sensia
Rockwell Automation + Schlumberger

MEASUREMENT SOLUTIONS

JISKOOT™

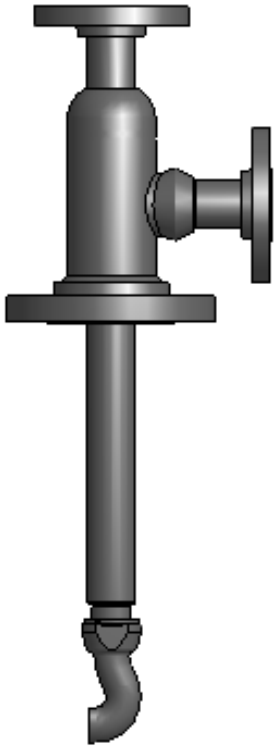
OPERATING,

INSTALLATION & MAINTENANCE MANUAL

FOR

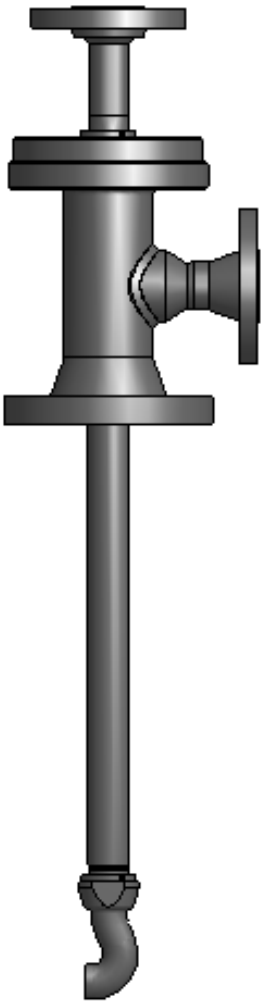
BYSCOOP SAMPLE TAKE OFF PROBE

AND VARIATIONS



Fixed
c/w Integral Return

Withdrawable
without Return



Withdrawable
c/w Integral Return

Important Safety Information

Symbols used in this manual:

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

Notes: ***Do not attempt insertion or withdrawal of the Standard 210 ByScoop Take-off Probe without the optional 154 Series Hydraulic Extractor if the line pressure exceeds 2.5 Barg (40 psig). At this pressure, approximately 60KgF – 132 lbf will be produced at the probe head, as such it will not be possible to undertake the operation without risk of damage or injury to equipment or personnel.***

The combined weight of the Sample Take-off Probe and the Hydraulic Extractor is approximately 65kg (145lb). Operators must ensure that adequate lifting equipment and safety precautions are used to avoid the risk of injury to personnel and damage to equipment whilst the Sample Take-off Probe is being installed or extracted.

Site location and access for Hydraulic Extractors in extended position should be considered together with additional scaffolding for slinging and supporting in both vertical and horizontal applications. See 7.2

Regular maintenance and inspection of this equipment in accordance with the suggested schedules is crucial to safety, use only factory supplied spare parts for repair.

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.**

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2	Revised to reflect seal housing redesign in 2006	P.Whittle	N.McGee	10/12/2008
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0	First issued	P.Whittle	M.A.Jiskoot	4/1/1994
Issue	**Revision History**	**Issued**	**Approved**	**Date**

Table of Contents

1 Introduction

The Jiskoot™ ByScoop Sample Take-off Probe is a large bore (33.5mm) probe designed to provide a representative bypass loop of liquid product flowing in a process pipeline. A bypass loop enables measurement devices such as samplers or on line analysers to be mounted remotely from the process and simply isolated.

The Jiskoot™ ByScoop can be used with any fluids compatible with its material of manufacture and within the stated capabilities of the device in regards to process pressure, temperature and pipeline velocity.

The device is available in a number of variants that include a simple takeoff connection or takeoff and return. There are also devices that are "fixed" i.e. not removable unless the process is depressurised and drained and others that are withdrawable under full and pressurised process operating conditions when using an appropriate (removable and optional) extraction device.

