SERIAL #1316

STF1.1

ODORATOR®

User's Manual
Natural Gas (Methane)



HEATH CONSULTANTS



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HPN. ODORATOR Complete Unit: 0705637

ODORATOR®

User's Manual

Natural Gas (Methane)

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INTRODUCTION

Natural gas (methane) to be analyzed enters the ODORATOR through the barbed fitting at the gas supply inlet port. Internally, the gas passes through an internal five micron filter to the input of a low pressure regulator. It then passes from the output of the low pressure regulator to the flow metering valve. This valve, located on the front panel of the ODORATOR, is operated by the user. After passing through the valve (when opened), the gas enters the mass flow sensor. This is the heart of the ODORATOR. The mass flow sensor responds to gas flow within the range of the flow metering valve.

The signal from the mass flow sensor is then processed, converted to a digital signal and fed to a liquid crystal display (LCD). The gas from the mass flow sensor then passes to the mixing chamber where it is combined with air drawn in by a blower motor and impeller. The user then sniffs the gas / air mixture at the exhaust port. The flow metering valve is incrementally opened and the exhaust port sniffed until odorant is readily detectable at which time the user presses and holds the READ switch down to display percent gas in air by volume.

The electronics and the speed of the blower motor are calibrated so that the concentration of the methane gas / air sample at the exhaust port agrees with the LCD at the 20% Lower Explosive Level (L.E.L.) which is 1.00 % gas. All other readings must be corrected using the chart. The correction chart is included to linearize the instrument within its range. To use the chart, record both the ODORATOR readily detectable level reading and the corrected actual value. For ODORATOR readings not specified in the chart, linearly interpolate between the next highest and lowest points on the chart. Do not extrapolate beyond the readings in the chart. Depending on how much the flow metering valve is opened, the concentration of gas/air at the blower exhaust port will be anywhere from zero to approximately 40 % L.E.L. in air. The LCD can only indicate up to 1.99%. Concentrations above

1.99% will be indicated by the LCD having its last two digits dashed out as "1.--".

When the ODORATOR is turned on, the user might momentarily notice the letter "L" on the LCD when the READ switch is depressed and held down. If the "L" fails to disappear, it may indicated insufficient blower speed such as would occur if the motor and impeller weren't turning at all or too slowly. The "L" indicates low blower speed and if on, the Odorator should not be used.

When it is time to replace the batteries, "LO BATT" will be indicated in the upper left corner of the LCD when the READ switch is depressed and held down.

The ODORATOR is designed and intended to be used in accordance with the GPTC Guide For Gas Transmission And Distribution Piping Systems, (49 CFR) 192.625 Subpart L, dated 10-15-03 and the American Society For Testing And Materials Standard D 6273 - 98. Supply gas must be natural gas (methane) of high quality. Blended or mixed gases as sometimes found during peak shaving cannot be tested using the ODORATOR.

WARNINGS AND CAUTION

IT IS ESSENTIAL THAT USERS OF THIS INSTRUMENT READ, UNDERSTAND, AND FOLLOW THE INSTRUCTIONS FOR OPERATION AND MAINTENANCE AND THE PRECAUTIONS CONTAINED IN THIS MANUAL TO INSURE THE INSTRUMENT IS USED IN A PROPER AND SAFE MANNER.

DURING OPERATION, KEEP THE ODORATOR AWAY FROM OPEN FLAMES. INLET SUPPLY PRESSURE SHOULD NOT EXCEED FOUR P.S.I.G. INLET PRESSURES IN EXCESS OF FOUR P.S.IG. WOULD RUPTURE THE LOW PRESSURE REGULATOR DIAPHRAGM, VENT THE GAS OUT OF THE INSTRUMENT AND CAUSE AN INSTRUMENT FAILURE.

WHEN CALIBRATING THE ODORATOR, YOU WILL BE WORKING WITH FLAMMABLE METHANE GAS WHICH IS POTENTIALLY DANGEROUS IF NOT HANDLED PROPERLY. METHANE GAS FROM A LECTURE BOTTLE MAY BE ODORLESS AND IS FLAMMABLE IN CONCENTRATIONS OF APPROXIMATELY 5.0 TO 15.0 PERCENT BY VOLUME IN AIR.

