

Important Safety Information

Symbols used in this manual:



This symbol identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.



This symbol indicates actions or procedures which if not performed correctly may lead to personal injury or incorrect function of the instrument or connected equipment.

Terms used in this manual:

Note Indicates actions or procedures which may affect instrument operation or may lead to an instrument response which is not planned.

Technical Support Contact Information:

Sensia LLC

200 Westlake Park Blvd

Houston, TX 77079

+1-866-773-6742

sensiaglobal.com

JISKOOT is a trademark of Sensia.

Copyright © 2021 Sensia.

All Rights Reserved.
Printed in the United Kingdom.

Manual No. H31, Rev. 1

Document Revision History:

1	Seals modified. Installation notes added.	J.Baker	P. Whittle	07 Mar 2007
0	First Issued (Based on G5 Issue 5)	N.McGee	P. Whittle	10 Mar 2007
Issue	Description of Change	Issued	Approved	Date

JISKOOT™ G6 Gas Sampler User Manual

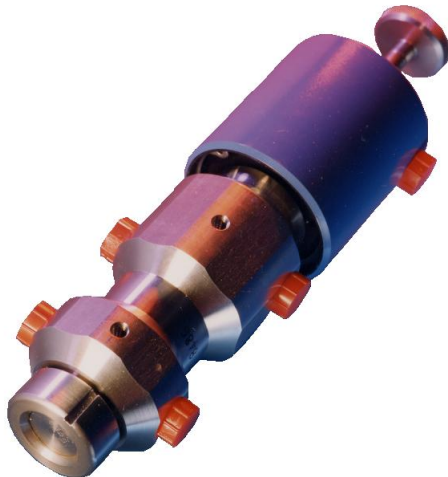
JISKOOT™ G6 Gas
Sampler User Manual

Table of Contents

1	Introduction	1
2	Operating Instructions	1
3	Glossary of Special Terms	2
4	Utilities Reference	2
5	Full Functional Description	2
6	General Assembly & Bill Of Material	3
7	Installation Details	4
7.1	Minimum Requirements.....	4
7.2	Typical Sampling System Installation.....	4
7.3	Sample Take-off Probe Selection, Location and Installation.....	5
7.4	Sample Take-off Probe Location and Installation.....	6
7.5	Typical Gas Sampling Configurations.....	7
8	Equipment Start-up	9
8.1	Initial Start-up and Leak Testing.....	9
8.2	Sampler Stroke Adjustment.....	9
9	Maintenance and Troubleshooting	10
9.1	Health and Safety Precautions.....	10
9.2	Annual Maintenance.....	10
9.3	Overhaul Instructions.....	10
9.4	To replace the Inlet Valve 'O' ring.....	11
9.5	To remove the Actuator Cylinder and Block from the Sampler Body.....	12
9.6	To remove internal cartridge seals from Sampler Body.....	12
9.7	Sampler Reassembly.....	12
10	Frequently Asked Questions	13
10.1	Sampler Does Not Operate.....	13
10.2	Sampler Operates But Does Not Produce A Sample.....	13
10.3	Sampler fails to take adequate sample.....	14
10.4	Leaks from Actuator.....	14
10.5	Process Fluid Leaks.....	15
11	Recommended Spares List	15
12	Product Specific Drawings	15

JISKOOT™ G6 Gas
Sampler User Manual

1 Introduction



The Jiskoot™ G6 Gas Sampler provides accurate and reliable means of extracting gas samples from pipelines.

The sample grab size is fully adjustable. The G6 uses pressure balanced self-lubricating seals to maximise service intervals and all construction materials are selected to eliminate corrosion. The complete design concept of the G6 is to combine reliability and accuracy with minimum maintenance. The G6 Gas Sampler can be completely overhauled in less than 30 minutes (Qualified and trained personnel).

The G6 operates at pipeline pressures between 5 and 200 barg and will provide repeatable sample sizes regardless of pressure fluctuations. It operates as a pressure balanced sampler ensuring samples are discharged at pipeline pressure. This minimises evaporation or condensation and ensures that each grab remains representative.

Note: When requesting assistance or spare parts, please provide the Sampler Model and Serial Numbers to ensure that the correct options are quoted.

2 Operating Instructions

The Jiskoot™ G6 Gas Sampler is intended for incorporation into a Sampling System typically comprising Sample Take Off Probe, a controller to generate the control signal - to operate the solenoid valve, switching the regulated air or gas supply to the actuator.

To operate the G6 Gas Sampler, ensure any isolating valves in the pipe work between the Sample Take-off Probe, the Sample Gas Inlet/Outlet Ports and the sample return line or vent, are open. Open any isolating valves between the Sample Outlet and the sample collection system.

The time interval between each sample grab and the duration of the actuating pulse will have been adjusted during installation and commissioning. Depending on the type and method of determining grab intervals, the sample will operate automatically when the flow is detected in the main pipeline or the Controller is initiated.

3 Glossary of Special Terms

Grab - The action of the sampler in taking a sample of gas.

