

Operating Principles

The Discrete Interval Sampler allows samples to be taken from distinct levels within a well. The sampler is pressurized at the surface to prevent water from entering the device as it is being lowered to the desired sampling depth. The pressure is then released allowing the Sampler to fill under hydrostatic pressure. The Sampler is then repressurized to maintain chemical stability of the sample as the Discrete Interval Sampler is retrieved.

At the surface, the sample is removed using the Sample Release Device, or in the case of the transportable model, sealed for transport straight to a laboratory.

SAFETY PRECAUTION

Using High Operating Pressures can be Dangerous

For sampling at depths greater than 200' (60m) below water level use the following method to increase safety.

Before Sampling: Pressurize the sampler to 100 psi (700 kPa) then lower the sampler to a depth of about 160' (50m) below water.

At that level increase the pressure to the maximum required, as determined when setting the operating pressure. Then lower the sampler to the appropriate level and continue as per the operating instructions.

After Sampling: Raise the sampler to a depth of about 160' (50 m) below water, then decrease the pressure on the sampler to 100 psi (700 kPa). Continue to raise the sampler and follow the instructions to properly remove the sample.

Setting the Operating Pressure

The pressurization of the Discrete Interval Sampler should be set prior to use.

This can be done following the formula below.

$[(\text{depth below grade in feet} - \text{static water level below grade in feet} \times 0.43) + 10 \text{ psi}]$ or $[(\text{depth below grade in metres} - \text{static water level below grade in metres} \times 9.8) + 70 \text{ kPa}]$

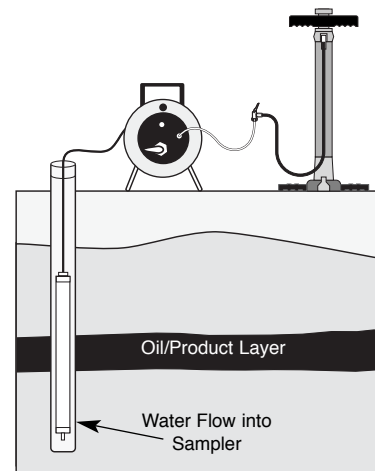
Recommended Operating Pressure			
Depth (ft.) below water	Pressure psi	Depth (m) below water	Pressure psi
25	20	7.6	145
50	30	15.2	220
100	50	30.5	370
200	95	61.0	670
300	140	91.4	965
500	225	152.4	1,565

Sampling with the Discrete Interval Sampler

Note: The Sample Release Device NEVER goes down the well.

- Before using the Discrete Interval Sampler, there are two important pieces of information needed.
 - Desired Sampling Depth
 - Static Water Level
- With the tubing connected to the Discrete Interval Sampler, and the air pump assembled, connect the air pump to the Pressure Inlet.
- Turn the Pressurize/Vent Valve to Pressurize.
- At this point you must make a calculation to ensure that you are operating at the proper pressure using one of the formulas in the "Setting the Operating Pressure" section.
- Using the air pump, pressurize the Discrete Interval Sampler to the required pressure.
- Disconnect the air pump from the reel before lowering into the well.
- Lower the Discrete Interval Sampler down the well to the desired sampling depth. If you have not marked your tubing, you may want to attach a measuring tape to the Lowering Bracket to measure to the proper sampling depth.
- Once the sampler is at the desired sampling depth, turn the Pressurize/Vent Valve to Vent. Wait for 1-3 minutes to allow the Discrete Interval Sample to fill.
- Turn the Pressurize/Vent Valve to Pressurize.
- Connect the air pump to the Pressure Inlet on the reel and repressurize the system using the same pressure as before.
- Once pressurized, disconnect the air pump and bring the sampler to the surface.
- When the sampler is at the surface, and you are ready to retrieve your sample, turn the Pressurize/Vent Valve to Vent.
- Hold the Discrete Interval Sampler over your sample bottle and press the Sample Release Device Stem up into the Lower Check Ball Body until sample begins to flow from the sampler. The flow rate can be regulated by simply adjusting the amount of the Stem inserted into the Lower Check Ball Body.

Note: If no sample is coming out of the Discrete Interval Sampler, loosen the Compression Fitting to allow venting and then take your sample.



Assembly

1. Push the V-010 o-ring inside the Lower Check Ball Body.
2. Place the V-203 o-ring inside the Lower Check Ball Body.
3. Insert the Teflon spacer into the Lower Check Ball Body until flush with the outer edge.
4. Thread the Lower Check Ball Body into the Lower End Plug until it is finger tight.

Note: The Teflon check ball sinks in water. The Polypropylene ball floats in water.

5. Drop the Teflon check ball into the Lower End Plug. 6. Push the Check Ball Retainer into the top of the Lower End Plug until it seats.
7. Thread the Lower End Plug into the Sampler Body until finger tight.
8. Place the V-203 o-ring inside the Upper Check Ball Body.
9. Insert the Teflon Spacer into the Upper Check Ball Body until flush with the outer edge.
10. Thread the Upper Check Ball Body into the Upper End Plug until it is finger tight.
11. Drop the Polypropylene check ball into the Upper End Plug.

Note: The Polypropylene check ball floats in water. The Teflon ball sinks in water.

12. Push the o-ring on the Check Ball Retainer into the Upper End Plug until it seats.
13. Thread the Upper End Plug into the Sampler Body until finger tight.
14. Attach the tubing by tightening the compression fitting nut to the compression fitting until finger tight. Using a wrench tighten until snug (no more than 1/8 or 1/4 turns).

Decontamination

The Discrete Interval Sampler should be decontaminated after each sampling event.

1. Disassemble the Sampler.
2. Wash all Sampler parts in a phosphate-free soap.
3. Rinse all parts thoroughly with deionized water and dry.
4. Reassemble the Sampler.

Tubing Connection (Compression Fitting) Assembly

