

§ 33.76

thereof, up to a maximum of 16 birds. The birds will be aimed so as to account for any critical exposed locations on the first stage rotor blades, with any remaining birds evenly distributed over the engine face area.

(6) Ingestion of small and medium birds tested under the conditions prescribed in this paragraph may not cause any of the following:

(i) More than a sustained 25-percent power or thrust loss;

(ii) The engine to be shut down during the required run-on demonstration prescribed in paragraphs (c)(7) or (c)(8) of this section;

(iii) The conditions defined in paragraph (b)(3) of this section.

(iv) Unacceptable deterioration of engine handling characteristics.

(7) Except for rotorcraft engines, the following test schedule shall be used:

(i) Ingestion so as to simulate a flock encounter, with approximately 1 second elapsed time from the moment of the first bird ingestion to the last.

(ii) Followed by 2 minutes without power lever movement after the ingestion.

(iii) Followed by 3 minutes at 75-percent of the test condition.

(iv) Followed by 6 minutes at 60-percent of the test condition.

(v) Followed by 6 minutes at 40-percent of the test condition.

(vi) Followed by 1 minute at approach idle.

(vii) Followed by 2 minutes at 75-percent of the test condition.

(viii) Followed by stabilizing at idle and engine shut down.

(ix) The durations specified are times at the defined conditions with the power being changed between each condition in less than 10 seconds.

(8) For rotorcraft engines, the following test schedule shall be used:

(i) Ingestion so as to simulate a flock encounter within approximately 1 second elapsed time between the first ingestion and the last.

(ii) Followed by 3 minutes at 75-percent of the test condition.

(iii) Followed by 90 seconds at descent flight idle.

(iv) Followed by 30 seconds at 75-percent of the test condition.

(v) Followed by stabilizing at idle and engine shut down.

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(vi) The durations specified are times at the defined conditions with the power being changed between each condition in less than 10 seconds.

(9) Engines intended for use in multi-engine rotorcraft are not required to comply with the medium bird ingestion portion of this section, providing that the appropriate type certificate documentation is so endorsed.

(10) If any engine operating limit(s) is exceeded during the initial 2 minutes without power lever movement, as provided by paragraph (c)(7)(ii) of this section, then it shall be established that the limit exceedance will not result in an unsafe condition.

TABLE 2 TO § 33.76—MEDIUM FLOCKING BIRD WEIGHT AND QUANTITY REQUIREMENTS

Engine Inlet Throat Area (A)— Square-meters (square-inches)	Bird quantity	Bird weight kg. (lb.)
0.05 (77.5)>A	none	
0.05 (77.5)≤A <0.10 (155)	1	0.35 (0.77)
0.10 (155)≤A <0.20 (310)	1	0.45 (0.99)
0.20 (310)≤A <0.40 (620)	2	0.45 (0.99)
0.40 (620)≤A <0.60 (930)	2	0.70 (1.54)
0.60 (930)≤A <1.00 (1,550)	3	0.70 (1.54)
1.00 (1,550)≤A <1.35 (2,092)	4	0.70 (1.54)
1.35 (2,092)≤A <1.70 (2,635)	1	1.15 (2.53)
	plus 3 ...	0.70 (1.54)
1.70 (2,635)≤A <2.10 (3,255)	1	1.15 (2.53)
	plus 4 ...	0.70 (1.54)
2.10 (3,255)≤A <2.50 (3,875)	1	1.15 (2.53)
	plus 5 ...	0.70 (1.54)
2.50 (3,875)≤A <3.90 (6,045)	1	1.15 (2.53)
	plus 6 ...	0.70 (1.54)
3.90 (6,045)≤A <4.50 (6,975)	3	1.15 (2.53)
4.50 (6,975)≤A	4	1.15 (2.53)

TABLE 3 TO § 33.76—ADDITIONAL INTEGRITY ASSESSMENT

Engine Inlet Throat Area (A)— square-meters (square-inches)	Bird quantity	Bird weight kg. (lb.)
1.35 (2,092)>A	none	
1.35 (2,092)≤A <2.90 (4,495)	1	1.15 (2.53)
2.90 (4,495)≤A <3.90 (6,045)	2	1.15 (2.53)
3.90 (6,045)≤A	1	1.15 (2.53)
	plus 6 ...	0.70 (1.54)

(d) *Large flocking bird.* An engine test will be performed as follows:

(1) Large flocking bird engine tests will be performed using the bird mass and weights in Table 4, and ingested at a bird speed of 200 knots.

(2) Prior to the ingestion, the engine must be stabilized at no less than the mechanical rotor speed of the first exposed stage or stages that, on a standard day, would produce 90 percent of