

## **INVENTURES TECHNOLOGIES iSOC® INSTALLATION PROCEDURE**



### **ITEMS SUPPLIED WITH iSOC® SYSTEM:**

1. iSOC® unit
2. Distribution header (supplied with ¼" barb, bleed valve, plug, valve and barb fitting)
3. Snoop Leak Detection Liquid
4. Filter with 5" piece of polyurethane tubing (two are supplied per iSOC® - the 2<sup>nd</sup> is a spare)
5. Hose clamps to be tightened around tubing at each barbed connection (not in photo)

### **ITEMS NEEDED TO BE ACQUIRED FOR iSOC® SYSTEM INSTALLATION:**

- Two-stage low flow regulator retrofitted with ¼" NPT male outlet
- Gas cylinder
- CLEAN polyurethane tubing (0.250" OD x 0170" ID OR 6mm OD x 4mm ID)

### **INSTALLATION STEPS:**

1. **Place tape over ends of on site Polyurethane tubing before installation.** The iSOC®, distribution header fittings, iSOC® filter and tubing piece are all supplied with tape covering the openings. Keep tape on all fittings and tubing until final connections are made. The tape will help to prevent dirt and debris from entering the system internally. Note: iSOC® system failure may occur if dirt enters the system via on site tubing, iSOC®, iSOC® distribution header or filter.
2. **Make sure all on site tubing is installed correctly.** It should be well protected from being crushed or severed. There should be no tight bends or kinks.
3. **Install gas bottle, regulator and iSOC® distribution header in a clean, dry, well protected area** sheltered from the elements and safe from vandalism.
4. **Crack open new gas cylinder BEFORE attaching regulator** to purge out any debris such as sand and paint chips. Be sure to do so while wearing proper eye protection and making sure there are no open flames or combustibles in the area. Observe OSHA safety guidelines for handling and securing gas cylinders. *Note: Follow same procedure for routine changing of gas cylinders. Failure to perform this procedure may cause iSOC® system failure.*
5. **Attach two-stage low flow regulator to gas cylinder.**
6. **Attach iSOC® distribution header to the two-stage low flow regulator.**
7. **Open all barbed valves on the iSOC® distribution header** by turning the blue lever parallel to the fitting. *Note: Directions can be found on the valve's blue lever.*
8. **Close the bleed valve on the distribution header.**
9. **Attach all necessary on site polyurethane tubing and hose clamps to iSOC® distribution header**
10. **Turn the regulator counterclockwise to make sure the pressure of the regulator is at zero.** At zero pressure there should be no gas flow.

