



Ensuring Safe Mixed Aeroplane and Helicopter Operations: Considerations and Best Practices

Aviation training and operations at busy airfields pose unique challenges, especially in the context of mixed aeroplane and helicopter activities. Flying instructors, air traffic controllers, and airfield operators all play crucial roles in ensuring the safety of these operations.

Just as inconsiderate driving practices can lead to accidents on the road, thoughtless flying practices can distract and annoy pilots, potentially compromising safety in the process.

This article aims to explore and discuss the considerations and dangers associated with mixed aircraft operations, both on the ground and in the air. Its goal is to help each type of operator gain a better understanding of the limitations and potential effects they might have on each other.

We will delve into various aspects, including:

- Ground operations
- Circuit patterns
- Downwash effects and wake turbulence
- Slow-speed operations
- Takeoffs and landings and hovering
- Hotspots and choke points
- Radio procedures
- Loose articles
- Foreign object debris/damage

1. Ground Operations

Coordinating ground movements during mixed operations requires careful attention. Helicopters generate powerful downwash, while aeroplanes can create a strong slipstream, both of which can pose hazards to nearby aircraft and personnel. Consider the following points:-

- Avoid positioning or routing aeroplanes too close to helicopter operations to minimize the risk of damage caused by rotor downwash. Remember the 3-rotor span rule to minimize the downwash effect of hovering or taxiing helicopters.
- Establish designated helicopter holding and landing areas, displaying appropriate signage and markings to separate mixed operations.
- Regarding slipstream effects, fixed-wing pilots, during power checks, should carefully consider the slipstream effects on those behind them, especially with large aircraft and high-power ground runs - even idle RPM can cause a disturbance in an open hangar behind an aeroplane.

2. Airborne Operations

a. Circuit Patterns

Ideally, circuit patterns with differing ground tracks and height separation should be established for aeroplanes and helicopters to minimize the risk of mid-air collisions and airprox incidents. Clearly communicate circuit procedures to all pilots and publish charts showing preferred circuits for each aircraft type. Encourage pilots to scale their circuit size based on their aircraft's performance and adapt their circuit to maintain efficient flow.

Moreover, pilots of all types must keep a good all-round lookout to maintain situational awareness in a busy circuit, especially when turning finals, as helicopters could be operating below or even above if setting up for practice autorotations.

b. Downwash and Wake Turbulence

All pilots must be trained to recognize the effects of helicopter downwash and the potential for wake turbulence and its downwind drift. Instructors should educate pilots on the dangers of flying too close behind or below helicopters, emphasizing the importance of maintaining safe separation distances to prevent loss of control or other hazardous situations.

c. Slow-Speed Operations

Helicopters often operate at slower speeds than aeroplanes. Instructors of both types should emphasize the importance of situational awareness and maintaining adequate separation while operating at different speeds to avoid unexpected encounters and potential conflicts. Training should cover the performance of different aeroplane types and appropriate procedures for judging and implementing spacing without being excessive.