4 Utilities Reference

Air pressure 80psig/5.5barg

Air Consumption Approximately 100ml free air per grab.

5 Full Functional Description

Item numbers referenced in this section are identified in fig 6.1.

The Jiskoot™ G6 Gas Sampler is intended to be installed close to a sample take-off probe mounted in the system pipeline as described in section 7 of this manual.

The Sampler is pneumatically actuated from a regulated air or gas supply via a solenoid valve operated by the sampler controller.

A flow of gas is maintained from the pipeline via the sample take-off configuration, flowing through the Gas Sampler's two bi-directional Sample Gas Inlet /Outlet ports.

Line pressure is applied to the Balance Port. This pressure is retained between the pair of main cartridge seal assemblies (Items 21/21a), the lower cartridge seal (21a), pressing down on the annulus of the Spring Retainer (9), which is located within the body by the spring (22). This ensures that the pressure required to lift the Seal cartridge (21b), which seals against the Sample Chamber (25) 'O' Ring (15) is at all times maintained above the line pressure, by the differential force exerted by the Spring (22).

6 General Assembly & Bill Of Material

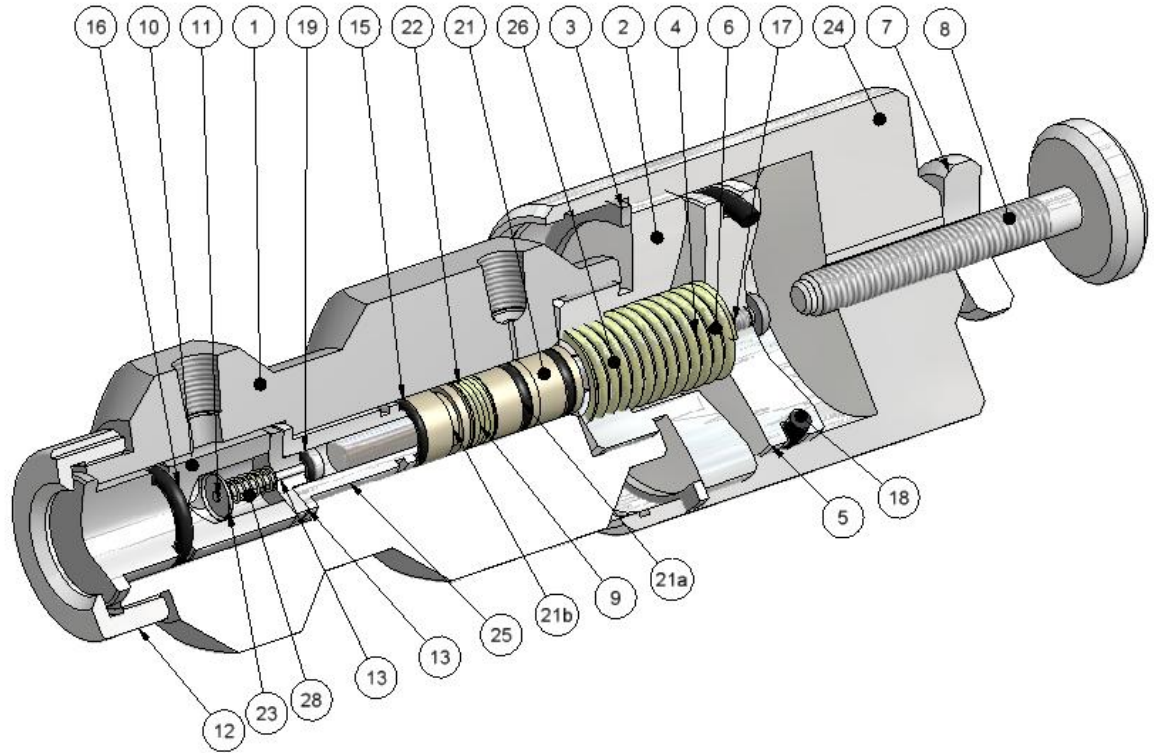


Fig. 6.1 Sectional View of G6 Gas Sampler

Item No	Description	Part Number	Item No	Description	Part Number
1	Main Body (Rev 6)	36-1330-00	24	Actuator Cylinder	36-1331-00
2	Actuator Block	36-1332-00	5	Actuator Piston	36-1333-00
18	Piston Seal	37-0542-00	4	Spring	40-0112-00
6	Set Screw	99-0040-00	8	Displacement Adjuster	36-0920-00
7	Lock Nut	36-1335-00	3	Circlip	37-0608-00
26	Sample Ram	36-0919-00	10	Valve Body	36-1334-00
13	Check Valve Stem	36-1336-00	28	Spring	40-0113-00
23	Flat Washer	99-0043-00	11	Spring Retainer	99-0044-00
19	'O' Ring	37-0714-00	25	Sample Chamber	36-3451-00
21	Cartridge	37-0789-00	15	'O' Ring	36-0792-00
21a	Cartridge	37-0789-00	22	Spring	40-0229-00
9	Spring Guide	36-3449-00	21b	Cartridge	37-0789-00
12	Lock Nut	36-1202-00	13	Check Valve Insert	36-1341-00
33	CE Label	33-0714-00	17	Pan Head Screw	99-0058-00
16	'O' Ring 13 x 3	37-0717-00			

