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**SUPPLEMENT S02  
TO THE AIRPLANE FLIGHT MANUAL**

**DA 62  
ICE PROTECTION SYSTEM**

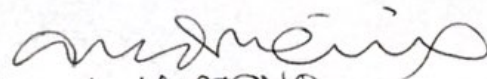
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This supplement to the DA 62 Airplane Flight Manual is approved in accordance with the Canadian Aviation Regulations.

Signature

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Authority

A/ : Chief Flight Test  
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## 1. GENERAL

### 1.1 INTRODUCTION

This supplement to the AFM contains all necessary information to operate the ice protection system of the DA 62.

The DA 62 can be equipped with an optional ice protection system in accordance with the Optional Design Change Advisory OÄM 62-002. It distributes a thin film of de-icing fluid on the wings, vertical stabilizer, horizontal stabilizer, propellers, and windscreen. This prevents the formation and accumulation of ice.

#### **NOTE**

The ice protection system is not approved for flight into known or forecast icing conditions. In case of an inadvertent icing encounter, leave icing area immediately. Refer to Chapter 3.13.4 - UNINTENTIONAL FLIGHT INTO ICING.

#### **NOTE**

The ice protection system is not a “de-icing” system in the usual sense. It can remove only small accumulations of ice. Its main purpose is to *prevent* the accretion of ice.

## WARNING

Some icing conditions have the potential of producing hazardous ice accumulations, which (1) exceed the capabilities of the airplane's ice protection equipment, and/or (2) create unacceptable airplane performance. Inadvertent operation in these conditions may be detected by heavy ice accumulation on the windshield, or when ice forms on the side areas of the canopy. Another indication is the rapid formation and shedding of bars of ice (6 mm (1/4 in) thickness or larger) from the porous panels. If these conditions are encountered, the pilot should take immediate action to select HIGH/MAX flow rate, and leave these conditions by changing altitude, turning back, or even continuing on the same course if clear air is known to be immediately ahead. This may best be achieved by climbing to warmer air above the freezing rain or drizzle. Maximum climb power with flaps retracted should be used.

## 1.5 DEFINITIONS AND ABBREVIATIONS

### (b) Meteorological Terms

- De-ice or de-icing: The periodic shedding or removal of ice accumulations from a surface, by destroying the bond between the ice and the protection surface.
- Freezing Drizzle: Drizzle is precipitation on the ground or aloft in the form of liquid water drops that have diameters less than 0.5 mm, and greater than 0.05 mm (50 µm to 500 µm, 0.002 in to 0.02 in). Freezing drizzle is drizzle in liquid form that exists in air temperatures less than 0 °C (32 °F), i.e. supercooled water, and freezes upon contact with objects on the surface or airborne.
- Freezing Rain: Rain is precipitation on the ground or aloft in the form of liquid water drops which have diameters greater than 0.5 mm (0.02 in). Freezing rain is rain in liquid form that exists at air temperatures less than 0 °C (32 °F), i.e. supercooled water, and freezes upon contact with objects on the surface



or airborne.

**Ice Crystals:** Any one of a number of macroscopic, crystalline forms in which ice appears. Examples are hail and snow.

**Icing conditions:** An icing condition is defined as visually detected ice, or the presence of visible moisture in any form at or below an indicated outside air temperature (OAT) of +5 °C (41 °F).

**Mixed Phase Icing Conditions:**

A homogeneous mixture of supercooled water drops and ice crystals existing within the same cloud environment.

**Supercooled Water:** Liquid water at a temperature below the freezing point of 0 °C (32 °F).

(i) Miscellaneous

**Protected Surface:** A surface containing ice protection, typically located at the surface's leading edge.

**Residual Ice:** Ice that remains on a protected surface immediately following the actuation of a deicing system

## 2. OPERATING LIMITATIONS

### NOTE

There is no change in existing operating limitations of the airplane. The following information is exclusively to reflect the new indications and information related to the ice protection system.

### 2.1 INTRODUCTION

#### 2.1.1 USE OF THE AUTOPILOT

Use of the autopilot is prohibited when any ice is observed forming aft of the protected surfaces of the wing, or when unusual lateral trim requirements or autopilot trim warnings are encountered.

### NOTE

The autopilot may mask tactile cues that indicate adverse changes in handling characteristics; therefore, the pilot should consider not using the autopilot when any ice is visible on the airplane.

### 2.2 AIRSPEED

Airspeed	IAS	Remarks
Minimum airspeed for inadvertent operation in icing conditions	90 KIAS	These limitations do not apply for take-off, landing, and maneuvers.
Maximum airspeed for inadvertent operation in icing conditions	160 KIAS	

## **2.6 WARNING, CAUTION, AND ADVISORY ALERTS**

### **2.6.1 WARNING, CAUTION, AND ADVISORY ALERTS ON THE G1000**

#### **NOTE**

The alerts described in the following are displayed on the Garmin G1000. Section 7.10 includes a detailed description of the alerts.

The following table shows the color and significance of the warning, caution, and advisory alert lights on the G1000.

