Instruction Manual

Model 275HD

Dilution Gas Sample Probe

AMETEK®

5200 Convair Drive Carson City, NV 89706 • Phone: 775-883-2500 • Fax: 775-883-6388 • www.universalanalyzers.com

MAN.275HD.REVA.12182014

Contents

Receiving and Storage

The UAI 275HD 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 20A. 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

OPERATING SPECIFICATIONS	
Voltage Requirements	120/240VAC, 50/60 Hz
Power Consumption	300 watts
Current Requirements	1.25 Amps at 240VAC 50/60 Hz 2.40 Amps at 120VAC 50/60 Hz
Power Connection	Screwless and Spring-Type Terminal blocks accept 22 AWG to 12 AWG Wire
Power Projection	10 Amp Circuit Breaker with 10KA Interrupting Capacity
Ambient Temperature	-20°F – 135°F
Operating Temperature	600°F Maximum
Sample Gas Inlet Temperature	1550°F Maximum (Options available for higher Stack Gas Temperatures)
Start –up Time	1 hour
Diluted Sample Gas Flow	5-15 l/m dependent upon Orifice and Dilution Air Pressure
Dilution Air Quality	-40°F or °C Dew Point or lower and free of oil, particles and CO_2, NOx, and SO_2
Dilution Ratio	10:1 to 600:1 Dependent upon Orifice and Dilution Air Pressure
Stack Gas Flow Dilution	20 cc/min to 820 cc/min Dependent upon Orifice
Stack Gas Flow Fast-Loop	375 cc/min to 760 cc/min Dependent upon Fast-Loop Motive Pressure
Required Dilution Motive Air	5-15 l/m dependent upon Orifice and Desired Dilution Ratio
Motive Air Pressure	20 – 85 psig dependent upon Orifice and Desired Dilution Ratio
Required Fast-Loop Motive Air	3 l/m
Motive Fast-Loop Pressure	5 psig
Dimensions	19” H x 17” W x 15” D
Weight (Minus Probe Tube)	Approx. 85 lbs. (dependent upon flange size)
Tubing Connections	3/8” and 1/4” Tube Connections Standard (Others Available upon Request)
Blowback Tank Volume	1.7 Liters (uncompressed) or 7.5 Liters @ 100 psig
Blowback Cv	0.76 Cv
Chamber Volume	200 ml
Filter	316SS 2 µm
Mounting Flange	3”,4” or 6” 150# Flange (Other Flanges Available upon Request)
Enclosure Material	304SS
Materials of Construction	316SS, Sapphire, and Viton
Sample Inlet Pressure	1.5 psig maximum allowed
Sample Inlet Vacuum	5” Hg vacuum maximum allowed
Environmental Protection	NEMA 4X

Description and Principle of Operation

APPLICATION

The 275HD is used for diluting a sample with dry, clean air. This section discusses some of the many reasons for diluting a sample. One of the reasons to dilute a sample is to avoid scrubbing of CO_2, SO_2, NO_2 and other water soluble constituents by lowering the sample dew point below the ambient temperature. By lowering the sample dew point below the ambient temperature the dilution system removes the need for heated sample transport lines, except for freeze protection in cold environments. The chances of solubility measurement problems in a straight extractive sample system increases with the length of the heated sample line. One does not have to worry about cold spots in a heated sample line with a dilution system. Dilution systems also eliminate acid aerosol problems encountered with straight extractive sample conditioning systems when high concentrations of SO_2 are present.

Dilution systems produce a sample that is easier for analyzers to measure. Explosive gas mixtures can be lowered below the Lower Explosion Limit (LEL) so that general purpose analyzers can be used. Dilution systems can also make otherwise toxic or highly corrosive samples safer to measure. A dilution system can also be used to increase the range of an analyzer. Another measuring advantage is of a dilution system is that analyzers measure samples on a wet-basis avoiding the need for dry to wet equations to convert dry measurements into wet-basis measurements.

Dilution systems only draw a fraction of the sample compared to straight extractive systems. This creates an advantage in terms of increased filter life since not as much sample is being drawing through the stack, and that particulate is more likely to remain in the stack. The disadvantage is that the response time is slower than a straight extractive system. The response time can be improved however by use of a fast – loop bypass for dilution systems with higher dilution ratios.

In conclusion dilution systems are useful when measuring particulate laden samples, samples with water soluble constituents, and/or are explosive, toxic, corrosive, or hazardous. Coal powered utilities which require the measurement of water soluble constituents, from corrosive samples often via long sample transport lines is an example of an application well suited for dilution sampling.

GENERAL DESCRIPTION

An overview of how the Universal Analyzers 275HD probe functions is described by following the sample from the sample point to the analyzer. First sample gas is drawn through the sample probe tube from the desired measurement point. The desired measurement point is typically the middle third of a stack. The middle third meets if the stack has a 9’ diameter a representative sample will be found between 3’ to 6’ from the stack wall. It is important to make the sample tube as short as possible to help increase response times. If an unheated sample tube plugs or if there is a cold spot in the sample path from the sample point and the heated dilution probe then a Heated Probe Tube Assembly (HPA) is recommended.

After flowing through the sample tube the stack gas enters the heated probe assembly. The entire dilution probe is heated above the dew-point of the sample. While in the heated probe chamber the stack gas is filtered via the primary filter. The primary filter is a 2 µm filter that is comprised of a 5 layer woven SS filter. The filtered stack gas then flows from the filter chamber to the dilution manifold, where it goes though the secondary filter which is a secondary safety filter to catch debris before entering the critical orifice. After being regulated by the critical orifice the sample gas is pulled to the middle of the Eductor where the pure sample mixes with the Dilution Air. The resulting mixture is a diluted sample that is ready for transport and sampling.

To increase the response time one can use a fast-loop to draw more sample gas thought the sample tube and filter chamber before dumping the gas back into the stack. When the fast-loop is used sample gas entering the dilution manifold will be pulled though the fast-loop orifice using the fast loop Eductor with the mixture of sample gas and fast loop motive air being returning to the stack.

To increase the filter life one can blowback/purge the primary filter. A high-pressure pulse of air from the blowback accumulator balls travel from the clean side of the filter and blasts particles from the surface of the primary filter out of the heated filter chamber, thought the probe tube and back to the sample location.

Calibration gas is used to verify the dilution ratio of the system. 2-3 l/m of calibration gas is injected to flood the filter chamber. The calibration gas must have enough pressure so that after line losses the calibration gas pressure will open the 1 psig check valve. The check valve is supplied to prevent stack gases from condensing in the calibration gas line.

Additional user connections include a Vacuum Tap that is supplied in the dilution manifold to monitor the pressure of the Dilution Eductor. A temperature sensor is installed in the dilution manifold to monitor and control the heated probe filter assembly so that the filter and the Dilution orifice and Eductor are constant and above the sample dew point.

THEORY OF OPERATION

Stack gas is combined with dry air (Dew Point of -40°F or lower) called Dilution Air in a repeatable manner to create consistent dilution ratio of Dilution Air to Stack Air. The Dilution Air is used to power an Eductor. The Eductor performs a similar function as a pump in terms of drawing sample form a stack, with the advantage of having no moving parts which cause variations and require maintenance. The Dilution Air travels through the reducing nozzle of the Eductor acting as the motive fluid. As the Dilution Air travels through the Eductor nozzle a high velocity is obtained which creates a lower pressure according to Bernoulli's equation. This lower pressure is the suction used to draw in stack gas. The stack gas and Dilution Air are then mixed in the Diffuser of the Eductor, and the resulting Diluted Stack gas is ready to be transported and sampled.

A consistent dilution ratio is created by controlling the flow of Dilution Air and the Stack Gas Sampled. The Dilution Air needs to be controlled by using a precise pressure regulator. A pressure regulator that can maintain a pressure tolerance of .02 psig with a static pressure inlet is desired. The regulator must not vary more than .1 psig even if there is a 50 psig variance in supply pressure. The regulator should maintain dilution air pressure of 85 psig with a supply pressure of 105 psig. The dilution regulator also needs to have a C¬v that allow 15 l/m of air to be supplied with a 20 psig pressure difference between the inlet and outlet of the pressure regulator. In addition to the constant pressure it is also important to be able to supply up to 15 l/m of Dilution air which is free of oil, particles, CO_2, NOx, SO_2 that has a dew-point of -40°F / °C Dew or lower. Please note that 85 psig is the upper limit used for Dilution Air the dilution pressure is often 45 psig with only 8 l/m of Dilution air being required.

The stack gas sampled is controlled by using an orifice that creates sonic flow of the stack gas. The sonic flow is created once the Eductor has achieved the critical pressure drop.

The Critical pressure drop is defined with the equation below:
$\Delta P=(1-(2/(\kappa+1))\kappa/(\kappa-1)$ *Pinlet
κ=the gas heat capacity, an ideal gas is 1.4
The equation of an ideal gas reduces to.
$\Delta P=.4717$*Pinlet

Please note that the gas heat capacity depends upon the gases sampled and the sample point and varies. The sample point can also vary, but assuming typical stack gas near atmospheric pressure one can know if the vacuum measured at the Eductor inlet is 14.5 "Hg or greater the flow is sonic. Sonic flow through the critical orifice means that the sample flow is constant. Sonic flow is obtained when the vacuum reading is above 14.5 "Hg. When sonic flow though the critical orifice is obtained the flow is choked, meaning that stack gas flow will be extremely constant.

HOW TO ORDER

There are many configurations of the 275HD available to satisfy a broad variety of user needs. This section shows one how to configure a 275HD P/N for their application. Before ordering the 275HD it is important to know the answers to the following questions:

Description and Principle of Operation

1. What is the dew point temperature? If the dew point is less than 400°F then the chamber selected should be –SS meaning the chamber is 316SS. If however there are ammonia salts or other components that would cause the dew point to be between 400°F and 600°F one would select –SS HT meaning that the chamber is 316SS and the other components are designed for temperatures up to 600°F.

2. What is the mating flange size? The probe can be constructed with a 3", 4" or 6" #150 flange by selecting -F3, -F4 or -F6 respectively. One can contact the factory reading other DIN flange sizes or #300 flange sizes. Note that if one is using a Heated Probe Assembly (HPA) with a Fast-Loop return then the flange must be larger than 4".

3. What is the flange orientation? The flange can be configured for a straddled bolt configuration with the bolts at the 11 o'clock and 1 o'clock positions or Top-Dead-Center with a bolt at the 12 o'clock position. The flange orientation identifiers are -STD for Straddled or -TDC for Top-Dead-Center.

4. What is the temperature sensor used? One picks the temperature sensor suited for the selected controller. If the controller is supplied as part of the probe assembly the temperature sensor used is a Type K thermocouple picked by selecting -T/C K. Possible temperature sensors are used for monitoring and controlling the dilution probe are Type K thermocouples designated by –T/C K, Type J Thermocouples designated by -T/C J, or a Resistance Temperature Detector PT100 designated by –RTD.

5. How is the dilution heated probe controlled? The dilution probe can have a build in controller to control its self, or the dilution probe can be controlled remotely with the Universal Analyzers 728 DCD (and compact Dilution Control Drawer mounted near the analyzers) or another controller supplied by the user. The selections are -SELF and -RMT respectively.

6. Is there a Fast-Loop? If there is a Fast-Loop how is the Fast-loop Returned? A fast-loop is used to draw additional sample to speed up the response time of the system. If the dilution ratio is low, the sample system volume is low and the response time is acceptable-NO FL is selected for No Fast-Loop. Normally a fast loop is returned to the sample point. If the fast loop is returned to the sample point and a Heated Probe Assembly (HPA) is not used then the designation –FL is chosen. If one is using a HPA with a Fast-Loop then the call out is –FL HPA.

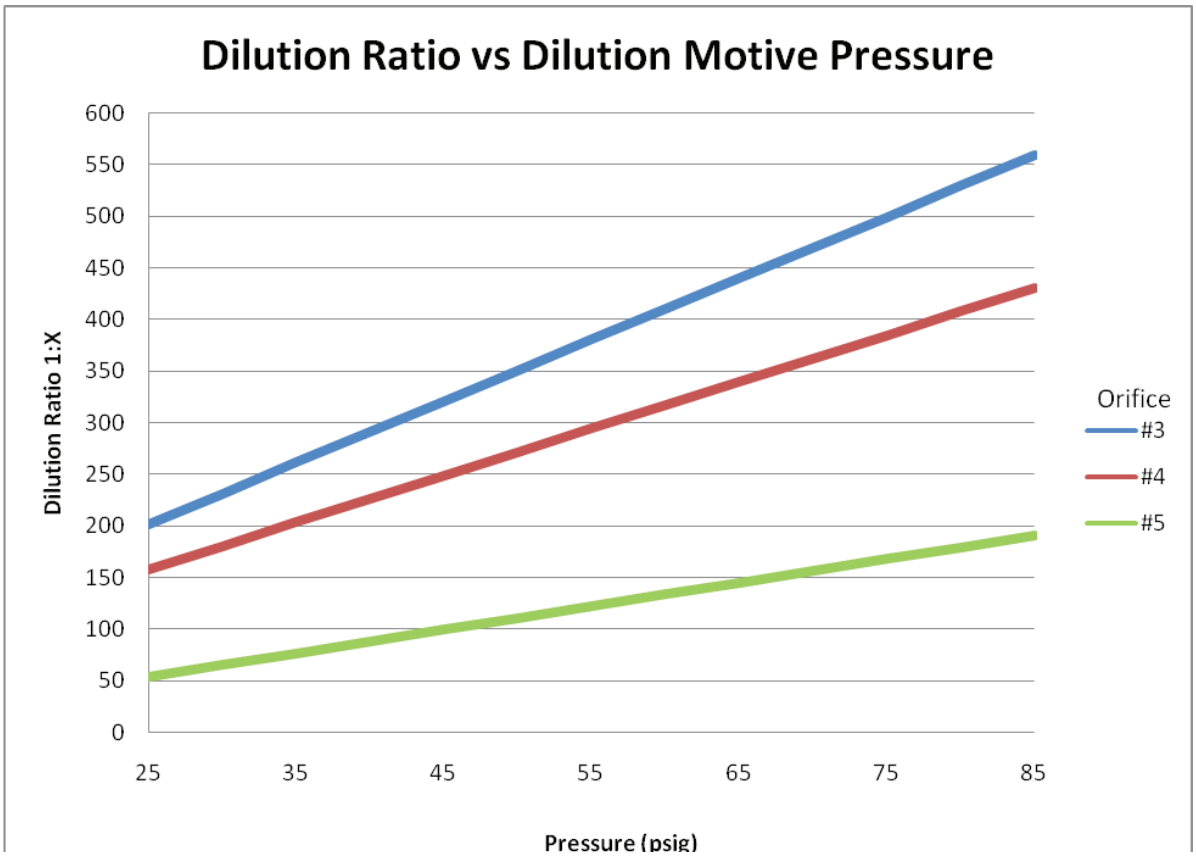
7. Does the system require Blowback? If there is blowback how is it controlled? It is possible that since the dilution probe drawing less sample then straight extractive systems that blowback will not be required. If the particle loading is greater than 0.1 grams/hour then blowback is recommended. If no blowback is required then the designator –NO BB is used. If blowback is used and controlled remotely via a PLC, DAS, the 728 DCD or other remote controller –BB is selected with the either (24) for 24VDC control, (115) for 115VAC control, (230) for 230VAC control or (Air) for pneumatic control. An example a 24VDC blowback solenoid controlled remotely is BB (24). If one choices the automatic blowback timer to be installed in the system then the designator –BBT is used.

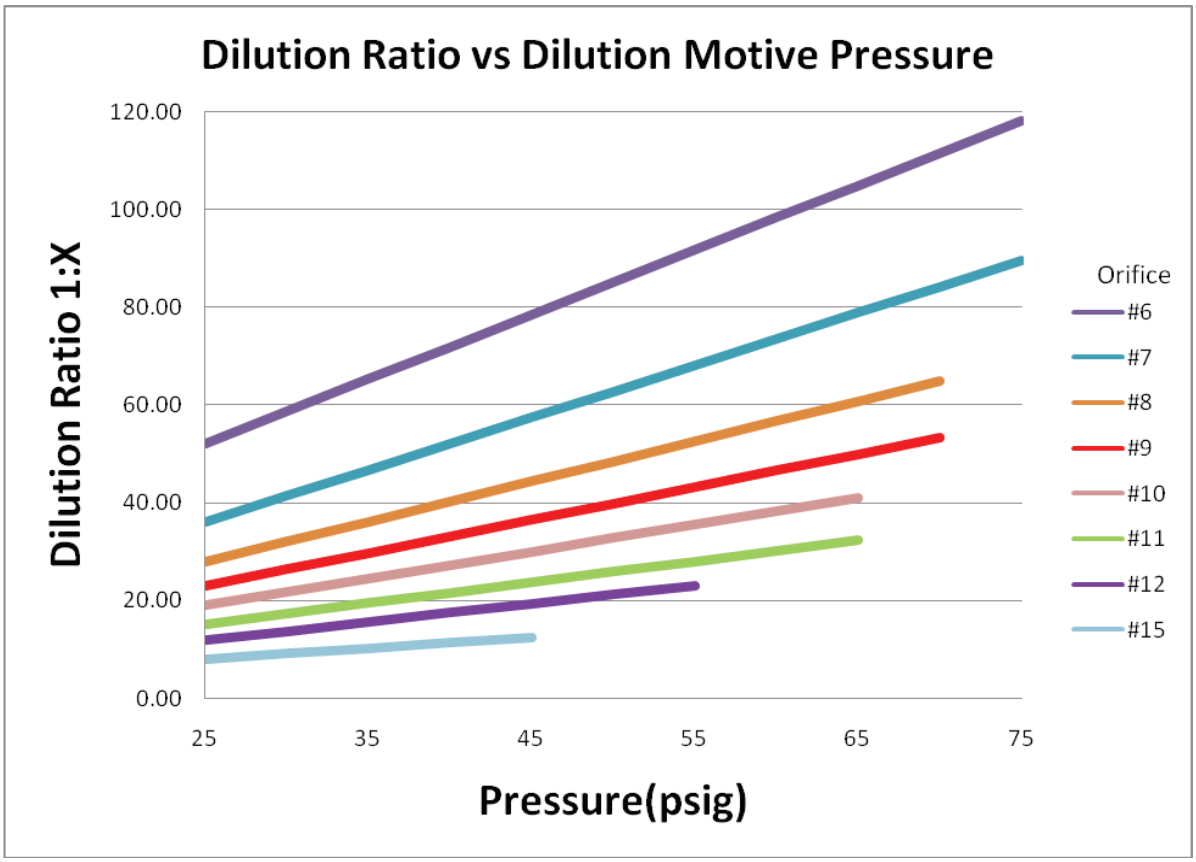
8. What size cable entry gland is required? The 3" boot means that the supply lines are in a bundle between 2.75" and 1.43". The 2" boot will accommodate bundles of 1.70" to 0.75"

9. What voltage does the system run on? The two options are 115VAC or 230VAC. The selection of the voltage will determine where the jumpers are placed for the probe chamber filter heaters.

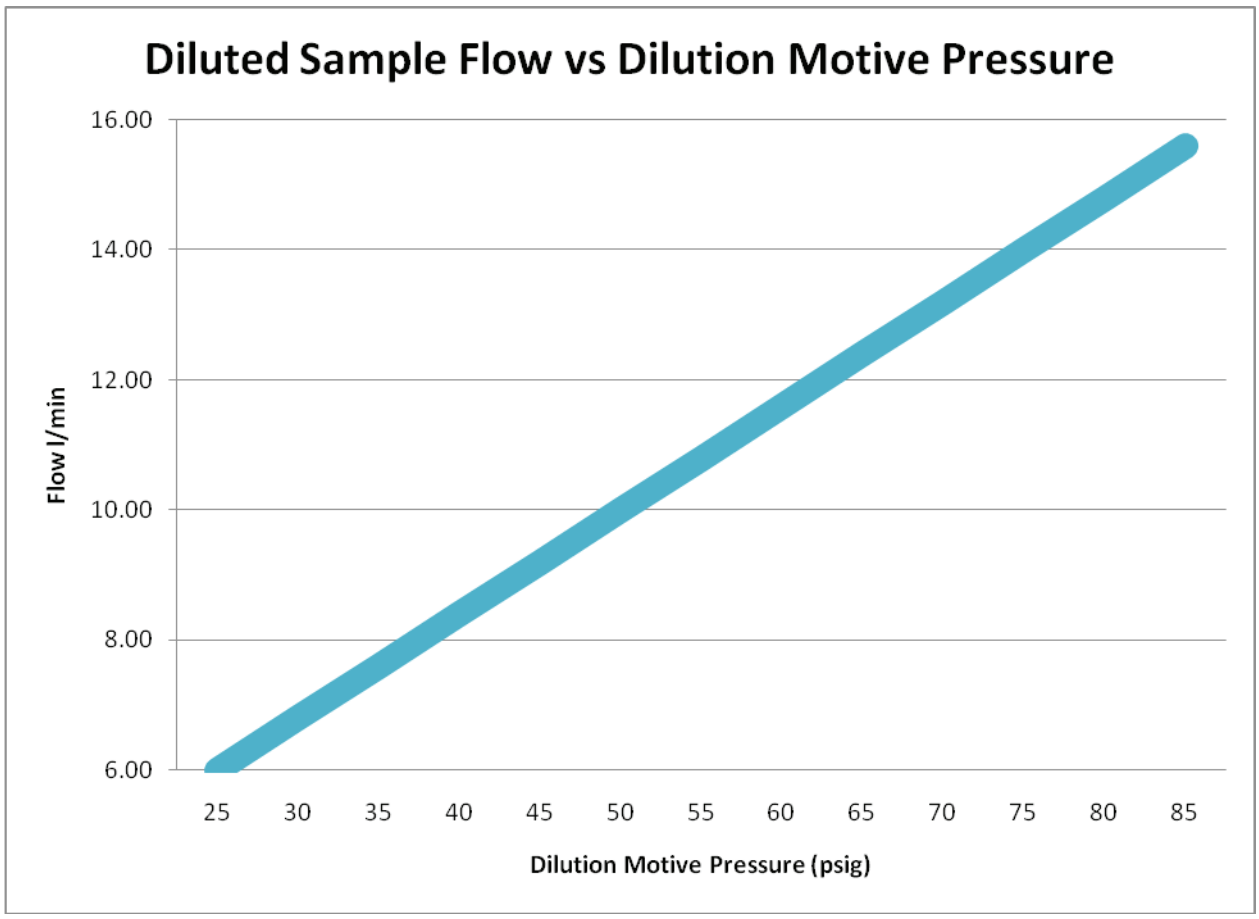
10. What is the desired Dilution Ratio? How much flow is needed for the analyzers? The following graphs will assist in selecting the correct dilution orifice. As an example if one wanted a 40:1 dilution ratio the graph below shows that (4) orifices are acceptable. The difference between the orifices is that different dilution pressures are required and different diluted sample flows are produced for the same dilution ratio. Using the 40:1 dilution ratio example one can use a #7 Orifice with 28 psig motive air to produce 6.5 l/m of diluted sample or one can use a #10 Orifice with 65 psig motive air to produce 12 l/m of diluted sample. The valid orifice sizes for selection are #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #15.

Description and Principle of Operation





Description and Principle of Operation



In conclusion an example of a typical system could have the following call out:
275 HD-SS-F4-STD-T/CK-RMT-FL-BB(115)-3”-115-#5-A.

The translation for the system part number above is a dilution probe with a SS chamber not to be heated above 400°F. The flange size is 4” #150 mounted in a straddled orientation. The heater control is done remotely with a type-K thermo-couple. The system has a fast-loop return, and blowback that is controlled by 115VAC power input. The cable entry boot is 3” un-shuck, the heaters are wired for a 115VAC power input and the orifice is a #5 meaning the diameter .005”.

Note that the probe tube and/or dilution controller drawer are ordered separately.

Installation

Before ordering a dilution probe one should select a sampling location in accordance with the appropriate regulatory requirements insuring that a representative sample location is chosen. The heated dilution filter probe needs to be located in non-hazardous area suitable for general purpose equipment. We encourage that sampling location is chosen in a location with plenty of room for maintenance, especially in front of the probe. Please keep in mind that unheated and heated probe tubes extend into the stack require room to be safely inserted and removed. For example if the probe tube is 6' long there should be 9' of access directly behind the insertion point of the probe tube to allow for the assembly to be removed. It is also important to maintain clearance for the enclosure door to be opened. The probe is designed so that it can be mounted vertically or horizontally, and even rotated depending if a Top-Dead-Center (TDC) flange with a bolt in the 12 o'clock position or a Straddled (STD) flange with bolts at the 1 and 11 o'clock positions are used. The probes can also be built to mate to a (STD) or (TDC) flange without rotating the enclosure.

Upon receipt of the Dilution Probe please inspect for damage and contact the factory at (775) 883-2500 immediately if there is shipping damage or missing components. Before mounting the 275HD enclosure to the flange at the sample location one needs to attached the probe tube. Heated Probe tubes require the 3/8-16 Allen screws as explained in the HPA installation guide. Standard probe tubes require high temperature anti-seize tape P/N 9515-1000, or high temperature anti-seize paste P/N 8000-0016 to be applied to the ½ Male National Pipe Thread (MNPT) for sealing and serviceability. The next step requires transporting the assembly to the sample location where the probe is installed.

Installing the sample probe requires a gasket seal between the two mating flanges. To insure a good gasket seal it is important to first center the gasket. Next one should lubricate the nuts and with the assistance of a torque wrench tighten the bolts in one-third increments according to the bolt pattern shown in figure #1.

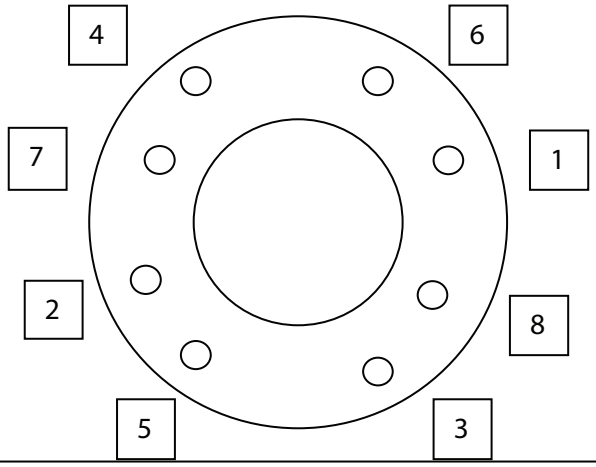


Figure #1 Gasket Bolt Tightening Pattern

Before ordering a dilution probe one should select a sampling location in accordance with the appropriate regulatory requirements insuring that a representative sample location is chosen. The heated dilution filter probe needs to be located in non-hazardous area suitable for general purpose equipment. We encourage that sampling location is chosen in a location with plenty of room for maintenance, especially in front of the probe. Please keep in mind that unheated and heated probe tubes extend into the stack require room to be safely inserted and removed. For example if the probe tube is 6' long there should be 9' of access directly behind the insertion point of the probe tube to allow for the assembly to be removed. It is also important to maintain clearance for the enclosure door to be opened. The probe is designed so that it can be mounted vertically or horizontally, and even rotated depending if a Top-Dead-Center (TDC) flange with a bolt in the 12 o'clock position or a Straddled (STD) flange with bolts at the 1 and 11 o'clock positions are used. The probes can also be built to mate to a (STD) or (TDC) flange without rotating the enclosure.

Upon receipt of the Dilution Probe please inspect for damage and contact the factory at (775) 883-2500 immediately if there is shipping damage or missing components. Before mounting the 275 HD enclosure to the flange at the sample location one needs to attached the probe tube. Heated Probe tubes require the 3/8-16 Allen screws as explained in

Installation

the HPA installation guide. Standard probe tubes require high temperature anti-seize tape P/N 9515-1000, or high temperature anti-seize paste P/N 8000-0016 to be applied to the 1/2 Male National Pipe Thread (MNPT) for sealing and serviceability. The next step requires transporting the assembly to the sample location where the probe is installed.

Installing the sample probe requires a gasket seal between the two mating flanges. To insure a good gasket seal it is important to first center the gasket. Next one should lubricate the nuts and with the assistance of a torque wrench tighten the bolts in one-third increments according to the bolt pattern shown in figure #1.

Now that the probe is mounted it is time to add the electrical and tube connections. Please ensure that power and air lines are de-energized by following proper lock-out, tag-out procedures. Only trained technicians who have read the manual and are familiar with the drawings should proceed with the installation.

All 275HD configurations will require a power input for the probe heaters and additional signal wires for blowback and/ or temperature control wires are needed according to the configuration selected. The torque specification for the power entry to the circuit protection device is 20in.-lb. The terminal blocks for the thermocouple wires used when a system is configured for a remote thermocouple reading have a torque speciation of 3.5 to 7in.-lb. It is recommended to use wire ferrules/ wire lugs for the tension clamp connection terminal blocks used for landing blowback signal wires. It is also acceptable to used solid wire if it has been striped 0.4”. The wiring connections are done according the corresponding electrical wiring drawing for the configured system.

Pneumatic connections enter the enclosure via the cable entry gland in the bottom of the enclosure. The possible tube connections are listed below:

- Diluted Sample Outlet 3/8” Tube Fitting - This is the diluted sample that is sent to the analyzer to be measured. It is important the line is not pressurized since it will prevent the Eductor from working properly, we recommend and atmospheric manifold or tee to ensure that the line is not pressurized.
- Dilution Motive Air 1/4” Tube Fitting - This is the clean, dry, zero air supplied at a precise pressure that is the motive air for the Eductor and the dilution air for the sample.
- Dilution Eductor Vacuum Tap 1/4” Tube Fitting - This connection is used for monitoring the function of the Eductor, and that sonic flow through the critical orifice is achieved.
- Instrument air for Blowback 1/4” Tube Fitting - Clean, dry, instrument air is acceptable for blowback. The pressure should be between 85 psig and 125 psig. Note that Blowback is an optional feature not used with clean samples.
- Instrument Air for fast loop/bypass 1/4” Tube Fitting - Clean, dry, instrument air is also acceptable for use as a motive fluid for the fast loop/bypass Eductor used to increase the sample intake in order to increase the response time. This is especially important with higher dilution ratios. An orifice is used for the fast loop/bypass flow path so that a wide range of pressures can be used to motivate the fast loop/bypass Eductor. One is able to conserve instrument air and regulate the pressure to 5 psig, or one can simply use the blowback air at 85 psig and the fast loop/ bypass will work.

