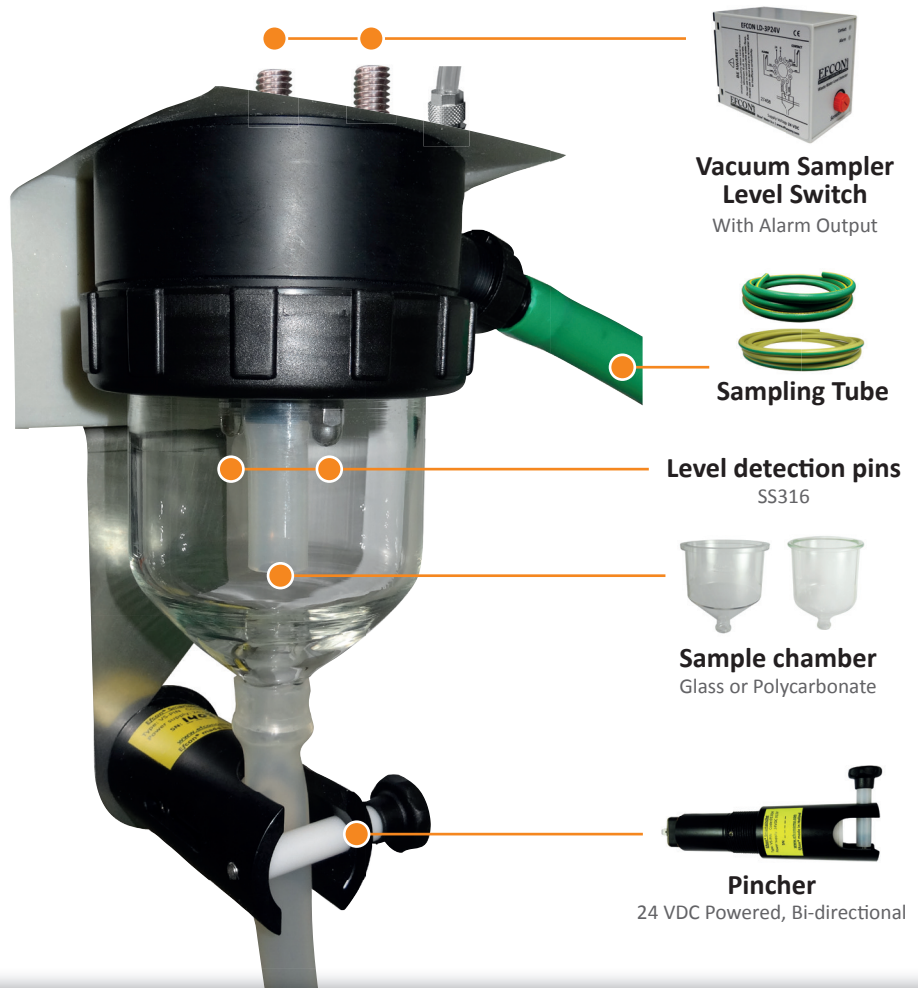# EFCON® Vacuum Samplers

Efcon Vacuum Samplers are equipped with reliable basic hardware and standard electronics. The complete design is focussed on long term reliable sampling with minimum drop out. Efcon Vacuum Samplers are constructed with 1 sampling head with a glass or non breakable polycarbonate chamber.

Contact level indicator functions on a minimum wastewater conductivity of 50 μS.

8m pump unit

Maximum suction height 8 meter
Suction height 8 meter acc. EN 16749
3 x Membrane pump 24 VDC
1 x SS Air valve 24 VDC
Volume 17 L/min

Vacuum Sampler Level Switch
With Alarm Output

Sampling Tube

Level detection pins
SS316

Sample chamber
Glass or Polycarbonate

Pincher
24 VDC Powered, Bi-directional

| Enclosure type:	Carrybox	Efconomy	Efcon Industrial
Power supply:	110/230VAC /1A	230VAC / 2,5A	230VAC / 2,5A
Enclosure:	>30% recycled LDPE green marble For wall mounting	>30% recycled LDPE white/green marble Efcon patended dual wall PUR isolated	>30% recycled LDPE white/green marble Efcon patended dual wall PUR isolated
Dimensions (HxWxD):	±412 x 340 x 302 mm	±1100 x 600 x 600 mm	±1500 x 750 x 750 mm
Weight:	±9kg	±65 kg	±75 kg
Protection class:	IP41	IP54 / 23	IP54 / 23
Ambient temperature:	0... +40°C	-20...+40°C	-20...+40°C
Refrigerated zone:	-	2...5°C (acc. EN16479, ISO5667-3 and NEN6600-1)	2...5°C (acc. EN16479, ISO5667-3 and NEN6600-1)
Electrical connections:	Connectors on left side	Terminal strip inside IP54 compartment	Terminal strip inside IP54 compartment
Container configurations:	None included	24x1l, 12x2l, 8x5l, 4x15l & 2x25l, 1x25l, 1x60l	1x60l, 2x55l, 4x30l, 6x18l, 8x15l
Zone:	Not in explosion hazardous environment	Not in explosion hazardous environment	Not in explosion hazardous environment
Warranty on enclosure:	4 years	4 years	4 years

