

APPENDIX C

SAMPLING EQUIPMENT

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In2Process Pty/Ltd
Manufacturers of the Quantum Sampler

Quantum Sampler

Installation & Maintenance

Manual

10cc, 25cc & 50cc

April 2005

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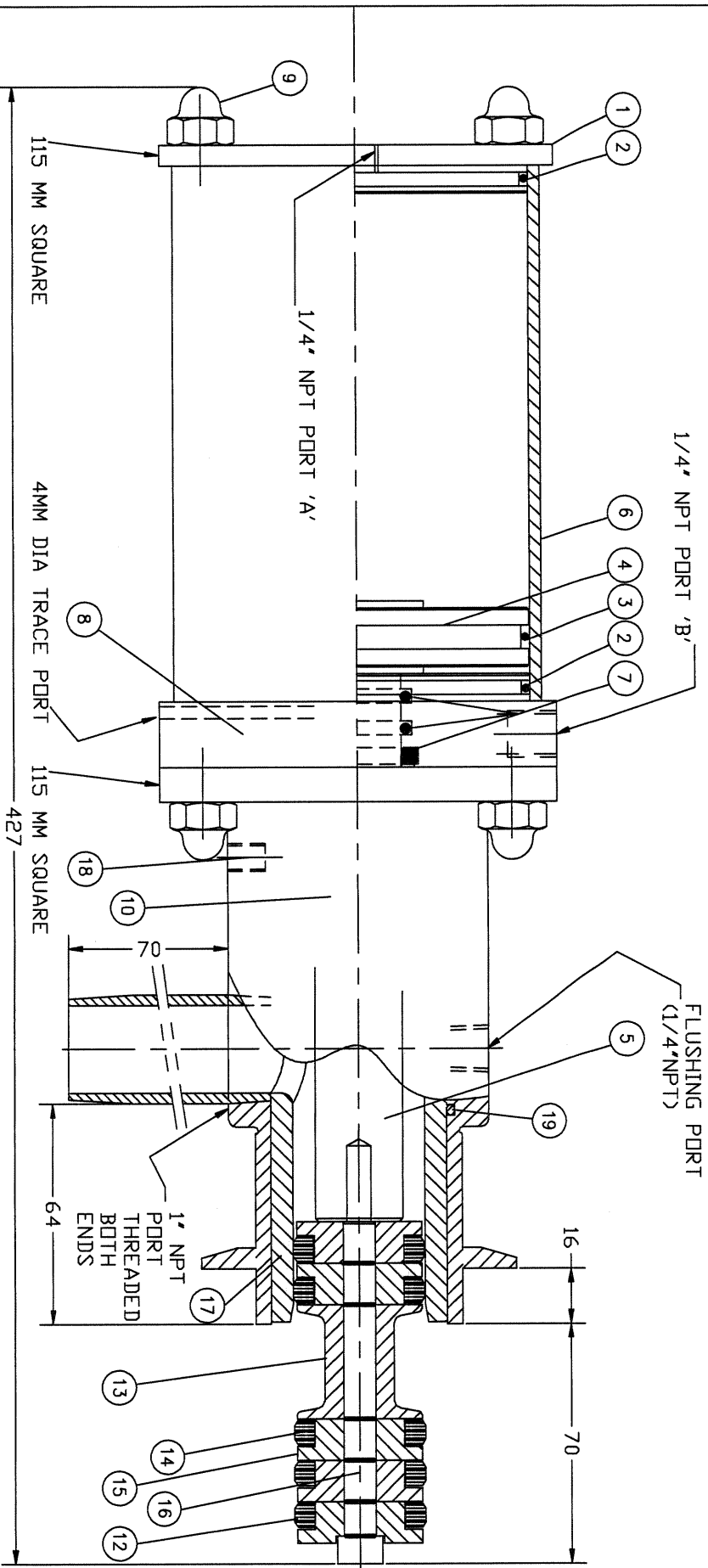
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ITEM	PART NUMBER	QTY	DESCRIPTION
6	2000-F02/1	1	S/S BARREL
13	2000-F05/2	1	10-50 CC SPOOL
9	2000-G01/9	4	TIE ROD AND NUTS

