

# Model ESF

## ESF/EDF – Sealing Liquid Monitor

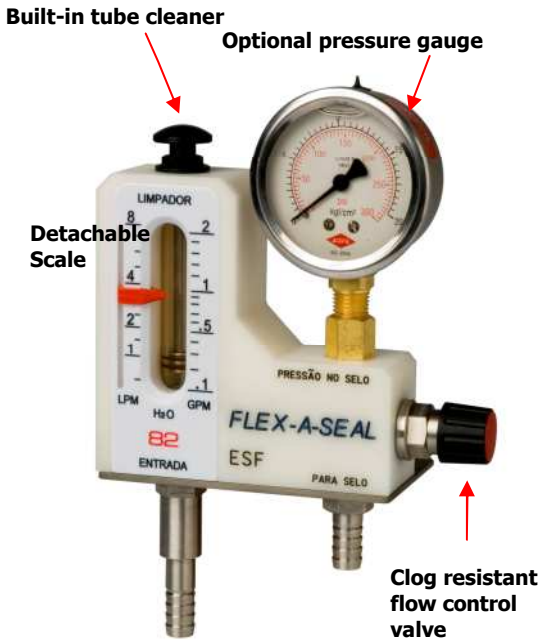
### DIRECTIONS FOR USE

#### 1. INSTALLATION

##### 1.1 Mounting

For simple installation, the ESF/EDF is equipped with a mounting plate. The ESF/EDF can be mounted by loosening a bolt at the selected mounting location, such as a pump flange, pushing the notch of the mounting plate against the bolt, and re-tightening the bolt. Alternatively, if a convenient bolt is not available, the ESF/EDF mounting plate can be attached onto another surface. Simply drill two 5/16" holes, 1 3/4" apart, and install the ESF/EDF with 1/4" bolts.

An optional meter stand is mounted near the pump for example with 1/2" anchor bolts. The ESF/EDF is attached to the meter stand with the enclosed 1/2" x 1" bolt and washers.

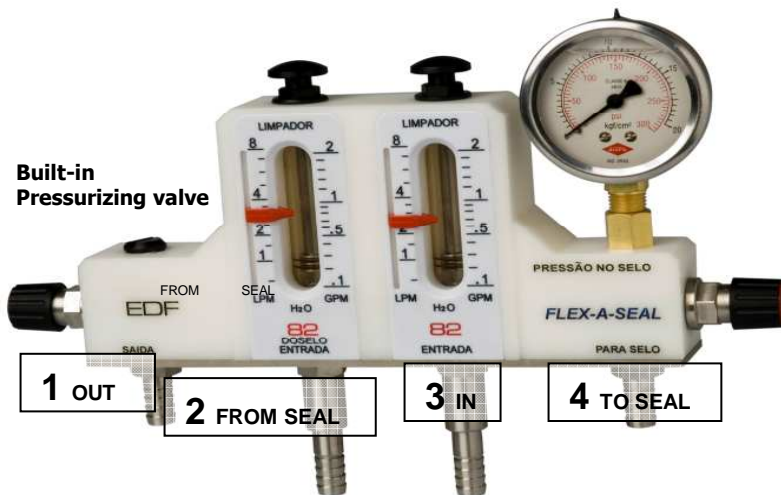


**OPTIONAL FITTINGS:**  
Hosebarb connectors

##### 1.2 Hose connections

Hose connections may be made with 3/8" inside diameter hose. Typically the hose should be textile reinforced, and able to withstand pressures of 240 psi. Hoses should be attached with pipe clamps over the hose barb fittings, and should be left long enough to prevent kinks and avoid sharp turns. Hoses may be bundled with, for example, tie straps.