7 Installation Details

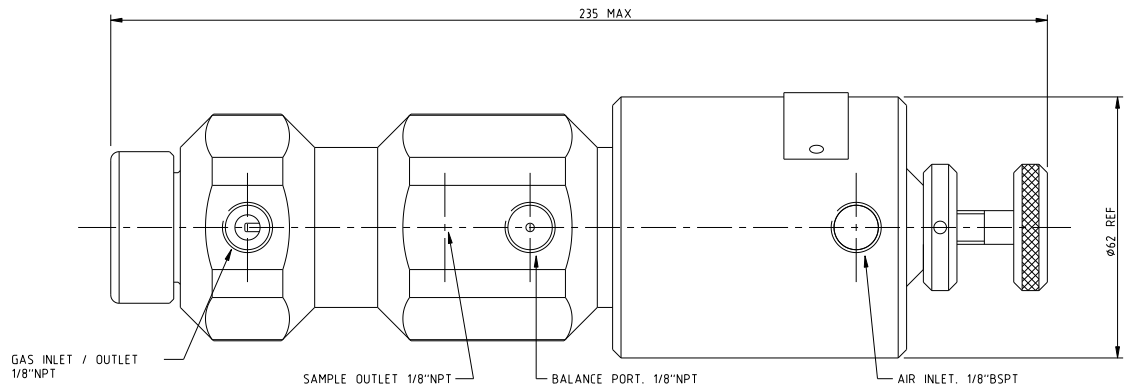


Fig 7.1 G6 Gas Sampler

NOTE: *Thread tape must NOT be used on any joints associated with this equipment due the risk of pieces of tape becoming entrapped in the internal components. Use liquid thread sealants such as Loctite 572 or similar.*

7.1 Minimum Requirements

The Jiskoot™ G6 Gas Sampler is intended for incorporation into a Sampling System typically comprising Sample Take-Off Probe, a controller to generate the control signal to operate the solenoid valve switching the regulated air or gas supply to the actuator and a sample receiver.

7.2 Typical Sampling System Installation

All equipment required for the correct operation of the gas sampling system should be located and installed inside a suitable enclosure. The enclosure may require heating to keep all piping and cylinders at line pressure and temperature if the gas is wet. This will prevent condensation of the heavy products and liquids that may affect the sample validity.

The Sample Cylinder, whether it be a fixed volume (variable pressure) type or the variable volume (constant pressure) version, should be mounted inside the enclosure close to the Gas Sampler.

The sampling system enclosure, being a fully functioning self-contained system, should be located as close to the Sample Take-off Probe as possible.

JISKOOT™ G6 Gas Sampler User Manual

To prevent any trapped volume, the sample line from the probe to the sampling system enclosure should ideally be sloping upwards.

If the gas pressure applied to the Balance Port is to be supplied from an external source such as a Nitrogen supply and not directly from the Sample Inlet pipework, it is essential that the pressure is controlled to within 2 bar of the sample inlet pressure.

NOTE: The air supply line from the solenoid valve to the actuator on the G6 Must be of a flexible type. Hard tubing this line can cause undesirable forces from the tubing installation to pull on the actuator/piston assembly, causing mis-alignment and potentially a small air leak past the piston seal. Slowing the grab

7.3 Sample Take-off Probe Selection, Location and Installation

7.3.1 Selection of Sample Take-off Probe

Single Flow (conventional) Probe.

A single flow probe (Fig. 7.2) may be used singularly if only a product supply is desired for sampling procedure. If a product loop is desired, a single flow probe installed in a high pressure area and return through a tapping in a low pressure area may be used. (Fig. 7.4).

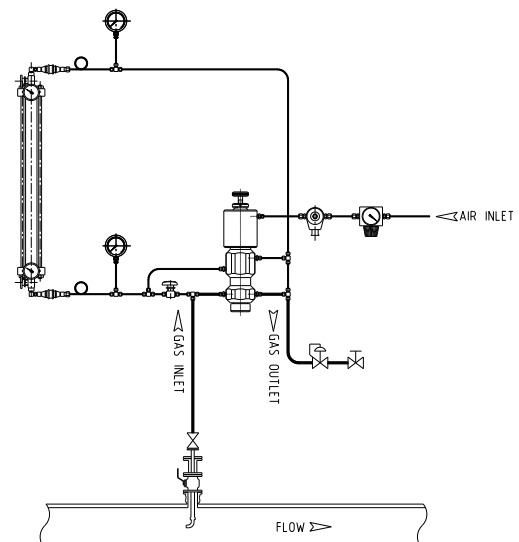


Fig. 7.2. Single Flow Probe

JISKOOT™ G6 Gas
Sampler User Manual

Dual Flow Probe.

A dual flow probe is recommended to achieve a product loop where only one pipeline port is available. (Fig. 7.3).