While the ByScoop is designed in compliance with standards appropriate to the extraction of a representative loop for typically sampling hydrocarbons, its application is not limited to this. The sample representivity of the loop will depend wholly on ensuring that it is installed in a appropriately homogenous process stream. Guidance to ensure this is provided in the appropriate standards and can be provided by Jiskoot. Location is crucial to success.

Operated within its design envelope, the ByScoop entry prevents any biasing of the slipstream components and provides adequate strength to overcome bending moment or vortex shedding induced by the flow.

Note: Do not attempt insertion or withdrawal of a withdrawable ByScoop from a full or pressurised pipeline without use of the optional Hydraulic Extractor. See section 3

The table below displays the standard Jiskoot™ range of ByScoops, customised flanges and insertion lengths, materials MAY be available on special request.

Sampler Model	Flange size	Flange rating	Connection	Withdrawable	Maximum Pipeline velocity
Fixed NO return	3”	150 - 1500#	RF - RTJ	No	Typically A - 9.4 m/s B - 6.9 m/s C - 4.8 m/s Dependent On viscosity
Fixed c/w return	3"	150 - 1500#	RF - RTJ	No	
Withdrawable	2" - 3"	150 - 1500#	RF - RTJ	Yes	
Withdrawable c/w return	2" - 3"	150 - 1500#	RF - RTJ	Yes	

Insertion lengths drawing reference for related to API standards.

Sampler Model	Flange size	Flange rating	Connection	Drawing Reference
Fixed c/w return	3"	150#	RF	29291
		300#	RF	30143
		600#	RF	30399
		600#	RTJ	30654
		900#	RTJ	30398
		1500#	RTJ	32093
Withdrawable	2" - 3"	150#	RF	29122
		300#	RF	29124
		600#	RF	29126
		900#	RF	29128
Withdrawable c/w return	2" - 3"	150#	RF	29834
		300#	RF	29129
		600#	RF	29130

2 Operating Instructions

The Sampler must be installed in accordance with the Installation Details (Section 7) and maintained as detailed below.

The ByScoop Sample Take-off Probe has no moving parts. A differential pressure must exist between the flow and return of the loop to generate flow. This is normally created using a centrifugal pump, alternatively if a separate return leg is provided, the differential loop pressure may be generated by placing the return at a lower pressure than the takeoff.

Both the fixed and withdrawable versions of the ByScoop Sample Take-off Probe may be supplied with integral return (See front page illustration) as part of the assembly thus reducing the number of hot taps required for installation.

As standard Jiskoot™ Series ByScoop Sample Take-off Probe mount on full bore 3" stub/taps and normally require the tapping to have a minimum internal bore of 55mm diameter to allow the ByScoop Head to pass into the pipe. They are available in a series of lengths suitable for line sized from 8" – 52" in diameter and are supplied with 1½" flow connection(s). Alternative flange sizes and pressure ratings may be supplied to suit specific site requirements.

2.1 Fixed ByScoop

Available as 3" Only.

The ByScoop is installed through a 3" pipeline stub directly into the process stream, with or without the 1½" return connection.

The standard Fixed ByScoop is manufactured from Low Carbon Steel, but is available in Stainless Steel or other materials as an option.

2.2 Withdrawable ByScoop

All withdrawable Jiskoot™ Series ByScoop Sample Take-off Probes, must have closed coupled isolation values on the outlet and return, in order to withdraw or insert under pressurised conditions.

The withdrawable ByScoop is inserted through a full bore 3" Ball or Gate Valve into the process stream. It has a flanged seal housing which enables the ByScoop head to be withdrawn under pressurised line conditions and is supplied with or without the 1½" return connection. The standard seal housing is manufactured from Low Carbon Steel with either an epoxy paint finish or Xylan 1010 coating, all other wetted parts are stainless steel; the seal is H-Ecopur based.

An optional stainless steel seal housing is available

3 Installation Details

Jiskoot™ Series ByScoop Sample Take-off Probes are manufactured in various lengths to meet compliance with appropriate ISO and API standards and suitable for pipelines from 8" to 52". The Jiskoot™ Series Sample Take-off Probe is designed for horizontal or vertical mounting.

