DL100 Lifting System

User Manual

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Searching for Keywords

Search for keywords such as “battery” and “install” to find a topic. If you are using Adobe Acrobat Reader to read this document, press Ctrl+F on Windows or Command+F on Mac to begin a search.

Navigating to a Topic

View a complete list of topics in the table of contents. Click on a topic to navigate to that section.

Printing this Document

This document supports high resolution printing.

Using this Manual

Legend

⚠ Important Hints and Tips Reference

Read Before Use

Watch all the tutorial videos first, then read the documentation included in the package and this user manual.

If you have any questions or issues during installation and use of this product, contact the official support or an authorized dealer.

Video Tutorials

Go to the address below or scan the QR code to watch the tutorial videos, which demonstrate how to use the product safely:

https://ag.dji.com/t55/video

Downloading DJI SmartFarm

Scan the QR code to download DJI SmartFarm, which provides end-to-end service support for the operation.

Contents

1 Notices

1.1 Flight Environment Requirements

- During takeoff, landing, flight, and when selecting an emergency recovery area (including alternate landing, forced landing, or crash sites), keep away from roads, railways, water surfaces, and obstacles such as utility poles, high-voltage lines, and trees. Maintain a safe distance of more than 10 m from crowds and animals.
- Fly in moderate weather conditions with temperatures between 0° to 40° C (32° to 104° F). DO NOT use the aircraft in severe weather conditions including wind speeds exceeding 6 m/s, heavy rain (precipitation rate exceeding 25 mm (0.98 in) in 12 hours), snow, ice, fog, and lightning. Make sure to follow the IP rating requirements when flying in the rain.
- DO NOT fly more than 4,500 m (14,763 ft) above sea level.
- DO NOT fly the aircraft in areas that severely affect GNSS signal, such as indoors or under bridges. Only operate the aircraft with a strong GNSS signal.
- Fly in open areas.
- Avoid flying in areas with high levels of electromagnetism, including mobile phone base stations and radio transmission towers. The electric field strength in the operating area must be ≤ 10 V/m.
- The payload capacity will decrease with increasing altitude. Be careful when flying 2,000 m (6,560 ft) or more above sea level as battery and aircraft performance may be reduced.
- In low temperature environments, make sure that the flight battery is fully charged and be sure to reduce the payload of the aircraft. Otherwise, it will affect flight safety or a takeoff limit will occur.
- DO NOT use the aircraft near accidents, fire, explosions, floods, tsunamis, avalanches, landslides, earthquakes, dust, or sandstorms.

1.2 Pre-Flight Checklist

- Make sure all devices are fully charged.
- Only use genuine components. Unauthorized parts may cause system malfunctions and compromise flight safety.
- Make sure all components are in good condition and not blocked by foreign object, including but not limited to motors, propellers, vision system, radar module, and antennas. Replace aged or broken parts in time.

- If the aircraft is equipped with LiDAR, make sure the LiDAR surface is clean and free of any foreign objects, or its performance may be affected.
- Make sure all parts are mounted securely and cables are connected correctly and firmly, including but not limited to the aircraft battery, payload system, and arm locks.
- Make sure the aircraft and its components are all in good working order, damage-free, and functioning well. Components include, but are not limited to, the remote controller, compass, propulsion system, radar module, and payload system.
- Always wear a helmet during the operation and maintain a safe distance of more than 10 m from the aircraft. Make sure there are no other personnel, vehicles, or obstacles around the aircraft.
- Make sure to clear any debris in the task area that may affect flight, such as plastic bags, empty fertilizer bags, and plastic films that can be easily blown away.
- Make sure DJI Agras is functioning properly. Without the flight data recorded by the app and stored in your remote controller, in certain situations such as the loss of your aircraft, we may not be able to provide aftersales support or assume liability.
- Examine and check all warning messages on the aircraft status list displayed in the app prior to each flight. Ensure there are no errors.
- The DJI Agras app will intelligently recommend the payload weight limit according to the current status and surroundings of the aircraft. DO NOT exceed the recommended payload weight limit. Otherwise, the flight safety may be affected.

