

CARBURETOR ICE DETECTOR INFORMATION

(Model No. 107AP)

Thank you for inquiring into ARP's Carburetor Ice Detection systems. For years, ARP's ice detectors have proven to be the most effective "*pre-frost and ice*" warning system available.

Unlike a temperature gauge, ARP's systems utilize an optical probe that detects actual ice crystal formation within the carburetor. This is extremely important when detecting carburetor ice, since ice formation varies over both humidity and temperature as shown in the enclosed Carburetor Icing Probability Chart. When ice crystals form it blocks the light beam emitted by the probe, causing the instrument's bright red warning light to activate inside the cockpit warning the pilot. As soon as enough carburetor heat is applied and melts the ice the warning light extinguishes. If icing continues to occur, you can use the detector to monitor the minimum amount of heat needed to keep the warning light out, thus keeping the carburetor free of ice and the engine running economically and safely.

In fact, an article appeared in *Aviation Safety*¹ discussing the problem of carburetor ice and recommending that if your aircraft is not equipped with an ice detector already, that you should consider installing one.

ARP's Carburetor Ice Detectors are FAA approved for installation on both airplanes and helicopters with reciprocating engines equipped with a carburetor. Depending on your installation needs and available cockpit space, ARP offers the following system configurations (see attached photos):

- "Panel Mount" – For mounting in a standard (or existing) 3 1/8" opening. This configuration has the Power On/Off Switch, Sensitivity Adjustment Control and the Red Warning Light mounted on the system's faceplate.
- "Remote Mount" – Also for mounting in a standard (or existing) 3 1/8" or smaller opening, and generally used when space is limited. This configuration is similar to the Panel Mount, except the Red Warning Light (plus its individual mounting placard) is detached from the faceplate. This allows the electronics box to be mounted in a remote location and still allow the Red Warning Light to be mounted in tight locations on the instrument panel or glare shield.
- "Universal Mount" – This is ARP's latest configuration. With today's cockpits becoming more integrated and congested, panel space is becoming increasingly limited. The "Universal Mount" was designed to allow the ability to mount it virtually anywhere. This configuration has the pilot's interface components detached from the electronics box thus allowing the box to be mounted behind the cockpit or other non-accessible location. The Power On/Off Switch, Sensitivity Adjustment Control and the Red Warning Light (plus their individual mounting placards) are all mounted separately and anywhere on the instrument panel or glare shield.

Each Carburetor Ice Detector system is equipped with an optical probe and a full set of documentation (including an Aircraft Installation Manual, a Flight Manual Supplement and a copy of the FAA Supplemental Type Certificate). Installation is simple requiring approximately 1 to 3 man-hours, and comes with a one-year warranty.