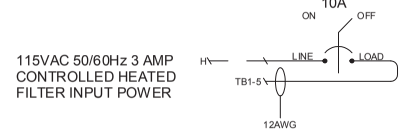
Hint, color coding the pneumatic lines with electrical tape can help installation and with trouble shooting at a later date. The insulated instrument jacked cover for the 275HD can be removed to see the laser inscribed labels on the manifold to help identify where to connect the appropriate lines. The insulated instrument jacket can be installed and removed without removing the pneumatic connections.

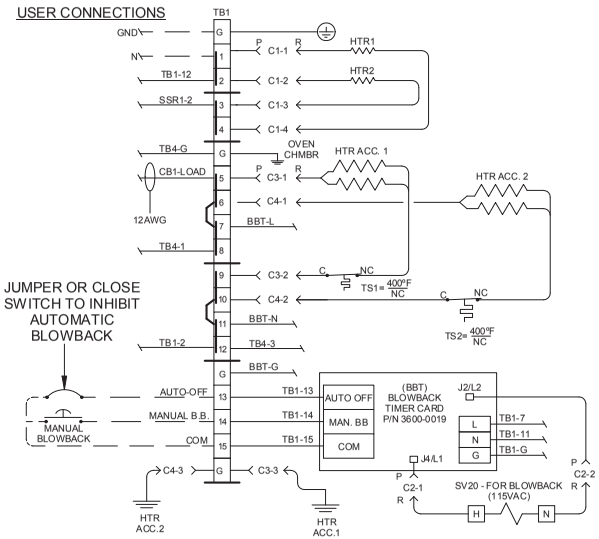
The final installation step is to apply heat with a torch or heat gun to the cable entry gland to shrink and seal the bundle that was just installed. Since the cable entry gland will fix the bundle it is recommended to leave a service loop inside the enclosure for future maintenance.

LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1 P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER
10A

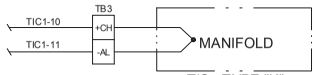
115VAC 50/60Hz 3 AMP CONTROLLED HEATED FILTER INPUT POWER





THERMOCOUPLE TYPE "K"

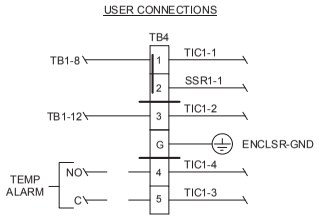
THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

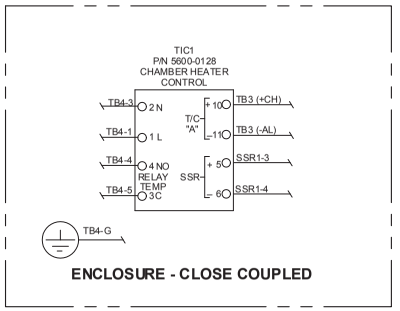


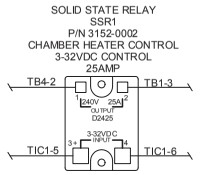
T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

LOCAL TEMPERATURE CONTROL / HEATED BLOWBACK TIMER / 115VAC







- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- JUMPER - P/N 3304-1003
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

FILTER HEATER ROD (HTR1 & HTR2) P/N 3014-1001

ACCUMULTOR HEATER (HTR ACC.1 & 2) - P/N 4956-0009

LOW TEMP ALARM TS1 & 2
NORMALLY CLOSED (NC) BELOW 400°F P/N 3103-0009

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
P
C3&4 - 3 POSITION PLUG - P/N 3304-0027
R
C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

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

+ RED
- BLUE
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

LOCAL / HEATED BLOWBACK W/TIMER /115VAC WIRING SCHEMATIC

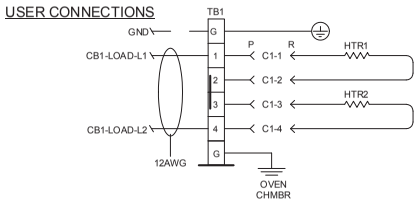
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	41 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	88	P1308

REMOTE TEMPERATURE CONTROL / NO BLOWBACK / 230VAC

CB1
P/N: 3012-1000
POWER SWITCH /
CIRCUIT BREAKER
10A

REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER



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

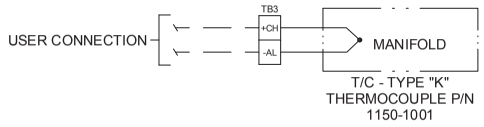
2) AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

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

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

THERMOCOUPLE TYPE "K"

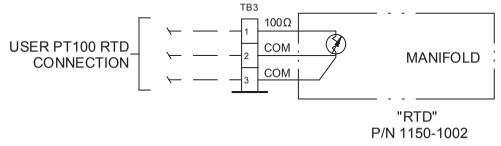
THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



- [#/#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- [#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- [G] - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- —— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

→ - CONNECTION PIN - P/N 3304-0089
≺ - CONNECTION SOCKET - P/N 3304-0035

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

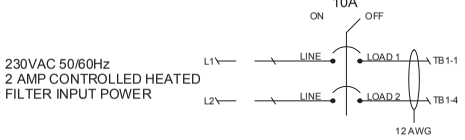
REMOTE / NO BLOWBACK/230VAC WIRING SCHEMATIC

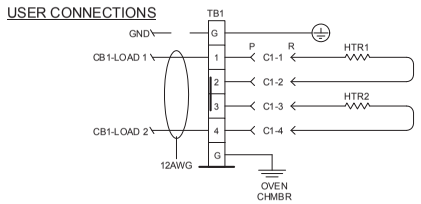
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	42 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills / G.Evans	86	P1308

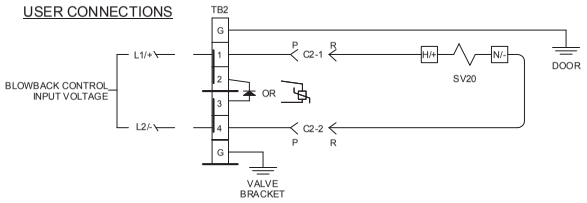
REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-1000
POWER SWITCH / CIRCUIT BREAKER
10A



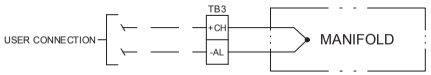


BLOWBACK



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

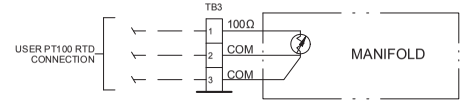


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



"RTD"
P/N 1150-1002

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

REMOTE TEMPERATURE CONTROL / BLOWBACK / 230VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

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

.

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APV'D
B	05/23/11		MW	GE

REVISIONS

REMOTE / BLOWBACK/230VAC WIRING SCHEMATIC

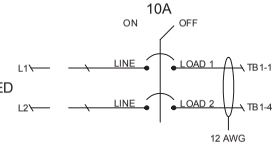
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	43 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wells		P1308
		APV'D BY G. Evans	86	

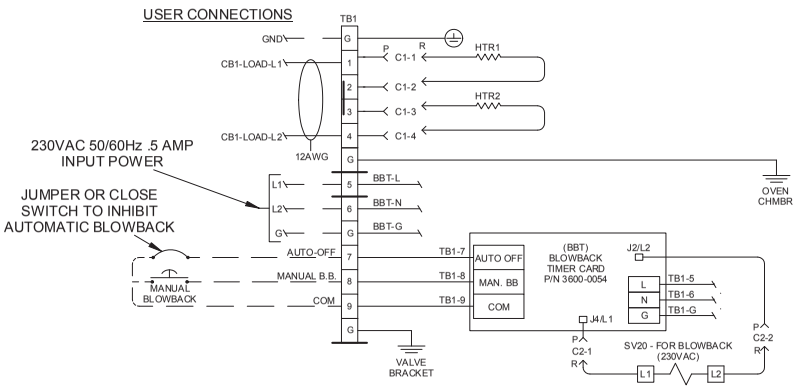
REMOTE TEMPERATURE CONTROL / BLOWBACK TIMER / 230VAC

CB1
P/N: 3012-1000
POWER SWITCH /
CIRCUIT BREAKER
10A

230VAC 50/60Hz
2 AMP CONTROLLED HEATED
FILTER INPUT POWER

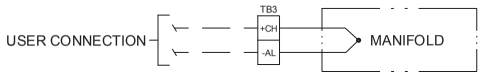


REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

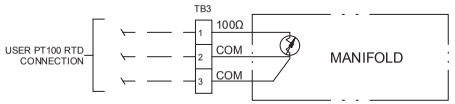


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING / CONTROL



"RTD"
P/N 1150-1002

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

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

+ RED
- BLACK

USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

[#/#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
[#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
[G] - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
—— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES
HTR1 & HTR2 - P/N 3014-1001
P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153
P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
→ - CONNECTION PIN - P/N 3304-0089
—< - CONNECTION SOCKET - P/N 3304-0035

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

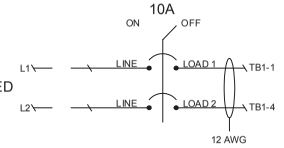
REVISIONS

REMOTE / BLOWBACK TIMER/230VAC WIRING SCHEMATIC		DATE 03/11/2008	SCALE NTS	SIZE D	SHEET 44 OF 53
PART NO.	FOR	DRAWN BY R. Wills		ECO#	DRAWING NO.
275HD	STANDARD	APV'D BY G. Evans		86	P1308

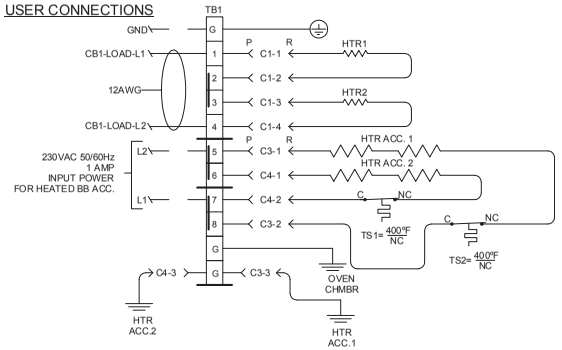
REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-1000
POWER SWITCH / CIRCUIT BREAKER
10A

230VAC 50/60Hz
2 AMP CONTROLLED HEATED
FILTER INPUT POWER

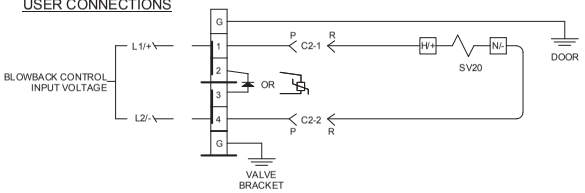


USER CONNECTIONS



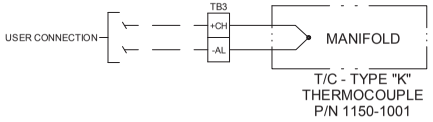
USER CONNECTIONS

BLOWBACK



THERMOCOUPLE TYPE "K"

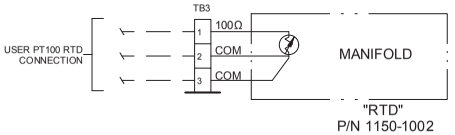
THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH= 3304-0167
-AL = 3304-0168



"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

REMOTE TEMPERATURE CONTROL / HEATED BLOWBACK / 230VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 22AWG UNLESS OTHERWISE SPECIFIED
\+ RED
\- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

- [#/#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- [#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- [G] - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES
HTR1 & HTR2 - P/N 3014-1001
- P C1 - 4 POSITION PLUG - P/N 3304-0152
- R C1 - 4 POSITION RECEPTACLE - P/N 3304-0153
- P C2 - 2 POSITION PLUG - P/N 3304-0004
- R C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
- P C3&4 - 3 POSITION PLUG - P/N 3304-0027
- R C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028
- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

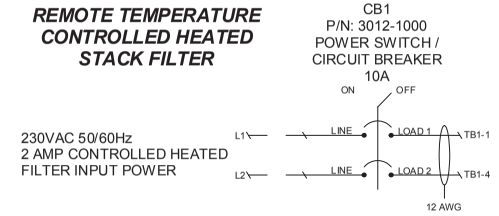
REVISIONS

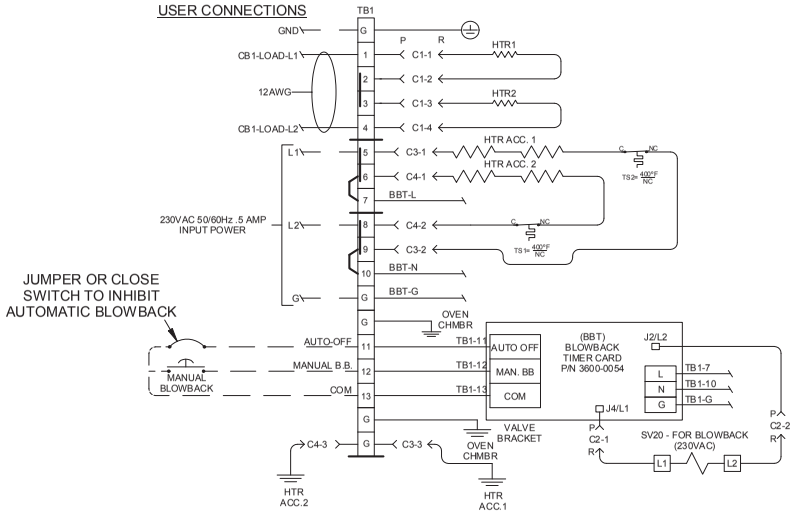
REMOTE/HEATED BLOWBACK/230VAC WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	45 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills / G. Evans	88	P1308

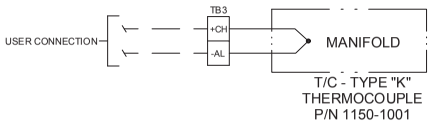
REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER





THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

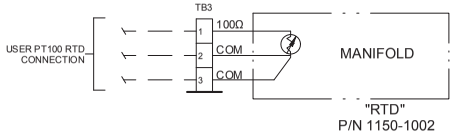


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



"RTD"
P/N 1150-1002

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

REMOTE TEMPERATURE CONTROL / HEATED BLOWBACK TIMER / 230VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

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

+ RED
- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

[#][#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
[#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
[G] - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
(- JUMPER - P/N 3304-1003
— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
P
C3&4 - 3 POSITION PLUG - P/N 3304-0027
R
C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

→ - CONNECTION PIN - P/N 3304-0089
—< - CONNECTION SOCKET - P/N 3304-0035

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

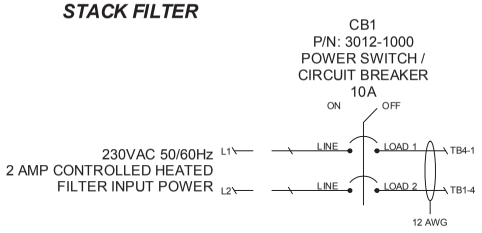
5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

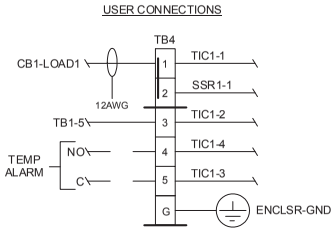
REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

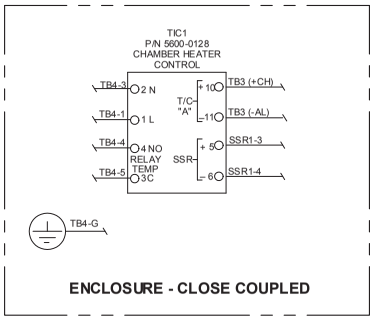
REMOTE / HEATED BLOWBACK TIMER/230VAC WIRING SCHEMATIC	DATE 03/11/2008	SCALE NTS	SIZE D	SHEET 46 OF 53
PART NO. 275HD	FOR STANDARD	DRAWN BY R. Wills	ECO# 86	DRAWING NO. P1308
		APVD BY G.Evans		

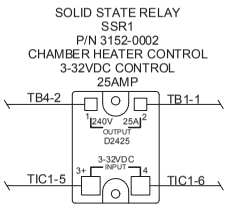
LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

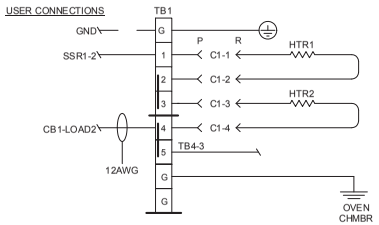




LOCAL TEMPERATURE CONTROL / NO BLOWBACK / 230VAC







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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

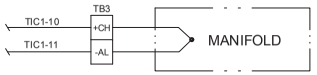
3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED..

\+ RED
\- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

[#][#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007

[#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002

[G] - GROUND TERMINAL BLOCK - P/N 3304-1000

- TERMINAL BLOCK NUMBERS - P/N 5001-0085

—— - ISOLATION BLOCK - P/N 3304-1001

- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152

R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

→ - CONNECTION PIN - P/N 3304-0089

—< - CONNECTION SOCKET - P/N 3304-0035

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

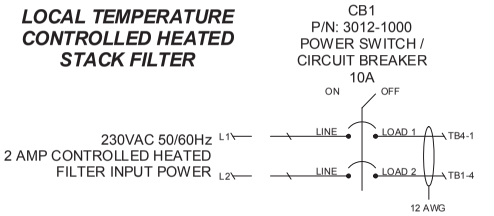
REVISIONS

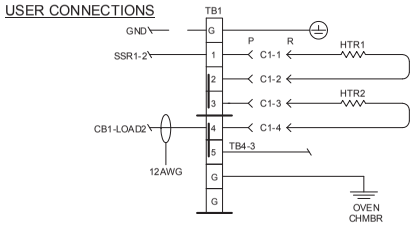
LOCAL CONTROL / NO BLOWBACK/230VAC WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	47 OF 53

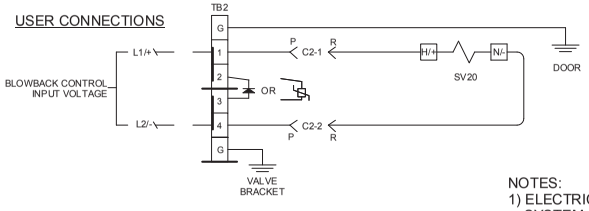
PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER



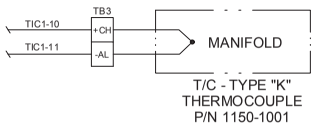


BLOWBACK

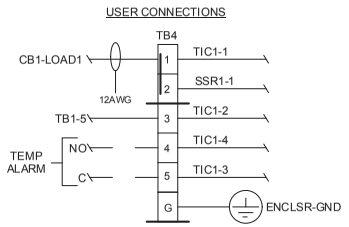


THERMOCOUPLE TYPE "K"

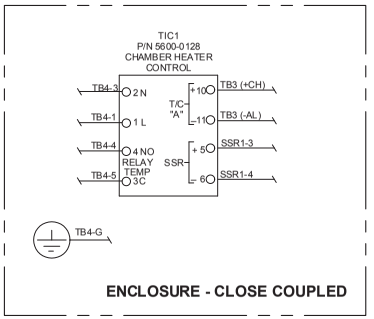
THERMOCOUPLE FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

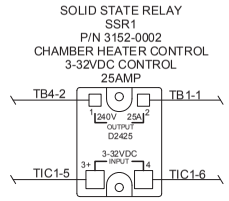


NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.



LOCAL TEMPERATURE CONTROL / BLOWBACK / 230VAC





- # - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- # - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- G - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035
- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED..

+ RED
- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

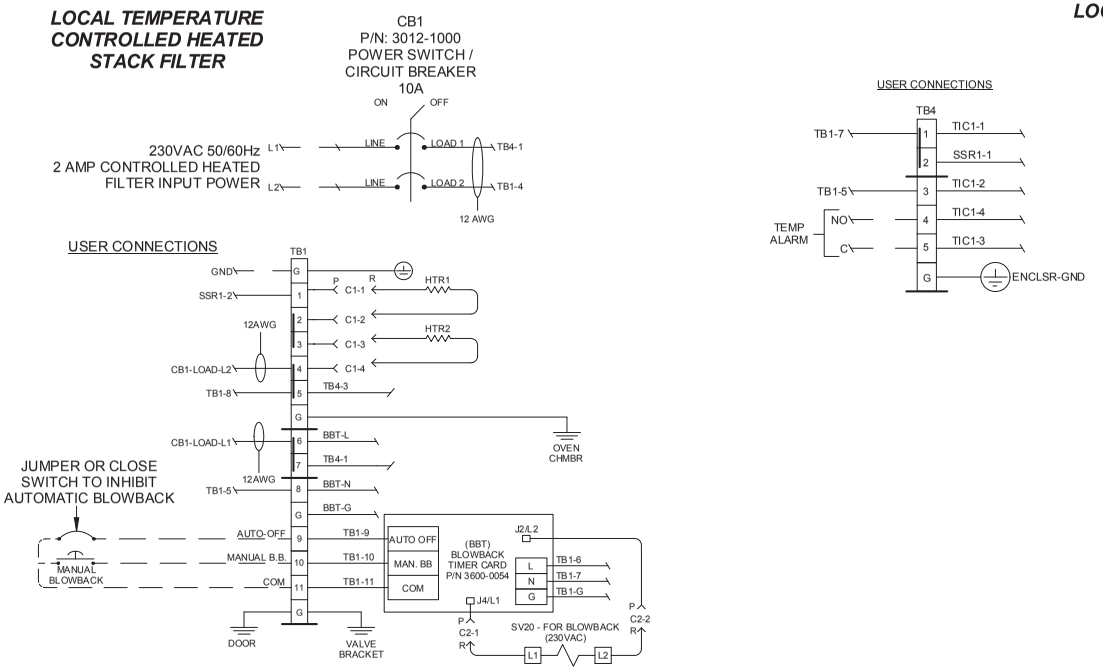
REVISIONS

LOCAL CONTROL / BLOWBACK/230VAC WIRING SCHEMATIC

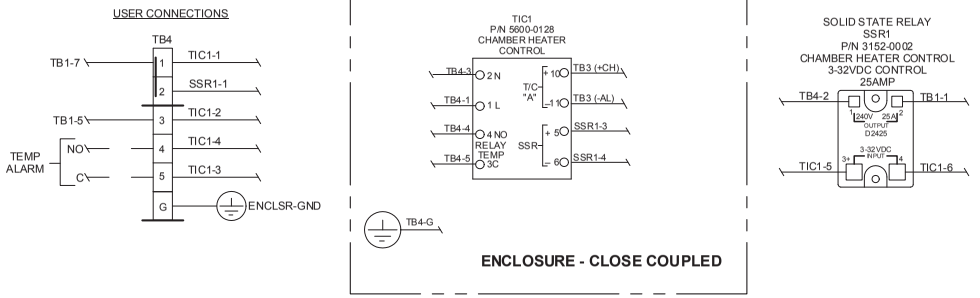
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	48 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

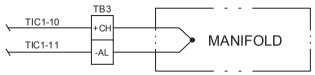


LOCAL TEMPERATURE CONTROL / BLOWBACK TIMER / 230VAC



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED..

+ RED
- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
G - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES
HTR1 & HTR2 - P/N 3014-1001
P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153
P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
→ - CONNECTION PIN - P/N 3304-0089
≺ - CONNECTION SOCKET - P/N 3304-0035

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

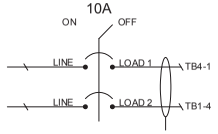
LOCAL / BLOWBACK TIMER/230VAC WIRING SCHEMATIC

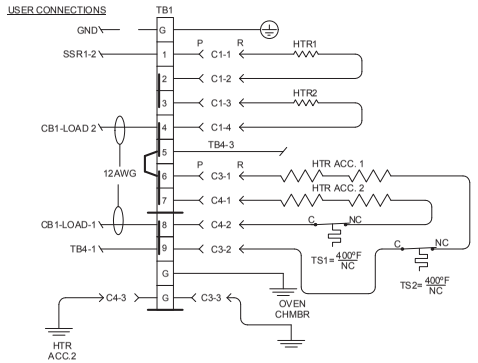
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	49 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APV'D BY G.Evans	86	P1308

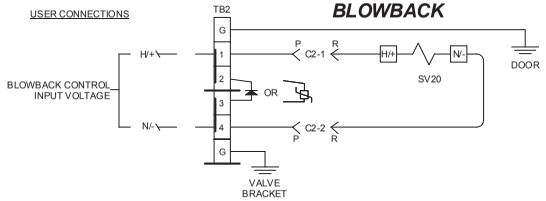
LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-1000
POWER SWITCH / CIRCUIT BREAKER
10A



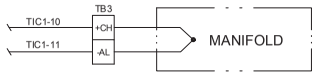


BLOWBACK

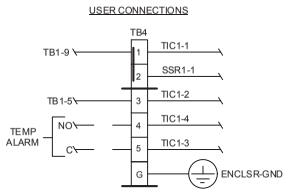


THERMOCOUPLE TYPE "K"

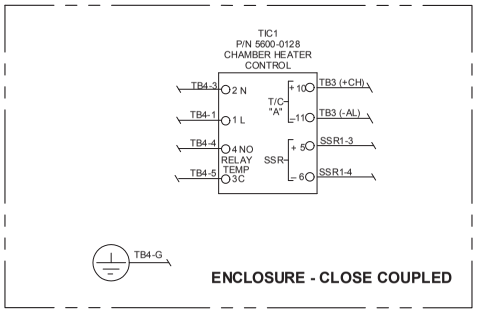
THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

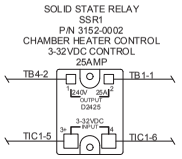


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001



LOCAL TEMPERATURE CONTROL / HEATED BLOWBACK / 230VAC





- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- JUMPER - P/N 3304-1003
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
P
C3&4 - 3 POSITION PLUG - P/N 3304-0027
R
C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035
- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V
L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED..

+ RED
- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

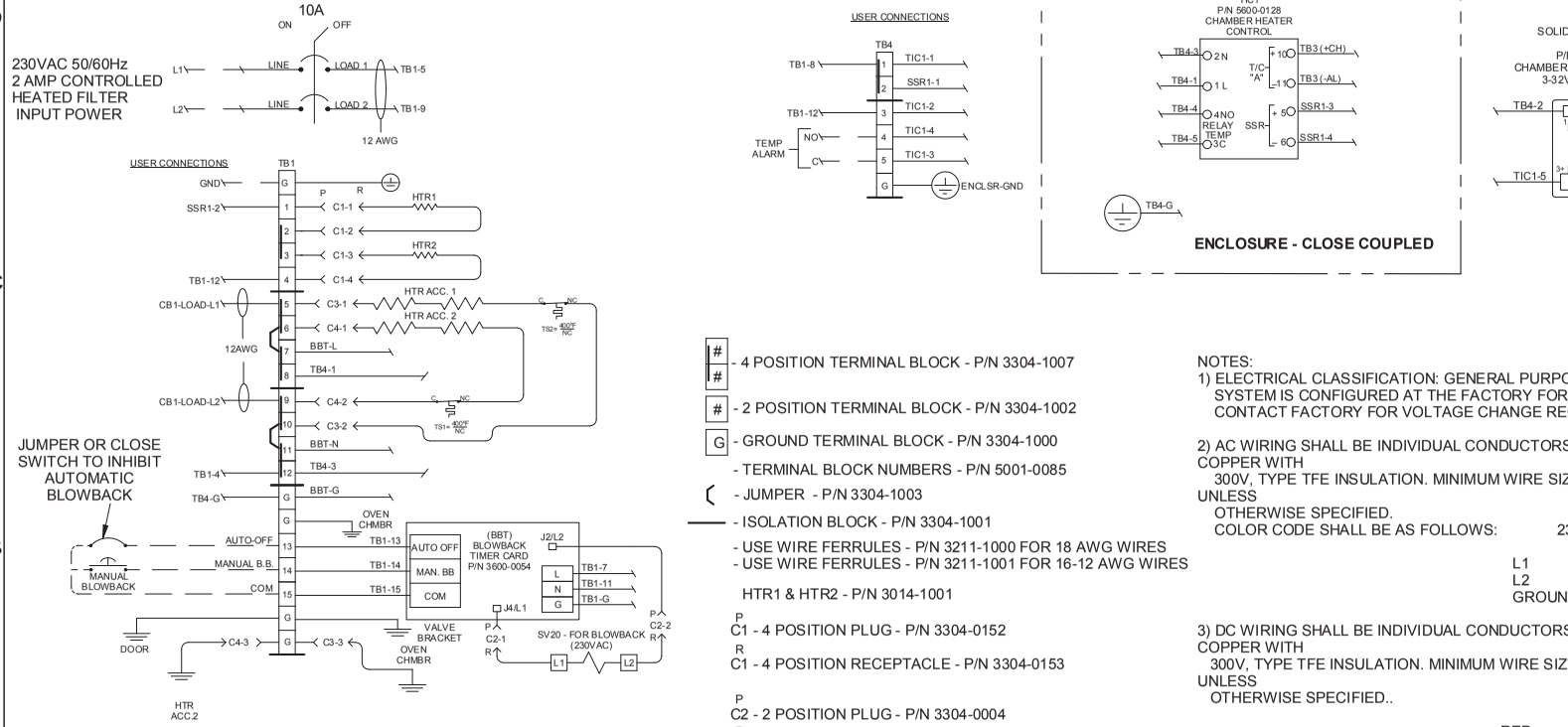
LOCAL / HEATED BLOWBACK/230VAC WIRING SCHEMATIC

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

DATE 03/11/2008 | SCALE NTS | SIZE D | SHEET 50 OF 53

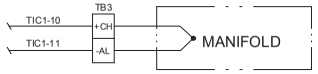
LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

LOCAL TEMPERATURE CONTROL / HEATED BLOWBACK TIMER / 230VAC



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER
HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- JUMPER - P/N 3304-1003
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
P
C3&4 - 3 POSITION PLUG - P/N 3304-0027
R
C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS
OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 230V

L1 - BROWN
L2 - BLUE
GROUND - GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH
300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS
OTHERWISE SPECIFIED..