WHEN YOU ARE NOT CALIBRATING OR OPERATING THE ODORATOR, CLOSE ALL VALVES AND TURN THE ODORATOR OFF.

ANY TIME GAS IS BEING PASSED THROUGH THE ODORATOR THE POWER SWITCH MUST BE TURNED ON. THIS WILL DILUTE THE GAS AT THE BLOWER EXHAUST PORT AND PREVENT POCKETS OF CONCENTRATED GAS FROM ACCUMULATING.

100% L.E.L. IS APPROXIMATELY EQUAL TO 5% METHANE GAS BY VOLUME IN AIR. AS LONG AS THE REFERENCE C.G.I. READS SAFELY BELOW THE L.E.L., YOU SHOULD NOT HAVE ANY PROBLEM WITH A FLAMMABLE MIXTURE BUILDING UP.

ANY SUSPICION OF A GAS LEAK BY UNEXPLAINED SOUND OR OPERATION OF THE ODORATOR IS REASON TO IMMEDIATELY SHUT OFF THE GAS SUPPLY VALVES AND THEN SEEK THE CAUSE.

If indoors, allow the ODORATOR to purge for at least 1 minute after a reference C.G.I. indicates the environment is safe before turning the power "OFF". The ODORATOR is NOT DESIGNATED

Instrinsically Safe and MUST NOT be used in a confined space or hazardous location.

WARNING:

DURING CALIBRATION, KEEP THE ODORATOR AWAY FROM OPEN FLAMES, INLET PRESSURE SHOULD NEVER EXCEED 4 P.S.I.G. AND DO NOT OBSTRUCT OR BLOCK THE BLOWER INTAKE OR EXHAUST.

CAUTION: BECAUSE OF INHERENT LIMITATIONS, LIQUID CRYSTAL DISPLAYS SHOULD NOT BE SUBJECTED TO EXTREMES OF TEMPERATURE OR HUMIDITY. IF THE UNIT IS EXPOSED TO A TEMPERATURE BELOW FREEZING OR ABOVE +49 ^{o}C (+120 ^{o}F), THE LIQUID CRYSTAL DISPLAY MAY TEMPORARILY CEASE TO FUNCTION PROPERLY, AND IN SOME CASES PERMANENT DAMAGE MAY RESULT. IT IS THEREFORE RECOMMENDED THAT THE INSTRUMENT NOT BE SUBJECTED TO EXTREME CONDITIONS SUCH AS A CLOSED VEHICLE IN DIRECT SUNLIGHT OR CONTINUOUS SUB-FREEZING TEMPERATURES.

USE AT ELEVATION:

THE ODORATOR MUST BE USED WITHIN 1000 FEET OF ITS CALIBRATION ELEVATION FOR ACCURACY. READING CORRECTION CHARTS, AS FOUND IN APPENDIX C, MUST BE USED FOR ELEVATION CHANGES GREATER THAN 1000 FEET.

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Chapter I

OPERATION:

This Chapter discusses the proper steps to safely operate the ODORATOR. Also included are procedures for periodic testing and identification of the ODORATOR's controls.

Operation of the ODORATOR

WARNING

DURING OPERATION, KEEP THE ODORATOR AWAY FROM OPEN FLAMES. INLET SUPPLY SHOULD NOT EXCEED 4 P.S.I.G. AND 1/4 P.S.I.G. (7 INCHES WATER COLUMN) IS RECOMMENDED.

****NOTE**** **Connect the ODORATOR to the gas supply with a non-absorbing, odor-free hose such as high grade urethane, PVC, or Tygon.**

****NOTE**** **Users of the ODORATOR should be selected with due consideration to smoking habits, colds, and other conditions of health, since these factors affect the sense of smell. It is desirable to select operators with an average sense of smell in order to obtain reasonably consistent results from the use of this instrument.**

****NOTE**** **See Figure 1 on page 4 for reference to the following steps.**

****NOTE**** **All valves must be closed and the Odorator turned "OFF".**

A. Odorization Readily Detectable Test Procedure:

1. Connect the sample hose to the gas supply outlet valve and to the ODORATOR inlet port (1).

2. Open the gas supply outlet valve and the ODORATOR flow metering valve for about 10 seconds to purge the air out of the sample hose.

