

Big Haulers has two main parts, a controller and a car (hurlers).

The car is powered by two (AA size) batteries and a power switch is on the bottom of the chassis. Antenna is built inside the car.

The controller is powered by one 9V battery and has 4 switches incorporated on two knobs. Forward and backward are on left-hand side of the controller, Left turn and right turn are on right hand-side of the controller. There is no power switch on the transmitter because it is not working when either Forward/Backward or Left/Right switch is activated (pressed).

When both controller and car are installed with batteries and the power switch of the car is set to on, user can control the car moving forward or backward or, turning left or right when running forward/backward simultaneously.

Electrical description of the controller (transmitter)

The RF link (control method) is established by encoding a pulse train which includes 4 codes. These codes will be interpreted by receiver decoder for forward/backward and left/right control.

The controller is a pulse wide modulation transmitter which has 3 main parts, an encoder, an oscillator and a RF amplifier.

Whenever a key is pressed (SW1~SW4), the VSS of the encoder IC (U1) will be connected (via D1-D4) to the negative terminal of 9V battery and the battery power is applied to the VDD of the encoder via R8. The operating voltage (3V) is regulated by a zener diode (Z1). At the same time, the IC (U1) is operating and generating a pulse train from pin 8 to Q2. The content of pulse train depends on key(s) pressed.

Q1 is a crystal control oscillator and the power is applied when a key (SW1~SW4) is pressed. It outputs to RF amplifier via C4.

Q2 is a RF amplifier and it receives signal from oscillator (RF frequency) and modulating pulse from encoder. A band pass filter (C8, L2 & C9) is placed between the amplifier and antenna to reduce upper harmonic & spurious emission.

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