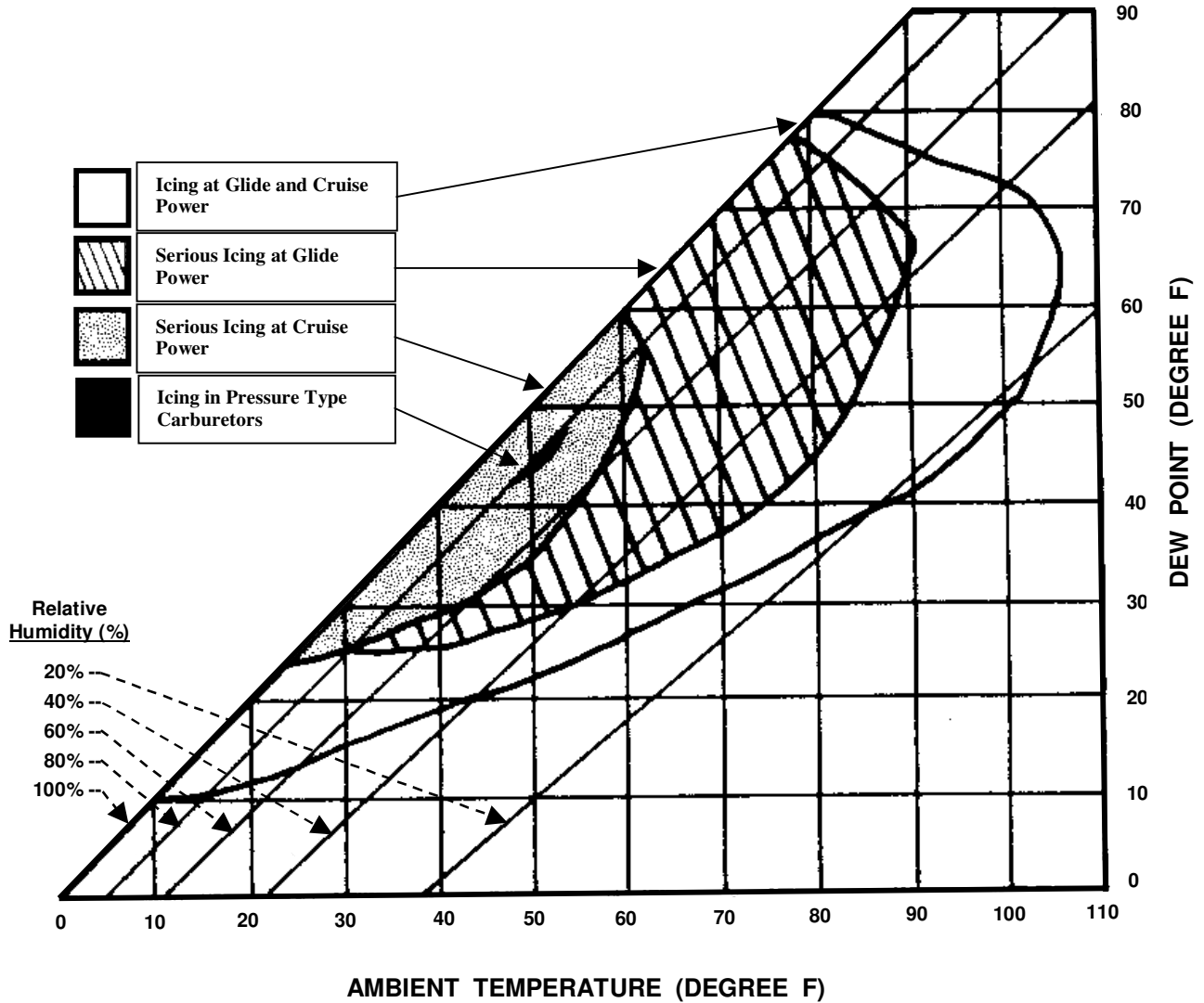
If you have any questions, please contact ARP directly.

Thank You,

ARP, Inc.

Footnote 1: *Aviation Safety* Magazine, February 1998 Addition

Carburetor Icing Probability Chart (1)



(1) Reference: Carburetor Icing Probability Chart from DOT/FAA/CT-82/44

Caution—

- Light icing over a prolonged period may become serious.
- When you receive a weather briefing, note the temperature and dew point and refer to this chart.

CARBURETOR ICE DETECTION SYSTEMS – MODEL No. 107AP

Detects Frost / Ice – Not Temperature

- “Optical Probe” mounted in the most ice prone area of the carburetor air stream – the carburetor venturi. Detects actual frost / ice crystal formation before any problems can occur. Much more reliable than temperature indicators which cannot compensate for temperature / moisture ratios.

FAA-STC SA489EA Approved

- For normal, utility and acrobatic airplanes and helicopters equipped with Continental, Franklin and Lycoming type engines and Precision Air-Motive (Facet or Marvel-Schebler) MA-2, MA-3, MA-3A, MA-3SPA, MA-4, MA-4-5, MA-4SPA, MA-5, MA-6, MA-6AA and HA-6 series carburetors.
- Installation on other aircraft not specified on the STC may be performed via FAA Form 337.

