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Rockwell Automation + Schlumberger

+ MEASUREMENT SOLUTIONS

INSTALLATION, OPERATION, & MAINTENANCE MANUAL

FOR

710 ELECTRIC CELL SAMPLER

This Jiskoot Product is designed to provide outstanding service if correctly installed, used and maintained recognising the effects of the process conditions (temperature, pressure, wax/pour point, sediment, etc.), however this equipment WILL NOT accurately perform without suitable recognition of the requirements for overall system design.

Truly representative sampling of crude oils etc., cannot be achieved by one single product in isolation. A well designed system and operating procedures as laid down in the Sampling Standards ISO 3171, *API 8.2 and* IP Chapter VI section 2 *are mandatory.*

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1 Warranty

This product should be supplied with a warranty card. Please complete and return it to register for warranty support.

In the event it is missing, to register for support, please contact us on +44 (0)1892 518000 or support@jiskoot.com, quoting the Jiskoot Order Number or Serial No with the following information:

- Date installed
- Full installation site details, including contact details
- Maintenance and operator contact details (where different from above)
- Product comments/feedback

If the product has been supplied as part of a Jiskoot system or assembly, please complete the warranty card for the system.

2 Introduction

The 710 flow-through Electric Cell Sampler provides a means of extracting a sample from liquids flowing in a pipeline. Designed for applications where instrument air is unavailable, the 710 Cell Sampler is installed in a 1" nominal bore "by-pass" loop from a main pipeline.

It is crucial that the bypass loop represents the flow in the main pipeline: please refer to ISO 3171, API 8.2, or to Jiskoot for advice.

The 710 Electric Cell Sampler is designed to extract nominal 1cc samples from products ranging from Natural Gas Liquid at -20°C to crude oil, refined hydrocarbons, including non-lubricating products, and non-corrosive chemicals at up to 100°C, operating in a pressure range from 3 to 50 Barg, on viscosities 0.5 to 500cSt. The Sampler can operate in an ambient temperature range of -20°C to 40°C and has an Ingress Protection rating of IP55 (*BS EN 60529: 1992*).

The standard Sampler is designed for installation as a wafer fitting between 1" 150# or 1" 300# raised face ANSI flanges and can withstand static pressure testing to full flange rating of 76 Barg.

The Sampler is supplied with 3 phase motor, voltage/frequency as specified at order placement. Where only single-phase supplies are available, an inverter can be supplied to generate the 3 phase supply.

A range of solenoids are available to suit the particular installation, and both Motors and Solenoids may be supplied for use in a hazardous area, certified to either ATEX/CENELEC Zone 1, Gas Group IIB, T4 or UL/FM Class 1, Division 1, Gas Groups 2, 3 & 4.

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

3 Operating Instructions

The Sampler must be installed in accordance with the Installation Details, and be connected to a suitable sample receptacle. All isolating valves in the fast loop or by-pass pipeline from the main pipeline must be open and the pipework flooded.

Warning: ***Before operating the Sampler for the first time, or following disconnection for maintenance, the direction of rotation must be checked as detailed in Section 7.***

A suitable Sample Receiver must be connected to the Sample outlet.

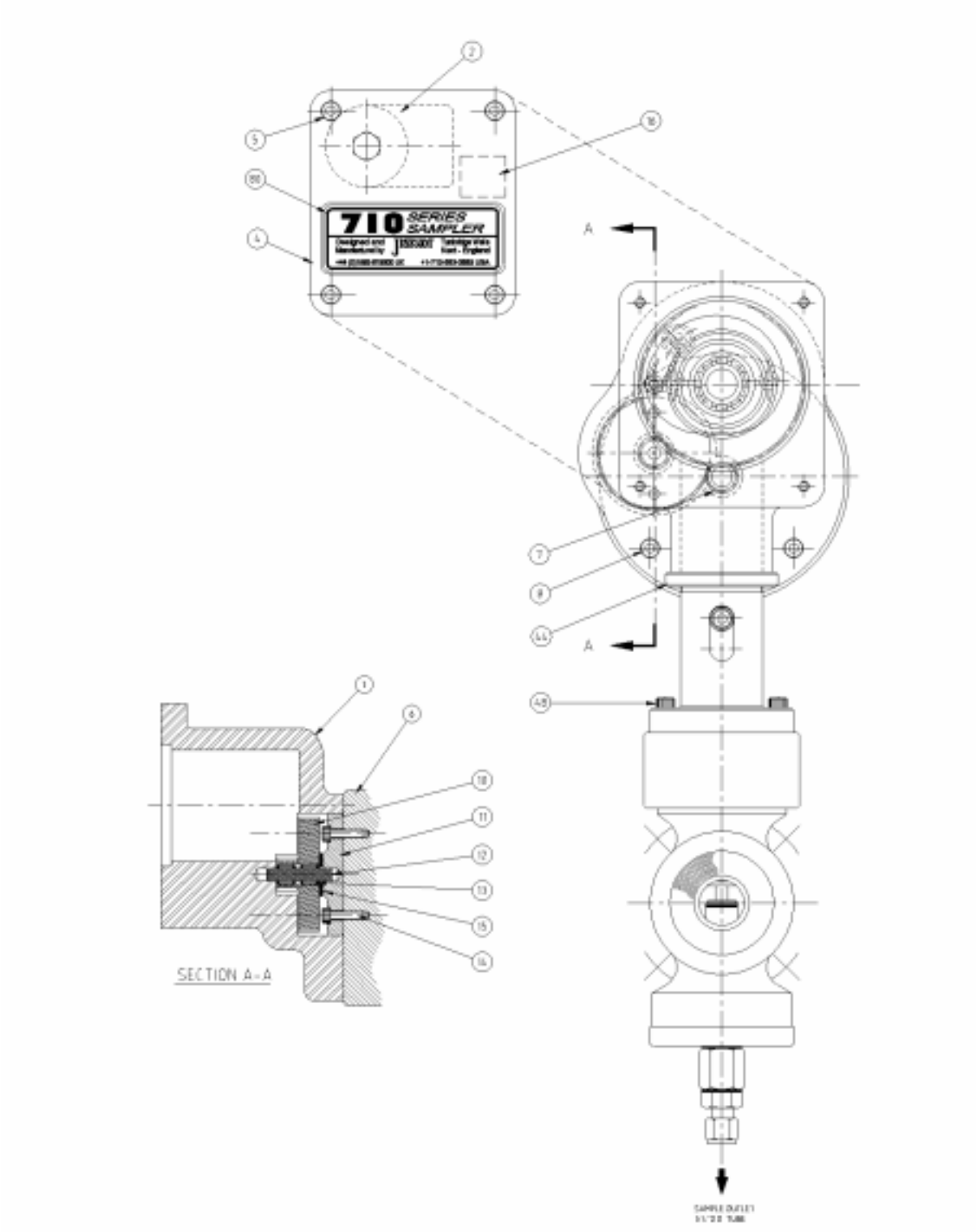
To operate the Sampler, it is necessary to apply continuous power to the motor and to energise the Sampler Solenoid for each sample grab to be taken. Any pipeline conditioning facility must be started up to ensure a representative product is available to the Sampler.