\+ RED
\- BLACK
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

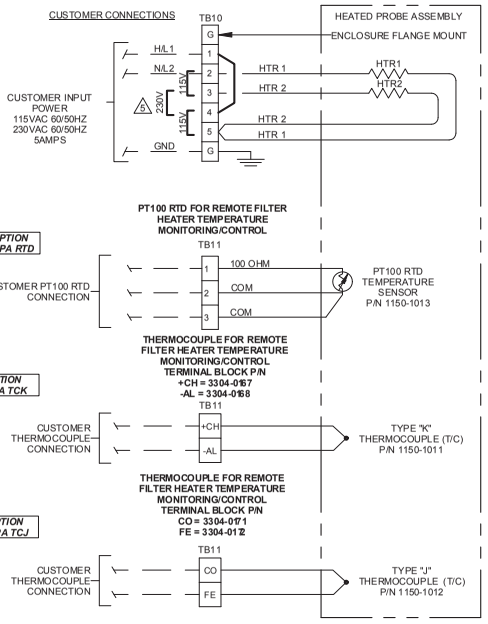
REVISIONS

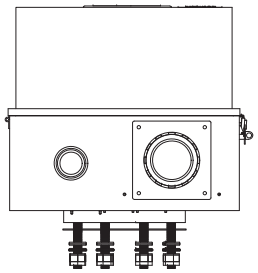
LOCAL / HEATED BLOWBACK TIMER
/230VAC
WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	51 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills	86	P1308
		APVD BY G.Evans		

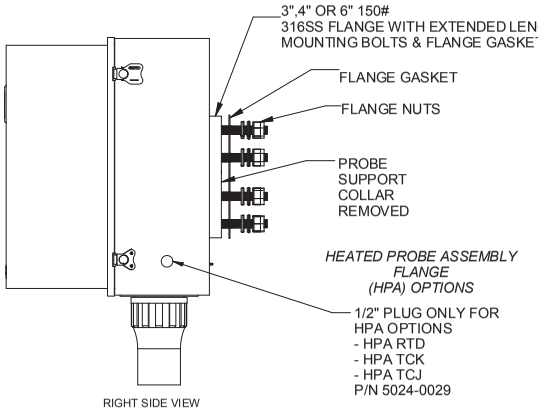
- # / # - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- # - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- G - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- (- JUMPER - P/N 3304-1003
- —— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 12 AWG WIRES





BOTTOM VIEW

REMOTE CONTROL OF HPA



RIGHT SIDE VIEW

CONDUIT AND FIELD WIRING NOTES

1) ELECTRICAL CLASSIFICATION : INSIDE - GENERAL PURPOSE
SYSTEM IS CONFIGURED AT THE FACTORY FOR PART NUMBER DEFINED VOLTAGE.

2) AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18 AWG.

	115VAC	230VAC
HOT	- BLACK	BROWN
NEUTRAL	- WHITE	BLUE
GROUND	- GREEN	GREEN / YELLOW

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 22 AWG. + RED / - BLUE.

4) HTR 1 & 2 SPECIFICATIONS: SEE HPA DRAWING P0920

5) FOR VOLTAGE CHANGE IN FIELD FROM 115VAC TO 230VAC REMOVE JUMPERS ON TB5 AT TERMINAL LOCATIONS 2-3 & 4-5. INSTALL ONE OF THE JUMPERS AT TERMINAL LOCATIONS 3-4.

6) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

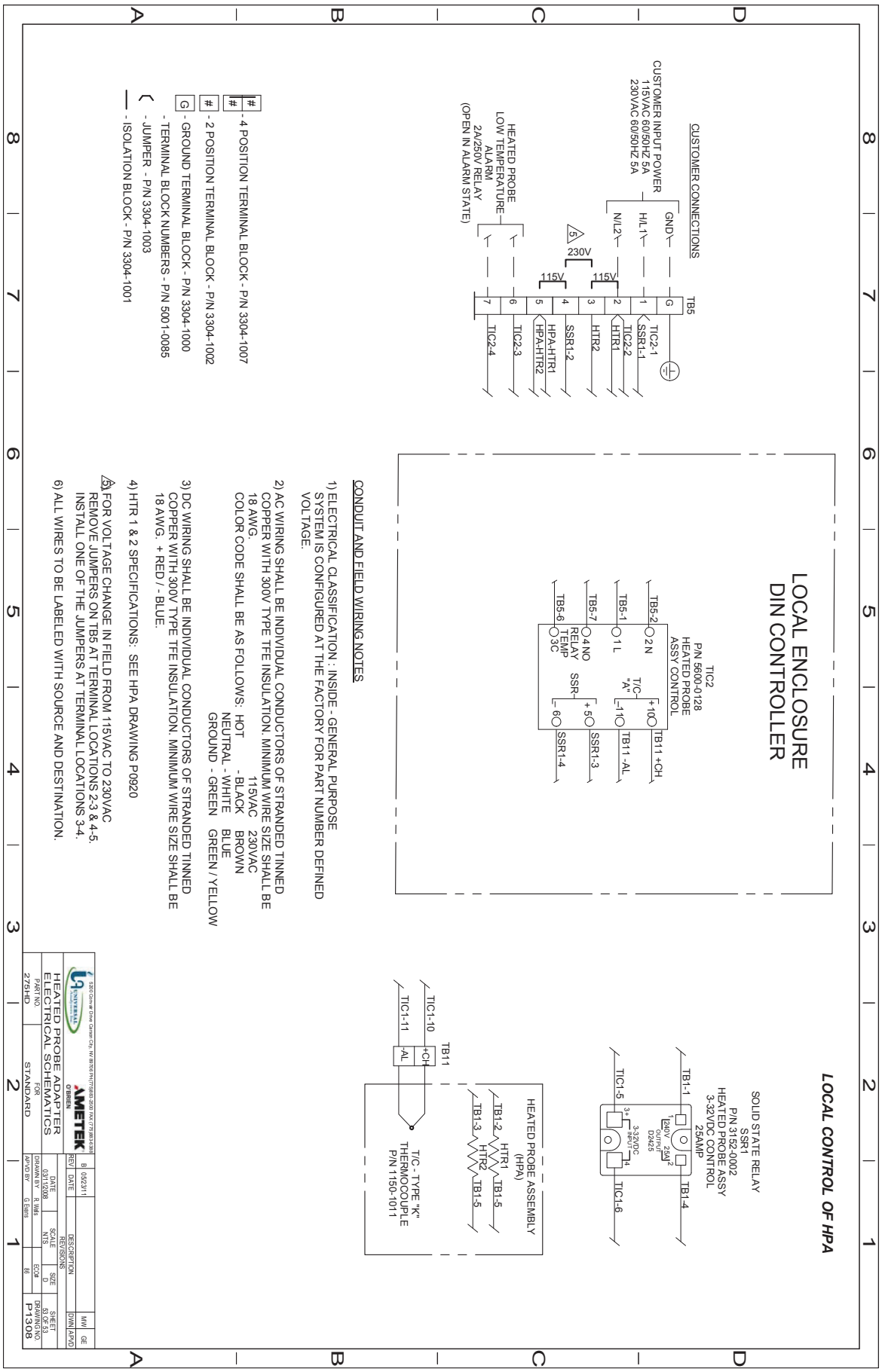
REVISIONS

HPA W/275HD WIRING SCHEMATIC

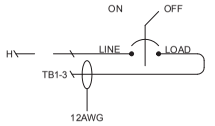
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	52 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills / APVD BY G.Evans	86	P1308

Electrical Connections Model 275HD

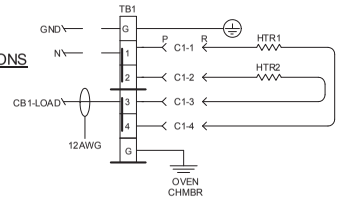


REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER



CB1
P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER 10A

115VAC 50/60Hz
3 AMP CONTROLLED
HEATED FILTER
INPUT POWER



USER CONNECTIONS

REMOTE TEMPERATURE CONTROL / NO BLOWBACK / 115VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
\+ RED
\- BLUE
USER CONNECTION

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

[#] [#] - 4 POSITION TERMINAL BLOCK - P/N 3304-1007

[#] - 2 POSITION TERMINAL BLOCK - P/N 3304-1002

[G] - GROUND TERMINAL BLOCK - P/N 3304-1000

- TERMINAL BLOCK NUMBERS - P/N 5001-0085

—— - ISOLATION BLOCK - P/N 3304-1001

- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

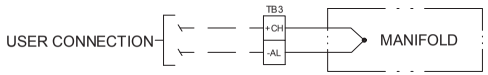
P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

→ - CONNECTION PIN - P/N 3304-0089

≺ - CONNECTION SOCKET - P/N 3304-0035

THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

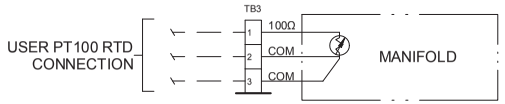


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



"RTD"
P/N 1150-1002

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

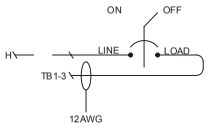
REVISIONS

REMOTE / NO BLOWBACK/115VAC WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	32 OF 53

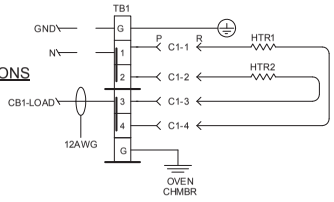
PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills / G.Evans	86	P1308

REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER

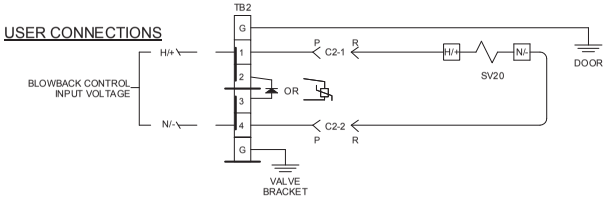


CB1
P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER 10A

115VAC 50/60Hz
3 AMP CONTROLLED HEATED FILTER INPUT POWER

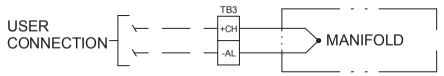


BLOWBACK



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

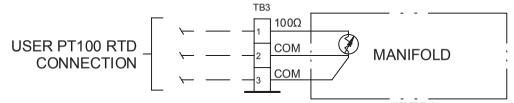


T/C - TYPE "K" THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



"RTD"
P/N 1150-1002

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

REMOTE TEMPERATURE CONTROL / WITH BLOWBACK / 115VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
\+ RED
\- BLUE
USER CONNECTION

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

- # / # - 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- # - 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- G - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

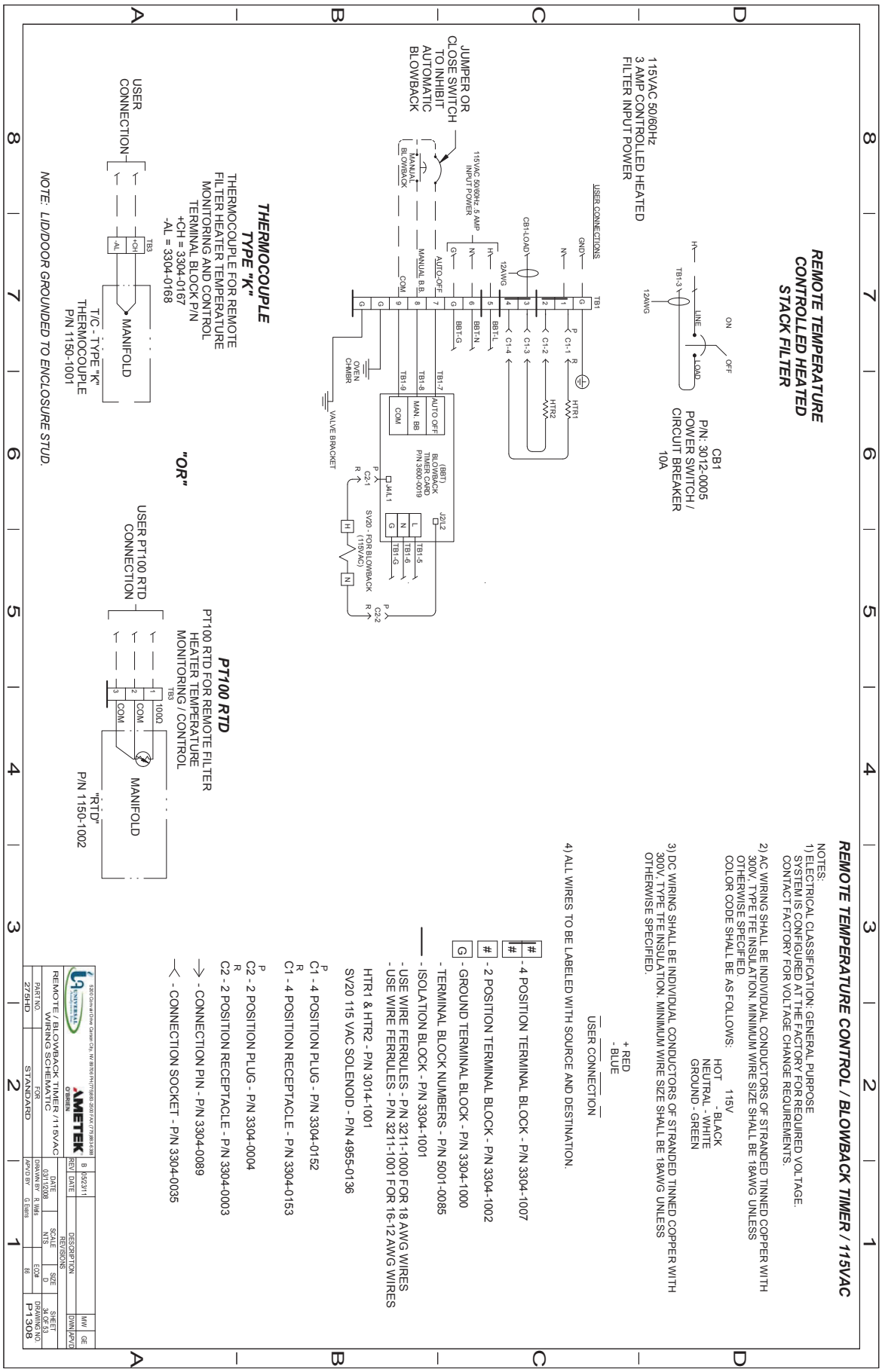
REVISIONS

REMOTE/BLOWBACK/115VAC WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	33 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills	86	P1308
		APV'D BY G. Evans		

Electrical Connections Model 275HD

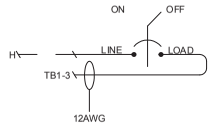


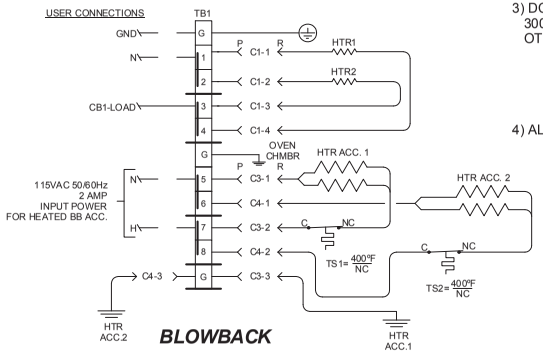
REMOTE TEMPERATURE CONTROL / HEATED BLOWBACK / 115VAC

REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER

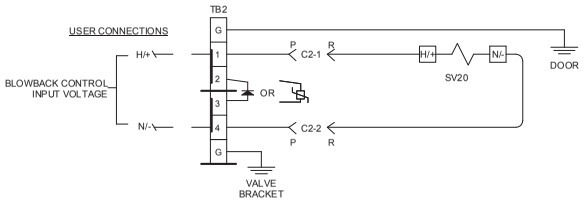
115VAC 50/60Hz
3 AMP CONTROLLED HEATED
FILTER INPUT POWER

CB1
P/N: 3012-0005
POWER SWITCH /
CIRCUIT BREAKER
10A



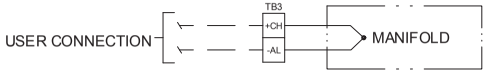


BLOWBACK



THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

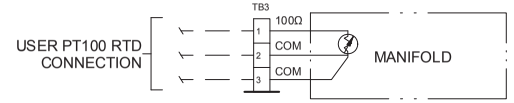


T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

"OR"

PT100 RTD

PT100 RTD FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING / CONTROL



"RTD"
P/N 1150-1002

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
\+ RED
\- BLUE
USER CONNECTION

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

FILTER HEATER ROD (HTR1 & HTR2) - P/N 3014-1001

ACCUMULTOR HEATER (HTR ACC.1 & 2) - P/N 4956-0009

LOW TEMP ALARM TS1 & 2
NORMALLY CLOSED (NC) BELOW 400°F P/N 3103-0009

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003

C3&4 - 3 POSITION PLUG - P/N 3304-0027

C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REMOTE / HEATED BLOWBACK/115VAC WIRING SCHEMATIC

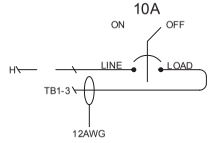
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	35 OF 53

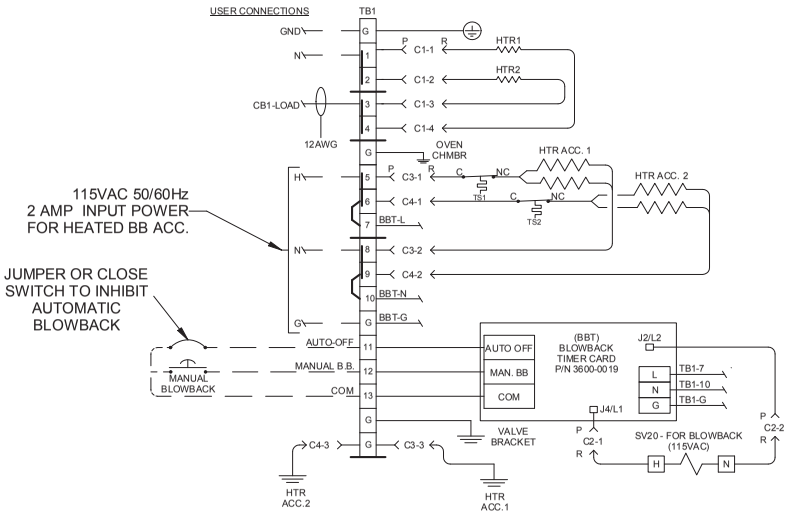
PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wills / APVD BY G.Evans	86	P1308

REMOTE TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER
10A

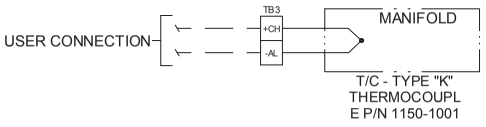
115VAC 50/60Hz
3 AMP CONTROLLED HEATED
FILTER INPUT POWER





THERMOCOUPLE TYPE "K"

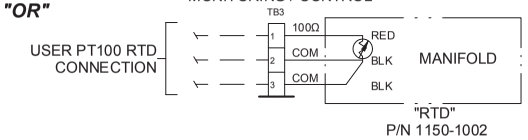
THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



"OR"

PT100 RTD

PT100 RTD FOR REMOTE FILTER HEATER TEMPERATURE MONITORING / CONTROL



NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

REMOTE TEMPERATURE CONTROL / HEATED BLOWBACK TIMER / 115VAC

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

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

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- JUMPER - P/N 3304-1003
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

FILTER HEATER ROD (HTR1 & HTR2) P/N 3014-1001

ACCUMULTOR HEATER (HTR ACC.1 & 2) - P/N 4956-0009

LOW TEMP ALARM TS1 & 2
NORMALLY CLOSED (NC) BELOW 400° F P/N 3103-0009

SV20 115 VAC SOLENOID - P/N 4955-0136

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153
P
C2/3/4 - 2 POSITION PLUG - P/N 3304-0003
R
C2/3/4 - 2 POSITION RECEPTACLE - P/N 3304-0004

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

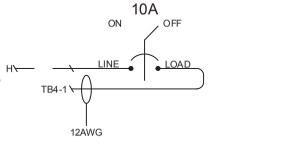
REVISIONS

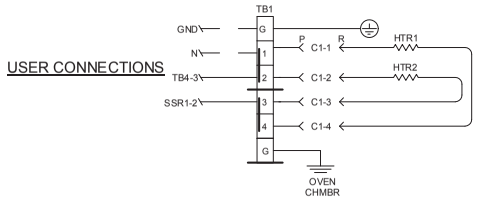
REMOTE / HEATED BLOWBACK TIMER /115VAC WIRING SCHEMATIC		DATE 03/11/2008	SCALE NTS	SIZE D	SHEET 36 OF 53
PART NO.	FOR	DRAWN BY R. Wills	ECO#		DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86		P1308

TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER
10A

115VAC 50/60Hz
3 AMP CONTROLLED HEATED
FILTER INPUT POWER





THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

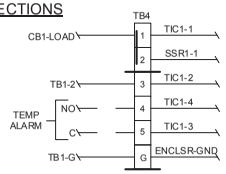
3) DC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED TINNED COPPER WITH 300V, TYPE TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 22AWG UNLESS OTHERWISE SPECIFIED.

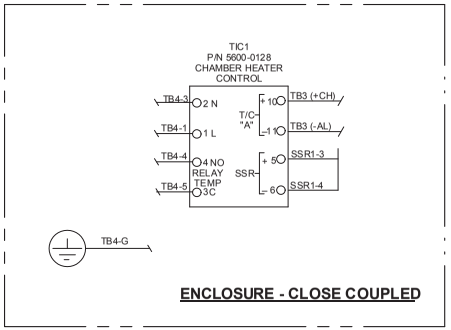
\+ RED
\- BLUE
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

LOCAL TEMPERATURE CONTROL / NO BLOWBACK / 115VAC

USER CONNECTIONS





- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

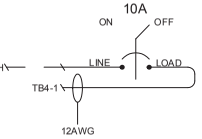
LOCAL / NO BLOWBACK/115VAC WIRING SCHEMATIC

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	37 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

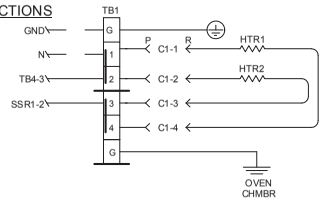
TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1
P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER
10A



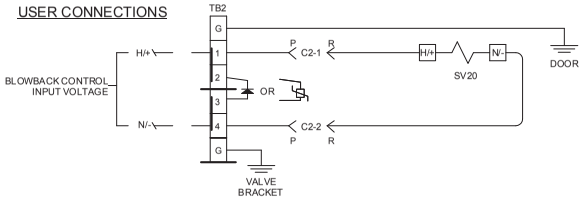
115VAC 50/60Hz
3 AMP CONTROLLED HEATED FILTER INPUT POWER

USER CONNECTIONS



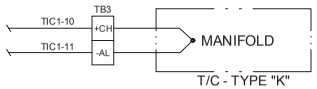
BLOWBACK

USER CONNECTIONS



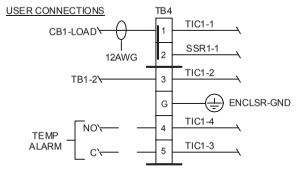
THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE FILTER HEATER TEMPERATURE MONITORING AND CONTROL TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168

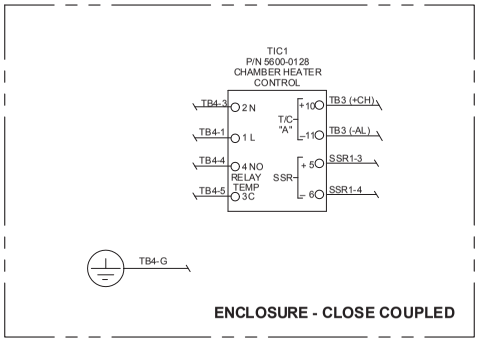


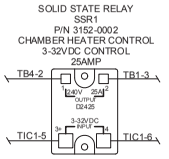
T/C - TYPE "K" THERMOCOUPLE
P/N 1150-1001

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.



LOCAL TEMPERATURE CONTROL / BLOWBACK / 115VAC





- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
G - GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
— - ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

HTR1 & HTR2 - P/N 3014-1001

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003

→ - CONNECTION PIN - P/N 3304-0089
→ - CONNECTION SOCKET - P/N 3304-0035
- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

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

+ RED
- BLUE
USER CONNECTION

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

5200 Convair Drive Carson City, NV 89706 PH:(775)883-2500 FAX:(775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

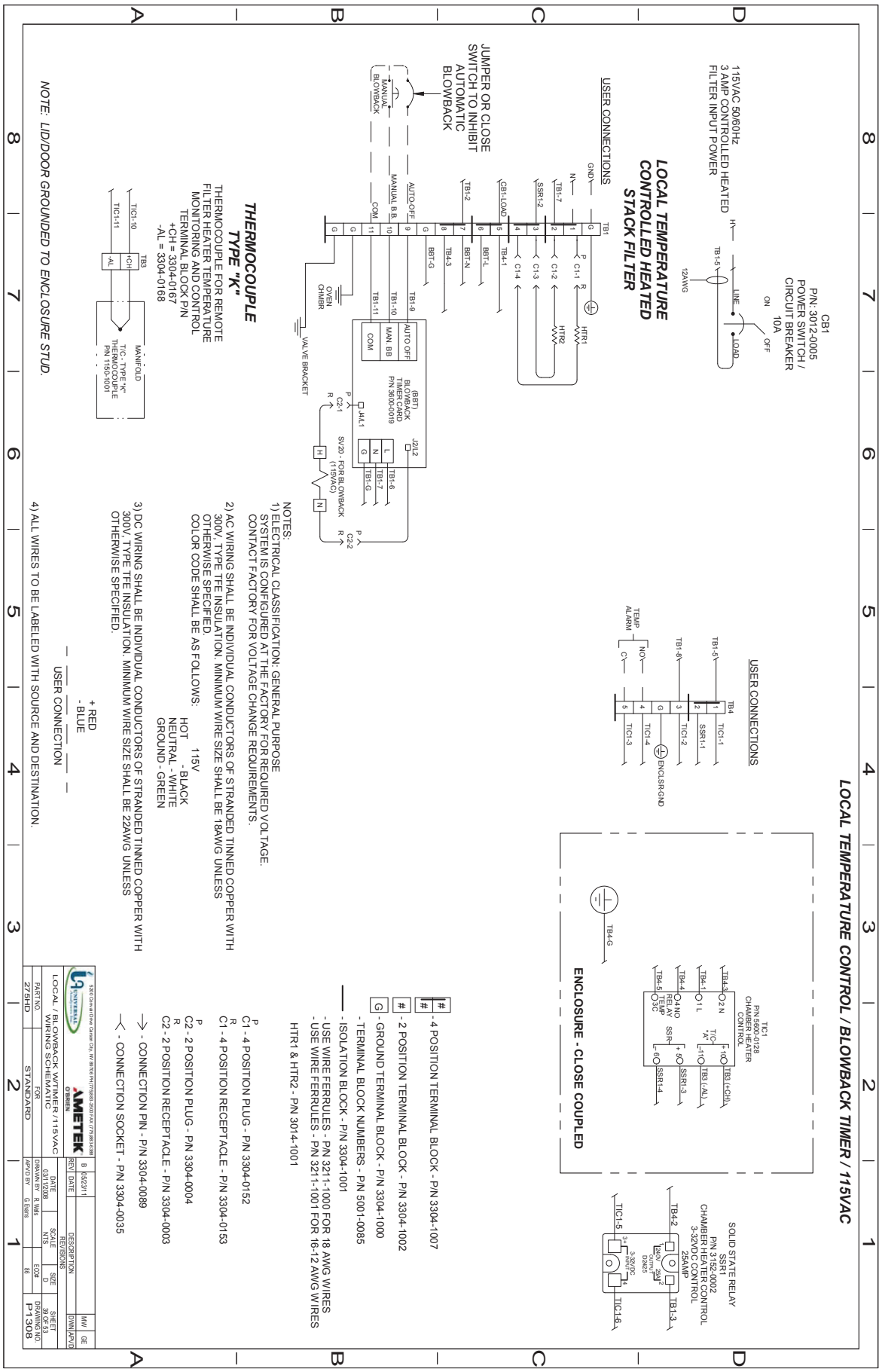
REVISIONS

LOCAL / BLOWBACK/115VAC WIRING SCHEMATIC

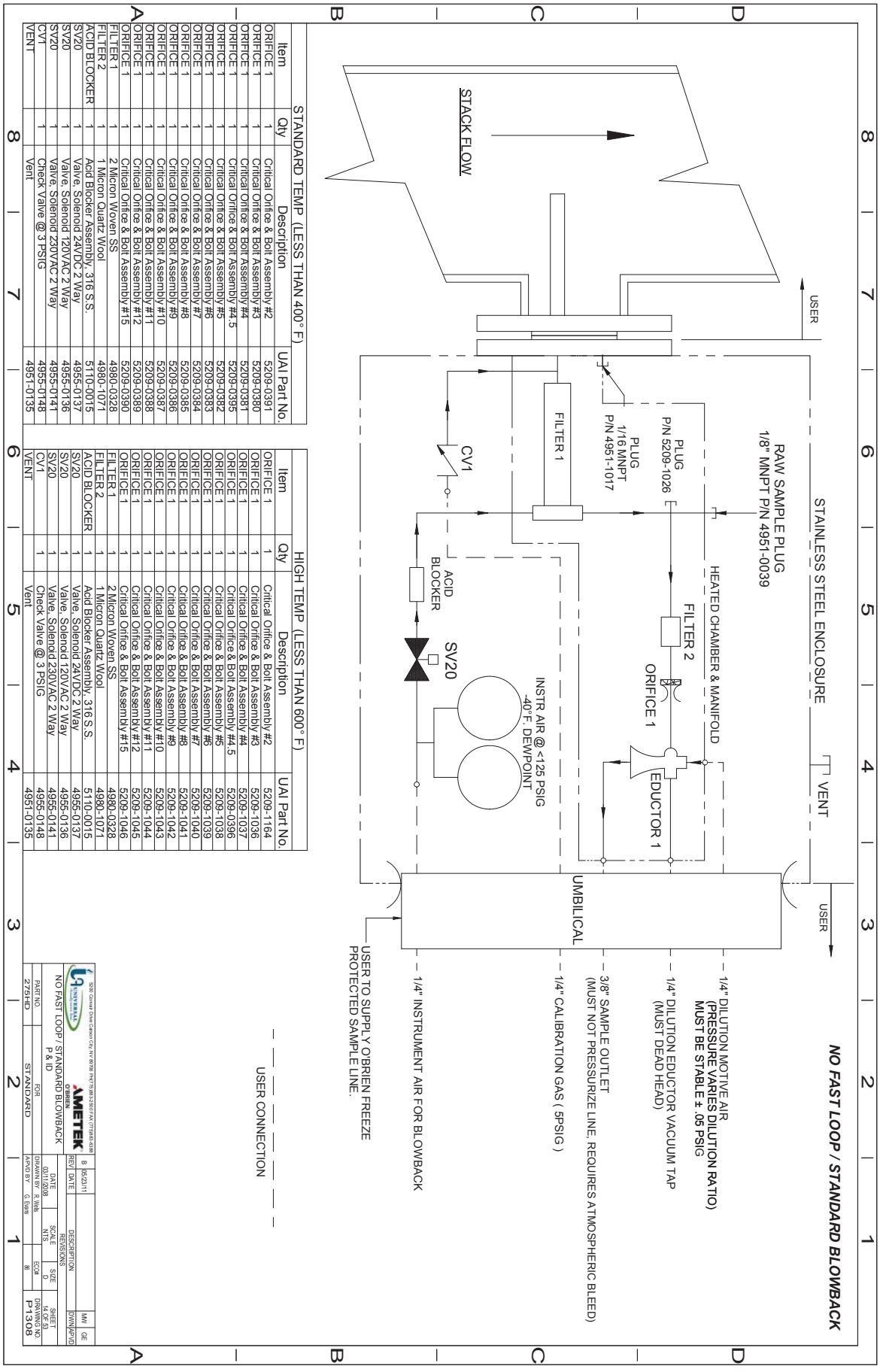
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	38 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