#### **Color and Significance of the Caution Alerts on the G1000**

<b>Caution Alerts (Amber)</b>	<b>Meaning/Cause</b>
DEIC PRES LO	De-icing pressure is low.
DEIC PRES HI	De-icing pressure is high.
DEICE LVL LO	De-icing fluid level is low.

## **2.13 KINDS OF OPERATIONS**

### **General**

#### **CAUTION**

The system provides protection against icing when the pilot has inadvertently entered icing conditions. Flights into known or forecast icing conditions are prohibited.

### **Take-off**

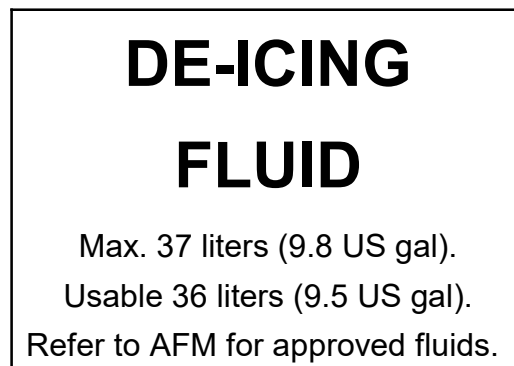
Take-off with ice or snow accumulation on the airplane is prohibited.

**NOTE**

The airplane must be completely cleared of ice, snow and similar accumulations. For approved de-icing fluids, refer to AFM Section 8.7 - GROUND DE-ICING.

**2.15 LIMITATION PLACARDS**

Next to the filler cap:

**2.17 DE-ICING FLUIDS FOR SYSTEM OPERATION**

Approved de-icing fluids for use in the ice protection system are:

- \* AL-5 (DTD 406B)
- \* Aeroshell Compound 07
- \* Kitfrost TKS 80

**WARNING**

The approved de-icing fluids are harmful. They are Glycol based with different additives. Refer to the Material Safety Data Sheets for proper handling which are available from the supplier of the de-icing fluid.

### CAUTION

The use of other fluids will provide a correspondingly lower standard of ice protection or may cause damage to the ice protection system.

### NOTE

The maximum usable tank capacity is 36 liters (9.5 US gal). The maximum tank capacity is 37 liters (9.8 US gal). Maximum system operating times with maximum usable quantity of de-icing fluid:

NORM mode . . . . .	3 hrs.
HIGH mode . . . . .	1 hr. 30 min.
MAX mode . . . . .	45 min.

### **3. EMERGENCY PROCEDURES**

#### **3.5 G1000 FAILURES**

##### **3.5.7 ERRONEOUS OR LOSS OF DE-ICING FLUID DISPLAY**

If the de-icing fluid quantity is known, the remaining system operating time can be estimated based on the durations given in Section 2.17 - DE-ICING FLUIDS FOR SYSTEM OPERATION.

### **3.13 OTHER EMERGENCIES**

#### **3.13.4 UNINTENTIONAL FLIGHT INTO ICING**

##### **WARNING**

If ice is observed forming aft of the protected surfaces of the wing, or if unusual lateral trim requirements, or autopilot trim warnings are encountered, accomplish the following:

- \* The flight crew should reduce the angle of attack by increasing speed as much as the airplane configuration and weather allow, without exceeding design maneuvering speed.
- \* If the autopilot is engaged, hold the control stick firmly and disengage the autopilot. Do NOT re-engage the autopilot until the airframe is clear of ice. The autopilot will NOT maintain airspeed if ice accretes on the airplane. MONITOR airspeed closely.
- \* Leave the icing area immediately by changing altitude, turning back, or even continuing on the same course if clear air is known to be immediately ahead.
- \* Report these weather conditions to air traffic control.

**CAUTION**

Do not delay activation of the ice protection system if icing conditions are encountered.

**CAUTION**

The stall warning in icing conditions may not be reliable and must not be relied upon in icing conditions.

**WARNING**

Flight in freezing rain, freezing drizzle, or mixed phase icing conditions (supercooled water and ice crystals) may result in hazardous ice build-up on protected surfaces exceeding the capability of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and it may seriously degrade the performance and controllability of the airplane.

**CAUTION**

Move ailerons, elevator, and rudder periodically to mitigate potential control locking due to ice accretion.

During Climb and Cruise

1. DE-ICE ..... HIGH
2. MAX. .... press push button, to dissipate ice  
build-up
3. Pitot heating. .... ON
4. ICE LIGHT ..... ON, as required
5. Cabin heat & defrost ..... ON
6. WINDSHIELD ..... press push button, as required

**CONTINUED**

*If the system does not work properly*

Continue with Section 3.15.1 - FAILURE OF THE ICE PROTECTION SYSTEM.

*If the system works properly, proceed as follows*

- 7. Leave the icing area (by changing altitude, turning back, even continuing on the same course if clear air is known to be immediately ahead).
- 8. De-icing fluid level . . . . . check periodically
- 9. DE-ICE . . . . . NORM, HIGH, or MAX, as required.  
Monitor ice build-up.

