

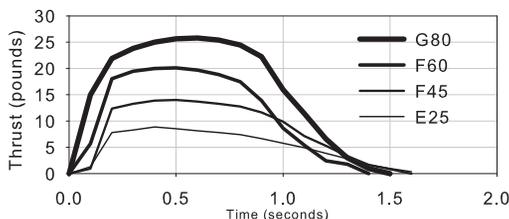
Model Rocket Motor Instructions READ BEFORE USE

Igniters Use of igniters other than supplied by Roadrunner is not recommended. An igniter that is too large can result in motor failure due to a blocked nozzle. Do not use igniters larger than 26 gauge wire. Never insert an igniter into a motor except outdoors at the launch site when you are almost ready to launch.

Igniter Installation Remove ½ inch of insulation, exposing two bare wires. Straighten the igniter and carefully insert the coated end through the nozzle. Gently probe to find the slot in the propellant and insert the igniter in the slot until it contacts the delay element at the other end of the motor. If a substantial length of the igniter has not been inserted into the motor, you did not get the igniter in the slot – remove the igniter and try again. The motor is now capable of being ignited – use extreme caution! Secure the igniter to the motor with masking tape.

Ignition System To avoid accidental ignition, make sure there is no electrical current flowing to the igniter clips and that you understand the operation of the launch system before connecting the igniter clips to the igniter leads. Ignite the motor outdoors using remote electrical means only.

Motor Performance Data



Motor	Impulse			Burn Time (S)	Prop Wt (gr)
	Total (N-S)	Avg (N)	Max (N)		
G80R	108	80	114	1.4	54.7
F60R	77	60	90	1.3	38.1
F45R	61	45	62	1.4	30.0
E25R	39	25	40	1.5	20.6

Roadrunner Rocketry, Inc
PO Box 630494 Irving, TX 75063
www.RoadrunnerRocketry.com

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Roadrunner Rocketry, Inc.

Model Rocket Motor Instructions WARNING-FLAMMABLE: READ INSTRUCTIONS BEFORE USE Keep out of reach of children

G Motors not for sale to persons under the age of 18. Federal law prohibits the sale of G motors to persons under the age of 18 and certain state and local regulations may contain additional prohibitions. Federal, state and local law and regulations should be followed in all rocketry activities and take priority over any contradictory instructions or recommendations herein.

Federal Aviation Administration (FAA) regulations restrict the flight of certain model rockets – the user should become familiar with and comply with relevant FAA regulations prior to flying model rockets.

Powerful Motors – Not Toys - Use Caution Roadrunner motors contain composite propellant that delivers up to three times the power of black powder motors. They are capable of launching rockets to substantial heights at great speed. Roadrunner motors are not toys and should be used only by or under the supervision of adults who are experienced rocketeers.

LIMITATION OF LIABILITY Since Roadrunner Rocketry, Inc. (Roadrunner) cannot control the handling, transportation, storage and use of its products, Roadrunner cannot assume any responsibility for these activities. Roadrunner shall not be responsible for, and purchaser and any permitted users agree to indemnify and hold Roadrunner harmless from, any personal injury or property damage resulting from the handling, transportation, storage or use of Roadrunner products. The purchaser and any permitted users assume and accept all risks and liabilities therefrom and use Roadrunner products on these conditions. No warranty either expressed or implied is made regarding Roadrunner products, except for replacement or repair, at Roadrunner's option, of those products proven to be defective in manufacture within one year from the date of original purchase. For repair or replacement, please contact your motor retailer. Your state or other law may provide additional rights not covered by this warranty. This limitation of liability will be given effect to the fullest extent permitted under applicable law.

ACKNOWLEDGEMENT OF TERMS AND CONDITIONS: After reading the Limitation of Liability if you do not agree to the terms and conditions, contact your motor retailer to return the unused product. Use of this Roadrunner product constitutes acceptance of the terms and conditions contained herein.

Model Rocket Motor Instructions READ BEFORE USE

Use motors only in accordance with these instructions.

Adult supervision is recommended for all model rocketry activities.