Electrical Connections Model 275HD



Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

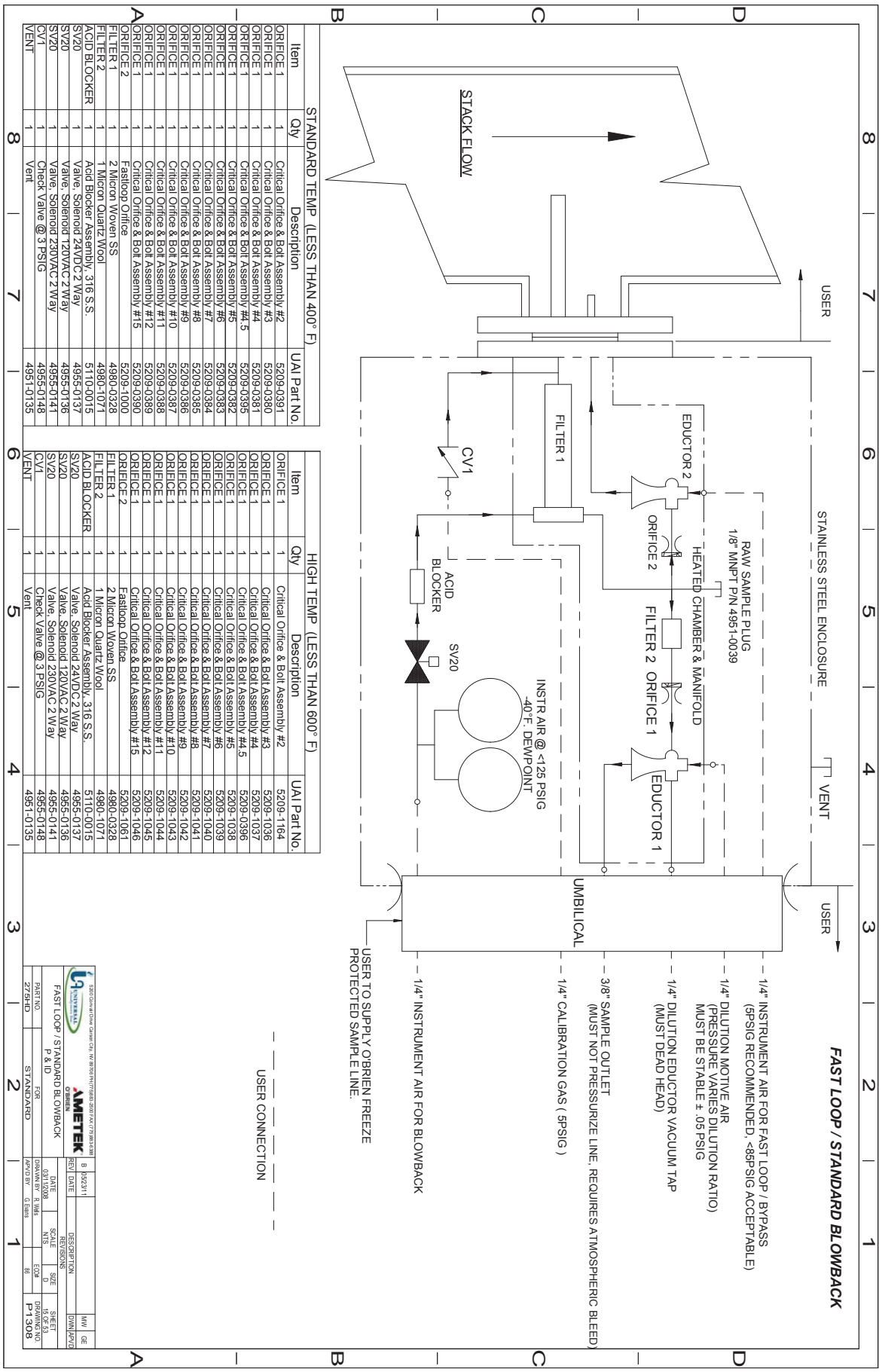
Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT		Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT		Vent	4951-0135

PART NO.		FOR		REV	DATE	DESCRIPTION	MW / GE
275HD		P & ID		B	05/23/11		DWN/APVD
		STANDARD				REVISIONS	
NO FAST LOOP / STANDARD BLOWBACK				DATE		SCALE	SIZE
				02/11/2008		N.T.S.	D
				DRAWN BY	K. Wells	ECR#	SHEET
				APVD BY	G. Evans	88	1 OF 1
						DRAWING NO.	
						P1308	

Process and Piping Connections Model 275HD



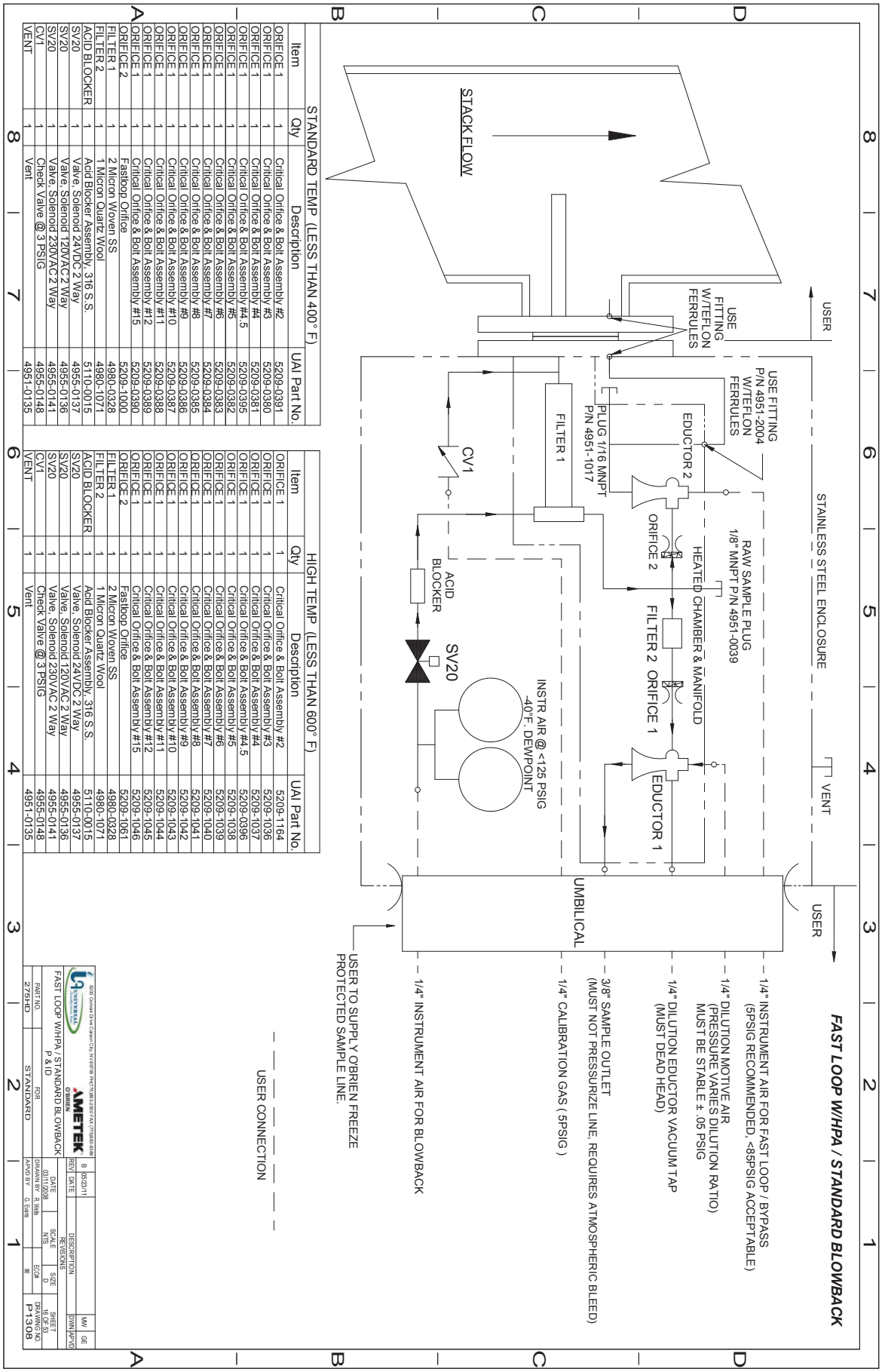
STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

Process and Piping Connections Model 275HD



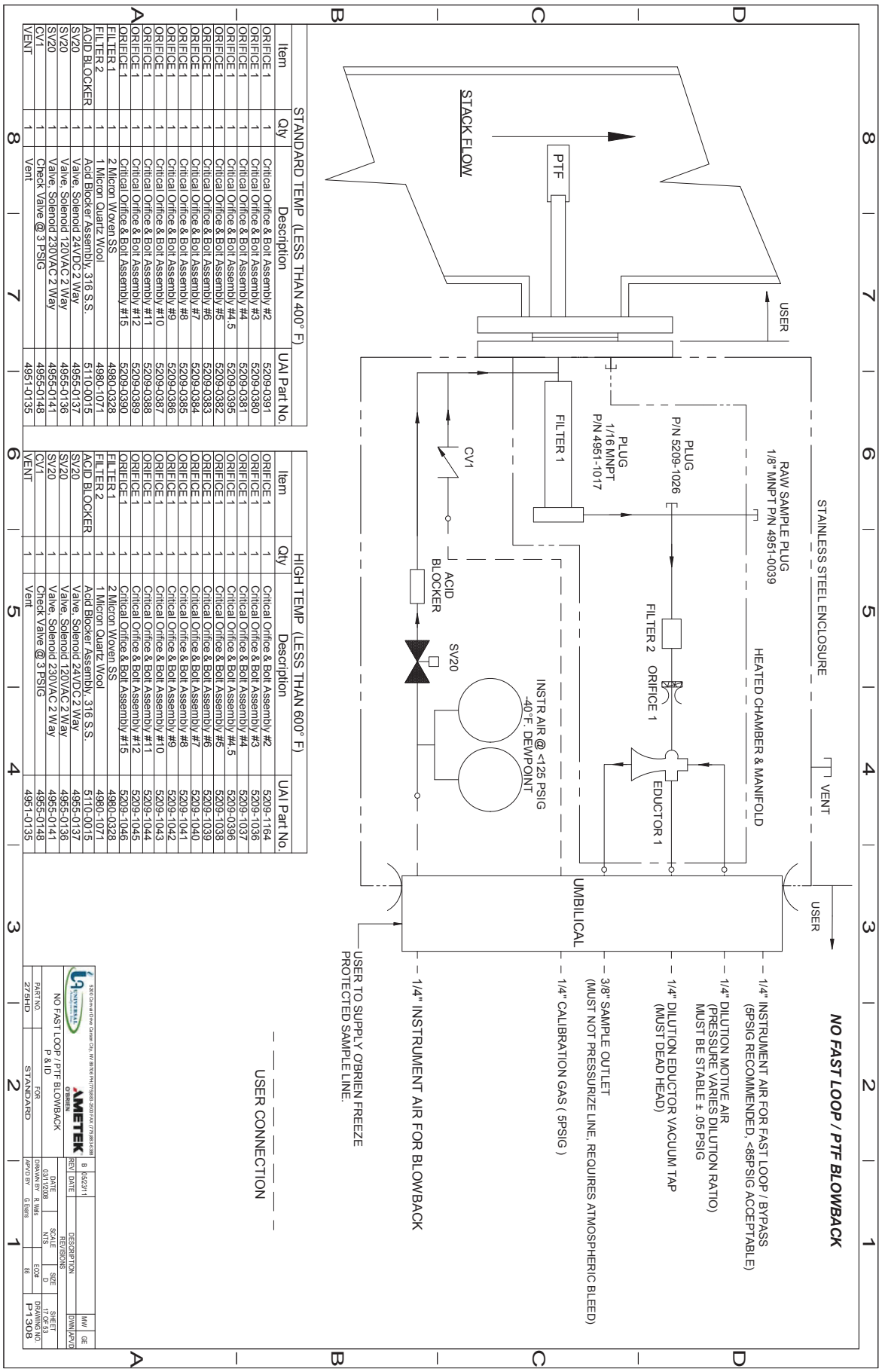
STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

5300 Dorman Drive Gibsonia, PA 15044-9101 PH (724)443-3300 FAX (724)443-4399

AMETEK Process Instruments

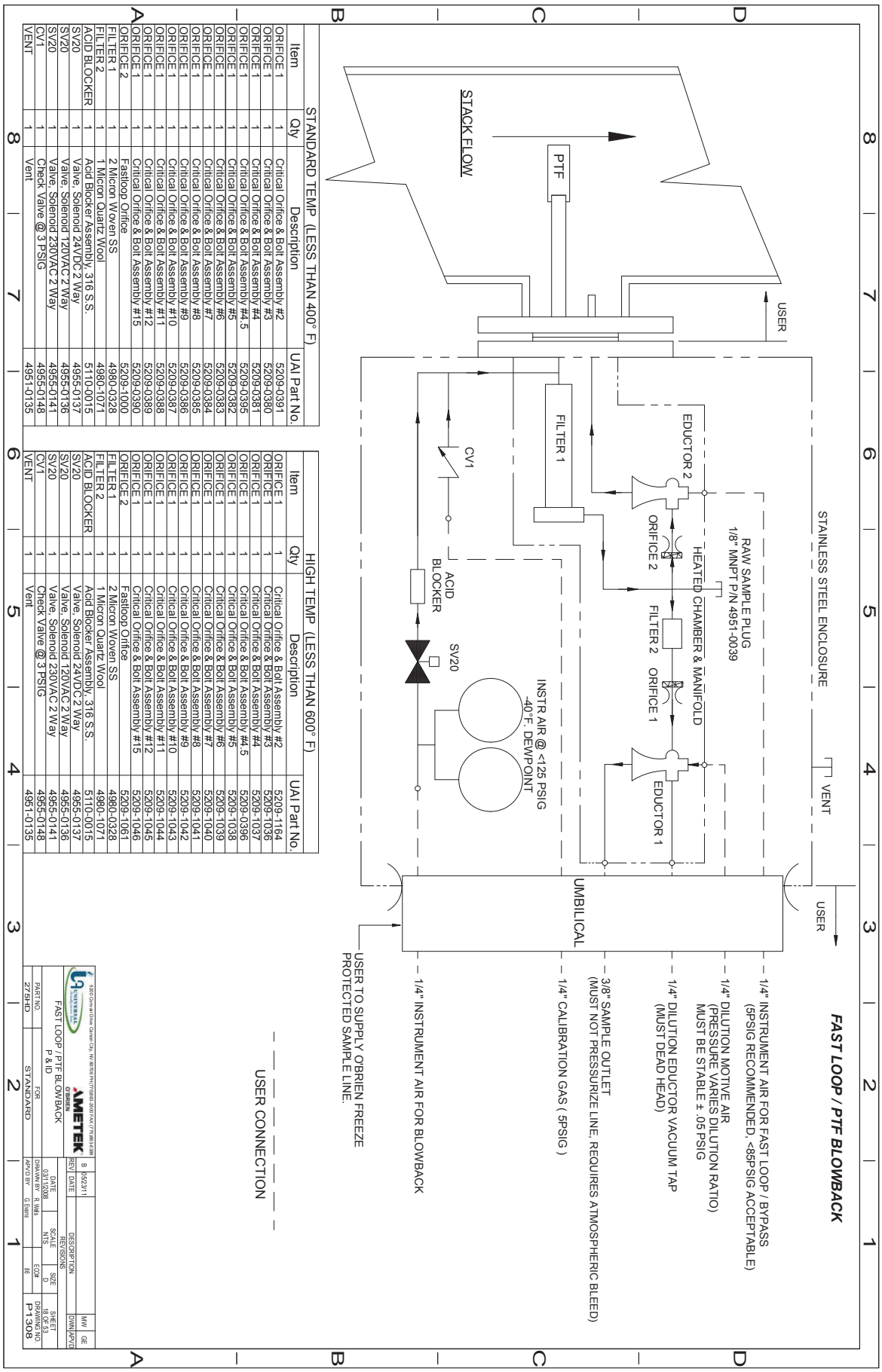
NO FAST LOOP / PTF BLOWBACK
P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	8/23/11		MW	GE

PART NO.	FOR	DATE	SCALE	SIZE	SHEET 1 OF 1
275HD	STANDARD	10/2008	NTS	D	DRAWING NO. P1308

DRAWN BY: R. Mills
APVD BY: G Bates
ECN# 88

Process and Piping Connections Model 275HD



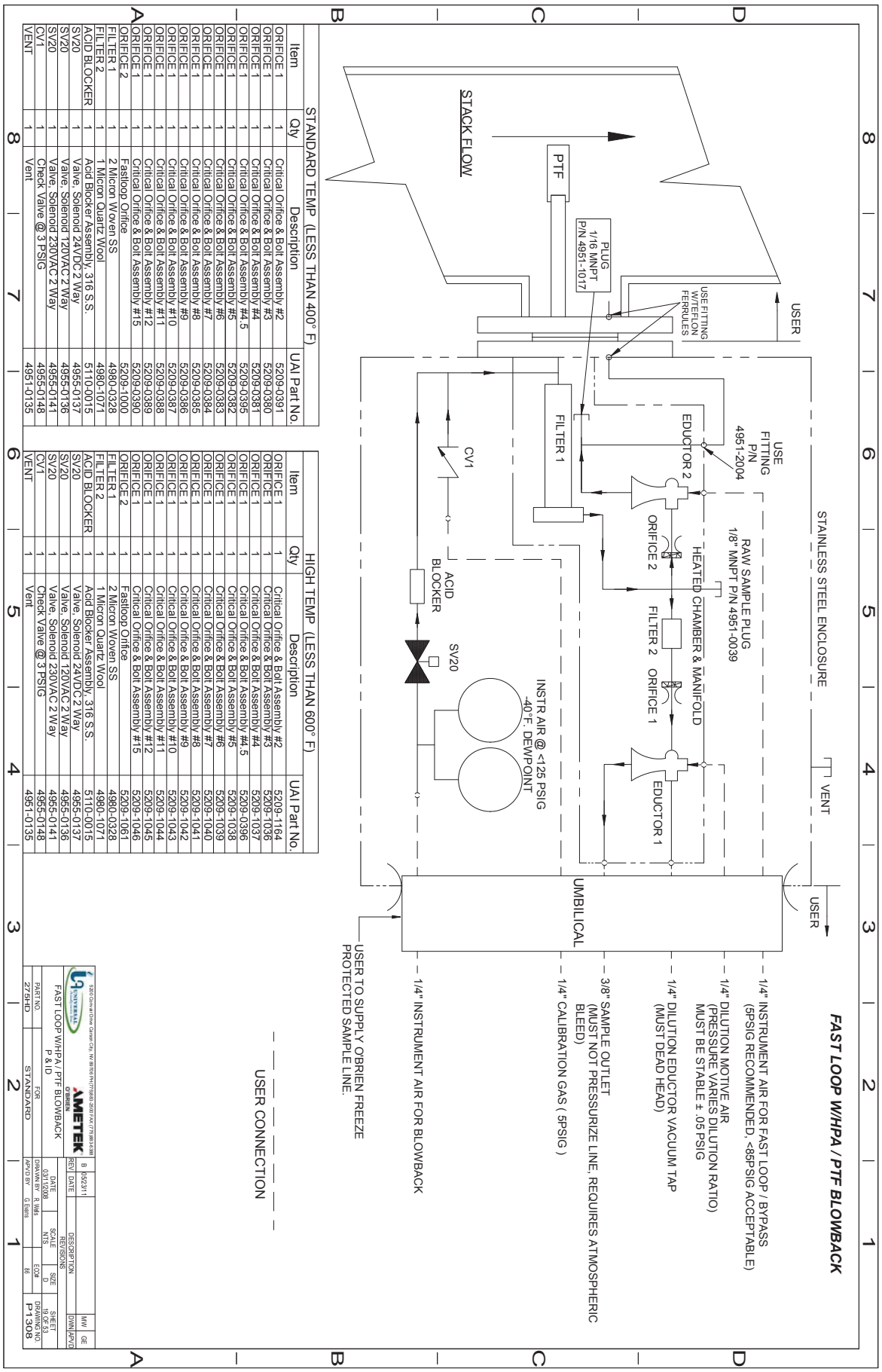
STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

Process and Piping Connections Model 275HD



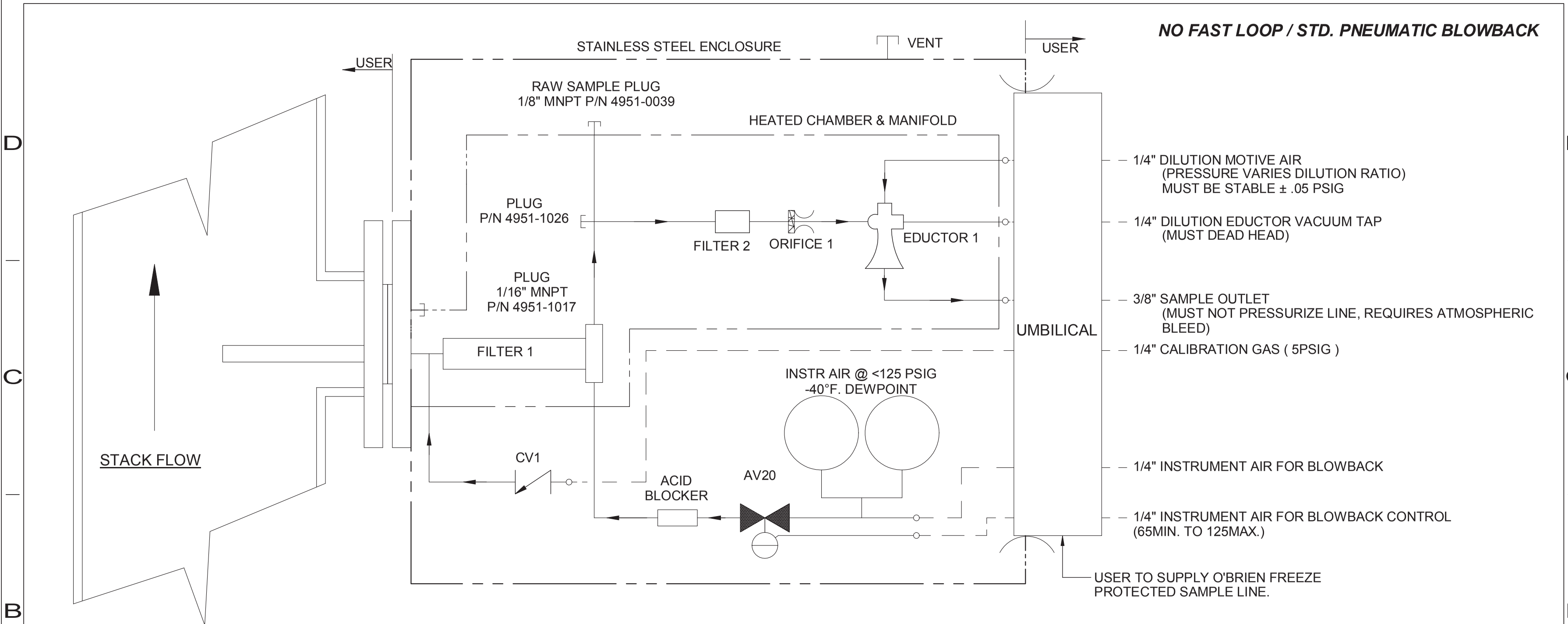
STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20	1	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20	1	Valve, Solenoid 120VAC 2 Way	4955-0136
SV20	1	Valve, Solenoid 230VAC 2 Way	4955-0141
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

— — — — USER CONNECTION

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

AMETEK O'BRIEN

NO FAST LOOP / STD. PNEUMATIC BLOWBACK P & ID

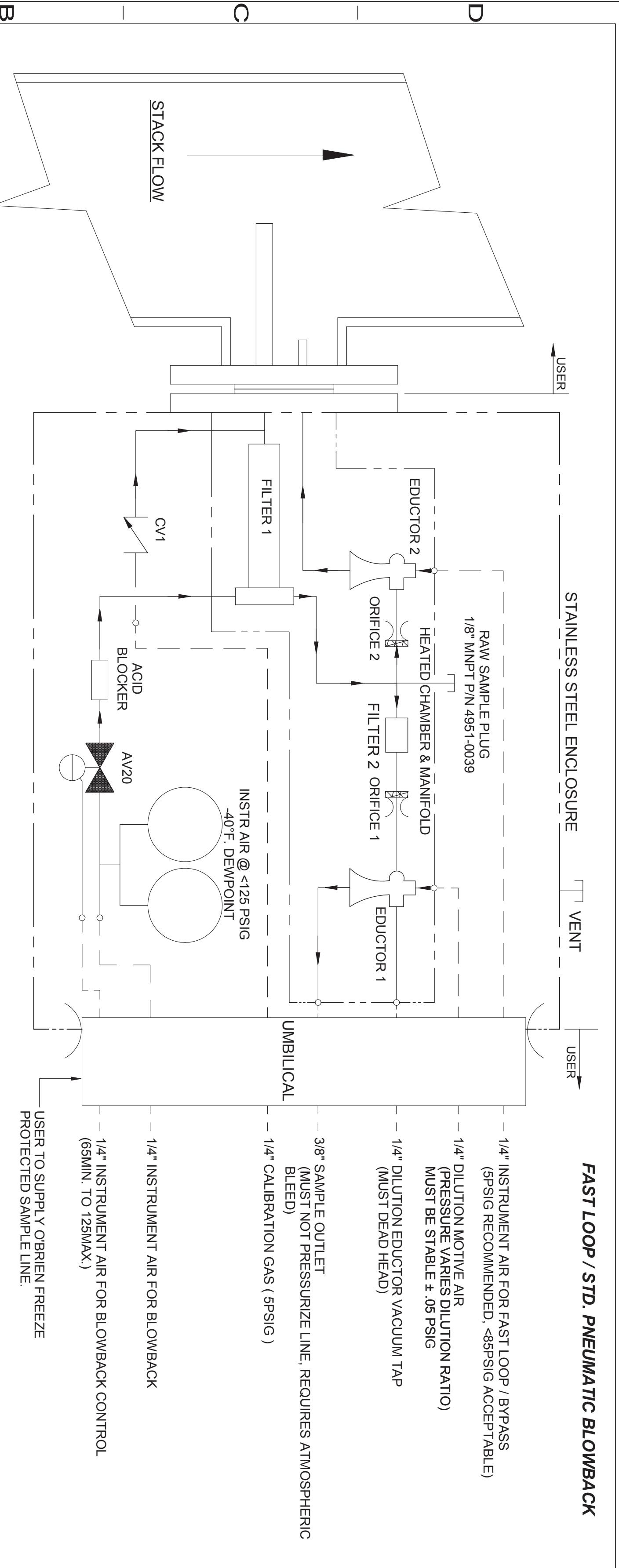
REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	20 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wells; APVD BY G. Evans	86	P1308

