



MODEL CA56

Cylinder Analysis System

OPERATOR'S MANUAL

Version 1.2

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WARNING

THIS PRODUCT IS DESIGNED TO CONNECT TO A VERY HIGH PRESSURE SOURCE.

MAKE SURE THAT THE CONNECTION HOSE TO THE GAS CYLINDER AND THE HOSE INLET FITTING IS SECURE AND THE CYLINDER FITTING IS THE CORRECT TYPE FOR THE CYLINDER.

SHOULD THE INSTRUMENT BE USED FOR AGGRESSIVE, HAZARDOUS OR CORROSIVE GASES OR MIXTURES MAKE SURE THE PURGE OUTLET CONNECTION IS PIPED TO AN ADEQUATE VENT. ALSO CHECK WITH THE FACTORY FOR GAS COMPATIBILITY.

Revision History

Issue	Issue Date	Changes	Author
1.0	29-02-2012	Initial Release Version	Nick Stuart
1.1	05-08-2013	Final Design Review	Bryan Cummings
1.2	19-07-2016	Editorial changes & ECN 1611s	Bryan Cummings

1.0 INTRODUCTION

The measurement of trace gas impurities such as oxygen and moisture in inert gas cylinders is very important. Especially to the inert gas manufacturers who need to check every gas cylinder for these impurities before delivery to its customers.

Trace oxygen and moisture analysers when measuring low ppm levels have a perfectly acceptable response to levels between low ppm and hundreds of ppm. However when low percent levels or air containing 20.9% O₂ or 10,000 ppm (+7 Deg C Dew point) these instruments struggle to recover to measure low ppm levels and can take several hours or even days to respond.

Clearly trying to determine the analysis of many cylinders per day when the connection to the analysers has to be open to the ambient air is challenging.

Systech Illinois have developed a Cylinder purge sample system to make these connections simple, to purge each cylinder and determine the trace O₂ or H₂O, or both within just a few minutes.

Note: This instrument must be used in conjunction with a Trace Moisture or Oxygen measuring instrument.

This manual is arranged in a manner we feel will provide the greatest ease of reference and use. We are proud of our active program of research and development. If you encounter any difficulties we would like to hear about them.

IMPORTANT

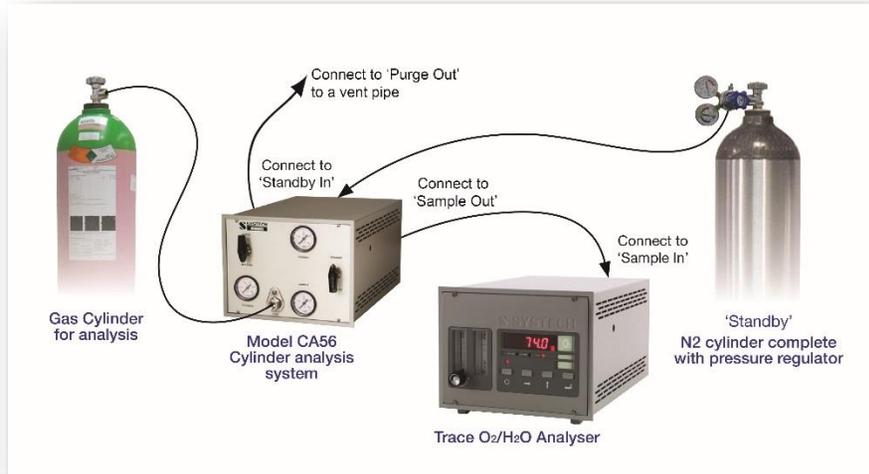
Please read this manual before attempting to install or operate the equipment.

**No responsibility is accepted by Systech Illinois
for accidents resulting from improper use of this equipment.**



This symbol is known as the 'Crossed-out Wheelie Bin Symbol'. When this symbol is marked on a product it means that consideration should be given to the disposal of the product, parts or accessories. Only discard electrical/electronic items in separate collection schemes which cater for the recovery and recycling of the materials contained within. Your co-operation is vital to ensure the success of these schemes and for the protection of the environment.

2.0 INSTALLATION



The diagram above shows the connections between the various components of the analysis system.