*After leaving icing conditions*

- 10. DE-ICE . . . . . OFF
- 11. ICE LIGHT . . . . . OFF
- 12. Pitot heating . . . . . OFF, as required
- 13. Cabin heat & defrost . . . . . OFF, as required

**END OF CHECKLIST**

During Approach and Landing

- 1. DE-ICE . . . . . HIGH
- 2. MAX . . . . . press push button if no shedding in HIGH mode. Repeat as required.

**NOTE**

The MAX push button activates the maximum possible system flow rate for 120 seconds.

**CONTINUED**



**CAUTION**

If ice fails to shed, proceed with Section 3.15.1 - FAILURE OF THE ICE PROTECTION SYSTEM.

- 3. ICE LIGHT ..... ON, as required
- 4. WINDSHIELD ..... press push button, as required

**NOTE**

De-icing fluid will remain on the windshield for a period after operating windshield de-ice. For an unobstructed view, do not operate the windshield de-ice within 30 seconds prior to landing.

- 5. Airspeed ..... Maintain 90 to 160 KIAS
- 6. FLAPS ..... UP or T/O, as required

**CAUTION**

Do not set the flaps to the LDG position. Climb performance and flight characteristics are significantly degraded with ice accretion.

**END OF CHECKLIST**

## **3.15 ICE PROTECTION SYSTEM EMERGENCIES**

### **3.15.1 FAILURE OF THE ICE PROTECTION SYSTEM**

A “failure” of the ice protection system is any condition in which the system fails to remove ice from protected surfaces, including the propellers.

1. Leave the icing area (by changing altitude or turning back or even continuing on the same course if clear air is known to be immediately ahead).
2. Maintain airspeed above 90 KIAS until final approach and landing.
3. Flap extension is limited to the T/O position.

### **WARNING**

With an inoperative ice protection system, set both POWER levers to MAX, and leave icing conditions as soon as possible. In heavy icing conditions, it may not be possible to maintain altitude or proper glide path on approach; in this case, it is imperative that a safe airspeed be maintained; the stall warning system may not function, and there may be little or no pre-stall buffet with heavy ice loads on the wing leading edges.

4. Increase landing distance from AFM Section 5.3.12 by a factor of 1.4.

**END OF CHECKLIST**

## **4A. NORMAL OPERATING PROCEDURES**

### **4A.6 CHECKLISTS FOR NORMAL OPERATING PROCEDURES**

#### **4A.6.1 PRE-FLIGHT INSPECTION**

##### I. Cabin Check

###### *Ice protection system*

- a) ELEC MASTER . . . . . ON
- b) DEICE FLUID . . . . . check quantity
- c) DOORS . . . . . closed
- d) WINDSHIELD . . . . . press push button
- e) Spraybar . . . . . evidence of de-icing fluid

#### **NOTE**

If the system has been inoperative for a while, has been drained, or has run dry, trapped air - suspected in the feeder lines to the main pumps - can be removed from the feeder lines to the main pumps by activating the windshield pumps several times.

#### **NOTE**

Do not operate the main pumps with an empty de-icing fluid tank. Operating the main system pumps with an empty de-icing fluid tank can cause a future system malfunction. To re-establish full system function, special maintenance action is required.

- f) ANNUN-TEST . . . . . ON

#### **NOTE**

The ANNUN-TEST mode activates the DEICE LVL LO caution immediately if the de-ice fluid quantity is low, and the DEIC PRES LO caution after 120 seconds.

**CONTINUED**

- g) DEIC PRES HI . . . . . verify NOT ILLUMINATED
- h) DEICE LVL LO . . . . . check (must be annunciated if de-icing  
fluid quantity is below 11 liters (2.9  
US gal)
- i) DEIC PRES LO . . . . . check, ILLUMINATED (refer to NOTE)
- j) DE-ICE . . . . . HIGH
- k) DEIC PRES LO . . . . . verify NOT ILLUMINATED
- l) DEIC PRES HI . . . . . verify NOT ILLUMINATED
- m) ICE LIGHT . . . . . ON
- n) Ice lights . . . . . visual inspection, check

### NOTE

If at ambient temperature above 10 °C (50 °F) and below 20 °C (68 °F) DEIC PRES LO warning appears in HIGH mode, switch to max mode to cancel the warning. Above 20 °C (68 °F) ambient temperature, warning cancellation may not be possible.

- o) DE-ICE . . . . . OFF
- p) ICE LIGHT . . . . . OFF
- q) ANNUN-TEST . . . . . OFF
- r) ELECT MASTER . . . . . OFF

### END OF CHECKLIST

#### II. Walk-Around Check, Visual Inspection

##### *Ice protection system*

- a) De-icing fluid tank . . . . . visually check quantity through filler  
cap on top of the LH nose baggage  
compartment

### CONTINUED

- b) Filler cap . . . . . check secure
- c) Inspection door . . . . . check closed
- d) Deflector and spraybar . . . . . visually check, free from dirt
- e) Porous panels on wings. . . . . visually check no damage and no  
holes blocked, evidence of de-icing  
fluid
- f) Porous panels on horizontal & vertical tail . . . visually check no damage and no  
holes blocked, evidence of de-icing  
fluid
- g) Slinger rings and/or nozzle at propeller . . . . . visually check no damage and no  
holes blocked, evidence of de-icing  
fluid
- h) Wing, tail, propellers, windshield . . . . . verify free from ice

**END OF CHECKLIST**

**4A.6.5 TAXIING**

**NOTE**

De-icing fluid will remain on the windshield for a while after operating windshield de-ice. For an unobstructed view, do not operate the windshield de-ice during taxi.