3.1 Fixed ByScoop

The pipeline MUST BE EMPTY AND DEPRESSURISED.

Insert the ByScoop into the pipeline with the Swan Neck opening facing the fluid flow and bolt the mounting flange to the pipeline stub, check that orientation is correct by reference to the “Flow” arrow on the 3” mounting flange, and connect the 1½” return. To remove the ByScoop ensure that the pipeline is EMPTY AND DEPRESSURISED

3.2 Withdrawable ByScoop

All withdrawable Jiskoot™ Series ByScoop Sample Take-off Probes, must have closed coupled isolation values on the outlet and return, in order to withdraw or insert under pressurised conditions.

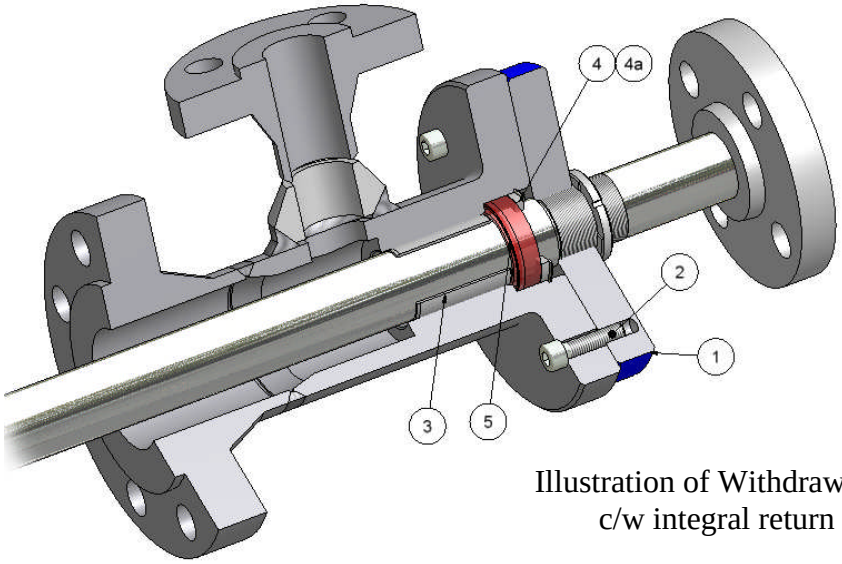


Illustration of Withdrawable c/w integral return

Item	Description	Item	Description
1	Support Tube Flange	4	Anti-extrusion ring
2	Cap Bolt – See section 3.3	4a	Locking Ring
3	Seal Housing Guide	5	Seal

To prepare for installation, remove the 4 cap head screws that attach support tube carrier flange to the seal housing and retain them safely, this will allow you to withdraw the ByScoop head into the seal housing. Ensure that isolating valves are correctly mounted with appropriate gaskets and bolts, secured and blinded on the flow (and return) lines. Check that any other vent/drain points fitted are appropriately plugged.

Mount the seal housing on the flange of the isolating ball valve, ensuring that the ByScoop head is orientated to face the flow of the process stream (direction of flow is stamped on the support tube carrier flange). Secure the Sample Take-off Probe to the flange and gasket.

If the process is under pressure a hydraulic extractor will now be required.

Open the process pipeline isolating valve and push the ByScoop head through the seal housing into the pipeline, using the Hydraulic Extractor if required (see handbook for the Hydraulic Extractor).

Check alignment and fix and torque the support tube carrier flange to the top of the seal housing using the 4 cap head screws supplied.

Prior to pressurising system, ensure that a suitable 1/4" NPT plug (Where fitted) is fitted to the seal housing vent connection in place of the plastic shipping plug.

Note :Any corroded and worn parts and expendable items such as bolts and seals should be replaced with OEM (Original equipment manufacturer) spares of the correct specification. All information is correct at the time of print and is subject to change.

