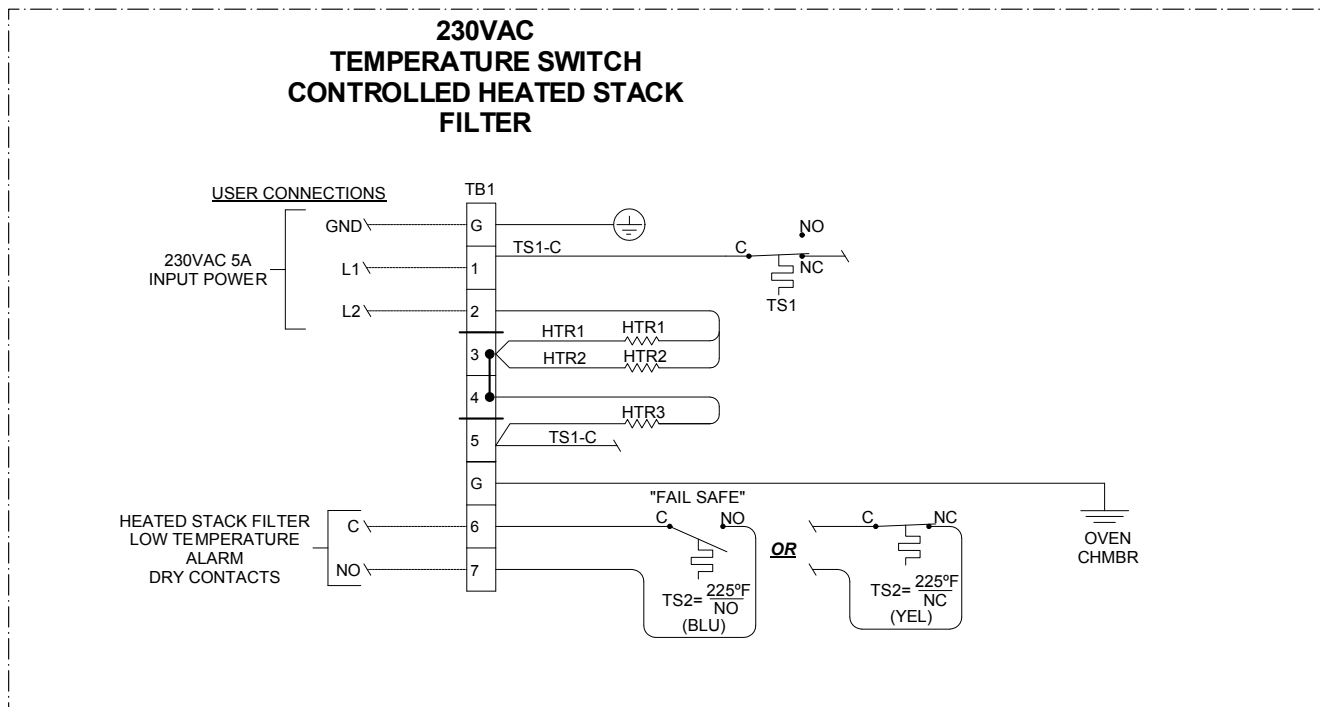
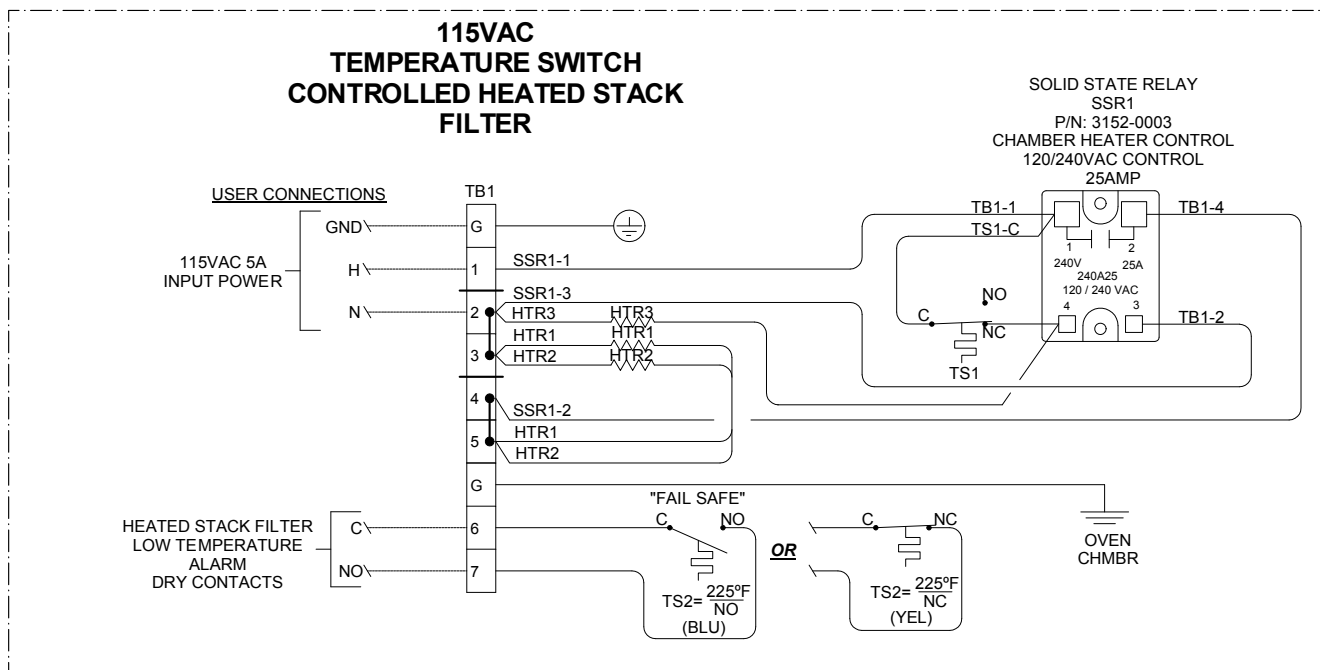
Provide power to the terminal block within the Model 275 enclosure. Insure the power supplied to the heater matches the heater voltage requirement shown on the serial number tag. An independent ground wire should be run to the grounding terminal on the terminal strip.

Connect solenoid controls for the blowback solenoid to the appropriate terminals blocks. If monitoring of low filter temperature conditions is desired, connect to the contact terminals for the low temperature switch. If an independent measurement and display of the oven temperature is desired, an RTD Temperature Sensor can be slipped into the Upper Heater Tube (next to Heater Rod Retaining Screw) to measure the temperature of the filter oven.

The final installation step is to check to insure that the sample line insulation between the HSL and the Sample Outlet Connection on the Model 275E is still intact. Close the cover of the enclosure and latch shut. The gas sample should be maintained at a temperature above the dew point of the gas.

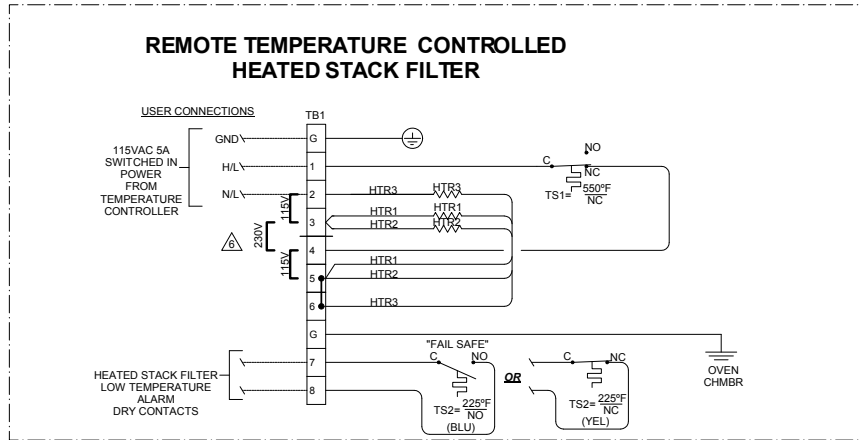
# Electrical Connections Model 275E

Electrical connections used depend on options chosen.

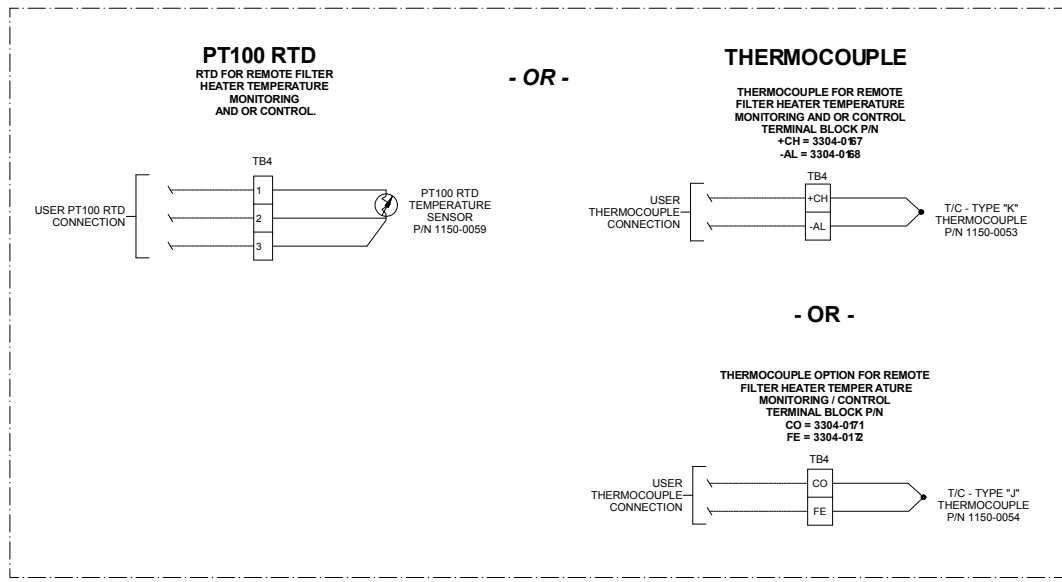
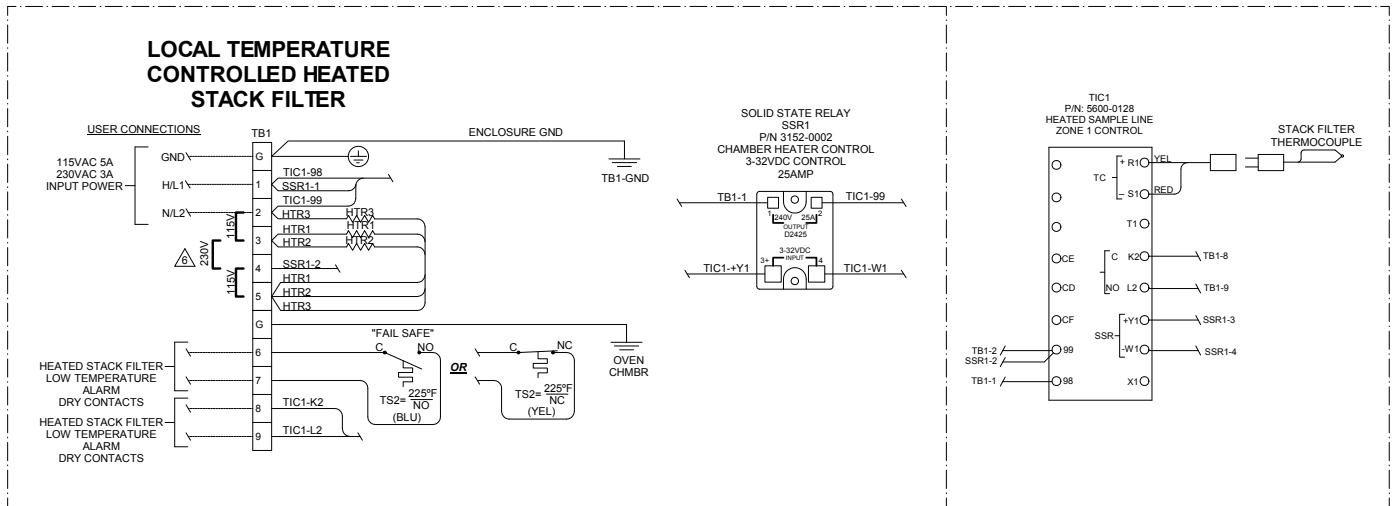




# Electrical Connections Model 275E

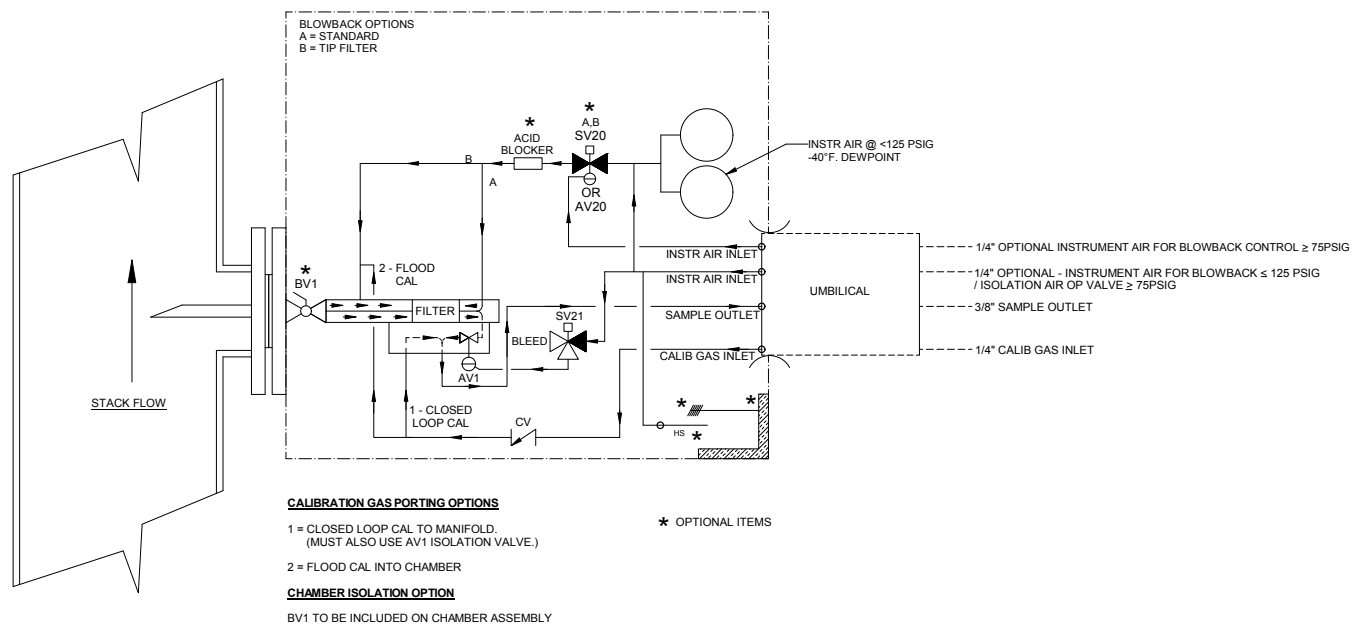
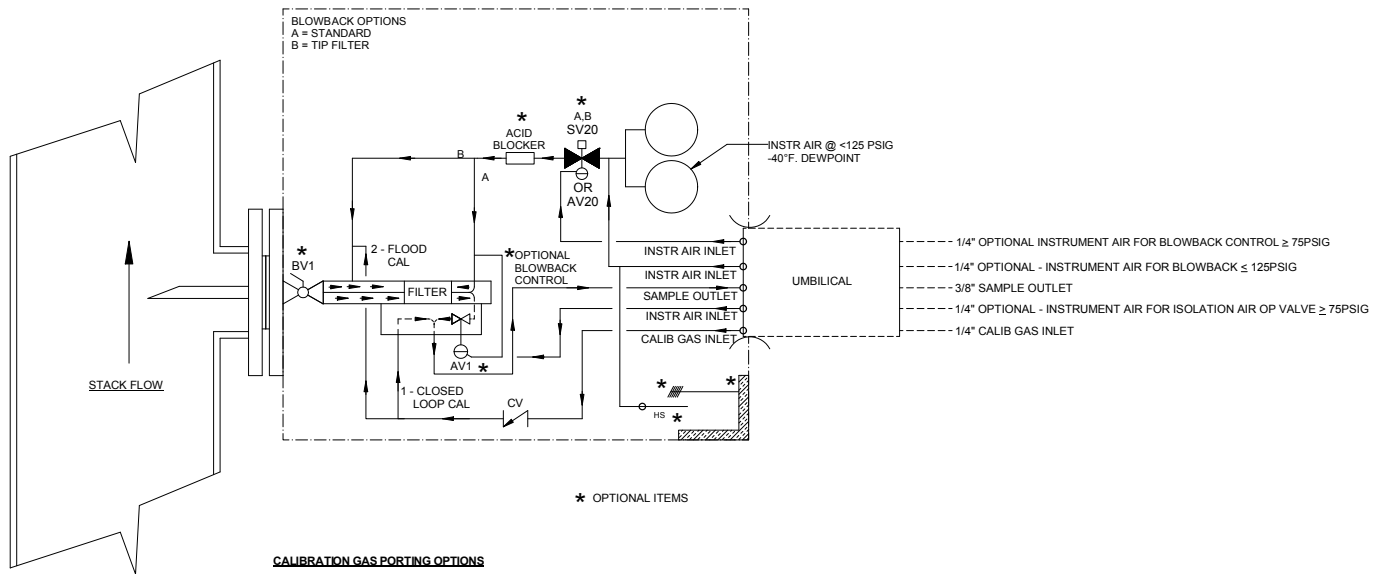