FAA-PMA Approved

- For sale and installation on type certificated aircraft.

Gives Up To 5 Minutes Warning Time

- Red ice warning light illuminates up to 5 minutes before enough ice forms inside the carburetor to cause loss of engine performance.

Highly Reliable

- Over 30 years of proven field performance.

Light Weight

- 13 ounces (no impact on weight and balance).

Low Installation Cost

- Simplified installation keeps installation cost low.
- Approximately 1 to 3 man-hours.

Twin Engine Applications

- Individual ice detector systems required for each engine.

Saves Fuel

- Saves fuel by avoiding unnecessary use of carburetor heat.

“PANEL MOUNT” (Self-Contained)



- ◆ Installation – Mounts in standard 3-1/8” instrument panel opening. All functions are contained within this single package.
- ◆ Instrument—
 - Face Plate: 3.50” x 3.50” x .032” Thick
 - Enclosure: 2.75” x 2.12” x 1.62” High

Part No's: 107AP-12 (For 12-Volt Aircraft)
107AP-24 (For 24-Volt Aircraft)

“REMOTE MOUNT” (With Remote Warning Light)



- ◆ Installation – Ideal for limited spaces and existing mounting holes. Red remote warning light mounts in 1/2” diameter hole on glare shield or instrument panel.
- ◆ Instrument—
 - Face Plate: 3.50” x 2.25” x .032” Thick
 - Enclosure: 2.75” x 2.12” x 1.62” High
- ◆ Remote Warning Light—
 - Placard: 1.25” Diameter x 0.012” Thick
 - Light Mounting Hole: 0.50” Diameter

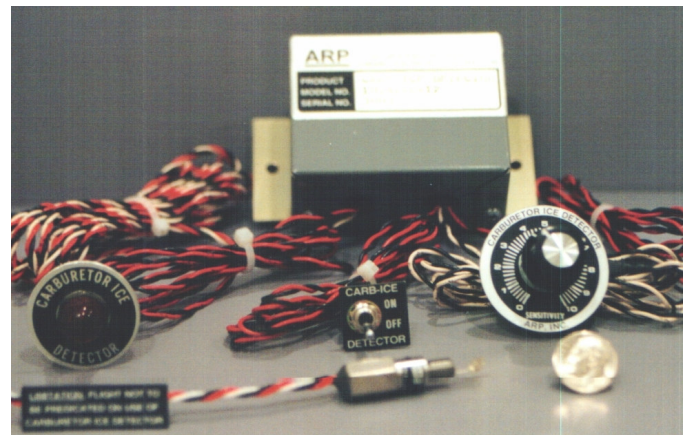
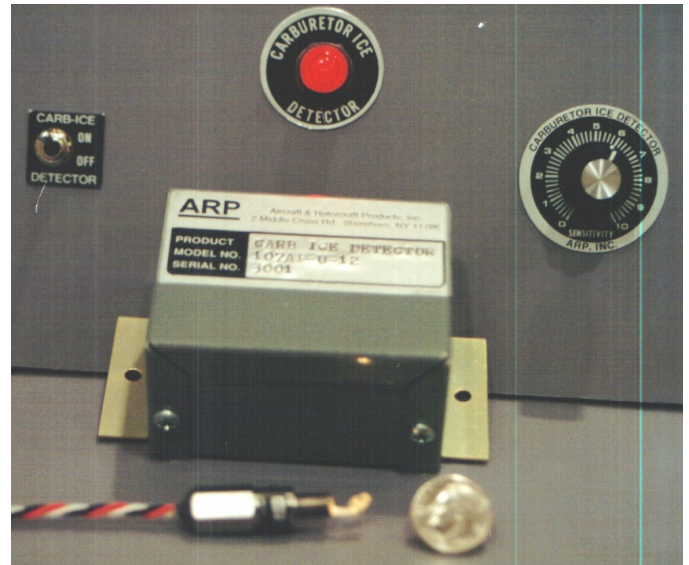
Part No's: 107AP-R-12 (For 12-Volt Aircraft)
107AP-R-24 (For 24-Volt Aircraft)