3. Close the flow metering valve.

4. Turn the ODORATOR "ON". Raise the exhaust port cover.

5. Wait about 30 seconds and then position the nose about 3/4 inch (20 mm) above the exhaust port and sniff the exhaust. The exhaust must be un-odorized.

6. Push the read switch (5) and while holding it down adjust the zero knob (7) until the LCD reads ".00". Release the read switch.

7. Slowly open the flow metering valve counter-clockwise 1/2 - 1 turn. Wait about 30 seconds and then position the nose about 3/4 inch (20 mm) above the exhaust port and sniff the exhaust. Your upper lip may lightly touch the front edge of the blower exhaust port.

8. If no odorant is detected in the exhaust, repeat step 7.

****NOTE**** **The operator should frequently pause when sniffing for odorant by moving the nose away from the instrument, breathing fresh air and then continuing testing. This precaution is necessary because the sense of smell fatigues rapidly during this type of test.**

9. When the **first faint smell** of odorant is detected, push and hold the read switch down. This is the threshold detection level. Considerable variation will exist among individuals in detecting this threshold level.

10. Slowly open the flow metering valve another 1/2 - 1 turn, wait about 30 seconds and then position the nose about 3/4 inch (20 mm) above the exhaust port and sniff the exhaust.

11. If the exhaust does not have a readily detectable odor repeat step 10.

If the exhaust does have a readily detectable odor, push and hold the read switch down and **record** the percent gas in air by volume reading as shown on the LCD. This reading is the **readily detectable level** which should be noticed by the average person's sense of smell.

12. Close the gas supply outlet valve and then disconnect the sample hose from the gas supply outlet.

13. Fully open the flow metering valve counterclockwise and leave the ODORATOR "ON" for approximately one minute after the test to purge the mixing chamber.

14. Turn the ODORATOR "OFF".

15. Identify the correction chart to use on the side of the instrument (natural gas / methane or propane gas). The correction charts are included to linearize the instrument in its ranges. To use the charts, take the ODORATOR **readily detectable level reading** and **look up** and **record** the **corrected actual % gas value** for the gas being tested. For ODORATOR readings not specified in the chart, linearly interpolate between the next highest and lowest points on the chart. Do not extrapolate beyond the readings in the charts. **The readily detectable level reading and the corrected actual value must meet the requirements of the user's company operations procedures.**

Use at Elevation. See Appendix C, page 12.

ODORATOR Top Panel

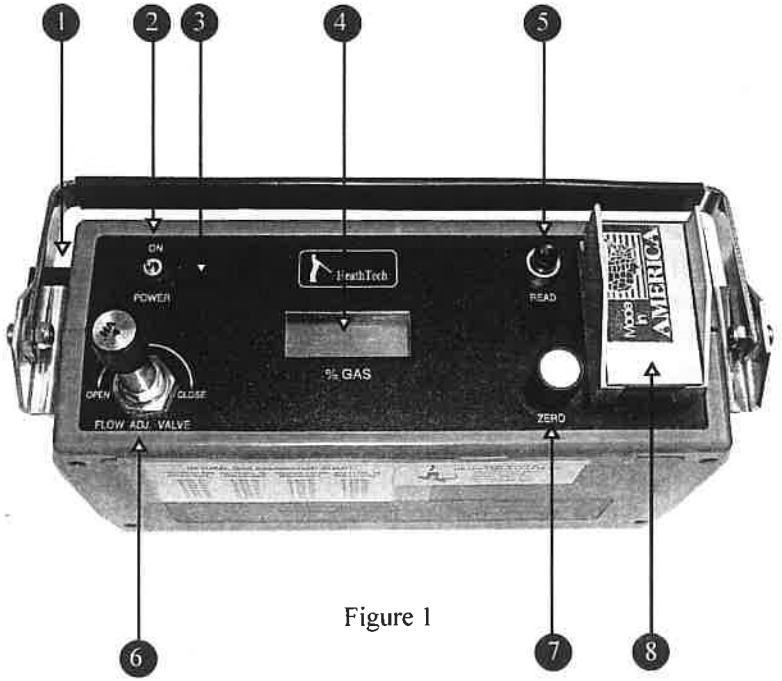


Figure 1

1. Gas Inlet
2. Power Switch
3. Power Indicator
4. LCD
5. Read Switch
6. Flow Metering Valve
7. Fine Zero Knob
8. Blower Exhaust