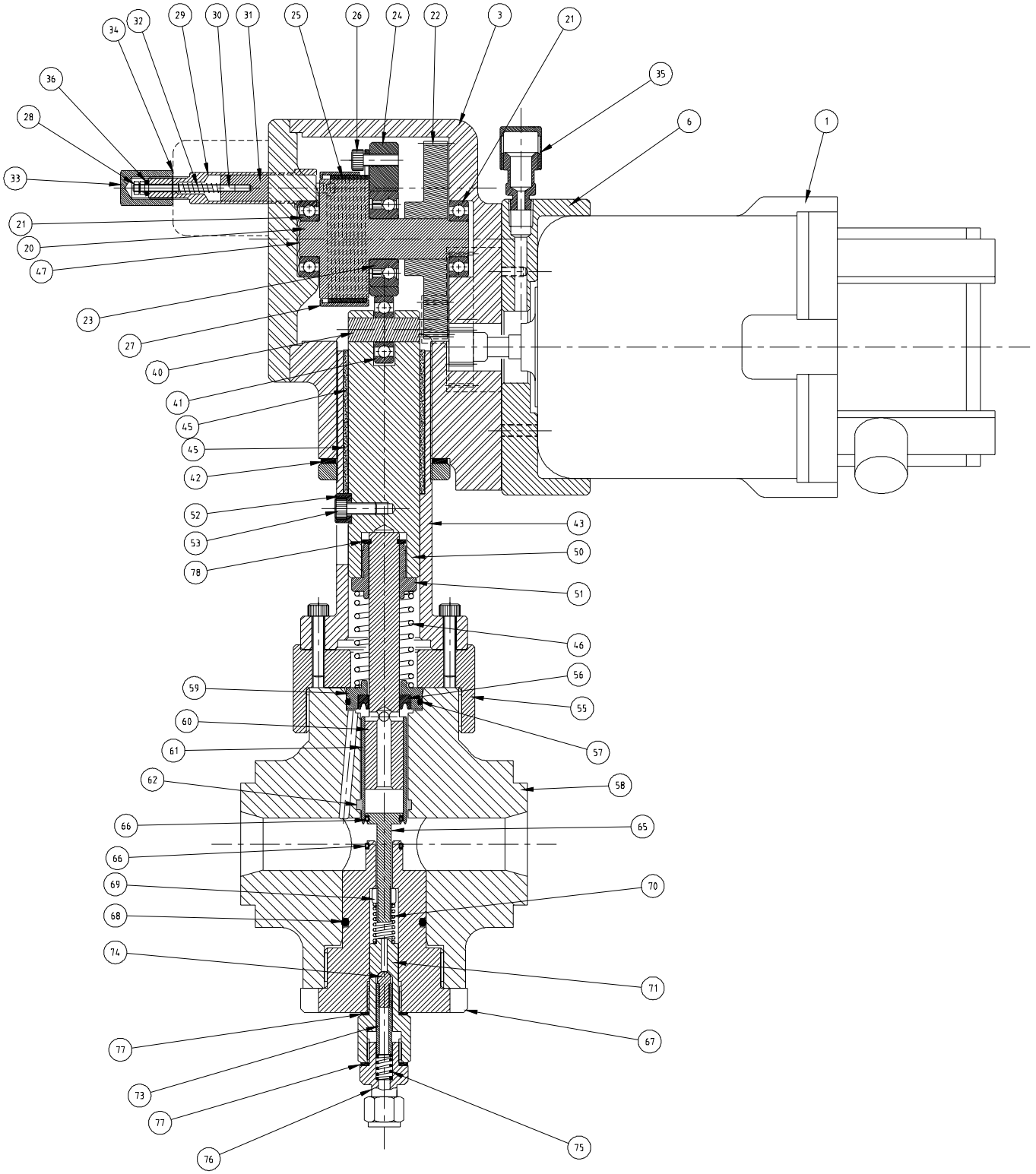
Control of the Sampler, including changeover of the Sample Receivers will be determined by the type of Sampler Control System being used.

4 Glossary Of Special Terms

Grab	The action of taking an individual sample (normally 1 or 2 ml) from the pipeline.
Fast Loop	A by-pass pipeline along side the main pipeline through which a proportion of the product is flowing. This may either be pumped by a dedicated pump, or utilise the pressure drop across the discharge to suction of Jet-Mix Pump or across an orifice.

