Vertical Flight Society

2025-2026 Design-Build-Vertical Flight Competition

FAQ

Version 2

Website: www.vtol.org/FLY

Questions: FLY@hq. vtol.org

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1. **Do sand bags have to be commercially available or can they be custom made?**

   Sand bags may be either commercially available or custom-made. Please ensure that they are filled with sand, and not alternative materials like rocks or plastic pellets.

2. **Can you clarify: “Any materials attached to the payloads used for mounting onto the aircraft must never reach more than 1 foot above the ground in height”? Does this refer to the size of the payloads? How they attach to the aircraft?**

   This refers to the size of the total payload bundle and any attachments on the ground. When set on the ground waiting to be picked up, all materials must not exceed 1ft above the ground.

3. **Where is ground zone A? “All remaining team members, including the pilot, will remain in ground zone A. Please see Figure 3 for reference. If at any point a team member leaves their designated zone while the aircraft is armed, the attempt will be disqualified.”**

   Thank you for pointing this out! This is a typo, and should read "...will remain at the flight line...". This will be corrected in the next version release.

   (updated in RFP v2)

4. **Are teams allowed to put additional hardware or electronics in WM or WA to assist with remotely loading the aircraft with payload?**

   Yes, so long as those materials still meet the constraints of the RFP.

5. **Can you share information about the color of the tarps used to mark each ground zone? If you could share the specific tarps you are using, that would help us replicate the course layout while practicing prior to competition.**

   Tarps will be either blue or black. Either color should be expected at each waypoint using a tarp.

   (updated in RFP v2)

6. **For five payloads to count as a bundle, do they need to be individual payloads with their own mounting attached together? Or, for example, could you have a box with five sandbags inside of it (which we consider to be a bundle) that is mounted to the drone.**

   Either example above meets the definition of a payload bundle. A payload bundle is any combination of payloads attached together. That can be 5 sandbags thrown in a box or bag with a single mounting mechanism, or 5 payloads with individual mechanisms. Teams will have to decide what is best for their pickup/drop mechanism.

7. **Just to clarify, the aircraft must pick up payloads fully remotely and humans may not interact directly to load payload?**

   Correct, the aircraft must pickup the payload fully remotely. Team members may not approach the aircraft to assist in loading the payloads during the flight mission. Any payloads onboard the aircraft before the start of the mission may, however, be loaded manually.

   Note there is a difference between "remotely" and "autonomously". Remotely, teams can flip switches or move a joystick to pick up the payload. Autonomously, there can be no human interaction what-so-ever.

   This was not part of the response originally, but should be noted by all teams*: an "autonomous" payload pickup is also by definition a "remote" payload pickup.*

8. **Do all waypoints have a tarp, and if so are there specific tarp colors for each waypoint/target?**

   Tarps will be either blue or black. Either color should be expected at each waypoint using a tarp.

   (updated in RFP v2)

9. **Are we allowed to put a QR code or anything similar on the corners of targets or waypoints before our flight attempt?**

   This is not permitted for any waypoints other than WA or WM. Nothing can be added to the other remaining waypoints before a team's flight attempt. Please

note: any materials left within the bounds of WA or WM should be fully inside the waypoint at the start of FM-1.

10. **Are the 2.5lb sandbag weights calculated with the bag included in the weight, or is it 2.5 pounds of just sand, that needs to be stored in a bag?**

    Each payload is 0.5lb. The bag is included in the weight of each payload.

11. **Does any potential attachment added to a sandbag count as part of the measured weight?**

    It does not.

12. **While attempting FM-1 autonomously, if the landing fails to receive a flag, will we be able to continue to attempt the landing autonomously? Would the craft have to return to 10ft to attempt again fully autonomously? Would the attempt have to be completely redone? Or would we not be able to receive the autonomous bonus.**

    While attempting FM-1 autonomously, if the landing is not successful, the aircraft will need to return to 10ft to attempt to land again. If the aircraft enters manual at any point to accomplish this, the autonomy points will not be granted.

13. **Where is ground zone A? Not pictured in figure 3.**

    Thank you for pointing this out! There is a typo, and should read "All remaining team members, including the pilot, will remain at the flight line...". This will be corrected in the next version release.

    (updated in RFP v2)

14. **Is the 20 points from GM-1 included in the 300 points maximum?**

    Yes.

1. **Can you leave behind attachments in the payload pickup zones (WA/WM)? For example, if we wanted to put our payload on a 6-inch stand that the drone picks it up from, or a mechanical base that centers payloads in a specific position, can that stand/base stay in the L zone during the attempt.**

   This is permitted. However, please note that payloads that leave the ground and are unintentionally dropped may impact final scoring, as outlined by the RFP.

   This was not part of the response originally, but should be noted by all teams: *this is permitted for waypoints WA or WM, NOT for waypoint L or any other remaining waypoints.*

2. **Can you use different kinds of sand, such as sand with greater density? Would iron sand be out of the question?**

   All sand will be defined as SiO2 (silicon dioxide). Fine granularity is expected.