Chapter II

Periodic Test:

1. Every thirty (30) days the ODORATOR should be operated with the power switch on and while **not** hooked up to a gas supply.
2. Wait about 30 seconds and then position the nose about 3/4 inch (20 mm) above the exhaust port and sniff the exhaust.
3. If no odor is detected, turn the ODORATOR "OFF". The ODORATOR has not absorbed the odorant and is usable.
4. If an odor is detected, turn the ODORATOR "OFF" and send it to the nearest Heath Repair Center (Regional Office) listed on page 20. The odor is an indication that the ODORATOR has absorbed the odorant and must have its internal tubing replaced and gas flow components cleaned.

The forms on pages 10 and 11 are provided to document the Periodic Tests and are as a courtesy only. Company procedures will define how records are kept and in what format.

Calibration:

Annual factory calibration recommended. Only Heath factory or factory trained personnel should perform ODORATOR calibration. Factory recognized labels and seals maintain warranty.
Refer to page 20 for Heath repair and calibration centers.

Chapter III

MAINTENANCE:

Troubleshooting Chart

SYMPTOM	PROBABLE CAUSE	REMEDY
"LO BATT" appears on LCD.	Weak batteries.	Replace batteries.
Motor and LCD will not turn on.	Weak batteries or fuse blown.	Replace batteries, replace fuse; inspect wiring.
LCD turns on but motor does not.	Motor leads may have become disconnected.	Connect motor
Low Air Indicator "L" comes on.	Leads to blower may have become disconnected.	Connect blower leads.
LCD will not zero with gas supply line attached to the ODORATOR.	Leads on sensor may have become disconnected.	Connect sensor leads.
LCD will not zero with gas supply line attached to the ODORATOR.	Leaky flow valve in "off" position.	Replace flow valve and recalibrate.

Parts List

The following list specifies ODORATOR assemblies and specific parts that are available from the factory or Regional Office for repair or replacement purposes.

*	0715626	ASSY, TOP PANEL
	0715627	ASSY, CHASSIS
*	0715628	PCB, MAIN ASSY
*	0715664	ASSY, BLOWER
*	0715805	ASSY, SAMPLING HOSE
*	0715686	ASSY, FLOW SENSOR
*	**0715630**	**MANUAL, ODORATOR USER'S**
*	**0715631**	**CALIBRATION CHART, METHANE**
	0715632	**FILTER, IN-LINE, 5 MICRON**
	0711517	**Battery, Alkaline "C" size**
	0715826	Tubing (available in various lengths)
	0715813	Zero Potentiometer, 10 turn
	0715822	Knob, black
*	0715834	Guard, READ switch
*	0715835	Button, black, READ switch
	0715842	Spring, Exhaust
	0715843	Spring, Intake
	0715814	Regulator, Internal Low Pressure
	0110679	"O" Ring, Seal, Regulator Adapter
	0717451	Motor, Blower
*	0817090	Switch, power "ON/OFF"
*	0715685	Switch, push-button, READ
	0715825	Wheel, Blower
	8307484	Screw, 6-32 x 2.25" long (Housing)
*	0715668	Fuseholder, In-line
*	0715669	Fuse, AGC fast blow, 1 amp
*	**0715868**	**Valve, Flow, Stainless Steel**
	0715687	Cartridge, replacement for 0715868
*	0715690	LCD
	0715820	Label Instructions

Parts List

The following list specifies ODORATOR assemblies and specific parts that are available from the factory or Regional Office for repair or replacement purposes.

*	0715626	ASSY, TOP PANEL
	0715627	ASSY, CHASSIS

* Older models may take different parts. Contact your nearest Heath Office for assistance.

Appendix A

Periodic Test Records.