**CAUTION: HEATED PROBE FILTERS MUST NOT EXCEED 400°F LOW TEMPERATURE UNITS, AND 600°F HIGH TEMP UNITS.**

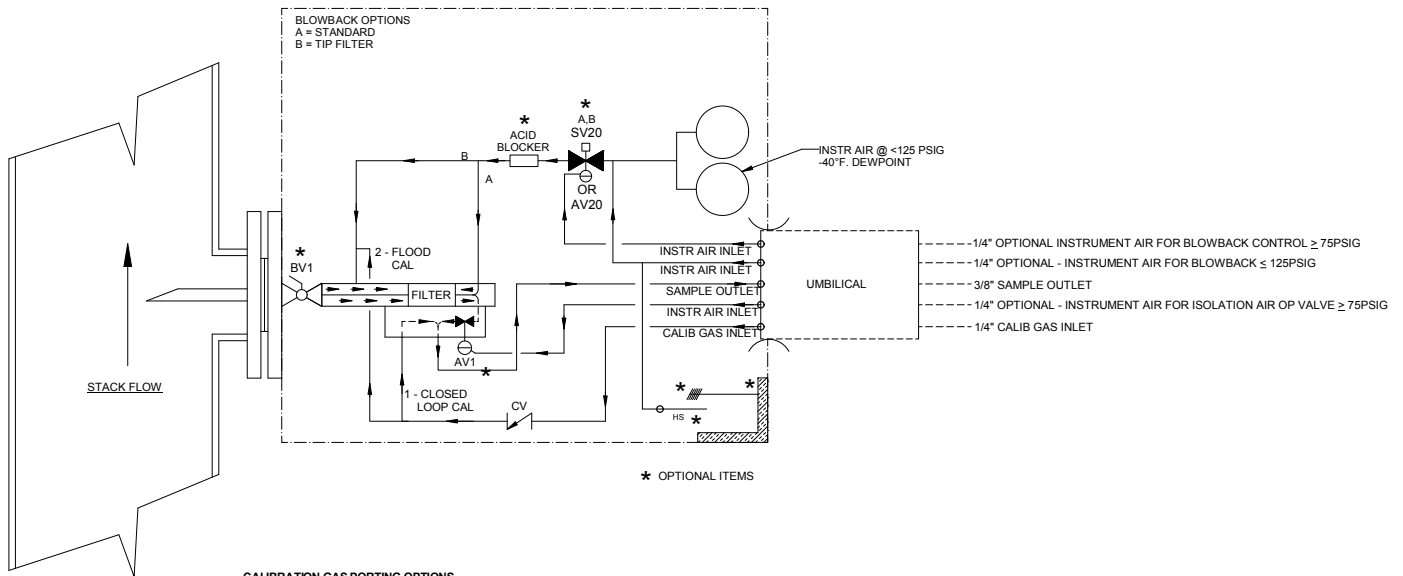


# Process and Piping Connections Model 275E

Piping connections used depend on options chosen.



# Process and Piping Connections Model 275E



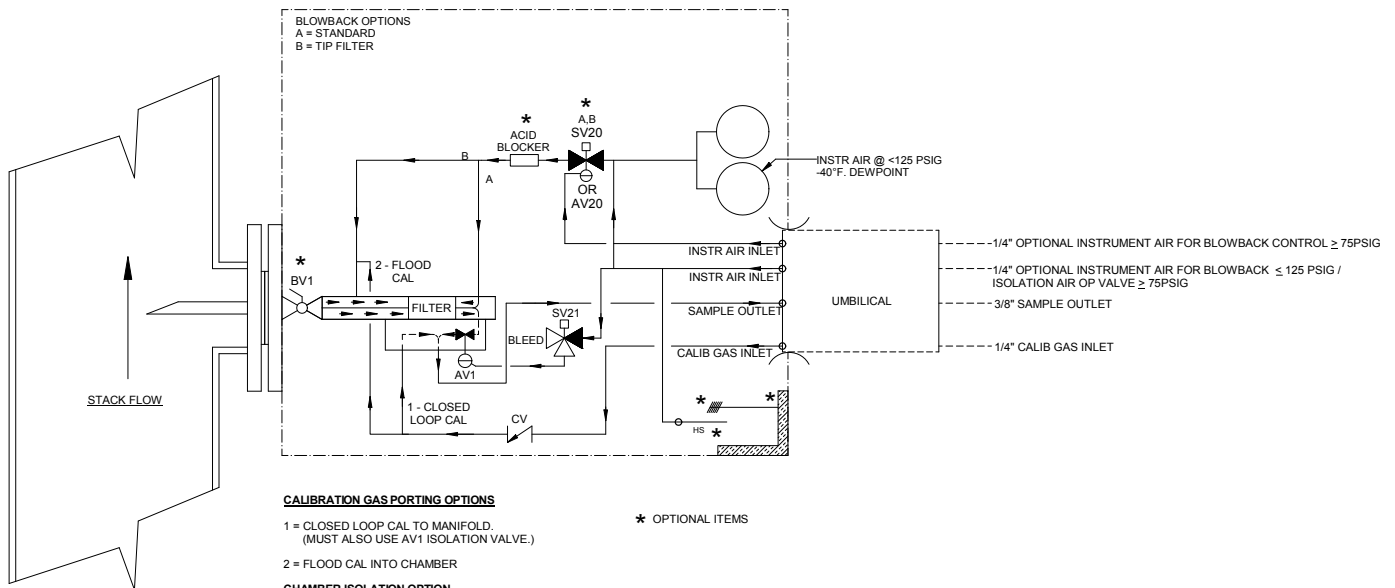
## CALIBRATION GAS PORTING OPTIONS

1 = CLOSED LOOP CAL TO MANIFOLD.  
(MUST ALSO USE AV1 ISOLATION VALVE.)

2 = FLOOD CAL INTO CHAMBER

## CHAMBER ISOLATION OPTION

BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY



## CALIBRATION GAS PORTING OPTIONS

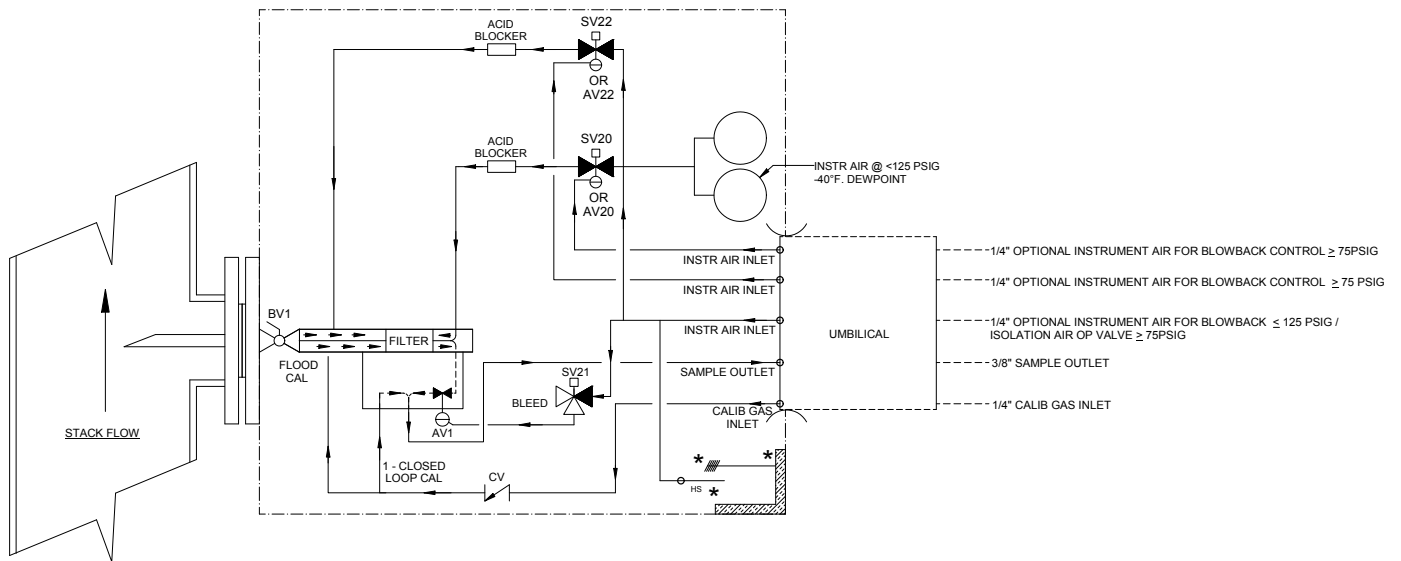
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# Start-Up

Apply power to the Model 275E. Allow one hour for the Filter and optional Enclosure Heater to come to temperature. This warm-up period is extremely important to avoid the presence of condensation within the Model 275E filter which would cement the particulates to the filter surface.

Run a calibration cycle to insure that the calibration lines are properly installed and sealed. A flow meter should be installed in the calibration gas supply line to insure that there is at least 10 percent more calibration gas being supplied to the Model 275E than is being withdrawn as sample. That will insure that the filter and probe are being properly flooded with calibration gas. The excess calibration gas will be discharged through the probe tube.

# Shutdown

Before removing power from the unit, ensure filter chamber has been purged of any potentially hazardous components.

To purge the chamber, perform the following:

1. If equipped, perform a manual blowback operation.
2. Close the filter stack isolation valve(s).
3. Ensure no sample is being drawn through the filter chamber. If the sample is being drawn using a sample pump, turn off the power to the pump or disconnect the sample line.
4. If not already done, disconnect the sample line.
5. Use instrument air or other inert gas, flow ~10 l/m for 15-30 minutes through the filter chamber.  
Note: Inert gas can be routed through the chamber via the calibration gas line.
6. After purging is complete, follow the maintenance procedure to change the filter.
7. Cap the sample outlet tube connection and disconnect power from the unit.

Note: If electrical wires are to be disconnected, follow applicable 'Lock Out/ Tag Out' requirements.

# Maintenance

## CHANGING THE FILTER



**CAUTION: THIS PROCEDURE CAN CAUSE SEVERE BURNS. USE PROPER PROTECTION.**

Changing the filter in the Model 275E Heated Filter Assembly is extremely easy. Unsecure the door latches and open the door to the Heated Filter. Close the filter isolation valve(s) to isolate the filter chamber from process. Using gloves to protect the hand, grasp the cap on the end of the filter body opposite the probe and turn it counter clockwise. The cover may be hot to the touch and may cause burns to the hand if not protected. Removing the cover also removes the filter.

Inspect the O-Rings which are at each end of the filter to ensure they are still elastic and will seal the filter. Replace them if they are charred or deformed.

Replace the filter with a new one. Ensure it is in the center of the oven so that it is in contact with the O-Ring on the far end of the filter.

Screw the cap back on the filter body. Open the filter isolation valve(s). Close the door and secure the door latches. The filter replacement procedure is complete.

## REMOVING THE PROBE TUBE



**CAUTION: THIS PROCEDURE CAN CAUSE SEVERE BURNS. USE PROPER PROTECTION.**

Removing the probe tube (e.g. for maintenance or inspection) can be done while the process is still running. Shut down the probe in accordance with shut down instructions. Disconnect the electrical and gas connections to the filter chamber and isolation valve stack. Remove the subflange retaining bolts holding the primary subflange to the secondary subflange.

**Caution:** Parts in the filter stack including the flange and probe tube may be hot. Use proper protection to avoid burns. Pull the filter stack assembly away from the flange, allowing the probe tube to slide through the probe tube support if installed.

When the filter stack assembly and probe tube (and probe tube support) are fully withdrawn, close the process side isolation valve. For the triple O-Ring seal, remove the secondary subflange from the main flange by removing the remaining subflange retaining bolts. For the retractable probe tube support, disconnect the lanyard and remove the filter and probe tube assembly. The probe tube may be removed from the filter stack assembly and primary subflange for maintenance. See the section on installation to reinsert the probe tube and filter assembly into the stack.

# Troubleshooting

The following table should give an overview of possible errors and an instruction to check and to repair them (is not valid for the starting-up period of cooler).