Process and Piping Connections Model 275HD



USER CONNECTION

STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

AMETEK O'BRIEN

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

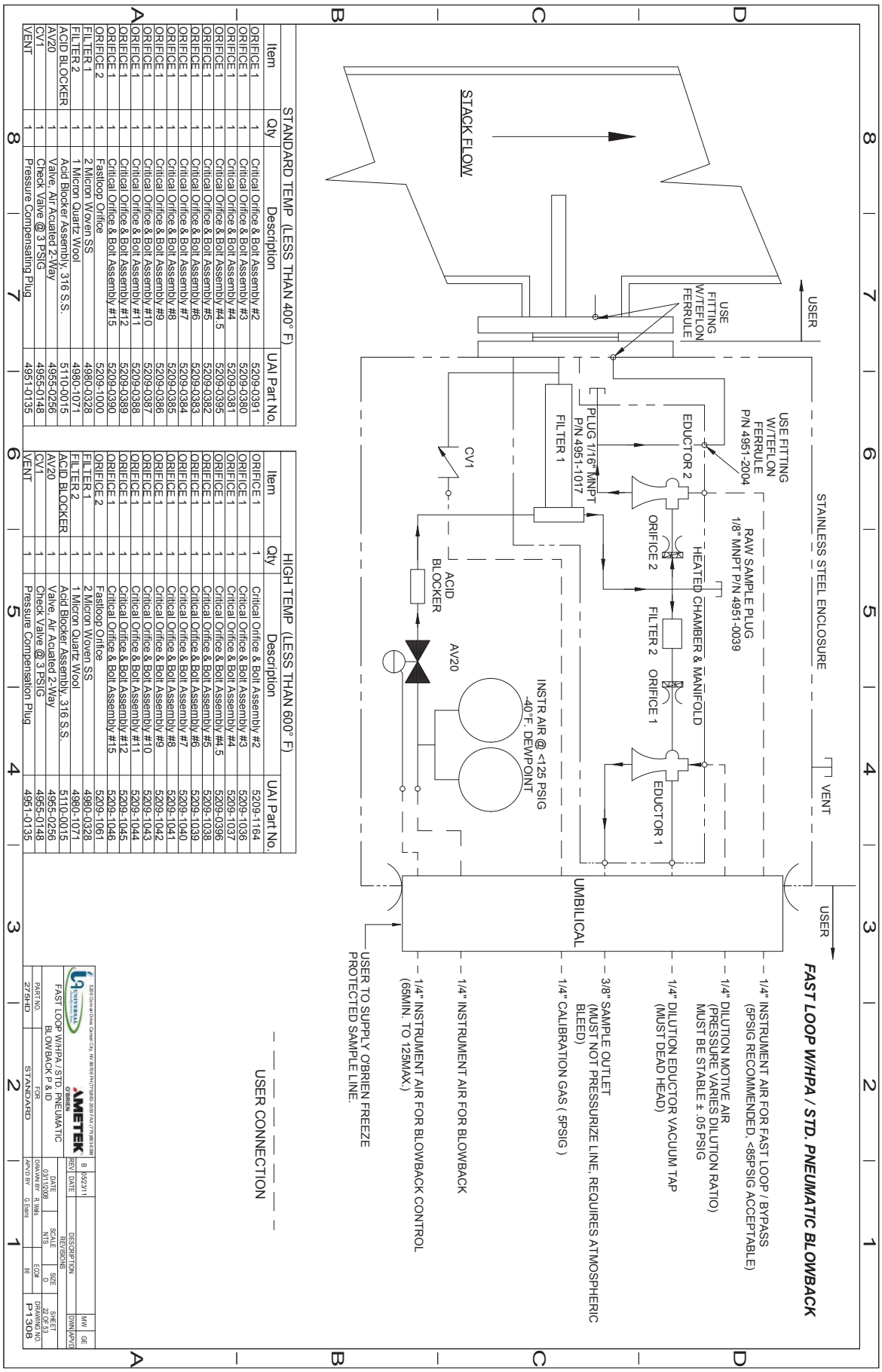
REVISIONS

FAST LOOP / STD. PNEUMATIC BLOWBACK P & ID

PART NO.	FOR	DATE	SCALE	SIZE	SHEET
275HD	STANDARD	03/11/2008	NTS	D	21 OF 53

DRAWN BY R. Wells · APVD BY G. Evans · ECO# 86 · DRAWING NO. P1308

Process and Piping Connections Model 275HD



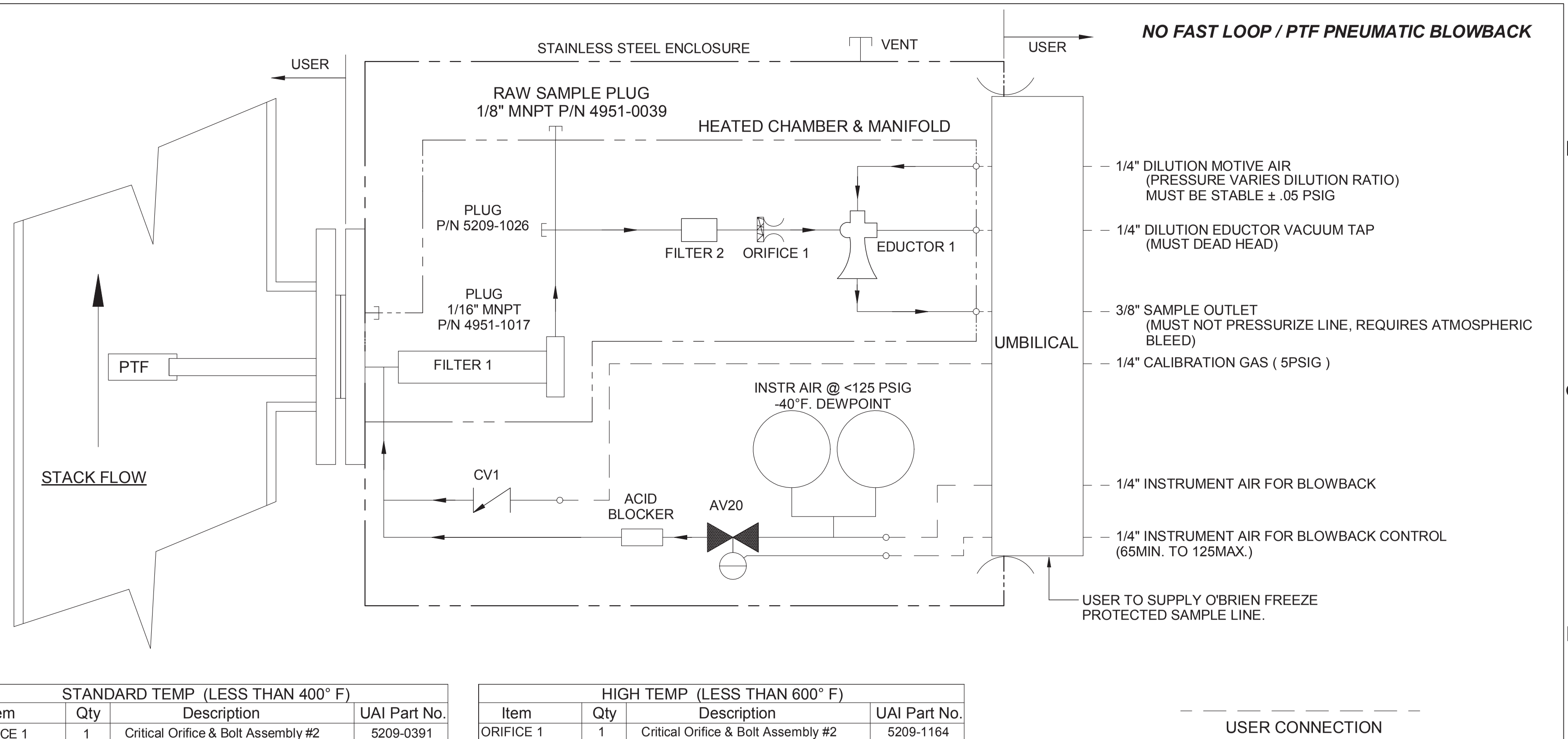
STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Pressure Compensating Plug	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Pressure Compensation Plug	4951-0135

Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

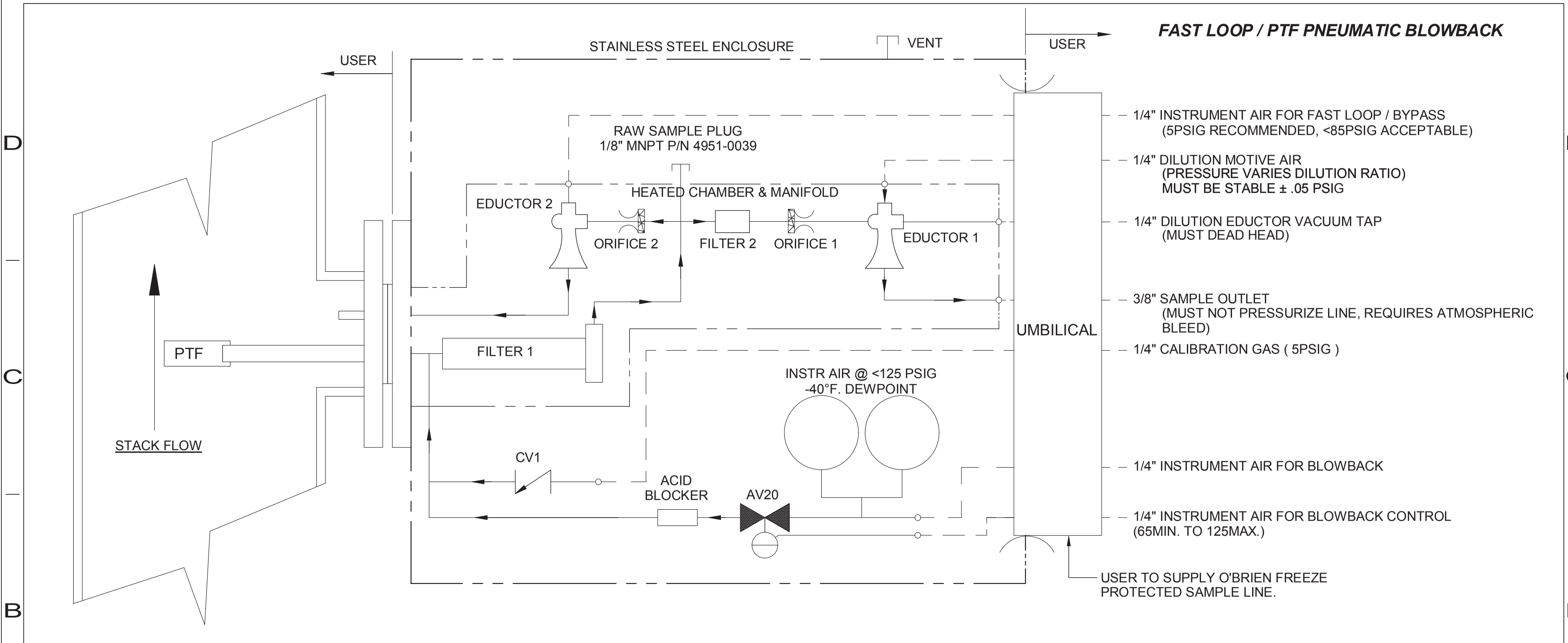
NO FAST LOOP / PTF PNEUMATIC BLOWBACK
P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

PART NO.	FOR	DATE	SCALE	SIZE	SHEET	DRAWING NO.
275HD	STANDARD	03/11/2008	NTS	D	23 OF 53	P1308

DRAWN BY R. Wells · APVD BY G. Evans · ECO# 86

Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

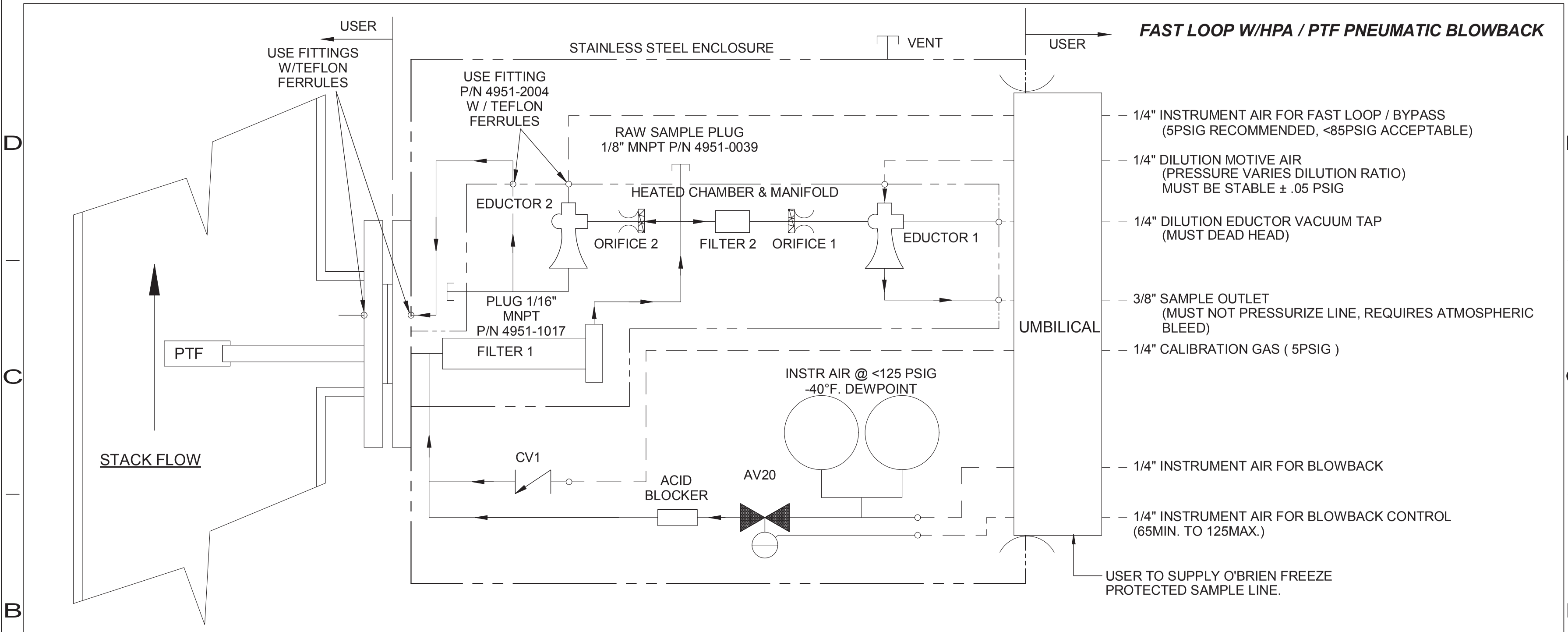
Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

USER CONNECTION

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388
AMETEK O'BRIEN
FAST LOOP / PTF PNEUMATIC BLOWBACK P & ID
REV B DATE 05/23/11 DWN MW APVD GE
REVISIONS
DATE 03/11/2008 SCALE NTS SIZE D SHEET 24 OF 53
PART NO. 275HD FOR STANDARD
DRAWN BY R. Wells APVD BY G. Evans ECO# 86 DRAWING NO. P1308



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
AV20	1	Valve, Air Acuated 2-Way	4955-0256
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

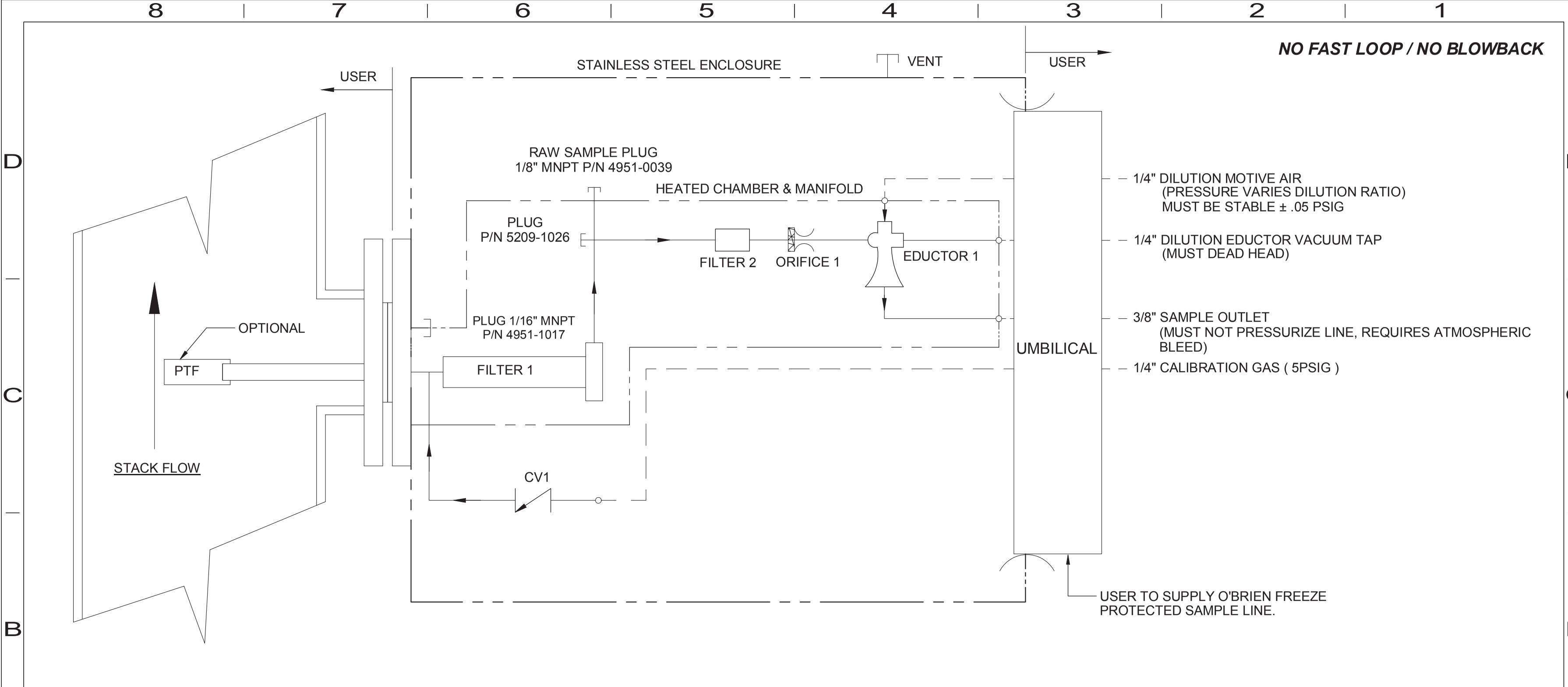
AMETEK O'BRIEN

FAST LOOP W/HPA / PTF PNEUMATIC BLOWBACK P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

PART NO. 275HD — FOR STANDARD — DATE 03/11/2008 — SCALE NTS — SIZE D — SHEET 25 OF 53 — DRAWN BY R. Wells — APVD BY G. Evans — ECO# 86 — DRAWING NO. P1308

Process and Piping Connections Model 275HD



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

USER CONNECTION

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

AMETEK O'BRIEN

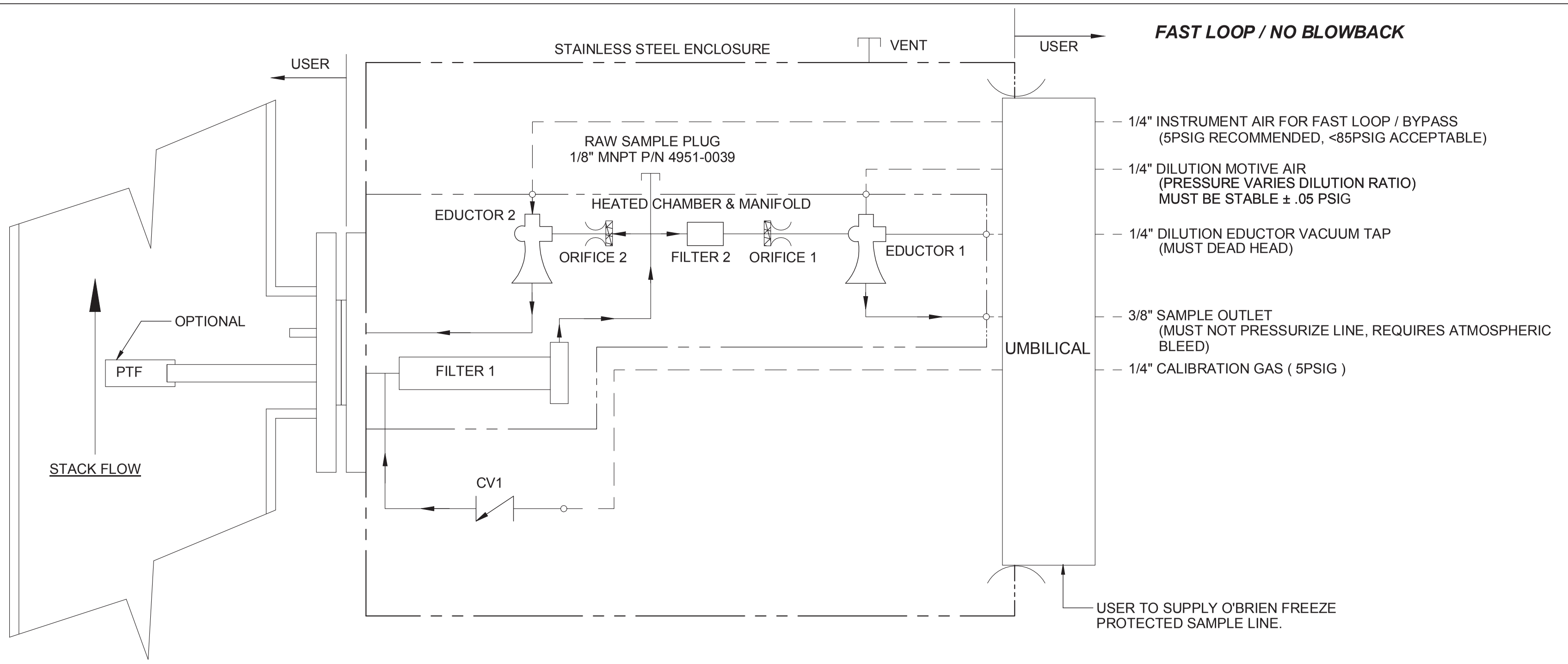
NO FAST LOOP / NO BLOWBACK
P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

PART NO.	FOR	DATE	SCALE	SIZE	SHEET	DRAWING NO.
275HD	STANDARD	03/11/2008	NTS	D	26 OF 53	P1308

DRAWN BY R. Wells
APVD BY G. Evans
ECO# 86

Process and Piping Connections Model 275HD



USER CONNECTION

STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

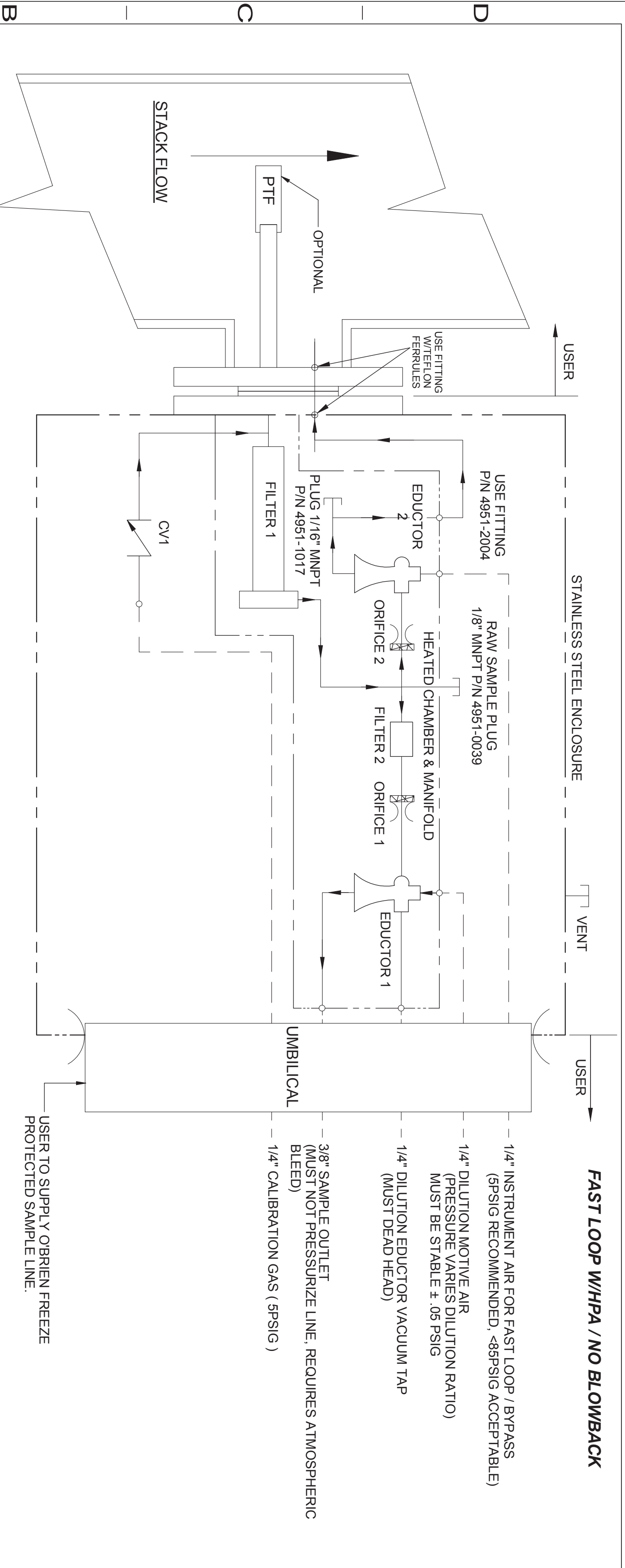
AMETEK O'BRIEN

FAST LOOP / NO BLOWBACK
P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

PART NO.	FOR	DATE	SCALE	SIZE	SHEET	DRAWN BY	APVD BY	ECO#	DRAWING NO.
275HD	STANDARD	03/11/2008	NTS	D	27 OF 53	R. Wells	G. Evans	86	P1308



STANDARD TEMP (LESS THAN 400° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-0391
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-0380
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-0381
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0395
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-0382
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-0383
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-0384
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-0385
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-0386
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-0387
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-0388
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-0389
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-0390
ORIFICE 2	1	Fastloop Orifice	5209-1000
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

HIGH TEMP (LESS THAN 600° F)

Item	Qty	Description	UAI Part No.
ORIFICE 1	1	Critical Orifice & Bolt Assembly #2	5209-1164
ORIFICE 1	1	Critical Orifice & Bolt Assembly #3	5209-1036
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4	5209-1037
ORIFICE 1	1	Critical Orifice & Bolt Assembly #4.5	5209-0396
ORIFICE 1	1	Critical Orifice & Bolt Assembly #5	5209-1038
ORIFICE 1	1	Critical Orifice & Bolt Assembly #6	5209-1039
ORIFICE 1	1	Critical Orifice & Bolt Assembly #7	5209-1040
ORIFICE 1	1	Critical Orifice & Bolt Assembly #8	5209-1041
ORIFICE 1	1	Critical Orifice & Bolt Assembly #9	5209-1042
ORIFICE 1	1	Critical Orifice & Bolt Assembly #10	5209-1043
ORIFICE 1	1	Critical Orifice & Bolt Assembly #11	5209-1044
ORIFICE 1	1	Critical Orifice & Bolt Assembly #12	5209-1045
ORIFICE 1	1	Critical Orifice & Bolt Assembly #15	5209-1046
ORIFICE 2	1	Fastloop Orifice	5209-1061
FILTER 1	1	2 Micron Woven SS	4980-0328
FILTER 2	1	1 Micron Quartz Wool	4980-1071
ACID BLOCKER	1	Acid Blocker Assembly, 316 S.S.	5110-0015
CV1	1	Check Valve @ 3 PSIG	4955-0148
VENT	1	Vent	4951-0135

5200 Convair Drive Carson City, NV 89706 PH (775)883-2500 FAX (775)883-6388

AMETEK O'BRIEN

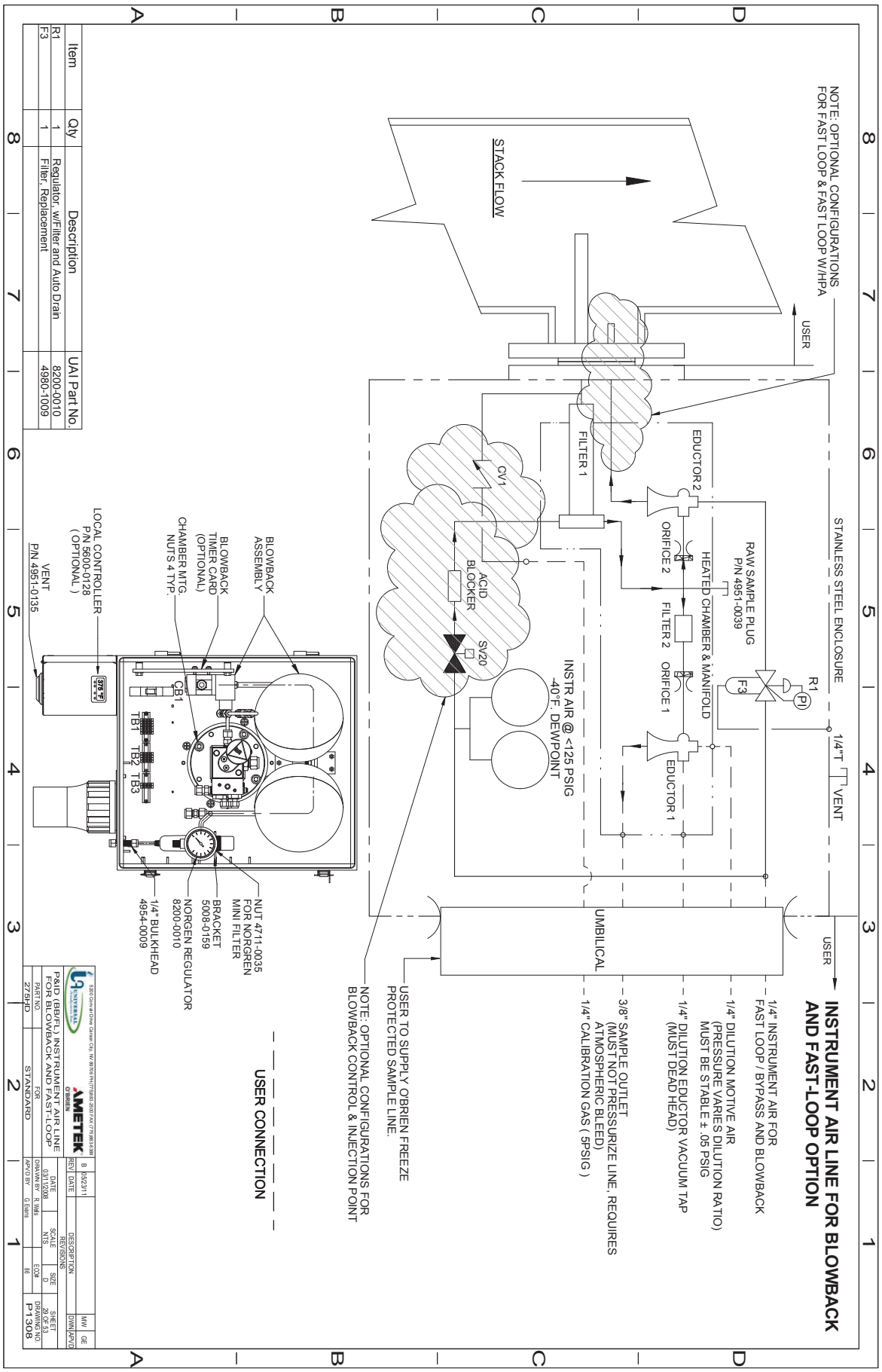
FAST LOOP W/HPA / NO BLOWBACK
P & ID

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

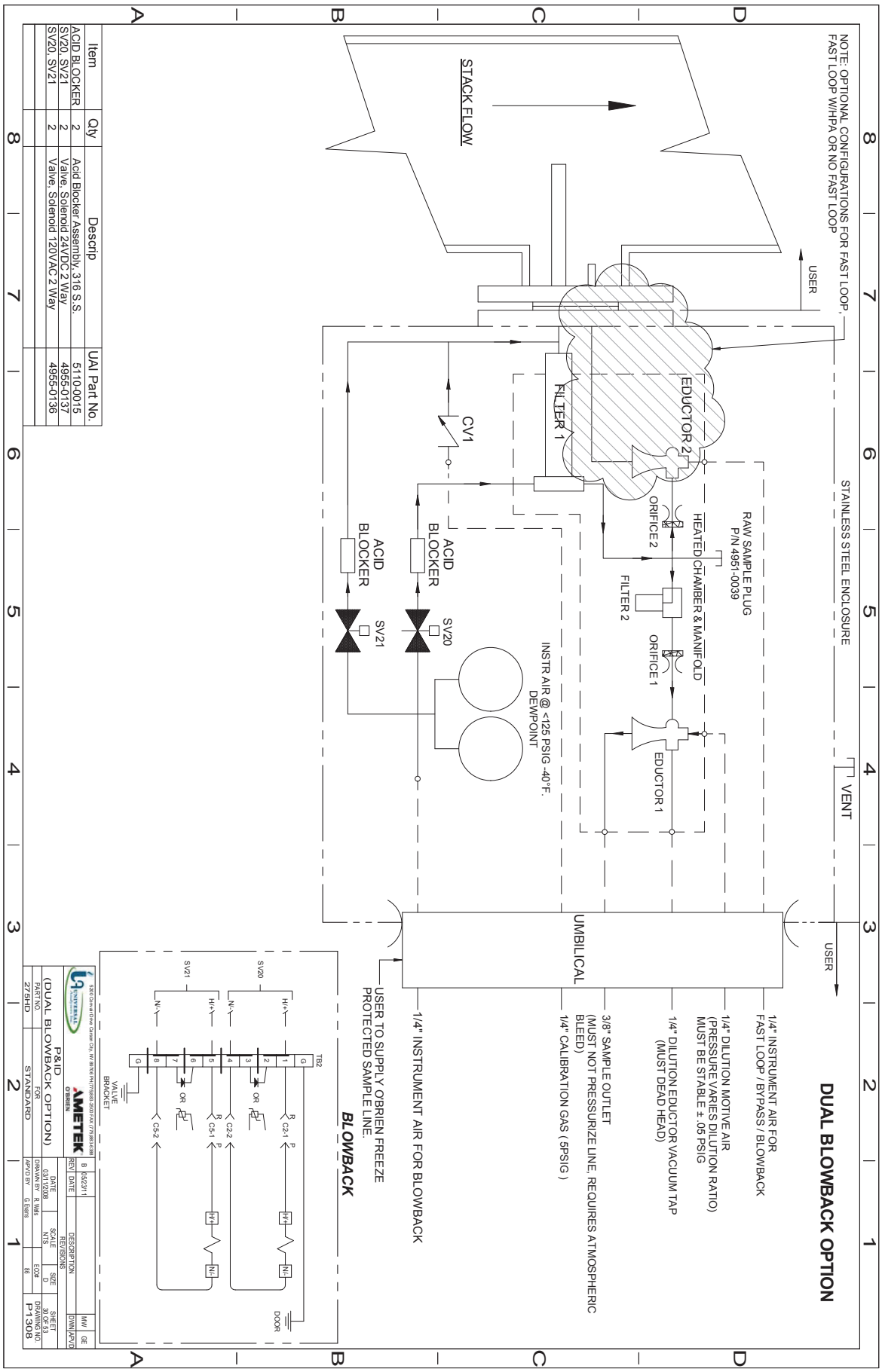
PART NO.	FOR	DATE	SCALE	SIZE	SHEET	DRAWING NO.
275HD	STANDARD	03/11/2008	NTS	D	28 OF 53	P1308

