

Maintenance Manual	Document No: 013
Revision No: 9.0	Revised date: 17-08-2023

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# AG 365S

# MAINTENANCE MANUAL

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## Cautions/Disclaimers

- The Maintenance manual consists of information pertaining to all configurations compatible to the UAS “AG 365S”. Users must strictly follow the guidelines pertaining to the configuration he is provided with.
- The “UAS Is not IP rated” please avoid using in Drizzle/heavy wind or dusty conditions any damage under this regard will void warranty.
- No-fly zones must be observed. It is the user’s responsibility to ensure that the drone is operated legally and safely.
- Changing any factory parameters is recorded on the flight controller and will void the warranty.
- Be careful NOT to override the drone if it is in low battery landing mode. It is not safe to fly if the battery is LOW
- If after calibration the craft is unsteady or toilet bowling, land the craft safely and re-do the calibration process. DO NOT calibrate near any metal or over re-enforced concrete.
- Always wait until the props have completely stopped spinning before approaching the drone. Once landed remove the Quick switch and place it on the propeller and cover the drone with the drone cover.
- Before each flight, please check the propellers for damage – replace immediately if damaged. The lithium batteries should be removed from the aircraft after each flight. When not in use, the lithium batteries should be placed in a fireproof pouch or container and stored in a cool environment to avoid accidents. Keep out of reach of children and pets.
- Never over charge or over discharge the LiPo battery as this will reduce the LiPo battery life or the LiPo may catch fire.
- The lithium batteries should never be stored at full charge – the ideal level is 3.8V. Always remove the LiPo battery from the aircraft and place in a fireproof pouch and store in a cool environment.
- Study the LiPo voltage chart below to assist you with your battery condition checking – Use the BX100 battery checker
- If a LiPo battery swells or is deformed – Contact MARUT Personnel Immediately!
- There is “No shock absorbing” mechanisms implemented in the UAS,Avoid Harsh/Rough landings
- Always lookout for a clear platform with at least 3-4m clearance from landing spot

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## 1. Maintenance procedures of the UAS

### 1.1. Maintenance Schedule

MARUT recommends proper maintenance by the user on a daily and monthly basis. Apart from the regular maintenance by user, a predetermined scheduled maintenance needs to be conducted by an authorized representative of MARUT for safe, reliable and efficient operation of UAS. Note that the life of UAS is 3 years.

Maintenance Schedule	To be done by
Every Day	User
Every Month	User

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## 2. Continuous Monitoring process for UAS components

### 2.1. Maintenance - Every Day

#### 2.1.1 Drone daily maintenance

- Check Motor Angles with level gauge with respect to proper ground level.
- Clean the aircraft body with a clean and soft cloth.
- Check the propellers for visible deformation, severe wear and cracks, and if there are any foreign materials clean the propellers with a dry soft cloth.
- Check whether the strainer and pipe are blocked. If there are, please clean the strainer and the pipe.
- The battery ports on the drone are clean and dry without any corrosion. Clean out any water and dust if there is any.
- Rotate the rotor of the motor to check if there is any blockage or rubbing.
- Check the Battery plate straps are tightly clamped to batteries.

#### 2.1.2 Configuration 1 daily maintenance

- Check for leakages from tank
- Clean the tank thoroughly using water.
- Clean the nozzle tip & filter inside the nozzle bar after usage
- Clean the tank filter inside the tank
- Check pipe connectors.

#### 2.1.3 Configuration 2 daily maintenance

- Clean the tank.
- Check the centrifugal rotor for any granular seed blockage and clear if any.
- Check electrical connections of the payload
- Check for the mechanically tightened bolts, if found loose, tighten it.

#### 2.1.4 Battery Checklist for Maintenance

- Make sure the battery is not swollen, leaky, or damaged.
- Make sure battery terminals are clean.
- Charge the battery with authentic charger provided by manufacturer
- Charge always in balance mode
- Use 20 amp power plugs for charging

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## 2.2 Maintenance - Every Month

### 2.2.1 Drone Monthly maintenance

- Perform Daily maintenance regularly and then do the monthly maintenance
- Check whether the screws of the propellers are loose.
- Check the arm joints for any damage or cracks. Grab the carbon tube and shake the arm slightly to check if there is no obvious movement from any joints
- Rotate the rotor of the motor to check if there is any blockage or rubbing.
- Rotate the motor base around the central line of the carbon tube to check if the motor and carbon tube connection is loose.
- performing regular maintenance will reduce the monthly maintenance time
- The following checks are suggested to detect deterioration and in-service wear in critical components.