The Periodic Test should be conducted every 30 days. The procedure for this test may be found on page 5 of this manual.

The forms on pages 10 and 11 are provided for your convenience. They should remain in the manual and be kept in a safe location as a permanent record of periodic testing. Company procedures will define how records are kept and in what format.

Appendix B
ODORATOR Correction Charts for Methane.

The 99.9% pure methane input flow rate is set at 150.0 SCCM relative to air as a reference flow point and the motor speed control is adjusted to achieve a 20% L.E.L. at the blower output referenced to an external C.G.I. ODORATOR span is also adjusted at this point to read 1.00%. This chart assumes the ODORATOR has been properly zeroed and allowed to run for at least one minute.

Methane Correction Chart, 1 % Reference

ODORATOR % Gas Reading	Actual % L.E.L.	Actual % Gas
.10	1.4	0.08
.20	3.4	0.17
.30	5.0	0.25
.40	6.6	0.33
.50	8.0	0.40
.60	10.0	0.50
.70	12.4	0.62
.80	15.0	0.75
.90	17.4	0.87
1.00 Ref.	20.0 Ref.	1.00 Ref.
1.10	22.0	1.10
1.20	26.6	1.33
1.30	31.2	1.56
1.40	37.2	1.81
1.50	41.0	2.05

This chart reflects the use of the Heath calibration adapter to determine the location of sampling the exhaust output for the C.G.I. which is consistent with actual instrument use. Any other method will produce different values. ODORATOR Correction Chart for Methane, 1% reference.

Periodic Test Record

Periodic Field Calibration

Test Date	Results	Action	Operator Name

Periodic Test Record			
Periodic Field Calibration			
Test Date	Results	Action	Operator Name

Appendix C.

ODORATOR Use at Elevation.

The ODORATOR works by allowing a metered amount of sample gas (natural gas or methane), to mix with a fixed amount of air and the mixture is then tested by a user for odorant detection. The internal components of the ODORATOR are very stable over changes in elevation. The air that is mixed, however, thins out with increasing elevation and must be accounted for. An elevation change of 3000 feet from the calibration can produce reading discrepancies of nearly 10 % which must be corrected. It is recommended that the ODORATOR readings be corrected whenever the elevation change from calibration is 1000 feet or more. The calibration elevation may be found on the exhaust port label.

Two correction charts with accompanying usage directions have been developed for methane. The first chart provides corrections for increased elevations only. Most instruments will be used at elevations higher than their calibration elevation. ODORATORS calibrated at the factory have a calibration elevation of about 50 feet. Many gas utilities send their ODORATORS to the Heath factory for annual calibration, hence most instruments will be used at elevations higher than their calibration elevation. The second chart provides corrections for elevation changes which may be up to 5000 feet higher or lower than the calibration elevation. ODORATORS calibrated at one elevation and then used at a lower elevation will make the most use of this chart. An ODORATOR calibrated and used within 1000 feet of the same elevation will use the respective correction chart found on the instrument.

ODORATORS that are field calibrated must have an accurate reference instrument or C.G.I. that is also in calibration at that elevation. It is recommended that a reference gas be used to verify proper calibration instrument readings. The elevation correction charts are based on a normal atmosphere. Abnormal atmospheres, as caused by extreme weather conditions, can affect the measurements and safe use of the ODORATOR and operation is not recommended. Usage instructions are included with each chart but both types use the difference in elevation between the working or measurement

elevation and the calibration elevation to select the respective correction value versus the ODORATOR'S reading.

****Note**** **The elevation correction charts support new style Methane and Propane ODORATORS only. Instruments manufactured before July 1997, that have not been upgraded, calibrated to propane or to a natural gas (methane) reference other than 1% will not use the elevation correction charts. Consult the factory for using older style ODORATORS at elevation. To identify an ODORATOR'S style or to tell if an upgrade has been performed, check the top panel to see if there is a snap-in bezel or a clear window in the overlay covering the display ("LCD"). Older style ODORATORS have a snap-in bezel over the LCD. ODORATORS not calibrated for 1% natural gas (methane) have correction charts for that gas or reference level and can be identified by the charts as the reading and actual values will be equal at the reference level.**