3. Takeoffs, Landings, and Hovering

a. Takeoffs and Landings



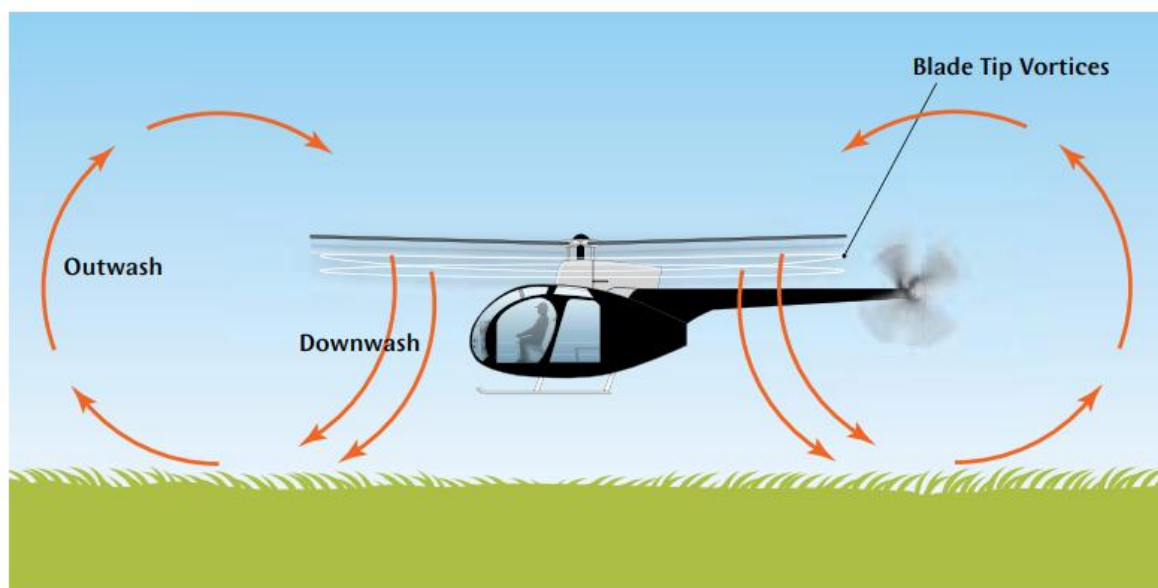
Simplified wake vortices generated from a helicopter in forward flight.

Pilots must anticipate and avoid the potential effects of rotor downwash during takeoffs and landings. Instructors should emphasize proper technique, including maintaining a safe speed and distance from preceding aircraft and the flight path required for avoiding wake turbulence.

b. Hovering

Helicopters frequently hover in and out of ground effect during certain operations over the airfield for both training and operational purposes. Helicopter instructors should emphasize the importance of maintaining situational awareness and avoiding hovering in locations which may obstruct the view of other pilots or air traffic controllers.

Helicopter pilots should also consider the downwind drift of their rotor wash in prevailing conditions and position themselves accordingly and considerately.



Simplified flow pattern around a helicopter during a stationary hover close to the ground.

4. Hotspots, Choke Points, and Radio Procedures

a. Hotspots and Choke Points

Airfield operators should identify and communicate potential hotspots and choke points on the airfield where the convergence of helicopter and aeroplane operations may pose risks. Pilots must exercise caution and maintain situational awareness in these areas.

b. Radio Procedures

Clear and concise radio communications are vital in mixed operations. Instructors should stress the importance of using standardized phraseology, active listening, and providing accurate information to enhance situational awareness for all involved.

Aeroplane pilots should also be aware that many airfields do not require helicopter pilots to use 'positive RT' when flying circuits and, once cleared to fly circuits, simply fly one after another until complete with no RT. There may be a need to put greater reliance on advice from ATC about helicopter circuits, and all pilots must look out carefully to build and confirm accurate situational awareness of other circuit users.

5. Loose Articles and Foreign Object Debris/Damage

a. Loose Articles

Pilots and passengers of all aircraft should secure loose articles inside the aircraft before flight to avoid potential hazards caused by objects becoming airborne and interfering with operations or damaging aircraft. Pilots should also confirm that nothing can be sucked out of an open cockpit by the propeller or rotor slipstream.

b. Foreign Object Debris/Damage

Airfield operators should regularly inspect the airfield and surrounding areas for foreign object debris (FOD) and establish FOD prevention programs to minimize the risk of damage to aircraft caused by loose objects or debris. Also, pilots should be encouraged to report any FOD they notice.

Conclusion

Safe mixed aeroplane and helicopter operations require a proactive approach from flying instructors, air traffic controllers, and airfield operators. By understanding the considerations and dangers associated with these operations, we can implement best practices to mitigate risks and foster an environment of mutual understanding and respect.

Adhering to best practices and promoting effective communication and coordination, alongside a good understanding and consideration of each other's type of operations and limitations, ensures the safety and success of mixed operations in the aviation community.

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<https://www.aviation.govt.nz/assets/publications/gaps/wake-turbulence.pdf>