5 General Assembly & Bill Of Material

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Item No	Description	Part Number	Item No	Description	Part Number
1	Motor	48-0570-00	2	Solenoid	
3	Gearbox Housing	36-3070-00	4	Gearbox Cover	36-3071-00
5	M5 *16 Cap Head Screw		6	Motor Adapter	36-3072-00
7	Helical Gear	39-0270-00	8	M5 *25 Cap Head Screw	
9			10	Gear Cluster	39-0186-00
11	Blanking Plug	36-3074-00	12	Dowel	36-3075-00
13	Needle Roller	39-0150-00	14	M4 * 12 Cap Head Screw	
15	Thrust Washer	39-0021-00	16		
17			18		
19			20	Gearbox Shaft	36-3073-00
21	Ball Bearing	39-0053-00	22	Spur Gear	39-0231-00
23	Free Wheel Ball Race	39-0162-00	24	Cam	36-3077-00
25	Clutch Spring	40-0200-00	26	M5 * 10 Cap Head Screw	
27	Unwind Restrictor	36-3078-00	28	Half Nut	
29	Armature Sleeve	36-3079-00	30	Stop Screw	36-3080-00
31	Armature	36-3081-00	32	Spring	40-0201-00
33	Solenoid Nut	36-3065-00	34	Crinkle Washer	
35	Lubricator	40-0206-00	36	'O' Ring	37-0702-00
37			38		
39			40	Dowel	36-3076-00
41	Ball Bearing	39-0163-00	42	Delrin Washer	36-3138-00
43	Mounting Tube	36-3089-00	44	Lock Nut	36-1134-00
45	Wear Bush	39-0020-00	46	Spring	40-0202-00
47	Bearing Pre-load Spring	40-0207-00	48	M5 * 25 Cap Head Screw	
49			50	Cam Follower	36-3140-00
51	Capture Tube Retaining Nut	36-3088-00	52	Guide Sleeve	36-3142-00
53	M5 * 12 Cap Head Screw		54		
55	Cell Body Adapter	36-3143-00	56	Seal	37-0730-00
57	'O' Ring	37-0733-00	58	Cell Body	36-1273-00
59	Seal Adapter	36-3151-00	60	Sample Ram	36-3144-00
61	2cc Sleeve	36-3141-00	62	Slydring	37-0518-00
63			64		
65	Sample Plunger	36-3145-00	66	Balseal	37-0540-00
67	Bottom Plug	36-3146-00	68	'O' Ring	37-0043-00
69	Split Nut	36-3147-00	70	Spring	40-0205-00
71	Check Valve Insert	36-3148-00	72		
73	Valve Stem	36-3149-00	74	Check Valve Tip	36-1229-00
75	Spring	40-0084-00	76	Male Connector	48-0467-00
77	Dowty Seal	37-0403-00	78	Circlip	37-0582-00
79			80	Label	33-0270-00

6 Full Functional Description

The 710 Electric Cell Sampler operates on grab principles similar to previous Jiskoot Samplers, but uses an electric motor to provide the motive power.

The Sampler Motor (1) is designed for continuous operation, the shaft speed being reduced through a gearbox to a free-wheel gear and clutch arrangement. The Clutch Spring (25) is normally held disengaged by the Solenoid Armature (31), allowing the motor to freewheel. When the Solenoid Coil is momentarily energised, it disengages the spring clutch, turning the Cam (24).

As the Cam revolves, the Cam Follower (50) moves the Sample Ram (60) downwards past the Balseal (66) located on the top of the Bottom Plug (67), trapping a sample of product in the void between the Sample Plunger (65) and the Bottom Plug. Continuing downward motion depresses the Sample Plunger, forcing the trapped sample past the gap between the Plunger stem and the Bottom Plug and opens the Check Valve (74). The sample is then expelled through the Connector (76) via the external Check Valve to the sample receiver.

As the Cam continues to revolve, the Cam Follower moves the Sample Ram away from the Bottom Plug and back up to the dwell position, ready for the next grab to be initiated and allowing fresh product to pass in the area between Sample Plunger and Bottom Plug.

7 Utilities Reference

Motor Voltage Available:	Three phase	380-440 Volts 50/60 Hz
	Power Consumption	60 Watts (nominal)
Solenoid Voltages Available:	Single phase	110-240 Volts 50/60 Hz
	Single phase	24 Volts DC
	Power Consumption	10 Watts
Sample pulse duration (Solenoid energisation time)		50-250 milliseconds
Maximum Grab Rate **		50 grabs/minute at 50Hz operation

**Maximum grab rate is dependent on supply frequency and process conditions (i.e. line pressure and fluid viscosity)

8 Installation Details

8.1 Installation

The 710 Electric Cell Sampler is designed to be bolted as a wafer fitting between 1" ANSI 150# or ANSI 300#RF flanges and can withstand static pressure testing to full flange rating.

The 710 Electric Cell Sampler weighs 16 Kg and the pipeline into which it is located will need to be adequately supported.

The Sampler will be supplied with the Motor facing across the Sampler pipeline, but may be rotated through 30° steps by removing the 4 off M5 Cap Head Screws (48) and turning the Mounting Tube/Gearbox Assembly. *Under no circumstances must the Lock Nut (44) be loosened and the Mounting Tube rotated in the Gearbox Housing as this will disturb a critical internal alignment.*

The Motor and Solenoid are selected to suit the specific application and will require connecting to suitable supplies via glands and cables appropriate to the area classification. ATEX/CENELEC certified motors are supplied with an M20 cable entry, FM certified motors and solenoids have a ½"NPT entry. ATEX/CENELEC certified solenoid coils are supplied with an encapsulated lead to be connected to the Sampler Controller via a suitably certified junction box. Where electrical connections are to be made through conduit, flexible conduits should be used.

