



Echotel Ultrasonic Gap Switches – Sell the Technology!

Magnetrol is the world's leading producer of ultrasonic gap switches. We have achieved this through the development and manufacture of highly reliable, and cost effective products such as the Model 910 and the Model 961/962 switches.

Density Calibration

Tuning forks vibrate at a resonant frequency in the absence of a liquid. This frequency is changed when a liquid of sufficient density covers the forks. A switch in the electronics is used to do a density calibration of each tuning fork. There are three different specific gravity ranges that need to be considered when calibrating a tuning fork:

- Most liquids are suitable for leaving the density switch in the up position
- The switch must be moved to the down position for lighter liquids like butane, heptane, gasoline, methane, and many others.
- Liquids even lighter than the ones listed above will not reliably operate with a tuning fork, and another technology such as a gap switch must be considered

It is important for customers to consider the density sensitivity issue of tuning fork.

Process Conditions

The temperature and pressure specifications are similar for the tuning forks and the Magnetrol ultrasonic gap switches, but the edge here definitely goes to ultrasonics. Model 961 is rated at 325⁰ F and 1500 PSIG (2000 PSIG for transducer actuation lengths of 1" or 2").

Moving Parts

Tuning forks inherently have moving parts. The fork tines must vibrate for the technology to work. There are known examples of enamel coated tuning forks (designed for corrosive media) failing due to the enamel cracking and chipping away, exposing the bare metal to the corrosive media. Echotel gap switches have no moving parts.

Foam

The vibrating fork would have sporadic faulty switching in foaming liquids or very turbulent conditions. The remedy in these cases is that the tuning fork be mounted in a bypass. Echotel gap switches ignore foam. The entrained air within the bubble does not permit the ultrasonic signal to be transmitted to the receive piezoelectric crystal. In any application where the user has a foam layer present and wishes to measure the liquid level surface, Echotel is a superior instrument.

Dual Point Capability

Tuning forks do not have dual point capability. The supplier must provide two tuning forks going into two separate tank openings. The Model 962 not only offers dual point capability, but can also perform auto empty or auto fill functions. Dual point capability gives gap switches a clear advantage over tuning forks.

Electronics Housing

The standard tuning fork electronics housing has female threads on the base and male threads on the cover. This allows a potential path for water ingress from rain or condensation when the cover is not tightened all the way down. Magnetrol housings have male threads on the base and female threads on the cover. This design prevents water from entering the electronics housing when the cover is not completely tightened.

In addition, tuning forks do not have a remote mounted electronics housing option. Remote mounted Model 961/962 once again get the advantage since they can be mounted up to 150' (45 meters) away from the ultrasonic transducer.

Fork Lengths

The compact tuning fork has tines that are 2" long. Extended lengths start at 6" tines, and there is an older version of the fork that has 4.7" tines. These are the only lengths offered that are shorter than 6" long. Since most level switch applications require switch points of less than 6", this once again gives the advantage to gap switches.

Sell the Technology!

Make sure your customer understands the advantages of ultrasonic gap technology over tuning forks. Better specs, reliable performance, and no calibration all make the choice easy when it comes to demanding level switch applications Echotel!!

