the AirCheck✔Kit™
Model K901

Thank you for selecting the Team of Experts at Trace Analytics, Inc. for your compressed air and pure gas analyses. We appreciate your business and look forward to a long lasting relationship with you. Please do not hesitate to contact us with your air related questions.

Phone:	512-263-0000
Toll-Free US & Canada:	800-247-1024
Fax:	512-263-0002
Customer Service E-mail:	Service@AirCheckLab.com
After Hours Emergency:	Ruby@AirCheckLab.com
Website Address:	www.AirCheckLab.com
Mailing Address:	Trace Analytics, Inc. 15768 Hamilton Pool Rd. Austin, TX 78738
Laboratory Hours:	8-5, CST, Mon - Thurs 8-3, CST, Friday

The AirCheck✔Kit™ hardware has a lifetime warranty. If you should experience a problem, return non-working part for a free replacement. We also have a money-back guarantee, for details, see FAQs.

TABLE OF CONTENTS

AirCheck✔Notes, issued periodically, are available for viewing and download from our Helpful Technical Info section on our website: www.AirCheckLab.com

About Trace Analytics, Inc.
Accreditation Documentation – current Scope of Accreditation and Certification documents
Air Sampling Methods – discusses various sampling methods, advantages and disadvantages
Example Report – sample AirCheck✔Report and certificate
Moisture Analysis – why Trace uses a gas chromatograph/mass spectrometer as it's accredited method of analysis, and detector tubes as a back-up method for onsite analysis, explains accuracy and precision, standard deviation, relative standard deviation, and confidence intervals
Trace Analytics Overview – company info, lab facilities, analytical techniques and QC procedures

About the AirCheck✔Kit
Kit Sampling Instructions – included with every AirCheck✔Kit sold
Cylinder Sampling Instructions (SCBA/SCUBA) – 1 page description on how to obtain a sample directly from a SCBA or SCUBA cylinder

Useful Information
Blank Data Sheet – form that must accompany every sample submitted for analysis
Carbon Dioxide – discusses reasons for high CO_2 levels, valuable info on intake location placement, pipe size, molecular sieves, pressure drops, and general guidelines for assuring a safe air supply
Air Specifications – a description of commonly used specifications for breathing air, includes Summary Chart
NFPA 1989 – summary of current version
OSHA's Small Entity Compliance Guide
OSHA's Inspection Procedures for Respiratory Protection Standard
Bookmark our website for easy reference!

the AirCheck Kit™

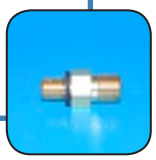
Your Kit Model K901 Should Include the Following

1 Detector Tube Assembly
PN T101

Brass T
PN C628

Tube Fitting
PN C624

Filter Luer
PN C623



Reducing Nipple with o-ring
PN C625

1 Bottle Holder
2 piece
PN F400

Needle Cleaner
PN C613

Needle Replacement Tool
PN C607

1 Flowmeter
(20-100 LPM)
PN C605

2 ft. Tubing
with Barbed Luer
PN C619

Spare Parts
PN C617

1 Adaptor per Kit (3 options available)

CGA 346/347
(for high pressure)
PN F401C

SCUBA
(for high pressure)
PN F401S

1/4" NPT
(for low pressure)
PN F401N

Carrying Bag
(or box for special group packaging)
PN C606

The above hardware items are covered by the AirCheck Kit Lifetime Warranty. Contact Customer Service for a Return Authorization Number. Trace will provide a free replacement for any non-working hardware item. The non-working item must be returned to receive free replacement. Warranty does not cover lost items.

The items below are consummable items. Please call or email us to place your order.

