

The How & Why of Breakout Junction Boxes

Follow the electrical code and use common sense when installing breakout junction boxes.

Reason to use:

- Prevent migration of landfill gas into the control panel
- Simplify installation and maintenance
- Increase overall safety of the pump and control system
- Reduce operation problems
- Reduce replacement costs
- Increase life of sensors, controls and pumps

Breakout junction boxes should be installed as close as possible to the pump riser, sump, or well and easily accessible. Junction boxes provide easy access for inspection and removal of motor power cables, level sensor leads, floats or other sensors.

There are two styles of breakout junction boxes, both of which are designed to provide reusable means of connecting and disconnecting the power and sensor cables between the pump and control panel and provide a gastight seal between the sump, tank, riser, wet well or the well and control panel when coupled with the appropriate seal off.

Typically these gastight seals are created with a potting or seal material that creates a permanent non-reusable seal. This seal should always be between the junction box and the controller; not between the sensor or pump and the junction box.

One style of junction box is used when a submersible level sensor requires that the inside of the junction box sees the same gas effect as does the sensor down in the liquid. This can be accomplished by installing the breakout junction box as close to the sump well or riser as possible with the conduit open to both the inside of the breakout junction box and sump. **Connected to sump.**

The second style is used for power and/or other kinds of sensors and should be connected in such a way to minimize or eliminate gas getting into the breakout junction box. This is best done by using a jacketed cable with cord restraints or seal at both where it exits the riser and enters the breakout junction box.

There is a way to use conduit for this run. Check with EPG. **Isolated from sump.**

To summarize, when using a submersible level sensor junction box, you want gas in the box and then a gastight seal between it and the control panel. In the second case, we want to eliminate the path for gas into the junction box and have a gastight seal between it and the control panel.

Separate junction boxes must be used for voltage and the line voltage should never be run in the same box or conduit as the low voltage milliamp signal nor should the line voltage be run in the same conduit or junction box that contain circuits protected by intrinsically safe barriers.

Electrical pipe threads are not designed to make a gastight seal. We highly recommend that these connections be sealed with pipe sealing tape or compound. This does eliminate the conduit as a ground. Therefore, you must run a separate ground wire from the breakout junction boxes to the control panel.