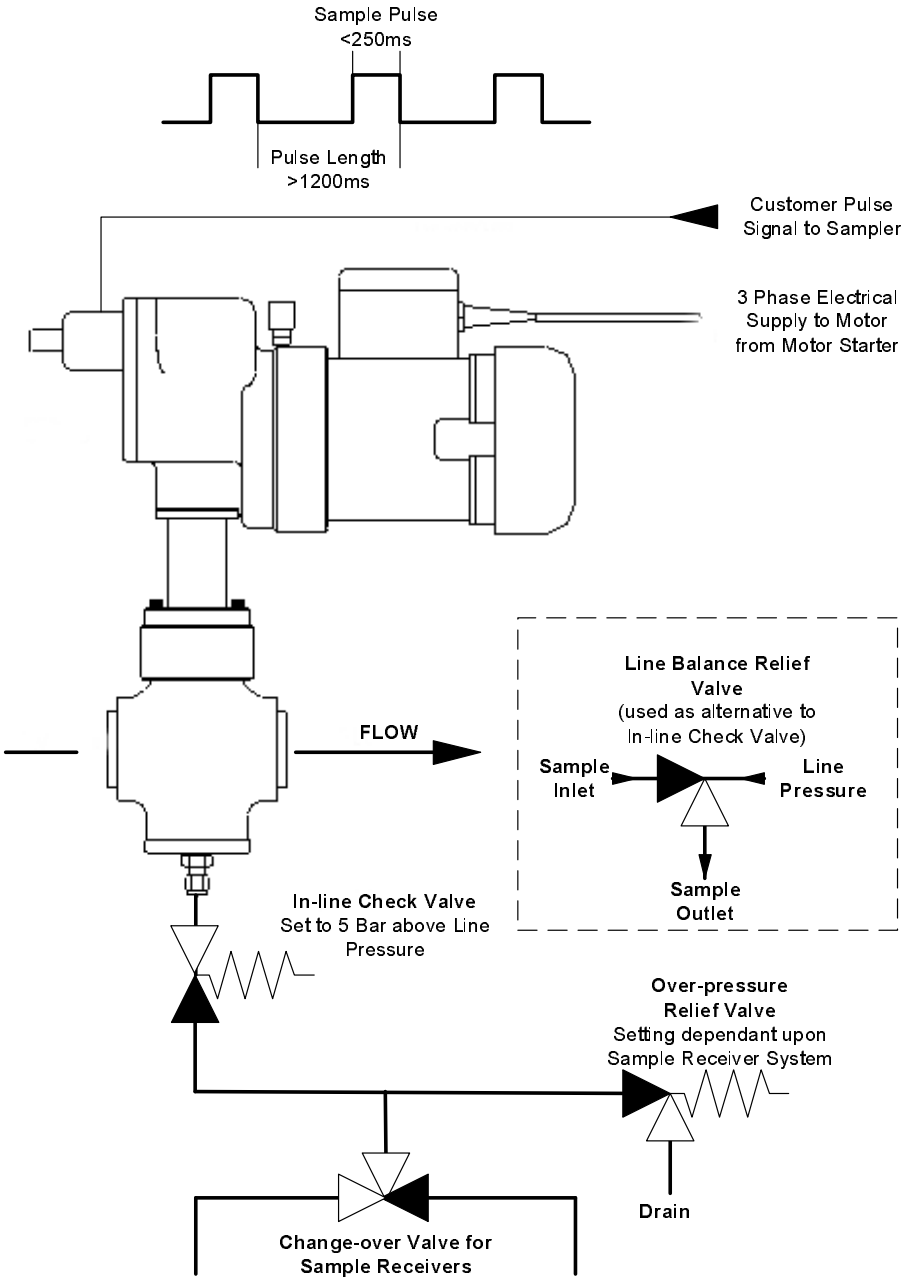
External earth tags are provided on the motor and on the ATEX/CENELEC certified solenoid to permit adequate bonding of the equipment to the site earth/ground.

The motor is designed for continuous operation and should be connected to the power feed via a suitably fused start/stop switch or isolator. An Emergency Stop Button should be fitted close to the Sampler to provide a means of shutting the sampler off in an emergency.

The Sampler must not be operated with either the Shroud covering the Mounting Tube or the Gearbox Cover removed (other than to check the correct rotation of the motor as detailed below).

The ¼" Swagelok Sample Outlet Port in the Bottom Plug (76) must be connected to the Sample Receiver System using ¼" or 6mm stainless steel tubing via either an in-line Check Valve or a Jiskoot Line Balanced Relief Valve and a relief valve as shown in the diagram below.

***Note:** Failure to fit an external check valve may result in the Sampler continually discharging product from the outlet due to the line pressure exceeding the internal check valve setting.*



The Check Valve will normally be set to 5 Bar above the maximum line pressure, ensuring that this is sufficient to allow for any additional pressure increase created by thermal expansion when any isolating valves are closed and the effects of trace heating and or solar energy. If the cracking pressure is set too low, the valve may open under adverse conditions, causing the Sample Receiver System to overfill and the sample to leak through the relief valve to atmosphere.

Where line-balanced, high-pressure sample receivers are being used (i.e. where the sample is being collected at, or close to line pressure), and the installation uses the Swagelok R3A or any similar valves unaffected by back pressure, to avoid placing unnecessary load on the Sampler seals, the Check Valve should be set to operate at 1 Bar. If the valve is found to lift and fill the Sample Receiver due to pressure surges, this setting may be increased slightly.

The relief valve fitted to the sample line is to provide protection to the Sampler in the event of the sampler being operated against a blocked sample line, e.g. without a sample receiver being fitted or with a full sample receiver. This relief valve should be within the maximum pressure rating of the receiver system, but may need to be increased slightly to allow for momentary pressure surges as the sample is being taken.

Ensure that lengths of tubing connecting the sampler to the receiver system are kept to a minimum to minimise "dead" i.e. trapped volume (long lengths of tubing also create extra back pressure and premature seal wear), and that the sample travels downhill at a minimum angle of 15 degrees from the Sampler Outlet to the Receiver to avoid water traps. The sample outlet piping may require heat tracing to prevent blockage.