<b>Error</b>	<b>Possible reason</b>	<b>Check/Repair</b>
No sample gas flow	Filter element plugged  Filter chamber exit port plugged	Check/ replace filter element  Remove filter element and inspect exit port. Exit port will be located at 0° or 180°, depending on configuration
Low temperature alarm	Insufficient warm-up time  power disconnected  Control switch defective	Ensure power has been applied to the unit for a minimum of 15 minutes  Ensure power is supplied to the unit. Check by measuring for AC voltage on TB1-1 & 2  Verify by measuring for a closed circuit between TB1-1 & 4
High oxygen readings/low pollutant readings	Leak	Leaking past the filter element O-Rings. Remove filter element and inspect O-Rings. There are two O-Rings, one located at the base of the filter element and the other in the cap. Ensure both are pliable and seated in their respective grooves  Leaking blowback solenoid valve. Block or disconnect the blowback supply  Loose connection Verify all fittings are leak free
Low readings during calibration	Insufficient calibration gas flow	Ensure calibration flow is at least 110% of the sample gas flow

# Spare Parts

<b>Consumable Spare Parts (with filter oven temps below 400°F)</b>	
<b>Part</b>	<b>P/N</b>
Filter Cap Assy with SS Woven Filter for Circular Chambers	5209-1001
Filter, 2 µm Woven SS 9" Lg. (Other Options Available)	4980-0328
O-Ring, Viton 2-113, Isolation Valve Body to Chamber Manifold	4904-0002
O-Ring, Viton 2-210, Isolation Piston	4904-0008
O-Ring, Viton 2-011, Isolation Piston Shaft	4904-0043
O-Ring, Viton 2-110, Chamber Manifold to Chamber Body	4904-0046
O-Ring, Viton 2-106, Isolation Piston Shaft Screw	4904-0109
Silicone Grease – 700°F High Temperature 1oz. (For O-Rings)	8010-0011

<b>Basic Spare Parts (with filter oven temps below 400°F)</b>	
<b>Part</b>	<b>P/N</b>
Heater Element, 4-1/4" Lg. 120VAC @ 250 Watt	3014-0054
Heater Element, 4-1/4" Lg. 120VAC @ 125 Watt	3014-0058
Temp. Switch Heater Control, Normally Closed Below 375 °F	3103-0061
Solid State Relay, 120/240VAC Control/240VAC Drive 25-Amp	3152-0003
Low Temp. Switch, Normally Open Below 225 °F (Fail Safe)	3103-0012
Low Temp. Switch, Normally Closed Below 225 °F	3103-0013
Solenoid Valve, 3-Way 115VAC (Isolation Valve Control)	4955-0131
Solenoid Valve, 3-Way 24VDC (Isolation Valve Control)	4955-0132
Solenoid Valve, 3-Way 230VAC (Isolation Valve Control)	4955-0140
Solenoid Valve, 2-Way 115VAC (Blowback Control)	4955-0136
Solenoid Valve, 2-Way 24VDC (Blowback Control)	4955-0137
Solenoid Valve, 2-Way 230VAC (Blowback Control)	4955-0144
Check Valve, Set @ 3 PSIG	4955-0148

<b>Optional Parts (with filter oven temps below 400°F)</b>	
<b>Part</b>	<b>P/N</b>
Enclosure Heater, 115VAC @ 250 Watt	3014-0066
Enclosure Heater, 230VAC @ 300 Watt	3014-0067
Temp. Switch, Enclosure Heater, Normally Closed Below 225 °F	3103-0013
Blowback Timer Card, 115VAC (NA with Enclosure Heater)	3600-0019
Blowback Timer Card, 230VAC (NA with Enclosure Heater)	3600-0054
Insulation Blanket for Heated Filter Oven	5150-0157
Temp. Sensor, RTD PT100 (Optional Customer Oven Temp. Control)	1150-0059
Isolation Valve Assembly, Air Op. "Normally Open"	5209-0180
Isolation Valve Assembly, Air Op. "Normally Closed"	5209-0207

\* Commissioning Spare Part



<b>Consumable Spare Parts (with filter oven temps above 400°F)</b>	
<b>Part</b>	<b>P/N</b>
Filter Cap Assy with SS Woven Filter for Circular Chambers	5209-1001
Filter, 2 µm Woven SS 9" Lg. (Other Options Available)	4980-0328
O-Ring, Viton 2-113, Isolation Valve Body to Chamber Manifold	4904-0002
O-Ring, Viton 2-210, Isolation Piston	4904-0008
O-Ring, Viton 2-011, Isolation Piston Shaft	4904-0043
O-Ring, Viton 2-110, Chamber Manifold to Chamber Body	4904-0046
O-Ring, Viton 2-106, Isolation Piston Shaft Screw	4904-0109
Silicone Grease – 700°F High Temperature 1oz. (For O-Rings)	8010-0011

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Heater Element, 4-1/4" Lg. 120VAC @ 250 Watt	3014-0054
Heater Element, 4-1/4" Lg. 120VAC @ 125 Watt	3014-0058
Temperature Controller Oven, 1/32 DIN	5600-0128
Thermocouple, Type "K" (High Temp.)	1150-0053
Solid State Relay, 3-32VDC / 240VAC 25 Amp	3152-0002
Solenoid Valve, 3-Way 115VAC (Isolation Valve Control)	4955-0131
Solenoid Valve, 3-Way 24VDC (Isolation Valve Control)	4955-0132
Solenoid Valve, 3-Way 230VAC (Isolation Valve Control)	4955-0140
Solenoid Valve, 2-Way 115VAC (Blowback Control)	4955-0136
Solenoid Valve, 2-Way 24VDC (Blowback Control)	4955-0137
Solenoid Valve, 2-Way 230VAC (Blowback Control)	4955-0144
Check Valve, Set @ 3 PSIG	4955-0148
Check Valve, Set @ 3 PSIG	4955-0148

<b>Optional Parts (with filter oven temps above 400°F)</b>	
<b>Part</b>	<b>P/N</b>
Enclosure Heater, 115VAC @ 250 Watt	3014-0066
Enclosure Heater, 230VAC @ 300 Watt	3014-0067
Temp. Switch, Enclosure Heater, Normally Closed Below 225 °F	3103-0013
Blowback Timer Card, 115VAC (NA with Enclosure Heater)	3600-0019
Blowback Timer Card, 230VAC (NA with Enclosure Heater)	3600-0054
Insulation Blanket for Heated Filter Oven	5150-0157
Filter Cap Assembly (Incl. Cap Assy., Filter Element Retainer, O-Rings & Seals)	5209-0182
Temp. Sensor, RTD PT100 (Optional Customer Oven Temp. Control)	1150-0059
Isolation Valve Assembly, Air Op. "Normally Open"	5209-0208
Isolation Valve Assembly, Air Op. "Normally Closed"	5209-0209

# Drawings Model 275E

**- FLANGE SIZE**

- 2F - 2" Flange
- 3F - 3" Flange
- 4F - 4" Flange (Standard)
- 6F - 6" Flange
- 2T - 2" Flange - Top Dead Center
- 3T - 3" Flange - Top Dead Center
- 4T - 4" Flange - Top Dead Center
- 6T - 6" Flange - Top Dead Center

**- CHAMBER ISOLATION VALVE**

- N - None (Standard)
- V - Isolation Valve Material of Construction will Match Chamber Material / Temperature
- Low Temp - 316SS Valve, Hast-C, 316SS Siliconert
- High Temp - 316SS Valve, Hast-C, 316SS Siliconert

**- CHAMBER HEAT CONTROL**

- TS - 340°F Temp Switch (Standard)
- DK - DIN Control w/ Type K Thermocouple & "J" Box
- RD - RTD Only (PT100) For Remote Control
- TK - T/C Only (Type K) For Remote Control
- TJ - T/C Only (Type J) For Remote Control

**- CHAMBER MATERIAL**

- SS - 316 Stainless Steel Chamber <400°F (Standard)
- C - Hastelloy C-276 <400°F
- SN - 316 Stainless Steel w/ Siliconert Coating <400°F
- SH - 316 Stainless Steel Hi Temp w/Kalrez <600°F
- CH - Hastelloy C-276 w/Kalrez (Hi Temp) <600°F
- SNH - 316 Stainless Steel w/ Siliconert Coating & w/Kalrez (Hi Temp) <600°F

**- BLOWBACK CONTROL**

- BA - Pneumatic Signal 7psig Minimum
- B24 - 24VDC (Standard)
- BV - 115/230VAC - Same as Supply Voltage
- BTV - 115/230VAC w/Timer Card - Same as Supply Voltage
- N - No Blowback

**- BLOWBACK PORT**

- BB - Standard Blowback (Standard)
- BT - Blowback w/ Probe Tip Filter
- BD - Dual Blowback
- N - No Blowback

**- BLOWBACK ISOLATION VALVE**

- NO - Normally Open (Standard)
- NC - Normally Closed
- OH - Normally Open (Hi Temp)
- CH - Normally Closed (Hi Temp)
- N - None

**- BLOWBACK ISOLATION VALVE ACTUATOR**

- I24 - 24VDC
- I115 - 115VAC
- I230 - 230VAC
- IAIR - Air Actuated Valve Only - Switching Valve Supplied by Others
- IBB - Isolation Actuator Plumbing into Blowback (NO Valve Only)
- N - None

**ENCLOSURE HEAT CONTROL**

- TS - 225°F Temp Switch & Insulation
- DN - DIN Control w/ Insulation & "J" Box
- TK - T/C Type K Insulation
- TJ - T/C Type J Insulation
- RD - RTD PT100 & Insulation
- I - Insulation Only
- N - No Enclosure Heat (Standard)

**- BOOT PLATE SIZE**

- B2 - 2" Boot
- B3 - 3" Boot (Standard)
- B4 - 4" Boot
- BX - Two - 2" Boots
- N - Blank Plate

**- CAL INJECTION**

- F - Flood Cal (Standard)
- D - Direct Cal

**- SYSTEM VOLTS**

- 115 - 115 VAC
- 230 - 230 VAC

**- LOW TEMP ALARM**

- O - Closed on Alarm
- F - Fall Safe (Standard)
- RD - PT100 RTD
- TK - Type K Thermocouple
- TJ - Type J Thermocouple
- N - None

CONFIGURATION OPTIONS		
OPTION	DESCRIPTION	DWG
-HR	TERMINALS FOR HEATED PROBE ASSEMBLY	
-HJ		
-HK		
-PTS	PROBE TUBE SUPPORTS	A0398
-NH3	AMMONIA CONVERTER	
-ZV	Z-PURGE VERTICAL	
-ZVR	Z-PURGE VERTICAL, REMOTE MOUNT	
-ZH	Z-PURGE HORIZONTAL	
-ZHR	Z-PURGE HORIZONTAL, REMOTE MOUNT	

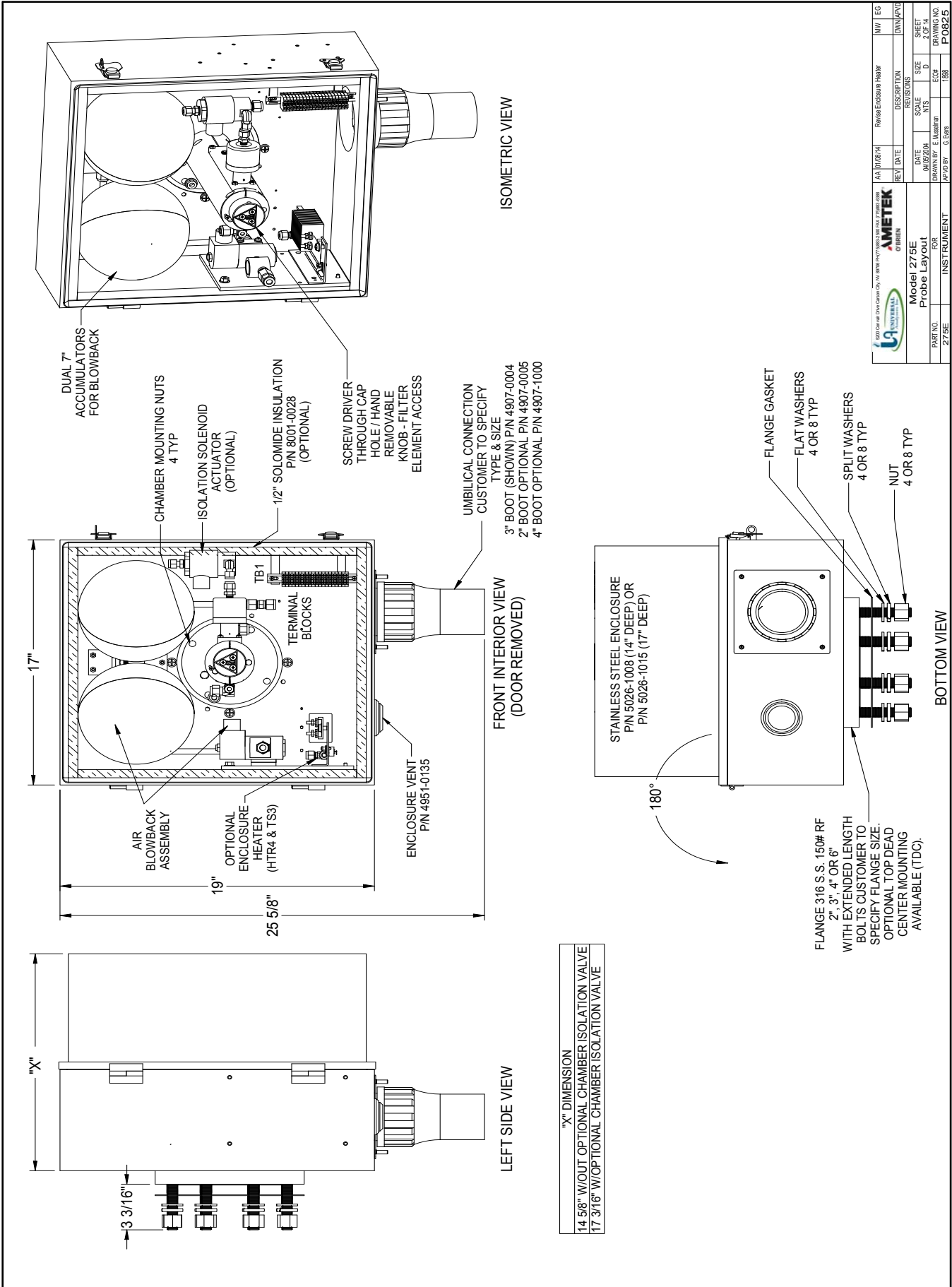
- SHEET 2 - 3 - LAYOUT
- SHEET 4 - FILTER CHAMBER ASSEMBLY
- SHEET 5 - CHAMBER INSTALLATION
- SHEET 6 - P&ID N.O. BLOWBACK ISOLATION w/ PNEUMATIC ACTUATION
- SHEET 7 - P&ID N.O. BLOWBACK ISOLATION w/ SOLENOID ACTUATION
- SHEET 8 - P&ID N.C. BLOWBACK ISOLATION w/ PNEUMATIC ACTUATION
- SHEET 9 - P&ID N.C. BLOWBACK ISOLATION w/ SOLENOID ACTUATION
- SHEET 10 - P&ID DUAL BLOWBACK ISOLATION NORMALLY CLOSED w/ SOLENOID ACTUATION
- SHEET 11 - TEMPERATURE SWITCH FILTER CONTROL
- SHEET 12 - TEMPERATURE SENSOR FILTER CONTROL
- SHEET 13 - BLOWBACK & BLOWBACK ISOLATION ELECTRICAL
- SHEET 14 - ENCLOSURE, HEATER CONTROL, ELECTRICAL