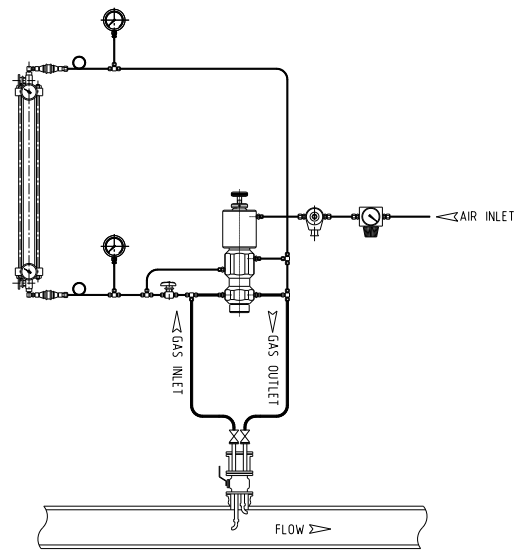


Fig. 7.3. Dual Flow Probe

7.3.2 Acceptable Sample Loops

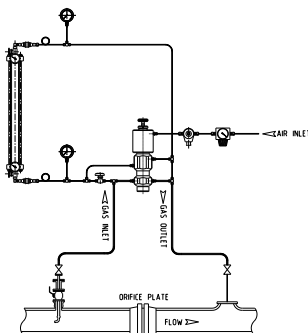


Fig. 7.4

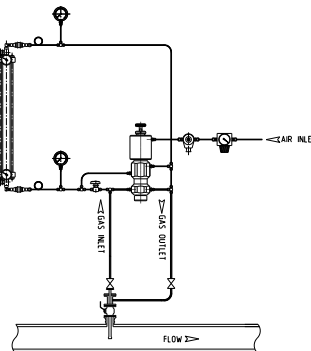


Fig. 7.5

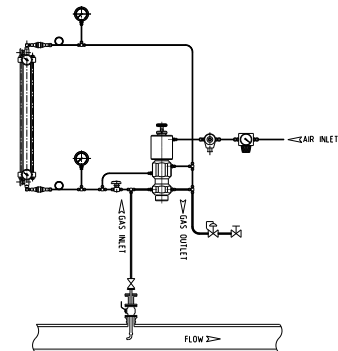


Fig. 7.6

7.4 Sample Take-off Probe Location and Installation

The Sample Take-off Probe should be a minimum of five pipe diameters from any device which could cause aerosols or significant pressure drops.

The Sample Take-off Probe should not be located within the meter tube region as defined in *AGA 3-1985 edition, Figure 4-8*.

The Sample Take-off Probe should be mounted vertically in a horizontal run.

The Sample Take-off Probe should penetrate into the centre one-third of the pipeline.

The end of the Sample Take-off Probe should be cut parallel to the pipeline.

JISKOOT™ G6 Gas
Sampler User Manual

The Sample Take-off Probe should be stainless steel.