CARBURETOR ICE DETECTION SYSTEMS – MODEL No. 107AP

“UNIVERSAL MOUNT”

(Mounts Anywhere)

- ◆ Installation – Mounts virtually anywhere. Designed for aircraft with tight or extremely limited space. Red warning light, sensitivity adjustment control and on/off switch are detached from the electronics box with discrete wires for mounting in remote locations on the instrument panel or glare shield.
- ◆ Electronic Box—
 - Mounting Plate: 3.75” x 1.62” x .050” Thick
 - Enclosure: 2.75” x 2.12” x 1.62” High
 - Mounting Holes: 0.156” (x2)
- ◆ Remote Warning Light—
 - Placard: 1.25” Diameter x 0.012” Thick
 - Light Mounting Hole: 0.50” Diameter
- ◆ Sensitivity Adjustment Control—
 - Placard: 1.50” Diameter x 0.012” Thick
 - Potentiometer Mounting Hole: 0.375” Diameter
- ◆ On/Off Power Switch—
 - Placard: 0.75” x 0.75” x 0.012” Thick
 - Switch Mounting Hole: 0.25” Diameter



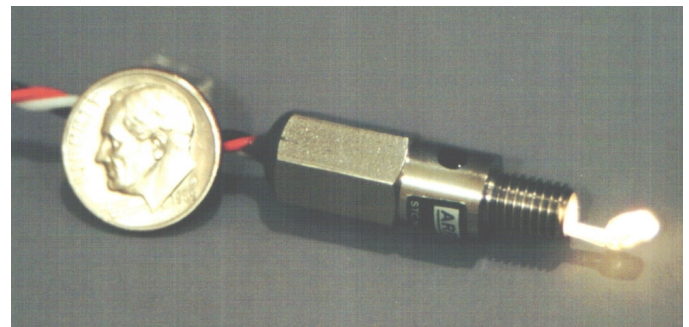
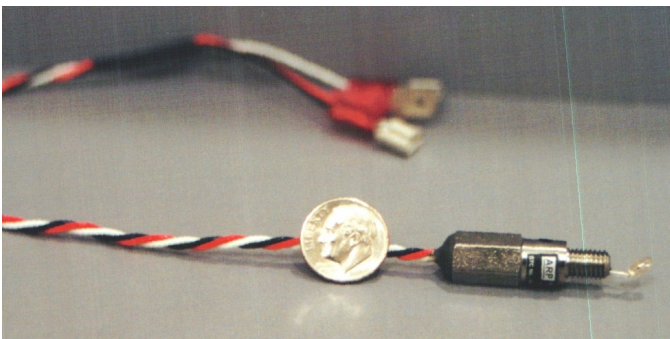
Part No's: 107AP-U-12 (For 12-Volt Aircraft)

107AP-U-24 (For 24-Volt Aircraft)

“PROBE ASSEMBLY”

(Replacement)

- ◆ Installation – Mounts in the carburetor adjacent the throttle valve.
- ◆ Spare Part – FAA Approved for ARP's Carburetor Ice Detection Systems, Model No. 107AP.



Part No.: 107AP-P (All Systems)