2 Replacement Needles
PN C612

Sampling Media

PN A100DY
Source Bottle,
37 mm Filter,
Detector Tube

PN A100DX
Source Bottle,
37 mm Filter, Detector Tube, Ambient bottle

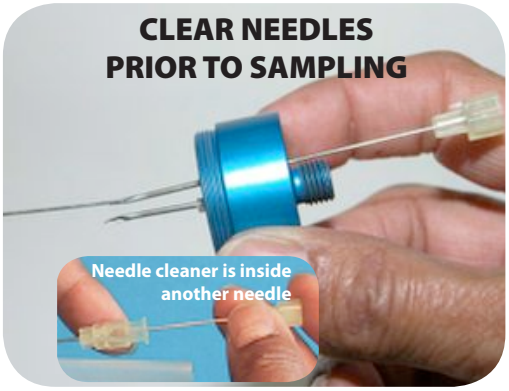
When placing an order by phone, e-mail, or online please reference your customer number (see Notebook cover)

Version K901-1

the AirCheck Kit™

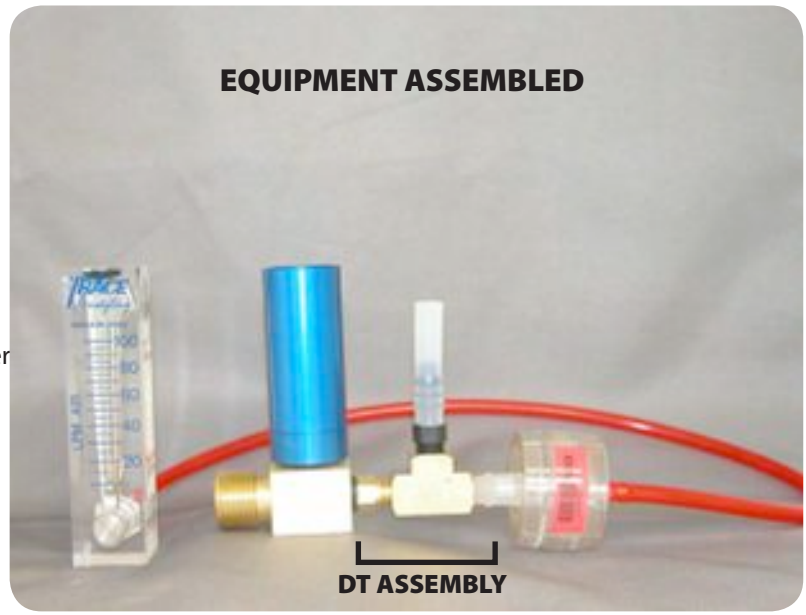
Step 1 PREPARATION

INSPECT and CLEAN all parts to avoid sampling problems or invalid tests. Disassemble two-part Bottle Holder. Remove o-ring and run Needle Cleaner through both needles from the bottom of the Bottle Holder prior to every sample. Check needles for damage. **CAUTION** Needles are sharp. Replace needles that are crooked, overly bent, or jagged by sliding Needle Tool over needle into slots at base of the needle. Make sure needle is tightly seated. Replace dry or damaged o-rings. Inspect and clean threaded parts. Reassemble Bottle Holder. If your kit contains a Type I Bottler Holder (previous 1-part model) refer to FAQs/Equipment/Bottle Holder Needles.



Step 2 ASSEMBLE EQUIPMENT

If sampling directly from compressor; warm up for 10-20 minutes prior to sampling. If sampling immediately after a purification filter change; run for at least 20 minutes to avoid high or low oxygen readings (see FAQs/Analysis). Open valve for at least one minute or sufficient time to clear out stored air, water, dirt from lines. Attach DT Assembly (consists of Brass T with Reducing Nipple, Filter Fitting and Detector Tube Fitting) to Adaptor. Hand tighten Adaptor to your sampling outlet/ charging lead. Thread aluminum Bottle Holder to top threaded hole on the CGA/SCUBA/NPT Adaptor (see additonal photos in Sampling Notes) taking care not to cross-thread fittings. Gently push and turn Filter Cassette 1/4 turn onto Filter Fitting at end of Brass T (do not overtighten or remove shrink wrap from cassette). Open end of Tubing is attached to Flowmeter Fitting then Luer end of Tubing is inserted into downstream side of Cassette. The upper back hole of Flowmeter remains unplugged to vent air. Flowmeter must be level for proper reading.



Step 3 BEGIN OIL AEROSOL TEST

Open your system valve slowly to obtain an optimum reading of 50 LPM from the Flowmeter. If you are unable to control flow to achieve 50 LPM, see FAQs/Sampling/Flow Control.

The Flowmeter reading should be steady. If flowrate drops or varies, determine average flowrate and note on data sheet that steady flowrate was not achieved. The Adaptor and Bottle Holder may become cold and ice up. This is normal. Air is vented from the side port of the Bottle Holder and the upper back hole of Flowmeter.

