Frequency Considerations

The industry in general uses a range from 175 kHz to approx. 250 kHz. I am sure each manufacturer will believe their specific frequency is the most appropriate one as well. However, we feel the 190 kHz to 200 kHz range allows the best overall performance in the water types and depths most commonly fished by a majority of anglers.

High frequency sonar pulses in this range are primarily suited to relatively shallow water, less than 600 feet, provide superior target separation and detailed echo returns due to the shorter wavelength of sound. Low frequency, generally in the 50 kHz neighborhood, is better suited for deeper waters. These depths are generally only obtained in saltwater. The high power, low frequency, and long wavelength of this transmit pulse will allow the sound wave to penetrate deeper, with less dispersion from pressure or salinity than the higher frequency ranges.

Application

200 kHz is recommended for all freshwater applications to provide the best coverage and details. 50 kHz capability is recommended for saltwater in inshore coastal areas, deep saltwater (appropriate power and transducer), and inland freshwater operation in the great lakes areas. In freshwater 50 kHz can be used to track the depth of downrigger cannon balls and deep trolled baits when depth and not details are important.

Transducers

General Specifications

Sonar transducers are the bullhorn and ears of your sonar unit. But what exactly is a transducer, and what does it do?

In the field of electronics is a special device known as a crystal. It has some distinct properties. When a crystal is excited by an electrical field it begins to resonate or vibrate at a specific frequency determined by its internal properties. This same crystal, when vibrated, develops an electrical field or voltage.

The sonar transducer is a composite crystal material with these properties. When excited by voltage (transmit power), it begins to vibrate at the designated frequency. This physical vibration occurs with the transducer in contact with the water so the high power vibration or sound wave is coupled to the water. When sound waves or vibrations (echo return), strikes the face of the transducer, this vibration causes an electrical field or voltage to develop which is then coupled into the sonar receiver for processing.

The sole purpose of the transducer is to couple sound waves into the water from electrical signals, and to then couple electrical signal to the receiver from sound waves. Sounds simple but I assure you we will complicate it in further sections.

Cone Angle verses Coverage Area

Cone angles and coverage areas are probably the area of most contention and the least understood of all sonar performance specifications. Lets try to shed some