Jazz controller:

Display:	2 lines, 16 characters, 16 keys Totalizer 3000000,0 maz (auto reset)
I/O hardware:	8 digital inputs, 4 analog inputs
Quick buttons:	Manual sample, next container, reset
Inputs:	Flow Pulse, flow current 4-20mA, 2x programmable digital input
Outputs:	2x programmable relay output
Sample interval:	Volume, Time or Batch
Interval range:	0,1...2500,0 m3/sample 2...2500 minutes/sample
Max Error samples:	0...999
Sample volume:	20...250ml
Vacuum settings:	Purge, Suction & dose time 1...99 sec.
Turn time:	Clock time (RTC) or time interval
Container config:	1...24 containers, 0,1...99 liter
Password settings:	Yes
Flow signal:	Pulse / Current / pulse + current
Pulse range:	0,1...1000m3
Current range:	1...3600 m3/h
Input options:	PRG on/off, Start PRG, Stop PRG, take sample, next container & start cool unit
Output options:	General alarm, sample alarm, sampling active, sample OK, sample error, 1m3 pulse, 0,1m3 pulse, containers full
Communication:	Modbus RTU optional

Vision controller:

|	
Display:	8 lines, 128x64 2,4"display, 20 keys
Settings:	Basic functions almost the same as the Jazz with extra options. Better HMI and used in customized applications
Sample settings:	Interval by day of the week
Distributor settings:	Selectable day of the week
Pump controller:	Optional (for ILS samplers only) 4-20mA level sensor input 1 or 2 pump controller with alternating function High/low level & overflow setting
Logging:	2000 log lines for daily/cycle totalizer 2000 log lines for time interval logging Data logging to micro SD-card Optional: Extra analytical values
Calendar sampling:	Program sampler to sample Full 1 year on specified calendar days.
Open channel flow measurement:	Optional: Bubbler or ultrasonic open channel flow measurement: Straight weir Venturi Formula 1: Q=C x (R)h3 x 3600 Formula 2: Q=C x he x 3600 Data table over 24 points
Communication:	Optional: Ethernet, modbus & profibus
Software:	Free supporting software from Unitronics

Operational principal:
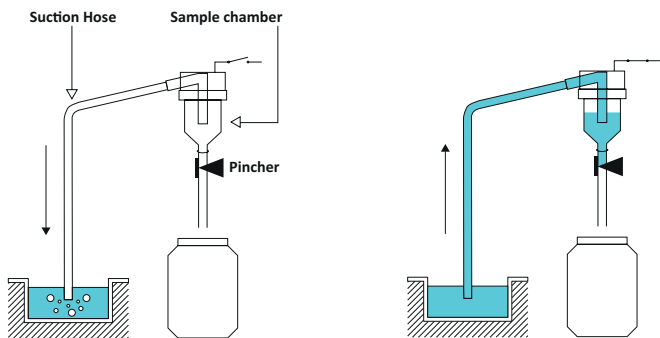
1. Purge:

The air pump starts and generates pressure in the sample chamber. Air bubbles will escape from the end (inlet) of the suction hose. This is a sign that the 'old' wastewater has left the suction hose.

2. Suction:

Suction: the air pump creates a vacuum in the sample chamber. The medium is sucked up through the suction hose until it reaches the level pen again.
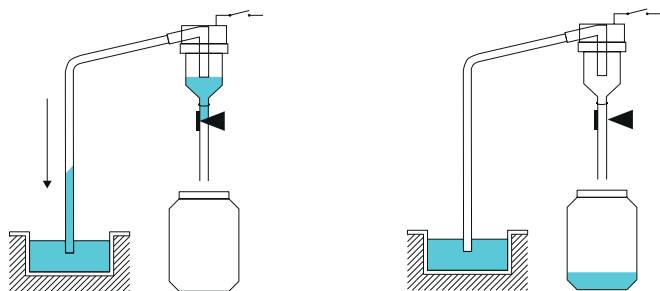
3. Dose:

The level pins detect the medium. After this, the pump creates pressure and doses the volume into the flask. The excess medium is blown back through the suction hose.
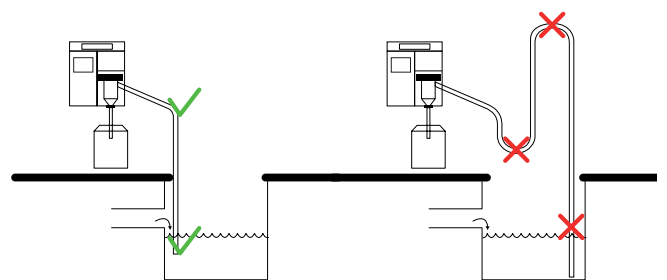

4. Drain:

The pinch opens and the sample falls into the container. After a few seconds, the air pump stops and the cycle is complete.
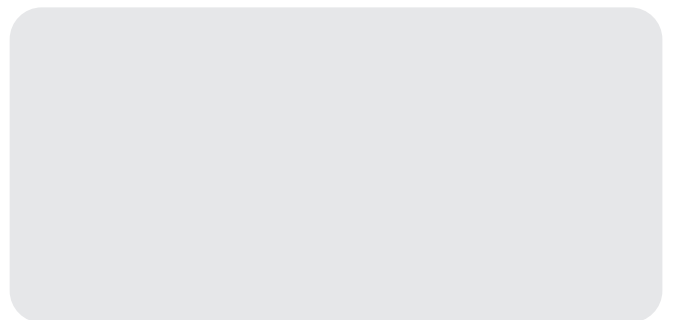
Installation instructions:

Mount the inlet of the suction hose on a fixed representative turbulent point to sample homogeneous, non-foaming wastewater. Ensure the suction hose is always emerged in the wastewater/medium.

Sample Medium
- Free of solid parts
- Non foaming
- Free of air inclusion
- Temperature: +0,1°C / +40°C
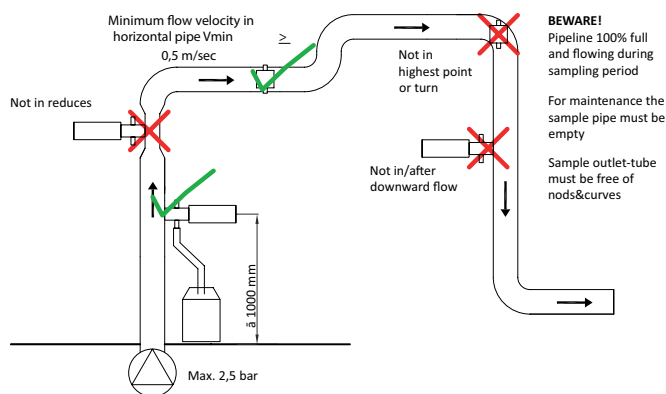- Minimal conductivity: 50µS

Distributed by:

EFCON® Guillotine Samplers

Sample Cycle:	± 5 sec total
Wetted parts:	SS316/V4A, PTFE, Viton, POM and Silicon
Material Plunjer:	SS316/V4A
Material seals:	Viton & PTFE
Water temp:	Max 35°C optional 50°C
Max Pressure:	2,5 Bar optional 5 Bar
Min Pipe DN:	80 mm if smaller, use special EFCON® cross fitting
Outlet DN:	14 mm
Sample vol.:	50 ml fixed volume
Actuator:	Pneumatic
Air supply:	6-8 bar conditioned
Protection class:	IP 65
Encl. cyclinder:	Front SS316 with aluminum cylinder
Air connection:	8 mm / 1/4" coupling
Activation time:	± 5 sec
Resp. contact:	Optional
Valve:	5/2 Valve
Power supply:	24 VDC ±5% / 0,13 A
Current:	0,13 A
Ambient temp.:	0,1°C / 40°C
Zone:	Not in EX zones

Plunjer section

Optional: cross fitting
Efcon fitting for pipe lines ≤ 2"

Thread fitting and welding ridge

The Efcon® ILS Guillotine

This is an automatic fixed volume sampler for use on 100 % filled and pressurised effluent lines.
The sampled media must be liquid, and free of air / hard solids.

Designed for sampling of (raw) wastewater, the Efcon Guillotine sampler works with a maximum process pressure of 2.5 Bar and optional up to 5 Bar. This sampling method complies to EN ISO 5667-2, EN ISO 5667-10 and NEN 6600-1 and is equipped with a pneumatic actuator (6-8 bar).