Withdrawal of the ByScoop is generally the reverse of the above procedure when head assembly is fully withdrawn into the seal housing. DO NOT TRY TO FORCE ANY FURTHER or severe damage will result. Do not close the main pipeline valve until the ByScoop head is fully withdrawn.

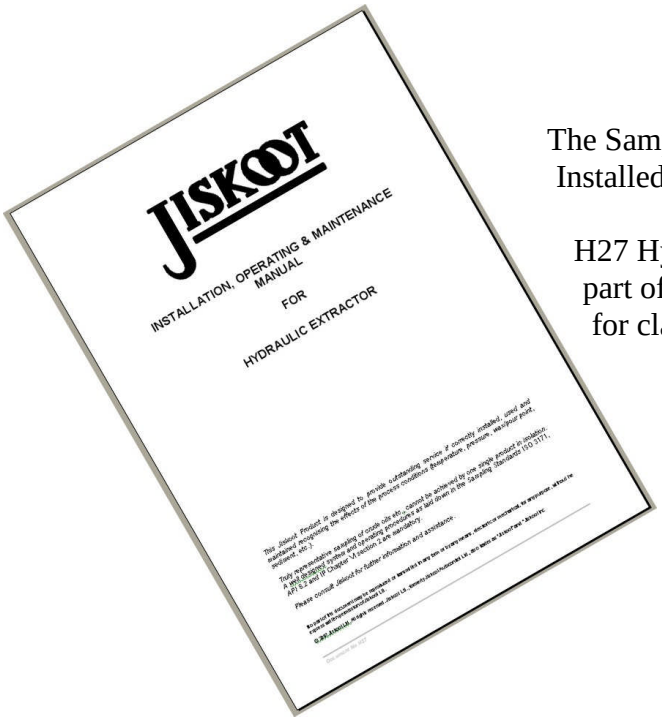
3.3 Torque Settings

The following torque settings should be used in the reassembly of the sampler:

Screw Location	**Size**	**Torque**
Support Tube Flange to Seal Housing	Pre April 2006 M10 x 40mm cap head (Item 51)	40Nm/29.5lbfft
	Post April 2006 M12 x 35mm cap head (Item 51)	50Nm/37lbfft

3.4 Sample Take-off Probe Installation

3.4.1 Installation of Sample Take-off Probe with HE1B and 154 Series Hydraulic Extractor



The Sample Take-off Probe should be Installed with reference to :

H27 Hydraulic Extractor Manual, part of which is reproduced below for clarity.

Remove any ancillary equipment fitted to the Sample Take-off Probe

Refer to H27 Hydraulic Extractor Manual for detailed instruction and usage.

Fit the Hydraulic Extractor as detailed in H27 Hydraulic Extractor Manual.

Connect the high-pressure hose from the pump head end of the Hydraulic Pump to the quick release coupling piped from the bottom of the hydraulic rams, and the hose on the reservoir end of the Pump to the coupling for the top end of the rams.

Due to the combined weight of the Sample Take-off Probe and Hydraulic Extractor, it is recommended that the Extractor be unbolted from the Probe when fitting or post extraction removal of the Sample Take-off Probe to the Isolating Valve.

Open the pipeline Isolation Valve

1. Select the '154' series diverter valve to apply pressure to the top of the hydraulic rams and apply one or two strokes of the Pump to push the Sample Take-off Probe towards the isolating valve and pipeline.
2. Pump the Sample Take-off Probe into the pipeline.
3. Once the Sample Take-off Probe has been fully inserted, replace and tighten the cap head screws which attach the support tube flange to the seal housing. The Hydraulic Extractor should now be removed.

Notes: ***It is not recommended that the Hydraulic Extractor remain attached to the Sample Take-off Probe when installed in the line.***

3.4.2 Manual Installation of Sample Take-off Probe (Unpressurised Pipeline)

Installation of Sample Take-off Probe (Withdrawable) is carried out as follows:

Remove the Cap head screws securing the Support Tube Flange to the Seal Housing.

Move the Seal Housing down the Support Tube until the Probe Head is inside the Seal Housing.