2 Lifting Operation

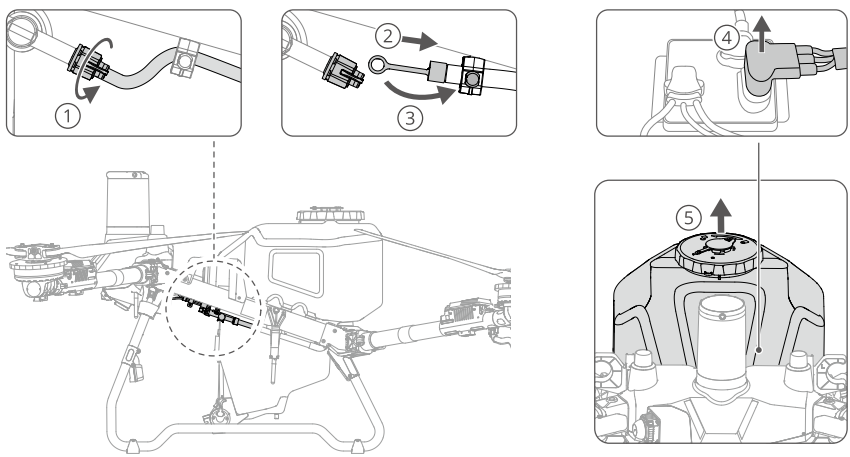
Click the link or scan the QR code to watch the tutorial videos.

https://ag.dji.com/t55/video

2.1 Installing the Lifting System

Remove the spraying system and install the lifting system as shown in the figures.

1.



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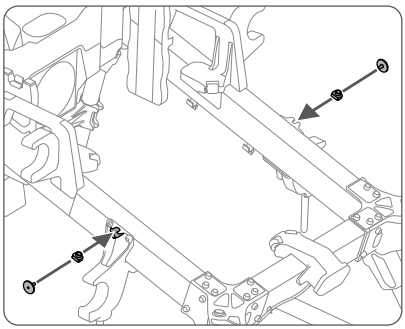

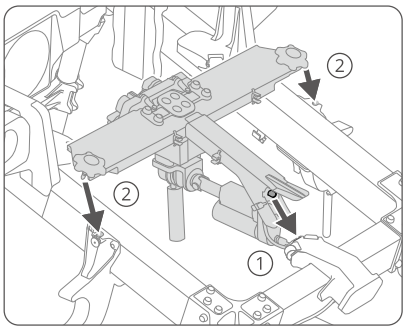

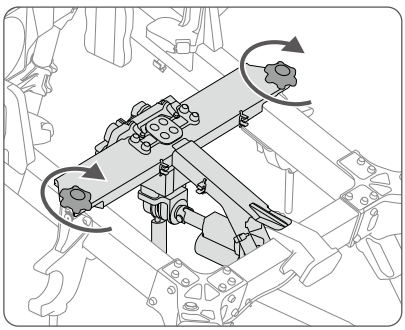

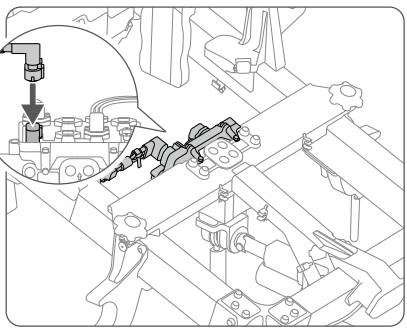

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- Strictly follow the official guidelines to install the product. Users take full responsibility for any losses caused by incorrect installation.
- Before installation, ensure the Intelligent Flight Battery is removed.
- Before removing the spraying system, ensure to clean the residual liquid in the hose.

2.2 Operation Requirements

1. DO NOT load or unload cargo directly above people.
2. DO NOT fly the aircraft above people. Maintain a safety distance of at least 10 m between people and the aircraft at all times. Stay away from the rotating propellers.
3. Select open, flat areas for takeoff and landing points. Check and make sure the area is free of any objects. DO NOT take off or land on the road with people.