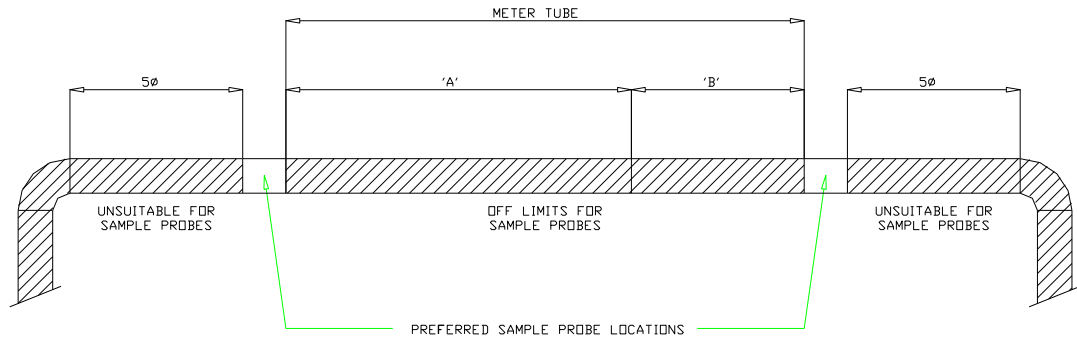


Fig. 7.7. PREFERRED PROBE LOCATION

7.5 Typical Gas Sampling Configurations

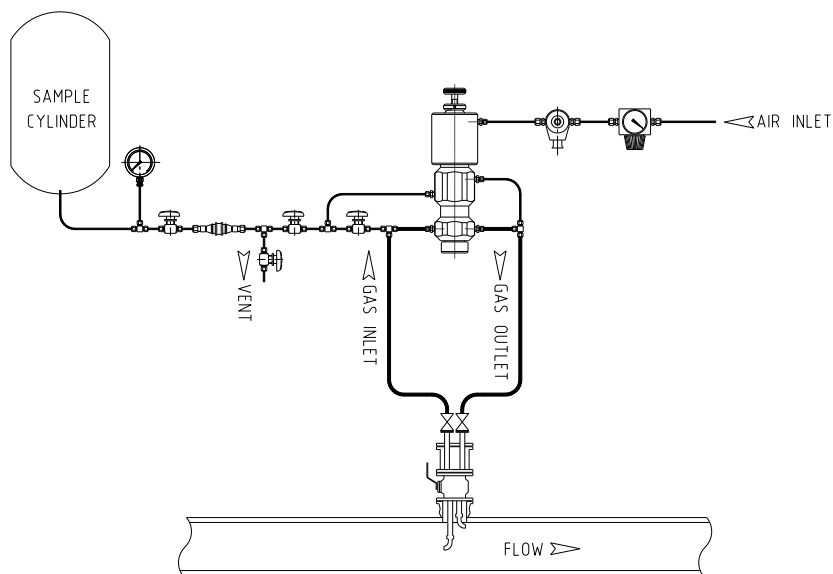


Fig.7.8. Fixed Volume Sampling System

JISKOOT™ G6 Gas
Sampler User Manual

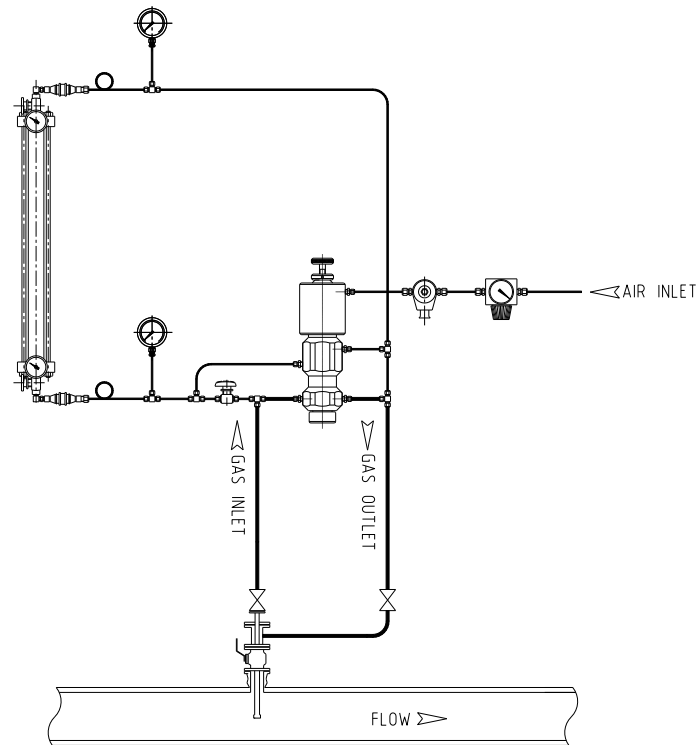


Fig.7.9. Constant Pressure Sampling System

The product loop should be as short as possible using 1/4"-3/8" (6-8mm) inch stainless steel tubing and should be insulated if extreme conditions are expected (e.g. extremely cold weather, product supply lines longer than 10 feet/3 metres).

The supply line should slope from the probe up to the sampler. All traps must be avoided.

The supply line should slope down from the sample to a connection of lower pressure on the pipeline.

To minimise pressure loss in the sample loop, all valves should be full bore stainless steel ball valves.

The product loop should not have filters fitted.

8 Equipment Start-up

8.1 Initial Start-up and Leak Testing

When all tubing connections have been completed, open the sample probe supply and return valves to establish product supply pressure to the sampler. Check all connections in the product loop using leak detector (e.g. *SNOOP*).

Adjust the actuator supply filter/regulator to 80psig/5.5 Barg and check all connections to the solenoid valve using leak detector.

For initial start-up and leak test, the Displacement Adjuster on the top of Sampler should be at 12 turns open (anti-clockwise) for maximum volume and select the quickest sampling rate which can be achieved by applicable control for the initial start-up and leak test procedure.

Sampler actuation will begin when the solenoid is energised by the sampler controller or timer. Allow the Sampler to actuate at the fast rate and maximum volume until desired stabilised pressure is achieved at sample discharge. Check all connections from sample discharge of Sampler to connection on sample cylinder using liquid leak detector.

8.2 Sampler Stroke Adjustment

Table 1 indicates the theoretical displacement per sample grab for the setting of the Displacement Adjuster based on a non-compressible medium and time desired between samples.

The sample output is infinitely adjustable from 0-0.4cc/stroke. Turn the Displacement Adjuster clockwise until plunger is bottomed out. Turning anti-clockwise count the revolutions until desired setting is reached.

The desired time between samples (determined from Table 1) is set in the sampler controller and requires a pulse of 3 seconds duration time for Sampler actuation.