2.1 CONNECTING THE CA56 TO THE TRACE H₂O OR O₂ ANALYSER.

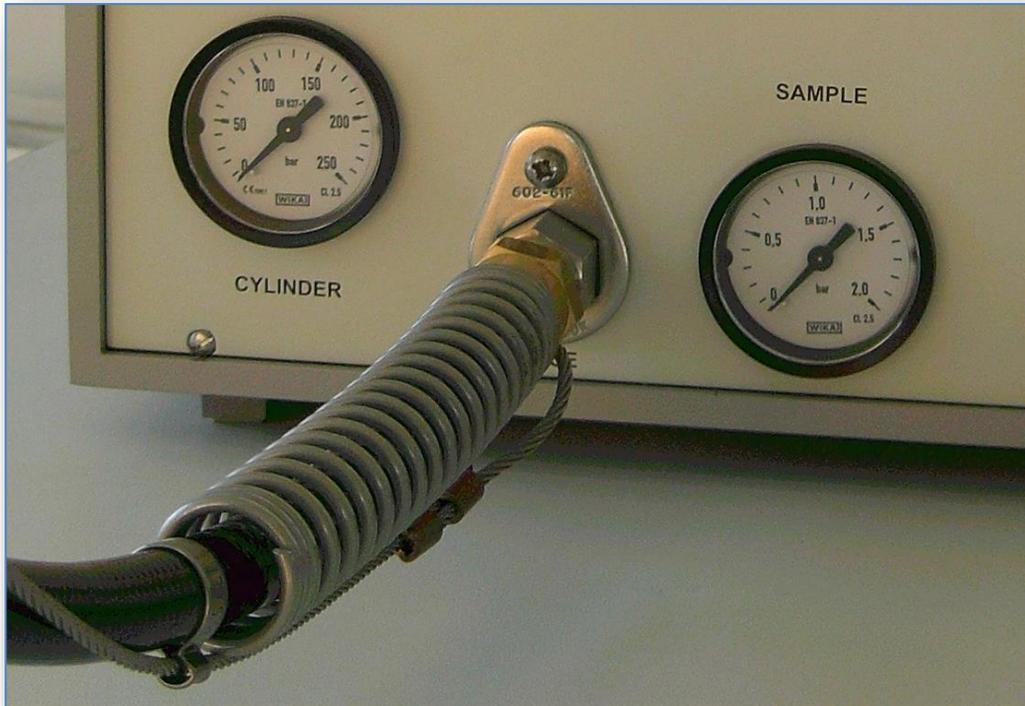


Referring to the diagram above connect the “Sample Out” to the analyser using 1/8 inch stainless steel pipe only. Ensure that all connections are tight, but **DO NOT** over tighten.

The “Standby In” connection should be connected again with 1/8 inch stainless steel pipe to the pressure regulator of the “Standby” cylinder. The “Standby” cylinder should be equipped with a suitable regulator and set to approx. 1.5 Barg.

The “Purge out” connection can be left open, if the application is for inert gases or connect with a pipe to a vent line if the application is for an aggressive gas or if the equipment is contained in an enclosed environment.

2.2 CONNECT THE CA56 TO THE GAS CYLINDER FOR ANALYSIS.



Referring to the diagram above connect the sampling pipe to the front of the CA56. MAKE SURE THIS CONNECTION IS SECURE.

NOTE, this connection should be made with PTFE sealing tape around the thread to ensure a leak free connection. Connect the other end of the high pressure hose to the cylinder for analysis. Note there are many national standards in all countries for the thread size and type. The correct type should have been provided with the instrument.

3.0 OPERATION

3.1 FIRST TIME SETUP OF THE EQUIPMENT

- 3.1.1 Obtain a cylinder of industrial N₂, which normally would have an O₂ and H₂O of below 10ppm. Make sure it is fitted with a good quality pressure regulator. Open and close the cylinder valve a few times whilst the regulator is set for 1.5 Barg. This will purge the regulator sufficiently. Connect the pipe from the CA56, 'Standby cylinder In' to the regulator; with the cylinder valve open and the pressure set to 1.5Barg.
- 3.1.2 Referring to section 2.1, undo the connection from the CA56, Sample out to the recipient analyser. Make sure standby/measure valve is in the 'Standby' position. Leave a few minutes to purge the all the tubing and reconnect the connection. Note that the 'standby pressure gauge' displays approximately 1.5 Barg, the same that has been set on the standby cylinder.

- 3.1.3 On the Trace O₂/H₂O analyser, (the recipient analyser), open outlet valve fully and open inlet sufficiently to obtain flow around half scale, (100cc/min). Allow the recipient analyser enough time to reach an equilibrium to show a measurement of approximately what you expect to be the contents of the standby cylinder.
- 3.1.4 Connect the 'hose' supplied from the Model CA56 to the cylinder for analysis (as shown below). Make sure 'measure /purge' valve is in the 'measure' position and open the cylinder valve. Note 'cylinder pressure gauge' reads the cylinder pressure and sample pressure gauge reads the regulated sample/measure gas pressure (factory set to 1.5 Barg).



