Federal Aviation Administration, DOT

§ 25.415 Ground gust conditions.

(a) The control system must be designed as follows for control surface loads due to ground gusts and taxiing downwind:

(1) The control system between the stops nearest the surfaces and the cockpit controls must be designed for loads corresponding to the limit hinge

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### PILOT CONTROL FORCE LIMITS (SECONDARY CONTROLS)—Continued

<table>
<thead>
<tr>
<th>Control</th>
<th>Maximum forces or torques</th>
<th>Minimum forces or torques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aileron:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stick</td>
<td>100 lbs</td>
<td>40 lbs</td>
</tr>
<tr>
<td>Wheel 1</td>
<td>80 D in.-lbs</td>
<td>40 D in.-lbs</td>
</tr>
<tr>
<td>Elevator:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stick</td>
<td>250 lbs</td>
<td>100 lbs</td>
</tr>
<tr>
<td>Wheel (symmetrical)</td>
<td>300 lbs</td>
<td>100 lbs</td>
</tr>
<tr>
<td>Wheel (unsymmetrical)</td>
<td>300 lbs</td>
<td>130 lbs</td>
</tr>
<tr>
<td>Rudder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The critical parts of the aileron control system must be designed for a single tangential force with a limit value equal to 1.25 times the couple force determined from these criteria.
2. Diameter (inches).
3. The unsymmetrical forces must be applied at one of the normal hand grip points on the periphery of the control wheel.


§ 25.399 Dual control system.

(a) Each dual control system must be designed for the pilots operating in opposition, using individual pilot forces not less than—

(1) 0.75 times those obtained under § 25.395; or

(2) The minimum forces specified in § 25.397(c).

(b) The control system must be designed for pilot forces applied in the same direction, using individual pilot forces not less than 0.75 times those obtained under § 25.395.

§ 25.407 Trim tab effects.

The effects of trim tabs on the control surface design conditions must be accounted for only where the surface loads are limited by maximum pilot effort. In these cases, the tabs are considered to be deflected in the direction that would assist the pilot, and the deflections are—

(a) For elevator trim tabs, those required to trim the airplane at any point within the positive portion of the pertinent flight envelope in § 25.333(b), except as limited by the stops; and

(b) For aileron and rudder trim tabs, those required to trim the airplane in the critical unsymmetrical power and loading conditions, with appropriate allowance for rigging tolerances.

§ 25.409 Tabs.

(a) Trim tabs. Trim tabs must be designed to withstand loads arising from all likely combinations of tab setting, primary control position, and airplane speed (obtainable without exceeding the flight load conditions prescribed for the airplane as a whole), when the effect of the tab is opposed by pilot effort forces up to those specified in § 25.397(b).

(b) Balancing tabs. Balancing tabs must be designed for deflections consistent with the primary control surface loading conditions.

(c) Servo tabs. Servo tabs must be designed for deflections consistent with the primary control surface loading conditions obtainable within the pilot maneuvering effort, considering possible opposition from the trim tabs.

§ 25.415 Ground gust conditions.

(a) The control system must be designed as follows for control surface loads due to ground gusts and taxiing downwind:

(1) The control system between the stops nearest the surfaces and the cockpit controls must be designed for loads corresponding to the limit hinge