§ 29.501 Ground loading conditions: landing gear with skids.

(a) General. Rotorcraft with landing gear with skids must be designed for the loading conditions specified in this section. In showing compliance with this section, the following apply:

(1) The design maximum weight, center of gravity, and load factor must be determined under §§29.471 through 29.475.

(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.

(b) General. Rotorcraft with landing gear with skids must be designed for the loading conditions specified in this section. In showing compliance with this section, the following apply:

(1) The design maximum weight, center of gravity, and load factor must be determined under §§29.471 through 29.475.

(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.

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(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.

(b) General. Rotorcraft with landing gear with skids must be designed for the loading conditions specified in this section. In showing compliance with this section, the following apply:

(1) The design maximum weight, center of gravity, and load factor must be determined under §§29.471 through 29.475.

(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.

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§ 29.501 Ground loading conditions: landing gear with skids.

(a) General. Rotorcraft with landing gear with skids must be designed for the loading conditions specified in this section. In showing compliance with this section, the following apply:

(1) The design maximum weight, center of gravity, and load factor must be determined under §§29.471 through 29.475.

(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.

§ 29.501 Ground loading conditions: landing gear with skids.

(a) General. Rotorcraft with landing gear with skids must be designed for the loading conditions specified in this section. In showing compliance with this section, the following apply:

(1) The design maximum weight, center of gravity, and load factor must be determined under §§29.471 through 29.475.

(2) Structural yielding of elastic spring members under limit loads is acceptable.

(3) Design ultimate loads for elastic spring members under limit loads is acceptable.
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(ii) An assumed rotor lift of not more than 1.5 times that used in the limit drop tests prescribed in §29.725.

(4) Compliance with paragraph (b) through (e) of this section must be shown with—

(i) The gear in its most critically de-

(ii) The ground reactions rationally
distributed along the bottom of the
skid tube.

(b) Vertical reactions in the level land-
ing attitude. In the level attitude, and
with the rotorcraft contacting the
ground along the bottom of both skids,
the vertical reactions must be applied
as prescribed in paragraph (a) of this
section.

(c) Drag reactions in the level landing
attitude. In the level attitude, and with
the rotorcraft contacting the ground
along the bottom of both skids, the fol-

(1) The vertical reactions must be
combined with horizontal drag reac-
tions of 50 percent of the vertical reac-
tion applied at the ground.

(2) The resultant ground loads must
equal the vertical load specified in
paragraph (b) of this section.

(d) Sideloads in the level landing atti-

dude. In the level attitude, and with
the rotorcraft contacting the ground along
the bottom of both skids, the following apply:

(1) The vertical ground reaction must
be—

(i) Equal to the vertical loads ob-
tained in the condition specified in
paragraph (b) of this section; and

(ii) Divided equally among the skids.

(2) The vertical ground reactions must be combined with a horizontal sideload of 25 percent of their value.

(3) The total sideload must be applied
equally between skids and along the
length of the skids.

(4) The unbalanced moments are as-
sumed to be resisted by angular iner-
tia.

(5) The skid gear must be inves-
tigated for—

(i) Inward acting sideloads; and

(ii) Outward acting sideloads.

(e) One-skid landing loads in the level
attitude. In the level attitude, and with
the rotorcraft contacting the ground
along the bottom of one skid only, the
following apply:

(1) The vertical load on the ground
contact side must be the same as that
obtained on that side in the condition
specified in paragraph (b) of this sec-
tion.

(2) The unbalanced moments are as-
sumed to be resisted by angular inert-
tia.

(f) Special conditions. In addition to
the conditions specified in paragraphs
(b) and (c) of this section, the rotor-
craft must be designed for the fol-

(1) A ground reaction load acting up
and aft at an angle of 45 degrees to the
longitudinal axis of the rotorcraft.

This load must be—

(i) Equal to 1.33 times the maximum
weight;

(ii) Distributed symmetrically among
the skids;

(iii) Concentrated at the forward end
of the straight part of the skid tube;

and

(iv) Applied only to the forward end
of the skid tube and its attachment to
the rotorcraft.

(2) With the rotorcraft in the level
landing attitude, a vertical ground re-
action load equal to one-half of the
vertical load determined under para-
graph (b) of this section. This load
must be—

(i) Applied only to the skid tube and
its attachment to the rotorcraft; and

(ii) Distributed equally over 33.3 per-
cent of the length between the skid
tube attachments and centrally located
midway between the skid tube attach-
ments.

[Amtd. 29–3, 31 FR 966, Jan. 26, 1968; as
amended by Amdt. 27–26, 55 FR 8002, Mar. 6, 1990]

§ 29.505 Ski landing conditions.

If certification for ski operation is
requested, the rotorcraft, with skis,
must be designed to withstand the fol-

(1) A vertical load of \( \frac{P}{n} \) and a hori-

zontal load of \( \frac{P}{4n} \) are simultaneously
applied at the pedestal bearings; and

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