ITEM	PART NUMBER	QTY	DESCRIPTION	ITEM	PART NUMBER	QTY	DESCRIPTION
1	2000-F03	1	CYLINDER END CAP	12	2000-F07/2	1	ROD END SEAL MOUNT
2	2000-F02SK	2	BARREL SEAL ('O'RINGS)	13	2000-F05/1	1	SPOOL 25cc
3	2000-F04/1SK	1	PISTON SEAL	14	2000-F05SK	1	PROCESS SEAL KIT
4	2000-F04/1	1	PISTON	15	2000-F05/3	4	SEAL MOUNT
5	2000-F04/2	1	PISTON ROD	16	2000-F08/1	1	SPOOL ASSEMBLY BOLT
6	2000-F02	1	ALLOY BARREL	17	2000-F09/3	1	WEAR SLEEVE
7	2000-F06SK	1	ROD GLAND SEAL KIT	18	2000-F10/1	1	WEAR SLEEVE GRUB SC
8	2000-F06	1	ROD GLAND	19	2000-F10	1	WEAR SLEEVE 'O'RING
9	2000-G01/9	4	TIE ROD AND NUTS				
10	2000-F07	1	SAMPLE CHAMBER				



- NOTES
- MATERIAL: ALL PARTS 316 S/S U.O.N.
STD. CYLINDER BARREL: ALUMINIUM EXTRUSION
 - WEIGHT: 12.5 kg

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IN2PROCESS
QUANTUM SAMPLER SYSTEM
3" TRI-CLOVER SAMPLER

In2Process Pty/Ltd

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Installation Instructions

1. The sampler is to be positioned horizontally into the side of a pipeline which is completely full of flowing product. It is not recommended that the sampler be placed into a half full pipeline as the sample spool piece will not be completely filled thus giving a sample volume less than the unit is designed to take.
2. The sampler is best positioned into the pipeline where the product flow will be well mixed eg: in a vertical section of pipe after a 90 deg bend or at least 2 meters after the discharge of a pump.
3. The sampler is to be connected onto the pipe using the pre-selected process connection Eg: BSP Thread, Tri-clover or JIC fitting. When connecting the sampler onto the process pipe ensure the end of the sampler will be as close as possible to the internal diameter of the pipeline. Ensure the samplers discharge pipe is pointing down.
4. Connect the Sampler Chamber inlet flushing lines into the ¼" BSP threaded hole on top of the sampler if required.
5. Connect suitable "plant standard" air-line fittings into the ¼" BSP tapped ports stamped "A" & "B" on both the Rod Gland (port "B") and the Cylinder End Cap (Port "A") using PTFE tape or similar thread sealant. Connect the airlines from your 5/2 solenoid valve or the supplied Quantum Sampler Controller onto these fittings.
6. The installation of the Quantum Sampler is now complete.
7. Connect the plants DCS/PLC to the 5/2 solenoid valve and program the desired sampling time / intervals or connect suitable power to the Quantum Sampler Controller and program the timer as per the instructions in the operations page of this manual.

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Operation Instructions

The Quantum Sampler is directly controlled by a 5/2 spring return, single coil solenoid valve. The 5/2 solenoid valve needs to be operated either via your plants own DCS/PLC or a Quantum Sampler Controller. The following procedure is assuming an In2process Quantum Sampler Controller is used. If the plants DCS is to be used the basic procedure is the same. This procedure is the same for Liquids, Slurry and Powders Quantum Samplers.

1. Connect the airlines from the outlet ports of the solenoid valve marked "A" & "B" on the bottom of the control box into the two ports on the sampler marked "A" & "B". The solenoid valve can now direct compressed air into the end of the pneumatic cylinder port "A", extending the samplers spool piece (into the process stream). Retraction of the sampler's spool piece (with its sample) is via port "B" which is on top of the centre gland.
2. The samplers "stroke" is broken down into three parts:
 - a) Extension into the process stream (approx. 1-2 sec).
 - b) Dwell time in the process (1-2 sec only for slurries, 2-4 sec for powders, depending on the flow).
 - c) Retraction back into the sample chamber with collected sample (approx. 1-2 sec).
 - d) A minimum "static" dwell time of 2 sec (spool assembly in the retracted position) is recommended giving the product sample time to drop down into the collection vessel.
3. The sampler can be "Stroked" up to a maximum of 10 times per minute for 4 minutes continuously or as little as 1 stroke every hour. We recommend this minimum stroke to help lessen any product build up that might occur on the end of the sampler. The final collected sample is directly proportional to the amount of strokes taken. Note: Ensure the sample spool piece is retracted back into the Sample Chamber and out of the product stream between sample strokes.