8.2 Motor Rotation

Note: ***Before commissioning three phase versions of the sampler is it essential to check that the motor will revolve in the correct direction. The clutch assembly will be damaged if the motor rotates backwards.***

710 Samplers fitted with 3 Phase motors will be supplied with a temporary plastic spacer fitted between the 'O' Ring (36) and the Armature Sleeve (29) to prevent the clutch being accidentally engaged.

To check motor direction, check that the plastic spacer is fitted as described above by removing the Solenoid Nut (33). If not, disengage the clutch by removing the Gearbox Cover (4).

Momentarily apply power to the motor.

The **motor** must rotate **anticlockwise** when viewed from the fan end, or the **Gearbox Shaft** (20) must rotate **clockwise** when viewed through the gearbox opening.

To reverse direction, change over two phases of the motor supply. Do not continue to operate the Sampler with the Gearbox Cover removed. Remove the plastic spacer (if fitted) to engage the clutch.

9 Maintenance and Troubleshooting

9.1 Health and Safety Precautions

The 710 Sampler may be used in applications involving carcinogenic or other 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.

9.2 Routine (8 Weekly) Maintenance

It is recommended that the Sampler be lubricated on an 8-week cycle, using a high melting point, general-purpose grease suitable for temperature range of -20°C to +200°C such as *Electrolube.*

Lubricate the motor-end of the gearbox by screwing in the Lubricator (35) fitted to the top of the Motor Adapter (6) until the gearbox is heard to run quietly. When the Lubricator has been fully screwed in, remove the cap and re-pack the Lubricator with grease.

The Clutch Spring must be regularly lubricated to prevent excessive wear.

Isolate the power to the sampler motor and remove the 4 off M5 x 16 Cap Head Screws (5) securing the Gearbox Cover to the Gearbox Housing. The Gearbox Cover (4) is a push fit onto the Outer Bearing 21 and may be removed by rotating the Cover against the Gearbox Housing and pulling off with a rocking motion. DO NOT LEVER APART.

Note the location of the Bearing Pre-Load Spring(s) (47) inside the bearing housing of Gearbox Cover.

Remove the Clutch Spring from the Cam (24), by unscrewing the M5 x 10 Cap Head Screw (26) securing the spring assembly to the Cam, and withdraw the assembly from the housing.

Remove any old grease from the sides of the gearbox casting and cover. Remove the Clutch Spring from the Unwind Restrictor, clean grease from both components. Check the spring for wear and ensure that the tang on the Clutch Spring is still perpendicular (90°) to the spring. Replace if bent or worn.

Reassembly the Unwind Restrictor over the Spring, with the wide recess over the loop end of the Spring and the straight end located in the small notch.

Apply a ring of grease around the inside of the spring and work into the coils. Reassemble the clutch assembly onto the Gearbox Shaft by rotating it in an anti-clockwise direction. Refit the M5 x 12 Cap Head Screw (26) into Cam, ensuring looped end of Clutch Spring is secured under the head. Tighten the Screw.

Remove any excess grease and replace the Gearbox Cover, ensuring that any Bearing Pre-Load Spring(s) (47) are correctly fitted.

Some versions of the 710 Sampler have an oil-way machined into the centre of the gearbox shaft, enabling grease to be applied to the clutch spring to be lubricated using a grease gun without removing the spring. If this method is used, be careful not to over-lubricate the assembly.

Note : Avoid greasing the probe excessively, excess grease may solidify and prevent proper operation of the sampler.

9.3 Annual Maintenance (or as determined by site conditions)

The 710 Electric Cell Sampler is designed to operate 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 can not be guaranteed. When used in crude oils with high levels of sediment or from mixed carrier shipments, the failure interval cannot be determined and may be random. The service intervals will therefore need to be determined from the experience gained on the particular application.

The Sampler should be removed from the pipeline and taken to a clean area for servicing.

NOTE: ***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. If any of the sliding surfaces are damaged, leakage will occur from the seals.***

All joints, 'O' Rings and moving parts must be lubricated on assembly using a general purpose grease such as **Castrol "Spheerol B2"** ***grease or an equivalent lithium based water-resistant grease.***

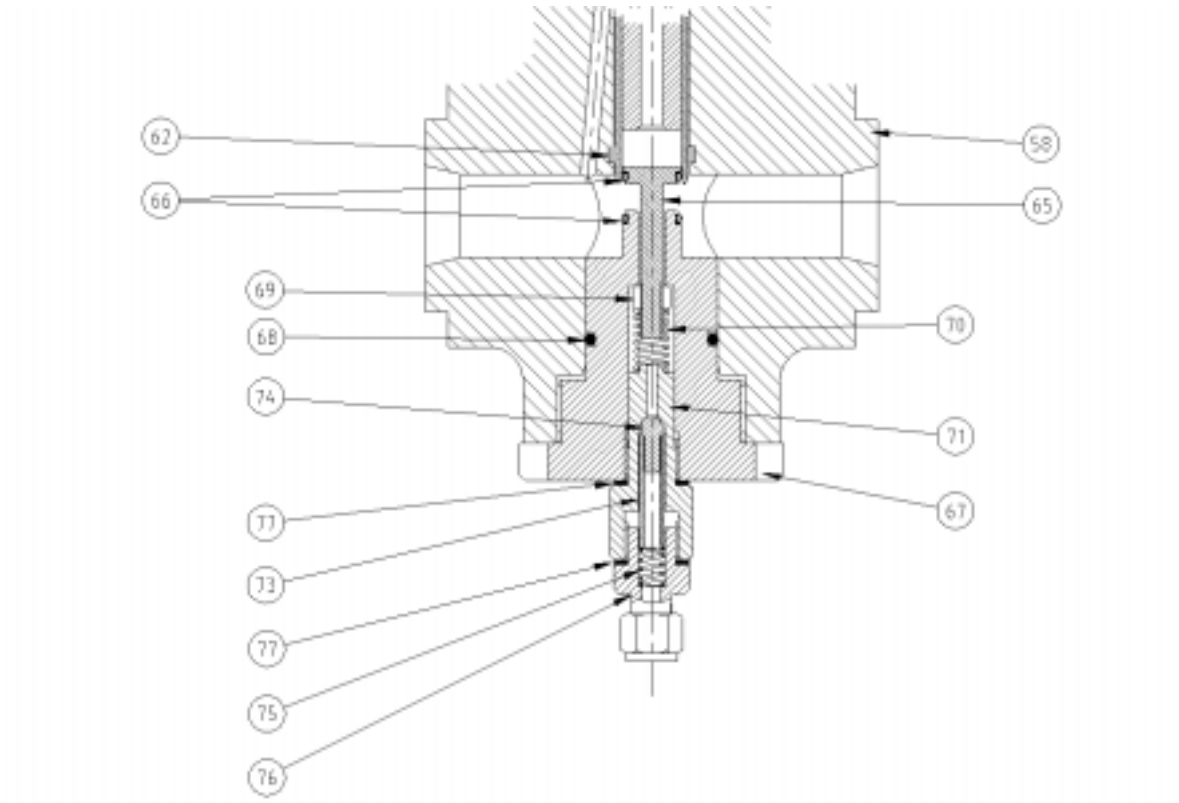
The motor and gearbox components must be lubricated with a high melting point grease such as "**Electrolube".***

