§ 23.1021 Oil system drains.
A drain (or drains) must be provided to allow safe drainage of the oil system. Each drain must—
(a) Be accessible;
(b) Have drain valves, or other closures, employing manual or automatic shut-off means for positive locking in the closed position; and
(c) Be located or protected to prevent inadvertent operation.
[Amendment 23–29, 49 FR 6847, Feb. 23, 1984, as amended by Amendment 23–43, 58 FR 18973, Apr. 9, 1993]

§ 23.1023 Oil radiators.
Each oil radiator and its supporting structures must be able to withstand the vibration, inertia, and oil pressure loads to which it would be subjected in operation.

§ 23.1027 Propeller feathering system.
(a) If the propeller feathering system uses engine oil and that oil supply can become depleted due to failure of any part of the oil system, a means must be incorporated to reserve enough oil to operate the feathering system.
(b) The amount of reserved oil must be enough to accomplish feathering and must be available only to the feathering pump.
(c) The ability of the system to accomplish feathering with the reserved oil must be shown.
(d) Provision must be made to prevent sludge or other foreign matter from affecting the safe operation of the propeller feathering system.

COOLING
§ 23.1041 General.
The powerplant and auxiliary power unit cooling provisions must maintain the temperatures of powerplant components and engine fluids, and auxiliary power unit components and fluids within the limits established for those components and fluids under the most adverse ground, water, and flight operations to the maximum altitude and maximum ambient atmospheric temperature conditions for which approval is requested, and after normal engine and auxiliary power unit shutdown.
[Doc. No. 26344, 58 FR 18973, Apr. 9, 1993, as amended by Amendment 23–51, 61 FR 5137, Feb. 9, 1996]

§ 23.1043 Cooling tests.
(a) General. Compliance with § 23.1041 must be shown on the basis of tests, for which the following apply:
(1) If the tests are conducted under ambient atmospheric temperature conditions deviating from the maximum for which approval is requested, the recorded powerplant temperatures must be corrected under paragraphs (c) and (d) of this section, unless a more rational correction method is applicable.
(2) No corrected temperature determined under paragraph (a)(1) of this section may exceed established limits.
(3) The fuel used during the cooling tests must be of the minimum grade approved for the engine.
(4) For turbocharged engines, each turbocharger must be operated through that part of the climb profile for which operation with the turbocharger is requested.
(5) For a reciprocating engine, the mixture settings must be the leanest recommended for climb.
(b) Maximum ambient atmospheric temperature. A maximum ambient atmospheric temperature corresponding to sea level conditions of at least 100 degrees F must be established. The assumed temperature lapse rate is 3.6 degrees F per thousand feet of altitude above sea level until a temperature of −69.7 degrees F is reached, above which altitude the temperature is considered constant at −69.7 degrees F. However, for winterization installations, the applicant may select a maximum ambient atmospheric temperature corresponding to sea level conditions of less than 100 degrees F.
(c) Correction factor (except cylinder barrels). Temperatures of engine fluids and powerplant components (except cylinder barrels) for which temperature limits are established, must be corrected by adding to them the difference
§ 23.1061 Installation.

(a) General. Each liquid-cooled engine must have an independent cooling system (including coolant tank) installed so that—

(1) Each coolant tank is supported so that tank loads are distributed over a large part of the tank surface;

(2) Each coolant tank must have an expansion space of at least 10 percent of the total cooling system capacity; and

(3) It must be impossible to fill the expansion space inadvertently with the airplane in the normal ground attitude.

§ 23.1045 Cooling test procedures for turbine engine powered airplanes.

(a) Compliance with § 23.1041 must be shown for all phases of operation. The airplane must be flown in the configurations, at the speeds, and following the procedures recommended in the Airplane Flight Manual for the relevant stage of flight, that correspond to the applicable performance requirements that are critical to cooling.

(b) Temperatures must be stabilized under the conditions from which entry is made into each stage of flight being investigated, unless the entry condition normally is not one during which component and engine fluid temperatures would stabilize (in which case, operation through the full entry condition must be conducted before entry into the stage of flight being investigated in order to allow temperatures to reach their natural levels at the time of entry). The takeoff cooling test must be preceded by a period during which the powerplant component and engine fluid temperatures are stabilized with the engines at ground idle.

(c) Cooling tests for each stage of flight must be continued until—

(1) The component and engine fluid temperatures stabilize;

(2) The stage of flight is completed; or

(3) An operating limitation is reached.

§ 23.1047 Cooling test procedures for reciprocating engine powered airplanes.

Compliance with § 23.1041 must be shown for the climb (or, for multi-engine airplanes with negative one-engine-inoperative rates of climb, the descent) stage of flight. The airplane must be flown in the configurations, at the speeds and following the procedures recommended in the Airplane Flight Manual, that correspond to the applicable performance requirements that are critical to cooling.

§ 23.1061 Installation.

(a) General. Each liquid-cooled engine must have an independent cooling system (including coolant tank) installed so that—

(1) Each coolant tank is supported so that tank loads are distributed over a large part of the tank surface;

(2) Each coolant tank must have an expansion space of at least 10 percent of the total cooling system capacity; and

(3) It must be impossible to fill the expansion space inadvertently with the airplane in the normal ground attitude.