Actual % Natural Gas (Methane) Correction Chart for Increased Elevation

ODOR Reading	Correction Actual %	Up 1000'	Up 2000'	Up 3000'	Up 4000'	Up 5000'	Up 6000'	Up 7000'	Up 8000'	Up 9000'	Up 10000'
0.10	**0.08**	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.11
0.20	**0.17**	0.18	0.18	0.19	0.19	0.20	0.20	0.21	0.21	0.22	0.22
0.30	**0.25**	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.31	0.32	0.33
0.40	**0.33**	0.34	0.35	0.36	0.37	0.39	0.40	0.41	0.42	0.42	0.43
0.50	**0.40**	0.41	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.53
0.60	**0.50**	0.52	0.53	0.55	0.57	0.59	0.60	0.62	0.63	0.64	0.66
0.70	**0.62**	0.64	0.66	0.68	0.70	0.73	0.74	0.76	0.78	0.80	0.81
0.80	**0.75**	0.78	0.80	0.83	0.85	0.88	0.90	0.92	0.94	0.96	0.98
0.90	**0.87**	0.90	0.93	0.96	0.99	1.02	1.04	1.07	1.09	1.12	1.14
1.00	**1.00**	1.03	1.07	1.10	1.14	1.17	1.20	1.23	1.26	1.29	1.31

Instructions for correction on page 15.

The Heath ODORATOR mixes air with natural gas (methane) or propane to allow a user to determine the percent gas level at which odorant is readily detectable in the gas. As elevation is increased, the air becomes thinner and the actual values indicated in a single column chart must be modified to reflect the change in air density. Use the respective Increased Elevation Correction Chart as follows:

1. Use the ODORATOR to determine the odorant readily detectable level reading as per this instruction manual.

2. Write down the reading from the digital display on the ODORATOR.

3. Write down the elevation at which the ODORATOR was last calibrated, as found on the exhaust port label.

4. Determine the elevation at which you are now measuring the odorant readily detectable level and write it down.

5. Subtract the calibration elevation from the measurement elevation, round to the nearest 1000 feet and write it down. Use this value and select your respective "Up" column. If zero, use the Calibration Elevation column.

6. Use the ODORATOR reading and either look up the actual % gas value from the respective column or interpolate the actual % gas value for ODORATOR readings not shown on the chart and write it down.

Example:

A methane ODORATOR reading of 0.23 is taken at 3000 ft. from a calibration elevation of 0 feet (sea level). The difference in elevation is 3000 feet . This corresponds to the Up 3000' column (Step 5). The reading of 0.23 lies between actual values of 0.28 and 0.19. Interpolating an actual % gas value for a reading of 0.23 yields an actual value of 0.22% gas using the following equation:

$$\text{Actual \% Gas Value} = \text{Chart Lower Actual \% Gas Value} + [\,\text{Chart Actual \% Gas Value Difference} \times \text{Chart ODORATOR Reading Difference} \times 10\,]$$

For the example:

$$\text{Actual \% Gas Value} = 0.19 + [\,(0.28 - 0.19) \times (0.23 - 0.20) \times 10\,] = 0.22\%$$

Actual % Natural Gas (Methane) Correction Chart for Elevation Changes

ODOR Reading	Down 5000'	Down 4000'	Down 3000'	Down 2000'	Down 1000'	**Correction Actual %**	Up 1000'	Up 2000'	Up 3000'	Up 4000'	Up 5000'
0.10	0.06	0.07	0.07	0.07	0.08	**0.08**	0.08	0.09	0.09	0.09	0.09
0.20	0.14	0.14	0.15	0.16	0.16	**0.17**	0.18	0.18	0.19	0.19	0.20
0.30	0.20	0.21	0.22	0.23	0.24	**0.25**	0.26	0.27	0.28	0.28	0.29
0.40	0.26	0.28	0.29	0.30	0.32	**0.33**	0.34	0.35	0.36	0.37	0.39
0.50	0.32	0.33	0.35	0.37	0.38	**0.40**	0.41	0.43	0.44	0.45	0.47
0.60	0.40	0.42	0.44	0.46	0.48	**0.50**	0.52	0.53	0.55	0.57	0.59
0.70	0.49	0.52	0.54	0.57	0.59	**0.62**	0.64	0.66	0.68	0.70	0.73
0.80	0.60	0.63	0.66	0.69	0.72	**0.75**	0.78	0.80	0.83	0.85	0.88
0.90	0.69	0.73	0.76	0.80	0.83	**0.87**	0.90	0.93	0.96	0.99	1.02
1.00	0.80	0.84	0.88	0.92	0.96	**1.00**	1.03	1.07	1.10	1.14	1.17

Instructions for correction on page 17.

