8/24/10

To: Whom it May Concern:

I have the following recommendation for a minor change on Livestock Project Protocol Draft Version 3.0.

On page 30, on Paragraph 6.1, change footnote 39 to footnote 40. Then add a footnote 39 after the word "guidance" in the 2nd bullet in paragraph 6.1. The text of the new footnote (now numbered 39) follows:

[39]If field check can be done "in situ" (e.g. compare "no flow" condition to original factory "zero flow" calibration point on flow meter's Calibration Certificate or Tag), than trained professional is not required to conduct field check.

Please note, I have attached a number of documents explaining why the procedure on page 42 is valid with our technology, and that the simplicity of this procedure does not require a trained professional, but merely requires adherence to the factory calibration field check titled on page 42 of the Sage Manual (attached) as "Sensor Functionality and Zero Calibration Self Check". In particular, see the document titled "Typical Sage Calibration Curve-SN55412" for a complete explanation of why the Sage Flow Meter is unique is this capability of ease of conducting a calibration field check.

Thank you,

Robert Steinberg
President
Sage Metering, Inc.
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P.S. Note, Sage Metering is an approved vendor of the Climate Registry and can be found on the Climate Pages

Operational activity of the destruction devices shall be monitored and documented at least hourly to ensure actual methane destruction. GHG reductions will not be accounted for or credited during periods in which the destruction device is not operational.

If for any reason the destruction device or the operational monitoring equipment (for example, the thermal coupler on the flare) is inoperable, then all metered biogas going to the particular device shall be assumed to be released to atmosphere during the period of inoperability. During the period of inoperability, the destruction efficiency of the device must be assumed to be zero. In Equation 5.10, the monthly destruction efficiency (BDE) value shall be adjusted accordingly. See below for an example BDE adjustment.

Box 6.1. Example BDE Adjustment

As an example, consider a situation where the primary destruction device is an open flare with a BDE of 96%, and it is found to be inoperable for a period of 5 days of a 30 day month. Assume that the total flow of biogas to the flare for the month is 3,000,000 scf, and that the total flow recorded for the 5 day period of inoperability is 500,000 SCF. In this case the monthly BDE would be adjusted as follows:

*BDE =[(0.96*2,500,000) +(0.0 * 500,000)] / 3,000,000 = 80%*

6.1 Biogas Measurement Instrument QA/QC

All gas flow meters[37] and continuous methane analyzers must be:

- Cleaned and inspected on a quarterly basis, with the activities performed and as found/as left condition of the equipment documented
- Field checked by a trained professional for calibration accuracy with the percent drift documented, using either a portable instrument (such as a pitot tube)[38] or manufacturer specified guidance, at the end of but no more than two months prior to the end date of the reporting period[39]
- Calibrated by the manufacturer or a certified calibration service per manufacturer's guidance or every 5 years, whichever is more frequent

If the field check on a piece of equipment reveals accuracy outside of a +/- 5% threshold, calibration by the manufacturer or a certified service provider is required for that piece of equipment.

For the interval between the last successful field check and any calibration event confirming accuracy below the +/- 5% threshold, all data from that meter or analyzer must be scaled according to the following procedure. These adjustments must be made for the entire period from the last successful field check until such time as the meter is properly calibrated.

1. For calibrations that indicate under-reporting (lower flow rates, or lower methane concentration), the metered values must be used without correction.

[37] Field checks and calibrations of flow meters shall assess the volumetric output of the flow meter.

[38] It is recommended that a professional third party calibration service be hired to perform flow meter field checks if using pitot tubes or other portable instruments, as these types of devices require professional training in order to achieve accurate readings.

[39] Instead of performing field checks, the project developer may instead have equipment calibrated by the manufacturer or a certified calibration service per manufacturer's guidance, at the end of but no more than two months prior to the end date of the reporting period to meet this requirement.