   (updated in RFP v2)

3. **Are we required to follow the dotted path in Figure 1 or can we go directly to the drop zone (e.g. WA to F1)?**

   While figure 1 does not denote any required flight paths, actual flight paths during the fly-off event will be expected to stay within any host-defined geofence boundaries, which will be provided at the start of the event.

4. **Are we able to use containers around the entire payload if it's clear (colors are still visible to designate WA/WM)?**

   This is acceptable so long as it follows the rest of the requirements in the RFP.

5. **What defines a sandbag? For example, would a plastic bottle count as a sandbag? If not, what would be the cutoff between bag and container?**

   A sandbag is any openable (for the purposes of showing that the bags are filled with sand at the event) and closeable container that is flexible. A rigid container, such as a hard plastic bottle, would not be considered a sand bag. This will be clarified in the next version of the RFP.

   (updated in RFP v2)

6. **“A team’s fully assembled aircraft, excluding any mechanisms for holding or mounting payloads, may not exceed the dimensions of 8ft x 8ft x 8ft.” Are we allowed to extend something beyond the 8x8x8 ft box to pick up the payload? This extension starts in the 8x8x8 ft box but will extend out**

   Following the statement above from the RFP, a mechanism that extends beyond the 8ft x 8ft x 8ft box after takeoff would be permitted.

7. **If a camera is used for the payload holding mechanism, is that apart of the aircraft or the payload holding mechanism.**

   If the camera starts on the ground with the payload in WA or WM at the beginning of the mission, it is considered part of the payload attachment. If the camera starts onboard the aircraft at the beginning of the mission, it is considered part of the aircraft.

8. **“A team’s fully assembled aircraft, excluding any mechanisms for holding or mounting payloads, may not exceed the dimensions of 8ft x 8ft x 8ft.” Page 17. Are we allowed to have a 30-foot cable to pick up and drop the payload while the aircraft is at 30 feet AGL? The payload would be dropped from a height around 5-foot AGL but the aircraft is still at 30-foot AGL. This cable starts in the 8x8x8 ft box but will extend out.**

   Extendable cables such as these are acceptable. Please note that making contact with the ground or waypoints with this cable (or the payload when attached to the aircraft) will be treated the same as the aircraft making contact with these regions, as outlined in the point breakdown for each flight mission.

9. **Specify how the lidar device mounts. A bolt pattern is shown, but how exactly do they plan on the device being mounted? Do we need a backing for nuts, etc?**

   Please leave room for someone to tighten locknuts behind the plate. We will use a bolt and locknut on the backside.

   (updated in RFP v3)

10. **Does the lidar accept only a certain cell count? It specifies a 5v rail, but can it be a 2s, 3s, etc. Does it have a voltage regulator or do we need a voltage regulator.**

    It should be 5 Volts (4.9V to 5.3V range). It will not accept battery power, the rail must be a regulated 5V at all times during the flight.

    (updated in RFP v3)

11. **For the sandbag, does the weight include the bag or only the filler material?**

    Each payload is 0.5lb. The bag is included in the weight of each payload, along with the sand. No attachments will contribute to this weight.

    (updated in RFP v3)

12. **For payload bundling, is it (the container for the bundle) allowed to fully encapsulate the payloads? I.e. put sandbags into some sort of cylinder/container.**

    Yes. Please keep in mind that the weight constraints for each individual payload will still apply, so the container will not contribute to the weight minimums for each payload.

13. **Can the C.G. of the aircraft be intentionally shifted for control purposes (for example, by internal moving masses)?**

    This is permitted, so long as the CG shift is remotely controlled and not performed manually between flights. If the CG shift is performed manually between flights, this will be considered a non-1-for-1 aircraft configuration change, which will void all prior attempts during the competition. If the CG shift is instead performed remotely during the flight, this will be considered a controlled actuator, which is permitted without voiding prior competition attempts.

14. **Can the payloads be placed on a platform in the retrieval points to stand upright as long as the total height is below 12 inches?**

    Materials are permitted to be placed and left in waypoints WM and WA prior to the start of FM-1. However, please note that any materials left in WA or WM must remain fully inside the box at each waypoint, and must not exceed 12 inches above the ground. Materials may also be left behind after retrieving a payload, but please note that any materials that leave the ground will be considered part of a payload attachment, and if dropped will contribute to any rules related to drops below 15ft and 30ft.

    (updated in RFP v3)

15. **Can payloads have a static funnel/shroud that is not attached to them but is placed one the ground in the retrieval points, staying less than or equal to 12-inch height, to assist in retrieval? This would funnel the pickup system to an attachment point on the payload.**

    Materials are permitted to be placed and left in waypoints WM and WA prior to the start of FM-1. However, please note that any materials left in WA or WM must remain fully inside the box at each waypoint, and must not exceed 12 inches above the ground. Materials may also be left behind after retrieving a payload, but please note that any materials that leave the ground will be considered part of a payload attachment, and if dropped will contribute to any rules related to drops below 15ft and 30ft.