# Model EDF



**1. OUT** - water outlet to effluent channel or recirculation  
**3. IN** -water feed inlet

**2 FROM SEAL** - water return from seal to pressurizing valve  
**4. TO SEAL** - water feed to seal

### 1.3 Alarm installation and adjustment

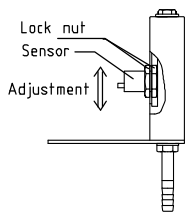


The alarm sensor is mounted in the back of the ESF/EDF behind the indicating tube. The sensor is equipped with two lock nuts. One of these should be moved to the flat end of the sensor, and the other approximately 1/2" behind the first. The sensor can be inserted into the sensor slot at the back of the ESF/EDF by pivoting it into place at the widened top opening of the sensor slot. Once in place in the sensor slot, the sensor is free to move up and down in the sensor slot, and can be tightened into position by tightening (clockwise) against the bottom of the sensor slot.

Low flow alarm setting is done by adjusting the position of the sensor in the sensor slot. When the plastic flow indicator ring has fallen slightly below the midpoint on the sensor, the alarm is activated. To set the low flow alarm more accurately, adjust the water flow to the alarm value, and move the sensor up until the alarm goes off. Depending on the type of sensor used, the alarm state can be determined from a sensor state LED indicator on the sensor body, or by connection to an alarm system.

The high flow alarm is activated when the plastic flow indicator ring rises to nearly the midpoint on the high flow sensor. Accurate high flow alarm level setting is made similarly to the accurate setting of the low flow alarm. The ESF/EDF can be equipped with both low and high flow alarm by utilizing two sensors. Once set, the sensors can be locked into position by tightening the outer lock nut against edge of the sensor slot.

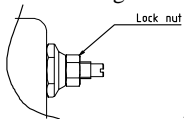
#### Sensor mounting



### 1.4 Flow adjustment

When a basic ESF/EDF without a pressurizing valve is used, flow rate is set by adjusting the valve until the desired value is reached. Using the quick cleaner, the float can be pushed away from the set value, to ensure that it will return to the desired value once the quick cleaner is retracted. For tamper prevention and to make the ESF/EDF screwdriver adjustable, simply remove the hand knob. The hand knob may be removed by removing the back of the hand knob and unscrewing the knob lock screw. Once the knob has been removed, screw the enclosed M8 locknut onto the valve.

#### Valve locking



When using a back-pressurizing valve, both flow and pressure need to be adjusted. Start by first fully opening both valves. Adjusting the valve on the flow meter sets the desired flow level. Once the flow rate is set, set the desired pressure by adjusting the pressurizing valve behind the flow meter. Setting the back-pressurizing valve will change flow, so it will be necessary to repeat these two steps until the desired flow and pressure values have been reached.

### 1.5 Quick cleaning

Over time the indicating tube may discolor due to algae, silt, fiber, and other contamination. This may make it difficult to read the flow rate. The ESF/EDF has a built-in quick cleaner. Quick cleaner operation is as follows:

1. Hold the meter firmly with one hand while cleaning.
2. Thread the cleaning plunger rod into the top of the meter.
3. Push the cleaning plunger downwards slowly to avoid pressure variations to the seal.
4. Let pressure push the plunger upwards slowly by releasing, until the plunger comes all the way to the top.

Please note that if the ESF/EDF is equipped with a flow alarm it will need to be dampened for a minimum of 5 seconds or disconnected. Failure to do so may cause false alarms, and possible disturbances in interlocked connections.

## 2. SERVICE AND MAINTENANCE

### 2.1 Flow meter

If flow meter problems are not resolved by quick cleaning, the cause is typically foreign objects or long-term contaminant build-up in the metering components. In such instances, the metering components should be disassembled to determine the cause of the problem. Meter disassembly:

1. Close the water feed to the meter (not the ESF/EDF valve).
2. Close the valve on the ESF/EDF.
3. Screw on the quick cleaning rod, and push it halfway into the metering tube.
4. Open the upper plug, using an adjustable (or ½" metric) wrench.
5. Pull out the quick cleaner, and with a thumb, push the metering tube out of the meter body.
6. Gently lift out the float with, for example, a toothpick.
7. Clean the feed inlet with, for example, a cloth wrapped around a toothpick.
8. Separate parts should be soaked in soap or mild solvent based solution, and brushed clean with a cloth.
9. Reassemble the metering components in the reverse order.

