

Purley Amateur Rocketry Society (PARS)



Flying rockets is dangerous if simple precautions are not taken. PARS members obey all rules set by UKRA. In addition, PARS has its own Code of Practice. Everyone who attends a PARS meeting does so strictly at their own risk and is required to acknowledge this. You will be given a copy of the PARS Code of Conduct on the day. Please read it and please take it seriously.

Code of Practice

1. PARS meetings are fun, but rockets are not toys and should be treated seriously. Never touch or play with rocket motors.
2. Adults are responsible for the safety of their own children and themselves.
3. Always obey the instructions of the organizers. Anyone disobeying an instruction will be required to leave.
4. If a child is in danger, they will be physically man handled to remove them from the area of danger.
5. Rocket motors will be kept in a closed metal box, especially during launches. The box will be kept at least 30 feet from the launch pad.
6. A rocket must only be launched in calm weather.
7. A rocket can only be launched from a launch pad that is stable for the weight and height of the rocket. If there is any chance of a rocket falling over on its pad it cannot be launched.
8. Only use the word FIRE in the event of a FIRE.
9. A small first aid kit will be on hand at all times.

Preparing for Launch

10. No more than two people should prepare a rocket for launch. Everyone else must be 30 feet away at all times. One is the RANGE MASTER (RM) and the other is the LAUNCH CONTROLLER (LM).
11. The electrical ignition system (EIS) should be kept 30 feet from the launch pad.
12. Before connecting the EIS to an igniter the RM checks to ensure that the EIS SAFETY is ON (SAFE position) and the EIS is NOT armed (RED button UP).
13. No one must touch the EIS while a rocket is being armed. To do so is grossly irresponsible and could lead to serious injury.

Launch Sequence

14. The RM checks for low flying aircraft and other hazards, for example, members of the public, before announcing "ALL CLEAR".
15. Once the ALL CLEAR is given, the LC can turn SAFETY OFF. He or she then clearly announces "SAFETY OFF".

16. Once the SAFETY is OFF, no one is allowed to move and everyone should be quiet.
17. The RM performs a second check before arming the rocket by pressing the ARM button on the EIS. He or she then clearly announces "ROCKET ARMED."
18. The LM then makes a final check that everyone is safe before starting the countdown as follows 5, 4, 3, 2, 1, IGNITION. To launch the rocket the IGNITE button on the EIS is pressed and held down until the rocket leaves the pad.

Misfires

19. If a rocket misfires the SAFETY switch should be returned to the SAFE position.
20. No one should approach the rocket. This includes the LM and the RM. Only the launch organizers will decide what steps to take and when.

Legal Stuff

21. Parents are responsible for themselves and their own children.
22. Everyone who attends a PARS meeting does so strictly at their own risk and is required to acknowledge this.

Best Practices

The launch site will meet minimum size requirements set out by the American National Association of Rocketry. For example, for D impulse motors, 200 meters.

The launch site will be a large open space, such as heath-land. Parks or other areas where large numbers of the public are likely to be at play are not suitable.

The launch site will be at least 500 meters away from buildings, power and telecomm cables, railway lines, radio/relay masts and other obvious hazards. Roads, the site boundary (i.e. property which does not belong to launch site owner) and other obvious hazards (e.g. trees) should be at least 300 meters from the launch point. The launch point should be taken as the centre of the designated launch area, or the point, which is farthest from surrounding hazards. The wind direction should be taken into account when launching, as rockets will drift a long way on a parachute.

Organisers will check to see if there is an airfield, airport or helipad within 5 miles of the launch point. The presence of an airfield does not normally constitute a problem for launches, but it may be necessary to contact the local air traffic control.

Organisers should reserve the right postpone or cancel launches for safety reasons – e.g. weather, an inadequate or an inappropriate launch area. PARS will comply with Air Safety legislation and launch only when rockets do not constitute a hazard to other air users (e.g. aircraft and helicopters).

Jet efflux from a rocket motor is hot and potentially could cause burn injury or cause a fire. These hazards are potentially serious. They are dealt with, a) by following the

established and recommended procedures for launch adapted from those specified by the British Model Flying Association and the American National Association of Rocketry and b) by having one of the supervisors prepare and launch every rocket. Procedures for misfires must be enforced.

Rockets travel at up to 100 kph. They can cause injury if someone is hit by a rocket. However, they are lighter, less dense and travel slower than a cricket ball. Even so the hazard is potentially serious. This hazard is dealt with by always launching within 10 degrees of the vertical so rockets fly upwards, away from people and by enforcing an operational exclusion zone devoid all people except those directly involved in launch and recovery. Even these people remain at a minimum distance of 50 feet from the launch pad.

At least two supervisors are required and take on the roles of Launch Controller (LC) and Range Master (RM). The responsibility of the LC is to check, load and launch all rockets. The RM's task is the safety of participants, onlookers and others in the vicinity. The RM will control and advise onlookers.

Rockets pose a potential hazard on their return to earth if their recovery device (to slow descent) fails to operate, should anyone be in the way. To avoid this risk, a designated landing exclusion zone is allocated. Access to this is restricted and it is accessible only with permission from the Launch Controller or Range Master. Observers will be able to watch at a distance out of range of the rockets.

Drifting rockets being recovered by their parachutes are a potential hazard to vehicle drivers (road, air and rail) and precautions are taken to ensure that roads, railways and other transport routes are out of range of rockets.

The electrical firing system of the rockets has a SAEFTY feature as an additional safety measure. Unintentional firing of a rocket is almost impossible. They can only be ignited by the special electrical system and fuse of the launcher.

The rockets are light in weight and typically travel no faster than a ball, as used in school sports. The risk of injury from moving rockets is slight and should not be severe, should an accident occur. A small first aid kit will be on hand at all times.

PARS uses only lightweight, non-metal parts for the nose, body, and fins of any rocket.

PARS uses only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.

PARS will launch rockets with an electrical launch system and electrical motor igniters. PARS launch system will have a SAFETY interlock in series with the launch switch, and will use a launch switch that returns to the 'off' position when released.

If a rocket does not launch when the button of the electrical launch system is pressed, PARS will remove the launcher's safety interlock or disconnect its battery, and will

wait two minutes after the last launch attempt before allowing anyone to approach the rocket.

PARS will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 50 feet away when rockets with D motors or smaller are launched. If anyone at the site is uncertain about the safety or stability of an untested rocket, PARS will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance.

PARS will launch rockets only from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and this will include a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, PARS will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.

PARS will not launch any rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in rockets.

PARS will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.

PARS will use a recovery system such as a streamer or parachute in all rockets so that it returns safely and undamaged and can be flown again, and will use only flame-resistant or fireproof recovery system wadding in rockets.

PARS will not attempt to recover rockets from power lines, tall trees, or other dangerous places.

All solid fuel motors are carried to and from launch sites in a sealed metal container.