S.No	Components	Checks to detect In service wear	Corrective Action
1	Propellers	Check for visible deformation, severe wear and cracks	Contact MARUT Authorized Technician
2	Arm Joints	Check for any damages or cracks if any, apply gentle movements/force to find any loose joints or fixtures	Contact MARUT Authorized Technician
3	Arms	Check for any visual bend or cracks in Arms	Contact MARUT Authorized Technician
4	Motors	Rotate the rotor of the motor to check if there is any blockage or rubbing.  Rotate the motor base around the central line of the carbon tube to check if the motor and carbon tube connection is loose.  Check for any abnormal heating of motors after operations	Contact MARUT Authorized Technician

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5	Batteries	Check for any abnormal heating or bulge in batteries after operations.	Contact MARUT Authorized Technician
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### 2.2.2 Configuration 1 Monthly maintenance

- Check for Leakages from tank
- Check pipe connectors.
- Check all connections electronic interface connection,if found damaged,contact Marut personnel
- If noted pressure drop check Spray Pump and filters
- Clean the tank thoroughly using water.

### 2.2.3 Configuration 2 Monthly maintenance

- Clean the tank.
- Check the centrifugal rotor for any granular seed blockage and clear if any.
- Check electrical connections of the payload
- Clean the dust inside the brushed motors using a blower or brush.
- Check for the mechanically tightened bolts,if found loose, tighten it.

### 2.2.4 Training Configuration Maintenance

- The maintenance guidelines of 2.2.2 & 2.2.3 applies to training configuration.
- check the port of the extra transmitter for any dust particles.
- If you find dust on any ports, clean it with cotton buds.

## 2.3. Component performance and Replacement Periods

S.No	Component	Lifetime	REPLACEMENT PERIOD
1	Battery	200 cycles	After lifetime
2	Motor	1200 hours	After lifetime
3	Frame	3 years	To be discarded after lifetime
4	Landing gear	1500	After lifetime

**Note :** please reach out to MARUT personnel for any replacements

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## 3. Storage Guidelines

### 3.1. Drone Storage Guidelines

- Keep in enclosed space.
- Do not Expose to direct sunlight for a long time.
- Place drone at nominal room temp and avoid flammable objects near it
- Make sure everything got plugged out.

### 3.2. Battery Storage Guidelines

- Never store loose batteries touching each other.
- Don't use or store the battery near fire, heat source, inflammable, explosive, corrosive and other articles.
- For long-term storage, please keep batteries in storage mode.
- Do not store in too hot place
- The battery should be stored within 10°C~50°C range environmental conditions.
- Check all batteries are at a storage voltage of 22.8V on a weekly basis if kept in storage mode.
- If batteries are not at storage voltage, then charge them till storage voltage.
- Never alter, puncture or impact Batteries or related components.
- If sudden drop in Voltage of batteries or bulge in them is observed, mark them as faulty batteries
- Separate faulty batteries and waste batteries – Mark them as 'Damaged Batteries'. They must be placed in special treatment cabinets for isolation and disposal.



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**Maintenance Record:**

S.NO	Maintenance Personnel	Date Of Maintenance	Signature	Remarks

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**Appendix - 1: Document Revision Details**

<b>Version</b>	<b>Date</b>	<b>Revisions Done</b>	<b>Revised By</b>	<b>Approved By</b>
1.0	16-12-2022	Initial Version	Vijay	Suraj
2.0	06-01-2023	Added Maintenance for every configuration	Vijay	Suraj
3.0	20-01-2023	Added two other configurations maintenance	Vijay	Suraj
4.0	03-02-2023	updated maintenance for new configurations	Vijay	Suraj
5.0	06-03-2023	updated maintenance for new 7 configurations	Vijay	Suraj
6.0	8-05-2023	Updated cautions and disclaimers	Vijay	Suraj
7.0	27-06-2023	updated for 2 payloads	Vijay	Suraj
8.0	04-07-2023	updated manual	Vijay	Suraj
9.0	17-08-2023	Updated for training configuration	Vijay	Suraj

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**TO WHOM IT MAY CONCERN**  
**Déclaration**

This is to declare that all the information provided in the document is accurate and appropriate to the best of our knowledge.

A handwritten signature in blue ink, appearing to read "Prem Kumar", is written over a circular blue ink stamp. The stamp contains the text "MARUT DRONETECH PRIVATE LIMITED" around the perimeter, "Hyderabad" in the center, and a small star symbol at the bottom.

Signature of Authorized Representative

Name of Signatory: Prem Kumar Vislawath  
Designation: CEO & Director,  
Marut Dronetech Pvt Ltd