



# **INSTRUCTION MANUAL**

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**HEATED FILTER PROBES**

**GENERAL PURPOSE SERIES**

**Model 34C**

Version 4.04

# TABLE OF CONTENTS

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|                                |   |
|--------------------------------|---|
| A: Specifications.....         | 3 |
| B: Limited Warranty.....       | 4 |
| C: Principle of Operation..... | 5 |
| D: Maintenance.....            | 6 |
| E: Troubleshooting.....        | 7 |
| F: Spare Parts.....            | 8 |
| Appendix: .....                | 9 |

# A: SPECIFICATIONS

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## 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 | External regulated (standard)                              |
| Connections                | 1/4" male pipe nipple mount; 1/2" male pipe thread adapter |
| Connectors                 | 1/4" cal gas, 1/4" sample line                             |
| Thermocouple               | Type K   |
| Blowback                   | Single direct; 2-way solenoid blowback / calibration valve |
| Blowback Tank              | 16 ga. SS, 4" x 8", leak checked, pressure tested          |
| Heat-shrink Boot           | 7" length, 2.75" min expanded I.D. nose                    |
| O-rings                    | Viton <sup>®</sup>   |
| Gaskets                    | Graphoil   |
| Dimensions                 | 14" x 12" x 8" HWD (w/o Stinger probe)                     |
| Weight                     | 34 lbs   |

## Operating Specifications

|                             |   |
|-----------------------------|---|
| Calibration Gas Requirement | 20 psig, 6-10 LPM                         |
| Probe Operating Temperature | 375°F (190°C)                             |
| Blowback Duration           | 5 sec standard (30 sec maximum)           |
| Blowback Valve              | 110 standard (220 optional) VAC, 50/60 Hz |
| Blowback Flowrate           | 14 scfh                                   |
| Instrument Air for Blowback | Min 50 psig, Max 90 psig                  |

## Material Specifications

|                               |   |
|-------------------------------|---|
| Enclosure Material            | NEMA 4 Steel  |
| Probe Stinger                 | 316L SS tubing (standard)<br>Schedule 40<br>Schedule 80<br>Durinert <sup>®</sup> coated<br>Hastelloy <sup>®</sup>                             |
| Heater Type                   | Heater bands, 350W (standard on external temp regulated)<br>Silicone rubber blanket w/ metal snap closures, 100W (standard on self regulated) |
| Enclosure Insulation Material | 1/8" thick silicone, medium density   |
| Filter Chamber Material       | 316 stainless steel   |
| Filter Element Types          | 10 micron sintered SS (standard)<br>5, 20 micron sintered SS<br>2 micron ceramic<br>2 micron SS screen mesh                                   |

# **B: LIMITED WARRANTY**

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## **BALDWIN, INC. LIMITED WARRANTY**

Baldwin, Inc., hereafter referred to as Baldwin, warrants to the original purchaser that the material and workmanship of its supplied products shall be free of defects and will be manufactured with materials of construction chosen to provide maximum service life against corrosion. This expressed warranty is for a period of 18 months from date of installation by others, or 24 months from shipment from Baldwin, Inc., Reno, Nevada; whichever occurs first. If any part is returned by the purchaser, at his expense, to Baldwin and in the sole judgment of Baldwin, that part has failed due to material or workmanship, Baldwin will replace that part with a new and like part at no cost to the purchaser and the return shipping costs will be paid for by Baldwin.

In the case of OEM purchases, Baldwin expects the OEM to act as a first echelon service organization. This entails all customer contact, removal, shipment, and replacement of the defective product at the expense of the OEM. Baldwin will honor costs only to the extent listed in paragraph one above.

For major sub-assemblies not manufactured by Baldwin but supplied by a vendor, Baldwin limits its warranty liability to written warranty extended by the vendor. Under no circumstances will Baldwin give an unlimited warranty to parts or assemblies subject by the application to gas or solids corrosion or excessive mechanical wear due to high temperature operation. Baldwin does not warranty consumable items such as filter elements, diaphragm pump internal parts (diaphragms, check valves, disks, etc), electrical fuses, thermal control elements, thermal heating elements, "O" Rings, seals, Air Dryer elements.

Baldwin cannot warranty against operator error resulting in damaged components or operator deficiencies resulting in gross System failure or catastrophic cessation of operation.