DRAWN BY R. Wells; APVD BY G. Evans; ECO# 86

Process and Piping Connections Model 275HD



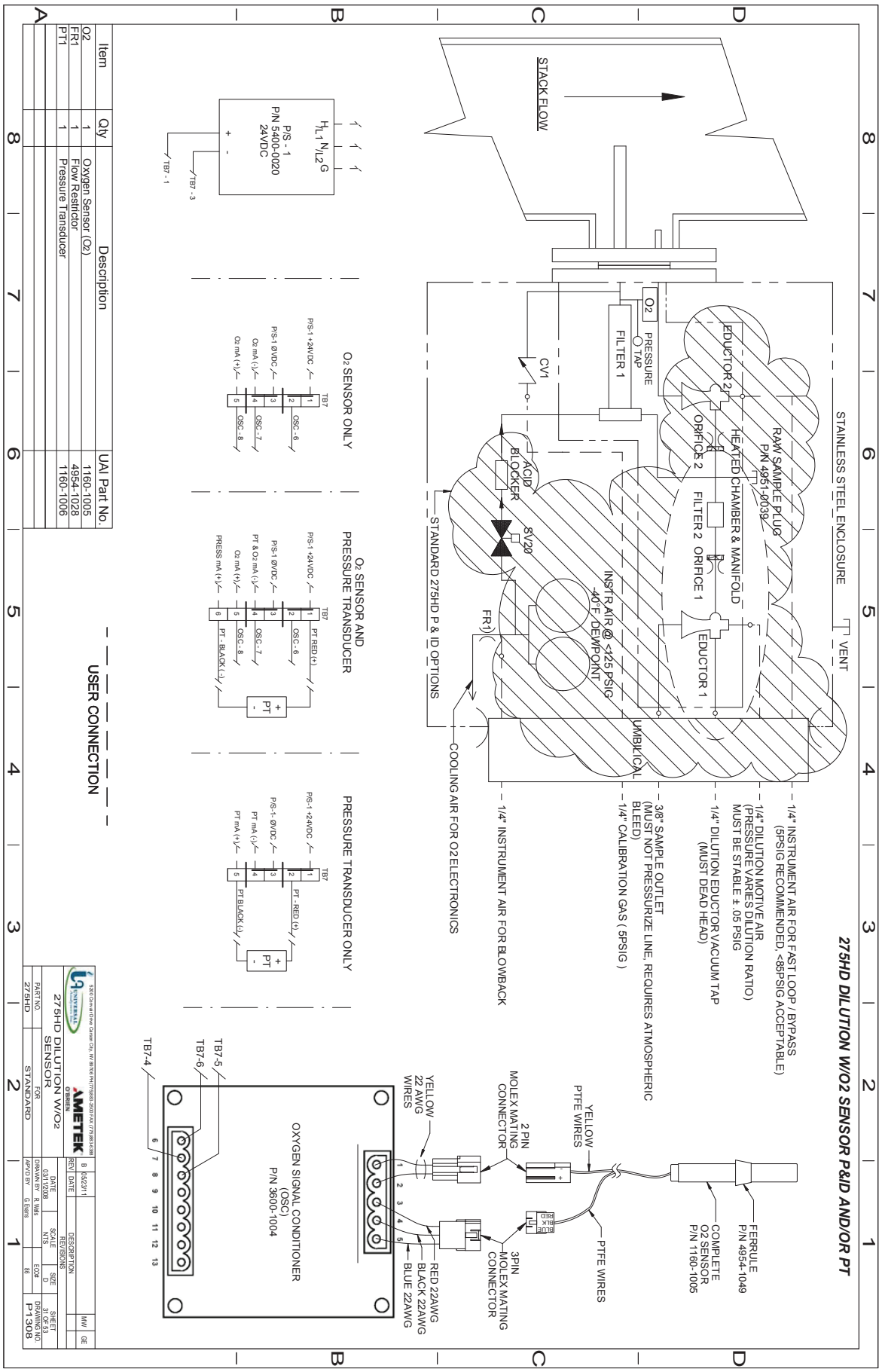
Process and Piping Connections Model 275HD



Item	Qty	Descrip	UAI Part No.
ACID BLOCKER	2	Acid Blocker Assembly, 316 S.S.	5110-0015
SV20, SV21	2	Valve, Solenoid 24VDC 2 Way	4955-0137
SV20, SV21	2	Valve, Solenoid 120VAC 2 Way	4955-0136

P&ID (DUAL BLOWBACK OPTION)	REV	B	052311
PART NO. 275HD	DATE	03/11/2008	
STANDARD	DRAWN BY	R. Mills	
	APVD BY	G Bahn	
	DESCRIPTION		
	REVISIONS		
	SCALE	NTS	
	SIZE	D	
	SHEET	30 OF 33	
	DRAWING NO.	P1308	

Process and Piping Connections Model 275HD



Item	Qty	Description	UAI Part No.
O2	1	Oxygen Sensor (O2)	1160-1005
FR1	1	Flow Restrictor	4954-1028
PT1	1	Pressure Transducer	1160-1006

Start-Up

Once the dilution probe has been installed according to the installation instructions above one can apply power to the unit. The probe will begin to heat to the controlled temperature which is above the dew point. The probe can be controlled with a single channel Proportional Integral Differential (PID) controller set to auto-tune. The controller can be installed as part of the dilution probe assembly, located in the Universal Analyzers 728 DCD dilution control drawer or supplied separately. Please wait for the system to heat up before proceeding; it will take an hour for the system to stabilize.

The first objective is to be able to read zero with zero gas. Before sending zero gas to the dilution probe send zero gas to the analyzer and calibrate that analyzer so that the analyzer reads zero when zero gas is applied. The next step is to send the zero gas up to the dilution probe. It is recommended to start with 5 l/m of zero gas to insure that the dilution probe is flooded with zero gas. The combination of zero test gas with clean Dilution Motive Air will produce a reading of zero. If a Zero value is not seen at the analyzer one should check the following:

- Calibration gas flow to the probe. Is the calibration gas line connected to the correct inlet at the probe? Break the tube connection before the check valve to verify flow. Remove the heated filter and verify flow of calibration gas in chamber.
- Is the Dilution Motive Air Zero Air? Run the Dilution Motive air directly to the analyzer to verify that the dilution motive air reads Zero.
- Once a Zero reading is obtained the probe is ready to accept a known span gas. The Span Gas is introduced. The Dilution motive air pressure is set to the expected valve for the desired dilution ratio with the desired orifice. The motive air pressure is regulated so that the expected dilution ratio occurs. Once the reading is stable the analyzer span is calibrated. The span valve that analyzer is calibrated to is the Dilution ratio multiplied by the bottle value. The Dilution probe is now ready to start reading stack gas.

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. Ensure no sample is being drawn though 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.
3. If not already done, disconnect the sample line.
4. Use instrument air or other inert gas, flow ~10 LPM for 15-30 minutes through the filter chamber. Note: Gas can be routed through the chamber via the heated sample line.
5. After purging is complete, follow the maintenance procedure to change the filter.
6. Cap the sample outlet tube connection and disconnect power from the unit. Note: If electrical wires are to be disconnect, follow applicable ‘Lock Out/ Tag Out’ requirements

Maintenance

SERVICE EDUCTOR BYPASS/FAST-LOOP EDUCTOR

The function of the bypass/fast-loop Eductor is to increase the sample inlet flow to increase the response time. If the sample response time greatly deteriorates it is probable that the sample inlet flow from the bypass/fast-loop Eductor is reduced or non-existent. The first item to verify is that the fast loop bypass/fast-loop Eductor has motive air. The next possibility is that the fast loop/bypass educator port may have particulates in the Eductor causing the Eductor not to function properly. The first step to clear the Eductor would be to increase the motive air to 100 PSIG or more to attempt to remove any particulates that may be causing obstruction of flow.

Removal of the Eductor manifold is recommended, but not necessary. It can be done hot or cold, use caution and insulated gloves when doing this hot. The insulation jacket will need to be partially removed to get access to the chamber manifold assembly. The first two insulation jacket straps will need to be loosened completely and pull straps through the strap loops then unsnapped buttons. Lift the right side of the insulation jacket to access manifold. The last strap can be loosened and completely remove insulation jacket. Instrument air is recommended for clearing out the educator air pathways, but canned air can be used. Accessing the educator will require the removal of a 1/16” MNPT plug (UAI Part number 4951-1017) located on the manifold attached to the filter chamber assembly. A 5/32 Allan wrench will be needed for the plug removal. The plug is on the top side of manifold , when the probe is installed horizontally above where the “SERVICE PORT” is etched on the manifold. If the etching is not legible it will be the shorter of the two plugs and the one closest to the filter chamber assembly. Once the plug is removed introduce 50 PSI or more of instrument air to the “FAST-LOOP MOTIVE” inlet fitting on the manifold. This should extract any loose particulates from the inlet fitting to the Eductor. If any large or hardened particulates are present in the Eductor then the use of a cleaning wire is suggested. The recommended cleaning wire size should be approximately .012 inches outside diameter (UAI part number 9506-1001). Gently feed the wire into the plug hole until reach the Eductor which is approximately one inch from the outer edge and the inside diameter is small so it is difficult locate, have patience. Once the Eductor hole has been located, use short strokes to gently move the wire in and out against the obstruction. Repeat until you have worked your way through the obstruction or broken it down to blow it out. Next cover/plug the service port and Introduce instrument air again to the FAST-LOOP MOTIVE fitting to remove any particulates that may have cleared or broken down with the wire.

To continue cleaning the bypass/fast-loop Eductor the manifold must be removed if it has not been remove previously. Take the plug and install into the threaded hole on the back side of the manifold then screw it in finger tight. Remove the FAST-LOOP orifice bolt, plug the service port and then introduce 50 PSI or more to remove any particulates that may have settled in the orifice bolt air pathway. Turn off instrument air and remove plug from back side of manifold and Teflon tape plug then reinstall it on the side of manifold.

If a low dilution air vacuum reading is improved when disabling the bypass/fast-loop Eductor motive air that mean that the FAST-LOOP Eductor outlet is clogged with debris on the stack side of the chamber assembly the chamber will need to be removed. This will require disconnecting all tubing connections to chamber assembly such as the sample line, calibration gas line, instrument air line and blowback to chamber connection. The heater wire Molex connection will need to be disconnected and the Thermal couple wire removed from the manifold. The four nuts (9/16”) need to be removed and the chamber can now be removed from the box. Caution: The probe tube will be attached to the chamber assembly so allow for adequate room depending on probe tube length. Once the chamber assembly has extracted from the enclosure, then locate outlet hole next to the probe tube that is a ¼” tube hole. Next insert a pipe cleaner or small brush into the hole to remove any debris that may be restricting air flow. Install a compressed air line to the FAST-LOOP motive air inlet fitting and apply 50 PSI or more and blow out any remaining particulates. Turn off compressed air and remove the line and reinstall the chamber assembly in the reverse sequence of the chamber removal.

Maintenance

SERVICE EDUCTOR DILUTION EDUCTOR

Reduced diluted sample outlet flow with reduced dilution vacuum are symptoms of a dilution pass Eductor not functioning properly. The Eductor might have particulates or a buildup of contaminates so that the Educator does not function properly. Removal of the eductor manifold is recommended, but not necessary. Service can be done hot or cold, use caution and insulated gloves when doing this hot. The insulation jacket will need to be partially removed to get access to the chamber manifold assembly. The first two insulation jacket straps will need to be loosened completely and pull straps through the strap loops then unsnapped buttons. Lift the right side of the insulation jacket to access manifold. Access to instrument air is recommended for clearing out the Eductor air pathways, but canned air can be used.

First disconnect the diluted sample outlet line before connecting instrument air to the Dilution Motive air and increasing the air to 100 psig in an attempt to clear the eductor. The next cleaning path involves capping/plugging the 3/8" diluted sample outlet port, removing the orifice bolt, capping/plugging the vacuum port and to apply 100 psig of air to "DILUTION MOTIVE" fitting. Look for debris in the cavity were the dilution bolt resides, remove any debris if found. The next cleaning method is to cap/plug the "DILUTION MOTIVE" fitting, leave the orifice bolt removed, and the diluted sample outlet plugged. Remove the plug form the vacuum tap and apply 100 psig of air. Once again look for debris in the cavity were the dilution bolt resides, remove any debris if found. Finally return the probe to its original configuration with the diluted sample line off and run 100 psig of air to clean out the eductor.

If the problem persists the Eductor can be cleaned to remove any contaminates. A physical cleaning of the educator will require the removal of a plug located on the manifold that is attached to the filter chamber assembly. A 5/32 Allan wrench will be needed for the plug removal. The plug is on the top side of manifold above where the "SERVICE PORT" is etched on the manifold. If the etching is not legible it will be the taller of the two plugs or the one farthest away from the filter chamber assembly. One will also remove the sample out tubing that is located on the opposite side of the manifold from plug and is marked Dilution Sample. The recommended cleaning wire size should be approximately .012 inches outside diameter (UAI Part number 9506-1001). Gently feed the wire into the plug hole until reach the eductor which is approximately one inch from the plug holes entrance. The inside diameter eductor is small so it is difficult locate. Once the eductor hole has been located, using short stokes gently move the wire in and out against the obstruction. Repeat until you have worked through the obstruction or broken it down to blow it out. Once through the wire pass all the way though the manifold and out the Diluted sample output fitting the eductor can be flossed.

Introduce instrument air at the plug and fitting locations to remove any particulates that may have been broken up with the wire. Turn off instrument air and Teflon tape plug then install it. Remove the DILUTION orifice bolt and plug the sample output fitting then introduce 50 PSI or more to remove any particulates that may have settled in the orifice bolt air pathway.

DILUTION AND FAST LOOP CRITICAL ORIFICE REPLACEMENT

The critical orifices can be replace hot or cold, use caution and insulated gloves when doing this hot. The insulation jacket will need to be partially removed to get access to the chamber manifold assembly. The first two insulation jacket straps will need to be loosened completely and pull straps through the strap loops then unsnapped button. Lift the right side of the insulation jacket to access the dilution orifice and Fast loop orifice bolts. The manifold is etched with the designation for both orifice bolts, if the etching is not legible the dilution orifice bolt is in the upper location and the fast loop is in the lower location assuming horizontal installation. Using a 15/16" wrench or adjustable wrench to loosen the bolt by rotating it counter clockwise until the bolt is released from the manifold. Prior to installing the new or refurbished orifice bolt, inspect each O-Ring for defects such as abrasions, cuts, or punctures. If any flaws exist, this can prevent satisfactory performance during operation of equipment. Use a very thin coat of silicon lubricant (SSP-1209A, UAI part number 8010-0011) on the O-Rings prior to installation. Install the new or refurbished orifice bolt into the threaded hole and rotating it clockwise until the sealing O-Ring is compressed and rotation has stopped.

DILUTION CRITICAL ORIFICE FILTER REPLACEMENT

Use the dilution and fast loop critical orifice replacement instructions to remove the dilution critical orifice bolt. Once the orifice bolt has been removed from the manifold, grasp the bolt head in one hand and insert a 7/32" Allen wrench into the filter located at the opposite end of bolt. Rotate the Allen wrench counter clockwise until the filter is released from

the dilution orifice bolt. If resistance occurs when removing the filter try placing a 15/16” or adjustable wrench on the bolt head and inserting the 7/32” Allen wrench and rotating Allen wrench counter clockwise until it is released. The filter can be cleaned with compressed air to remove any particulates that may be stuck to filter. Install the new or cleaned filter by inserting it into the dilution bolt and using a 7/32” Allen rotate the filter clockwise until rotation has ceased. Do not over tighten or future filter replacement may become difficult or impossible. Note: Do not use any anti-seize or lock tight on the filter threads this may compromise the integrity and functionality of the equipment.

CLEANING CRITICAL ORIFICE

This procedure will require either instrument air or a compressed canned air container. Remove the orifice bolt and orifice bolt filter according to the orifice and orifice filter replacement instructions. Once the orifice and filter have been removed install the COS4-4U fitting into the orifice bolt and secure. Connect the air source to the opposing side of the fitting. If using instrument air a ¼” tube connection will be needed to connect directly to the COS4-4U fitting. If using a canned air source will require an additional fitting CUR4-2 which has ¼” tube connection to connect to the COS4-4U fitting and 1/8” tube connection for the canned air output tubing. Introduce approximately 50 PSI or more if deemed necessary to blow any particulates or obstructions out.

SAMPLE FILTER REPLACEMENT

Important – The Dilution motive and Fast loop/Bypass motive air must be turned off when removing the sample filter. The reason for this is to avoid the possibility of unfiltered sample particulates from getting into orifices and eductors. Filter replacement can be done hot or cold, use caution and insulated gloves when doing this hot. The insulation jacket strap closest to the filter cap assembly will need to be loosened to remove the filter assembly. Remove filter assembly from filter chamber, turn the knob cap counter clockwise until it releases form filter chamber. Once released from the filter chamber grasp the filter with one hand and grasping the filter cap body with your other hand and rotate the filter counterclockwise until released. (If difficulty in removing filter occurs then place a 1” wrench on the slotted end of the filter and place a screw driver in the filter cap body intake hole then rotate loose.) Install the new filter by rotating clockwise until rotation stops. Universal Analyzers Inc. recommends that a little anti-seize (Bostik Never Seez Heavy metal Free UAI part number 9515-1000) be applied to the threads prior to installation. The filter should be checked every quarter and replaced if necessary the replacement filter UAI part number is 4980-0328.

O-RING MAINTENANCE

Removal of O-Rings: Remove filter from filter cap assembly and remove from filter cap assembly. When removing O-Rings, care must be taken to ensure that the groove surface is not marred or scratched. The correct tool should be used In order to minimize this kind of damage. A variety of these tools may be used. They should be made from soft metal such as brass and aluminum, however, tools made from phenolic rod, plastics, and wood may also be used. Avoid using pointed or sharp-edged tools that might damage the O-Ring groove surface. Place the removal tool under the O-Ring and then lifted to allow the removal tool to pull the O-Ring from its place. Once it has been taken from the O-Ring cavity, rotate/roll O-Ring off the end of filter cap assembly. O-Rings should be replaced annually.

Installation of O-Rings: Rotate/roll on each O-Ring onto the end of the filter cap assembly into the appropriate cavity. Use a very thin coat of silicon lubricant (SSP-1209A, UAI part number 8010-0011) on the O-Rings. As a rule, O-Rings require no adjustment after installation, but the precautions described below must be observed or early failure will result. Prior to the installation of the new O-Rings, cleaning of the O-Ring cavity that will receive the new O-Rings is necessary. Ensure that each of the O-Ring cavities are clean and free from contaminates that may prevent a good seal. Inspect each replacement O-Ring for defects such as blemishes, abrasions, cuts, or punctures. If any flaws exist, this can prevent satisfactory O-Ring performance during operation of equipment. Verify that O-Ring is the correct size so that there is a uniform pressure around the O-Ring for proper operation. Re-Install filter assembly and tighten insulation jacket strap.

WARNING: O-Rings that are not authorized for use with the 275HD and use of unauthorized O-Rings may compromise the integrity and functionality of the equipment.

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).

Error	***Possible reason***	***Check/Repair***
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

Consumable spare parts (with filter oven temps below +400ºF)	
Part	***P/N***
Screws, Pan Head 10-32 x 1 5/8” Long to mount Dilution manifold to the chamber	4704-1042
Gasket, Flange 4”	4903-0001
Gasket, Flange 3”	4903-0003
Gasket, Flange 2”	4903-0004
Gasket, Enclosure Foam	4903-1000
Gasket, sub flange connection between Chamber and flange	4903-1001
O-Ring to seal chamber from ambient air on Filter assembly	4904-0016
O-Ring to seal stack gas from filtered stack gas and Blowback on filter assembly	4904-0036
O-Ring to seal orifices on Dilution and Fast-Loop orifice bolts	4904-0041
O-Ring to seal sample inlet and fast loop return Outlet where the chamber and manifold connect	4904-0046
O-Ring to seal top of Manifold to the Orifice Bolts	4904-1006
Valve, Solenoid 115VAC High flow for blowback	4955-0136
Valve, Solenoid 24VDC High flow for blowback	4955-0137
Valve, Check Valve for Calibration gas Entry	4955-1002
Accumulator Balls, Provides Blowback Pulse	4956-0001
Safety Screen for Critical Orifice	4980-0327
Filter Woven SS 2 µm	4980-0328

Optional spare parts (with filter oven temps below +400ºF)	
Part	***P/N***
High Temperature Lubricant, for O-Rings on the Filter cap assembly	8010-0011
High Temperature Tape, seals and prevents Galling on fittings	8000-0016
Anti-Corrosion Vapor Capsule	8010-1000
Orifice Cleaner	9506-1001
Brush for chamber cleaning	9506-1002
Chamber cleaning Brush extension rod 36” long	9506-1005
Chamber cleaning Brush “T” handle	9506-1006
High Temperature Anti-Seize for metal to metal screws to prevent galling	9515-1000
Heater Rods with Shielded wires	3014-1001
Sensor PT100 RTD with fitting for mounting and armor leads	1150-1002
Sensor Type K Thermocouple with fitting for mounting and armor leads	1150-1001

* Commissioning Spare Part

Spare Parts

Eductor (Sample Dilution) Critical Orifice Options (w/ filter oven temps below +400ºF)	
Part	***P/N***
Orifice #3 for Critical Orifice with Orifice holding bolt	4990-1023
Orifice #4 for Critical Orifice with Orifice holding bolt	4990-1024
Orifice #5 for Critical Orifice with Orifice holding bolt	4990-1025
Orifice #6 for Critical Orifice with Orifice holding bolt	4990-1026
Orifice #7 for Critical Orifice with Orifice holding bolt	4990-1027
Orifice #8 for Critical Orifice with Orifice holding bolt	4990-1028
Orifice #9 for Critical Orifice with Orifice holding bolt	4990-1029
Orifice #10 for Critical Orifice with Orifice holding bolt	4990-1030
Orifice #11 for Critical Orifice with Orifice holding bolt	4990-1031
Orifice #12 for Critical Orifice with Orifice holding bolt	4990-1032
Orifice #15 for Critical Orifice with Orifice holding bolt	4990-1033
Acid Blocker, Protects Blowback Solenoid from Stack gas	5110-0015
#3 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0380
#5 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0382
#6 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0383
#7 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0384
#8 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0385
#9 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0386
#10 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0387
#11 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0388
#12 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0389
#15 Orifice, Orifice holding bolt, O-Rings, and Safety Screen	5209-0390
Orifice, Orifice holding bolt, and O-Rings	5209-1000
Dilution Manifold, Fast-loop Venturi, Dilution Eductor, Plugs and Fittings	5209-1002
Filter Cap Assembly, Includes: Sealing O-Rings, Filter Insulator and Knob	5209-1005

Spare Parts

Consumable Spare Parts (High Temperature 550ºF)	
Part	***P/N***
Screws, Pan Head 10-32 x 1 5/8” Long to mount Dilution manifold to the chamber	4704-1042
Gasket, Flange 4”	4903-0001
Gasket, Flange 3”	4903-0003
Gasket, Flange 2”	4903-0004
Gasket, Flange 6”	4903-0018
Gasket, Flange 4” with fast loop	4903-0027
Gasket, Flange 6” with fast loop	4903-0028
Gasket, Enclosure Foam	4903-1000
Gasket, sub flange connection between Chamber and flange	4903-1001
O-Ring 2-217 Kalrez 7075	4904-2001
O-Ring 2-318 Kalrez 7075	4904-2016
O-Ring 2-110 Kalrez 7075	4904-2015
O-Ring 2-017 Kalrez 7075	4904-0050
O-Ring 2-012 Kalrez 7075	4904-1007
Valve, Solenoid 115VAC High flow for blowback	4955-0136
Valve, Solenoid 24VDC High flow for blowback	4955-0137
Valve, Solenoid 230VAC High flow for blowback	4955-0141
Valve, Pneumatic actuated normally open	4955-0126
Valve, Check Valve for Calibration gas Entry	4955-1002
Accumulator Balls, Provides Blowback Pulse	4956-0001
Filter Woven SS 2 µm	4980-0328

Spare Parts

Eductor (Sample Dilution) Critical Orifice Options (High Temperature 550ºF)	
Part	***P/N***
Orifice #3 for Critical Orifice	4990-1023
Orifice #4 for Critical Orifice	4990-1024
Orifice #5 for Critical Orifice	4990-1025
Orifice #6 for Critical Orifice	4990-1026
Orifice #7 for Critical Orifice	4990-1027
Orifice #8 for Critical Orifice	4990-1028
Orifice #9 for Critical Orifice	4990-1029
Orifice #10 for Critical Orifice	4990-1030
Orifice #11 for Critical Orifice	4990-1031
Orifice #12 for Critical Orifice	4990-1032
Orifice #15 for Critical Orifice	4990-1033
Critical Orifice Assy Bolt #2 High Temp.	5209-1164
Critical Orifice Assy Bolt #3 High Temp.	5209-1036
Critical Orifice Assy Bolt #4 High Temp.	5209-1037
Critical Orifice Assy Bolt 4.5 High Temp.	5209-0396
Critical Orifice Assy Bolt # 5 High Temp.	5209-1038
Critical Orifice Assy Bolt # 6 High Temp.	5209-1039
Critical Orifice Assy Bolt # 7 High Temp.	5209-1040
Critical Orifice Assy Bolt # 8 High Temp.	5209-1041
Critical Orifice Assy Bolt # 9 High Temp.	5209-1042
Critical Orifice Assy Bolt # 10 High Temp.	5209-1043
Critical Orifice Assy Bolt # 11 High Temp.	5209-1044
Critical Orifice Assy Bolt # 12 High Temp.	5209-1045
Critical Orifice Assy Bolt # 15 High Temp.	5209-1046

Spare Parts

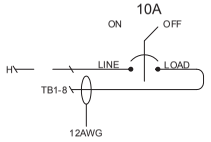
Optional Parts (High Temperature 550ºF)	
Part	***P/N***
High Temperature Lubricant, for O-Rings on the Filter cap assembly	8010-0011
High Temperature Tape, seals and prevents Galling on fittings	8000-0016
Anti-Corrosion Vapor Capsule	8010-1000
Orifice Cleaner	9506-1001
Brush for chamber cleaning	9506-1002
Chamber cleaning Brush extension rod 36” long	9506-1005
Chamber cleaning Brush “T” handle	9506-1006
High Temperature Anti-Seize for metal to metal screws to prevent galling	9515-1000
Heater Rods w/Shielded wires	3014-1001
Sensor PT100 RTD with fitting for mounting and armor leads	1150-1002
Sensor Type K Thermocouple with fitting for mounting and armor leads	1150-1001
Sensor O_2 with Ferrule	1160-1000
Pressure transducer 4-20 mA output	1160-1002
Circuit breaker 115VAC/230VAC	3012-0005/1000
Blow Back timer card 115VAC/230VAC	3600-0019/0054
O2 sensor board	3600-1000
3” heat-shrink boot	4907-0004
2” heat-shrink boot	4907-0005
4” heat-shrink boot	4907-1000

Assembly Parts (High Temperature 550°F)	
Part	***P/N***
Acid Blocker, Protects Blowback Solenoid from Stack gas	5110-0015
Orifice, Orifice holding bolt, and O-Rings	5209-1000
Complete filter and cap assembly High temp with O-Rings	5209-1016
Fast loop critical orifice	5209-1061
Manifold Hasteloy for use w/o HPA	5209-1157
Manifold Hasteloy for use with HPA	5209-1158

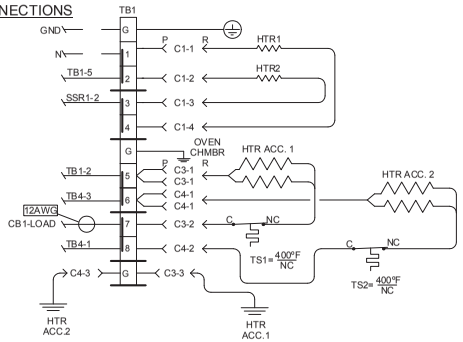
LOCAL TEMPERATURE CONTROLLED HEATED STACK FILTER

CB1 P/N: 3012-0005
POWER SWITCH / CIRCUIT BREAKER
10A

115VAC 50/60Hz 3 AMP
CONTROLLED HEATED
FILTER INPUT POWER

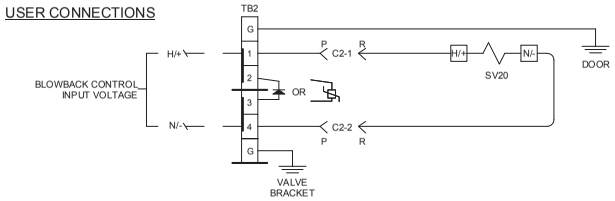


USER CONNECTIONS



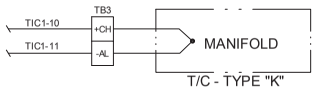
BLOWBACK

USER CONNECTIONS



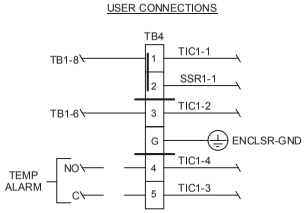
THERMOCOUPLE TYPE "K"

THERMOCOUPLE FOR REMOTE
FILTER HEATER TEMPERATURE
MONITORING AND CONTROL
TERMINAL BLOCK P/N
+CH = 3304-0167
-AL = 3304-0168



T/C - TYPE "K"
THERMOCOUPLE
P/N 1150-1001

USER CONNECTIONS



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 TFE INSULATION. MINIMUM WIRE SIZE SHALL BE 18AWG UNLESS OTHERWISE SPECIFIED.
COLOR CODE SHALL BE AS FOLLOWS: 115V
HOT - BLACK
NEUTRAL - WHITE
GROUND - GREEN

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

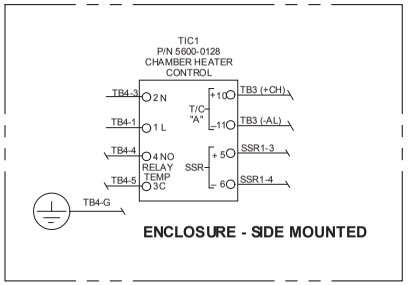
\+ RED
\- BLUE

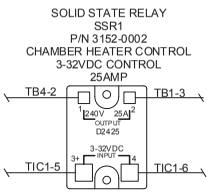
USER CONNECTIONS

4) ALL WIRES TO BE LABELED WITH SOURCE AND DESTINATION.