**4A.6.13 AFTER LANDING**

- 1. DE-ICE . . . . . OFF
- 2. ICE LIGHT . . . . . OFF

**4A.6.15 EXIT AIRPLANE**

**CAUTION**

When the ice protection system has been enabled in flight, the walkways on the inner wings may be slippery.

**4A.6.17 PARKING****NOTE**

When the ice protection system has been enabled in flight, special care must be taken when touching the airframe structure or windscreen, as they may be partially contaminated with de-icing fluid.

Clean the de-icing fluid from the windscreen and the porous panels. Refer to Chapter 8 for appropriate procedures.

## **4B. ABNORMAL OPERATING PROCEDURES**

### **NOTE**

The abnormal operating procedures of this supplement describe the operation of the ice protection system during the occurrence of cautions on the G1000. Nevertheless, flight in icing conditions is not approved.

### **4B.3 CAUTION-ALERTS ON THE G1000**

#### **4B.3.15 DEIC PRES LO**

DEIC PRES LO	De-icing pressure is low.
--------------	---------------------------

1. DE-ICE ..... HIGH

*If DEIC PRES LO indication does not extinguish on the G1000*

2. PUMP1/PUMP2..... select other main pump

### **NOTE**

Activate the WINDSHIELD pump to prime the alternate main pump if necessary.

*If DEIC PRES LO indication still does not extinguish on the G1000*

3. ALTERNATE switch on de-ice panel. . . . . open guard, toggle switch

*If DEIC PRES LO indication still does not extinguish on the G1000*

4. Proceed with Section 3.15.1 - FAILURE OF THE ICE PROTECTION SYSTEM.

*If DEIC PRES LO indication extinguishes on the G1000 and normal operation is achieved*

5. Proceed with Section 3.13.4 - UNINTENTIONAL FLIGHT INTO ICING.

**CONTINUED**

**CAUTION**

If at ambient temperature above 10 °C (50 °F) and below 20 °C (68 °F) DEIC PRES LO warning appears in HIGH mode, switch to max mode to cancel the warning. Above 20 °C (68 °F) ambient temperature, warning cancellation may not be possible.

**END OF CHECKLIST****4B.3.16 DEIC PRES HI**

DEIC PRES HI	De-icing pressure is high.
--------------	----------------------------

1. Icing conditions ..... leave the icing area as soon as possible

**NOTE**

Reduced system performance may occur. Unscheduled maintenance is required.

**4B.3.17 DEICE LVL LO**

DEICE LVL LO	De-icing fluid level is low.
--------------	------------------------------

Maximum remaining system operating times after first annunciation of the DEICE LVL LO caution message:

NORM mode ..... 55 min.  
HIGH mode ..... 27 min.



#### **4B.3.18 FAILURE OF THE INDICATION LIGHTS**

The indication lights (MAX, NORM, HIGH) on the de-ice panel are only used to indicate the selected operating mode. Failure to illuminate does not indicate a malfunction of the system.

1. Continue flight according Section 3.13.4 - UNINTENTIONAL FLIGHT INTO ICING.
2. Unscheduled maintenance is required after flight.

#### **4B.3.19 FAILURE OF THE WINDSHIELD DE-ICE**

A “failure” of the windshield de-ice is any condition in which the system fails to remove ice from the windshield.

1. Continue flight according Section 3.13.4 - UNINTENTIONAL FLIGHT INTO ICING by viewing through the unobstructed areas on the side of the windshield and/or doors. Open the emergency window if necessary.

## **5. PERFORMANCE**

### **5.1 INTRODUCTION**

Airplane performance and stall speeds in clear air are unchanged with the installation of the ice protection system.

#### **CAUTION**

Significant climb and cruise performance degradation, range reduction, buffet, and stalling speed increase must be expected if ice accumulates on the airframe.

Residual ice on the protected surfaces and ice accumulation on the unprotected areas of the airplane can cause noticeable performance losses, even with the ice protection system operating.