    (updated in RFP v3)

16. **By silicon dioxide fine granularity, is this an example of what is meant by that? Are there any other options? https://a.co/d/je1CBe9**

    The provided product is acceptable. Products with minor impurities (specifically fine sands for soil and plants) are also acceptable. Play sand from local stores is also acceptable. A few more acceptable examples below:

    - https://www.homedepot.com/p/Quikrete-50-lb-All-Purpose-Sand-115251/100318450
    - https://www.homedepot.com/p/Mosser-Lee-5-lbs-Desert-Sand-Soil-Cover-1110/204370350
    - https://www.homedepot.com/p/Quikrete-60-lb-Tube-Sand-115960/100318522#see-more-details
    - https://www.amazon.com/Mosser-Lee-ML1113-Desert-Sand/dp/B0BSVPRG44/ref=sr_1_5

17. **Will teams be provided a payload deployment mechanism or will we be responsible for creating our own that fits within the constraints?**

    Teams are responsible for developing their own payload deployment and attachment mechanisms for the sand bag payloads. Please note that the design process and reasoning for these mechanisms may not only factor into your competition scores, but your FTR and Final Presentation scores as well, as outlined in the RFP.

    Please also note that there will be a separate host-provided device for in-flight measurements, such as altitude, which the aircraft must be prepared to mount and provide power to, as outlined in the RFP and FAQ documents.

18. **What type of mounting pattern is required if a mechanism is provided for us? Is there a certain threading pattern required for us to include?**

    Please see the response to question 31 above. For the onboard provided sensor, no threading will be needed. Please expect to provide space for a bolt and locknut for tightening/mounting.

    (updated in RFP v3)

19. **Would it be possible to receive an example of a payload deployment mechanism to visualize what we would be working with?**

    Please see the response to question 31 above. No example sand bags, mounting mechanisms, or onboard sensors will be provided to teams, but please see the FAQ document (and any upcoming additions) for additional clarification on acceptable sand bags and sand materials.

20. **Will the host provided payload be a permanent fixture on our aircraft during all flight missions?**

    The host-provided payload will be required to be onboard the aircraft during all flight missions.

21. **Is the host payload the only one that is required to use the mounting pattern provided in the RFP, or will the sandbag payload also need to follow a similar mounting style?**

    The host-provided payload must match the provided mounting pattern, but the sandbag payload and any relevant attachments (including any components onboard the aircraft for picking up and dropping payloads) are not required to match the mounting pattern.

22. **What constitutes as significant horizontal motion to disqualify a landing attempt? Thank you!**

    The intent of this rule is to ensure that aircraft land vertically. Small, minor, and minimal sideways swaying is permissible. Horizontal motion becomes significant when the aircraft moves beyond the radius of the designated landing zone or shows clear lateral travel rather than a controlled vertical descent. A judge will make the final ruling during the fly-off. Teams are encouraged to take time during practice to refine their landing procedure to ensure that their aircraft can land in a stable, consistent, and as close to vertical manner as reasonably possible

23. **The RFP for the DBVF competition requires Remote ID to be installed onboard competition aircraft. My question is "Is the implementation of Standard Remote ID required or is installing a Broadcast Remote ID module fine?"**

    All flights during the competition must be compliant with part 107. All forms of RemoteID permitted by part 107 are permitted for the competition. As of the date of this document’s release, both a broadcast RemoteID module and a standard RemoteID module are permitted for both.

24. **Where is the line drawn between flexible and rigid payloads? Can a flexible container like a bag have a frame inside of it to better facilitate attaching it to the drone? If not a full internal frame, then perhaps a clothes hanger-like piece to more easily carry it?**

    The bag and any materials inside the bag must be flexible (only sand is permitted inside the bag). However, any materials outside the bag that are attached to the bag (payload attachments) may be rigid in nature.

25. **Can more information be provided about the autonomous payload pickup portion of FM 3? Are we allowed to have some sort of rack for the drone to pick up the payloads from? Does the drone have to pick them up itself or can a separate loading mechanism be placed on the ground? Can these payloads be different from the non-autonomous loading payloads?**

    Regarding the rack and payload pickup - materials are permitted to be placed and left in waypoints WM and WA prior to the start of FM-1. However, please note that any materials left in WA or WM must remain fully inside the box at each waypoint, and must not exceed 12 inches above the ground. Materials may also be left behind after retrieving a payload, but please note that any materials that leave the ground will be considered part of a payload attachment, and if dropped will contribute to any rules related to drops below 15ft and 30ft.

    (updated in RFP v3)

    Regarding different payloads – yes, the autonomous and non-autonomous payloads can be different from eachother. Please ensure that all payloads meet RFP requirements, such as markings and weight.

26. **Is there any way to use the data from the provided LIDAR module?**

    There is no way to tie into the host-provided external payload (lidar). It is for judging only and will not have a shared signal with the aircraft flight controller or any other onboard components.

27. **What is the amperage/current to the host-provided payload? I know the voltage is 5.0 to 5.2 V and the plug is rated for a continuous current of 30 W. But I want to know the specific continuous and peak current.**

    Teams should expect a peak/burst current of no more than 3.5A, and a continuous current of 2.5A.

    (updated in RFP v3)