All warranty repairs will be conducted at Baldwin's facility in Reno, Nevada; and on parts returned by the purchaser at his shipping expense. There will be no charge for labor or materials for warranty repair and/or replacement at Baldwin's facility. If the warranty repair is undertaken in the field at the request of the purchaser and the part or assembly is judged to have failed due to defects in material and/or workmanship, then the labor and portal to portal transportation cost will be chargeable to the purchaser at the current rates in effect at the time of the warranty repair. The replacement part will be at no charge for a Baldwin manufactured component, and at the limited warranty replacement policy noted above for any vendor supplied parts or assemblies.

The repair or replacement of defective components shall constitute the sole remedy of the purchaser and the sole liability of Baldwin, Inc. There shall be no responsibility by Baldwin for loss of time of operation, consequential damages, fines or citations due to system down time, or the expense of replacing said components at the job site by personnel other than a Baldwin employee, or hired service representative.

This warranty is invalidated if the purchaser fails to pay for Baldwin products and sub-systems on a timely basis outside of Baldwin's Net Terms, or if the purchaser fails to maintain the components of the products to proper specifications. Proof of periodic maintenance requirements are demonstrated satisfactorily with daily Operator Check Sheets filled out from start up date to date of component failure.

Any unauthorized modifications to Baldwin products or components within a vendor-supplied system shall also invalidate this warranty.

# C: PRINCIPLE OF OPERATION

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The Baldwin Model 34C 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 34C features a standard 10 micron sintered stainless steel filter element, an external regulated heater jacket, an integral calibration gas port on both sides of the filter element, a NEMA 4 enclosure, and a single direct blowback system to clean the filter element.

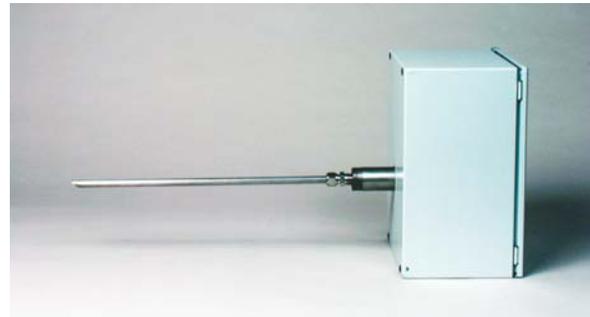


## Mounting

The Model 34C 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.

## Blowback

The Model 34C comes with a blowback air accumulator tank and 2-way solenoid. To operate blowback, connect a 50-90 psig instrument airline to the blowback air accumulator tank. The customer controls blowback via a PLC or other means determined by customer. The 2-way blowback solenoid is rated high temperature and 100 psig maximum pressure. The valve has a 1/8" orifice and the blowback instantaneous flowrate is 14scfh.



## 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

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The Model 34C does not require routine maintenance for the filter head or the temperature controller.

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

If the Model 34C is used in conjunction with the Baldwin 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.

Keeping a daily log of the sample vacuum will notify the operator what frequency of blowback is required and when increasing frequency of blowback is ineffective in reducing the sample vacuum. Once the sample vacuum will not reduce, the operator should replace the filter element with a new filter.

# E: TROUBLESHOOTING

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| <i>Symptom</i>  | <i>Check</i>  | <i>Action</i>   |
|---|---|---|
| 120 VAC heater jacket is not heating                                | Check the resistance between the black and white wires (tied together) and the blue wire. Resistance should be between 100-130 ohms together or from 230-250 ohms for each leg. | If the measure is open for heater resistance the fusible link has blown and the jacket should be replaced.  |
| 220 VAC heater jacket is not heating                                | Check the resistance between the black and white power wires using an ohmmeter. Resistance should be between 460-480 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<br><br>High particulate loading  | Replace "O" rings<br><br>Clean the "O" ring sealing surfaces with a clean towel prior to reassembly.        |
| Air from blowback tank keeps leaking onto sample when not activated | Voltage going to solenoid is 15VAC or less  | Disassemble solenoid valve and clean flapper, if still leaking replace valve                                |
| Heater clamps not getting hot                                       | Check for 110VAC going into the Clamps  | Replace clamp   |

