

DUCKBILL™

AUTOMATIC COMPOSITE SAMPLING SYSTEM

THE MARKLAND ADVANTAGE:

Meet the needs of challenging water & wastewater composite sampling applications

- Move samples up high lifts (80-plus feet) and over long runs (90-plus feet).
- Sample multiple sites simultaneously.

Self-cleaning

- Lines are blown clear and dry after each sample, even in freezing temperatures.

No pump and no vacuum system mean trouble-free sampling of influent and effluent

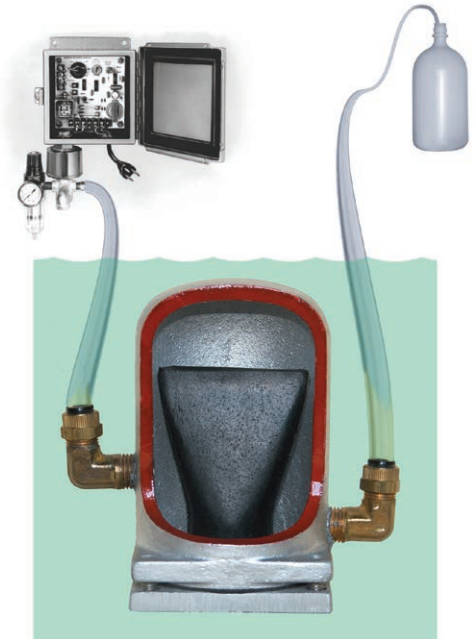
- Reduce maintenance costs.

Inherently explosion-proof

- This Simpler Sampler™ uses compressed air to move samples.
- Electronic controller can be located far from the sampling site.

Simple installation, even at remote locations

- Requires only an air-line running from sampler head to electronic controller, with a second line to the sample collecting bottle.



FEATURES

- Non-clogging
- Sample based on time or by a flow meter
- Call in manual samples at any time without affecting the normal sampling interval
- Sampler head is available in aluminum, stainless steel, and PVC
- Modular design to customize each sampler.

INSTALLATIONS

Markland sampling equipment is ideal for sampling at:

- tanks
- non-pressurized pipes
- sumps & pits
- septic systems
- open channels
- outfalls
- reservoirs
- sewer pumping and lift stations
- clarifiers

APPLICATIONS

Municipal water & wastewater treatment plants:

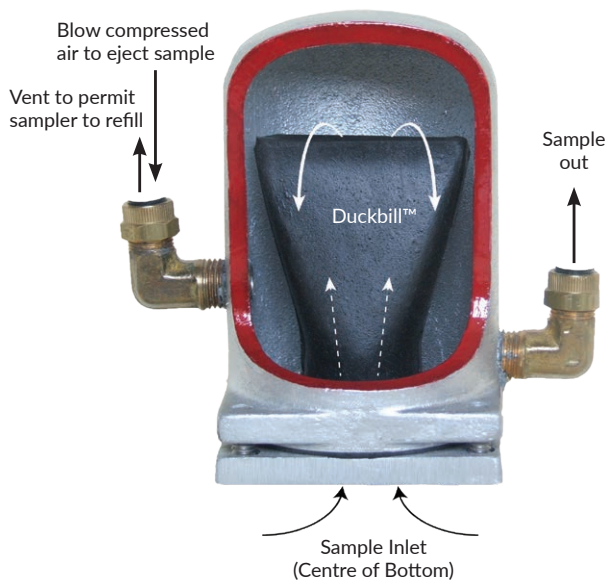
- influent
- sewage effluent

Industrial water & wastewater treatment plants in diverse sectors. For example:

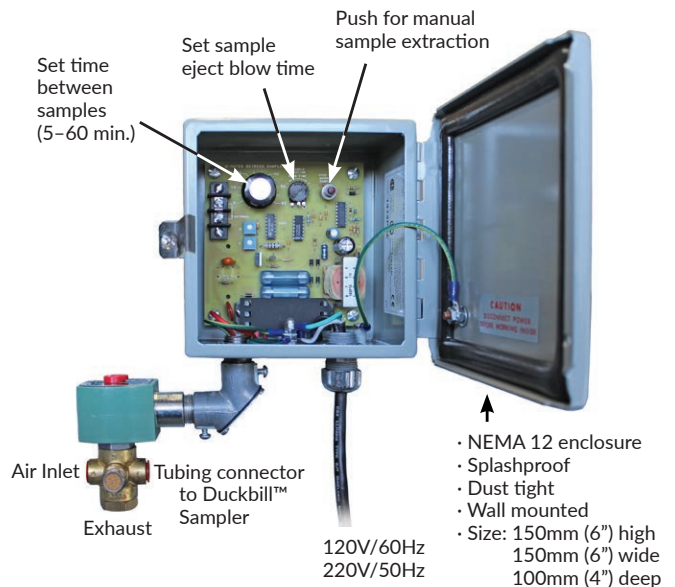
- food, mineral & chemical processing
- power generation
- pulp & paper production
- pharmaceutical, petrochemical and other manufacturing.

HOW IT WORKS

SAMPLER HEAD



CONTROLLER

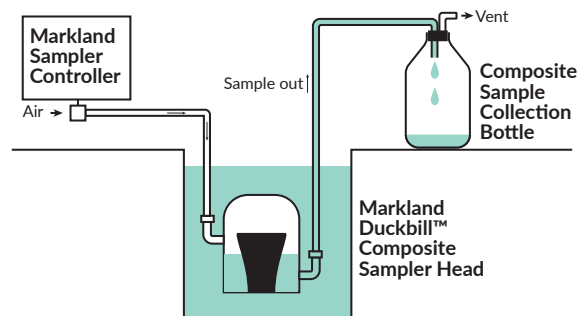
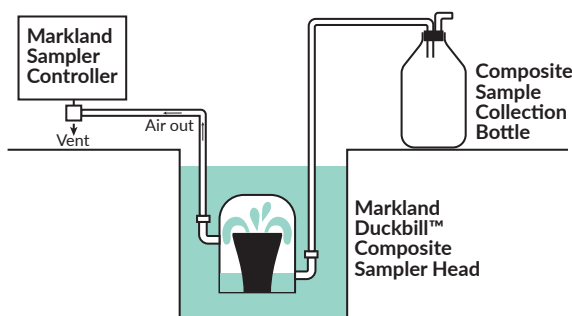


The Sampler Head is submerged below the liquid level. The top fitting is vented to the atmosphere. Hydrostatic pressure forces a sample up through the vertical inlet in the base of the Duckbill™ and on through its slit, until the body of the Sampler Head is filled above the level of the top fitting but below the top of the Duckbill™. A trapped air pocket in the dome ensures the Sampler Head does not fill completely with liquid.

The Sampler now 'calls in' a sample to the collecting station with a burst of compressed air that is introduced through the top fitting. A sample is forced through the

Sampler Head's bottom fitting and to the collecting bottle. Reverse leakage of the sample back through the Duckbill™ is impossible.

Markland manufactures automatic controls for 110 volt 60 Hz and 220 volts 50 Hz for clock sampling or flow proportional applications. Your complete sampling system can be supplied, including tubing & fittings, sample collecting bottles, refrigerators, small air compressors, regulators, etc. Plant compressed air supply is not necessary.

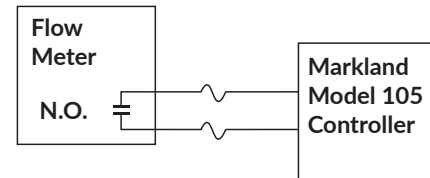


DUCKBILL™

AUTOMATIC COMPOSITE SAMPLING SYSTEM

HOW IT WORKS: FLOW PROPORTIONAL

With the two external control terminals jumpered, a dial sets the time between samples. With the jumper removed and an external normally open (N.O.) contact connected, momentary closures cause one sample to be extracted for every closure. This gives samples proportional to flow when connected to a Flow Meter Totalizer Integrator Switch. In addition, by maintaining the external contact in the CLOSED setting, the Sampler clock will be turned ON, and will continue to run and extract samples at the time interval set on the dial, until the maintained closure is broken.