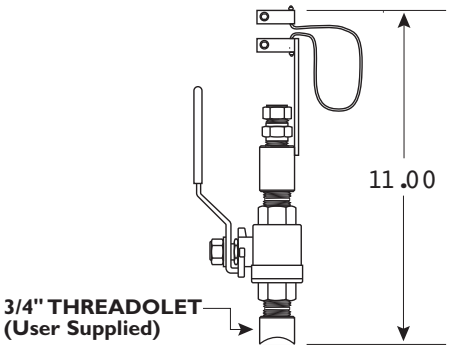
If field check can be done "in situ" (e.g. compare "no flow" condition to original factory "zero flow" calibration point on flow meter's Calibration Certificate or Tag), than trained professional is not required to conduct field check.

Mounting Hardware[3]

SVA05 SERIES ISOLATION VALVE ASSEMBLY FOR INSERTION METERS[4]

(for Low Pressure SVA05 see page 35)

Used for pressures to 650 psig[1] (shown for use with 1/2" diameter insertion meters). 150# or 300# flanged mounting is optionally available. Available sizes are 1/2" x 3/4" NPT (SVA05 shown), and 3/4" x 1" NPT for use with 3/4" diameter insertion meters (SVA07).

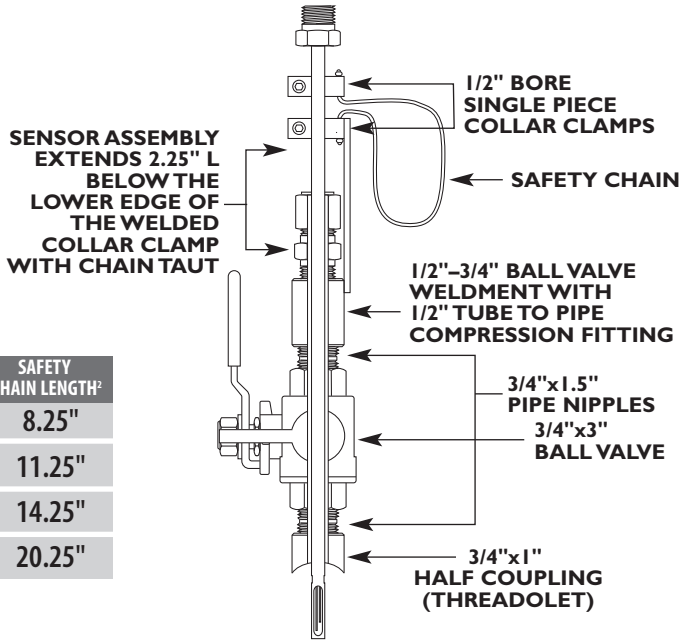


PROBE LENGTH (with sensor)	SAFETY CHAIN LENGTH[2]
12"	8.25"
15"	11.25"
18"	14.25"
24"	20.25"

NOTE: User needs to weld a 3/4" female threadolet (of appropriate radius) to mate with existing pipe after a 3/4" hole has been drilled in pipe. The 3/4" Male Coupling of the Sage Isolation Valve Assembly will thread into the user's 3/4" threadolet.

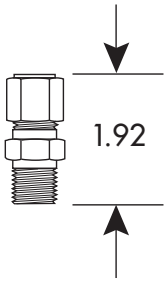
SVA05 SERIES ISOLATION VALVE ASSEMBLY DETAIL[5,6]

Cut away view of probe inserted through isolation ball valve assembly.

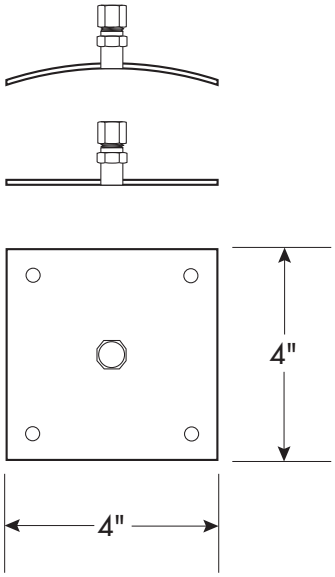


STCF SERIES TEFLON FERRULE COMPRESSION FITTING

1/2" tube x 1/2" pipe fitting (shown, not to scale), is used for low pressure insertion applications to 125 psig (Stainless Steel Ferrule optional for higher pressure applications – up to 225 psig). Also available in 3/4" tube x 3/4" pipe size.