If you are unable to achieve a 50 LPM flowrate, you can adjust the number of minutes to sample based on the required air volume (see chart to right) and flowrate you can achieve by using the formula below.

Formula To Determine Sample Time

$$\frac{\text{AIR VOLUME}}{\text{FLOWRATE, LPM}} = \text{Sample Time, min.}$$

Immediately proceed to Step 4 to begin timing for a minimum of 10 minutes.

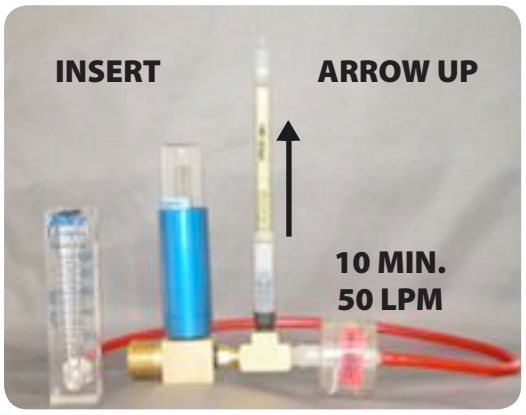
AIR FLOW CHART

SPECIFICATION	AIR LIMIT mg/m3	AIR VOLUME (liters)	FLOWRATE (lpm)	TIME (min.)
CGA Gr D, E, OSHA US Navy Diving, USAF T.O. 1042B, Fed. BB-1034b	5	200+	50	10
NFPA 1989, CSA Z180	2	500	50	10
O2 compatible, BS EN 2021, or any spec with a limit of <1.0 mg/m3 for oil mist/cond. hydrocarbons *REQUIRES GREEN LABELED FILTER	0.1	1000	50	20

A MINIMUM OF 10 MINUTES IS REQUIRED

Step 4 BEGIN GAS AND WATER TESTS

To avoid puncturing the blue cap, hold bottle holder at an angle with outer needle on lower side. Insert Source Bottle into Bottle Holder and gently press onto needles. **CAUTION DO NOT** twist Source Bottle when inserting or removing. Break both tips of the detector tube using the small hole tapped into side of Brass T fitting. **CAUTION** when breaking tips or inserting tube, glass splinter may come off. Danger of injury due to sharp edges. Immediately and carefully insert the detector tube into the Tube Fitting by slowly rotating until tube end reaches black fitting inside tubing. Arrow on tube points away from Brass T, see photo. **BEGIN TIMING TEST FOR 10 MINUTES**. Accurate timing is necessary. **CAUTION** do not use Ambient (black capped) Bottle for this test, do not puncture Source Bottle more than once, do not re-use bottle, filter, or detector tube for another test. If you abort test for any reason; mark data sheet VOID and return sampling media to Trace.



Step 5 OPTIONAL AMBIENT TEST

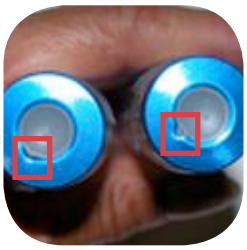
Remove black cap from Ambient Bottle and place bottle close to compressor intake. Recap after 1-10 minutes. If septum falls out of cap, replace it, shiny red side facing into bottle. Ambient sample is an optional diagnostic tool and not required by air specifications. Must be requested, additional fee applies.

Step 6 ODOR TEST

Sniff air flowing from the side port of the Bottle Holder. Checkmark either None/Slight or Pronounced on the datasheet.

Step 7 STOP TESTS • REVIEW • RETURN

At the end of 10 minutes sampling time, while air is still flowing remove the Source Bottle and remove Detector Tube, then **STOP TEST**. If additional time is needed for Oil Aerosol test (Step3) continue without Detector Tube until additional time is complete. At any time during the 10 min. test if the color changes on the detector tube to a grayish / reddish brown AND reaches the 200 mark on the tube, remove the tube and note elapsed time on data sheet. Immediately, and in no more than 1 minute, read the color change on the Detector Tube and mark on data sheet. **COMPLETE ALL REQUESTED INFORMATION ON DATA SHEET.** The Detector Tube reading values in ppmv and dew point are shown in Table, next page. Replace protective caps on Filter Cassette and Detector Tube. If water vapor results are in excess of your air specification limit, you may want to take corrective action and retake complete test with new set of bottle(s), filter, and detector tube for a free resample. Both samples must be returned, the second sample must be marked Retest on the data sheet. You will receive two AirCheck Reports.



