

## SETUP (PERFORM BEFORE TESTING AT EACH LOCATION)

1. Open kit and check that all items are present:

- Tubing for Feed
- Graduated Cylinder
- Filter Holder (with tubing connected)
- Tweezers
- Thermometer
- Sample SDI Membrane Filters



2. Connect the tubing to the feed port labeled "IN" by inserting the tubing into the fitting and pushing to the pipe-stop. Pull lightly on the tubing to check that it is secure.

(To remove the tubing when you are done testing: Push in the collet against the face of the fitting. With the collet held in this position the tube can be removed.)



3. Connect the elbow at the end of tubing attached to the filter holder by inserting the stem into the outlet labeled "OUT" and pushing to the pipe stop. Pull lightly on the elbow to check that it is secure.

(To remove the elbow when you are done testing: Push in the collet against the face of the outlet fitting. With the collet held in this position the elbow can be removed.)



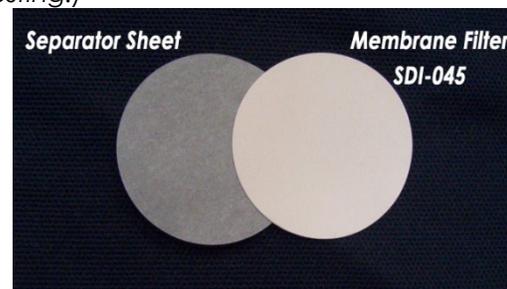
4. Once all connections are made, direct the outlet from the (empty) filter holder to drain. Turn the feed water on by turning the control valve handle counter-clockwise to the open position. Allow the system to run for approximately 15 seconds to flush and purge the air from the system.

Return the valve to the closed position by twisting the handle clockwise.



5. Open the filter holder by twisting the cap and place the membrane filter into the holder. The filter disk goes below the o-ring lying flat against the perforated screen. Use the tweezers to handle the membrane filter – do not touch this with your hands. Note that the filters are packaged with blue separator sheets between them – these should be discarded.

(Setup is now complete and you are ready to begin testing.)



## TESTING & CALCULATION

1. Verify that filter is installed and the output from the filter holder is directed to the 500 ml container.
2. Open the inlet ball valve and as quickly as possible adjust the pressure to 30psi. (Turning the knob on the pressure regulator clockwise increases the pressure, turning it counter-clockwise reduces the pressure.) As soon as the pressure reaches 30psi, begin timing.  $T_0$  is the time it takes to fill the 500 ml container starting when the valve is first opened.
3. Let the water run through the filter at the constant pressure of 30 psi (adjusting pressure regulator if necessary) for 15 minutes. Take another reading for the time it takes to fill the 500 ml container. This is  $T_{15}$ .
4. After the time to fill the 500 ml container starting at 15 minutes ( $T_{15}$ ) is recorded, the test may be discontinued.
5. Using the values of  $T_0$  and  $T_{15}$ , calculate the value of SDI from the formula below. This is called the standard SDI and is referred to as  $SDI_{15}$ .
6. It is possible that the filter may get completely plugged or it may take too long to collect the 500 ml sample after 15 minutes. In that case, starting with a new filter, repeat the process at 5 minutes, instead of 15 minutes. The SDI calculated using this information is called  $SDI_5$ . If possible, starting with a new filter, you may also determine  $SDI_{10}$  (at 10 minutes).
7. The formula for calculating the Silt Density Index is as follows:

$$S.D.I. = [(1 - T_0/T_t) \times 100] \div t$$

Small  $t$  = the time elapsed between the first timed test and the second timed test and is usually 15 minutes as stated in 3 above unless plugging occurs and a shorter interval is needed as in step 6. A typical calculation (using 15 minutes) is as follows:

$$S.D.I. = [(1 - 30/90) \times 100] \div 15 = 2.2$$

Where  $T_0$  = 30 seconds,  $T_{15}$  = 90 seconds, and  $t$  = 15 minutes.

8. The test may be repeated (using a new filter each time) at the same interval, and an average of the SDI readings may be used for analysis.