4. Check if the frame arm locks are securely in the lock position after unfolding the aircraft. Check if the propellers are tightened properly on the motors and in good condition, the washers show only minimal wear, and the nuts are secure. Make sure the battery port is free of black oxidation or rust.
5. Check in Operation View in the app for any red alerts. Follow the on-screen instructions whenever a red icon appears.
6. Operators must wear a helmet. Watch the official video for more safety guidelines of the payload system.

⚠ To prevent the sling from swinging excessively and being caught in the propellers, attach a 1.5–2 kg counterweight to stabilize the sling when flying unloaded.

2.3 Weight Sensor Calibration

When the aircraft is hovering without cargo but the measured weight does not equal 0, weight sensor calibration is needed.

1. Place the aircraft on level ground, ensuring the aircraft is unloaded and the sling is not pressed by other objects.
2. In Operation View, tap ⚙ > , then tap **Calibration** of **Tare Calibration** and the weight will reset to zero.

2.4 Loading Process

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- Before each use, ensure the sling and hook are secure. If the sling is visibly worn or cracked, replace it promptly according to the following requirements:
  - Sling Length: 10–15 m
  - Sling Diameter: ≥8 mm
  - Sling Material: Ultra-high molecular weight polyethylene or aramid fiber (high-strength polyester can be used as the inner core)
  - Hook: Withstands a pulling force of ≥500 kg
- After loading the cargo, ensure the cargo is firmly secured and the sling is not tangled or knotted. After completing ground operations, ensure that the ground crew has moved to a safe area before operating the aircraft to continue the task.
- The descent height and movement distance are recommended values. Make appropriate adjustments according to the actual sling length and surrounding environment during operation.

Ground Cargo Loading

1. When the aircraft is on the ground, use appropriate ropes to secure the cargo and attach it to the hook.

   Make sure to pull the sling down below the aircraft, then manually open and close the hook.
2. Check if the cargo is firmly secured and the hook is properly locked. The ground crew must not leave the site until all checks are complete.

Aerial Cargo Loading

1. Fly the aircraft above the cargo and hover. The hovering height should be greater than the sling length. Manually lower the aircraft until the hook touches the ground, then continue descending the aircraft a further 5 m, and fly backward 6 m.
2. After the ground support staff receives a signal from the pilot, put on a helmet and enter the site for cargo loading. Use appropriate ropes to secure the cargo and attach it to the hook.
3. Check if the cargo is firmly secured and the hook is properly locked. The ground crew must not leave the site until all checks are complete.
4. After the ground support staff reaches a safe area, fly the aircraft to hover directly above the cargo, and then ascend vertically to pull the cargo off the ground.

2.5 Unloading Process

Ground Cargo Unloading

Once the aircraft arrives at the designated area, make sure the ground meets landing requirements. Lower the aircraft until the cargo touches the ground, then land and wait for the motors to stop. The ground support staff go to pick up the cargo.

Aerial Cargo Unloading

1. The aircraft arrives at the designated area and maintains a suitable altitude. Once the aircraft is steady in hover, adjust the FPV camera downward so that the AR projection aligns with the unloading point. Lower the aircraft until the cargo touches the ground.
2. The aircraft continues to descend, and then flies away from directly above the cargo. The ground support staff go to pick up the cargo.

2.6 Planning and Performing Tasks

Set loading and unloading points in DJI Agras, and the aircraft will then fly to them automatically. Users can also manually control the aircraft to fly to the loading or unloading location without setting points.

1. In Operation View, tap the mode selection button in the upper-left corner, select **Agras Lift** to enter the operation view, then set task parameters on the left side.
2. Select the mode for adding points, then add points at the corresponding locations. If there are multiple team members, they can use the mobile phones with DJI SmartFarm to add points and check the aircraft's location.