EXTERNAL CONTROL FEATURES

This versatile, multi-purpose Sampler provides controls to meet your unique composite sampling needs.

For example:

- Enable scheduled operation by connecting the Controller to a 24-hour timer, PLC or SCADA system.
- Enable intermittent operation by connecting the Controller to a float switch that would turn the Sampler on when the liquid level rises, for example when stormwater runoff is being sampled.
- Extract samples only when a pollution parameter is out of limits, by connecting the Controller to a pH or other type meter.
- Operate start-up remotely by radio or telephone signals.

TECHNICAL SPECIFICATIONS

Body Diameter	73 mm (2 7/8")
Overall height	127 mm (5")
Mounting Lug	Projects 16 mm (5/8") Drilled two 7 mm (9/32") holes, 51 mm (2") on centres
Sample Size per 'Shot' (Standard)	75 ml (2 1/2 oz.) · 50 Samples = 1 US Gallon
Duckbill™ Elastomers	<ul style="list-style-type: none"> • E.P.T. (Ethylene Propylene Terpolymer), standard • Buna-N (Nitrile), use only for oily wastes • Viton (Fluorocarbon), special order & extra charge
Materials	<p>Model RS-200-ALUM: Aluminum Alloy, Brass tube fittings, standard</p> <p>Model RS-200-SS: Type 316 Stainless Steel, Plastic tube fittings.</p> <p>Model RS-200-PVC: PVC Body, Plastic tube fittings</p>
<p>*PVC Remote Sampler is available to take 200, 300, 400, or 500 ml. per 'shot'. Contact us for other sizes.</p>	



Keep it
SIMPLE!

MARKLAND'S FAMILY OF PROCESS CONTROL INSTRUMENTATION

Markland Specialty Engineering has been designing and manufacturing ultrasonic and optical instrumentation that helps measure, monitor, and automate control in the water, wastewater and process industries since 1967. Orders are followed by quick delivery, and prompt product support is always available.

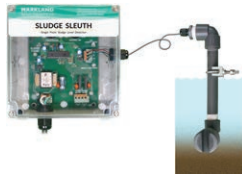
Sludge Gun® Portable Sludge Blanket Level Detector

Measure liquid-solids interface levels in clarifiers, septic tanks, ponds, and even murky lagoons. Facilitate monitoring for regulatory compliance and determining optimal times for pumping/dredging. Convenient thumbwheel adjusts the optical sensitivity. Compact and weatherproof.



Sludge Sleuth™ Single Point Sludge Level Detector

Single point monitoring & automatic control of settled bed depth in gravity settlers, decanting tanks, DAF units, SBRs, sumps, pits - even inclined plate clarifiers. Adjustable solids concentration set-point helps optimize equipment performance & reduce energy/haulage costs.



Suspended Solids Density Meter

Know real-time silt, sludge & slurry concentrations in clarifiers, tanks & pipes. Automate pumps to maintain preferred density. Help fine-tune dosing & thickener variables. Ultrasonic sensor needs no permits/ no approvals, measuring %S.S. even in thick concentrations. Readings are unaffected by color. Choose non-intrusive spool piece or throw-in probe.



Automatic Sludge Blanket Level Detector

Track liquid-solids interface levels in water, wastewater & process slurries, even in constricted areas. Program pumps to operate only when necessary. Help prevent process upsets. Maximize water removal. Optical sensitivity automatically adjusts for thick/thin concentrations.



Duckbill™ Automatic Composite Sampling System

Collect influent/effluent samples from sewers, lift stations, tanks, non-pressurized pipes, sumps, open channels. Explosion-proof sampler uses compressed air (no pumps, no vacuum system) to move samples, even up high lifts (80+ ft), over long runs (90+ ft), in freezing temperatures, from multiple sites simultaneously.



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MARKLAND
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Serving the water, wastewater and
process industries since 1967
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