NOTE: LID/DOOR GROUNDED TO ENCLOSURE STUD.

LOCAL TEMPERATURE CONTROL / HEATED BLOWBACK / 115VAC





- 4 POSITION TERMINAL BLOCK - P/N 3304-1007
- 2 POSITION TERMINAL BLOCK - P/N 3304-1002
- GROUND TERMINAL BLOCK - P/N 3304-1000
- TERMINAL BLOCK NUMBERS - P/N 5001-0085
- ISOLATION BLOCK - P/N 3304-1001
- USE WIRE FERRULES - P/N 3211-1000 FOR 18 AWG WIRES
- USE WIRE FERRULES - P/N 3211-1001 FOR 16-12 AWG WIRES

FILTER HEATER ROD (HTR1 & HTR2)
11" LG @ 600WATT/115VAC - P/N 3014-1001

ACCUMULTOR HEATER (HTR ACC.1 & 2) - P/N 4956-0009

LOW TEMP ALARM TS1 & 2
NORMALLY CLOSED (NC) BELOW 400°F P/N 3103-0009

P
C1 - 4 POSITION PLUG - P/N 3304-0152
R
C1 - 4 POSITION RECEPTACLE - P/N 3304-0153

P
C2 - 2 POSITION PLUG - P/N 3304-0004
R
C2 - 2 POSITION RECEPTACLE - P/N 3304-0003
P
C3&4 - 3 POSITION PLUG - P/N 3304-0027
R
C3&4 - 3 POSITION RECEPTACLE - P/N 3304-0028

- CONNECTION PIN - P/N 3304-0089
- CONNECTION SOCKET - P/N 3304-0035

TS1 & 2 - UAI P/N - 3103-0009
HTR ACCU. - UAI P/N 4956-0009

- DIODE P/N 1000-0009 FOR 24VDC SOLENOIDS
- MOV P/N 1010-1001 FOR VAC SOLENOIDS

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

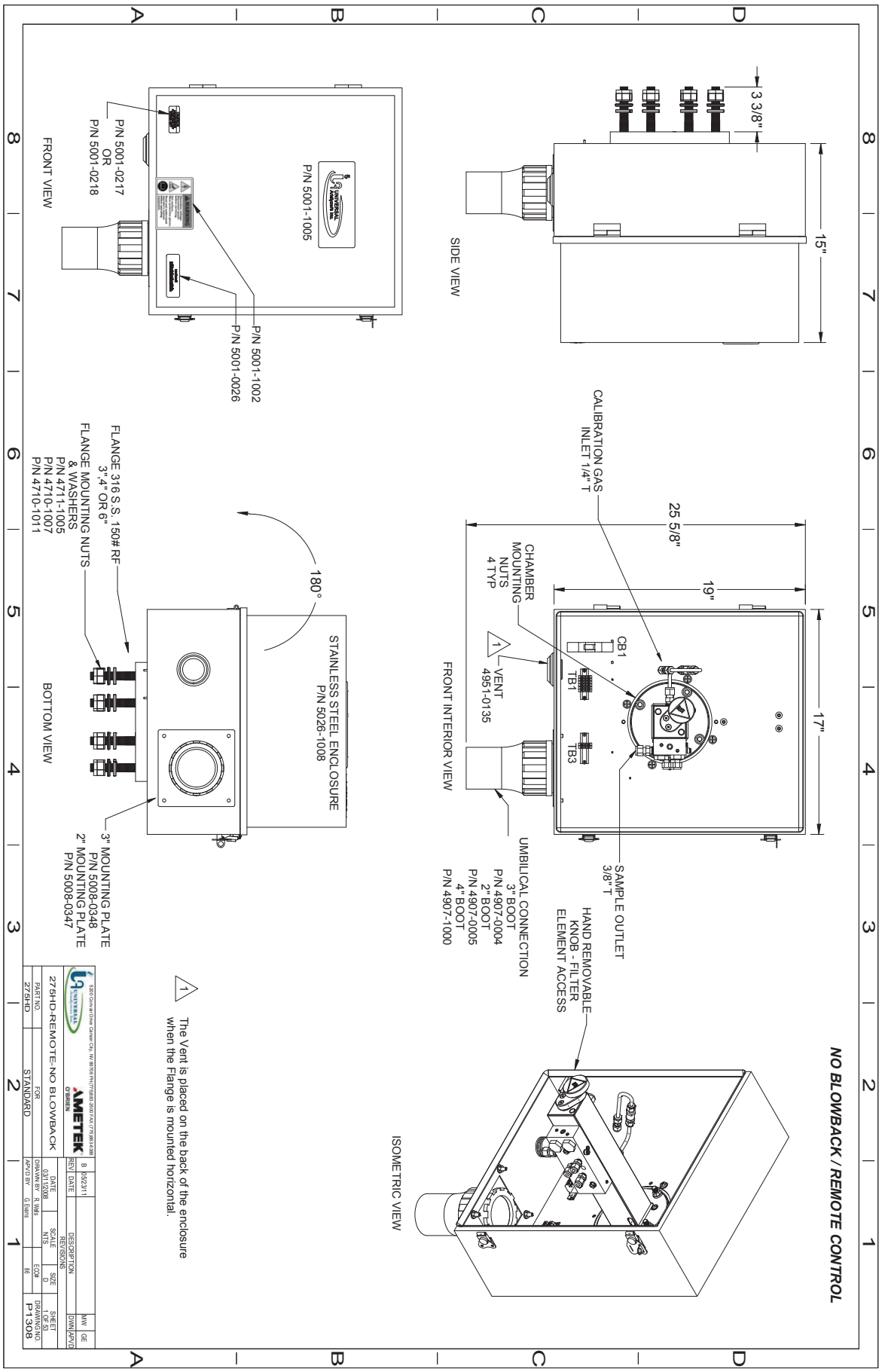
REVISIONS

LOCAL / HEATED BLOWBACK /115VAC WIRING SCHEMATIC

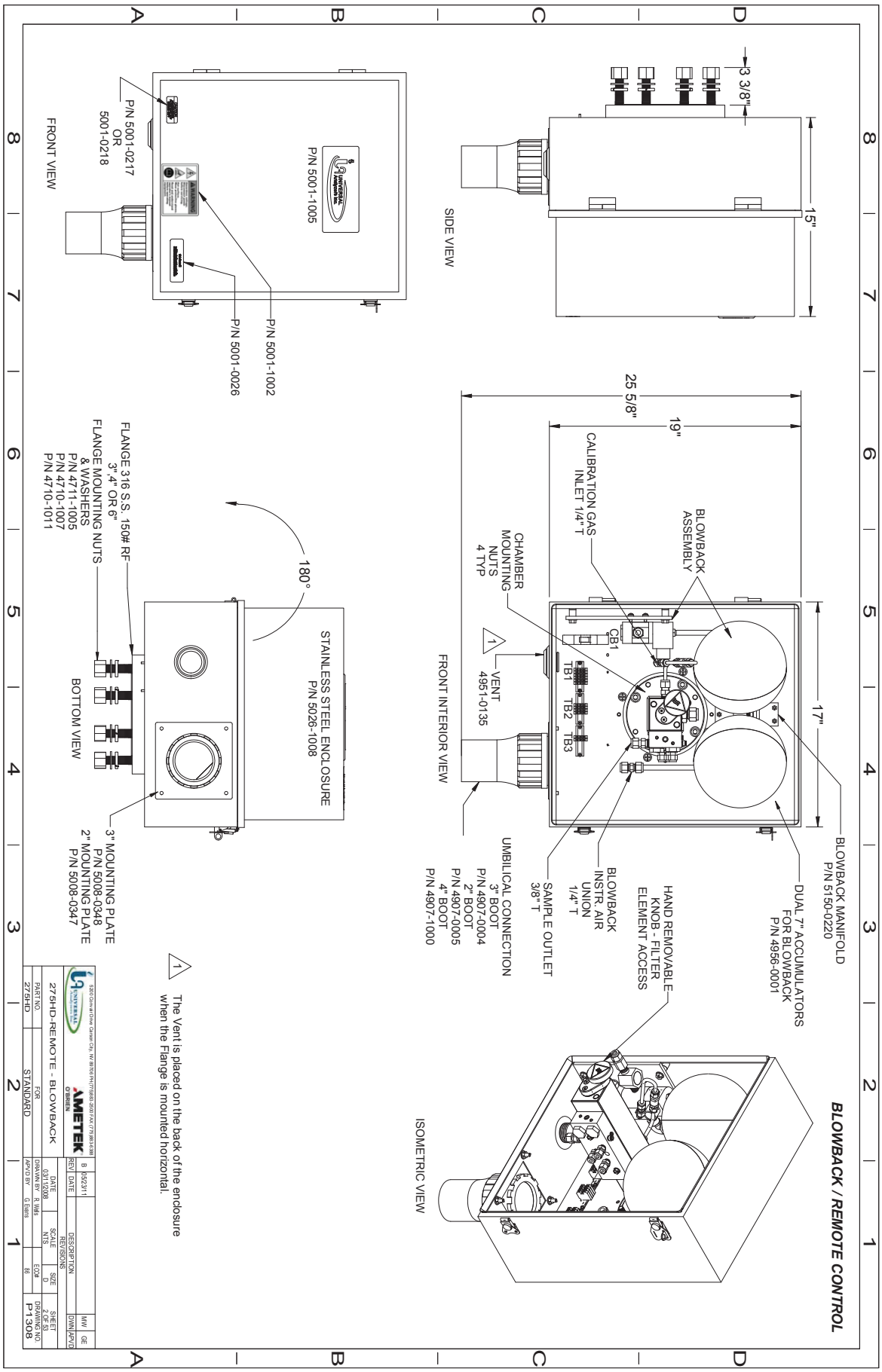
DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	40 OF 53