## **6. MASS AND BALANCE**

### **6.4 FLIGHT MASS AND CENTER OF GRAVITY**

#### **6.4.1 MOMENT ARMS**

Item	Lever Arm	
	[m]	[in]
De-icing fluid tank	0.90	35.4

The mass (weight) of the de-icing fluid is obtained as follows:

- \* Multiply the fluid quantity in liters by 1.1 to obtain kilograms (kg), or
- \* Multiply the fluid quantity in US gallons by 9.2 to obtain pounds (lb)

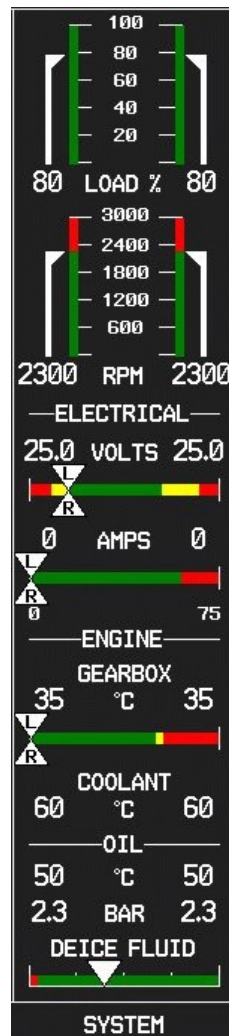
## 7.9 DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

### 7.9 POWER PLANT

#### 7.9.4 ENGINE INSTRUMENTS

On the Garmin G1000 MFD, the de-icing fluid level indication is displayed on the system page. Indication markings indicate (from left to right) 1/4, 2/4, 3/4, and 4/4 of the usable fluid quantity (36 liters or 9.5 US gal).

Displayed by pushing the SYSTEM button:



## **7.10 ELECTRICAL SYSTEM**

### **7.10.3 WARNING, CAUTION, AND ADVISORY MESSAGES**

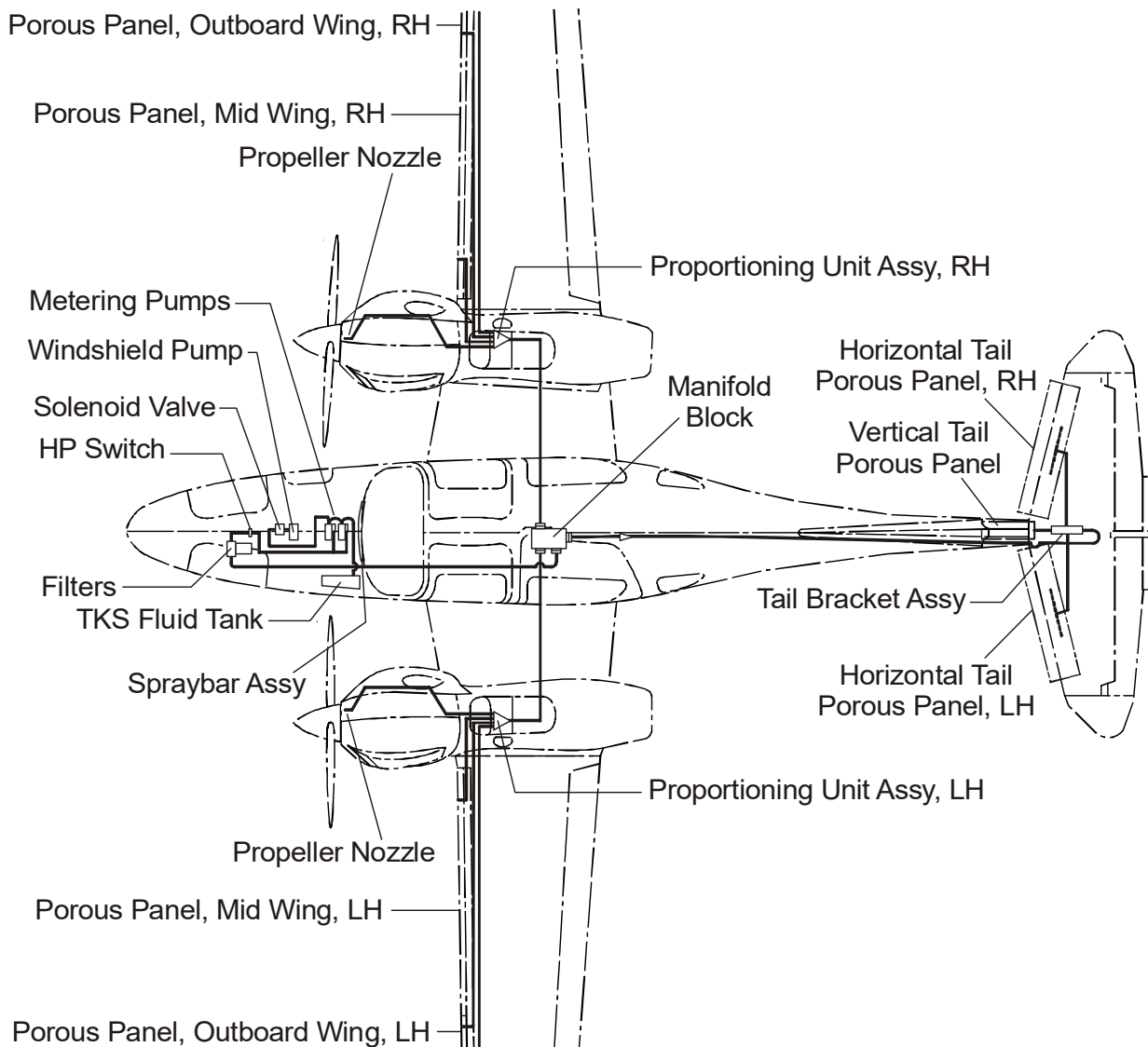
#### Caution Alerts on the G1000

<b>Caution Alerts (Amber)</b>	<b>Meaning/Cause</b>
DEIC PRES LO	System pressure upstream of the porous panels on the horizontal or vertical tail is too low.
DEIC PRES HI	System pressure upstream of the de-icing fluid filter is too high.
DEICE LVL LO	De-icing fluid level in the tank is below 11 liters (2.9 US gal).

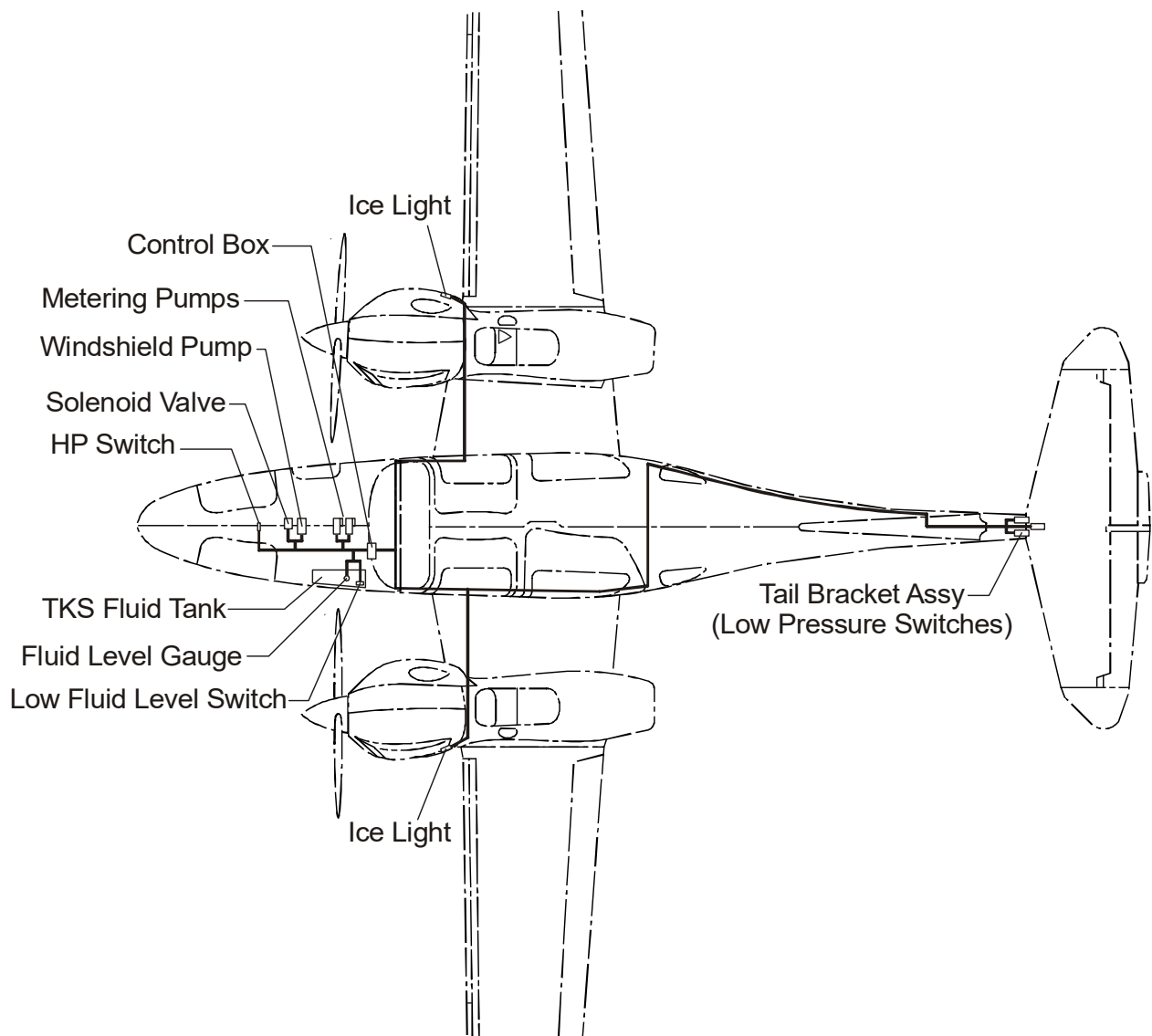
## 7.16 DE-ICING SYSTEM

### Description

The ice protection system is electrically operated. It is supplied with power via the XFR PUMP/DE-ICE circuit breaker. The airframe and propellers are grouped and operate together. Windshield de-icing is a separate system and operates independently. All systems draw fluid from a common tank.



