PERMA PURE

INSTRUCTION MANUAL

BALDWIN™ - Series

HEATED FILTER PROBES

GENERAL PURPOSE SERIES

Model 33C

Version 4.04

Perma Pure LLC
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A: SPECIFICATIONS

General Specifications

Probe	18" Stinger probe, 0.5" dia x .065" wall, 316L SS tubing
Calibration	Integral calibration on both sides of filter element
Heater Jacket Temp Control	Self regulated (standard)
Connections	1¼" male pipe nipple mount; ½" male pipe thread adapter
Connectors	¼" cal gas, ¼" sample line
Thermocouple	Type K
Heat-shrink Boot	7" length, 2.75" min expanded I.D. nose
O-rings	Viton®
Gaskets	Graphoil
Dimensions	14" x 12" x 8" HWD (w/o Stinger probe)
Weight	30 lbs

Operating Specifications

Calibration Gas Requirement	20 psig, 6-10 LPM
Probe Operating Temperature	375ºF (190ºC)
Instrument Air for Blowback	Min 50 psig, Max 90 psig

Material Specifications

Enclosure Material	NEMA 4 Steel
Probe Stinger	316L SS tubing (standard) Schedule 40 Schedule 80 Durinert® coated Hastelloy®
Heater Type	Silicone rubber blanket w/ metal snap closures
Enclosure Insulation Material	⅛" thick silicone, medium density
Filter Chamber Material	316 stainless steel
Filter Element Types	10 micron sintered SS (standard) 5, 20 micron sintered SS 2 micron ceramic 2 micron SS screen mesh

B: LIMITED WARRANTY

Perma Pure LLC
WARRANTY and DISCLAIMERS

Perma Pure (Seller) warrants that product supplied hereunder shall, at the time of delivery to Buyer, conform to the published specifications of Seller and be free from defects in material and workmanship under normal use and service. Seller's sole obligation and liability under this warranty is limited to the repair or replacement at its factory, at Seller's option, of any such product which proves defective within one year after the date of original shipment from seller's factory (or for a normal usable lifetime if the product is a disposable or expendable item) and is found to be defective in material or workmanship by Seller's inspection.

Buyer agrees that (1) any technical advice, information, suggestions, or recommendations given to Buyer by Seller or any representative of Seller with respect to the product or the suitability or desirability of the product for an particular use or application are based solely on the general knowledge of Seller, are intended for information guidance only, and do not constitute any representation or warranty by Seller that the product shall in fact be suitable or desirable for any particular use or application; (2) Buyer takes sole responsibility for the use and applications to which the product is put and Buyer shall conduct all testing and analysis necessary to validate the use and application to which Buyer puts the product for which Buyer may recommend the use or application of the product by others; and (3) the characteristics, specifications, and/or properties of the product may be affected by the processing, treatment, handling, and/or manufacturing of the product by Buyer or others and Seller takes no responsibility for he nature or consequence of such operations or as to the suitability of the product for the purposes intended to be used by Buyer or others after being subjected to such operations.

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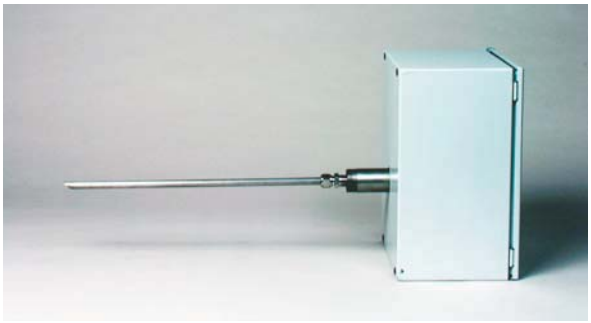
C: PRINCIPLE OF OPERATION

The Baldwin™-Series Model 33C Heated Filter Probe is designed to be mounted on a stack or duct for use in high particulate applications. Its primary function is to provide a heated environment to maintain sample gas temperatures above dewpoint and remove particulate material from the gas sample. Model 33C features a standard 10 micron sintered stainless steel filter element, a self-regulated heater jacket, an integral calibration gas port on both sides of the filter element, and a NEMA 4 enclosure.

