

CIVIL AVIATION AUTHORITY PAKISTAN

FLIGHT STANDARDS DIRECTORATE



This Information Bulletin, adopted by Flight Standards Directorate aims to keep members of Pakistani Civil Aviation community updated on latest items of common interest and developments within the aviation industry. It is anticipated that, the bulk of material would be of relevance to AOC, Training, Standards and helpful to the Safety Managers who implement their policies.

The Bulletin is designed to serve the objective of Flight Standards Directorate that is “To improve upon Safety Standards”.

INFORMATION BULLETIN

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TIEING AND MOORING OF AIRCRAFT

An aircraft tie-down scheme is designed to minimize the possibility of aircraft movement due to high winds or propeller/jet-efflux. Tie down is most likely to apply to aircraft up to about 12 tonnes/12,000 kg

26,455.471 lbs for normal conditions in temperate latitudes but in the case of extremely high winds everywhere, this indicative maximum could need upward revision.

Description

Each year numerous aircraft are needlessly damaged by winds or propeller/jet efflux because of inattention to weather forecasts, negligence, or improper tie-down procedures; it doesn't necessarily take storm-force winds to cause aircraft damage. If the weather conditions warrant it, an aircraft should be parked and tied down into wind, or as nearly into wind as possible. There are varied opinions as to whether a tail wheel aircraft should be tied down tail into wind. Remember that your aircraft was designed to meet the airflow head-on, and that flying control surfaces can be easily damaged if control locks are not in place when the aircraft is parked tail into wind. The aircraft also has a tendency to weathercock when on the ground. Therefore, if parked tail into wind (and not properly secured), it could be blown over as it is rotated into wind by a sudden gust. If the aircraft is parked tail into wind, it must have the park brakes on, control locks in place and the tail securely tied down.

Effects

- Physical damage to the aircraft arising from lack of, or inappropriate, tie-down.
- Damage to aircraft or airfield arising from inappropriate checks following tie-down.

Defences

- If the forecast winds are strong enough to damage the aircraft, then one course of action is of course to fly the aircraft to another airfield away from the forecast area of strong winds. This may not always be possible or practical.
- Park the aircraft in a storm proof hangar.
- If that is not possible, employ a suitable 3-point tie-down scheme; aircraft owners, operators and pilots should ensure that they know the correct method for securing their particular aircraft type.
- After the aircraft has been standing out and tied-down, a very careful pre-flight inspection should be carried out.
- Ensure that all tie-down strops, opening covers and external gust locks are removed before going flying.

Typical Scenarios

The following is an extract from a real-life incident: "As the aircraft took off from Runway 25, the tower Air Traffic Control Officer observed an object dangling from the tail. The object was subsequently identified as a car tyre filled with concrete, which had been used to tie down the aircraft on the ground. The pilot was informed and he landed the aircraft safely after completing a normal circuit. After landing, the aircraft was taxied clear of the runway and shut down before the tie-down weight was removed. A runway inspection was carried out before further use. The pilot reported that during the aircraft's pre-flight inspection he had removed the tie down weights attached to the wings but had failed to notice the tie down weight attached to the tail".

Contributory Factors

- Other Aircraft. It is important to make sure any adjacent aircraft are also securely tied down - having your own aircraft well tied down will be wasted if the neighboring aircraft blows over on to it.
- Flying Debris. Always check the surrounding area for other items that could be a danger as flying debris - things as large as 44-gallon drums or aircraft stairs and maintenance stands on castors have been known to blow across a tarmac area.

- Multi-engine aircraft. Smaller twin engine aircraft can also require tie-down; many do not have sufficient weight to protect them from movement by strong winds.

Solutions

- Any small aircraft parking area should be equipped for three-point tie-downs. The direction in which the aircraft are to be parked and tied down will be determined by prevailing or forecast wind direction.
- If fixed tie-down points are not available, then try to find a sheltered place in which to picket the aircraft, e.g, a natural depression in the ground, in the lee of a building, or behind a shelterbelt of trees. Seek local knowledge - sometimes the seemingly logical place may in fact be the worst because of localised wind effects. If a relatively sheltered place cannot be found, it may be possible to park a truck or tractor in front of the aircraft. This will serve as an extra tie-down point, as well as helping to break up the airflow over the aircraft.
- If permanent tie-down facilities are not available it will be necessary to use your own set of pickets. Your picket set should include a number of steel stakes, a mallet and ropes of appropriate length, all stowed in a bag or other suitable container.

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