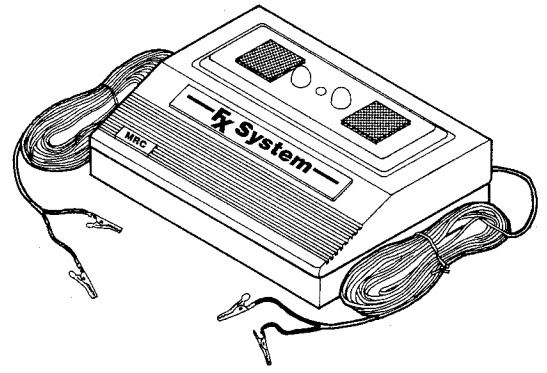




CONCEPT™



Dual Electric Launch Control Panel

READ THESE INSTRUCTIONS CAREFULLY BEFORE USE

INSTRUCTIONS

Product Number LS 205

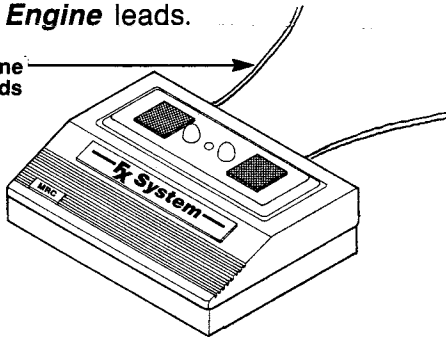
STEP 1

Remove the twist-tie from each of the bundles of igniter wire leads coming out of the back of the control panel.

STEP 2

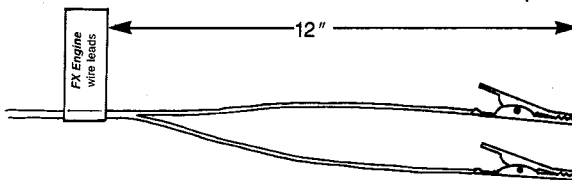
To help identify the **FX Engine** wire leads from the primary engine wire leads note that the left side launch button is marked **FX Engine**. The wire leads coming out of the control panel behind this button are the **FX Engine** leads.

FX Engine wire leads



STEP 3

Remove the backing from the **FX Engine** wire lead sticker and attach it to the **FX Engine** wire leads as shown about 12" from the end with the two micro clips on it.



STEP 4

Tie the plastic streamer onto the safety key as shown here.



Slide key 1/2 way on to streamer and tie in knot.

STEP 5

Remove the battery compartment door from the control panel.

STEP 6

Install four "C" size Alkaline batteries with the + plus and - minus ends facing as shown on the inside of the battery compartment.

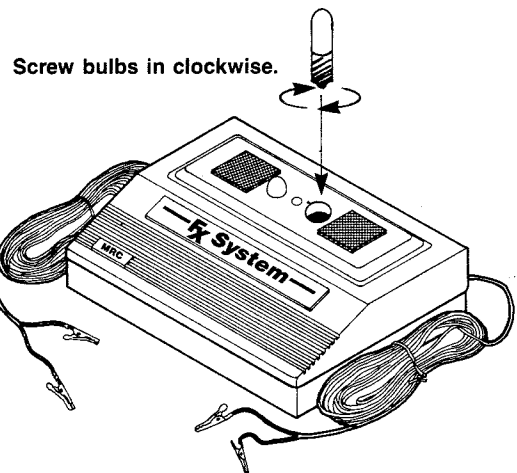
NOTE: We recommend using only Alkaline type batteries.

STEP 7

Replace battery compartment door.

STEP 8

Screw the two green lamps into place in the control panel. Do not overtighten.



Testing

The best way to test your Control Panel is to test fire an igniter by itself. It is best to conduct your test outdoors because the igniter will produce a small momentary flame and some smoke. Be sure your test area is free of any easy-to-burn materials.

Step 1. BE SURE SAFETY KEY HAS BEEN REMOVED FROM THE CONTROL PANEL BEFORE CONNECTING THE CLIPS TO AN IGNITER.

Step 2. Attach the **FX Engine** micro clips to an igniter. Be sure the clips are not touching each other.