SAMPLING RATE IN MINUTES FOR VESSEL INDICATED													
No. of turns open on Displacement Adjuster	Sample Displacement per Stroke	31 DAY SAMPLING PERIOD Sample Vessel Size In cc's						7 DAY SAMPLING PERIOD Sample Vessel Size In cc's					
		1000	800	600	500	400	300	1000	800	600	500	400	300
1	0.042	1.9	2.3	2.9	3.7	4.7	6.2	0.4	0.5	0.7	0.8	1.1	1.4
2	0.083	3.7	4.7	5.8	7.4	9.3	12.4	0.8	1.1	1.3	1.7	2.1	2.8
3	0.125	5.6	7.0	8.7	11.2	14.0	18.6	0.3	1.6	2.0	2.5	3.2	4.2
4	0.167	7.4	9.3	11.6	14.9	18.6	24.8	1.7	2.1	2.6	3.4	4.2	5.6
5	0.208	9.3	11.6	14.5	18.6	23.3	31.0	2.1	2.6	3.3	4.2	5.3	7.0
6	0.250	11.2	14	17.4	22.3	27.9	37.2	2.5	3.2	3.9	5.0	6.3	8.4
7	0.292	13.0	16.3	20.3	26.0	32.6	43.4	2.9	3.7	4.6	5.9	7.4	9.8
8	0.333	14.9	18.6	23.3	29.8	37.2	49.6	3.4	4.2	5.3	6.7	8.4	11.2
9	0.375	16.7	20.9	26.2	33.5	41.9	55.8	3.8	4.7	5.9	7.6	9.5	12.6
10	0.417	18.6	23.3	29.1	37.2	46.5	62.0	4.2	5.3	6.6	8.4	10.5	14.0
11	0.458	20.5	25.6	32.0	40.9	51.2	68.2	4.6	5.8	7.2	9.2	11.6	15.4
12	0.500	22.3	27.9	34.9	44.6	55.8	74.4	5.0	6.3	7.9	10.1	12.6	16.8

9 Maintenance and Troubleshooting

9.1 Health and Safety Precautions



The Jiskoot™ G6 Gas Sampler may be used in applications involving hazardous products. Care must be taken to avoid contamination by any product trapped within the internal components that may be released as the Sampler is stripped down.

The Jiskoot™ G6 Gas Sampler must be overhauled by trained and competent personnel.

9.2 Annual Maintenance

The Jiskoot™ G6 Gas Sampler is designed to operate continuously for a period of about 1,000,000 grabs or 12 months before a major overhaul, however this service interval will be affected by the type of product being sampled, particularly the amount of particulate matter such as sand, and therefore cannot be guaranteed. The service intervals will therefore need to be determined from the experience gained on the particular application.

The G6 Gas Sampler should be removed from the pipeline and taken to a clean area for servicing, servicing by trained and competent personnel.

It is essential that soft vice jaws are used whenever components are required to be held, and that all components, particularly those with sealing faces are thoroughly cleaned of dirt and other contamination by degreasing and drying prior to re-assembly.

9.3 Overhaul Instructions

Remove the Gas Sampler from sampling system enclosure.

The stainless steel tubing from the solenoid and the process connections to the Sampler must be disconnected before removing the Sampler. It is not necessary to remove the fittings from the Sampler.