Jiskoot recommend that to prevent seizure, all screwed components are lubricated with copper grease on assembly.

A Special Tool Kit, Part No. 45-0174-00, is available to assist in fitting some components and seals. Failure to use the correct tools may damage seals and other components, and will have a direct effect on the future performance of the Sampler.

9.3.1 Sampler Seal Replacement

Bottom Plug Assembly



The Bottom Plug Assembly is unscrewed from the Cell Sampler Body using the 'C' Spanner provided in the Special Tool Kit. Note the location of any shims located between the Bottom Plug and the Cell Sampler Body. These will be retained on the Bottom Plug by 'O' Ring (68).

To strip down and overhaul the component parts, carefully unscrew the Male Connector (76) being prepared to catch any of the spring loaded components of the Check Valve Assembly (Items 73, 74 and 75) as they are released.

Note ***The removal of the Sample Tube Plunger is not recommended unless the sealing surface is worn or damaged, as the adjustment of the plunger affects the sample size.***

Using small wire cutters, carefully cut off the two Balseals (66) from the Sample Plunger and the pedestal of the Bottom Plug, taking care not to damage the surfaces of the components.

Examine all components for signs of wear and thoroughly clean to remove any debris. Discard all seals.

Fit new Balseals after first warming them in hot water to make them more pliable.

Grease and slide the Balseal over the Sampler Tube Plunger and onto the Bottom Plug ensuring that the open spring end faces away from the body of the Plug. Press the seal firmly into the groove using fingers.

Grease and slide the Balseal onto the Sample Plunger ensuring that the open spring end faces towards the shaft of the Plunger. Press the seal firmly into the groove using fingers.

Unscrew the Check Valve Insert (71) and remove the Spring (70) to expose the Split Nut (69).

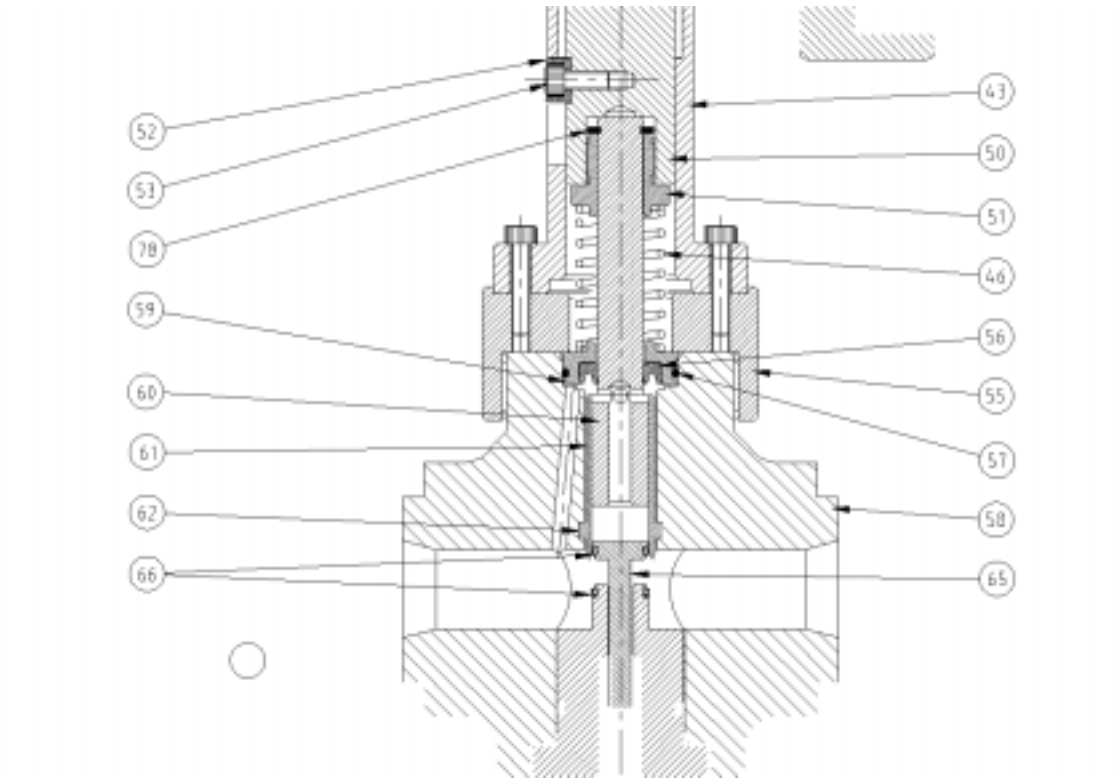
If the Sample Tube Plunger is to be replaced, using the Split Nut Driver and depending upon the style of the Sample Plunger, either the circlip pliers supplied in the Special Tool Kit or a 5.5mm AF Spanner, unscrew the Split Nut (69) from the end of the Sample Plunger (65).