Step 3. Attach the primary engine micro clips to another igniter. Be sure the clips are not touching each other or the **FX Engine** set of clips.

Step 4. Insert the safety key into the control panel. Both green lamps should light indicating a complete circuit. The igniters should not fire at this time.

Step 5. Press the **FX Engine** launch button. The **FX Engine** igniter should fire. Now press the primary engine launch button. The primary igniter should fire.

If the control panel fails to operate as described, proceed to the troubleshooting section.

Using your Dual Electric Launch Control Panel

Always be sure the safety key has been removed from the control panel and is with you before you begin.

Step 1. Set up your rocket launcher in an open area that is free of any dry grass or other easily flammable materials. Unwind the igniter wire leads and place your control panel the full length of the igniter wire leads (at least 15 feet) away from the launcher.

Step 2. Install the igniter in the rocket engine(s) according to the instructions included with it. Prepare your rocket's recovery system according to the instructions included with it.

Step 3. Slide your rocket onto the launch pad. CAUTION: ALWAYS USE CAUTION WHEN BENDING OVER LAUNCHER TO AVOID EYE INJURY.

Step 4. Attach the **FX Engine** micro clips to the **FX Engine** in your rocket. Attach the primary engine micro clips to the igniter in the primary engine. BE SURE MICRO CLIPS DO NOT TOUCH EACH OTHER OR METAL BLAST DEFLECTOR. Return to control panel.

Step 5. Insert safety key into control panel. Both green lamps should light indicating two complete circuits. If only one lamp lights, refer to the troubleshooting section.

Step 6. Check for low flying aircraft and alert bystanders that you are ready to launch.

Step 7. Provide a short verbal countdown and press the **FX Engine** launch button. The **FX Engine** will ignite and smoke for up to eight seconds. At any time during the eight seconds you can press the primary engine launch button to carry your rocket aloft.

Step 8. Always remove safety key after launching and take it with you. NOTE: The control panel can be used for single engine launching by only using one set of micro clips. When testing for continuity, only one green lamp should light.

Troubleshooting

If either engine does not ignite, REMOVE THE SAFETY KEY FROM CONTROL PANEL AND WAIT ONE FULL MINUTE BEFORE APPROACHING THE ROCKET. TAKE THE SAFETY KEY WITH YOU.

1. Check for a short circuit at the launcher. Check the micro clips to be sure they are not touching each other or the metal blast deflector plate.
2. Check to make sure the micro clips are clean. After several launchings the engine exhaust residue can build up on the micro clips. Clean each clip by lightly sanding away residue with 400 grit sandpaper.
3. If this is not the problem, remove the igniter from the engine. Check to see if the igniter is bent and touching itself inside the nozzle. If the igniter is broken at the tip it is defective. If the black material at the tip has burned away, then the igniter worked but failed to ignite the engine. The reason for this is that the igniter was not installed far enough into the engine nozzle to contact the propellant. Install a new igniter.
4. If the problem is not identified in steps 1, 2 or 3 you may have a bad battery connection. Open the battery compartment door and check to be sure the batteries are installed in the correct direction as engraved in the battery compartment. If the green lamps glow weakly you have weak or dead batteries. If there is any question that the batteries may be weak, install a fresh set. Cold temperatures also limit battery power so be sure the batteries are at least at room temperature (70 degrees).

Special Notes on Using adaptor for Outside Power Source

Your control panel comes with an adaptor to attach to an outside power source. Before using the adaptor, be sure to remove all alkaline batteries from the battery compartment.

The adaptor can be attached to a 6 or 7.2 volt power source. Connection to any higher voltage source can result in the lamps burning out.

We recommend using a rechargeable RC car battery pack such as the MRC Power Max 7.2V 1400 MAH (product number RB 422).

Other brands with a 1200 to 1800 MAH rating are acceptable.

We recommend a velcro fastener to attach the battery pack to the side or bottom of the control panel.

Special Notes for Cluster Ignition of FX Engines

Some of the **CONCEPT II** rocket kits have outboard recruits that can each hold one **FX Engine**. Because the distance between the recruits makes attaching one pair of micro clips to all engines and igniters at the same time impossible, you will need a device called a "clip whip" to enable you to attach a micro clip to all of the igniter leads. The key to good reliable cluster ignition of **FX Engines** is to distribute the electrical current evenly to each igniter at the exact same time.