## 275E EXTRACTIVE PROBE

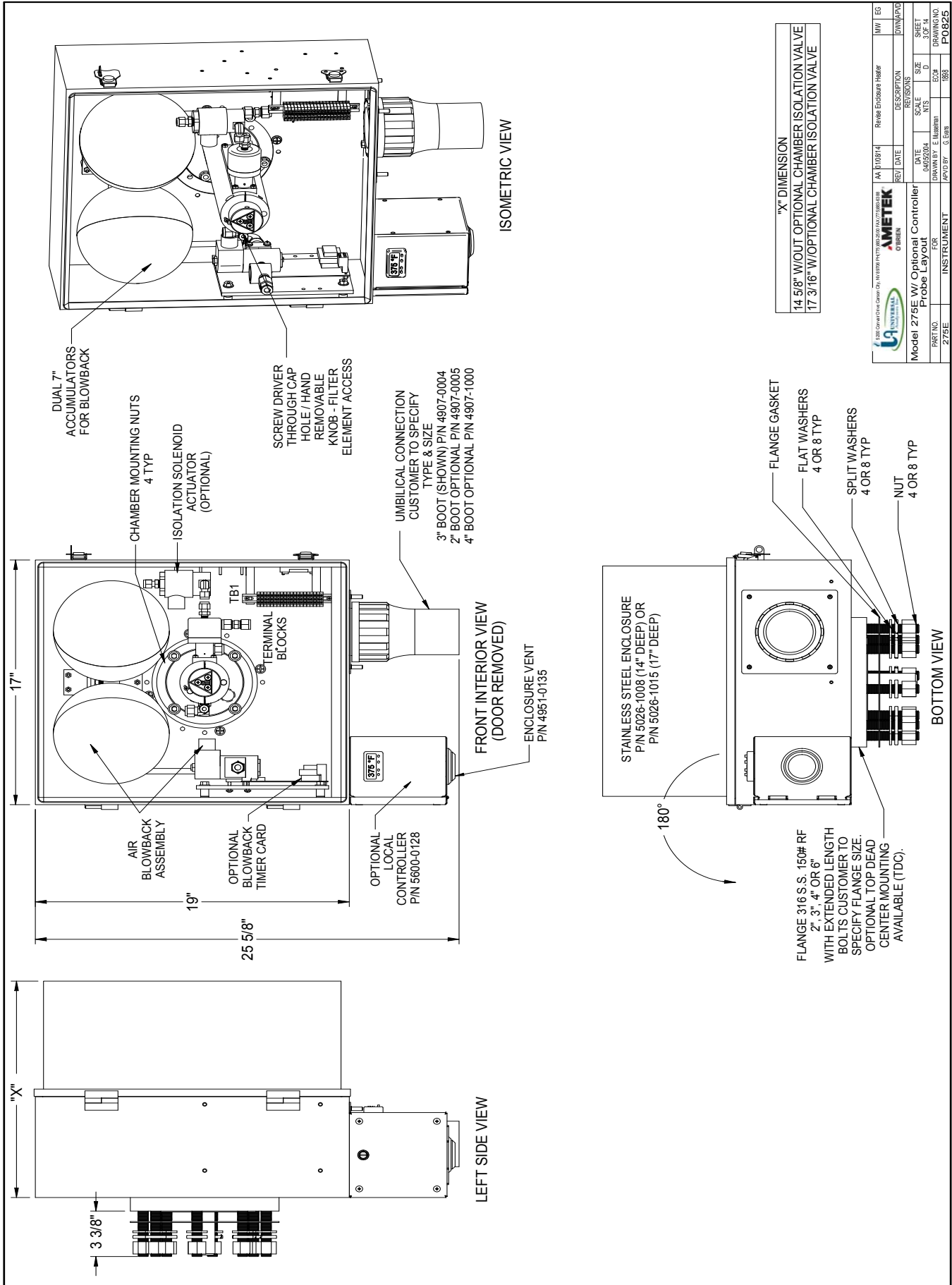
3000 Universal Probe Control Opt. Kit 007031-01 (0003-0001) (A) (7/2008) 0008		AA [010814]	Revised Enclosure Heater	MW	EG
REV	DATE	DESCRIPTION	REVISIONS	DOWN	AP/VD
DATE	SCALE	SIZE	SHEET		
APPROVAL	NO.	NO.	NO.		
DESIGNED BY	E. MURPHY	NO.	NO.		
APPROVED BY	G. EARL	NO.	NO.		
Model 275E Probe Layout					
PART NO.	FOR	INSTRUMENT			
275E					
			SHEET	P0825	
			DRAWING NO.	1888	

# Drawings Model 275E

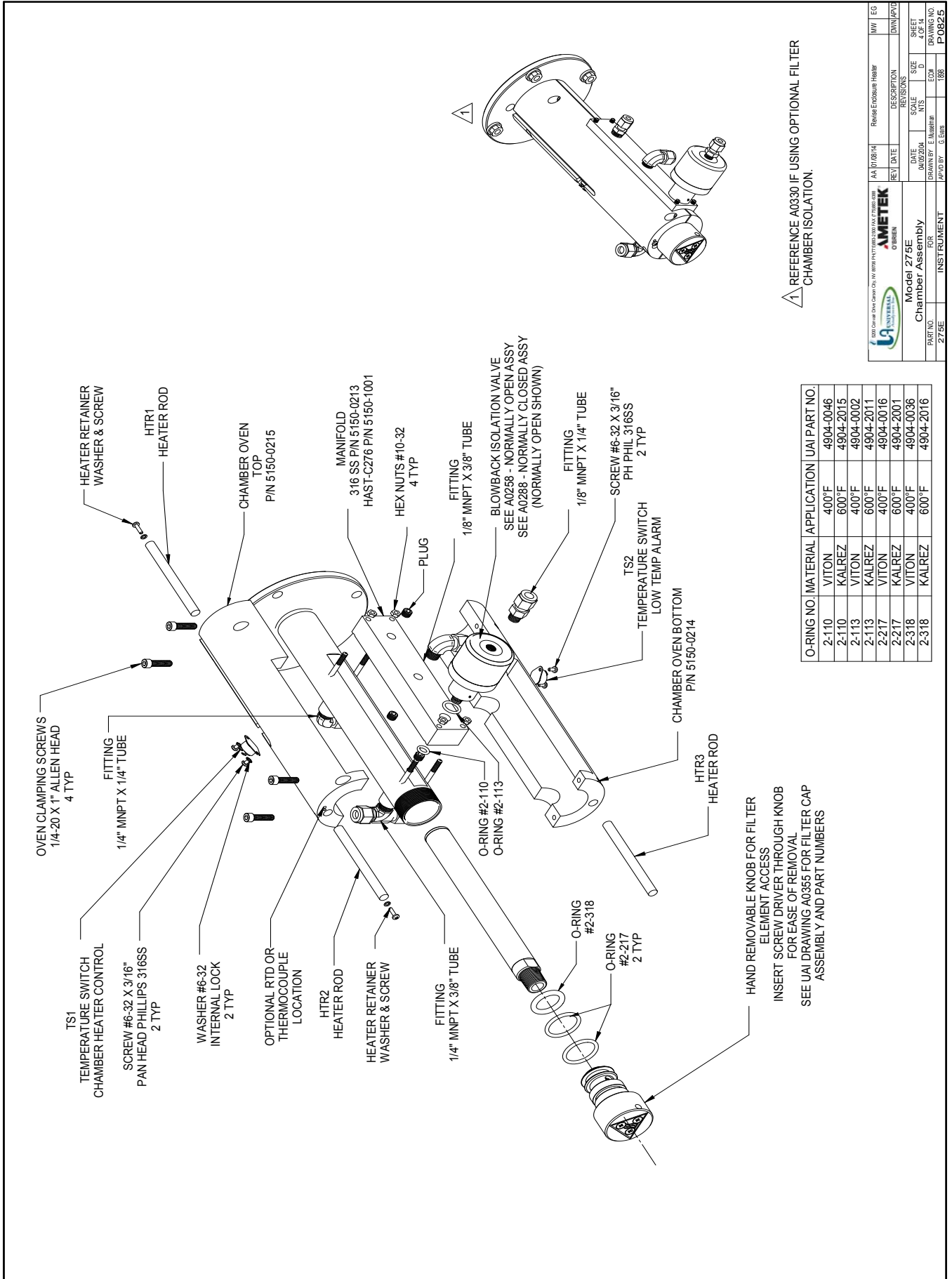


AMETEK D. BIRREN		Revise Enclosure Header	MW	EG
AA 10/08/14	REV	DATE	DESCRIPTION	DWN/APV/D
Model 275E Probe Layout		SCALE	SIZE	SHEET
PART NO.	FOR	APPROVED BY	DATE	NO.
275E	INSTRUMENT	G. SWAN	1988	P0825

# Drawings Model 275E




# Drawings Model 275E



**1** REFERENCE A0330 IF USING OPTIONAL FILTER CHAMBER ISOLATION.

O-RING NO.	MATERIAL	APPLICATION	UAI PART NO.
2-110	VITON	400°F	4904-0046
2-110	KALREZ	600°F	4904-2015
2-113	VITON	400°F	4904-0002
2-113	KALREZ	600°F	4904-2011
2-217	VITON	400°F	4904-0016
2-217	KALREZ	600°F	4904-2001
2-318	VITON	400°F	4904-0036
2-318	KALREZ	600°F	4904-2016

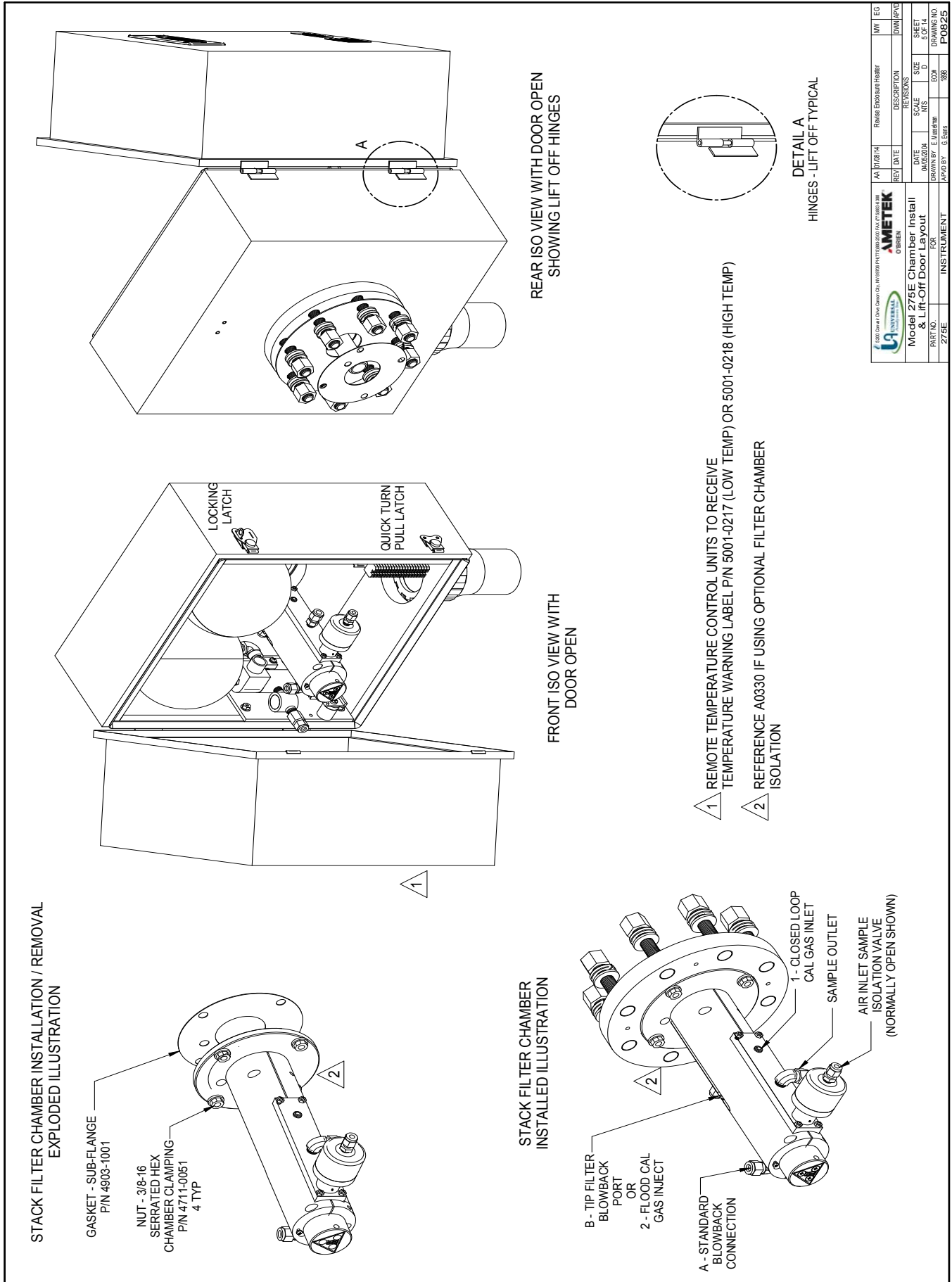
HAND REMOVABLE KNOB FOR FILTER ELEMENT ACCESS  
 INSERT SCREW DRIVER THROUGH KNOB FOR EASE OF REMOVAL  
 SEE UAI DRAWING A0355 FOR FILTER CAP ASSEMBLY AND PART NUMBERS