The Heath ODORATOR mixes air with natural gas (methane) to allow a user to determine the percent gas level at which odorant is readily detectable in the gas. As elevation is increased, the air becomes thinner and the actual values indicated in a single column chart must be modified to reflect the change in air density. Use the respective Elevation Change Correction Chart as follows:

1. Use the ODORATOR to determine the odorant readily detectable level as per this instruction manual.
2. Write down the reading from the digital display on the ODORATOR.
3. Write down the elevation at which the ODORATOR was last calibrated, as found on the exhaust port label.
4. Determine the elevation at which you are now measuring the odorant readily detectable level and write it down.
5. Subtract the calibration elevation from the measurement elevation, round to the nearest 1000 feet and write it down.
6. Positive values correspond to "Up" columns and negative values to "Down" columns from step 5. Select your respective column using the value from step 5. If zero, use the Calibration Elevation column.
7. Use the ODORATOR reading and either look up the actual % gas value from the respective column or interpolate the actual % gas value for ODORATOR readings not shown on the chart and write it down.

Example:

A methane ODORATOR reading of 0.23 is taken at 2700 feet from a calibration elevation of 5500 feet. The change in elevation is - 2800 feet. This corresponds to the Down 3000' column (Step 6). The reading of 0.23 lies between actual values of 0.22 and 0.15. Interpolating an actual % gas value for a reading of 0.23 yields an actual value of 0.17 % gas using the following equation:

$$\text{Actual \% Gas Value} = \text{Chart Lower Actual \% Gas Value} + [\ \text{Chart Actual \% Gas Value Difference} \times \text{Chart ODORATOR Reading Difference} \times 10\ ]$$

For the example:

$$\text{Actual \% Gas Value} = 0.15 + [\ (0.22 - 0.15) \times (0.23 - 0.20) \times 10\ ] = 0.17\%$$

Chapter IV

SERVICE INFORMATION:

Warranties and Warranty Repair

All instruments and products manufactured by Heath Consultants Incorporated are warranted to be free from defects in material and workmanship for one (1) year from the date of shipment.

Furthermore, the warranty on authorized repairs in the Houston Factory Service Center (FSC) and other regions is ninety (90) days materials and thirty (30) days labor. This repair warranty does not extend any other applicable warranties.

Our warranty covers only failures due to defects in materials or workmanship which occur during normal use. It does not cover failure due to damage which occurs in shipment, unless due to improper packing, or failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, modification, or service by anyone other than a Heath warranty repair location.

Battery and damage from battery leakage and all expendable items such as filters and Plunger Bar rods are excluded from this warranty.

Heath's responsibility is expressly limited to repair or replacement of any defective part, provided the product is returned to an authorized warranty repair location, shipped prepaid, and adequately insured. Return shipping charges and insurance will be paid by Heath warranty expense.

We do not assume liability for indirect or consequential damage or loss of any nature in connection with the use of any Heath product. There are no other warranties expressed, implied, or written except as listed above.

SERVICE INFORMATION:

Return Procedure:

The following steps will expedite the repair of your instrument:

1. Contact Heath Factory Service at 800-432-8487 to request a repair form. The form is available on-line at www.heathus.com.
2. Package carefully, using the original shipping carton and cushions if available and return all components including the repair form.

   The repair form request information such as complete shipping and billing addresses, instrument or product name, model number and serial numbers. Also included will be a brief description of the problem you are experiencing and the person and phone number to be contacted for additional information and approvals.

CORPORATE HEADQUARTERS

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Phone: 713-844-1300
Fax: 713-844-1309
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