9.4 To replace the Inlet Valve 'O' ring

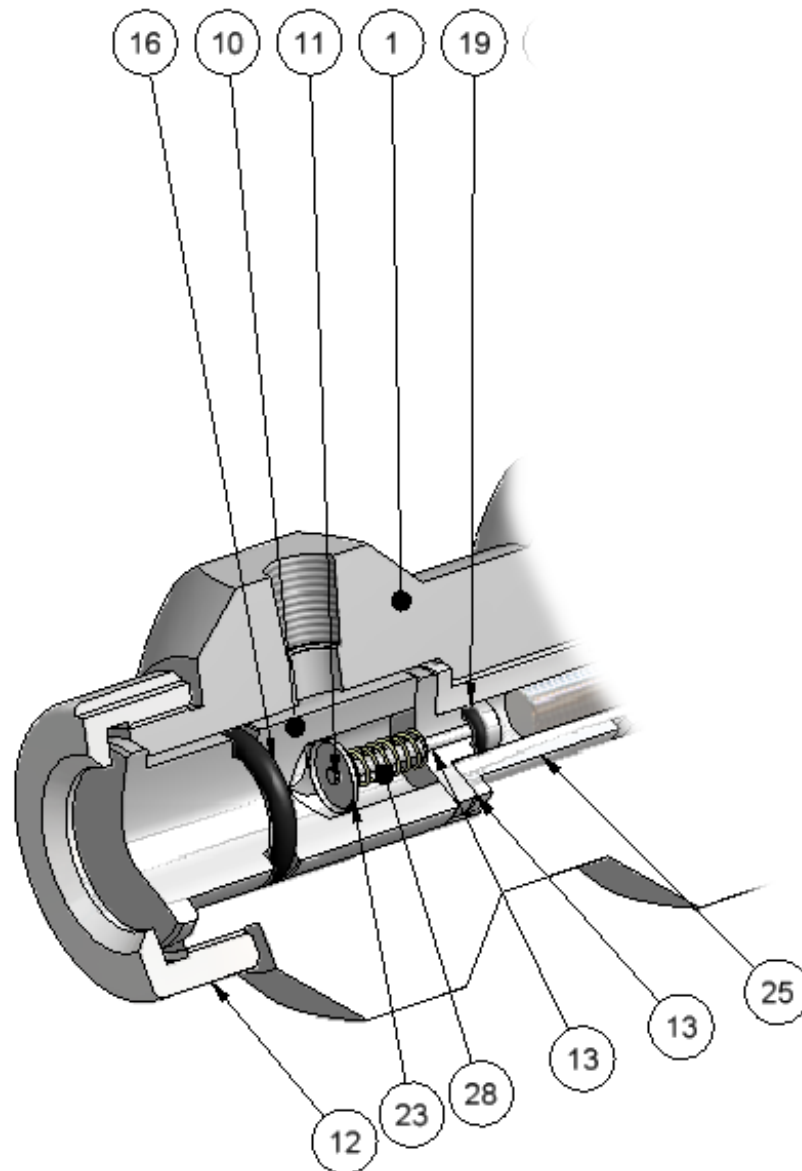


Fig.12. Sectional View - Main Seals

To replace the Inlet Valve 'O' ring (item 19), unscrew the Lock Nut (12) from the Main Body and withdraw the Valve Body (10). Cut the 'O' ring off the head of the Check Valve Stem (13) and stretch the new 'O' ring over the head of the Check Valve Stem using a light coat of *Castrol Spherol MP2* (or equivalent) grease.

The Inlet Valve Assembly should be refitted as described in section 9.7

9.5 To remove the Actuator Cylinder and Block from the Sampler Body.

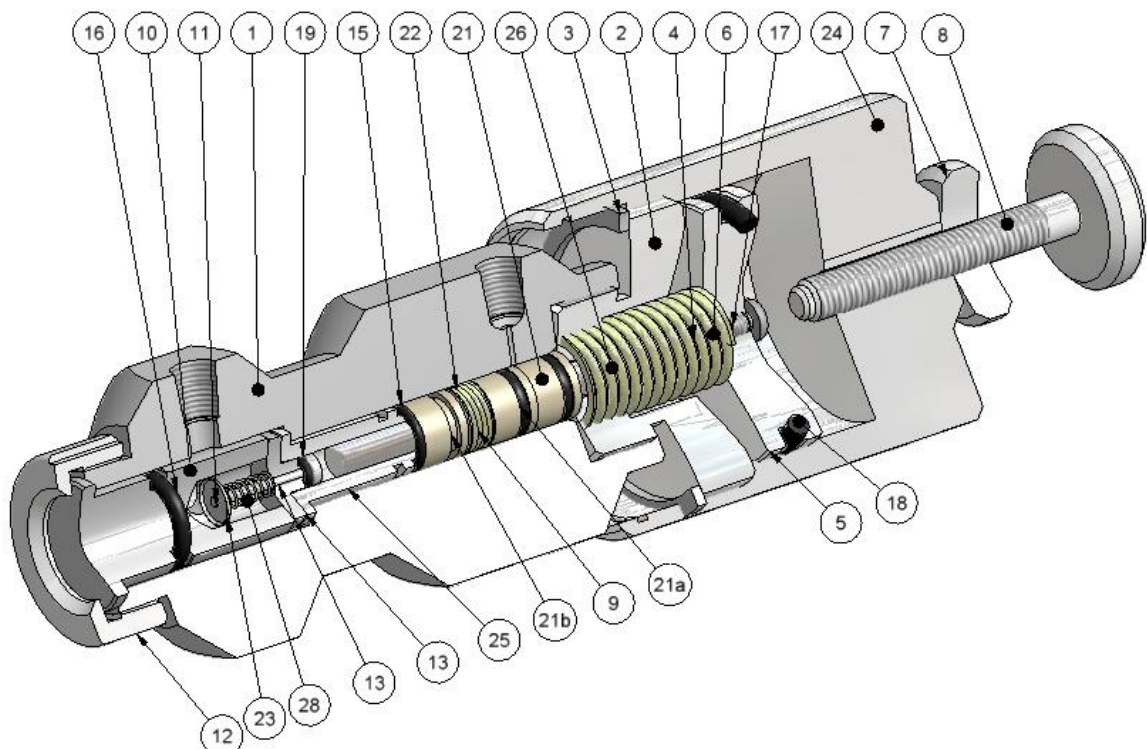
The Actuator Cylinder and Block are threaded into the top of the Main Body. The Actuator Cylinder houses the Actuator Piston, Spring and Piston and should not be dismantled unless one of these items needs replacing. To replace the Piston Seal, unscrew the Actuator Cylinder and Block from the Main Body, remove the Circlip (3) and withdraw the Actuator Block from the cylinder. This will allow the Actuator Piston to be removed and the Piston Seal to be replaced.

9.6 To remove internal cartridge seals from Sampler Body.

Unscrew the Actuator Cylinder and Block from the Main Body, Insert a non-metallic rod (between ¼"-½" (7-12mm) diameter) into the top of the Sampler Body. Gently tap to remove the Sample Chamber (25), out the bottom of the Sampler Body.