  
 Model 275E Chamber Assembly

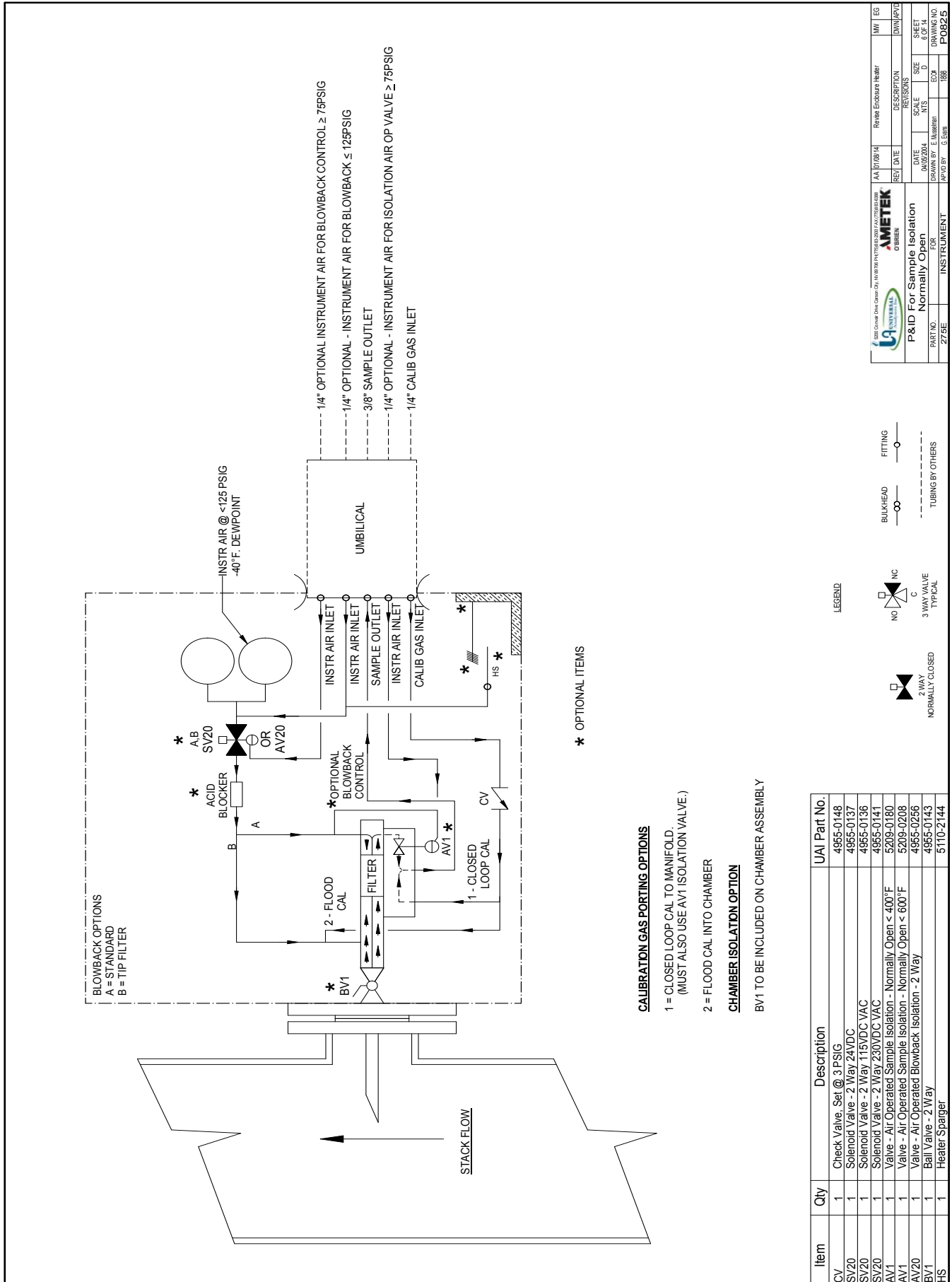
REV	DATE	DESCRIPTION	BY	CHKD
1	04/05/2004	Release Enclosure Heater	MMV	EG

PART NO.	275E	INSTRUMENT
DATE	04/05/2004	SCALE
DRAWN BY	E. Maslomin	SIZE
APP'D BY	G. Ennis	CDR
		SHEET
		D
		DRAWING NO.
		POS25

# Drawings Model 275E



AMETEK GIBBEN		REV	DATE	DESCRIPTION	MW	EG
1300 Central Drive, Carroll City, MO 64839 (P) 417-935-2010 FAX (417) 935-1898		A1	01/08/14	Reverse Enclosure Header		
Model 275E Chamber Install & Lift-Off Door Layout		REVISIONS		DATE	BY	SIZE
PART NO. 275E		DATE	DESCRIPTION	DATE	BY	SIZE
FOR INSTRUMENT		DATE	DESCRIPTION	DATE	BY	SIZE
DRAWN BY: E. J. J. / G. B. S.		DATE	DESCRIPTION	DATE	BY	SIZE
APP'D BY: G. B. S.		DATE	DESCRIPTION	DATE	BY	SIZE
DRAWING NO. P0825		DATE	DESCRIPTION	DATE	BY	SIZE



**BLOWBACK OPTIONS**  
 A = STANDARD  
 B = TIP FILTER

\* OPTIONAL ITEMS

**CALIBRATION GAS PORTING OPTIONS**

1 = CLOSED LOOP CAL TO MANIFOLD.  
 (MUST ALSO USE AV1 ISOLATION VALVE.)

2 = FLOOD CAL INTO CHAMBER

**CHAMBER ISOLATION OPTION**

BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY

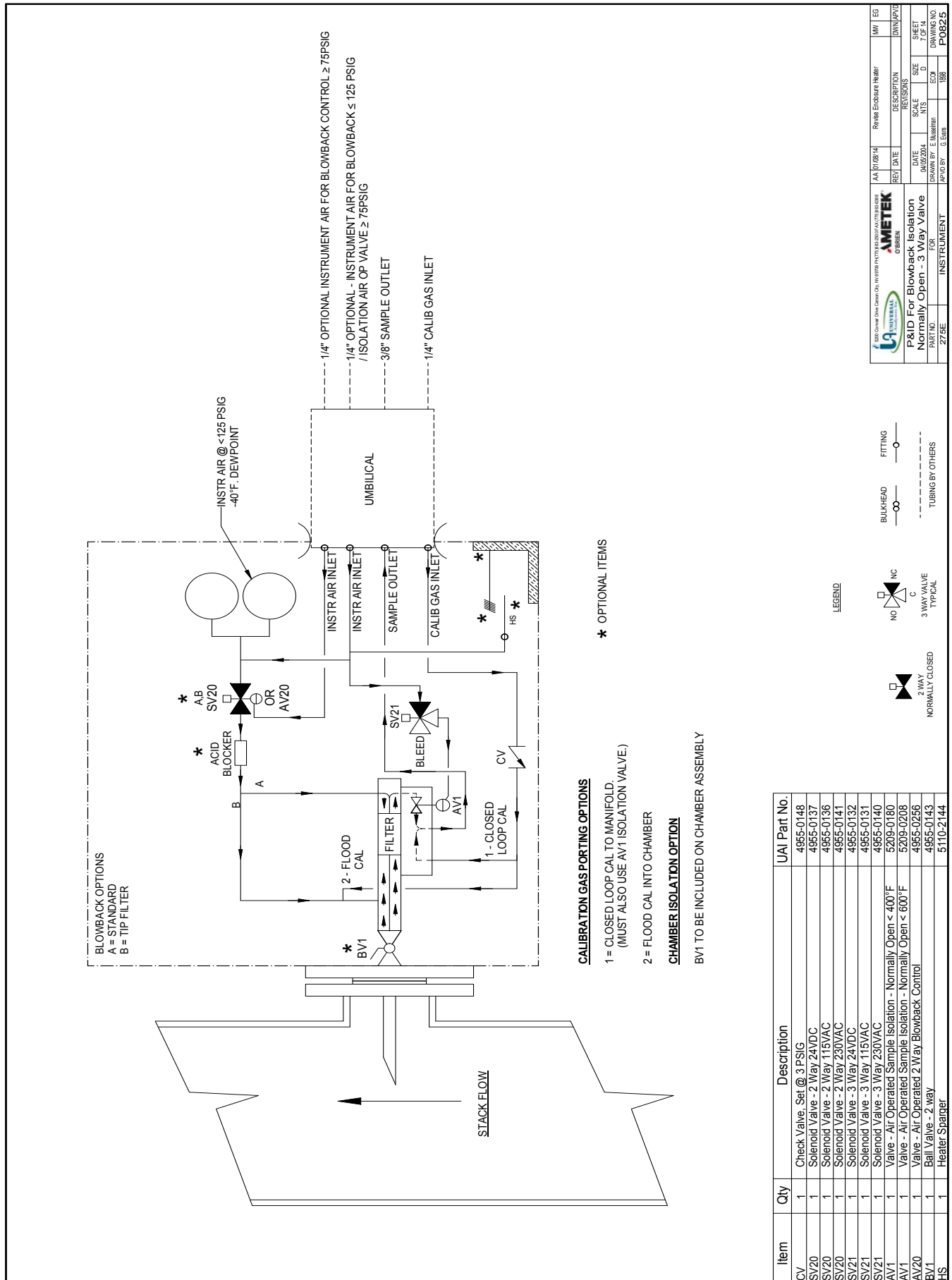
Item	Qty	Description	UAI Part No.
CV	1	Check Valve, Set @ 3 PSIG	4955-0148
SV20	1	Solenoid Valve - 2 Way 24VDC	4955-0137
SV20	1	Solenoid Valve - 2 Way 115VDC VAC	4955-0136
SV20	1	Solenoid Valve - 2 Way 230VDC VAC	4955-0141
AV1	1	Valve - Air Operated Sample Isolation - Normally Open < 400°F	5209-0180
AV1	1	Valve - Air Operated Sample Isolation - Normally Open < 600°F	5209-0208
AV20	1	Valve - Air Operated Blowback Isolation - 2 Way	4955-0256
BV1	1	Ball Valve - 2 Way	4955-0143
HS	1	Heater Sparger	5110-2144

**LEGEND**



REV	DATE	DESCRIPTION	APP'D
AA	01/08/14	Revised Enclosure Header	MW EG
DATE		DATE	DATE
04/03/04	04/03/04	04/03/04	04/03/04
DRAWN BY		ECZ	ECZ
DRAWN BY		E. Maslin	ECZ
APP'D BY		G. Enns	1088
PART NO.		275E	
INSTRUMENT			
P&ID For Sample Isolation			
Normally Open			
FOR			
DRAWING NO.			PO825

# Drawings Model 275E



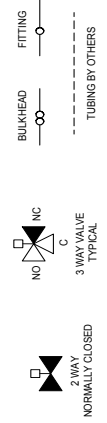
**BLOWBACK OPTIONS**  
 A = STANDARD  
 B = TIP FILTER

**CALIBRATION GAS PORTING OPTIONS**  
 1 = CLOSED LOOP CAL TO MANIFOLD.  
 (MUST ALSO USE AV1 ISOLATION VALVE.)  
 2 = FLOOD CAL INTO CHAMBER

**CHAMBER ISOLATION OPTION**  
 BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY

\* OPTIONAL ITEMS

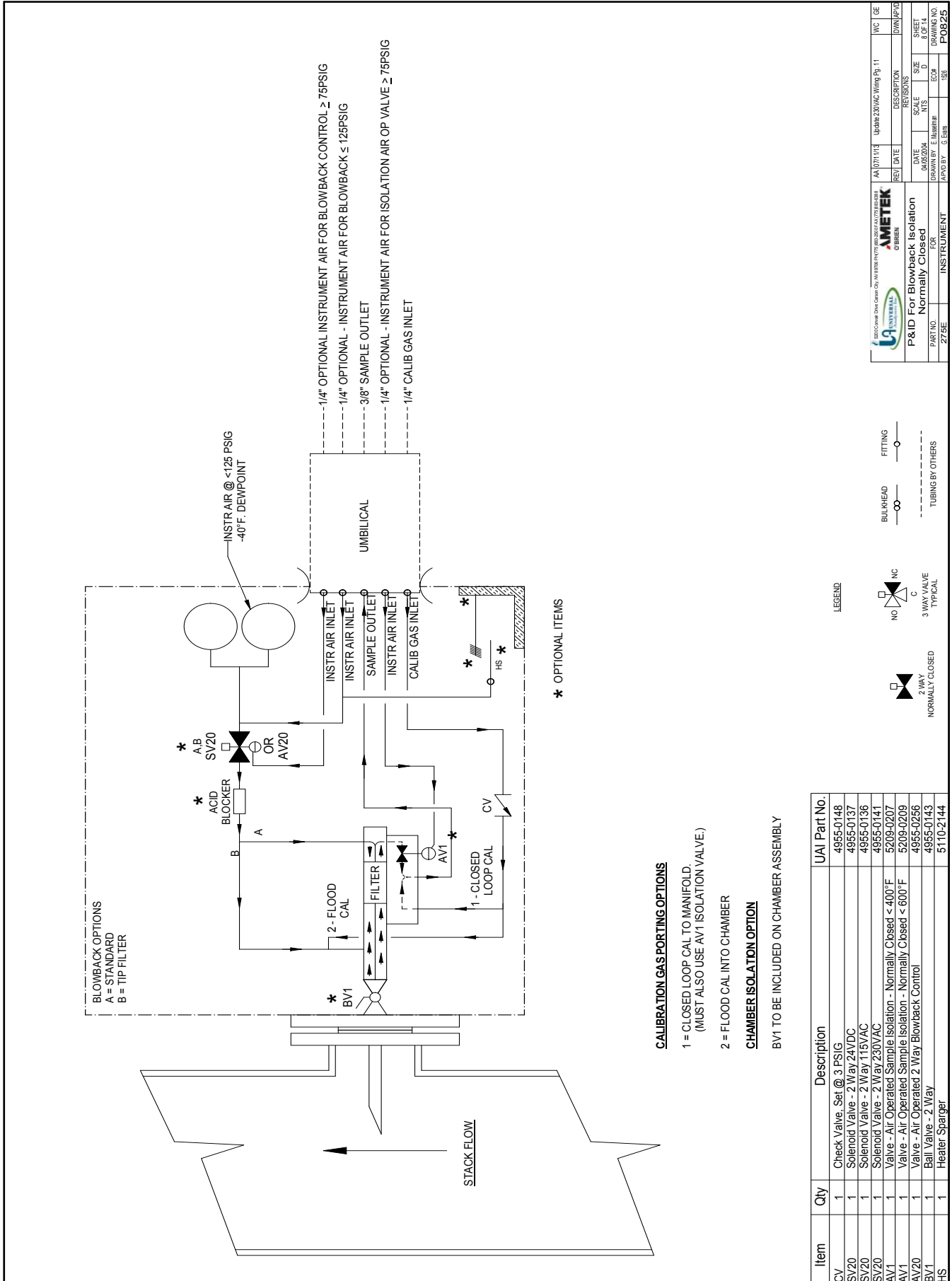
LEGEND



Item	Qty	Description	UAI Part No.
CV	1	Check Valve, Set @ 3 PSIG	4955-0148
SV20	1	Solenoid Valve - 2 Way 24VDC	4955-0137
SV20	1	Solenoid Valve - 2 Way 115VAC	4955-0136
SV20	1	Solenoid Valve - 2 Way 230VAC	4955-0141
SV21	1	Solenoid Valve - 3 Way 24VDC	4955-0132
SV21	1	Solenoid Valve - 3 Way 115VAC	4955-0131
SV21	1	Solenoid Valve - 3 Way 230VAC	4955-0140
AV1	1	Valve - Air Operated Sample Isolation - Normally Open < 400°F	5209-0180
AV20	1	Valve - Air Operated Sample Isolation - Normally Open < 600°F	4955-0256
BV1	1	Ball Valve - 2 Way	4955-0143
HS	1	Heater Sparger	5110-2144

AA 10/08/14	REV	DATE	Reverse Endorse Header	REV	EG
AMETEK	DESCRIPTION	REVISION	DATE	SCALE	SIZE
P&ID For Blowback Isolation			DATE	NTS	D
Normally Open - 3 Way Valve			04/05/2014		
PART NO.	FOR	INSTRUMENT	DRAWN BY: E. M. Smith	EC'D	1088
275E			APP'D BY: G. Emb		
			SHEET	DRAWING NO.	
			1 OF 14	P0625	





\* OPTIONAL ITEMS

**CALIBRATION GAS PORTING OPTIONS**

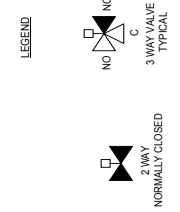
1 = CLOSED LOOP CAL TO MANIFOLD (MUST ALSO USE AV1 ISOLATION VALVE.)