MOUNTING PLATE FOR THIN WALLED DUCTS (INCLUDES STCF05 COMPRESSION FITTING)



1 At 650 psig, force exerted on 1/2" diameter probe is approx. 125 lbs
2 Safety chain is designed to prevent probe from accidentally escaping from assembly during removal from pressurized pipe
3 Insertion meters can have optional flanged mounting (generally used for high pressure or very hot gases). This adaptation is not shown. Consult factory for details.
4 Maximum gas temperature, 200F, unless high temperature models ordered.
5 Hot Tapping is feasible by removing Weldment (upper portion of assembly temporarily removed)
6 see page 43. SVA05 can be utilized for Sensor Functionality and Zero Self Check.

Sensor Functionality and Zero Calibration Self Check

Sage Prime has continuous diagnostics. The raw calibration milliwatts (mw) is always displayed in the upper left hand corner of the meter's display. At any time, you can check this reading at a "no flow" condition and compare the reading to the original reported "zero flow" value noted on the last few lines of your meter's Certificate of Conformance or the flow meter's data tag. This diagnostic procedure not only checks the sensor performance and the "live zero" calibration point, but it verifies that the sensor is clean. It essentially provides a means to validate that the meter is operating properly, verifies that there is no shift or drift, and eliminates the need for annual factory calibrations. This simple field diagnostic procedure also verifies that the sensor is free from contamination, even without inspection.

1. Verify that meter has no gas flow[1]
   Close appropriate valves in the process to have a "no flow" condition so you can check the "live zero" mw output of the actual gas (it should be checked at the same pressure as noted on Certificate of Conformance).
   If it is not possible to close valves in the process (e.g. natural gas supply must be kept flowing), a user with a Sage SVA05 or SVA07 Isolation Valve Assembly can check "zero" of the actual gas and pressure without shutting off the gas supply. Refer to SVA SERIES ISOLATION VALVE ASSEMBLY DETAILS ON PAGE 34.
   a) Loosen Lower Collar Clamp completely
   b) Slightly loosen compression fitting until Probe can be lifted
   c) Lift Probe until Safety Chain is taut
   d) Tighten compression fitting
   e) Close Valve
   f) Check zero mw as per "2" below
   Optionally, do an ambient air check by removing probe and covering up sensor by capping the sensor with a plastic bag, empty plastic water bottle or other means of preventing flow (see 8).
2. Observe the raw milliwatts (mw) on the top of the meter's display. Check the observed reading (after a few minutes of "no flow" stabilization) against the last line(s) of your Meter's Certificate of Conformance.
3. A value within 5 milliwatts of the original Factory value (assuming the same gas is checked at same pressure) indicates that the meter is still in calibration.
4. A value greater than 5 milliwatts, but less than or equal to 10 milliwatts, also indicates that the meter is still in calibration, but this reading may have been influenced by one or more of the following factors: gas composition, pressure, dirt, non-zero conditions, and sensor orientation. Any of these factors can have an effect on mWo. It is a very sensitive data point and that is why it is such a good check.
5. Note, if all of the above factors were remedied, it would be expected that the mW zero would report less than or equal to 5 milliwatts.
6. Note, in some cases, contamination of the sensor is the only cause of the additional heat transfer during the "no flow" test. Remove the probe, and clean the sensor (use an appropriate non-corrosive solvent to remove the build up). A soft brush can be used to gently clean the sensing surface, using caution to avoid damaging the sensor elements (the RTD's).
7. In summary, if a technician in the field were able to simulate Sage calibration conditions, he too would find that the mWo would be within one mW or very close to that. Since this is not always possible, we are finding that after considering all of the field variables, a mWo in the field that is within 10 mW is an acceptable value. This would allow for a check to be done in the pipe under application conditions.
8. Note, if desired, a second check can be conducted as well but using ambient air: This validation method requires that the sensor be removed from the pipe and inserted in a container such as an empty plastic water bottle. We would recommend this second check if there is any question at all about the first check (while in the pipe) or if it's mWo value is anywhere around 10 mW. The sensor should be removed from the pipe, cleaned, and inserted vertically into a clean dry container such as a water bottle. This would allow a field check very similar to the air mWo check that is done at Sage, and more than likely will give the same results that we recorded here at Sage.