Standard

High pressure

Sludge

Hot service

Jazz controller:

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I/O hardware:	8 digital inputs, 4 analog inputs
Quick buttons:	Manual sample, next container, reset
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Outputs:	2x programmable relay output
Sample interval:	Volume, Time or Batch
Interval range:	0,1...2500,0 m3/sample 2...2500 minutes/sample
Max Error samples:	0...999
Sample volume:	20...250ml
Vacuum settings:	Purge, Suction & dose time 1...99 sec.
Turn time:	Clock time (RTC) or time interval
Container config:	1...24 containers, 0,1...99 liter
Password settings:	Yes
Flow signal:	Pulse / Current / pulse + current
Pulse range:	0,1...1000m3
Current range:	1...3600 m3/h
Input options:	PRG on/off, Start PRG, Stop PRG, take sample, next container & start cool unit
Output options:	General alarm, sample alarm, sampling active, sample OK, sample error, 1m3 pulse, 0,1m3 pulse, containers full
Communication:	Modbus RTU optional

Vision controller:

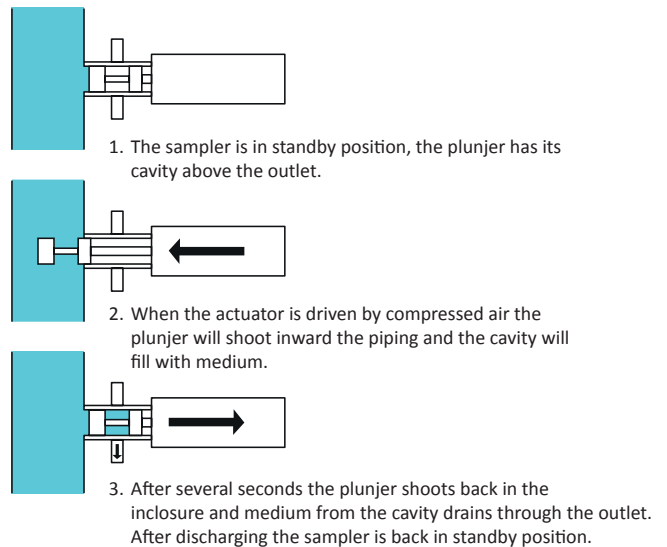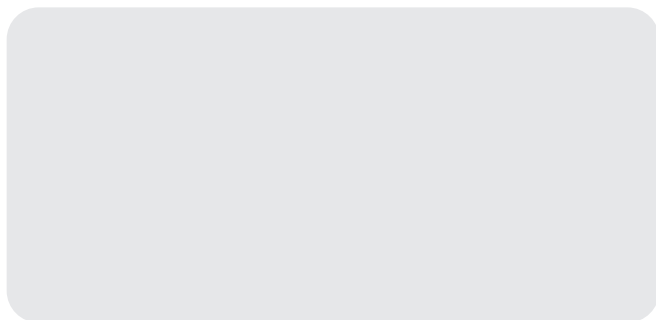|	
Display:	8 lines, 128x64 2,4"display, 20 keys
Settings:	Basic functions almost the same as the Jazz with extra options. Better HMI and used in customized applications
Sample settings:	Interval by day of the week
Distributor settings:	Selectable day of the week
Pump controller:	Optional (for ILS samplers only) 4-20mA level sensor input 1 or 2 pump controller with alternating function High/low level & overflow setting
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Open channel flow measurement:	Optional: Bubbler or ultrasonic open channel flow measurement: Straight weir Venturi Formula 1: Q=C x (R)h3 x 3600 Formula 2: Q=C x he x 3600 Data table over 24 points
Communication:	Optional: Ethernet, modbus & profibus
Software:	Free supporting software from Unitronics

Installation instructions:

- Place sampler in a 100% filled pipe free from air inclusion and in horizontal piping a minimum flow velocity of 0,5/s.

- Ensure there is enough height for the silicon hose which enters the inlet in the enclosure.

- Do not place the sampler in turns or reduces.

- For safe maintenance and reparations the sample pipe needs to be empty.

- Don't place the sampler in or after a downward flow

- Maximum pipe pressure 2,5 bar (optional 5 bar)

- Ensure the sampler doesn't stick in the piping in standby position.

Operational principal:

1. The sampler is in standby position, the plunjer has its cavity above the outlet.

2. When the actuator is driven by compressed air the plunjer will shoot inward the piping and the cavity will fill with medium.

3. After several seconds the plunjer shoots back in the inclosure and medium from the cavity drains through the outlet. After discharging the sampler is back in standby position.