2 = FLOOD CAL INTO CHAMBER

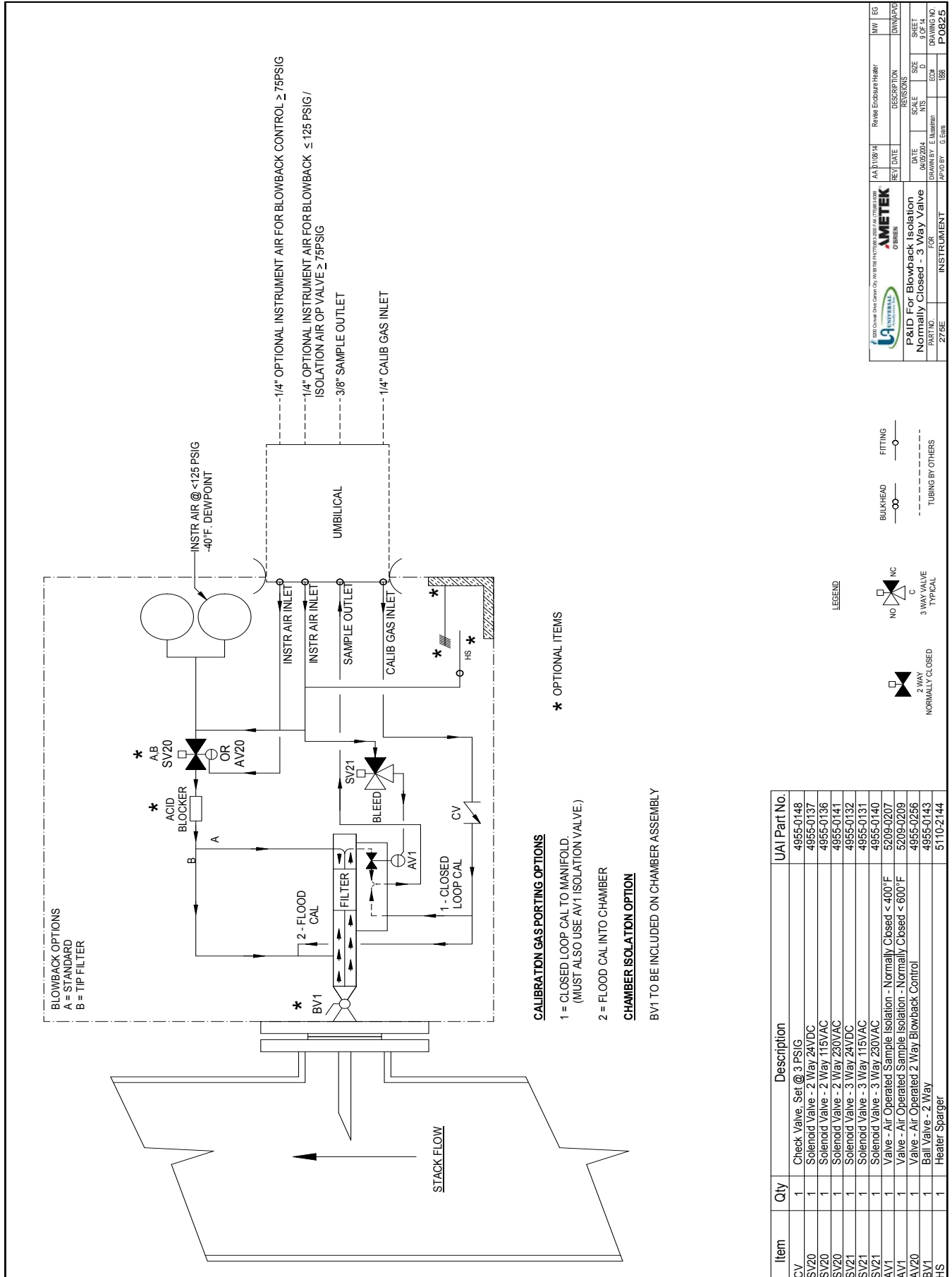
**CHAMBER ISOLATION OPTION**

BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY

Item	Qty	Description	UAI Part No.
CV	1	Check Valve, Set @ 3 PSIG	4955-0148
SV20	1	Solenoid Valve - 2 Way 24VDC	4955-0137
SV20	1	Solenoid Valve - 2 Way 115VAC	4955-0136
SV20	1	Solenoid Valve - 2 Way 230VAC	4955-0141
AV1	1	Valve - Air Operated Sample Isolation - Normally Closed < 400°F	5209-0207
AV1	1	Valve - Air Operated Sample Isolation - Normally Closed < 600°F	5209-0209
AV20	1	Valve - Air Operated 2 Way Blowback Control	4955-0236
BV1	1	Ball Valve - 2 Way	4955-0143
HS	1	Heater Sparger	5110-2144



		AA 071113 Update 230VAC Wiring Pg. 11 WC GE DWG REV
DATE 04/03/04	DESCRIPTION REV 1	SHEET 1 OF 14
DRAWN BY E. Mascher	CHECKED BY G. Barr	DRAWING NO. 275E
PART NO. 275E		INSTRUMENT P0825



BLOWBACK OPTIONS  
 A = STANDARD  
 B = TIP FILTER

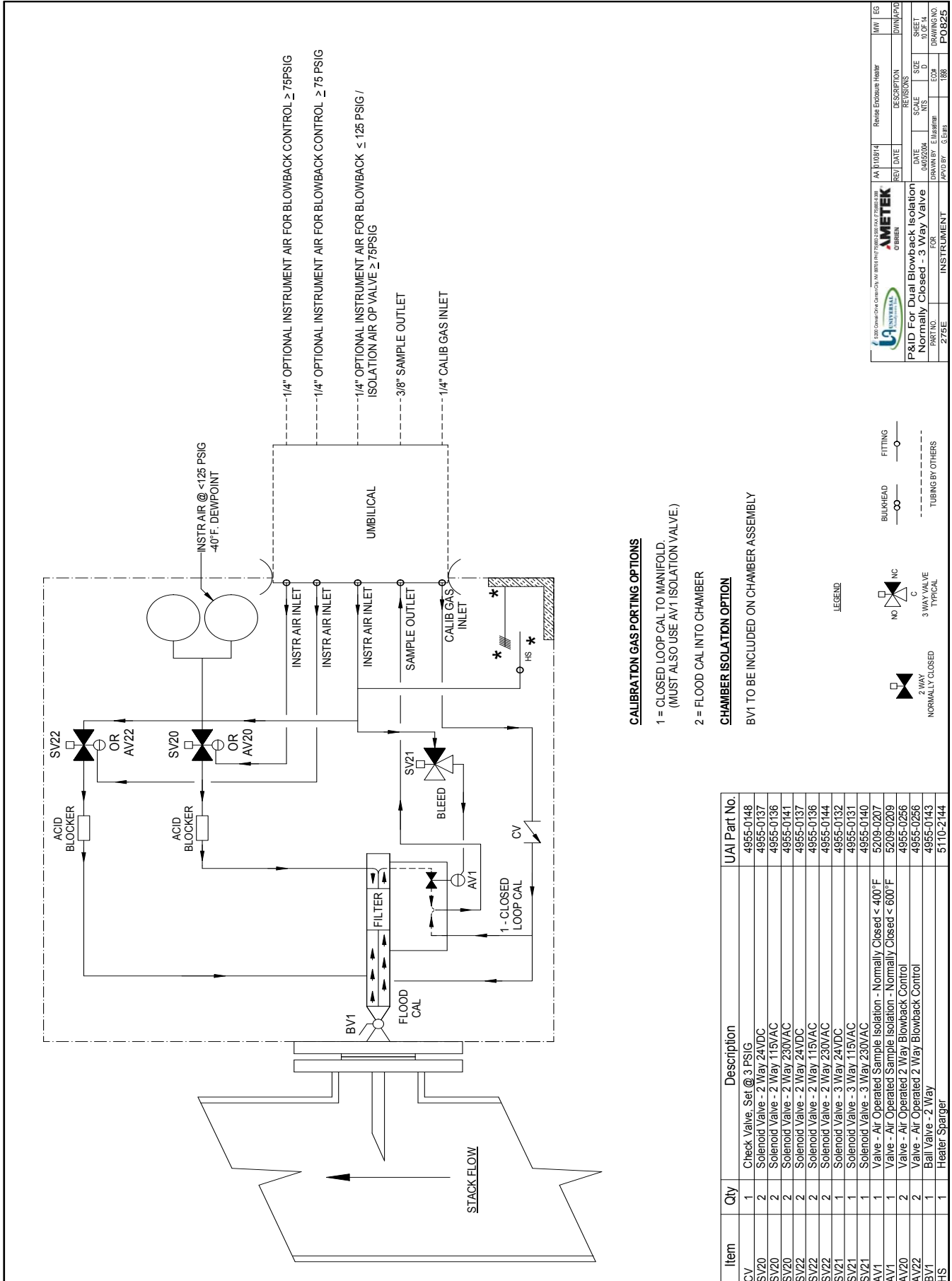
**CALIBRATION GAS PORTING OPTIONS**  
 1 = CLOSED LOOP CAL TO MANIFOLD.  
 (MUST ALSO USE AV1 ISOLATION VALVE.)  
 2 = FLOOD CAL INTO CHAMBER

**CHAMBER ISOLATION OPTION**  
 BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY

Item	Qty	Description	UAI Part No.
CV	1	Check Valve, Set @ 3 PSIG	4955-0148
SV20	1	Solenoid Valve - 2 Way 24VDC	4955-0137
SV20	1	Solenoid Valve - 2 Way 115VAC	4955-0136
SV20	1	Solenoid Valve - 2 Way 230VAC	4955-0141
SV21	1	Solenoid Valve - 3 Way 24VDC	4955-0132
SV21	1	Solenoid Valve - 3 Way 115VAC	4955-0131
SV21	1	Solenoid Valve - 3 Way 230VAC	4955-0140
AV1	1	Valve - Air Operated Sample Isolation - Normally Closed < 400°F	5209-0207
AV1	1	Valve - Air Operated Sample Isolation - Normally Closed < 600°F	5209-0209
AV20	1	Valve - Air Operated 2 Way Blowback Control	4955-0256
BV1	1	Ball Valve - 2 Way	4955-0143
HS	1	Heater Sparger	5110-2144

AA: 11/08/14	Revise	Endeavour Heater	MW	EG
REV: 1	DATE	DESCRIPTION	DRAWING NO.	
04/05/2014	DATE	REVISIONS	SHEET	
DRAWN BY: E. M. Smith	SCALE	NTS	D	8 OF 14
APP'D BY: G. East	SIZE	D	1/8"	DRAWING NO.
				P0625

**AMETEK**  
 UNIVERSAL  
 P&ID For Blowback Isolation  
 Normally Closed - 3 Way Valve  
 PART NO. 275E  
 INSTRUMENT



**CALIBRATION GAS PORTING OPTIONS**

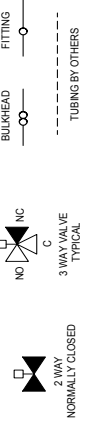
1 = CLOSED LOOP CAL TO MANIFOLD.  
(MUST ALSO USE AV1 ISOLATION VALVE.)

2 = FLOOD CAL INTO CHAMBER

**CHAMBER ISOLATION OPTION**

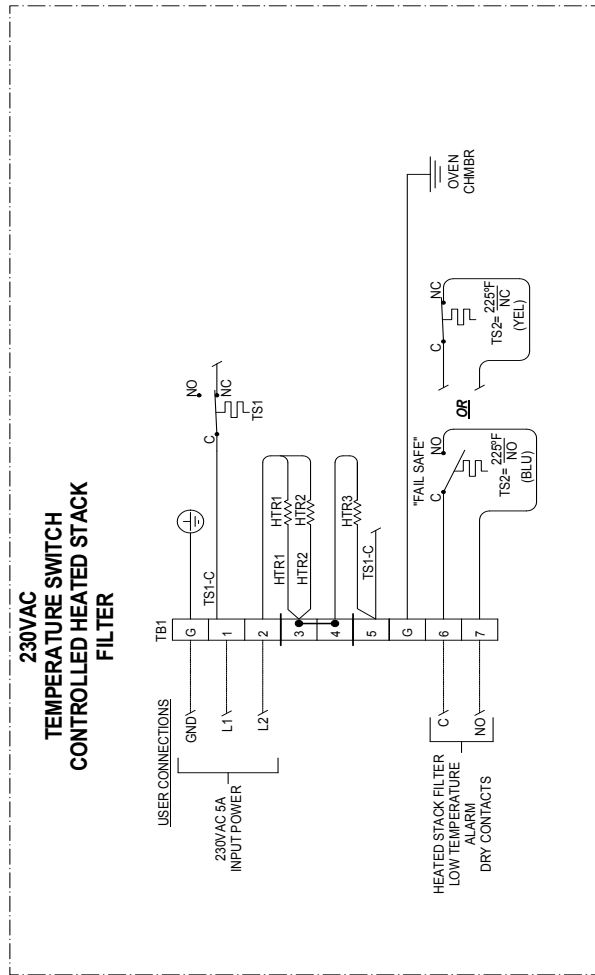
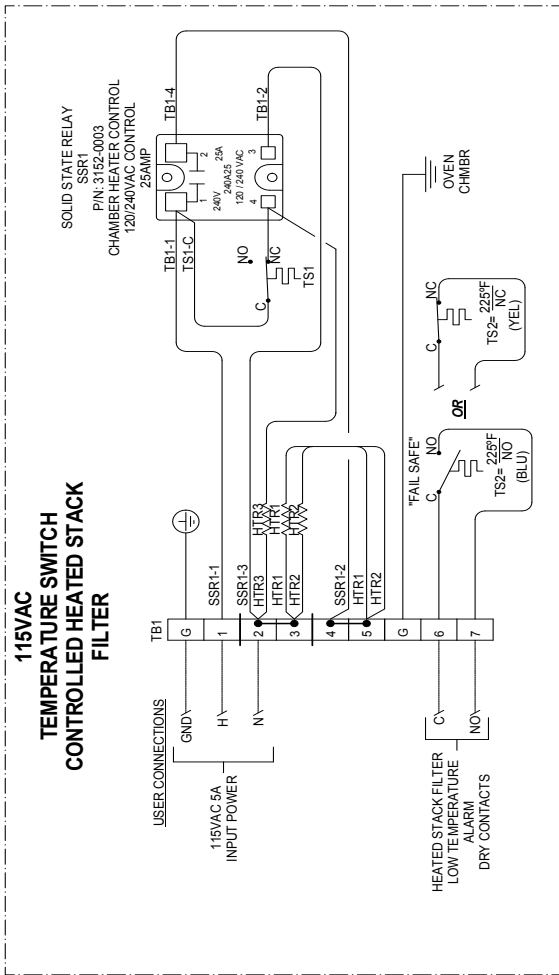
BV1 TO BE INCLUDED ON CHAMBER ASSEMBLY

