§ 23.1197  Fire extinguishing agents.

For all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies:

(a) Be capable of extinguishing flames emanating from any burning of fluids or other combustible materials in the area protected by the fire extinguishing system; and

(b) Have thermal stability over the temperature range likely to be experienced in the compartment in which they are stored.

(c) If any toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors (from leakage during normal operation of the airplane or as a result of discharging the fire extinguisher on the ground or in flight) from entering any personnel compartment, even though a defect may exist in the extinguishing system. This must be shown by test except for built-in carbon dioxide fuselage compartment fire extinguishing systems for which—

(1) Five pounds or less of carbon dioxide will be discharged, under established fire control procedures, into any fuselage compartment; or

(2) Protective breathing equipment is available for each flight crewmember on flight deck duty.

(d) The temperature of each container must be maintained, under intended operating conditions, to prevent the pressure in the container from—

(1) Falling below that necessary to provide an adequate rate of discharge; or

(2) Rising high enough to cause premature discharge.

(e) If a pyrotechnic capsule is used to discharge the extinguishing agent, each container must be installed so that temperature conditions will not cause hazardous deterioration of the pyrotechnic capsule.

§ 23.1201  Fire extinguishing systems materials.

For all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies:

(a) No material in any fire extinguishing system may react chemically with any extinguishing agent so as to create a hazard.

(b) Each system component in an engine compartment must be fireproof.

§ 23.1203  Fire detector system.

(a) There must be means that ensure the prompt detection of a fire in—

(1) An engine compartment of—

(i) Multiengine turbine powered airplanes;

(ii) Multiengine reciprocating engine powered airplanes incorporating turbochargers;

(iii) Airplanes with engine(s) located where they are not readily visible from the cockpit; and

(iv) Pylons.

§ 23.1199  Extinguishing agent containers.

For all airplanes with engine(s) embedded in the fuselage or in pylons on the aft fuselage the following applies:

(a) Each extinguishing agent container must have a pressure relief to prevent bursting of the container by excessive internal pressures.

(b) The discharge end of each discharge line from a pressure relief connection must be located so that discharge of the fire extinguishing agent would not damage the airplane. The line must also be located or protected to prevent clogging caused by ice or other foreign matter.

(c) A means must be provided for each fire extinguishing agent container to indicate that the container has discharged or that the charging pressure is below the established minimum necessary for proper functioning.
§ 23.1303 Flight and navigation instruments.

The following are the minimum required flight and navigation instruments:
(a) An airspeed indicator.
(b) An altimeter.
(c) A magnetic direction indicator.
(d) For reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and turbine engine powered airplanes, a free air temperature indicator or an air-temperature indicator which provides indications that are convertible to free-air.

(e) A speed warning device for—
(1) Turbine engine powered airplanes; and
(2) Other airplanes for which VMO/ MMO and Vd/MD are established under §§23.335(b)(4) and 23.1505(c) if VMO/MMO is greater than 0.8 Vd/MD.

The speed warning device must give effective aural warning (differing distinctively from aural warnings used for other purposes) to the pilots whenever the speed exceeds Vmo plus 6 knots or MMO+0.01. The upper limit of the production tolerance for the warning device may not exceed the prescribed warning speed. The lower limit of the warning device must be set to minimize nuisance warning;
(f) When an attitude display is installed, the instrument design must not provide any means, accessible to the flightcrew, of adjusting the relative positions of the attitude reference symbol and the horizon line beyond that necessary for parallax correction.
(g) In addition, for commuter category airplanes:
(1) If airspeed limitations vary with altitude, the airspeed indicator must have a maximum allowable airspeed indicator showing the variation of VMO with altitude.
(2) The altimeter must be a sensitive type.
(3) Having a passenger seating configuration of 10 or more, excluding the pilot’s seats and that are approved for IFR operations, a third attitude instrument must be provided that:
(i) Is powered from a source independent of the electrical generating system;
(ii) Continues reliable operation for a minimum of 30 minutes after total failure of the electrical generating system;
(iii) Operates independently of any other attitude indicating system;
(iv) Is operative without selection after total failure of the electrical generating system;
(v) Is located on the instrument panel in a position acceptable to the Administrator that will make it plainly visible to and usable by any pilot at the pilot’s station; and