**KEEP ON SITE WITH DISTRIBUTION HEADER**

11. **Open gas cylinder valve completely, then back off a slight amount making sure pressure remains at zero.**
12. **Drill two holes in well cap** - one for the iSOC<sup>®</sup> tubing and the other for the eyebolt used to secure the plastic coated iSOC<sup>®</sup> lifting wire.
13. **Calculate injection wellhead pressure** in psi by dividing the height in feet of the water column by 2.306 (approx. 1 psi/ 2.3 ft water depth of iSOC<sup>®</sup>) and attach secure plastic coated line to lifting eye on iSOC<sup>®</sup>.
14. **VERY IMPORTANT - Crack open oxygen cylinder** to purge the regulator, the iSOC<sup>®</sup> distribution header and on site tubing of any water or debris following safety guidelines outlined in step 4. **Failure to perform this procedure may cause iSOC<sup>®</sup> system failure.**
15. **Set regulator on oxygen cylinder to 50, 60 or 70 psi depending on chart specifications.** For immersion depths of less than 60 ft (18.3 m) of water, it is recommended that the oxygen cylinder be set at 50 psi. This will result in an average of 15 standard cc/min of oxygen delivered to the groundwater by iSOC<sup>®</sup>. For greater depths, the regulator setting should be adjusted such that it is a min of 25 psi above the head pressure of the water.
16. **Attach iSOC<sup>®</sup> filter and hose clamp to on site polyurethane tubing** (see warning #5 below).
17. **Repeat step #14** to ensure lines are purged **just prior to attaching the iSOC<sup>®</sup>**. This will reduce the possibility of moisture in the lines which may condense over time and possibly cause iSOC<sup>®</sup> system failure.
18. **Attach polyurethane tubing piece at end of filter to iSOC<sup>®</sup>**. Secure connection with hose clamp.
19. **Submerge iSOC<sup>®</sup> unit in a bucket of water.** In 1-2 minutes you should observe one bubble every 1-10 seconds coming from the top side of the iSOC<sup>®</sup>. *NOTE: The single bubble release is normal and is designed to mix DO throughout the full vertical extent of the well and release nitrogen, assuring good mass transfer.*
20. While iSOC<sup>®</sup> is in the bucket of water, **use Snoop to test for leaks on all exposed fittings.** Key objective: if any leaks are found, repair before continuing.
21. **Slowly lower the iSOC<sup>®</sup> into the well.** Note: Do not allow plastic coated lifting wire and tubing to wrap around each other. This can cause kinking, cutting, loss of gas flow and possible flooding of the iSOC<sup>®</sup>.
22. Once the iSOC<sup>®</sup> is at desired depth in well, **monitor the iSOC<sup>®</sup> bubble rate and regulator pressure gauge for the next 20-30 minutes.** *NOTE: If you are in need of assistance, please call your iTi representative while on site so that they can help in any of the steps above or any problem you may have encountered. Your iSOC<sup>®</sup> representative contact information can be found at [www.gasinfusion.com](http://www.gasinfusion.com) (iSOC<sup>®</sup> / sales) or [www.isocinfo.com](http://www.isocinfo.com).*

#### NOTES:

1. **Attaching polyurethane tubing to barb fittings** – Start tubing onto barb at an angle and wiggle or ‘walk’ it down to the fourth barb. Avoid kinking the tubing when doing so.
2. **Removing polyurethane tubing from barb fitting** – Pinch side of tubing at hose barb with pliers only, than pull tubing off barb with fingers. DO NOT score the barb when doing so. DO NOT cut tubing off barb using a knife or damage to the barb may occur resulting in a leak.
3. **Draining internal water from iSOC<sup>®</sup> unit** – Remove iSOC<sup>®</sup> unit from well. Stop gas flow to iSOC<sup>®</sup> unit by turning the valve on distribution header to the ‘off’ position. Insert supplied 2-prong steel tool into the two holes located at the bottom of the iSOC<sup>®</sup> unit. While gripping tool, unwind bottom ¼ npt stainless steel plug using ¼” hex allen key. Drain all water out of iSOC<sup>®</sup> unit (may have to remove tubing from iSOC<sup>®</sup> unit and drain water from top barb fitting as well). Once iSOC<sup>®</sup> unit is free of water, apply new Teflon tape to the ¼” stainless steel plug and reinsert. Check filter (warning #5). Follow steps #17 to 22 for re-installation.

#### WARNINGS:

1. **Do not allow gas cylinder to run out between site visits.** \*NOTE: iSOC<sup>®</sup> failure may occur if gas supply to iSOC<sup>®</sup> is interrupted while iSOC<sup>®</sup> is in well. If this is allowed to happen, the iSOC<sup>®</sup> may have to be removed from well and allowed to air dry at room temperature for 17 days.
2. **Store the iSOC<sup>®</sup> unit in a clean, cool, dry place.** \*NOTE: iSOC<sup>®</sup> failure may occur if the iSOC<sup>®</sup> unit is exposed to temperatures in excess of 60° C (140° F).
3. **Do not use iSOC<sup>®</sup> in free phase Chlorinated Aliphatic Hydrocarbon product.**
4. **Do not take iSOC<sup>®</sup> unit apart.** Damage to the unit may occur which WILL void the iSOC<sup>®</sup> warranty.
5. **During routine site visits, ensure the iSOC<sup>®</sup> filter has not filled with water.** If iSOC<sup>®</sup> filter has filled with water, the filter must be replaced with a new one. First, remove water-filled filter by cutting tubing ½” on either side of the filter’s barbs. Once filter has been removed, repeat step #14 by purging lines and equipment of any water or debris. Attach new spare filter to on-site tubing and iSOC<sup>®</sup> unit.