**For further service assistance, contact:**

Baldwin, Inc.  
 895 East Patriot Blvd., Suite 107  
 Reno, NV 89511  
 Tel: 888-234-7366 (toll free U.S.)  
 Tel: 775-850-1800  
 Fax: 775-850-1818  
 Email: tech@baldwinUSA.com  
 or your local representative

# F: SPARE PARTS

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## Model 34C (Part Number 4P-34C and 4P-34C-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-031PK  | O-Ring: Pack, Viton, "C" series probes only, 5 ea 1 $\frac{7}{8}$ " OD, 2 $\frac{1}{4}$ " OD |
| 4P-STNG-STD | Stinger, Replacement: 18", 316L SS, $\frac{1}{2}$ " x 0.065"w                                |
| 2VRS-005    | Valve: Check, 10 psig, $\frac{1}{4}$ " 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                                       |

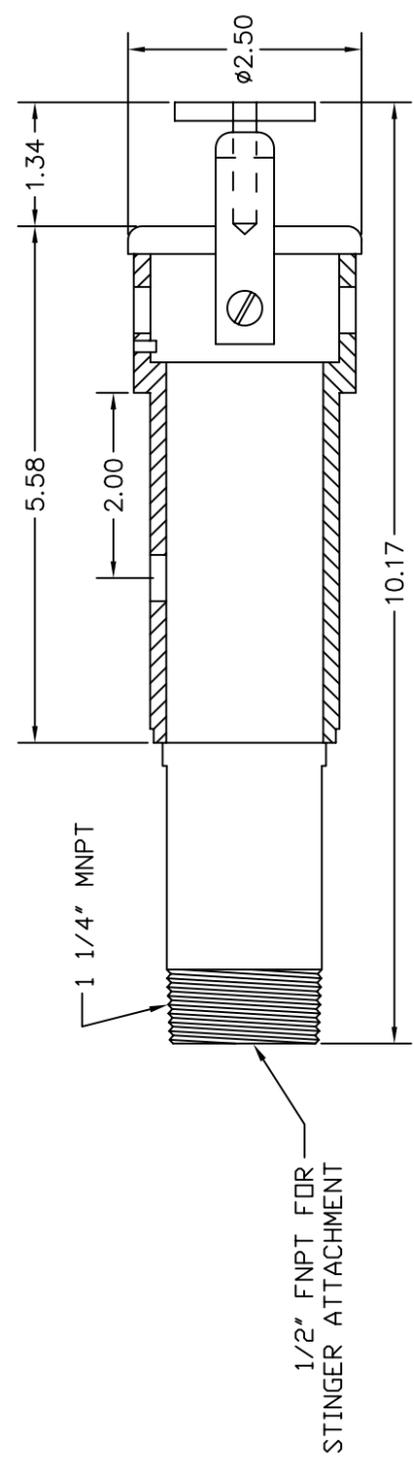
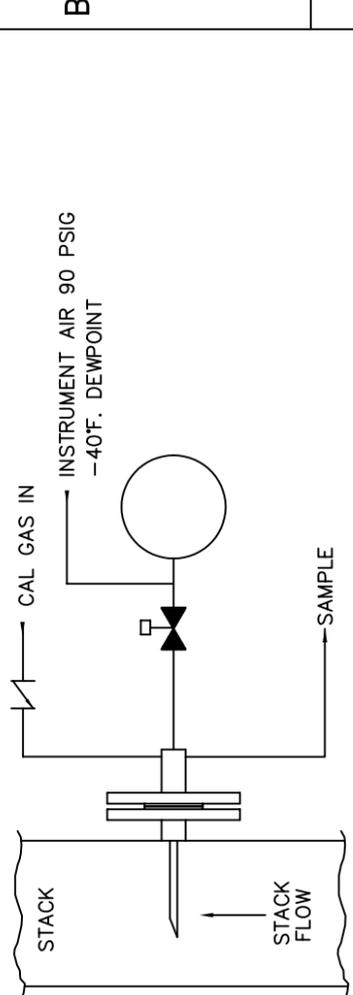
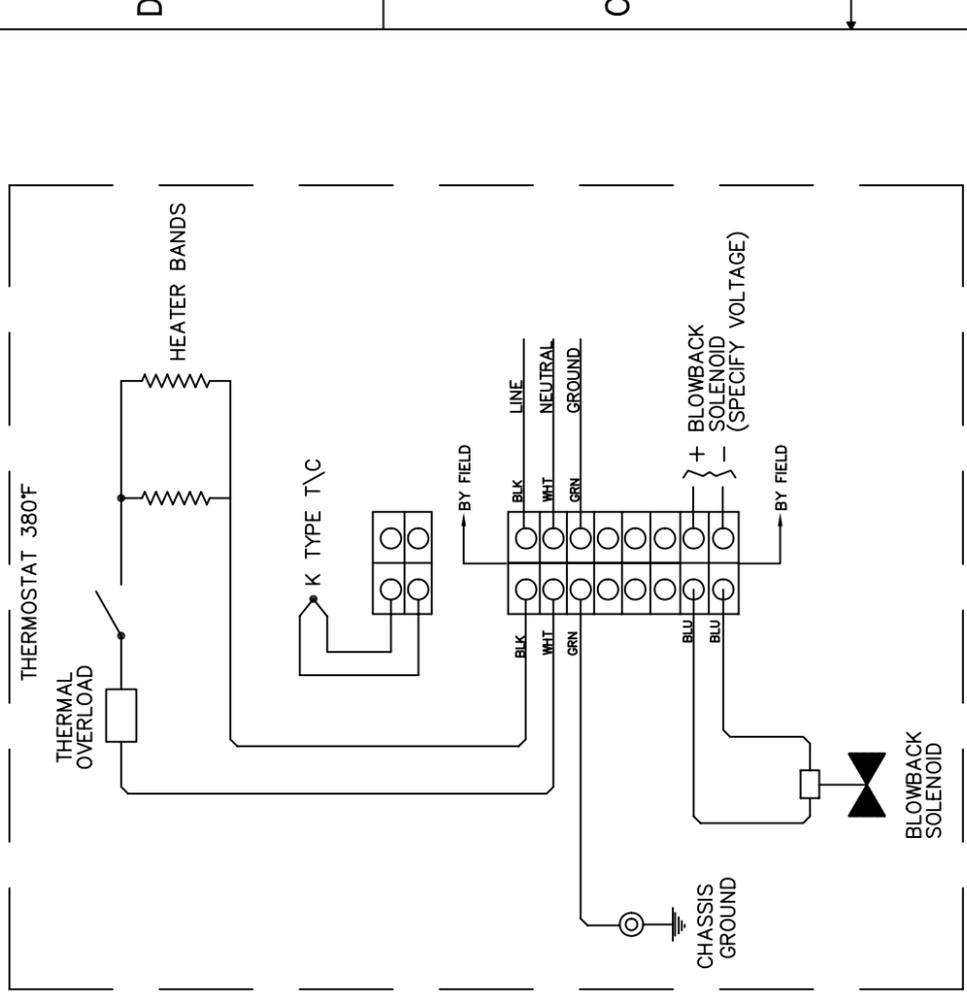
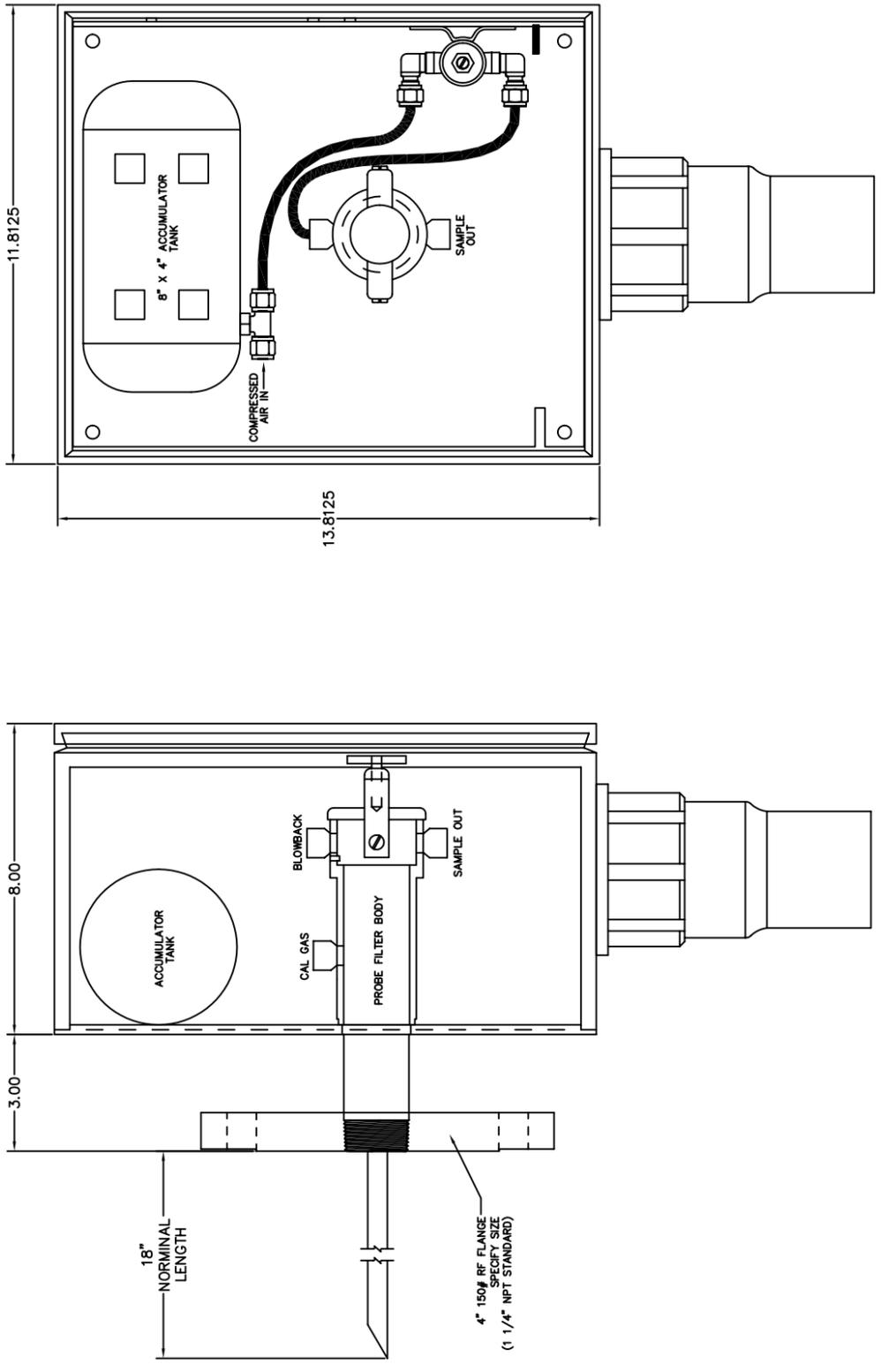
# APPENDIX:

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|      |          |                 |       |          |
|------|----------|-----------------|-------|----------|
| REV# | DATE     | DESCRIPTION     | DRAWN | APPROVED |
| 0    | 00/00/00 | INITIAL DRAWING | RAW   | RAW      |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|



FILTER PROBE  
(SCALE = 1/2")

BLWBK/FLOOD CALIB.

| ITEM  | QTY | DESCRIPTION | MANUF. |
|---|-----|-------------|--------|
| MODEL NUMBER: 02/19/04  |     |             |        |
| DESCRIPTION: BALDWIN, INC.  |     |             |        |
| DATE: 02/19/04  |     |             |        |
| RAW APP'D   |     |             |        |
| PART DESCRIPTION: MODEL 34C-R HEATED FILTER PROBE ARRANGEMENT DRAWING |     |             |        |
| SIZE SCALE: B NTS MODEL 34C-R   |     |             |        |
| DRAWING/PART NO.  |     |             |        |
| DESIGN DIMENSIONS ARE IN INCHES                                       |     |             |        |
| () DENOTES MILLIMETER EQUIVALENTS WHEN USED                           |     |             |        |

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BALDWIN, INC.

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|----------------------------|---------------------|
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| TOLERANCE                  | ANGLES = ±5°        |
| DECIMALS                   | HOLES = +.003/-0.01 |
| 1 PLACE = ±.02             |                     |
| 2 PLACE = ±.02             |                     |
| 3 PLACE = ±.010            |                     |
|                            |                     |
| www.baldwinUSA.com         |                     |