- 3.1.5 To measure the trace O₂ or H₂O content in the cylinder for analysis, turn measure/purge valve to purge. Close the valve on the cylinder for analysis. Wait for the cylinder pressure gauge to drop to zero, as soon as it drops to zero, reopen the cylinder valve and close it again.
- 3.1.6 Repeat step 3.1.5 above, an additional 4 times. This action purges the cylinder, the hose and internal regulator and pipework.
- 3.1.7 On the 5th time leave the cylinder valve open, turn the purge /measure value from purge to measure and back again a few times and leave in the measure position. (You will notice that the sample pressure gauge reduces to zero when you have this valve in the purge position).
- 3.1.8 Now turn the standby/measure valve to the measure position and measure the gas in the new cylinder. Wait a few minutes for stabilisation and the reading.
- 3.1.9 When the measurement of this cylinder of interest is noted the sample system can be connected to the standby cylinder – Close the cylinder valve and turn standby/measure valve to the standby position and disconnect the hose to the cylinder of interest.

IMPORTANT

Before disconnecting the high pressure hose, use the purge valve to empty the line of gas pressure. Make sure the cylinder gauge is reading zero before disconnecting.

3.2 TO MEASURE ANOTHER CYLINDER.

- 3.2.1 Connect the 'hose' to another cylinder and open the cylinder valve.
- 3.2.2 Turn measure/purge valve to purge. Close the valve on to the cylinder for analysis. Wait for the cylinder pressure gauge to drop to zero (you will also hear the purge gas escaping from the vent of the Model CA56, as soon as it drops to zero and you can hear that no more gas escapes from the vent; reopen the cylinder valve and close it.
- 3.2.3 Repeat step 3.2.2 above, an additional 4 times. This action purges the cylinder, the hose and internal regulator and pipework.
- 3.2.4 On the 5th time leave the cylinder valve open, turn the purge /measure valve from purge to measure and back again a few times and leave in the measure position. (You will notice that the sample pressure valve reduces to zero when you have this valve in the purge position).
- 3.2.5 Now turn the standby/measure valve to the measure position and measure the gas in the new cylinder. Wait a few minutes for stabilisation of the reading.
- 3.2.6 When the measurement of this cylinder of interest is noted the sample system can be turned to the standby cylinder – turn standby/measure valve to the standby position and disconnect the hose to the cylinder under test. **Note – purge the line before disconnecting.**

4.0 REPLACEMENT PARTS

Systech Instruments makes a number of useful accessories and replacement parts available to assist in applications and servicing. When ordering, please specify the model and serial number of your instrument and the description of items required as listed below:

Part Number	Description
900 202	High Pressure connection hose BS3 (UK type)
900 203	High Pressure connection hose (China type)
101 175	1/8" SS Swagelok® Nut
101 173	Ferrule set SS 1/8"

5.0 MAINTENANCE AND WARRANTY

5.1 MAINTENANCE

The Model CA56 Cylinder Analysis System requires no routine maintenance.

5.2 WARRANTY

This Instrument is guaranteed for a period of one year from its delivery to the purchaser covering faulty workmanship and replacement of defective parts. This assumes fair wear and tear and usage specified on the data sheet.

The Warranty is on a Return To Base (RTB) basis. However under exceptional circumstances this may be extended to cover onsite warranty. This may involve extra costs to the end user.

We maintain comprehensive after sales facilities and the instrument should be returned to our factory for repairing or servicing if this is necessary. The type and serial number should always be quoted together with full details of any fault.

Warranty repair or replacement will be made without charge noting the above comments. Equipment must be shipped prepaid after return authorisation has been obtained.

All service and technical enquiries are covered from our factories in Thame, Oxfordshire, and Johnsbury, Illinois where we will endeavour to give a quick and helpful response to all queries.

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For customers outside UK or USA, please contact us for details of your local representative. Alternatively check out our website:

6.0 TECHNICAL SPECIFICATIONS

Test Cylinder Pressure	2 - 250 Barg (30 - 3700 PSI)
Gas fittings	1/8 in Swagelok®, high pressure hose compatible to national standards normally supplied.
Enclosure	Epoxy coated heavy gauge steel
Dimensions:	237W x 390D x 190H mm ,(9.3W x 15.4D x 7.5H inches)
Weight:	7kg (15.4 lb)