   In the operation view of the DJI Agras app, tap ⚙ > > **Invite to Join** to display a QR code. Users can scan it using the DJI SmartFarm app to join the team. Then, tap **Lift** in the operation view of the DJI SmartFarm app. Ensure the RTK signal is strong, then tap **Add** to add the location of the mobile phone as a point. The point will be synced and shown on the remote controller.

   When adding points with the remote controller or a mobile phone, it is recommended to install the RTK high-precision positioning module to improve the accuracy.

3. Users can tap to select a marked point on the map and set it as a loading or unloading point.
4. In the app, select the loading point to be reached and tap **Go**. The aircraft will automatically fly to that point and hover upon arrival.
5. Follow the loading procedure to complete loading.
6. Select the unloading point, and the aircraft will automatically fly to that point and hover upon arrival.
7. Follow the unloading procedure to complete unloading.

- When loading or unloading at multiple locations, there is no need to set loading or unloading points. In the app, tap to select a point and tap **Go**, and the aircraft will fly directly to that point. Upon arrival, users can complete the loading or unloading according to the procedure.
- It is recommended to enable **Payload Collision Prevention** in ⚙ > . After enabled, the aircraft will enter obstacle sensing status when it detects an obstacle near the cargo. Users can control the aircraft with the control sticks according to the app prompts to ensure flight safety.
- During flight, if the cargo swings excessively, tap Balance Control in Operation View. When balancing, pay attention to the surrounding environment to avoid collisions.

- When the sling becomes entangled with trees or other objects, tap **Discard Cable** in the operation view to discard the cable and ensure flight safety.

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- When planning, it is necessary to observe the conditions around the task points and task routes to avoid the people, livestock, and obstacles in advance.
- During lifting operations, the aircraft cannot automatically bypass obstacles. If there is an obstacle on the task route, users can add a destination point nearby to make the aircraft fly through the point to avoid the obstacle.
- During operation, pay attention to the status of the aircraft and cargo. If any irregularities occur, promptly land or return.
- During continuous operations, if the app indicates battery overheating, promptly land or unload to prevent battery damage.

2.7 Trajectory Recording

For lifting tasks that shuttle repeatedly between fixed loading and unloading locations, you can use the trajectory recording feature to save the path for easy retrieval later.

Recording the Trajectory

- Ensure the RTK signal is strong. Otherwise, the trajectory cannot be recorded.
- It is recommended to perform the initial recording without a payload to prevent cargo swing from affecting the aircraft attitude, ensuring trajectory accuracy.

1. In the DJI Agras app, set the point type to **Trajectory Recording**.
2. Manually control the aircraft to take off, then tap **Start Recording**. The aircraft's current position will be saved as the starting point of the trajectory. If the aircraft is not located at the loading or unloading point, fly the aircraft to the corresponding location first and then start recording.
3. Control the aircraft to fly to the unloading point. The app will record the path and flight altitude, and the recorded path will be highlighted on the map.
4. After reaching the unloading point, tap the button in the app to stop recording. The recorded path will be displayed on the map. By default, the starting point is set as the loading point, and the destination point is set as the unloading point. After selecting the trajectory, you can rename or delete it. Once you apply the trajectory, you can choose to swap the loading and unloading points.

   After the aircraft reaches the unloading point, if a manual landing is performed, the descent will be recorded in the trajectory. The recording will stop

automatically upon touchdown. Choose the landing location carefully to avoid landing in a position where the aircraft might come into contact with the cargo.

Using the Trajectory

1. Select a trajectory on the map and tap **Use**.
2. After applying the trajectory, set the task and flight parameters on the left, then select the loading point to be reached in the lower-right corner. The aircraft will first fly to the trajectory line, then fly along the trajectory to the selected point, and hover there upon arrival.
3. Follow the loading procedure to complete loading.
4. Select the unloading point and tap **Go**, and the aircraft will automatically fly to that point along the trajectory.
5. Follow the unloading procedure to complete unloading.

3 Appendix

3.1 Specifications

Visit the following website for specifications.

https://ag.dji.com/t55/specs

Contact
DJI SUPPORT

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