### Mechanical Overview



### Electrical Overview

The system consists of the following main components:

- \* De-icing fluid tank with an integrated filler neck, which has an inlet strainer. The tank has a capacity of 37 liters (9.8 US gal) and is installed in the nose compartment of the airplane, on the LH side. The de-icing fluid is glycol-based. It has an approx. mass density of 1.1 kg/liter (9.2 lb/US gal).

- \* A low level sensor in the tank provides indication of the minimum quantity for dispatch (55 minutes).
- \* A fluid level gauge provides data for the de-icing fluid level indication on the G1000 system.
- \* Two main pumps, installed in the nose compartment of the airplane, under an inspection lid on the LH side.

The pumps take de-icing fluid from the tank and feed it to:

- the airframe ice protection system (see below), and
- the windshield de-icing system (see below).

In the NORM mode, both main pumps run simultaneously and are cycled on and off by two time delay relays.

In the HIGH mode, only the selected main pump runs continuously.

In the MAX mode, both pumps run simultaneously and continuously.

A switch in the cockpit selects the modes NORM and HIGH. In the HIGH mode, the MAX mode can be engaged by pressing a push button on the de-ice panel in the cockpit. This mode is activated for 2 minutes.

The mode in use is indicated by three lights on the ice protection control unit on the instrument panel.

- \* The airframe/propeller ice protection system consists of the following components:
  - The de-icing fluid filter, installed in the nose compartment of the airplane next to fluid tank mounted on the frame. The active main pump feeds the de-icing fluid through the filter to the proportioning units. The filters prevent the proportioning units from contamination.
  - Proportioning units in each nacelle (between the main spars) and in the upper vertical tail (forward of the front spar). The proportioning units regulate the flow of de-icing fluid to the porous panels and to the propeller slinger rings by means of capillaries.



- Porous titanium panels are fitted to the leading edge of the outer wings, the vertical tail, and the horizontal tail. The porous panels weep the fluid at a low rate through fine holes.
  - Nozzles and slinger rings on the propellers. The nozzle sprays fluid into the slinger ring which is mounted to the spinner backplate. The fluid is then distributed to the propeller blades by centrifugal force through notches in the slinger ring.
  - Three low pressure sensors which detect malfunctions of the system. Refer to Section 7.10 of this supplement.
  - One high pressure sensor which activates an indication when the filter cartridges need to be replaced. Refer to Section 7.10 of this supplement.
- \* The windshield ice protection system consists of:
- One windshield de-icing pump with a solenoid valve, installed in the nose compartment of the airplane under an inspection lid on the LH side. The active windshield de-icing pump supplies the fluid to the spraybar.
  - One de-icing fluid spraybar for the windshield.

Unlike the airframe de-icing system, the windshield de-icing system does not spray fluid continuously, but is activated for 5 seconds by operating a push button, even when the main switch of the Ice Protection System is in the OFF position.

- \* The electrical system consists of:
- An ice protection control box which is mounted on the compartment side of the frame below the instrument panel. The ice protection control box contains all necessary relays to operate and cycle the pumps.
  - A de-ice panel, mounted on the LH side of the instrument panel, enables the complete control of the whole de-icing system.
  - Two ice lights, one for each wing, are installed for monitoring ice accretion on the wings in low lighting conditions.

## Replenishing

Refer to Section 2.17 of this supplement for approved de-icing fluids.

### NOTE

The de-icing fluid must be considered for the mass and balance calculations. Refer to Chapter 6 of this supplement.

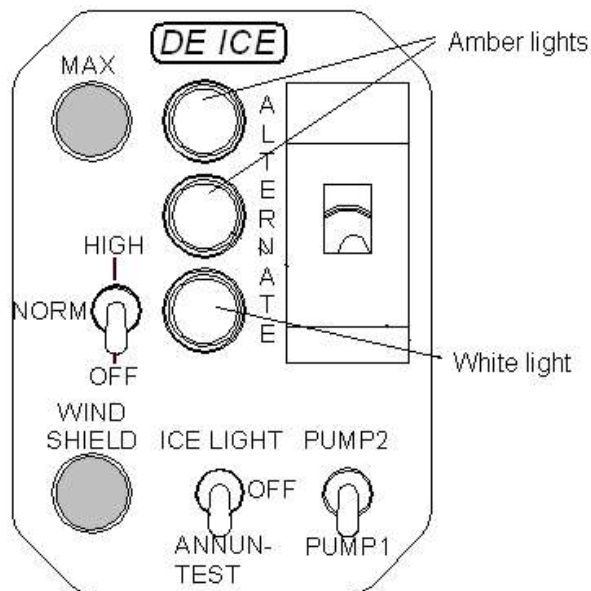
De-icing fluid is replenished through the filler, which is located on the fuselage LH side in front of the windshield. The tank has a usable capacity of 37 liters (9.3 US gal).

## Operation

The system is operated through four toggle switches, and two push buttons located on the ice protection control unit in the LH section of the instrument panel.

