

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 and tubing to fill under hydrostatic pressure. The Sampler is 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.

Assembly

1. Take the Sample Release Device (SRD) End Piece and lubricate the o-ring.
2. Lubricate the o-ring on the SRD Stem and slip the SRD Stem through the SRD End Piece from the threaded end until the pin reaches the threads.
3. Thread the SRD into the bottom of the Lower End Plug until it is finger tight.
4. Lubricate the Lower End Plug o-ring.
5. Lubricate the o-ring on the Valve Body and thread into the top of the Lower End Plug.
6. Lubricate the o-ring on the Valve Poppet and drop into the Valve Body, narrow end in first.
7. Lubricate the o-ring for the Central Rod Connector and thread into the Valve Body.
8. Take the Central Rod and thread approximately 4 rotations to just get it started at this point.
9. Slide the Sampler Body over the Central Rod until completely butted up against the Lower End Plug.
10. Lubricate the o-ring on the Upper End Plug.
11. Lubricate the o-ring on the Central Rod Connector and thread into the Upper End Plug until finger tight.
12. Line up the Central Rod Connector on the Upper End Plug with the threaded portion of the Central Rod in the Sampler Body and begin to thread together.
13. Tighten the Top and Bottom End Plugs until the Sampler Body is completely butted up against both of these to form a good seal.
14. Unscrew the Compression Fitting and carefully remove so as to not lose the Ferrules inside the fitting.
15. Place the Lowering Bracket over the threaded portion of the Compression Fitting (Optional).
16. Take the nut of the Compression fitting and slide onto the tubing. Slide the Hat shaped Ferrule over the tubing and then the Cone shaped Ferrule until you have about 2 inches of tubing exposed.
17. Butt the tubing into the Compression Fitting.
18. Slide the Ferrules down until they are butted together at the top of the Compression Fitting.
19. Slide the Nut of the Compression fitting down the tube and thread onto the Upper End Plug until finger tight. Then take a 9/16" wrench and tighten the Compression fitting another 1 1/4 turns.

Sampling with the Discrete Interval Sampler

1. Before using the Discrete Interval Sampler, there are two important pieces of information needed:
 - i) Desired Sampling Depth
 - ii) Static Water Level
2. With the tubing connected to the Discrete Interval Sampler, and the air pump assembled, connect the air pump to the Pressure Inlet.
3. Turn the Pressure/Vent Valve to Pressure.
4. At this point you must make a calculation to ensure that you are operating at the proper pressure using one of the following formulae.

Setting the Operating Pressure	
Feet	Meters
Sampler depth below grade(ft) static water level below grade (ft) x 0.43 + 10psi	Sampler depth below grade(m) static water level (m) x 9.8 + 70kPa
Example	
Sampling Depth is 100 ft. - Static Water Level at 30 ft. x 0.43 + 10 psi = 40 psi Therefore the Discrete Interval Sampler should be pressurized to 40 psi for proper operation.	

5. Using the air pump, pressurize the Discrete Interval Sampler to the proper pressure.
6. Disconnect the air pump from the reel before lowering into the well.
7. 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 Discrete Interval Sampler Body to measure to the proper sampling depth.
8. Once the sampler is at the desired sampling depth, turn the Pressure/Vent Valve to Vent. Wait for 1-3 minutes to allow the Discrete Interval Sampler and tubing to fill to static water level completely.
9. Turn the Pressure/Vent Valve to Pressure.
10. Connect the air pump to the Pressure Inlet on the reel and repressurize the system using the same pressure as before.
11. Once pressurized, disconnect the air pump and bring sampler to the surface.
12. When the sampler is at the surface you are ready to retrieve your sample from the Discrete Interval Sampler. Turn the Pressure/Vent Valve to Vent.
13. Hold the Discrete Interval Sampler over your sample bottle and press the SRD Stem up into the SRD End Piece 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 End Piece.

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

Recommended Operating Pressure			
Depth (ft.) below water	Pressure psi	Depth (m) below water	Pressure kPa
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

Discrete Interval Sampler Capacity			
Size	Capacity	Size	Capacity
1" x 2'	6 oz	25.4mm x 610mm	175ml
1.5" x 2'	15 oz	38mm x 610mm	450ml
2" x 2'	27 oz	50.8mm x 610mm	800ml

Decontamination

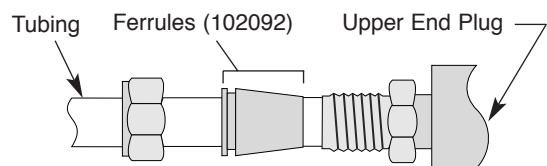
The Discrete Interval Sampler should be decontaminated after each sampling event.

1. Disassemble the Sampler.
2. Wash all Sampler parts in a non-phosphate soap or mild solvent.

Note: Do not use acetone on the o-rings

3. Rinse all parts thoroughly with deionized water and dry.
4. Reassemble the Sampler.

Compression Fitting Assembly



Safety Precaution

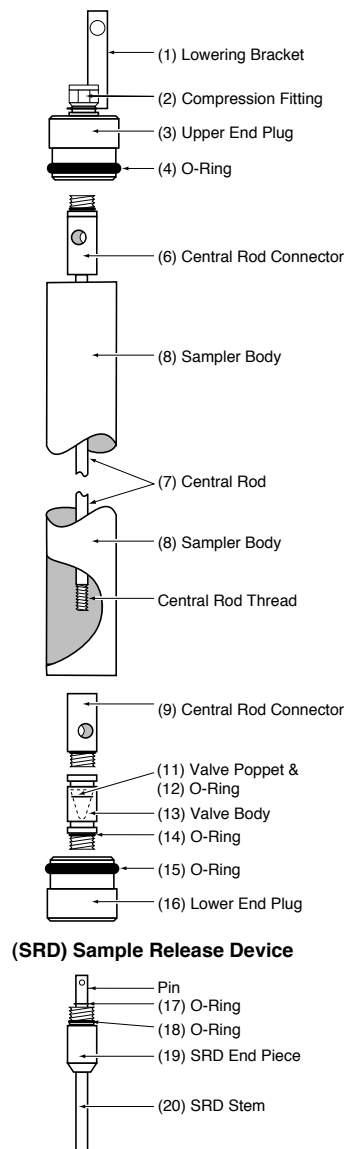
Using High Operating Pressures can be Dangerous

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

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



Discrete Interval Sampler		
	1" dia x 2 ft	2" dia x 2 ft
Complete DIS	100401	101857
(1) Lowering Bracket	100649	100649
(2) Compression Fitting	100709	100709
(3) Upper End Plug 101870	101854	101854
(4) O-ring(V-018) (V-131)	(V-018) 100923	(V-131) 100923
(6) Central Rod Connector	100706	100706
(7) Central Rod	100707	100707
(8) Sampler Body	101867	101856
(9) Central Rod Connector	100706	100706
(11) Valve Poppet	100369	100369
(12) O-ring (V-011)	(V-011) 100628	(V-011) 100628
(13) Valve Body	100368	100368
(14) O-ring (V-113) (V-113)	(V-113) 100627	(V-113) 100627
(15) O-ring (V-018) (V-131)	(V-018) 100923	(V-131) 100923
(16) Lower End Plug	101865	101855
(17) O-ring (V-009) (V-009)	(V-009) 101288	(V-009) 101288
(18) O-ring (V-113) (V-113)	(V-113) 100627	(V-013) 100627
(19) SRD End Piece	100711	100711
(20) SRD Stem	100710	100710