1 Sage "zeros" the meter in a horizontal pipe. If you have a vertical pipe, mW will be slightly lower at zero (also see note 4).

PRODUCT QUALITY CERTIFICATE OF CONFORMANCE

Product Inspection & Quality Statement

All individual parts and components which make up the product being provided have been inspected and approved for manufacture. In addition, subassemblies have been inspected, tested, and accepted for final assembly. Each completed assembly has been final tested and approved for shipment.

Conformance Statement

SAGE Metering Incorporated certifies this instrument was tested in compliance with ANSI/NCSL Z540 and ISO/IEC 17025 requirements. SAGE Metering, Inc. calibration services are derived from MIL-STD-45662A. The tests are performed using measuring & test equipment with certified NIST traceability. (Applicable NIST numbers are available upon request). Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced after written permission is granted by SAGE Metering, Inc.

CUSTOMER:	**ABC COMPANY**	
PURCHASE ORDER:	**123456**	
SAGE SALES ORDER:	**10072**	
MODEL:	**SRP-200-S150FLG200-DC24-NG-PLUS**	
POWER REQUIREMENT:	**DC24**	
OPTIONAL OUTPUT:	**Flow, 4 - 20mA**	**100 SCF/PULSE**
SAGE UNIT/SENSOR SERIAL NUMBERS:	**55412-32653**	**Mod Bus Address = 30**
TAG:	**TAG: TAG: FURNACE # 5701**	
PRIME BAUD RATE / PRIME PARITY	**19200.00**	**EVEN**
SUGGESTED CALIB/VALIDATION INTERVAL:	**12 months after Installation**	
CALIBRATION DATE:	**7/6/2010**	
OPERATING PRESSURE RANGE:	**(14.7 PSIA + PSIG) ± 20%**	
MAXIMUM PRESSURE RATING:	**500 PSIG**	
SENSOR TEMPERATURE RANGE:	**STD: -40 to 200 F**	
ELECTRONICS TEMPERATURE RANGE:	**0° to +150°F (-18° to +65.56°C)**	
ACCURACY REFERENCED TO 70°F (21°C):	**+/- 1% Rdg + 0.5% FS**	
CALIBRATION REFERENCE CONDITIONS:	**70°F and 29.92" Hg**	
PROCESS GAS:	**NG**	
PROCESS FLOW (FS, 4-20 mA)/LowFlowCutoff	**0 - 7000 SCFH**	**0 SCFH**
CALIBRATED FLOW (Incl Over Rg)	**116.67**	**SCFM**
PROCESS LINE SIZE	**2 in sch 40**	
PROCESS TEMPERATURE:	**75 F**	
PROCESS PRESSURE:	**10 PSIG**	
CALIBRATION TECHNICIANS:	**MV/RP**	
TURBINES	**1" SN:98489 2" SN:98490 0**	
DMM's	**DMM #1 & #2**	
FLOW CALIBRATION PROCEDURE USED:	**PRO-FCL-090103**	
TEMP CALIBRATION PROCEDURE USED:	**1403 (09/22/03)**	

SPECIAL NOTES:

GAS FLOW ZERO in mw/SOFTWARE REV#	**84**	**2.05**
AMBIENT AIR ZERO in mW	**70**	

INSERTION STYLE SENSORS TO BE PLACED AT CENTER OF PROCESS PIPE

Authorization: _____ **Date:** **July 6, 2010**