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Operation Instructions Con't

4. Your technician can now program the plants DCS/PLC or the Quantum Sampler Controller to obtain the desired sample over your preferred time frame. If you have purchased an In2process Quantum Sampler controller please refer to the supplied instruction sheet for setting the timing.
5. Connect the plants compressed air line into the Filter/Regulator, check that all air connections are secure then turn on the air. Set the filter/Regulator to between 700-950 Kpa.
6. If an In2process controller is being used, when desired turn the 3 position switch on the external front of the controller to either "Manual" or "Auto". When the "Manual" position is selected the sampler will stroke out and return when the switch is returned to the "Off" position. When the "Auto" position is selected the sampler will stroke out, dwell in the stream for the predetermined time then stroke back starting the automatic sequence.

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Quantum Sampler Control System

Set-up and Operation Instructions

The following instructions are for the standard Quantum Sampler Controller system using the Nais model PM4H timer and Festo 5/2 solenoid valve.

The control system will only require electrical power (either 110 Volt or 240 Volt A/C) and standard plant dry instrument compressed air and suitable length plastic airlines. This control system can be used for Slurry, liquids or Dry Powders samplers.

1. In the desired position, drill a hole into the control box, fit cable gland and the incoming power cable (not supplied). Note: Ensure the correct voltage is used. The internal electrical connections are now complete.
2. Using which ever air connection option was ordered (either the 1/4" BSPM air fitting or an 8mm plastic air line push-in fitting) connect the air supply line into the fitting at the bottom left of the box. Next screw in the two exhaust mufflers into their respective fittings. The filter regulator will need to be adjusted to between 700-900Kpa (80-100 PSI).
3. Standard 8 mm plastic air lines can now be run from the control box to the sampler. Ensure that the air lines are connected into the correct ports. Port "A" is the out-stroke taking the sample (located at the rear of the sampler) and port "B" (on top the centre gland) is the return (sample retrieving) stroke.
4. The system can now be powered up and the air supply turned on.
5. The timer will now need to be set. With the external switch in the "off" position and the circuit breaker "On", set the required times. The two dials (red & green pointers) are for the dwell time between sample strokes and the dwell time the sample spool is in the product stream. When the Green light on the timer and the external door is "On" the sample spool piece is extended into the product stream (air should be at port "A"). For slurry applications this time should be kept to a minimum (1-2 seconds) to reduce wear on the process seals. The red light on the timer is the dwell time between sample strokes.
6. Example: To get a 500 cc sample using a 50 cc sample spool over a 3 hour period the sampler will need to take a total of 10 samples, 1 sample every 18 minutes. This is achieved by setting the red pointer to the 18 minute mark (after selecting the "Min" position in the small window on the bottom left side of the timers face. Set the green pointer to the 2 second mark ensuring "Sec" is displayed in the small window on the bottom right of the timer block.

7. If your control box has the "Flush" option installed connect an 8mm air line from port "C" at the bottom of the control box to port "C" on top of the sampler directly above the discharge tube. Ensure that the second timer is set to activate the "Flush" solenoid's 0.8 second "on" pulse two seconds or more after the sample spool has returned with its sample. This time can be a longer delay if required as long as it is before the next sample stroke is taken. The external switch can now be set in the "Auto" position to start taking samples when required.
8. The Quantum Sampling System is now ready to operate

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Recommended Spares List

- | | |
|--------------------------------------|--|
| 1. Process Seals Kit | Part No. 2000-F05SK
(Please note: For earlier samplers with Process Seal “O” rings, the “O” rings are longer required.) |
| 2. Air Cylinder Seal Kit | Part No's. 2000-F02S
2000-F04/1
2000-F06SK |
| 3. Sample Chamber Wear Sleeve | Part No. 2000-F08/1 |