Follow the **Model Rocket Safety Code** of the National Association of Rocketry (www.nar.org) in all model rocketry activities.

For information on safety practices and regulations affecting rocketry, review the National Association of Rocketry section manual (www.nar.org).

Use only in rockets designed and built to withstand the high stresses that will result. Constructing rockets using the proper materials and techniques will help to reduce rocket failures and make rocketry a more enjoyable and safe experience.

Keep all persons and animals at least 30 feet way from the rocket at launch.

Do not launch motors that have achieved extreme temperatures (such as by sitting in the desert sun for several hours) as rocket motor performance varies with motor temperature! When launching in hot or cold temperatures, take reasonable steps to keep motors at moderate temperatures.

Do not ship or mail model rocket motors. It may be illegal for a consumer to do so and can endanger persons and cargo. Excess motors can be sold to local rocketeers, donated to a local rocket club or returned to your local motor dealer for proper disposition.

Do not launch unless the motor and delay are appropriate for your rocket. An experienced rocketeer, the manufacturer of your rocket, or simulation software can help you determine if your choice is appropriate. Two popular simulation packages are wRasp (free at www.wrasp.com) and Rocksim (for sale at www.apogeerockets.com). The above are suggestions only; user is solely responsible for determining the appropriate motor and delay.

Do not launch if winds are greater than 20mph, into clouds, near aircraft in flight, or at an angle greater than 30 degrees from vertical.

In the event your motor misfires or does not ignite, remove the safety interlock or disconnect the battery from the ignition system, then wait one minute before approaching the rocket.

Perchlorate Material – special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate

Model Rocket Motor Instructions READ BEFORE USE

Motor Classification Each motor is marked with a code (e.g. G80-7) which gives important information about the motor's performance. The letter indicates the range of total impulse produced by the motor. For example, a G motor has a total impulse of between 80 and 160 newton-seconds. Each successive letter has up to twice the power of the preceding letter. The first number indicates the average thrust (in newtons) of the motor; the last number indicates the time in seconds between the propellant burn out and the firing of the ejection charge.

Storage and Handling Store motors in a dry place where the temperature will remain between 45 and 100 degrees F. Do not attempt to cut, saw, alter the size, disassemble, modify or drop a motor. Do not use a motor that has been damaged in any way. Do not ignite a motor indoors. Do not breathe fumes from the motor exhaust.

First Aid For a minor burn, apply appropriate first aid. For a severe burn, seek medical assistance promptly. In the unlikely event of oral ingestion, induce vomiting and see a physician immediately. In the event of breathing exhaust fumes, move to fresh air. Seek further medical treatment if necessary.

Disposal Damaged, defective or unwanted motors may be disposed of in the following fashion: 1) Dig a small hole in the ground. 2) Place the motor into the hole with the nozzle pointing skyward and pack the hole firmly with dirt to securely restrain the motor. 3) Ignite the motor electrically, from a distance of 30 feet or more. 4) Do not approach for five minutes after the motor has burned out. Dispose of spent motor in the trash. Remember that the motor will be hot after firing.

Fire Safety Always be alert to fire risks at rocket launches. Make sure there are fire extinguishers present before launching any rockets. Use appropriate launch equipment (including a large blast shield and elevated launch stand) in a launch area clear of flammable material to reduce the risk of fire. In the event of a fire approaching model rocket motors, get away. Once ignited, model rocket motors cannot be extinguished and the motors can be propelled at high speed and cause injury.

Motor Retention The motor must be retained in the rocket so the thrust of the motor does not cause the motor to move into the rocket body during flight and the firing of the ejection charge does not cause the motor to be ejected from the rocket. The built-in thrust ring should prevent the first from happening. If necessary, however, wrap additional masking tape around the thrust ring or motor to build it up and prevent the motor from moving into the rocket body during flight. Insure that the motor fits securely into the motor mount tube by wrapping masking tape around the body of the motor until a tight fit is achieved and use positive motor retention to prevent the motor from being ejected when the ejection charge is fired.