### 2.2 Valve

Valve problems are normally caused by foreign material in the valve. Such material will remove by opening the valve and then setting the flow back to normal. If valve problems persist, the valve should be disassembled. Valve disassembly:

1. Close the water feed to the meter (not the ESF/EDF valve).
2. Since the seal has to be unpressurized, the pump must also be shut down.
3. Unscrew the valve assembly, using an adjustable (or 7/8") wrench.
4. Clean the meter inlet and valve area with, for example, a cloth wrapped around a toothpick.
5. If the valve needle O-ring leaks, remove the adjustment knob, and screw the needle clockwise through the valve body.
6. Reassemble the valve in the reverse order.

### 2.3 Seals

Broken or worn out O-rings should be removed carefully to avoid damage to the sealing surfaces. Best results are obtained by using only fingers or toothpicks. **Never use metallic tools.** When installing new O-rings, remember:

1. Do not damage the O-ring when moving it over threads. A short smooth pipe can be placed over the threads to protect the O-ring.
2. Do not leave the O-ring on a spiral.
3. Before installation, lightly lubricate new O-rings with silicone lubricant.
4. Use only Viton O-rings.

### 2.4 External cleaning

The metering unit may be cleaned with detergent liquid and water spray, or by brushing with a sponge or brush. Avoid strong solvents and excessive brushing. During cleaning, the quick cleaner hole should be covered or plugged, for example with the quick cleaner, to prevent dirt build-up on the top of the cleaning piston.

If the ESF/EDF is equipped with electrical alarms, excessive use of cleaning water should be avoided.

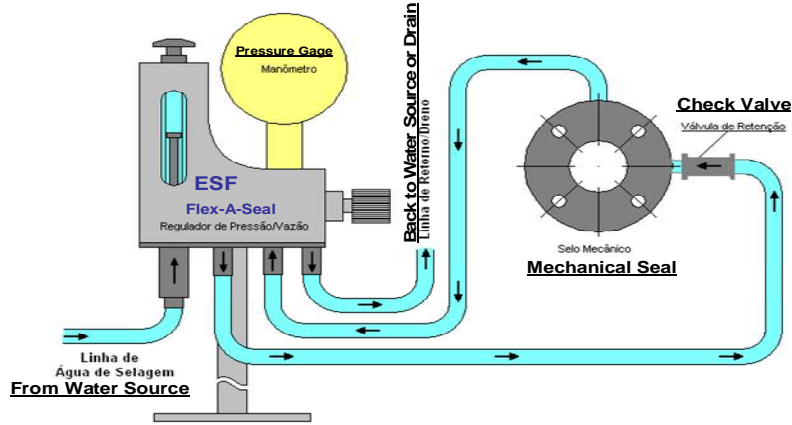
### 2.5 General operation and maintenance

1. **The ESF/EDF does not require regular maintenance.** The meter will remain operational for extended periods with occasional use of quick cleaner for metering tube cleaning and flow metering control.
2. **Only factory authorized spare parts should be used for the ESF/EDF.** Components such as the connectors, which might be replaced with third party components, are critical components of the ESF/EDF measurement and connection assembly.
3. **Do not leave water in the metering tube, during shutdown in cold conditions.** Freezing of the water left in the metering tube will break the glass tube. This is avoided by pushing down the quick cleaner.
4. **Do not over-tighten the ESF/EDF components.** Proper seals on the instrument do not require large tightening torque. If a leak develops, replace the O-ring seal, as necessary, rather than tightening the connections more. Tightening torque is 7-10 Nm.



# ESF FLOW METER PIPING INSTRUCTIONS

CONTROLADOR E REGULADOR SIMPLES DE ÁGUA DE SELAGEM MECÂNICA



# EDF DOUBLE FLOWMETER PIPING INSTRUCTIONS

CONTROLADOR REGULADOR DUPLO DE AGUA DE SELAGEM MECANICA