Complete and review all Data Sheet information. **RETURN five items to lab 1) FILTER CASSETTE 2) SOURCE BOTTLE 3) DETECTOR TUBE 4) AMBIENT BOTTLE** (if used), and **5) Data Sheet** using the preaddressed return box.

INSPECT

BEFORE

RETURNING

SAMPLE TO LAB

Provide all requested information on Data Sheet to avoid delays upon receipt at lab. **INSPECT BEFOR RETURNING** source bottle stopper, bottle holder needles, and filter for damage that may affect test results or future samples. If you observe bent needles, gouges in the stopper, punctured blue cap, or torn filter; VOID sample, correct problem, and resample to avoid delays or problems. Return VOIDED sample to lab for replacement. Take time to perform this quick inspection prior to leaving sampling location to avoid invalid samples and reporting delays. Ship samples immediately to lab via best method. Samples over 60 days are not valid and will not be analyzed.

Refer to FAQs for additional details

Dew Point Table

Table for Determining Dew Point from Detector Tube Reading based on Flow Rate

Pick the filter flowrate from the left column and cross-match with the detector tube reading to obtain the dew point in °F. For example (as highlighted in yellow) if you sampled at 55 LPM and the detector tube reading is 60, the dew point is -48°F. The red areas indicate the approximate water level below -65°F (24 ppmv).

Tube Reading mg/m³		2.5	5	10	20	30	40	50	60	70	80	90	100	125	175	200
Water Content, PPM		3.4	6.8	14	27	41	55	68	82	96	109.6	123.3	137	171.2	239.7	274
Filter Flowrate, LPM	20	-75	-65	-55	-45	-39	-34	-30	-27	-24	-22	-20	-18	-14	-8	-6
	25	-78	-69	-59	-49	-43	-38	-34	-31	-29	-27	-25	-23	-19	-13	-10
	30	-81	-72	-62	-52	-46	-41	-38	-35	-32	-30	-28	-26	-22	-16	-14
	35	-84	-75	-65	-55	-49	-45	-41	-38	-36	-34	-32	-30	-26	-20	-18
	40	-86	-77	-68	-58	-52	-47	-44	-41	-39	-36	-35	-33	-29	-23	-21
	45	-88	-79	-70	-60	-54	-50	-47	-44	-41	-39	-38	-36	-32	-26	-24
	50	-90	-81	-72	-62	-56	-52	-49	-46	-44	-42	-40	-38	-34	-29	-27
	55	-92	-83	-74	-65	-58	-54	-51	-48	-45	-44	-42	-40	-36	-31	-29
	60	-93	-84	-75	-66	-60	-56	-52	-49	-47	-45	-43	-42	-38	-33	-31
	65	-94	-85	-76	-67	-61	-57	-54	-51	-48	-47	-45	-43	-40	-34	-32
	70	-95	-86	-77	-68	-62	-58	-55	-52	-50	-48	-46	-44	-41	-36	-33
	80	-96	-87	-78	-69	-63	-59	-56	-53	-51	-49	-47	-46	-42	-37	-35
	85	-97	-88	-80	-70	-64	-60	-57	-54	-52	-50	-48	-47	-43	-38	-36
	85	-98	-89	-81	-71	-65	-62	-58	-56	-53	-52	-49	-48	-45	-39	-37
	90	-99	-90	-82	-72	-67	-63	-60	-57	-54	-53	-51	-49	-46	-41	-39

Dew Point, °F, at atmospheric pressure

The following are commonly used specification limits for water vapor:

Water Vapor Limits °F	ppm	Organization
-65°F	24 ppm	NFPA 1989, CGA Grade D for SCBA use
-63°F	27 ppm	CSA Z180
-50°F	63 ppm	OSHA 1910.134 (4)(iii) (for cylinders
-40°F	128 ppm	ANDI O2 Compatible
no limit		CGA Grade E for SCUBA, OSHA Commercial Diving, IANTD O2 Compatible
10° lower than lowest ambient temp		OSHA 1910.134 (5)(ii) for compressors (used for airline respirators)