Replace the Sample Plunger in the Bottom Plug, and locate with the Split Nut (69), ensuring that the free play in the Sample Plunger is exactly 6.5mm (measure with a vernier). This setting will determine the size of the sample taken per grab.

Using a new Spring (70) and Dowty Seal (77), refit the Check Valve Insert (71) into the Bottom Plug. Reassemble the Check Valve Assembly and refit into the Bottom Plug with the Spring (75), greasing threads with copper grease. Apply copper grease to the Male Connector and replace, also using a new Dowty Seal (77).

Apply copper grease to the threads of the Bottom Plug. Replace the 'O' Ring (68) taking care to refit any shims found when the Bottom Plug was removed, and screw the Assembly into the Cell Body.

Capture Tube Seal Replacement



Note the orientation of the Motor/Gearbox Assembly to the Cell Body.

Rotate the plastic cover on the side of the Mounting Tube (43) to expose the Guide Sleeve (52) and its Retaining Screw (53). Remove the Guide Sleeve from the side of the Cam Follower and the 4 off Cap Head Screws (48), securing the Mounting Tube (43) to the Cell Body Adapter (55).

Lift the complete Motor/Gearbox Assembly from the Cell Body Adapter and Cam Follower/Sample Ram Assembly.

If the Cell Body Adapter has slots for use with a 'C' Spanner, hold the Cell Body (58) in a soft jawed vice and unscrew the Cell Body Adapter using the 'C' Spanner provided in the Special Tool Kit. Alternatively, where there are no slots provided for using a 'C' Spanner, hold the Cell Body Adapter in a soft jawed vice and unscrew the Cell Body from the Adapter.

Remove the Cam Follower/Sample Ram Assembly, complete with the Seal Adapter (59), Seal (56) and 'O' Ring (57) from the Cell Body.

Hold the Cam Follower in the soft jaws in a vice and unscrew the Capture Tube Retaining Nut (51).

Carefully remove the Circlip (78) from the end of the Sample Ram (60), taking care to catch the Capture Tube Retaining Nut and Spring (46) as they are released. Remove the Seal Adapter (59), Seal (56) and the 'O' Ring (57).

Examine the Sample Ram Assembly for wear where it passes through the Seal (56) and replace if worn.

Using a small screw driver or similar tool, extract the Slydring (62) from the Cell Body and replace, using the Sample Ram Assembly to finally form the new Slydring into shape.

Fit new Seal (56) into the Seal Adapter and replace 'O' Ring (57), greasing the seal surfaces on assembly.

Replace the Seal Adapter Assembly over the Sample Ram, replace the Spring (46), Capture Tube Retaining Nut ((51) and secure with Circlip (78).

Apply copper grease to the threads of the Capture Tube Retaining Nut and screw into the Cam Follower. Tighten the Capture Tube Retaining Nut.

Grease the Cam Follower/Sample Ram Assembly and carefully slide the Assembly into the Cell Body.

Apply copper grease to the threads of the Cell Body and the Cell Body Adapter, and reassemble (handtight).

Slide the Motor/Gearbox Assembly over the Cam Follower and replace the Guide Sleeve (52) and Screw (53) to secure the Cam Follower in the Mounting Tube. Secure the Gearbox in position with the 4 off Cap Head Screws (48), ensuring the Motor/Gearbox Assembly is in approximately the same position as originally found.

9.3.2 Motor, Gearbox, Solenoid and Clutch Assembly

The Gearbox, Solenoid and Clutch Assembly will normally only require to be stripped down, the old grease removed from the clutch, and then reassembled.

Motor/Gearbox Replacement

Due to the need for special tools and the fine tolerance of the internal gears, field servicing or replacement of the Motor and Gearbox is not recommended. In the event of failure of these components, the entire Sampler should be returned to Jiskoot for repair.

If the Motor or Gearbox are required to be replaced on site, detailed assembly instructions will be supplied with the spare parts.

Clutch Overhaul

The only regular maintenance required is to remove as much of the old grease from the Housing as possible, and to remove, inspect and clean the Clutch Spring (25).

Remove the 4 off M5 x 16 Cap Head Screws (5). The Gearbox Cover (4) is a push fit onto the Outer Bearing 21 and may be removed by rotating the Cover against the Gearbox Housing and pulling off with a rocking motion. DO NOT LEVER APART.

Note the location of the Bearing Pre-Load Spring(s) (47) inside the bearing housing of Gearbox Cover.

To remove the Clutch Spring from the Cam (24), unscrew the M5 x 10 Cap Head Screw (26) securing the spring assembly to the Cam, and withdraw the assembly from the housing.

Remove the Unwind Restrictor (27) from the Clutch Spring, and examine the spring for damage, particularly on the end that engages with the Armature (31). Replace if necessary.

To refit, grease the Clutch Spring, and fit Unwind Restrictor over the Spring, with the wide recess over the loop end of the Spring and the straight end located in the small notch.

Push Spring over Gearbox Shaft, rotating it anti-clockwise. Refit the M5 x 12 Cap Head Screw (26) into Cam, ensuring looped end of Spring is secured under the head. Tighten the Screw.

Lightly grease the Gearbox Shaft front Bearing and Gearbox Housing face and fit Gearbox Cover to Gearbox Housing with 4 off M5 x 16 Cap Head Screws.

Solenoid Overhaul

To remove the Armature Assembly, remove the Gearbox Cover as described above, unscrew the two M3 half nuts from the end of the brass screw, and pull off the 'O' Ring (36) and Spring (32). Withdraw the Armature (31) from the Armature Sleeve (29) and clean off old grease.