PART NO.	FOR	DRAWN BY	ECO#	DRAWING NO.
275HD	STANDARD	APVD BY G.Evans	86	P1308

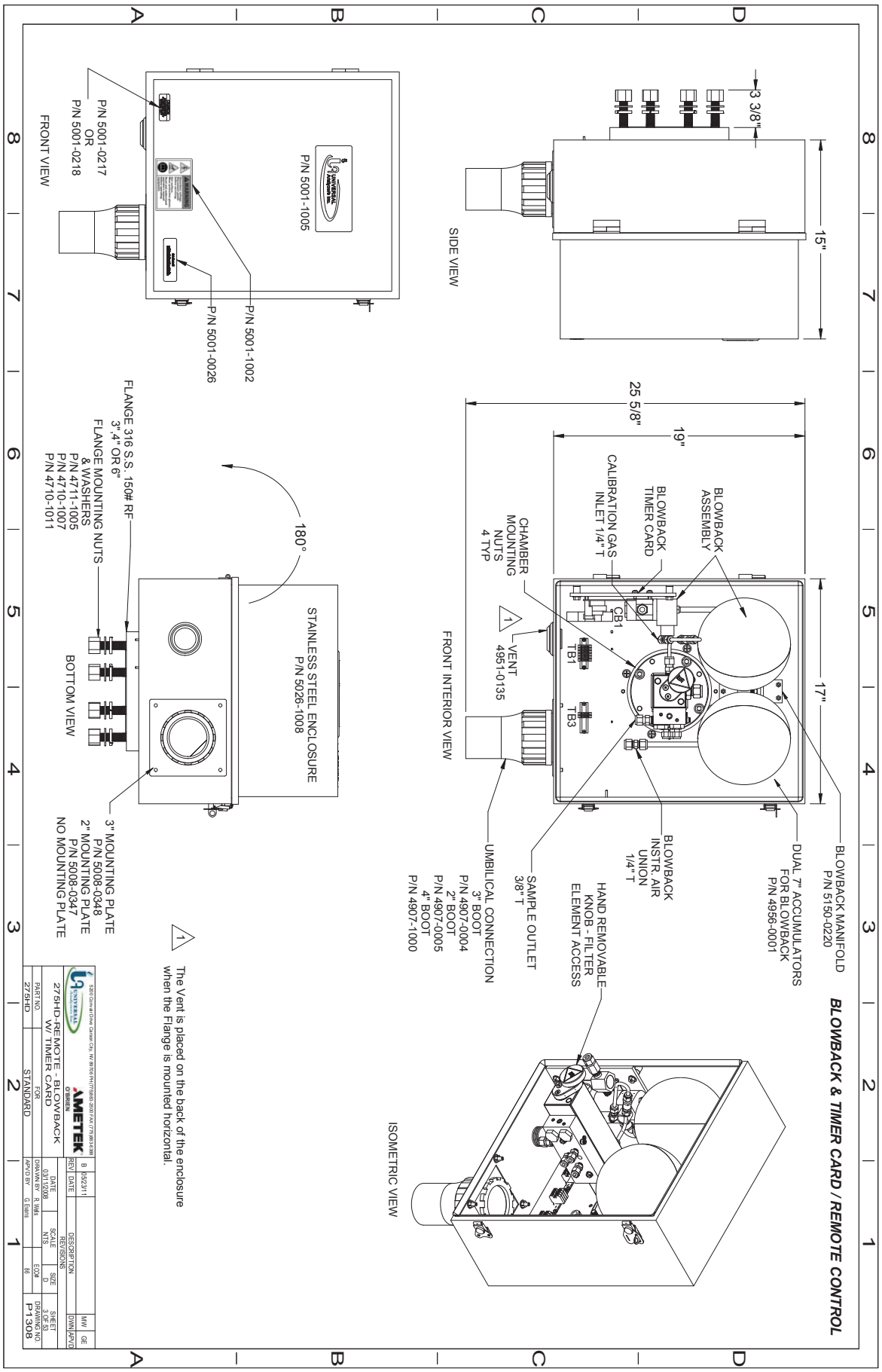
Drawings Model 275HD



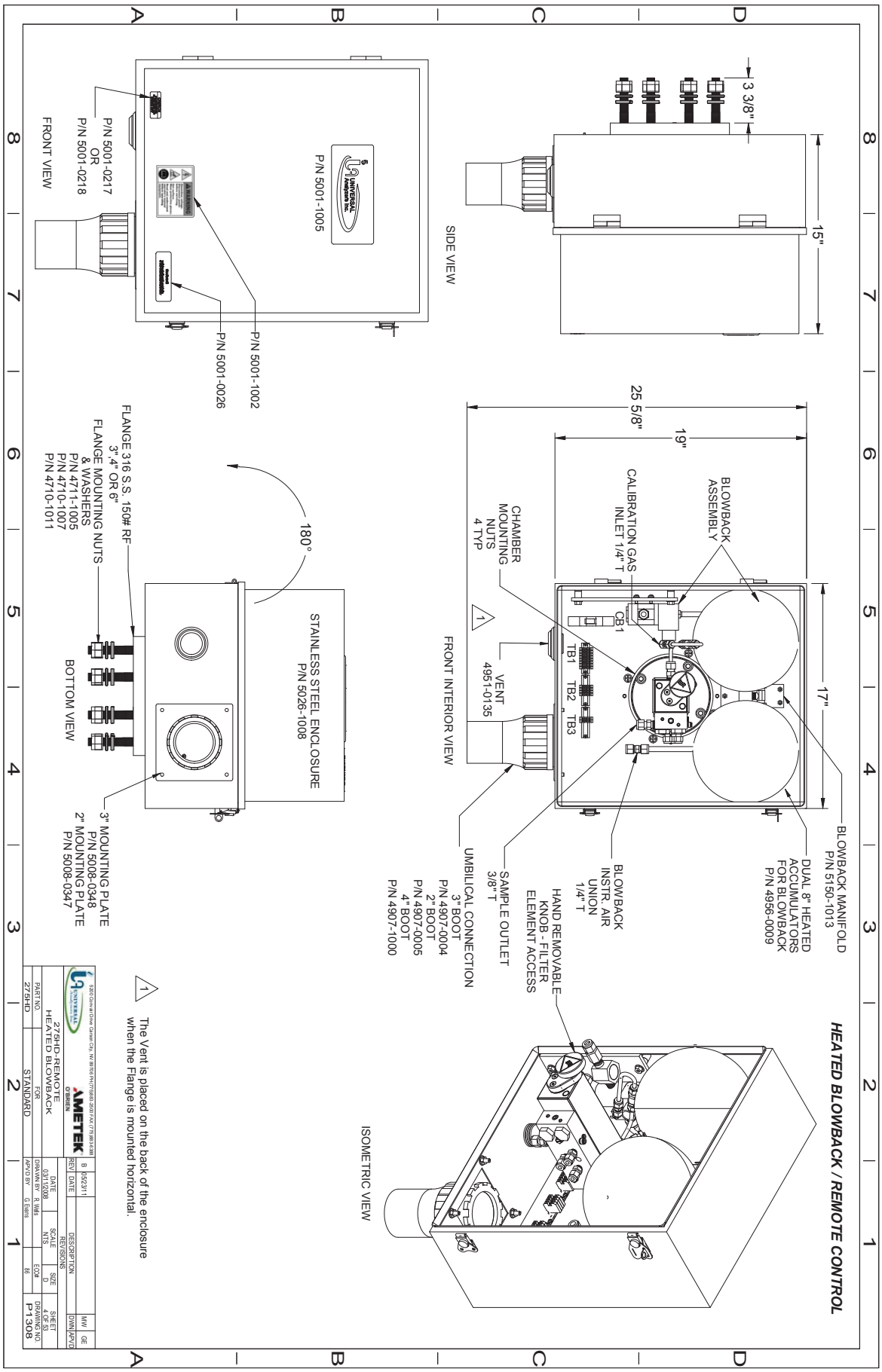
Drawings Model 275HD



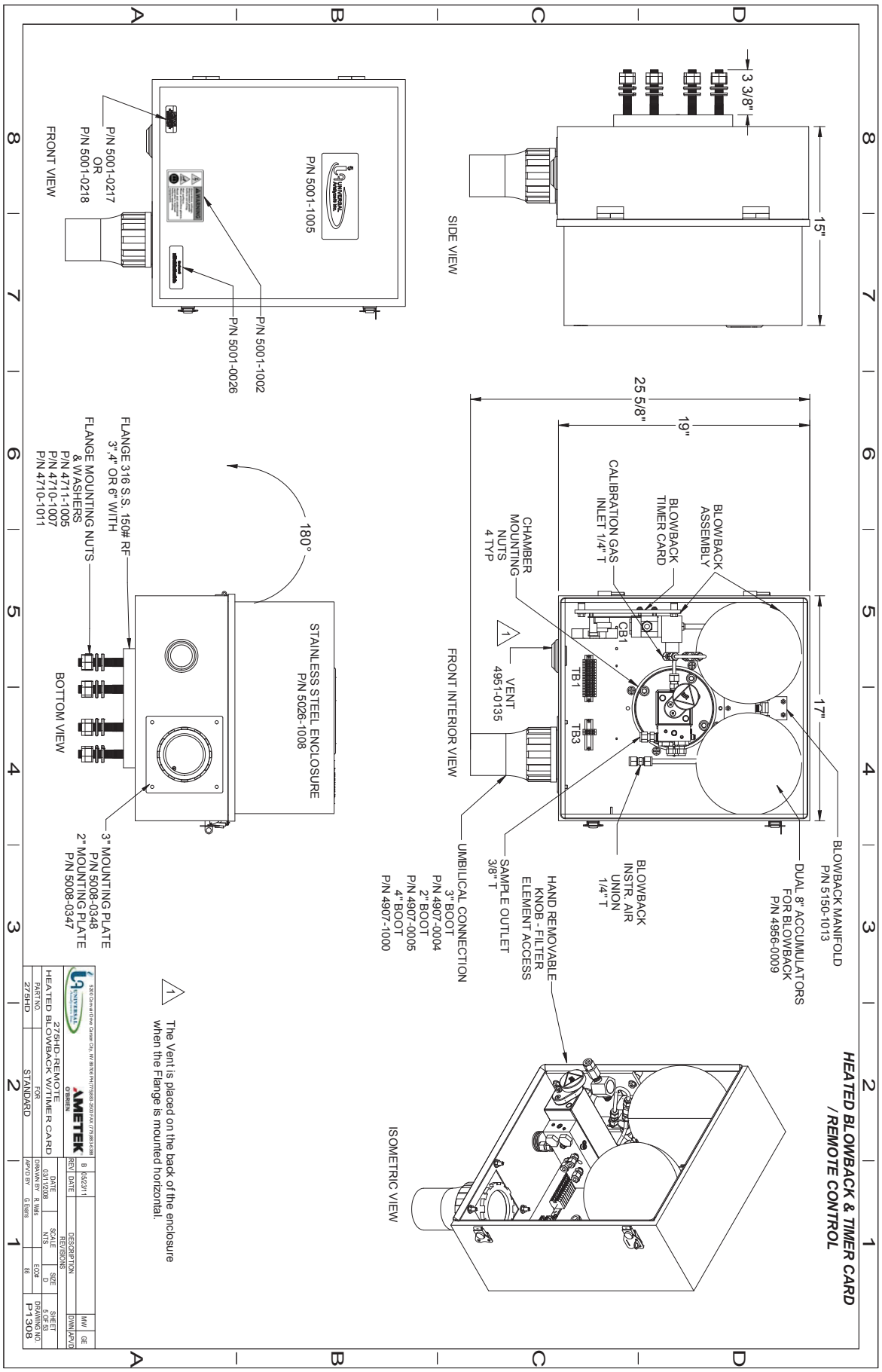
Drawings Model 275HD



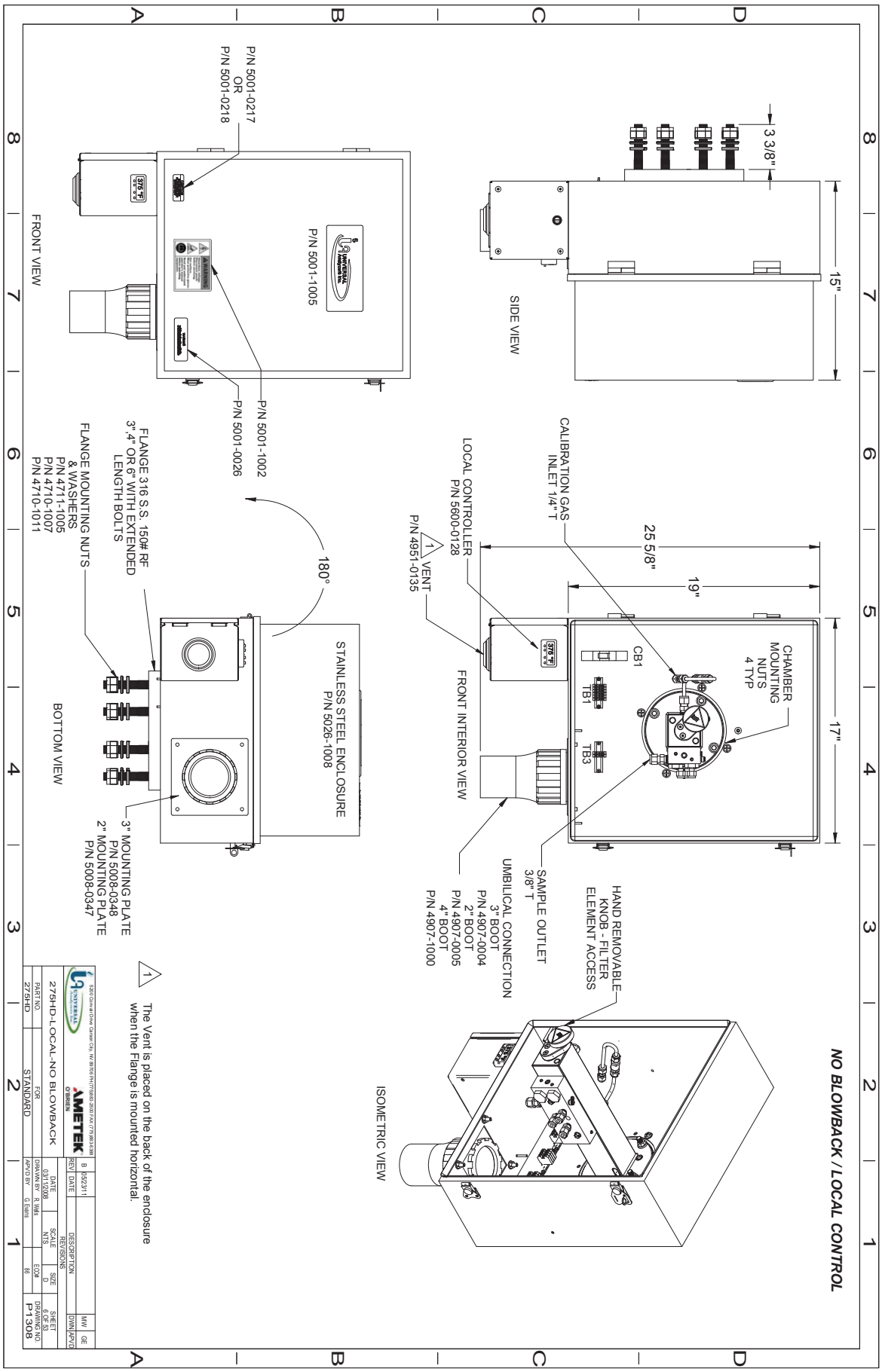
Drawings Model 275HD



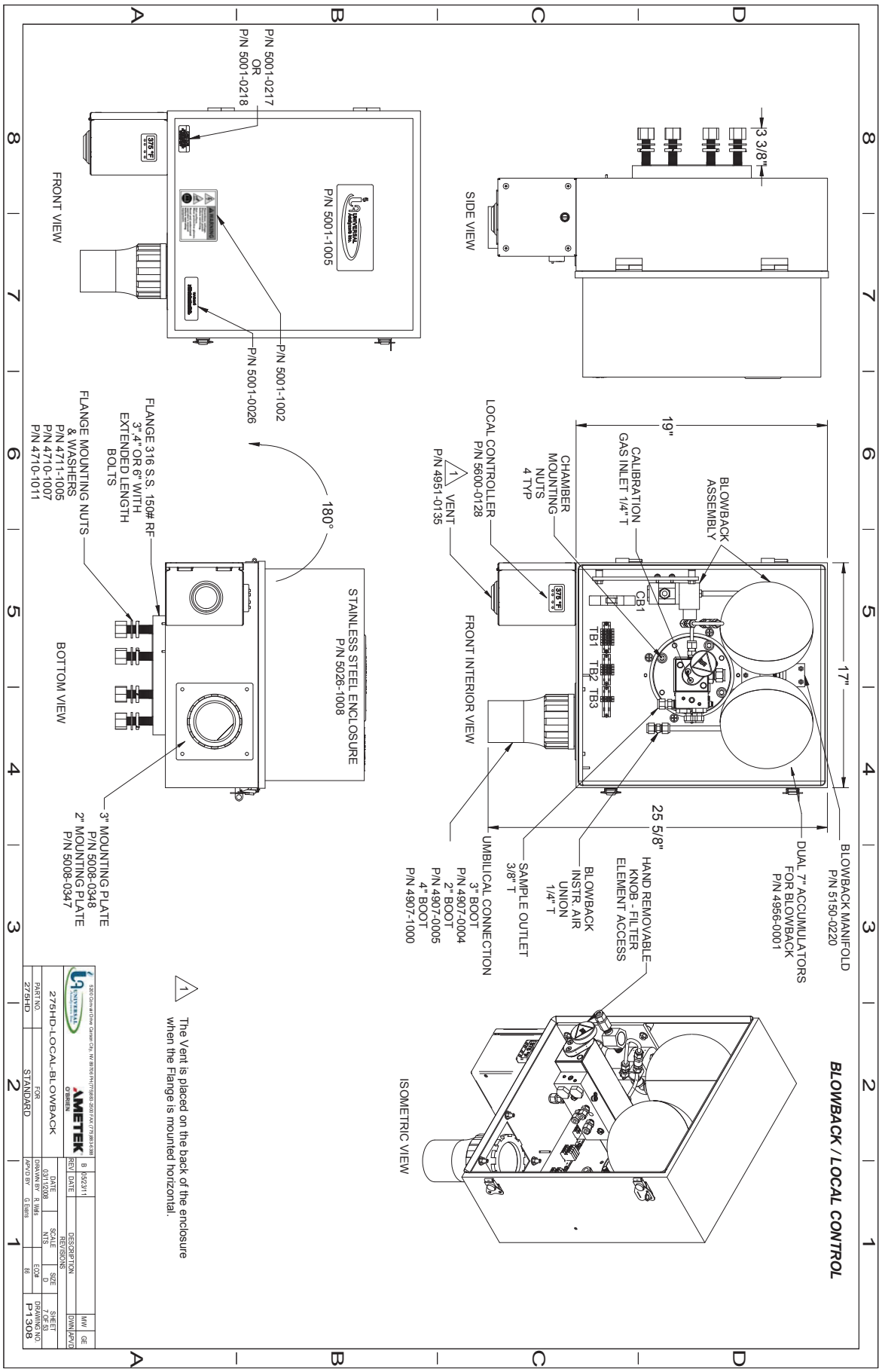
Drawings Model 275HD



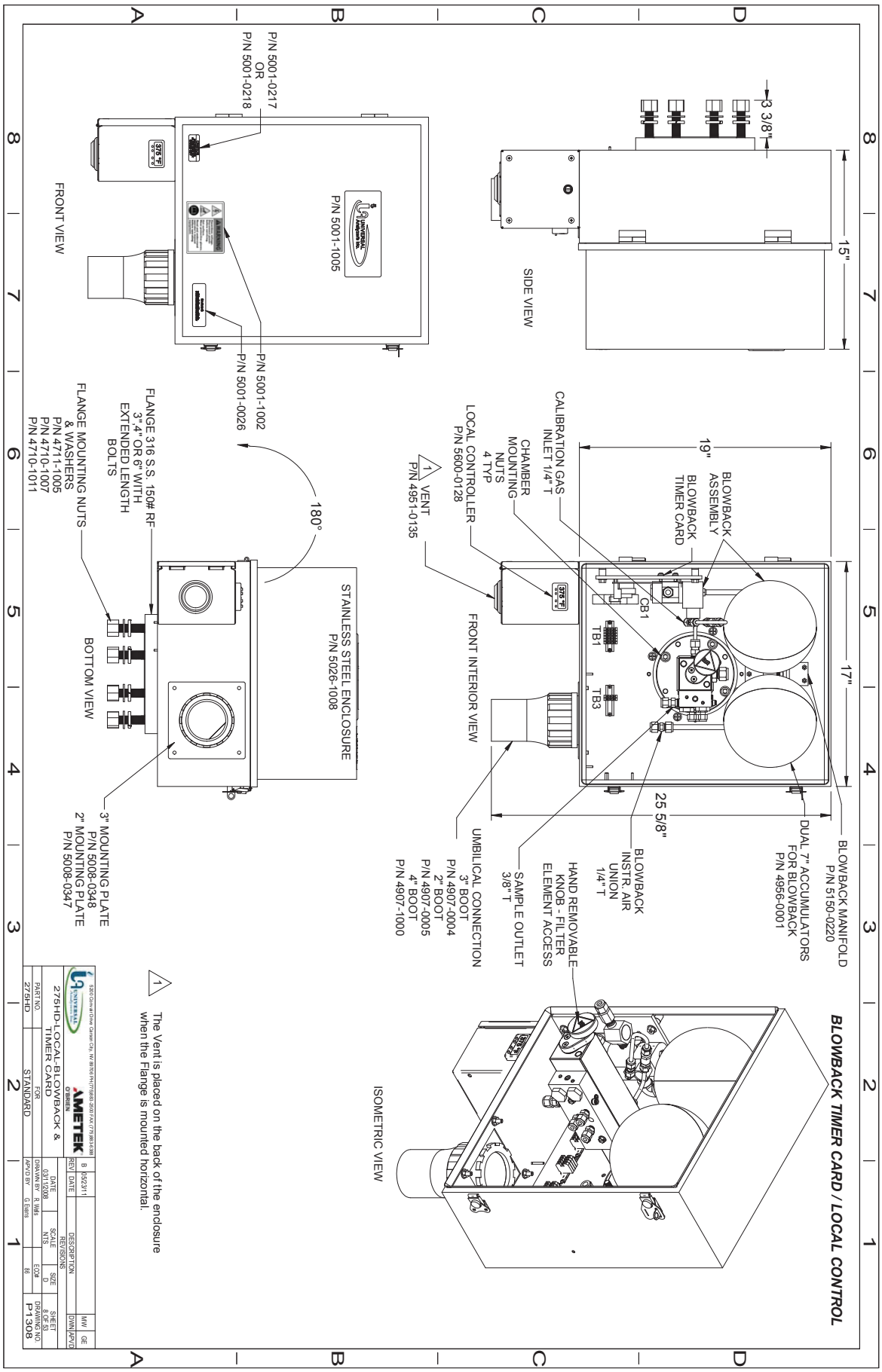
Drawings Model 275HD



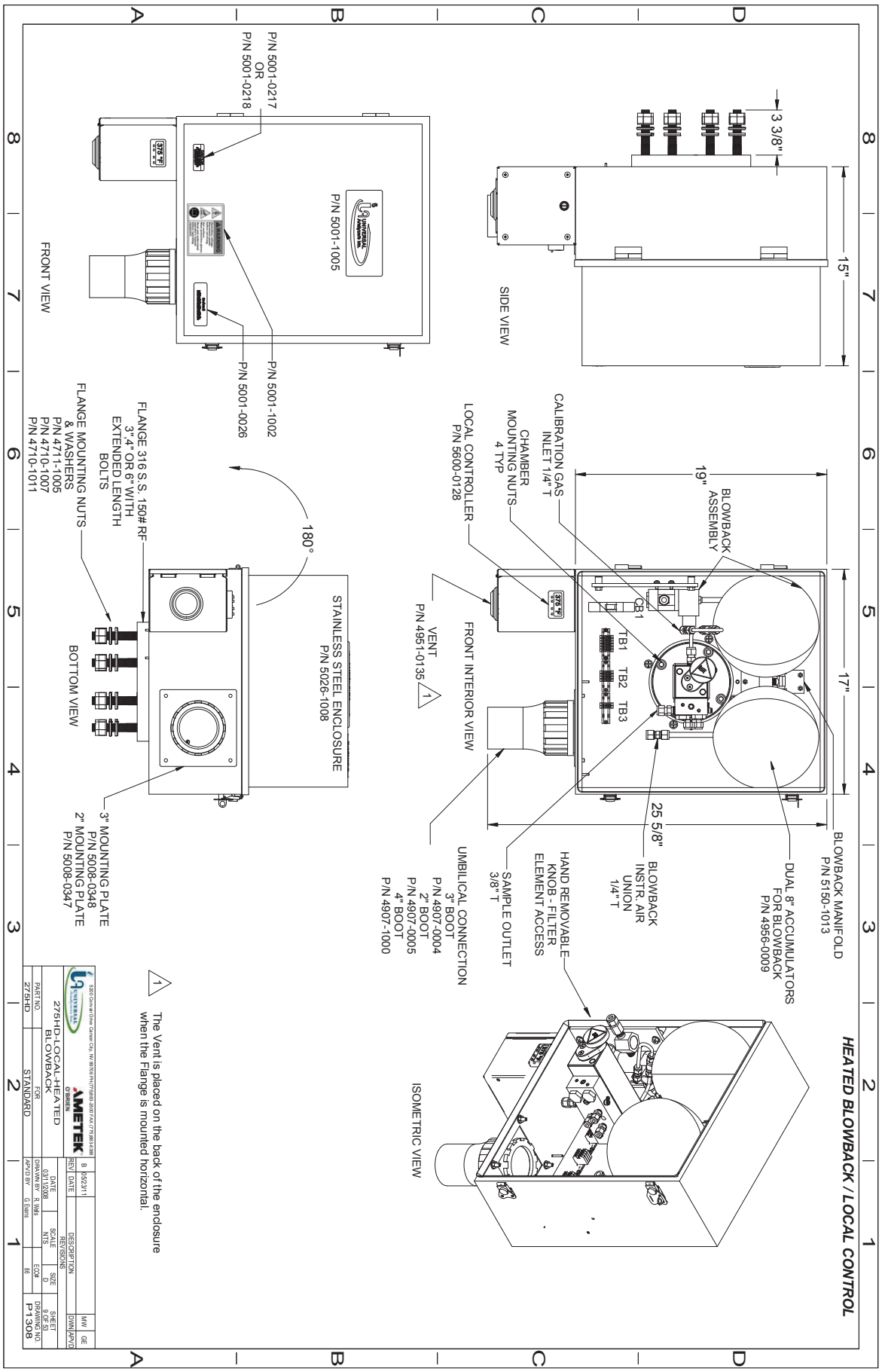
Drawings Model 275HD



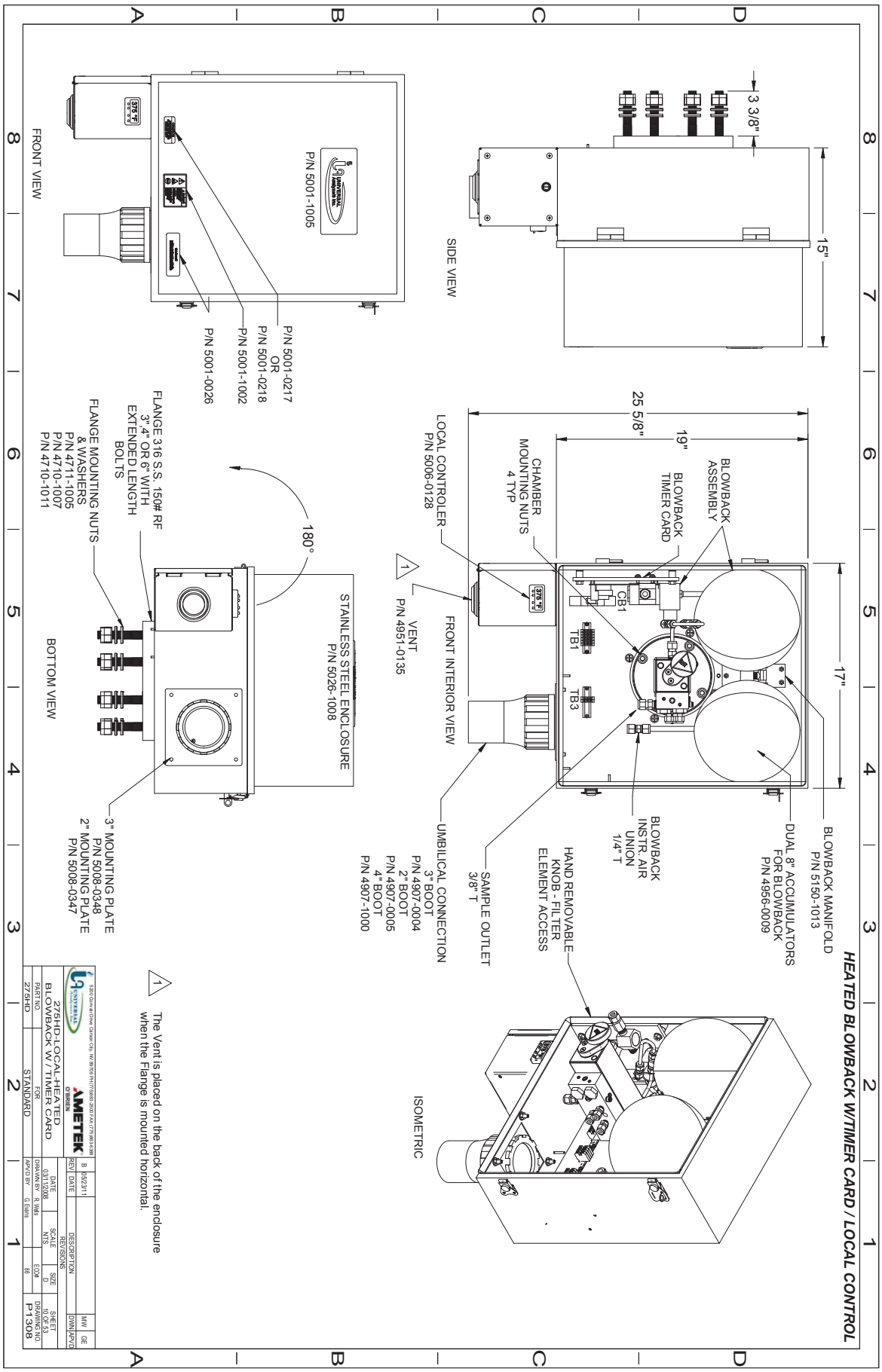
Drawings Model 275HD



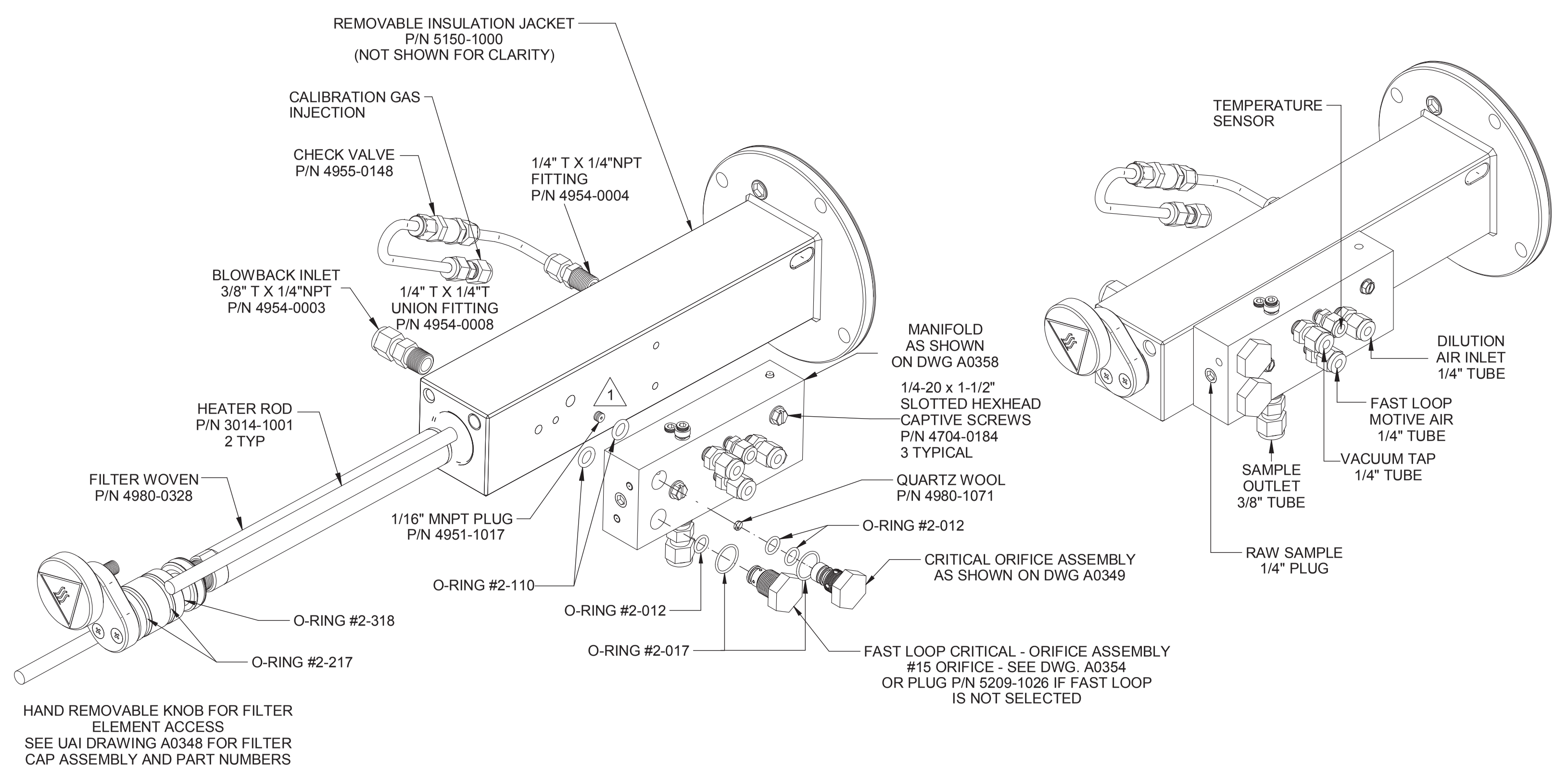
Drawings Model 275HD



Drawings Model 275HD



HEATED FILTER PROBE WITHOUT O_2 SENSOR



STANDARD TEMPS. LESS THAN 400°F

O-RING NO.	MATERIAL	UAI PART NO.
2-110	VITON	4904-0046
2-012	VITON	4904-0041
2-017	VITON	4904-1006
2-217	VITON	4904-0016
2-318	VITON	4904-0036

HIGH TEMPS. LESS THAN 600°F

O-RING NO.	MATERIAL	UAI PART NO.
2-110	KALREZ	4904-2015
2-012	KALREZ	4904-1007
2-017	KALREZ	4904-0050
2-217	KALREZ	4904-2001
2-318	KALREZ	4904-2016

1 PLUG - FAST LOOP RETURN IF FAST LOOP IS NOT USED, OR IF THE PROBE USES A HEATED PROBE TUBE ASSEMBLY (HPA)

5200 Convair Drive Carson City, NV 89706 PH(775)883-2500 FAX (775)883-6388

AMETEK O'BRIEN

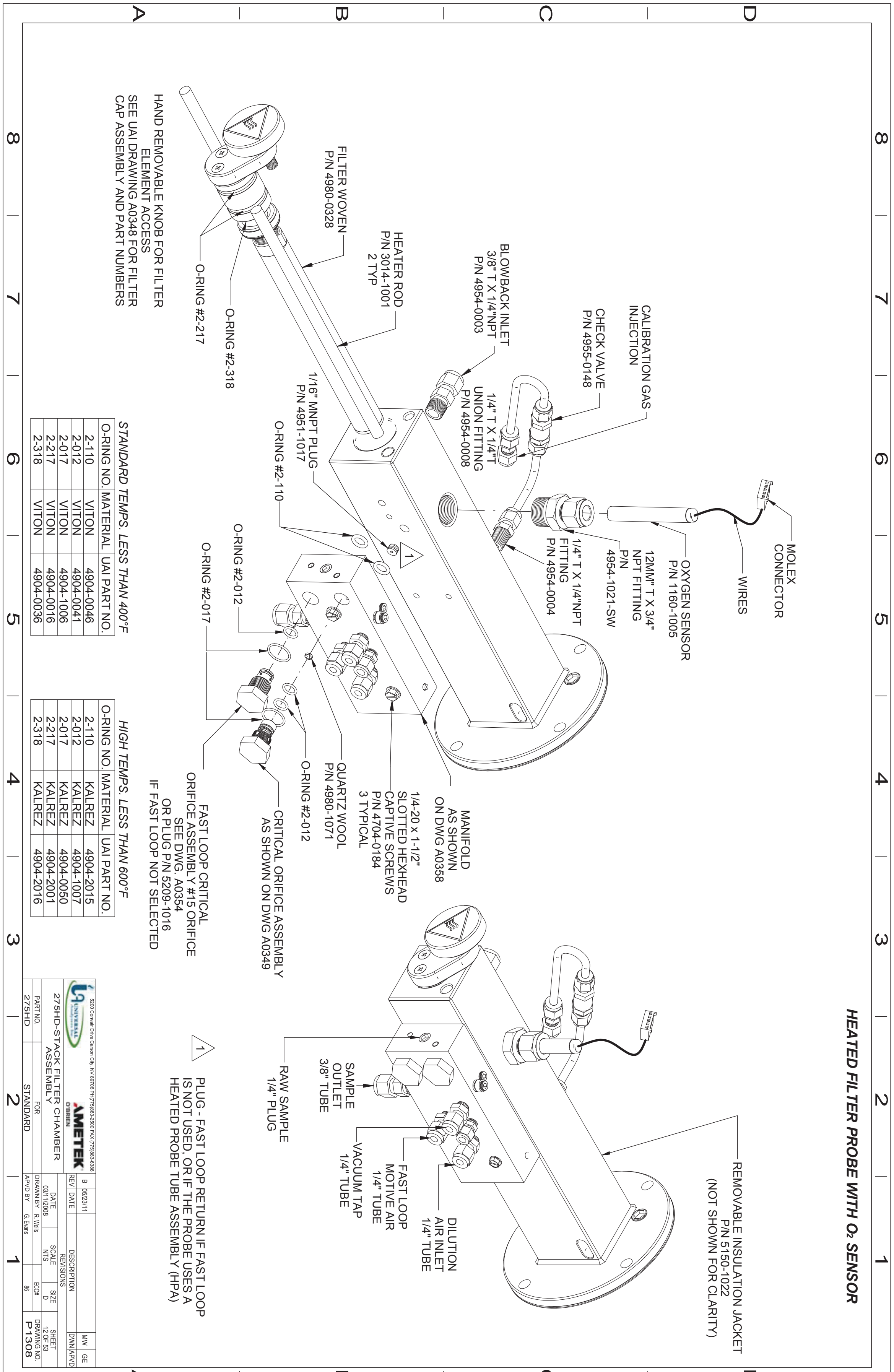
275HD-STACK FILTER CHAMBER ASSEMBLY

REV	DATE	DESCRIPTION	DWN	APVD
B	05/23/11		MW	GE

REVISIONS

DATE	SCALE	SIZE	SHEET
03/11/2008	NTS	D	11 OF 53

PART NO.	FOR	DRAWN BY	APVD BY	ECO#	DRAWING NO.
275HD	STANDARD	R. Wells	G. Evans	86	P1308



STANDARD TEMPS. LESS THAN 400°F

O-RING NO.	MATERIAL	UAI PART NO.
2-110	VITON	4904-0046
2-012	VITON	4904-0041
2-017	VITON	4904-1006
2-217	VITON	4904-0016
2-318	VITON	4904-0036

HIGH TEMPS. LESS THAN 600°F

O-RING NO.	MATERIAL	UAI PART NO.
2-110	KALREZ	4904-2015
2-012	KALREZ	4904-1007
2-017	KALREZ	4904-0050
2-217	KALREZ	4904-2001
2-318	KALREZ	4904-2016

275 HD
Heavy Duty
High Definition
Heated Dilution

- MODEL

275HD (Heavy Duty Dilution)

- MATERIAL

SS (Stainless Steel Chamber) (<400°F Std.)
SH (Stainless Steel Chamber High Temp) (<550°F)
C (Hastelloy C-276 Chamber) (<400°F)
CH (Hastelloy C-276 Chamber) (<550°F)

- FLANGE SIZE AND ORIENTATION

F a b c

a:
- 3 - 3" 150# Flange
- 4 - 4" 150# Flange
- 6 - 6" 150# Flange

b:
- S - Straddled - 11 o'clock to 1 o'clock
- T - Top Dead Center - 12 o'clock

c:
- ___ - Blank Std. Flange Mounted Vertically
- H - Flange Mounted Horizontal

- TEMPERATURE SENSOR AND CONTROL FOR HEATED FILTER

KR T/C Only (Type K) For Remote Control
JR T/C Only (Type J) For Remote Control
DR RTD Only (PT100) For Remote Control
KL T/C (Type K) With DIN Controller and Local Enclosure

- FASTLOOP / BYPASS

NL (NO FAST LOOP)
FL (FASTLOOP)
HL (FAST LOOP W/HPA)

- BLOWBACK CONTROL

NBB No Blowback
B24 24VDC Blowback Control
BAC 115/230VAC Blowback
BAIR Pneumatic Blowback Control
BTAC 115/230VAC Blowback w/Timer Card
HAIR 24VDC Heated Blowback Pneumatic Control
H24 Heated Blowback 24VDC Control
HAC Heated Blowback VAC Control (See System Voltage for 115 or 230)
HTAC Heated Blowback & Timer Card (See System Voltage for 115 or 230)

- BLOWBACK INJECTION

(Leave Blank If No Blowback)
S (Standard Flood Blowback)
P (Injected Before The Filter For Probe Tip Filter Blowback)
D (Dual Blowback)
N (No Blowback)

- BLOWBACK OPTIONS

N No Blowback Options Included
BI Blowback & Fastloop Instrument Air Combined
BD Dual Blowback Control (Separate Instrument Air Supplies for Fastloop & Blowback Required)

- BOOT PLATE SIZE

2" 2" Cable Entry Gland
3" 3" Cable Entry Gland
4" 4" Cable Entry Gland
N No Boot

- SYSTEM VOLTAGE

115 (115VAC)
230 (230VAC)

- ORIFICE / DILUTION RATIO

#2 Critical Orifice (475-1000:1)
#3 Critical Orifice (270-650:1)
#4 Critical Orifice (130-260:1)
#4.5 Critical Orifice (90-210:1)
#5 Critical Orifice (70-160:1)
#6 Critical Orifice (65-120:1)
#7 Critical Orifice (40-80:1)
#8 Critical Orifice (30-55:1)
#9 Critical Orifice (23-40:1)
#10 Critical Orifice (21:30:1)
#11 Critical Orifice (17-25:1)
#12 Critical Orifice (13-20:1)
#15 Critical Orifice (8-15:1)

OPTIONS:

O_2 Sensor
O_2 - Zr O_2 Sensor & Signal Conditioning Board Installed

Pressure Transducer
PT - Pressure Transducer 0 - 30 PSIA

Z - Purge
ZP - Z-Purged Enclosure

Integrated HPA

HKR Integrated HPA With Type K T/C For Remote Control
HJR Integrated HPA With Type J T/C For Remote Control
HDR Intergrated HPA With PT100 RTD For Remote Control
HKL Intergrated HPA With PT 100 RTD For Local Control
N Not Applicable

(HKR–HKL: See P0920)

OR

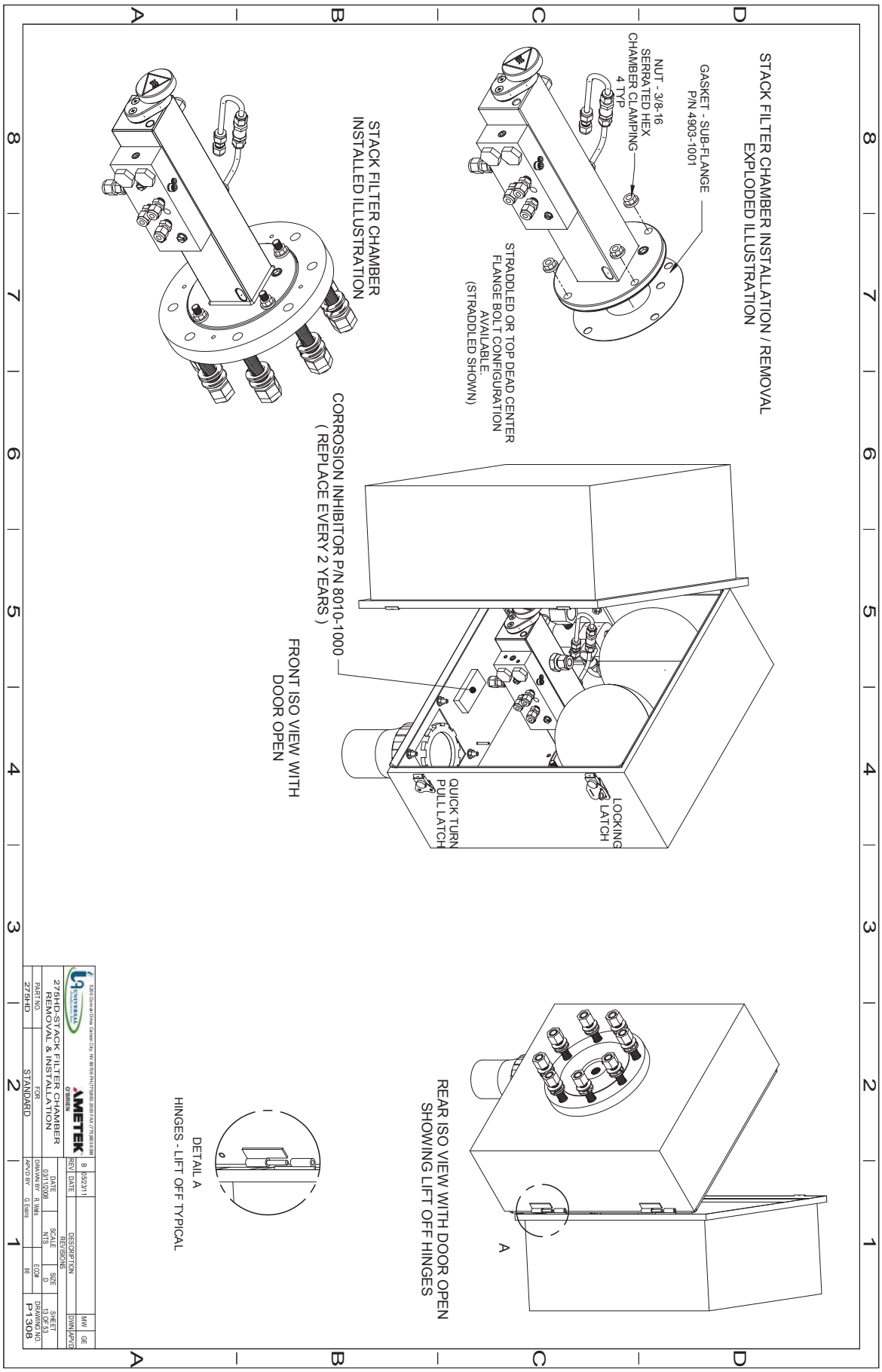
Probe Tube Support

P d e

d:
- **2 - 2'**
- **3 - 3'**
- **4 - 4'**
- **5 - 5'**

e:
- **S - 316 Stainless Steel**
- **C - C-276 Hastelloy**
- **T - 310 Stainless Steel**
- **I - Inconel**

Drawings Model 275HD



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