Trigger Survey System

Operating Manual

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Contents

I. Introduction

The Trigger Survey System is an integrated system formed by a GES Gas-Tec which is mounted (via quick release fasteners) to a Telegan Trigger Survey Unit that contains a sample boom pump with monitoring electronics and audible alarms and a Sample Boom Kit.

It is a full performance system but in a compact, quiet and practical package, easy to fit, easy to use and with a comprehesive range of features including full Audio/Visual system monitoring.

2. General description

The Trigger Survey System has a sturdy nylon-coated die-cast casing with quick release fixings for a top-mounted Gas-Tec. All controls and pre-set adjustments are readily accessible making the system suitable for one-man operation.

A lightweight four-inlet boom assembly with mounting kit is equipped with a full function filtering system.

The complete system matches British Gas E22:Part 2 Trigger Survey performance requirements.

2.1 Operational Features

a. Quiet, fully monitored system

The annoyance of a noisy boom sample pump has been eliminated by careful attention to the detail of the design.

Correct boom sample pump operation

Indicated by the Gas-Tec flow meter.

Boom sample line blockage

Indicated by the Gas-Tec 'flame-out signal.

b. Two distinctive alarm sounds

1. Alternate tones:
   System error:
   Gas-Tec is not electrically connected.
   Gas-Tec is not switched on.

2. Continuous tone:
   Gas leak indication:
   Gas-Tec output is above Alarm Theshold level.

c. Quick release mounting for Gas-Tec

A universal mounting system for all versions of Gas-Tec is incorporated on the case top.

The whole assembly can either be strapped securely to the passenger seat squab using the seat belt or stand in the passenger foot well.

d. Gas-Tec battery charger

The charging performance matches the standard Gas-Tec battery charger and in use operates continuously to maintain the optimum battery voltage.

Even a completely discharged Gas-Tec can be fitted, used immediately and be fully charged after only a few hours' operation.

e. Composite filter assembly

Three level filtering;
Micron particulate filter (standard Gas-Tec)
Hydrophobic filter (to stop water entering the system)
Carbon cloth elements

All elements are easily changed and even after a 'drowning' the system can be up and running again - fast.

f. Universal fitting, high capacity, fused vehicle cigar lighter plug

Allows connection of additional equipment such as a hazard warning light via the power output socket provided on the Trigger Survey Unit case.

g. Signal output socket

To connect an external chart recorder or data logger, an additional DIN socket is provided. The Gas-Tec Linear Output is on Pin 2, and Signal Earth on Pin 4.

3. Safety

Before operating the system make sure that the Gas-Tec Operating Manual has been read and understood, particularly with reference to safety aspects.

Confirm that the vehicle ignition is OFF before carrying out any installation work.

4. Operating Instructions

For location of features, controls and connections refer to the General Arrangement Views at the end of this manual.

4.1 Fitting the Sample Boom and Tubing

Fix the Sample Boom to various points near or at the front ofthe vehicle using the cable ties provided. Make sure the gap between the inlet cones and the ground is between 50mm and 100mm with the vehicle normally loaded and no more than 300mm in front ofthe vehicle. Find a suitable grommet in the bulkhead between the engine compartment and the passenger compartment Feed the Sample Supply tubing from the boom through this grommet to the Trigger Survey Unit. Make sure that the pipe run keeps away from all heat sources and moving parts and is adequately fastened at intervals using more cable ties.

4.2 Trigger Survey Unit (TSU) Assembly and Connections

The TSU is provided with 'flying lead' connections for the 12 volt D.C. power supply from the vehicle cigar lighter socket, the Gas-Tec electrical connection and the pumped sample supply to the Gas-Tec. The Gas-Tec leads are the correct length for direct connection when the instrument is fined on the four pillars with their quick release mounting system. Confirm the Gas-Tec is securely mounted on the TSU pillars. Plug in the electrical lead to the Gas-Tec output DIN socket and the filter assembly to the Gas-Tec pump connection (see Figure I). Connect the fused Power Supply Plug to the vehicle power supply socket.

4.3 Checking the system

Confirm that the red 'Power' LED is on, (with certain vehicles it will be necessary to switch on the ignition first). Rotate the volume control to maximum and confirm that no sound is emitted indicating that the Gas-Tec is correctly fined, tuined on and indicating at a level between the two alarms. Confirm the Gas-Tee flow meter is reading correctly. Adjust if required.