Bolt the Sample Take-off Probe to the isolating valve using appropriate gaskets. Ensure that the bleed tappings on the Seal Housing are closed and that suitable ½" NPT plugs (where fitted) are fitted in place of any plastic shipping plugs.

Open the pipeline isolation valve. Push the Sample Take-off Probe through the valve and into the pipeline.

Refit and torque the cap head screws to locate the Support Tube Flange to the Seal Housing, ensuring that the arrow in the top of the Support Tube Flange is aligned in the direction of the flow.

3.5 Removing the Sample Take off Probe

Notes: ***Do not attempt insertion or withdrawal of the Standard 210 'SD' Sample Take-off Probe without the optional 154 Series Hydraulic Extractor if the line pressure exceeds 2.5 Barg (40 psig). At this pressure, approximately 60KgF – 132 lbf will be produced at the probe head, as such it will not be possible to undertake the operation without risk of damage or injury to equipment or personnel.***

The combined weight of the Sample Take-off Probe and the Hydraulic Extractor is approximately 65kg (145lb). Operators must ensure that adequate lifting equipment and safety precautions are used to avoid the risk of injury to personnel and damage to equipment whilst the Sample Take-off Probe is being installed or extracted.

The procedure for withdrawing the Sample Take-off Probe from a pressurised pipeline is as follows:

1) Close all isolating valves on connections at line pressure. Any isloation valves fitted to the Sample Take-off Probe Head and Seal Housing must be closed.

2) Disconnect all lines to the Sample Take-off Probe.

3) Fit the Hydraulic Extractor to the Sample Take-off Probe, as detailed in H27 Hydraulic Extractor Manual.

4) Connect the pump hoses to the Hydraulic Extractor via the quick connect couplings.

5) Select the '154' series diverter valve on the pump to apply pressure to the top of the hydraulic cylinders and pump until pressure is felt. This will ensure that the probe remains in contact with the seal housing as the seal housing fixing bolts are loosened and removed.

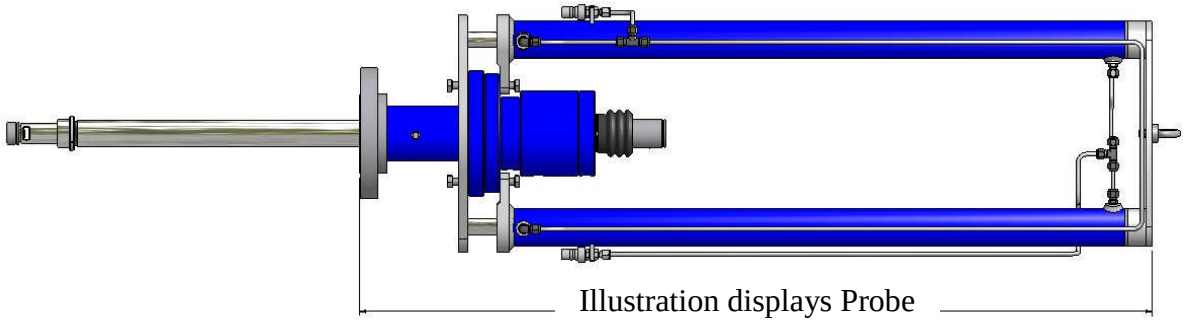
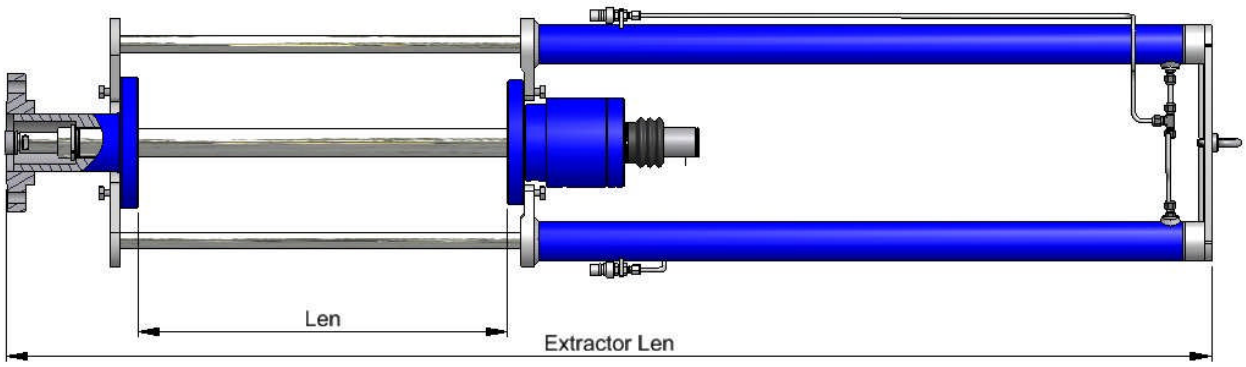