**LEGEND**



Item	Qty	Description	UAI Part No.
CV	1	Check Valve, Set @ 3 PSIG	4955-0148
SV20	2	Solenoid Valve - 2 Way 24VDC	4955-0137
SV20	2	Solenoid Valve - 2 Way 115V/AC	4955-0136
SV20	2	Solenoid Valve - 2 Way 230V/AC	4955-0141
SV22	2	Solenoid Valve - 2 Way 24VDC	4955-0137
SV22	2	Solenoid Valve - 2 Way 115V/AC	4955-0136
SV22	2	Solenoid Valve - 2 Way 230V/AC	4955-0144
SV21	1	Solenoid Valve - 3 Way 24VDC	4955-0132
SV21	1	Solenoid Valve - 3 Way 115V/AC	4955-0131
SV21	1	Solenoid Valve - 3 Way 230V/AC	4955-0140
AV1	1	Valve - Air Operated Sample Isolation - Normally Closed < 400°F	5209-0207
AV20	2	Valve - Air Operated Sample Isolation - Normally Closed < 600°F	4955-0209
AV22	2	Valve - Air Operated 2 Way Blowback Control	4955-0256
BV1	1	Valve - Air Operated 2 Way Blowback Control	4955-0256
HS	1	Ball Valve - 2 Way Heater Sparger	4955-0143
	1		5110-2144

REV	DATE	DESCRIPTION	APP'D BY
1	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
2	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
3	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
4	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
5	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
6	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
7	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
8	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
9	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
10	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
11	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
12	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
13	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
14	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
15	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
16	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
17	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
18	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
19	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
20	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
21	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
22	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
23	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
24	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
25	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
26	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
27	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
28	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
29	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
30	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
31	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
32	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
33	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
34	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
35	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
36	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
37	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
38	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
39	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
40	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
41	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
42	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
43	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
44	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
45	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
46	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
47	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
48	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
49	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
50	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
51	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
52	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
53	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
54	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
55	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
56	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
57	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
58	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
59	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
60	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
61	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
62	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
63	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
64	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
65	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
66	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
67	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
68	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
69	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
70	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
71	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
72	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
73	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
74	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
75	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
76	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
77	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
78	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
79	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
80	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
81	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
82	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
83	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
84	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
85	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
86	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
87	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
88	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
89	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
90	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
91	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
92	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
93	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
94	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
95	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
96	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
97	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY
98	04/20/04	REVISED TO ADD 230V/AC OPTION	E. J. MURPHY
99	04/20/04	REVISED TO ADD 24VDC OPTION	E. J. MURPHY
100	04/20/04	REVISED TO ADD 115V/AC OPTION	E. J. MURPHY

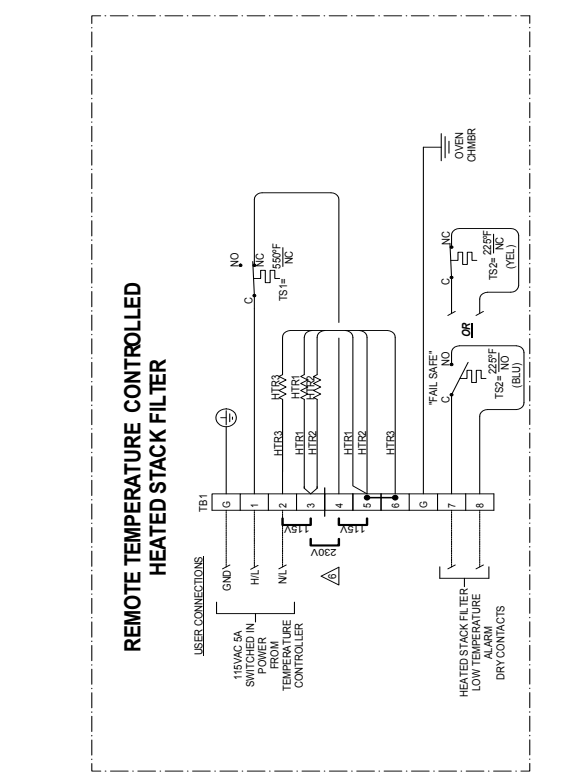
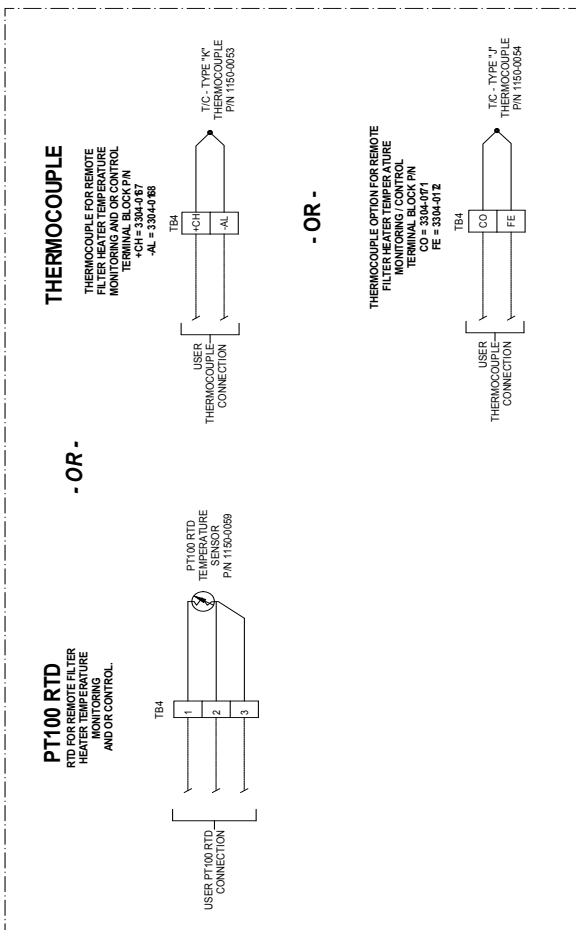


## TEMPERATURE SWITCH STACK FILTER HEATER CONTROL SCHEMES

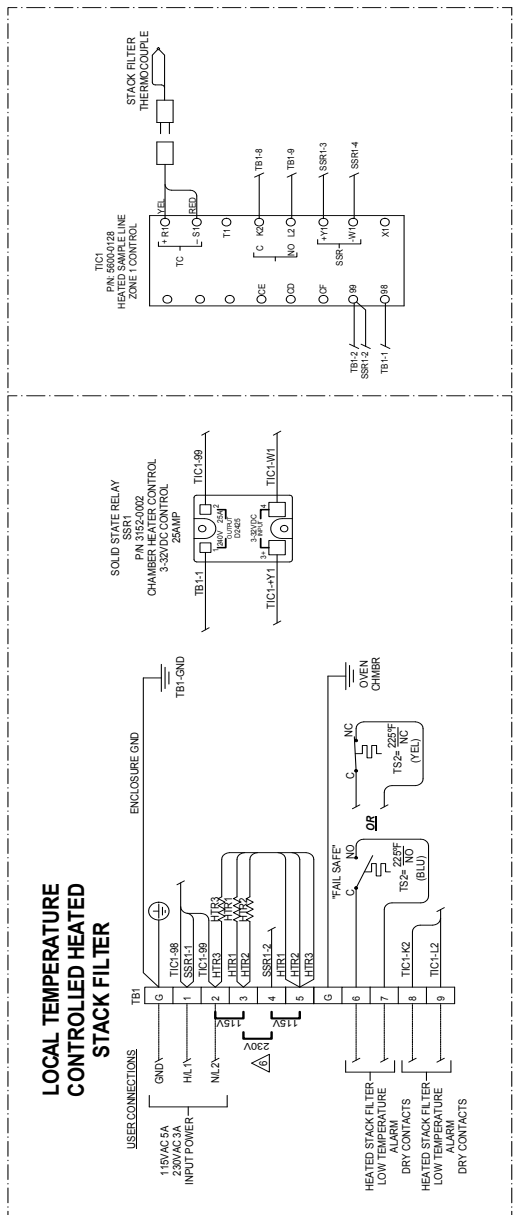
- NOTES:**
- 1) ELECTRICAL CLASSIFICATION, GENERAL PURPOSE, 1/2" (12.7MM) DIA. (1/4" (6.35MM) DIA. AVAILABLE) 1/2" (12.7MM) DIA. (1/4" (6.35MM) DIA. AVAILABLE) CONTACT FACTORY FOR VOLTAGE CHANGE REQUIREMENTS.
  - 2) AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH MINIMUM WIRE SIZE SHALL BE #18AWG UNLESS OTHERWISE SPECIFIED. COLOR CODE SHALL BE AS FOLLOWS:  
HOT - BLACK L1  
NEUTRAL - WHITE L2  
GROUND - GREEN
  - 3) FILTER HEATER ROD SPECIFICATIONS:  
HTR1 & 2 3/8" Ø x 4.25' LG 120VAC @ 25W - PIN 3014-0058  
HTR3 3/8" Ø x 4.25' LG 120VAC @ 25W - PIN 3014-0054
  - 4) CHAMBER HEATER CONTROL SWITCH (TS1):  
NORMALLY CLOSED BELOW 340° F - PIN 3105-0022GP  
NORMALLY CLOSED BELOW 550° F - PIN 3105-0005
  - 5) LOW TEMP ALARM OPTIONS (TS2):  
BLUE (BLU-FAIL SAFE) NORMALLY OPEN (NO) BELOW 225° F - PIN 3108-0012GP  
YELLOW (YEL) - NORMALLY CLOSED (NC) BELOW 225° F - PIN 3103-0015GP
  - 6) DOOR OF ENCLOSURE MUST BE ELECTRICALLY BONDED TO BODY OF ENCLOSURE.

FIELD TO WIRE

		REV: 14	AN: 110814	REVISED ENCLOSURE HEATER	MW	EG
		DATE	DESCRIPTION	REVISIONS	SIZE	SHEET
<b>Model 275E Probe</b> <b>Wiring Schematic</b>		04/03/2004		DATE	11.0	11 OF 14
PART NO. FOR INSTRUMENT 275E		DRAWN BY: E. Maschino	ECN#	DRAWING NO.	1088	POB25
		APP'D BY: G. Enns				



**CAUTION: HEATED PROBE FILTERS MUST NOT EXCEED 400°F LOW TEMPERATURE UNITS, AND 600°F HIGH TEMP UNITS.**



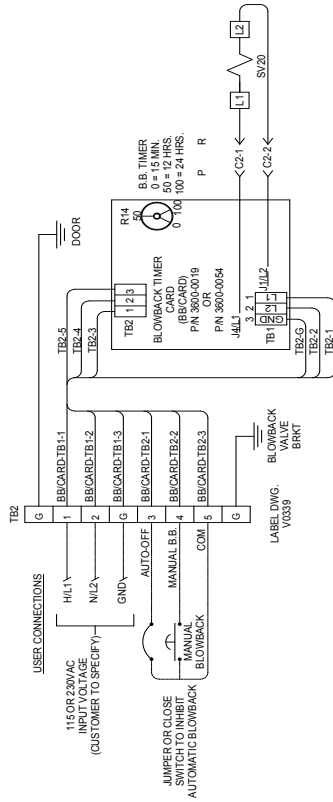
## STACK FILTER HEATER CONTROL SCHEMES

- NOTES:
- ELECTRICAL CLASSIFICATION: GENERAL PURPOSE SWITCHING CONTACTS. CONTACT FACTORY FOR VOLTAGE CHANGE REQUIREMENTS.
  - AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED. COLOR CODE SHALL BE AS FOLLOWS:  
HOT - BLACK  
NEUTRAL - WHITE  
GROUND - GREEN  
115V  
230V
  - HEATED STACK FILTER ROD SPECIFICATIONS:  
HTR1 & 2 3/8" Ø x 4.25' LG 120VAC @ 125W - PN 3014-0089  
HTR3 3/8" Ø x 4.25' LG 120VAC @ 250W - PN 3014-0094
  - CHAMBER HEATER CONTROL SWITCH (TS1):  
NORMALLY CLOSED BELOW 340°F - PN 3103-0012-GP  
NORMALLY CLOSED BELOW 500°F - PN 3103-0005
  - LOW TEMP ALARM OPTIONS (TS2):  
BLUE (BLU) FAIL SAFE NORMALLY OPEN (NO) BELOW 225°F - PN 3103-0012  
YELLOW (YEL) - NORMALLY CLOSED (NC) BELOW 225°F - PN 3103-0013
  - FOR VOLTAGE CHANGE FIELD FROM 115VAC TO 230VAC THE USER MUST REMOVE THE JUMPER AT TERMINAL LOCATIONS 2, 3 & 4. REPLACE THE JUMPER AT TERMINAL LOCATION 3-4.
  - DOOR OF ENCLOSURE MUST BE ELECTRICALLY BONDED TO BODY OF ENCLOSURE.

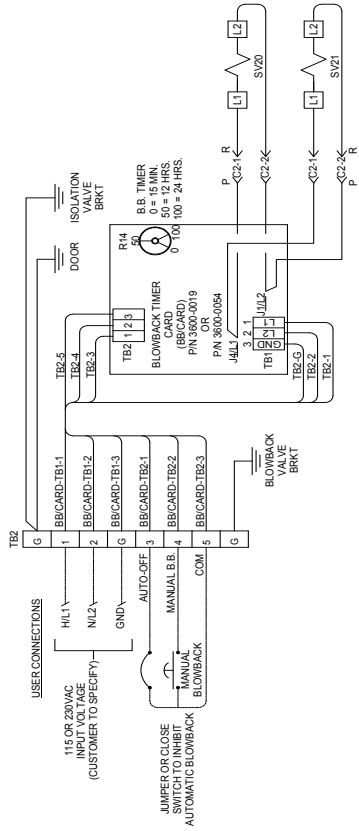
FIELD TO WIRE

1000 Central Express Dr., Ft. Worth, TX 76104-0001		Alt: 11/08/14	Revised Enclosure Heater	MW	EG
<b>AMETEK</b> OTHER		REV	DATE	DESCRIPTION	DATE
		1	04/05/2014	NTS	2.0 F. 14
		2	04/05/2014	NTS	2.0 F. 14
		3	04/05/2014	NTS	2.0 F. 14
		4	04/05/2014	NTS	2.0 F. 14
		5	04/05/2014	NTS	2.0 F. 14
		6	04/05/2014	NTS	2.0 F. 14
		7	04/05/2014	NTS	2.0 F. 14
		8	04/05/2014	NTS	2.0 F. 14
		9	04/05/2014	NTS	2.0 F. 14
		10	04/05/2014	NTS	2.0 F. 14
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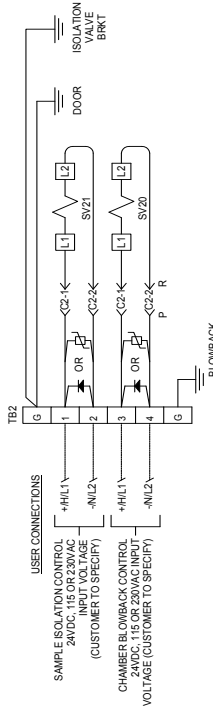
## TIMED BLOWBACK



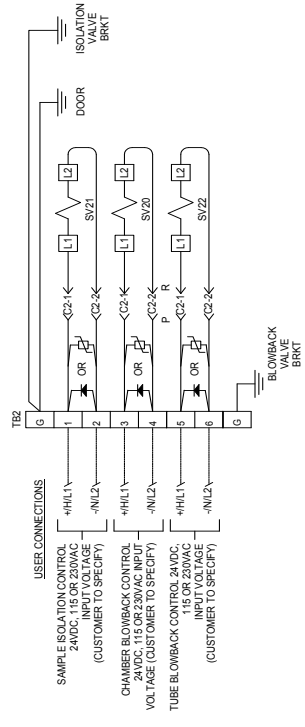
## TIMED BLOWBACK & BLOWBACK ISOLATION



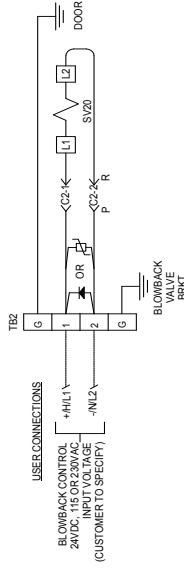
## SINGLE BLOWBACK & BLOWBACK ISOLATION SOLENOIDS



## DUAL BLOWBACK & ISOLATION SOLENOIDS



## SINGLE BLOWBACK SOLENOID



NOTES:  
 1) ELECTRICAL CLASSIFICATION: GENERAL PURPOSE SYSTEM IS CONFIGURED AT THE FACTORY FOR REQUIRED VOLTAGE. CONTACT FACTORY FOR VOLTAGE CHANGE REQUIREMENTS.

2) AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V. TYPE IFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.  
 COLOR CODE SHALL BE AS FOLLOWS:  
 HOT - BLACK L1  
 NEUTRAL - WHITE L2  
 BROWN  
 GROUND - GREEN L2  
 GREEN - GREEN

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V. TYPE IFE INSULATION. MINIMUM WIRE SIZE SHALL BE 22AWG UNLESS OTHERWISE SPECIFIED.

FIELD TO WIRE

2 PIN MOLEX CONNECTOR

R = 2 POSITION RECEPTACLE (FEMALE HOUSING) P/N 3304-0004  
 → = PIN (MALE TERMINAL) P/N 3304-0009

P = 0 POSITION (PLUS) (MALE HOUSING) P/N 3304-0003  
 ◀ = SOCKET (FEMALE TERMINAL) P/N 3304-0005

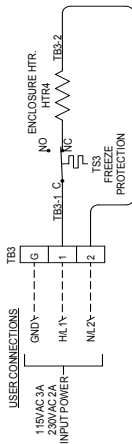
◄ = DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS

◄ = MOV P/N 1010-1001 FOR 115/230VAC SOLENOIDS

Model 275E Probe Wiring Schematic			
PART NO Z75E	INSTRUMENT	DATE 04/05/2004	SCALE NTS
DRAWN BY E. Muehlhain	CHECKED BY G. Lamb	SHEET 1 OF 14	SIZE D
REVISIONS	REVERSE ENGINEER HANDED	DRAWN BY	DATE
MW	EG	DATE	DRAWING NO P-0625

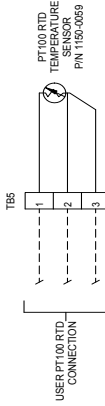
# Drawings Model 275E

## TEMPERATURE SWITCH CONTROL ENCLOSURE HEATER



## PT100 RTD

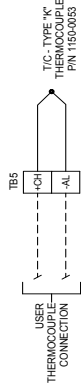
RTD OR REMOTE FILTER  
HEATER TEMPERATURE  
MONITORING  
AND OR CONTROL



## OPTIONAL REMOTE CONTROL ENCLOSURE HEATER

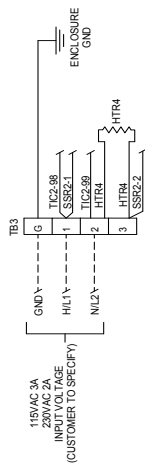
### THERMOCOUPLE

THERMOCOUPLE OR REMOTE  
FILTER HEATER TEMPERATURE  
MONITORING CONTROL  
TERMINAL BLOCK PIN  
-CH = 3304-0787  
-AL = 3304-0788



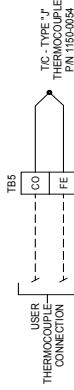
- OR -

## LOCAL TEMPERATURE CONTROL ENCLOSURE HEATER

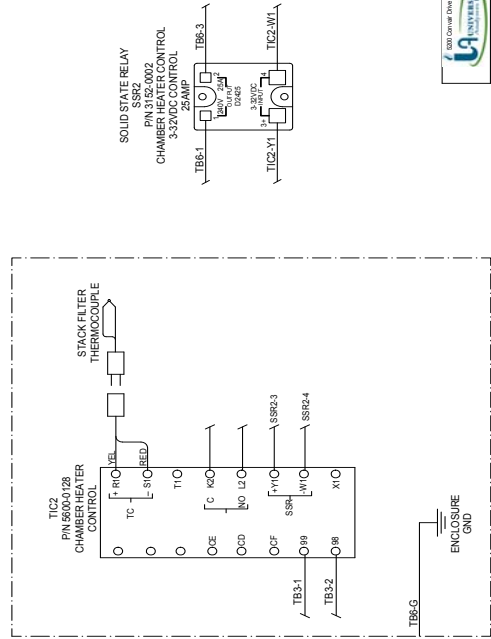


- OR -

THERMOCOUPLE OPTION FOR REMOTE  
FILTER HEATER TEMPERATURE  
MONITORING / CONTROL  
TERMINAL BLOCK PIN  
-CO = 3304-0781  
-FE = 3304-0782



## ENCLOSURE - SIDE MOUNTED



## ENCLOSURE HEATER CONTROL SCHEMES

- NOTES:  
1) ELECTRICAL CLASSIFICATION, GENERAL PURPOSE SYSTEM IS CONFIGURED AT THE FACTORY FOR REQUIRED VOLTAGE. CONTACT FACTORY FOR VOLTAGE CHANGE REQUIREMENTS.  
2) AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V TYPE TEE INSULATION. MINIMUM WIRE SIZE SHALL BE #18AWG UNLESS OTHERWISE SPECIFIED.  
COLOR CODE SHALL BE AS FOLLOWS: HOT - BLACK L1 230V  
NEUTRAL - WHITE L2  
GROUND - GREEN  
3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V TYPE TEE INSULATION. MINIMUM WIRE SIZE SHALL BE #22AWG UNLESS OTHERWISE SPECIFIED.  
4) ENCLOSURE SWITCHES SPECIFICATIONS: HTR4  
115VAC @ 250W - IAI PIN 3014-0086  
230VAC @ 300W - IAI PIN 3014-0087  
5) ENCLOSURE HEATER TEMPERATURE CONTROL SWITCH (TS3) SPECIFICATIONS:  
NORMALLY CLOSED, BEYOND 225°F - PIN 3103-0013  
REMOTE CONTROL NORMALLY CLOSED 340°F PIN 3103-0014  
6) USE HIGH TEMPERATURE TERMINAL BLOCKS IF ENCLOSURE IS HEATED.

-----  
FIELD TO WIRE

		AA [01/08/14]	REV	DATE	DESCRIPTION	MW	EG
		AA [01/08/14]	REV	DATE	DESCRIPTION	MW	EG
<b>Model 275E Probe</b> <b>Din Controller Wiring Schematic</b> FOR		DATE 04/02/04	DATE 04/02/04	DATE 04/02/04	DATE 04/02/04	DATE 04/02/04	DATE 04/02/04
PART NO. 275E		DRAWN BY E. Marshall		CHECKED		DRAWING NO. P0825	
INSTRUMENT		APPROV BY G. Emb		1888			

# Limited Warranty

## I. Limited Warranty

1. Limited Warranty. Universal Analyzers, Inc (UAI) offers a limited warranty on each of its products against failure due to defects in material and workmanship for a period ending the earlier of (i) fifteen (15) months from the date of the invoice relating to the sale of the product and (ii) twelve (12) months from the date of installation of the product (collectively, the "Initial Warranty"). During the Initial Warranty, UAI offers a limited warranty against failure due to defects in material and workmanship on each part of a product repaired or replaced by an authorized service person for a period ending the later of (a) the remaining term of the Initial Warranty of the product and (b) ninety (90) days from the date of such repair or replacement. After expiration of the Initial Warranty, UAI offers a limited warranty against failure due to defects in material and workmanship on each part of a product repaired or replaced by an authorized service person for a period ending ninety (90) days from the date of such repair or replacement. UAI further offers a limited warranty that the products and parts it sells will conform to UAI's written specifications therefor. The foregoing limited warranties cover parts and labor only and UAI does not warrant and will not reimburse the buyer of its products ("Buyer") for any costs relating to the access by service persons of UAI to the product at issue. The foregoing limited warranties cover only the repair or replacement of defective parts and such determination will be in the sole discretion of UAI. In its sole discretion, UAI may make repairs or replacements under these limited warranties with either new or refurbished parts. To the extent Buyer's product cannot be remedied under these limited warranties through repair or replacement of parts, Buyer may return the product for a refund of the purchase price, less a reasonable reduction in such purchase price equal to the depreciation expense incurred by Buyer relating to such product. The limited warranties of this Section I.1. are further subject to those warranty exclusions set forth below in Section I.2.

2. Limited Warranty Exclusions. Excluding the warranties provided for in Section I.1., UAI provides all products to Buyer "as-is," without any other warranty of any kind. UAI disclaims any and all express or implied warranties of merchantability, fitness for a particular purpose and non-infringement of the intellectual property of others. UAI makes no warranty, express or implied, as to the design, sale, installation or use of its products. UAI's warranties will not be enlarged by, nor will any obligation or liability of UAI arise due to UAI providing technical advice, facilities or service in connection with any product. There is no warranty by UAI with respect to any product's: (i) uninterrupted or error-free operation; (ii) actual performance, other than the product's capability to meet UAI's specifications therefor; (iii) removal or installation from a worksite or process; (iv) electronic components or associated accessories (including without limitation circuit boards and integrated circuits); (v) maintenance (including without limitation gasket and seal replacements, adjustments, minor repairs and other inspection requirements, preventative or otherwise); (vi) use under inappropriate conditions or not in accordance with operating instructions; or (vii) use in connection with the operation of a nuclear facility. There is no warranty for labor expenses associated with field repairs or the repair or replacement of defective parts in the engine or power unit of any product if such product has been in the possession of the owner or operator for greater than twelve (12) months. There is no warranty for products determined to be, in UAI's sole discretion, damaged as a result of (a) misuse, neglect or accident; (b) improper application, installation, storage or use; (c) improper or inadequate maintenance or calibration; (d) operation outside of the published environmental specification; (e) improper site preparation or maintenance; (f) unauthorized repairs or replacements; (g) modifications negligently or otherwise improperly made or performed by persons other than UAI; (h) Buyer-supplied software or supplies; (i) use in conjunction with or interfacing with unapproved accessory equipment; (j) use of ABC-style or dry powder fire suppression agents; or (k) leaked sample materials. To the extent a UAI product is used in connection with the operation of a nuclear power facility, Buyer agrees to indemnify and hold UAI harmless from any and all actions, claims, suits, damages and expenses arising from such use. UAI provides no warranty on the oral representations made by its personnel while they are attempting to assist Buyer in the operation of a product. This Standard Limited Warranty does not apply to items consumed by the products during their ordinary use, including but not limited to fuses, batteries, paper, septa, fittings, screws, fuses, pyrolysis, dryer or scrubber tubes, sample boats, furnaces or UV lamps.

3. Non-UAI Products. UAI does not in any way warrant products it does not manufacture except to the extent the warranty of the manufacturer of the product at issue passes through or is otherwise assigned to UAI. If a manufacturer warranty is so assigned to UAI, UAI will only be bound to comply with the length of time associated with such warranty. All other terms of such warranty will be governed by this Standard Limited Warranty and UAI's General Terms and Conditions incorporated herein by reference.



# Limited Warranty

4. Expenses on Non-Warranty Work. All repairs or replacements by UAI after the expiration of any applicable limited warranty period will be performed in accordance with UAI's standard rate for parts and labor. Further, if upon UAI's inspection and review, UAI determines the condition of the products is not caused by a defect in UAI's material and workmanship, but is the result of some other condition, including but not limited to damage caused by any of the events or conditions set forth in Section I.2., Buyer shall be liable for all direct expenses incurred by UAI to conduct the inspection and review of the product.

5. Exclusive Remedy. The foregoing limited warranty constitutes Buyer's exclusive remedy with respect to products sold by UAI and UAI's liability shall be exclusively limited to the written limited warranty specified herein. No employee, representative or agent of UAI is authorized to either expressly or impliedly modify, extend, alter or change any of the limited warranties expressed herein to Buyer.

6. Procedure and Costs. All limited warranty claims must be made in writing promptly following discovery of any defect. Buyer must hold defective products for inspection by UAI. If requested by UAI, Buyer must send the product to UAI for inspection. Any such returns by Buyer will be at Buyer's expense and Buyer will remain liable for any loss of or damage to the product during such product's transportation to UAI. No products will be sent to UAI for inspection unless UAI has authorized Buyer to do so.

7. Terms and Conditions. UAI's General Terms and Conditions are incorporated herein by reference and Buyer accordingly agrees to be bound by the terms thereof.

## II. Limitations on UAI Liability

1. In General. Buyer agrees UAI shall not be liable for any direct, indirect, incidental, punitive or consequential damages, including lost profits, lost savings or loss of use, whether Buyer's claim is based in contract, tort, warranty, strict liability or otherwise, which Buyer may suffer for any reason, including reasons attributable to UAI. Buyer agrees these limitations on UAI's liability are reasonable and reflected in the amounts charged by UAI for its products.

2. Force Majeure. This Standard Limited Warranty does not cover and UAI shall not be liable for either direct or consequential damage caused, either directly or indirectly, as a result of: (i) any act of God, including but not limited to natural disaster, such as floods, earthquakes, or tornadoes; (ii) damages resulting from or under the conditions of strikes or riots, war, damages or improper operation due to intermittent power line voltage, frequency, electrical spikes or surges, unusual shock or electrical damage; or (iii) accident, fire or water damage, neglect, corrosive atmosphere or causes other than ordinary use.

3. Limitation on Warranty Claims. Prior to any obligation of UAI to perform any limited warranty service as set forth herein, Buyer must have: (i) paid all invoices to UAI in full, whether or not they are specifically related to the product at issue; and (ii) notified UAI of the limited warranty claim within sixty (60) days from the date Buyer knew or had reason to know of the defect



5200 Convair Drive Carson City, NV 89706 • Phone: 775-883-2500 • Fax: 775-883-6388 • [www.universalanalyzers.com](http://www.universalanalyzers.com)