4.4 Adjusting the Alarm Levels

Two alarm levels are provided:

a. Negative Zero Alarm Level
b. Leakage Threshold Alarm Level

Both levels may be set using a small screwdriver to adjust pre-sets accessible via two small holes in the unit casing (see illustration Figure 1).

Either one of two methods may be used to set these levels.

1) If it is known that all Gas-Tecs to be used with the TSU have been correctly calibrated to provide the standard 2V signal at full scale deflection (equivalent to 2mVlppm on Range 1), then an external voltmeter may be used. Sockets are provided for this purpose. This is the preferred method as it provides the greatest accuracy and allows any TSU to be used with any Gas-Tec.

   To set the Alarm levels, connect a voltmeter to the TSU via the 4mm banana sockets positioned directly above the respective preset potentiometer hole (refer to the case top for the location of each adjustment group). The red socket is the positive connection and the black socket the negative connection. Adjust the preset to produce the desired level measured in mV. Typical levels are -4mV (-2ppm) for the Negative Zero Alarm and +5OmV (25ppm) for the leakage Threshold Alarm level.

2) If a Gas-Tec has been calibrated by adjusting the meter needle movement only, then the electrical output will not be to the standard required for external monitoring. In this case the only way to use the TSU is to match the alarm levels to the Gas-Tec meter readings and mark both the instruments so that they are always used as a matched pair.

   Setting Negative Zero is achieved by using the Gas-Tec zero control to set the meter needle to approximately -2ppm (say). Use a small screwdriver to adjust the preset potentiometer in the TSU until the alternate tone alarm sounds. by adjusting the meter reading up and down with the zero control the actual alarm level can be checked and fine tuned ifrequired. To set the leakage Threshold Alarm level a similar technique is used but with the meter needle set to the required alarm level. Ifthis level is greater than the normal zero adjustment available on the Gas-Tec then sample gas may have to be used to bring the meter reading up to the desired level. A single continuous tone will be heard in this case.

5. Maintenance

5.1 Sample Boom Filter Assembly

The filter assembly houses a filter backing disc, a 25mm diameter hydrophobic filter element and '0' ring, and a 27mm diameter paper pre¬filter element. To facilitate Gas-Tee 'Flame Out' with boom sample line blockage, it is advisable to fit an additional '0' ring around the joint between the two filter body halves.

The paper pre-filter should be in respected regularly and replaced when necessary. This will protect the hydrophobic filter from coarse contamination and extend its life.

When fitting this filter the hydrophobic surface should contact the '0' ring (ORG99005) and the fibrous surface be face down against the backing disc (FIL99021). When assembled in this manner, ifwater enters the filter assembly it will be prevented from passing the hydrophobic surface. Discarding the pre-filter, shaking or lightly blowing the hydrophobic surface and reassembling the unit with a new pre-filter should allow continued operation. Make sure all water is removed from the probe and tube assemblies before re-using.

5.2 Carbon Filter Assembly

The sample supply to the Gas-Tec has a filter assembly that can be fitted with carbon cloth elements if desired. This filter assembly houses a filter backing disc, a 25mm diameter hydrophobic filter element and either one or two carbon cloth filter elements (or none, see Note below), and an 'O' ring. With two carbon elements fitted the assembly has a performance characteristic similar to the carbon cloth filter design shown in B.G. Specification E22: Part 2.

Note: The number of carbon cloth elements should be to the locally agreed specification. The method of using and maintaining carbon cloth elements in patrol survey vehicle sample lines may be dependent on local area policy.

To facilitate Gas-Tec 'Flame Out' with boom sample line blockage it is advisable to fit an additional '0' ring around the joint between the two filter body halves.

