



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: **ANTI-MISFUELING DEVICES:**
THEIR AVAILABILITY AND USE

Date: 1/29/91
Initiated by: AFS-340

AC No: 20-122A
Change:

1. PURPOSE. This **advisory** circular (AC) explains the benefits of fitting reciprocating engine-powered general aviation aircraft with **anti-misfueling** devices and the fitting of fuel dispensing equipment with special fuel hose nozzle spouts.
2. CANCELLATION. AC 20-122, **Anti-misfueling Devices: Their Availability and Use, dated October 5, 1984**, is cancelled.
3. RELATED FEDERAL AVIATION REGULATIONS (FAR) SECTIONS.
FAR Sections 23.1557, 27.1557, 43.3, 91.3(a), 91.5, and 139.321.
4. RELATED READING MATERIAL. AC 00-34A, Aircraft Ground Handling and Servicing; AC 20-43C, Aircraft Fuel Control; AC 20-116, Marking Aircraft Fuel Filler Openings With Color Coded Decals; and AC 150/5230-4, Aircraft Fuel Storage, Handling, and Dispensing on Airports.
5. BACKGROUND.
 - a. Aviation statistics indicate that the use of improper fuel has caused or contributed to an inordinate number of accidents and incidents. Most of these have involved single-engine general aviation aircraft (and some multiengine) that were **misfueled** with jet or turbine engine fuel instead of gasoline which these aircraft use. **Misfueling** a reciprocating engine-powered aircraft with jet or turbine engine fuel can and has produced catastrophic results when engines failed during the critical takeoff phase of flight.
 - b. A specification developed by the General Aviation Manufacturers Association (**GAMA**), Specification No. 3 issued on July 1, 1982, provides a standard color coded decal to be affixed adjacent to aircraft fuel tank filler openings and corresponding color decal bands to be affixed to **refuelers'** fuel hoses. Both decals were designed to alert servicing personnel as to the proper fuel to be used.
 - c. The National Air Transportation Association (**NATA**) and **GAMA** are cooperating in an additional effort which will significantly mitigate the chances of **misfueling**. Fuel tank filler openings in reciprocating engine-powered aircraft may be equipped with pilot-installed adapter rings reducing the opening size from 3" to 2.3" in diameter. Jet or turbine engine fuel nozzle assemblies will be equipped with spouts with a minimum diameter of 2.6", thereby reducing the probability of introducing jet or turbine engine fuel nozzles into the filler openings of aircraft requiring gasoline.

6. DISCUSSION.

a. The down-size adapter rings are being made available through the aircraft **manufacturers'** original equipment manufacturer (OEM). Individual OEM's have developed, or are developing, **service information** for each conversion kit to ensure proper type and installation. Owners and operators of reciprocating engine-powered aircraft should seriously consider equipping each fuel tank **filler** opening with these adapters since safety will be significantly enhanced, and in some cases, the cost is being defrayed by insurance companies. Check with your aircraft manufacturer or insurance company to determine its participation. Since January 1, 1985, all **GAMA** member companies' newly-produced airplanes have fueling ports that meet the dimensions defined in the Society of Automotive Engineers' (SAE) Aerospace Standard (AS) **1852**.

b. Fuel tank filler opening adapters may be installed by pilots only when accomplished in accordance with OEM service information. Consistent with FAR Section **43.3(g)**, the fuel tank filler opening adapters may be installed by at least a certificated pilot. The installations must be approved for **return** to service under Section **43.7** and recorded as required by Section **43.9(a)**.

Note: The installation of these adapters may be performed on an aircraft owned or operated by the holder of a pilot certificate issued under Part **61**, as long as the aircraft is not used under **Parts 121**, or **135**.

c. In the interest of safety and standardization, it is recommended that Fixed Base Operators (**FBO**) and other aviation fuel suppliers equip their turbine fueling equipment (trucks, islands, pumps, etc.) with the larger size nozzles designated in **SAE AS 1852** to prevent **misfueling** reciprocating engined aircraft with turbine fuel. **SAE AS 1852** defines maximum free opening dimensions for airframe refueling ports on civil aircraft that require the exclusive use of aviation gasolines, and minimum free opening dimensions for airframe refueling ports on civil aircraft that operate with turbine fuels as a primary type fuel. In addition, the aerospace standard defines the minimum refueling nozzle tip dimensions for turbine fuel ground service equipment and the maximum refueling nozzle tip diameter dimension for aviation gasoline ground service equipment.

d. Airport owners should amend their airport operations manual to **encourage FBO's** and other suppliers to meet the new size specifications for jet fuel nozzle spouts, and to do so within a specified time period.

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e. For more information, interested parties should contact the manufacturer of their aircraft or General Aviation Manufacturers Association, 1400 K Street NW., Suite 801, Washington, D.C. 20005, telephone (202) 393-1500; National Air Transportation Association, 4226 King Street, Alexandria, Virginia 22303, telephone (703) 845-9000; or the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096, telephone (412) 776-4841.



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