Distributed by:

EFCON® water
EFFLUENT CONTROL SYSTEMS

Wastewater sampling stations
Patented extremely robust double-walled thermoplastic housing

Efconomy-sampler

Efcon industrial-sampler

Features:

|	
Cost-effective sampling solutions for standard applications	Custom sampling solutions with large sample containers with superior cooling capacity.
Top-quality custom or standard-built samplers	Condenser section with airflow
Wide range of sampling principles according to ISO 5667	Standard with coating on cooling section
Patented extremely robust, chemical-resistant and stable thermoplastic housing	SS316 evaporator
Excellent insulation for cooler use (1 to 5 °C) according to ISO 5667	2-5 °C with display
Long service life in harsh environments (5-year warranty on housing)	ISO 5667-3
Robust double-walled thermoplastic housing	Environment - 25 °C to +40 °C
Use of so many standard components for easy global service support	Warranty period 60 months on thermoplastic housing. 24 months on electronic components excluding wear parts.

SPECIALS

Mobile measuring set

Efconomy sampler

Industrial sampler

Distributed by:

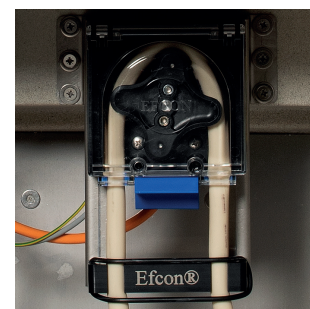# 3 Different sampling principles according to ISO 5667-2 & NEN 6600 - 1

Heavy Duty Guillotine sampler for raw or waste water (3 types available)
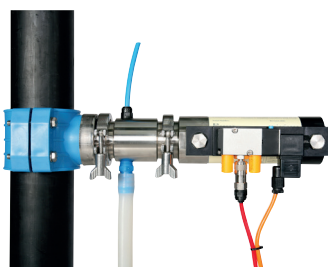
Vacuum sampler with high suction speed up to 8 metres

Peristaltic sampler with 9mm throughput

Technical specifications:	Efconomy	Efcon Industrial
Material:	Patented PE fibre-reinforced double-walled design with a 5-year warranty on the housing	Patented PE fibre-reinforced double-walled design with a 5-year warranty on the housing
Colour:	Green / white marble look	Green / white marble look
Polyurethane foam:	40 to 60mm	60 to 80mm
Dimensions W x D x H:	600 x 600 x 1050 mm +/- 2%	750 x 750 x 1500 mm +/- 2%
Weight:	+/- 55 kg empty	+/- 75 kg empty
Main switch:	Optional	Optional
Coated condenser:	Yes	Yes
Cooler and heater:	Stainless steel 316 evaporator for high-capacity cooling	Stainless steel 316 evaporator for high-capacity cooling
Cooler media:	R134-A	R134-A
Sample storage temperature:	2 to 5 °C according to ISO 5667-3	2 to 5 °C according to ISO 5667-3
Operating environment:	-25 to +40 °C	-25 to +40 °C
Frost-free protection:	Yes	Yes
IP class:	Electronics IP 65, cooled area IP 54, compressor area IP 23	Electronics IP 65, cooled area IP 54, compressor area IP 23
Container configurations:	24 x 1 - 12 x 2 - 4 x 15 - 2 x 25 L	6 x 18 - 4 x 30 - 4 x 20 - 2 x 55 L
	1 x up to 60 L	1 x up to 60 L
	2 x 10 L self-emptying and self-cleaning	3 x 17 L self-emptying and self-cleaning
Systembox WXDXH:	600 x 400 x 1050 mm +/- 2% single-walled	450 x 750 x 1500 mm +/- 2% single-walled
Systembox heating:	Optional +/- 50 watt tracing	Optional +/- 50 watt tracing
Controller:	Jazz	Efcon Vision
Application:	Set and forget	Optimal HMI and full options
Flow input:	Potential-free pulse contact & 4-20mA active	Potential-free pulse contact & 4-20mA active
Sampling programme:	Flow & Time proportional, Batch	Flow & Time proportional, Batch
Alarm output:	2x potential-free contact NC/NO	1x potential-free contact NC/NO
Container change:	Set to clock &/or number of samples	Set to clock per day &/or number of samples
Data tracking:	24 lines, with time & date stamp	12 x 2000 lines internal table & on micro SD card
Open channel flow meter:	-	Optional, various gutter types & formulas
Communication:	Modbus TCP/RTU optional	Profibus optional, Modbus TCP optional
Internet connection:	-	Optional