Ensure that the clutch end of the Armature is not damaged or worn and replace if necessary.

Check that the Armature slides in and out of the Sleeve without signs of binding. Lightly grease the Armature and refit to the Armature Sleeve, replace the Spring, 'O' Ring and M3 nuts and adjust to obtain a total travel of 4-5mm. Tighten the locknuts to hold location.

Replace the Gearbox Cover as described above.

10 Frequently Asked Questions

10.1 Sampler Fails to take any sample

Check product is available to sampler

Check all valves are open

Check motor is running - feel or listen for operation.

Is solenoid being energised? - Remove Coil and check Armature moves freely by pulling brass Stop Screw (30) out from Armature Sleeve and releasing. Sampler should operate when Armature manually operated. Check Solenoid Fuse

Check solenoid operation with a voltmeter or by placing a steel screwdriver or similar object inside the coil. The screwdriver will move when the coil is energised.

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

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

Turn off the electrical supply to the Motor and remove the Gearbox Cover. Check the Clutch Spring has not broken.

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

10.2 Sampler fails to take adequate sample

Check Sample Receiver is not full or the sample outlet piping blocked through waxing.

Check the external Check Valve fitted to Sampler Outlet Adapter is set to 5 Bar above line pressure for normal low-pressure receiver systems and to 1 Bar where high-pressure sample receivers are being used. If pressure is too high, excessive wear will be caused to the Sampler internal seals.

Check that the relief valve fitted to the sample discharge lines is not passing.

Check that the Armature is not sticking in the Armature sleeve by manually pulling the brass Stop Screw out of the Armature Sleeve and releasing.

Check the Clutch is not sticking through excessive or old grease in the mechanism.

Ensure that the Sampler Controller is not either demanding too fast a sample grab rate (60 grabs per minute maximum at 50 Hertz), or that the signal to the solenoid is too fast.

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

10.3 Sampler takes excessive sample

Check the external Check Valve fitted to Sampler Outlet is set to 5 Bar above line pressure for normal low-pressure receiver systems and to 1 Bar where high-pressure sample receivers are being used. If pressure is too low, then the internal Check Valve may be lifting allowing sample to pass at all times.

Ensure that the Sampler Controller is not either demanding too fast a sample grab rate (60 grabs per minute maximum at 50 Hz), or that the signal to the solenoid is too slow, and not allowing the clutch to disengage.

If the above are satisfactory, than the Sampler will require a change of internal seals, or the Clutch Spring may have broken, permitting the Sampler to grab continuously

11 Sub Supplier Information

The following sub supplied items are used in the 710 Electric Cell Sampler:

- Euromotori Motor Series ASA 56, selected to suit the application specific hazardous area and power supply requirements.
- Honeywell Solenoid Coil (selected to suit application specific hazardous area requirements and power supply).

Neither component contains any user serviceable parts.

12 Product Specific Drawings

Series 710 Cell Sampler Installation Details D24036

Series 710 Cell Sampler General Arrangement Drawing B23935

13 Recommended Spares List

When requesting assistance or spare parts, please advise the Sampler Model and Serial Numbers to ensure that the correct options are supplied.

Part/Sub- Assembly			Commissioning	1 Year Operation	2 Year Operation
Solenoid Coil (to suit application)			-	1	1
Spare Parts Kit 45-0128-00 comprising:			1	1	1
Item No.	**Description**	**Part No.**			
25	Clutch Spring	40-0200-00			
32	Spring	40-0201-00			
36	'O' Ring	37-0702-00			
47	Spring	40-0207-00			
56	Seal	37-0730-00			
57	'O' Ring	37-0733-00			
62	Slydring	37-0518-00			
66 (2 off)	Balseal	37-0540-00			
68	'O' Ring	37-0043-00			
70	Spring	40-0205-00			
74	Check Valve Tip	36-1229-00			
75	Spring	40-0084-00			
77 (2 off)	Dowty Seal	37-0403-00			
78	Circlip	37-0582-00			
Special Tool Kit 45-0174-00 comprising:			1	-	-
Description		**Part No.**			
Split Nut Driver		36-2051-00			
External Circlip Pliers		36-2042-00			
'C' Spanner		36-2000-00			

Part/Sub- Assembly		Commissioning	1 Year Operation	2 Year Operation
4mm Allen Key	36-2045-00			

14 Disclaimer

Whilst Jiskoot Limited has taken every care in the preparation of this document, it cannot accept responsibility for printing errors or omissions and does not warrant that it is correct and comprehensive in every particular. Equipment supplied should always be operated by persons with an appropriate level of skill and training.

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8	Check Valve and Relief Valve settings clarified	P.Whittle	M.A.Jiskoot	15/02/2006
7	Maximum viscosity corrected, motor voltages corrected.	P.Whittle	M.A.Jiskoot	11/10/2005
6	Various typographic errors corrected. Installation diagram added	P.Whittle	M.A.Jiskoot	12/01/2005
5	Lubrication requirements amended	P.Whittle	M.A.Jiskoot	11/11/2004
4	Revised Sample Seal Replacement to avoid disturbing setting of Sample Tube Plunger	P.Whittle	P.Whittle	25/3/2003
3	Revised to reflect use of 3 phase Euromotori Motor	P.Whittle	M.A.Jiskoot	16/2/2001
2	Revised to reflect minor design changes to Gear Train and Bottom Plug Assembly	P.Whittle	G.Potten	22/3/2000
1	Tool Kit revised, Sample Ram/Cam Follower Assembly and Check Valve Assembly modified, M3 Nyloc Nut replaced with Split Nut	P.Whittle	M.A.Jiskoot	16/4/1998
0	First issued	P.Whittle	M.A.Jiskoot	22/12/1997
Issue	**Revision History**	**Issued**	**Approved**	**Date**

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