Illustration displays Probe
Fitted Extractor
Length 1275 closed

6) Remove the SupportTube flange cap head screws completely.

7) The Sample Take-off Probe has an engineered stop to limit its travel when fully withdrawn from the pipeline. However the user must check the length during extraction and not rely on the stop ring.

Select the '154' series diverter valve on the hydraulic pump to apply pressure to the bottom of the hydraulic cylinders. Operate the pump to extract the probe out of the pipeline.



8) As the Sample Take-off Probe nears full extraction, check the length in anticipation of Extractor resistance due to reaching mechanical stop or failure of the 'Stop' ring, due to damage or loss.

9) Close the pipeline isolating valve, depressurise and bleed the Seal Housing and disconnect the Hydrauic Extractor.

10) The Sample Take-off Probe may now be removed from the pipeline isolating valve.

4 Fault Diagnosis

ByScoop Sample Take-off Probes have no moving components; therefore the only possible faults are a blockage, which may be cured by back purging or removing the ByScoop and manually cleaning or, in the case of a withdrawable ByScoop, leakage from the Seal in the Seal Housing.

5 Maintenance

There is a requirement for visual routine maintenance for corrosion. However a damaged seal can cause leakage in a withdrawable ByScoop and can be replaced as described below:

a) Remove ByScoop from the line as described in Section 3.5
b) Using the flats on the probe head and the top end of the support tube, unscrew the probe head.
c) Remove the socket head screws retaining the carrier flange of the support tube to the seal housing. Inspect and replace if corroded.
d) Completely withdraw the support tube through the seal housing.

NOTE: ByScoops manufactured after 2006, have a Smalley Ring (multi-turn circlip) to locate retain the seal and support bush. ByScoops manufactured before 2006 use a screwed seal retaining ring to locate the seal. A special tool (Part No 36-2011-00) is available from Jiskoot to assist in replacement of the screwed seal retainer.

e) Remove the Smalley Ring, seal retainer and seal.
f) Remove the seal collar and seal.
g) Grease the support tube and carefully slide over it the seal collar and the new seal, ensuring that the shaped sealing ring is towards the bottom of the seal recess. Take great care not to scratch the polished surface.
h) Carefully insert the support tube in the empty seal housing, again taking care not to damage the polished surface of the support tube.

NOTE: DO NOT ATTEMPT TO FIT THE SEAL IN THE SEAL HOUSING BEFORE INSERTING THE SUPPORT TUBE AS IT WILL DAMAGE THE SEAL LIP.

i) Slide the seal into the seal recess (an application of grease to the seal with assist installation). Refit and tighten the seal collar and tighten the grub screw to secure it.

5.1 Health and Safety Precautions

The Sample Take-off Probe should only be overhauled by trained and competent personnel. Incorrect assembly of the sampler may result in premature component failure and loss of containment. Jiskoot can provide in-house or on-site courses to ensure that personnel have the necessary training to be able to safely and competently overhaul the equipment.

The Sample Take-off Probe 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.

5.2 Maintenance

Regular and at least annual external visual inspection of the Sampler, including connections, hoses (if used) and general condition is mandated. Bolts fitted to this device are under tension required to retain it in the process, corrosion will affect their strength. Pay particular attention to the cap head bolts holding the support tube flange to the seal housing.

