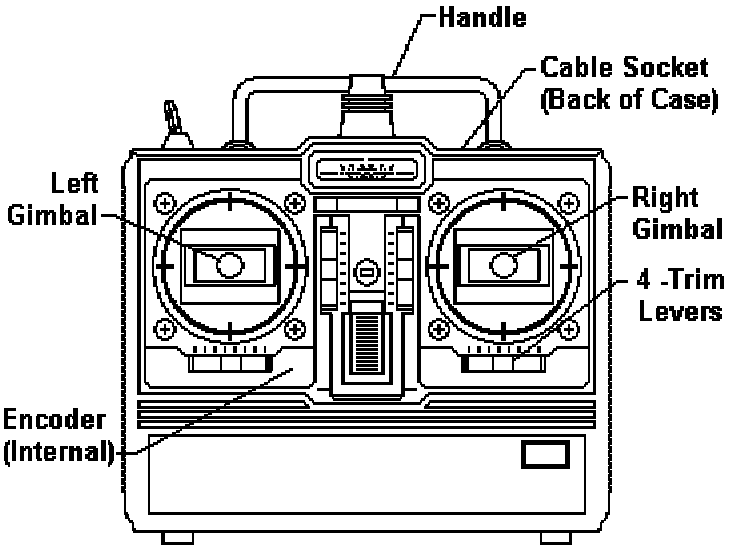
Buddy Box Operation

A trainer box, or buddy box, system is nothing more that a transmitter that has had the battery pack, antenna, and crystal removed. This could be a box that is specifically built for this purpose by the manufacturer of the student's radio system or an old transmitter that has been converted. The big advantage of this is that it allows the student to fly using only his radio gear and not interfering with the instructor's system. A complete transmitter can be used as a buddy box but care must be taken to ensure that the power switch is not turned on.

In a trainer system, the transmitter is the master unit and the buddy box is the slave. The instructor uses the master unit and the student uses the slave. The instructor *allows* the student to control the model by holding the trainer switch. When he releases it, he takes control away from the student. Although, many people have learned to fly using this method, very few people know how this system actually works. For an overview of how a radio control system works, read Radio Control System Operation. An understanding of how a radio works will greatly simplify the understanding of the buddy box operation.

A typical buddy box consists of most of the same basic components of a transmitter.



Typical Buddy Box

Gimbal (or Stick)	-	The device that allows the user to input desired control movements into the transmitter
Handle	-	The device for carrying the buddy box

Trim Lever - Slides used to adjust control surfaces during flight

Internally, the only important part of the buddy box is the encoder. This is the component that makes the buddy box system function.

Since the buddy box does not have a battery and since the encoder must be powered up to operate, the buddy box gets its power through the trainer cord from the master unit. The master unit powers up the slave unit through the buddy cord and the encoded pulse train is carried by a single wire from the slave unit to the master. This would mean that five (5) wires would be required; 2 for power, 2 for the encoded signal and a shield. When the instructor switches the trainer switch, power goes from the master to the encoder of the slave unit and powers it up. The slave unit components become the remote controls and encoder for the master unit. The controls sticks and encoder of the master unit do not function as long as the trainer switch is held on. This allows the slave unit to become the controlling unit.

The radio frequency (RF) section is the part of the transmitter that actually generates the radio signal. The pulse train from the slave unit is interpreted by the RF section of the master unit and a particular amplitude or frequency variation is generated to represent the pulse train. The radio signal is carried to the antenna and radiated from the transmitter.

The buddy box continues to operate as long as the trainer switch is held by the instructor. When the trainer switch is released, power is removed from the encoder of the slave and it no longer operates.