You can build your own "clip whip" with materials available at any RadioShack store.

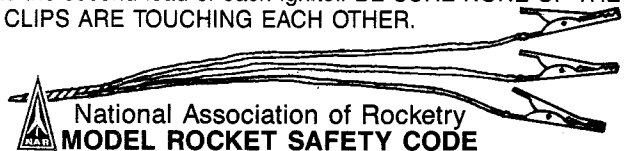
You will need the following to build two "clip whips":

a)—6 micro alligator clips b)—3 feet of 22 gauge wire

1. Cut the 22 gauge wire into six pieces five inches long each. Remove 1/2 inch of insulation from each end of the six pieces of wire.
2. Attach and solder a micro clip to one end of each wire.
3. Twist the end without a micro clip of three wires together. Solder for best connection.

USING YOUR "CLIP WHIP"

1. Attach one "clip whip" to each of the **FX Engine** micro clips from your control panel.
2. Use each "clip whip" as one half of the circuit and attach one set of "clip whips" to one lead of each igniter and the second set of "clip whips" to the second lead of each igniter. BE SURE NONE OF THE MICRO CLIPS ARE TOUCHING EACH OTHER.



1. **Construction**—My model rockets will be made of lightweight materials such as paper, wood, rubber, and plastic, without any metal as structural parts.
2. **Engines**—I will use only pre-loaded factory-made NAR Certified model rocket engines in the manner recommended by the manufacturer. I will not alter or dismantle model rocket engines or their ingredients in any way or attempt to reload these engines.
3. **Recovery**—I will always use a recovery system in my rockets that will return them safely to the ground so that they may be flown again. I will use only flame-resistant recovery wadding in my rockets.
4. **Weight Limits**—My model rocket will weigh no more than 1500 grams (53 ozs.) at lift off, and the engines will contain no more than 125 grams (4.4 ozs.) of propellant. My model rockets will weigh no more than the engine manufacturer's recommended maximum lift-off weight for the engines used or will use the engines recommended by the manufacturer for my rocket.
5. **Stability**—I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
6. **Payloads**—My model rockets will never carry live animals or payloads that are intended to be flammable or explosive.
7. **Launch Area**—I will launch my model rockets outdoors in a cleared area, free of tall trees, power lines, and buildings. I will ensure that people in the vicinity are aware of the pending rocket launch and are in a position to see the rocket's lift-off before I begin my audible 5-second countdown.
8. **Launcher**—I will launch my model rockets from a rod or other device which provides rigid guidance until the rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so that the end of the rod is above eye level or will cap the end of the launch rod when approaching it. I will cap or disassemble my launch rod when not in use and will never store it in an upright position. The launch device will have a jet deflector to prevent the engine exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, and other easy-to-burn materials.
9. **Ignition System**—The system I use to launch my model rockets will be remotely controlled and electrically operated and will contain a switch that will return to "off" when released. The system will contain a removable safety interlock in series with this firing switch. When launching, all persons will remain at least 15 feet away from any model rocket when igniting engines totalling 30 N-sec of total impulse or less and at least 30 feet when igniting engines totalling more than 30N-sec total impulse. I will use only electrical igniters which will ignite my rocket engine within one second of actuation of the launching switch.
10. **Launch Safety**—I will not let anyone approach a model rocket on a launcher until I have made sure that the safety interlock has been removed or the battery has been disconnected from my launcher. In the event of a misfire, I will wait one minute before allowing anyone to approach the launcher.
11. **Flying Conditions**—I will launch my model rocket only when the wind is less than 20 miles per hour, and under conditions where the model will not fly into clouds, fly near aircraft in flight, or be hazardous to people or property.
12. **Launch Area**—When conducting research activities with unproven designs or methods I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.
13. **Launch Angle**—I will not launch rockets so their flight path will carry them against targets. My launch device will be pointed within 30 degrees of vertical. I will never use model rocket engines to propel any device horizontally.
14. **Recovery Hazards**—If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.



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