ЗАВДАННЯ ДО МОДУЛЯ 2 гр. 753 мЛ

1. Перекладіть текст авіаційної спрямованості:

3.3. Landing Gear Disposition

The positioning of the landing gear is based primarily on stability considerations during taxiing, liftoff and touchdown, *i.e.*, the aircraft should be in no danger of turning over on its side once it is on the ground. Compliance with this requirement can be determined by examining the takeoff/landing performance characteristics and the relationships between the locations of the landing gear and the aircraft *cg*.

3.3.1. Angles of Pitch and Roll During Takeoff and Landing

The available pitch angle (θ) at liftoff and touchdown must be equal, or preferably exceed, the requirements imposed by performance or flight characteristics. A geometric limitation to the pitch angle is detrimental to the liftoff speed and hence to the takeoff field length. Similarly, a geometric limitation to the roll angle (ϕ) could result in undesirable operational limit under cross-wind landing condition.

For a given aircraft geometry and gear height (h_g), the limit for the takeoff/landing pitch angle follows directly from Fig. 3.1. The roll angle at which the tip of the wing just touches the ground is calculated using the expression [5, p. 350] $tan\ \phi = tan + tan\theta\ tan$

In this case, Γ is taken as the dihedral angle, *s* is the wing span, *t* is the wheel track, and Λ is the wing sweep. Similar conditions may be deduced for other parts of the aircraft, except that Γ, Λ and *s* in Eq. (3.1) must be replaced with appropriate values.

3.3.1.1. Pitch Angle Required for Liftoff

The takeoff rotation angle is prescribed in preliminary design, and then estimated. The final values for θ and ϕ are found as the detailed performance characteristics of the aircraft become available. The pitch angle at liftoff (θ_{LOF}) is calculated using the expression where α_{LOF} is the highest angle of attack anticipated for normal operational use, V_{LOF} is the liftoff speed, *g* is the gravitational acceleration $C_{L,\,LOF}$ is the lift coefficient, and $dC_L/d\alpha$ is the lift-curve slope. As shown in Fig. 3.1, the dimension of l_1 and l_2 are defined by the line connecting the tire-ground contact point upon touchdown and the location of the tail bumper, if one is present. For large transports, the typical value for the rate of rotation ($d\theta/dt$) is taken as four degrees per second [5].

The detailed aerodynamic data required to use Eq. (3.2) is not always available at the conceptual design stage. In most aircraft the aft-body and/or tail bumper is designed such that the aircraft cannot rotate by more than a specified number of degrees at liftoff. Typically, the value is between 12 and 15 degrees [2]. In addition to the tail scrape problem, the aircraft *cg* cannot rotate over and aft of the location of the main assembly, a phenomenon known as tail tipping and is critical during landing.

3.3.1.2. Pitch and Roll Angles During Landing

With the flaps in the fully-deflected position, the critical angle of attack of the wing during landing is smaller than in takeoff. Consequently, the pitch angle during landing is generally less than that during takeoff. In the absence of detailed information, the pitch angle on touchdown (θ_{TD}) may be assumed equal to θ_{LOF}.

2. Перекладіть подані термінологічні сполучення:

База шасі, колія шасі, обжате положення пневматика, основна опора шасі, бічний розкос, замок прибраного положення, вісь колес, гідроциліндр прибирання-випуска стійки, цапфа, візок шасі, двохзвінник, шток амортизатора, букса.