The current operating mode is indicated by the following indication lights:

- NORM : lower white light only
- HIGH : center amber light only
- MAX : both (top and center) amber lights



### *OFF/NORM/HIGH switch*

The OFF/NORM/HIGH switch operates the selected main pump and thus activates the system. It has 3 positions:

Down position: OFF

Center position: NORM (normal). The main pumps produce a cycled fluid flow: the main pumps provide fluid to the system for 30 seconds, followed by a 90 second break. This mode is designed to cover the more frequent but less severe known icing conditions as defined by CS 25/FAR Part 25, Appendix C, and is selected when icing conditions are encountered and prior to ice formation. Maximum system operating time is approximately 3 hours.

Up position: HIGH. The active main pump produces a continuous fluid flow. This mode is designed to cover all known icing conditions as defined by CS 25/FAR Part 25, Appendix C, and is selected when icing conditions are more demanding or if ice has already accumulated. Maximum system operating time is approximately 1 hour and 30 minutes.

### *MAX push button*

The upper push button activates the MAX mode of the ice protection system when the system is in the HIGH mode. This mode is designed to provide maximum possible protection for conditions outside the icing envelope as defined by CS 25/FAR Part 25 Appendix C, and is only active for 2 minutes after each activation. In this mode, both pumps are active simultaneously and provide fluid to the system. Maximum system operating time with continuous MAX mode activation is approximately 30 minutes.

### *PUMP1/PUMP2 switch*

The RH bottom switch selects one of the two main pumps. It has 2 positions.

Down position: PUMP 1. Main pump no. 1 is selected as the active pump in HIGH mode. Pump no. 2 is standby.

Up position: PUMP 2. Main pump no. 2 is selected as the active pump in HIGH mode.  
Pump no. 1 is standby.

#### *WINDSHIELD push button*

The WINDSHIELD push button activates the selected windshield de-icing pump for a duration of 5 seconds. During this time, it feeds de-icing fluid to the spraybar in front of the windshield.

The windshield de-icing works even when the OFF/NORM/HIGH switch of the ice protection system is set to OFF. The purging of air from the ice protection system is also provided by this pump by continuously pressing the WINDSHIELD push button.

#### *ALTERNATE switch*

The ALTERNATE switch connects the main pump no. 2 directly to the RH main bus. Thus, in case of a total loss of the LH main bus in icing conditions, operation of the ice protection system, in a manner similar to the HIGH mode, is possible.

#### *ANNUN-TEST/OFF/ICE LIGHT*

This switch activates either both ice-lights, or the annunciation test procedure (refer to Section 4A.6.1 - PRE-FLIGHT INSPECTION).

## **8. AIRPLANE HANDLING, CARE, AND MAINTENANCE**

The porous panels can be cleaned with soap and water using a clean, lint-free cloth. Isopropyl alcohol, ethyl alcohol, or methylated spirit may be used to remove oil or grease. Furthermore, approved de-icing fluids, AVGAS, and jet fuel are permitted for use on the panels.

### **CAUTION**

Do not apply polish or wax to the panels. Certain solvents, particularly methyl ethyl ketone (MEK), acetone, lacquer thinner and other types of thinners and solvents damage the inner membrane of the panels. Mask active area of panels with a low tack tape when using solvents or painting the airplane in the proximity of the panels or when the airplane is stored in a dusty environment.

### **NOTE**

The ice protection system should be checked for excessive de-icing fluid leaks after each use. Due to the dihedral, small amounts of de-icing fluid can evaporate from the inner wing panels over a period of several days. Contamination precautions must be taken if the airplane is stored in a hangar.

## **8.4 SERVICING**

### **8.4.5 REPLENISHMENT OF THE DE-ICING FLUID TANK**

For approved de-icing fluids, refer to Chapter 2 - LIMITATIONS. The tank is located in the nose baggage compartment, and the filler cap is on top of the filler neck of the tank, accessible via the open inspection door on the fuselage LH side.

To preclude the possibility of contaminated fluid, do not remove the inlet strainer, always clean the top of the fluid tank before replenishing. Secure the filler cap immediately after replenishment.

#### **8.4.6 PROLONGED OUT OF SERVICE OR DE-ICING SYSTEM RUN DRY**

To avoid the need to reprime the system, and to provide a quick response when returned to service, maintain at least 2 liters (0.5 US gal) in the tank. To ensure that all system components are filled with fluid, operate the system at least once a month. If necessary, operate the pumps until all air is purged from components and pipelines.

##### Priming of the Main Pumps

The main pumps may not be self priming, and are primed, when required, by the operation of the windshield pump. The windshield pump will prime main pump 1 or 2.

##### Priming of the Porous Panels

###### *In flight*

### **WARNING**

Priming of the porous panels in icing conditions is not permitted.

Priming of the porous panels is best done during climb or descent, at ambient temperatures up to 4 °C (39 °F). To prime the porous panels, activate the MAX mode. Repeat the procedure in intervals of approximately 5 minutes until fluid dissipates from all porous panels.

###### *By special maintenance*

At ambient temperatures above 4 °C (39 °F), special maintenance may be required to prime the porous panels.