Mounting

The Model 33C is designed to be mounted directly on a stack or duct with a 1¼" Schedule 40 male pipe nipple. This pipe nipple can be screwed into a standard ASA flange, either flat or raised face. The probe boot can be heat shrunk to the sample line to eliminate cold spots.



Calibration

To operate calibration gas to the probe, open the user supplied calibration gas control valve, adjust the cylinder pressure to >25 psig, and adjust the calibration gas flow rate to approximately 20% above the highest gas sample flow rate.

D: MAINTENANCE

The Model 33C does not require routine maintenance for the filter head or self-regulated probe body heater jacket.

The filter element requires periodic replacement, depending upon application and dust loading. See the attached Spare Parts list for replacement elements.

If the Model 33C is used in conjunction with the Baldwin™-Series Flow Control Drawer, monitoring the sample vacuum will warn the operator when to change the filter element. The operator should log the beginning sample vacuum when the system is first started up.

If the sample vacuum is consistently 25% higher than at start-up, the operator should replace the filter element with a new filter. Visual inspection will also confirm the condition of the filter element.

E: TROUBLESHOOTING

Symptom	*Check*	*Action*
115 VAC heater jacket is not heating	Check the resistance between the black and white wires (tied together) and the blue wire. A 200 watt heater @ 115 VAC will draw about 2 amps so the resistance is around 61 ohms.	If the measure is open for heater resistance the fusible link has blown and the jacket should be replaced.
230 VAC heater jacket is not heating	Check the resistance between the black and white power wires using an ohmmeter. A 200 watt heater @ 230 VAC will draw about 1 amp so the resistance is around 245 ohms.	If the measure is open for heater resistance, the fusible link has blown and the jacket should be replaced.
Filter plug cannot be removed from filter housing	Check “O” rings for damage High particulate loading	Replace “O” rings Clean the “O” ring sealing surfaces with a clean towel prior to reassembly.

For further service assistance, contact:
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Email: info@permapure.com
or your local representative

F: SPARE PARTS

Model 33C (Part Number 4P-33C and 4P-33C-R)

Part No.	Description
1PCG-002	Connector: Heated Line Entry Seal
3FES-015PK	Filter Element Seals: Silicone, Used w/ Screen Mesh 3FES-010 (10 pack)
3FES-010	Filter Element: 316L SS Screen Mesh, 2.0 Micron
3FES-004	Filter Element: 316L SS, 1.25” x 2.975”, 10 Micron
3FES-003	Filter Element: 316L SS, 1.25” x 2.975”, 20 Micron
3FES-005	Filter Element: 316L SS, 1.25” x 2.975”, 5 Micron
3FEC-002	Filter Element: Ceramic 2 Micron
3FEG-001	Filter Element: Glass, 0.1 Micron
3FEG-003	Filter Element: Glass/TFE Coated, 0.7 Micron
4P-FLANGE2	Flange: 2”, 150# with Gasket & Bolts
4P-FLANGE3	Flange: 3”, 150# with Gasket & Bolts
4P-FLANGE4	Flange: 4”, 150# with Gasket & Bolts
4P-FLANGE6	Flange: 6”, 150# with Gasket & Bolts
4P-GCS-212	Gas Cooling Spool Piece: w/ 2” Flanges & 12” Spool
4P-GCS-412	Gas Cooling Spool Piece: w/ 4” Flanges & 12” Spool
3PAM-006PK	Gasket: Graphoil 1.25” (10 pack)
3PHH-003	Heater Jacket, Wire-Wound w/ Thermostat & Thermal Fuse (“C” series only)
2HTR-007	Heater Band, 350W
3PAM-028PK	O- Ring: Silicone, 50 Durometer (10 pack)
3PAM-010PK	O- Ring: Viton, 50 Durometer (10 pack)
3PAM-031PK	O-Ring: Pack, Viton, “C” series probes only, 5 ea 1⅞” OD, 2 ¼” OD
4P-STNG-STD	Stinger, Replacement: 18”, 316L SS, ½" x 0.065”w
2VRS-005	Valve: Check, 10 psig, ¼” Viton “O” Ring
2VS2-007	Valve: Solenoid, 2 Way, 120VAC/60Hz, 100 psig, Hi Temp
2VS2-006	Valve: Solenoid, 2 Way, 220VAC/50Hz, 100 psig, Hi Temp