Unless external corrosion or leakage is evident, this device is unlikely to require maintenance. If corrosion or leakage occurs the ByScoop must be removed from the pipeline and taken to a clean area for servicing.

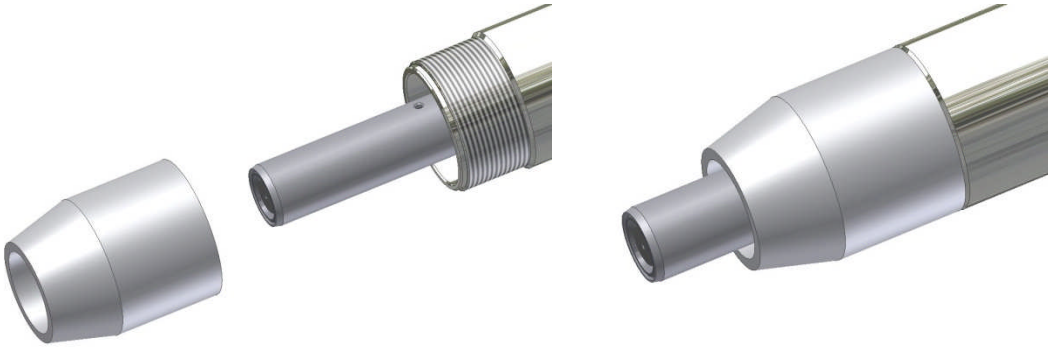
Any corroded and worn parts and expendable items such as bolts and seals should be replaced with OEM (Original equipment manufacturer) spares of the correct specification.

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.

5.2.1 Replacement of Seal Housing

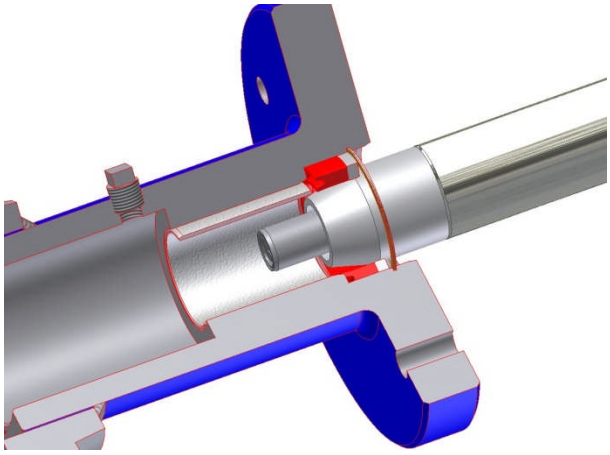
Illustration for seal assembly aid.

Grease the Support Tube.



Holding the Seal Housing in a vice, and ensuring the Sampler Assembly is adequately supported so as not to bend the Support Tube or damage any components, carefully insert the Support Tube with aid of special tool 37-0795-MC through the Seal in the Seal Housing so as to leave a 25mm (1”) gap between the Seal Housing and the Support Tube Flange.

Attach the Support Tube Flange to the Seal Housing ensuring the flow arrow or groove on the Support Tube Flange is aligned with the ¼” NPT tapping in the Seal Housing.



Secure the Support Tube Flange to the Seal Housing, using 4 off M12 x 40mm cap head screws, tightened to the specified torque.

5.2.2 Replacement of Probe Head

Fully screw Lock Ring onto Support Tube.

Refit the Swan Neck Scoop to the Support Tube.

Fully tighten Swan Neck Scoop and Lock Ring using 36-2000 Series ‘C’ Spanner

5.3 Testing

It is recommended that where a test facility is available, the Sample Take-off Probe is pressure tested prior to returning to service.

6 Product Generic Drawings

Sampler Model	Flange size	Flange rating	Connection	Drawing Reference
Fixed c/w return	3"	150#	RF	29291
Withdrawable	2" - 3"	150#	RF	29122
Withdrawable c/w return	2" - 3"	150#	RF	29834

7 Disclaimer

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