British Human Powered Flying Club

Promoting the sport of Human Powered Flight

HPA Guides / Procedures for Competition Flights

V1. Authors, Bill Brooks,

Robin Kraike & Roger Warren

Guides & Procedures

- ***How fit do you need to be fly an HPA, e.g. Airglow?*** *Most moderately fit people can manage enough power to manage at least a short hop (20 meters plus*)
- ***Can I fly it?*** *Depends on Power to Weight ratio within limits.*

Pilot weight Kgs	*Take-off power (watts, for 25 seconds)*	*Cruise power (watts, for 2 minutes)*
60	*280*	*230*
65	*300*	*250*
70	*320*	*270*
75	*340*	*290*
80	*360*	*310*

High wind flying… Icarus 2012 https://www.youtube.com/watch?v=7Td-SiLGP7Y

Attempting a turn 2012 https://www.youtube.com/watch?v=iHTU3K5aomA

Procedures

- In Brief….

WING HANDLEING: Calls of “Your Wing”. “ My Wing”.

“You have the Fuz” (Fuzelage). “My Fuz”. “Clear Prop”.

LAUNCH: Check with handlers and call the actions, ‘Walking’ or “Rolling”, spin up faster and call ‘All out , All out”; pilot or ‘Javelin-man’ call “Release”.

Increase spin up speed, input yaw for roll control if needed. Max all out pedal under control. Trim to pitch up gently under control and push from behind, immediately to hands off trim while maintaining max all out controlled cycle, then allow cruise pedalling.

At the End of flying operations the airfield must be cleared of HPA’s, equipment, tools, pilots, bikes etc.

GROUND HANDLING IN WIND

- ANY WIND WILL CAUSE POWERFUL LIFT AND ROLL FORCES
- KNOW WHERE ON THE AIRCRAFT IT CAN AND CANNOT BE HANDLED. ENSURE ALL TEAM MEMBERS KNOW.
- ALWAYS KEEP NOSE INTO WIND WHEN POSSIBLE AND KEEP THE NOSE UNDER CONTROL (SLIGHTLY DOWN). BALLAST OR A PILOT MAY BE NECESSARY TO KEEP THE NOSE DOWN.
- IT MAY BE POSSIBLE TO KITE THE AIRCRAFT INTO WIND, PROVIDING THE WINGS AND NOSE ARE CONTROLLED.
- IF CROSSWIND, THE INTO WIND WING MUST BE DOWN AND CONTROLLED BY A HANDLER AT ALL TIMES.
- WHEN USING 2 WING HANDLERS, USE THE GLIDER “MY WING/YOUR WING” PROTOCOL TO TRANSFER CONTROL TO THE INTO WIND WING.
- NEVER ALLOW SIGNIFICANT WIND ON THE TAIL.
- NEVER HOLD ONTO THE TRAILING EDGE OR BACK OF THE TAIL (RISK OF DAMAGE AND AIRCRAFT LOOPING OVER YOU).

Pre-task checks

- Pilot & aircraft to have flown before (duration task into wind excepted)
- Check trim and controls full, free correct sense
- Instruments/cameras ON
- Helmet worn
- Clear propeller
- Safe flight 1st priority, task execution 2nd

Flight Testing Preparation

- Testing is necessary before attempting any competition task except duration
- Pilot to wear a helmet
- With a pilot in the aircraft, ensure the propeller is clear by shouting “clear prop”.
- Before any flight attempt, ensure controls move fully, freely and in the correct sense.
- Ensure any instrumentation and cameras are on.
- Check wind direction and all clear to go.
- Re-Briefing may be called on the field during flying, as required

Flight Testing

- Must be done in smooth air conditions. A smooth wind is OK, but beware getting turned out of wind and also beware wind gradient (airspeed rising in a climb and dropping in a descent)
- Test transmission up to full power.
- Keep power smooth and avoid sudden stoppage to avoid transmission damage.
- Look well ahead at all times, only glance at instrumentation.
- Recommend 2 wing handlers and 1 on tail (if it has a tail!).
- Smooth acceleration up to full power/speed.
- Use fine pitch adjustment – start with neutral and gradually apply up elevator till takeoff, then find a trim setting.
- Use coarse application of rudder to keep straight, do NOT tolerate any deviation from straight into wind.
- If stable flight is achieved, pilot to call “release” to release ground handlers if desired.
- If nose rises uncontrollably, stop pedalling and apply down elevator.
- On landing or at the end of a flight attempt, ground looping is likely unless a ground handler can get to the dropping wing and keep the aircraft straight. In calm conditions this is not usually a problem, but in a wind the aircraft will tend to sail around and pick up speed downwind. Into a wind it should be easy for ground handlers to keep pace with the aircraft and get it back under control.

After the task

- Remain with the aircraft until it is back under ground handling control
- Turn off controls, instruments
- Clear the course
- Return to launch clear of the course, along the grass or taxiway

If it all goes wrong!

- Ensure pilot and ground crew are cared for, use 1st aid provided on the field
- If there is injury or 3rd party damage, fill in a BHPA incident form (available from organisers)
- Clear the aircraft from the course, minimising damage
- In the case of serious accident, do not move wreckage, dial 999, inform BHPFC and AAIB