APPENDIX:

HEATED FILTER PROBES

GENERAL PURPOSE EXTRACTIVE SERIES

Baldwin's Heated Filter Probes feature an advanced design to extract sample gas and remove particulate while preventing condensation prior to the gas sample entering the heated sample line.

Features New Machine-Lathed Sure-Lock™ Filter Assembly

Baldwin's new Sure-Lock™ filter assembly is precision machined and features a unique design to help ensure proper insertion into the assembly and to reduce the possibility of leaks. The filter head is inserted into a notch in the assembly to ensure proper alignment before locking it in place. The o-rings are tightened under compression, rather than being located on the sides of the filter head, to reduce the risk of leakage.

Broad Range of Filter Elements Designed for Your Application

Baldwin offers the largest selection of filter element sizes and materials including: ceramic, glass fiber, stainless steel, and Hastelloy. Only Baldwin offers a special 2 micron stainless steel mesh screen especially suited for hydrocarbon applications.

Durinert® or Teflon® Coated Filter Assembly Option

Concerned about corrosion, gas absorption, or gas reaction with the stainless steel filter assembly? Then have the assembly Durinert® or Teflon® coated. Durinert® is a special coating uniformly applied to filter assembly creating an inert, protective surface that will not flake or crack.

Numerous "Stinger" Options Available

Baldwin Heated Filter Probes come standard with an 18 in. stainless steel tubing stinger to extend into the stack or duct. Schedule 40 and Schedule 80 stingers are available. Hastelloy® stingers are available if stack or duct temperatures exceed 1000°F (540°C). A gas cooling spool piece may also be required for high temperature applications.

Model Comparison

General Purpose Series Standard Items:

- Sure-Lock™ filter holder assembly
- 10 micron sintered stainless steel filter element
- Type K thermocouple
- 1¼ in. male pipe nipple mount
- 18 in. Stinger probe, 0.5 dia. x .065 in. wall, 316L stainless steel tubing, ½ in. male pipe thread adapter

	Model 31	Model 32C	Model 33C	Model 34C	Model 35C	Model 36C
Common Applications	Stack Testers (Portable)	Gas Turbine	Gas Turbine, Refinery	Gas Turbine, Coal Boilers	Coal Boilers, Incinerators	Coal Boilers, Furnaces
Blowback	N/A	N/A	N/A	Single Direct	Single Direct	Isolation Calibration
Heater Jacket	Self Regulated	External Regulated	Self Regulated	Self Regulated*	Circuit Board Reg	Circuit Board Reg
Blowback / Calibration Valve	N/A	N/A	N/A	2-way Solenoid	2-way Solenoid	4-way Isolated
Temp / Blowback Controller	N/A	N/A	N/A	N/A	Integral	Integral
Cal Gas Port	N/A	Integral	Integral	Integral	Integral	Integral
Enclosure	Insulated Canister	NEMA 4 Steel	NEMA 4 Steel	NEMA 4 Steel	NEMA 4 Steel	NEMA 4 Steel

*External regulated heater jacket available

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GENERAL PURPOSE EXTRACTIVE SERIES
Model 33C

Application

The Baldwin Model 33C Heated Filter Probe is designed to be mounted on a stack or duct for use in low particulate applications. Its primary function is to provide a heated environment to maintain sample gas temperatures above dewpoint and remove particulate material from the gas sample. Model 33C features a self-regulated heater jacket, a standard 10 micron sintered stainless steel filter element, an integral calibration gas port on both sides of the filter element, and a NEMA 4 enclosure.