Clean and inspect all components to determine if replacement is necessary.

NOTE: Normal service generally requires only the replacement of the Cartridge seals, available from Jiskoot Ltd.



9.7 Sampler Reassembly

Apply a light coat of *Castrol Spherol MP2* (or equivalent) grease on all components to prevent damage.

JISKOOT™ G6 Gas Sampler User Manual

Install the Sample Chamber with 'O' ring (15) positioned at the end of the chamber.

It is recommended that the cartridge seals are first placed over the Sample Ram before final assembly with the Spring and Actuator.

Insert the cartridge seals (21,a,b), spring (22) and spacer (9), through the top of the Sampler body noting the position of “O” rings on the cartridge seals (Remove “O” ring on cartridge Seal 21b).

Screw the Actuator Block to the top of Main Body to retain all components in place.

Apply a light coat of grease on the Sample Ram prior to installation and ensure that the end is free from burrs. Insert the Sample Ram into the Seal Spacer and with a twisting motion, push down through the seals.

Replace the actuator and fit the Circlip to retain the body to the actuator.

Replace the Inlet Valve Assembly in the Main Body, ensuring that the cross port is in line with the tapping's in the body. It is recommended that a small Allen key or bar is used to stop the body rotating as it is tightened.

Set the Displacement Adjuster back to its original setting.

Reconnect impulse/actuator lines to Sampler Body and Actuator Cylinder.

Pressure test Sampler as described in Section 2 to ensure correct operation.

10 Frequently Asked Questions

10.1 *Sampler Does Not Operate*

Check that all Actuator and electrical connections are secure and correct.

Check that the Actuator pressure, indicated on the air regulator discharge pressure gauge is between 5-6 Barg, re-adjust as required.

Ensure that the electrical pulse signal supplied to the Solenoid Valve is the correct duration (500 millisecond minimum).

10.2 *Sampler Operates But Does Not Produce A Sample*

Check all valves are open and that there is pressure in the pipeline.

Check Sampler Controller is demanding a grab and that any interposing relays are operating satisfactorily.

Is solenoid being energised? - Check Solenoid Fuse and operate manually where solenoid has manual override facility.

Check that the Solenoid Valve is energised for minimum of 500 milliseconds each cycle. Short cycling will prevent the Actuator from stroking fully.

Check that Sample Receiver is not either full or isolated (Carefully loosen ¼" connections in sample discharge tubing to test).

Ensure the Actuator pressure is correct. If the pressure is too low, the Actuator will not stroke fully.

Connect a pressure gauge to the outlet and actuate the sampler. Check the sampler can produce up to a maximum 200 Barg, or 50% greater than the maximum line pressure, whichever is lowest. Check the outlet pressure is maintained for 30 minutes without loss.

10.3 Sampler fails to take adequate sample

Check Sample Receiver is not full and that the Displacement Adjuster (8) is not fully screwed down, restricting the stroke and sample size.

Ensure that the Sampler Controller is not either demanding too fast a sample grab rate (120 grabs per minute maximum), or that the signal to the solenoid is too short and not allowing the Actuator to travel to the full extent of its stroke.

Check that the air supply is at the correct pressure and capacity to operate the Gas Sampler (Refer to Utilities Section).

If the above are satisfactory, then the Sampler will require a change of internal seals.

Connect a pressure gauge to the outlet and actuate the sampler. Check the sampler can produce up to a maximum 200 Barg, or 50% greater than the maximum line pressure, whichever is lowest. Check the outlet pressure is maintained for 30 minutes without loss.

10.4 Leaks from Actuator

Leaks will occur from the Actuator if the 'O' Ring (18) is damaged, the Lock Nut (7) is loose, or if the air supply tubing causes the Actuator to be pulled out of alignment.

Dismantle the Actuator (see Section 9.5) and inspect the 'O' Ring. If the 'O' ring is worn or damaged, a replacement 'O' Ring must be fitted.

JISKOOT™ G6 Gas Sampler User Manual

WARRANTY - LIMITATION OF LIABILITY: Seller warrants only title to the products, software, supplies and materials and that, except as to software, the same are free from defects in workmanship and materials for a period of one (1) year from the date of delivery. Seller does not warranty that software is free from error or that software will run in an uninterrupted fashion. Seller provides all software "as is". THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Seller's liability and Buyer's exclusive remedy in any case of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, software, supplies, or materials is expressly limited to the replacement of such products, software, supplies, or materials on their return to Seller or, at Seller's option, to the allowance to the customer of credit for the cost of such items. In no event shall Seller be liable for special, incidental, indirect, punitive or consequential damages. Seller does not warrant in any way products, software, supplies and materials not manufactured by Seller, and such will be sold only with the warranties that are given by the manufacturer thereof. Seller will pass only through to its purchaser of such items the warranty granted to it by the manufacturer.

JISKOOT™ G6 Gas Sampler User Manual

JISKOOT™ G6 Gas
Sampler User Manual