5.3 Fuses

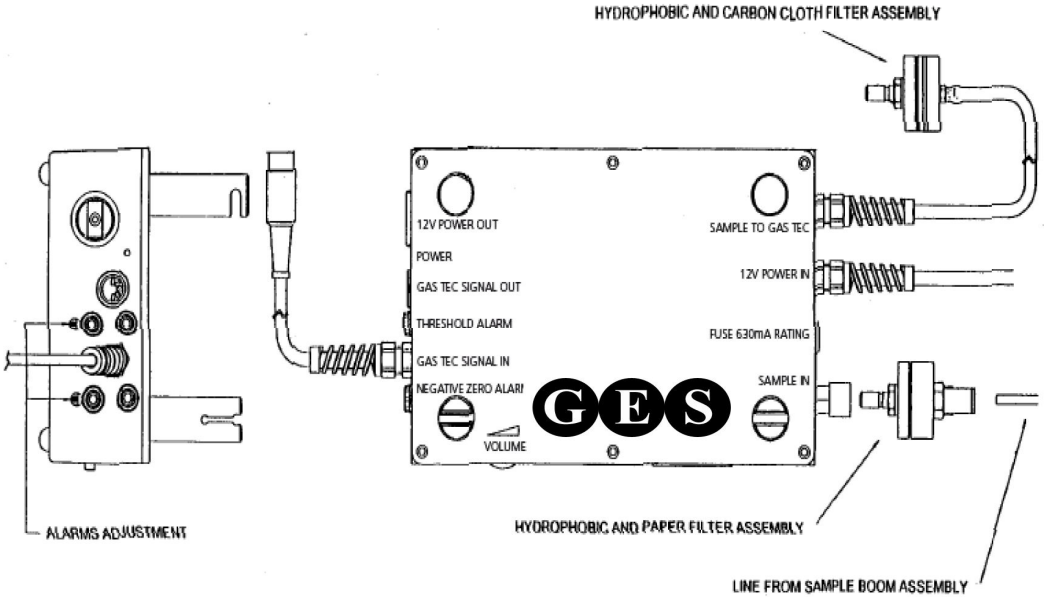
If either of the fuses fail the cause should be investigated and any fault corrected before replacing with a new fuse.

6. Spare Parts

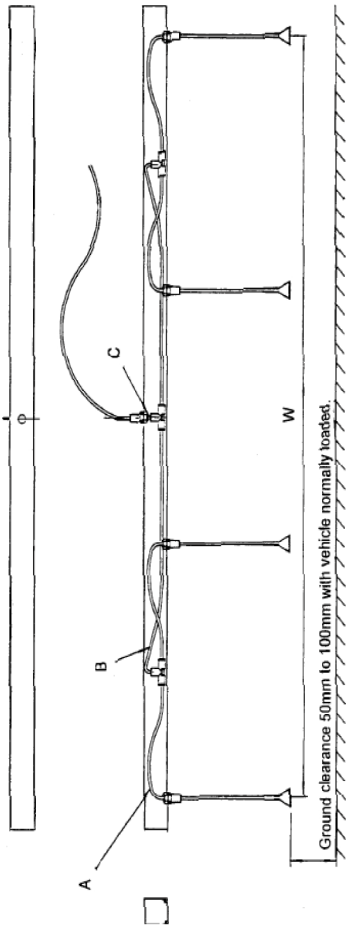
Always quote the quantity, part number and description together with the serial number of the Trigger Smvey Unit when ordering.

Part Number	Description
FUS99015	630mAFuse
FUS99011	8AFuse
FIL99016	Filter Assembly
FIL99014	Filter Assembly with Carbon Cloth Element
FIL99039	Paper Filters -Box of 400
FIL99013	Hydrophobic Filters -Packet of 5
FIL99015	Carbon Cloth Filter Elements - Packet of 5
FIL99021	Filter Backing Disc
DRG99005	Filter 'O' Ring
TUB99059	Sample Tubing -3 metre length
MIS72006	Sample Boom Inlet Funnel Assembly

Other part numbers are available on application. Due to Gas & Environmental's continual research and development programme some part numbers may be subject to change without prior notice. If you have any queries please contact the Company.



GENERAL VIEW OF TRIGGER SURVEY UNIT FIGURE 1.



TUBE LENGTHS	No. Off
A = W/5	4
B = W/2.8	2
C = 20mm	1

TYPICAL SAMPLE BOOM LAYOUT FIGURE 2.

Gas & Environmental Services Ltd

Units 1 & 3 Little Ridge Industrial Estate
Welwyn Garden City, Hertfordshire, AL7 2BH

Tel: +44 (0) 1707 373751
Fax: +44 (0) 1707 373752

Website: www.gesuk.com
Email: sales@gesuk.com