CARBURETOR ICE DETECTION SYSTEMS – MODEL No. 107AP

Carburetor Mounting Illustrations

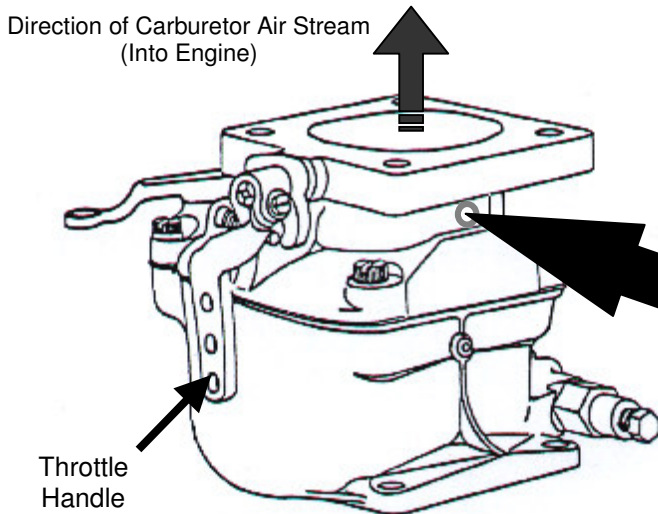


Figure 1
Model MA-2, MA-3 and MA-4

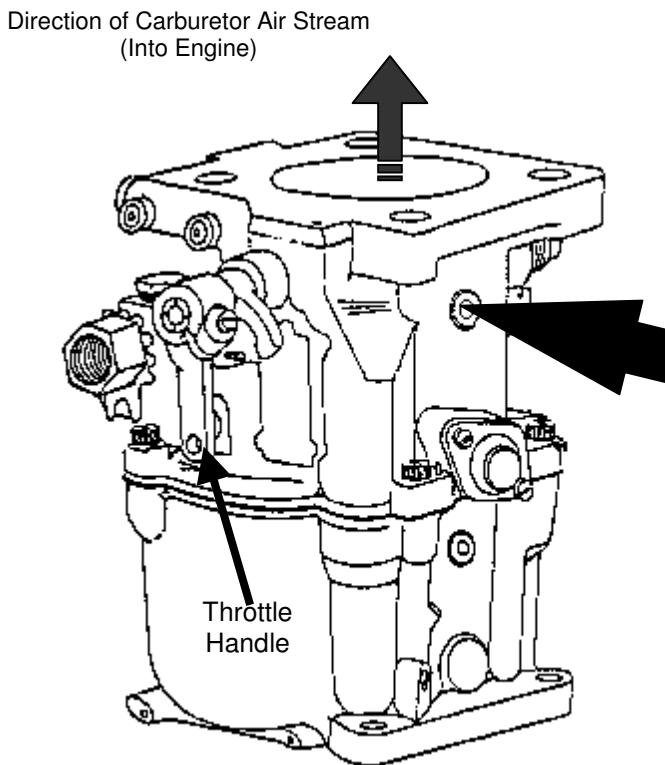


Figure 2
Model MA-4-5

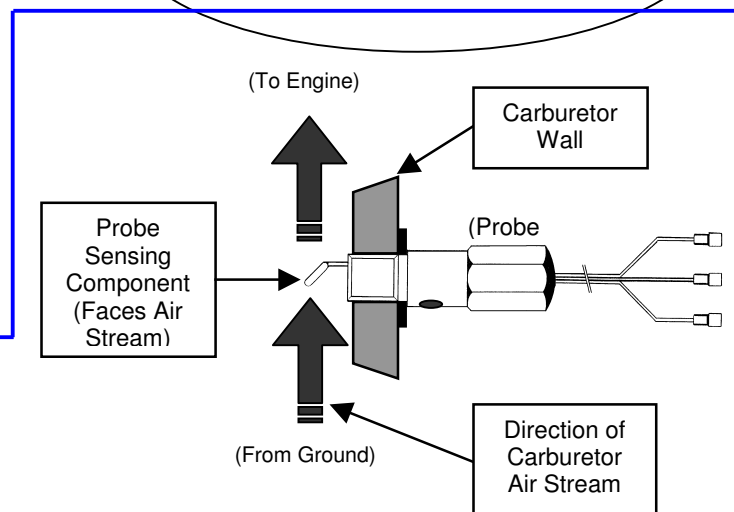


Figure 3
Detailed Side View
Probe Mounted in Carburetor Wall