General Specifications

Probe	18" Stinger probe, 0.5" dia x .065" wall, 316L SS tubing
Calibration	Integral calibration on both sides of filter element
Heater Jacket Temp Control	Self regulated (standard)
Connections	1¼" male pipe nipple mount; ½" male pipe thread adapter
Connectors	¼" cal gas, ¼" sample line
Thermocouple	Type K
Heat-shrink Boot	7" length, 2.75" min expanded I.D. nose
O-rings	Viton®
Gaskets	Graphoil
Dimensions	14" x 12" x 8" HWD (w/o Stinger probe)
Weight	30 lbs

Operating Specifications

Calibration Gas Requirement	20 psig, 6-10 LPM
Probe Operating Temperature	375ºF (190ºC)
Input Voltage	110 standard (220 optional) VAC, 50/60 Hz

Material Specifications

Enclosure Material	NEMA 4
Heater Type	Silicone rubber blanket with metal snap closures
Enclosure Insulation Material	⅛" thick silicone, medium density
Filter Chamber Material	316 stainless steel
Filter Element Types	10 micron sintered SS (standard) 5, 20 micron sintered SS 2 micron ceramic 2 micron SS screen mesh

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REVN	DATE	DESCRIPTION	DRAWN	APPROVED
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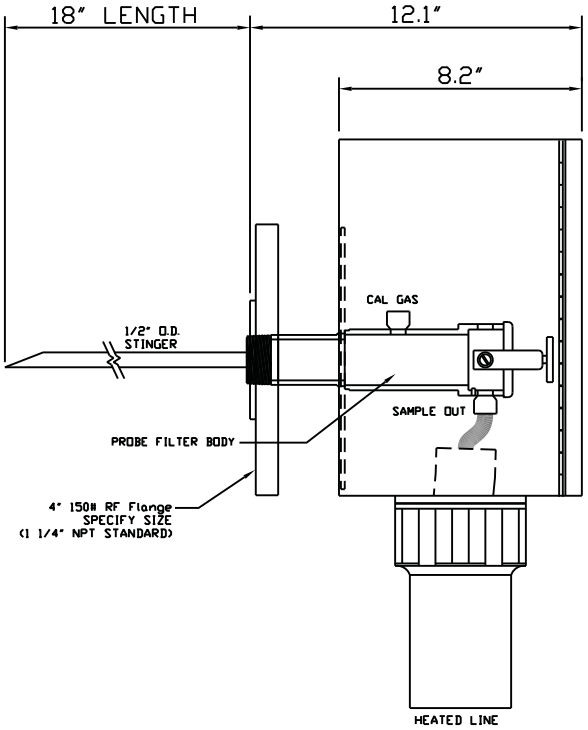
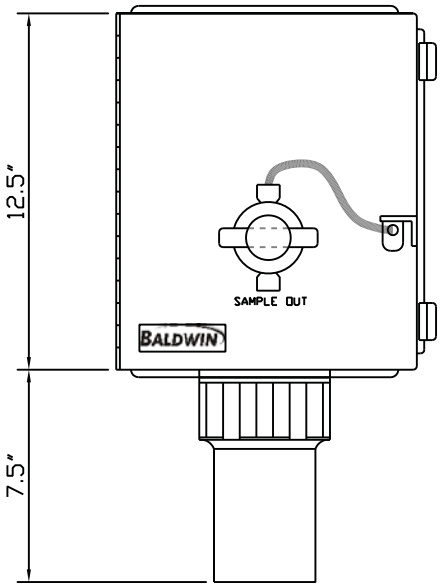
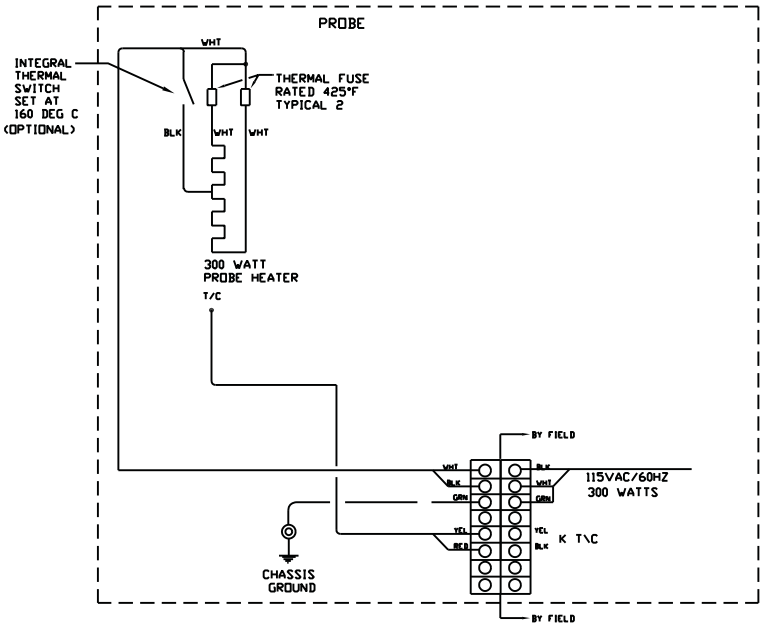
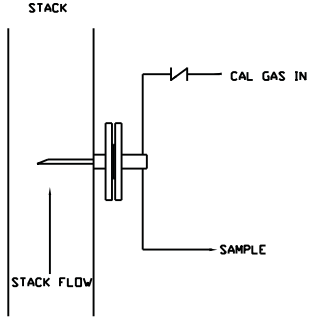
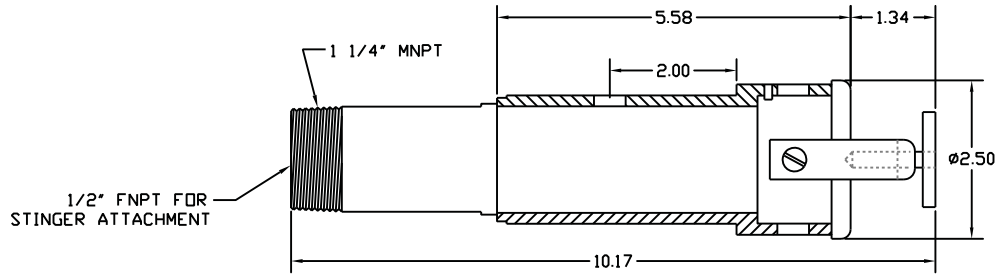








BLWBK/FLOOD CALIB.



ITEM	QTY	DESCRIPTION	MANUF.

USED FOR: MODEL NUMBER:

DESCRIPTION:

UNLESS OTHERWISE SPECIFIED

TOLERANCE DECIMALS
1 PLACE = ±.02
2 PLACE = ±.02
3 PLACE = ±.010

SURFACE FINISHES 125

ANGLES = ±5°

HOLES = +.003/-.001

BALDWIN

www.baldwinUSA.com

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BALDWIN, INC.

DRAWN BY: JO DATE: 05/12/02

APP'D: DATE

MATERIAL

FINISH

DESIGN DIMENSIONS ARE IN INCHES
( ) DENOTES MILLIMETER EQUIVALENTS WHEN USED

BALDWIN, INC.

PART DESCRIPTION
MODEL 33C HEATED FILTER PROBE ARRANGEMENT DRAWING

SIZE	SCALE:	DRAWING/PART NO:
A	NTS	MODEL 33C

CAD DIR: S:\SALES\DWG\HEATED FILTER\DWG

SHEET 1 OF 1