

	Ice and Rain Protection	I	
	Chapter 13 - 1/5	07/04/20	Rev 1

ICE AND RAIN PROTECTION

GENERAL

The ice and rain protection system consist of engine anti-ice, airfoil anti-ice and de-ice, probe heaters, windshield anti ice and anti fog and windshield wipers.

ENGINE ANTI-ICE

The engine nose cowl, the inlet guide vanes and the nose dome are anti-iced by engine compressor bleed air. Both engines have three anti-ice valves.

The left and right valves provide warm air from the low pressure compressor to the inlet guide vanes and the nose dome.

The cowl valve provides air from the high pressure compressor.

AIR FOIL ANTI-ICE AND DE-ICE SYSTEM

The airfoil ice protection system employs hot pressurize air from the pneumatic system, for anti-icing the wing leading edge slats, forward strakes and the air conditioning ram air scoop provided the airplane is in flight mode and the airfoil switch and associated crossfeed valves are actuated.

De-icing is available to horizontal stabilizer leading edge when selected by operating the tail pushbutton, thereby diverting the flow of heated air from the wing slats and strake ducts to the stabilizer.

PROBE HEATER SYSTEM

The probe heaters system consists of electric heating elements within the pitot tubes, static ports, angle of attack transducers vanes and ram air temperature (RAT) probes.

WINDSHIELD AND WINDOWS ANTI-ICE AND ANTI-FOG SYSTEM

Electrical resistance coating provide heat for anti-icing and anti-fogging the clearview and eyebrow windows.

WINDSHIELD WIPER SYSTEM

The windshield wiper system is provided to maintain clear areas on both forward left and right windshield in rain and snow.

ICE FOD ALERT SYSTEM

The Ice FOD Alert is a fully automated system designed to operate during ground operations. An over-wing sensor sends signal for clear ice to the processor which relays the information to the cockpit.

CONTROLS AND INDICATORS

ENGINE ANTI-ICE



ENG Anti-ice L, R Switches:
ON: Opens simultaneously all the engine anti-ice shutoff valves.
OFF: Closes simultaneously all the engine anti-ice shutoff valves.



ENG ANTI-ICE ON L, R Light:
ON: Indicates that one or more engine anti-ice shutoff valves are open, regardless of the engine anti-ice switch position.
OFF: Indicates that all the engine anti-ice shutoff valves are closed.



ENG VALVE Disagree L, R Light:
ON: Indicates a discrepancy between the position of the engine anti-ice shutoff valves and the position of the engine anti-ice switch.
OFF: All the engine anti ice shutoff valves are in accordance with the ENG Anti-ice L, R switch.

AIR FOIL ANTI-ICE AND DE-ICE SYSTEM

PNEU PRESS Indicator:

Indicates the pneumatic pressure available in the central duct. For more information see also chap. 16.



AIR FOIL Ice Protect L, R Switch:

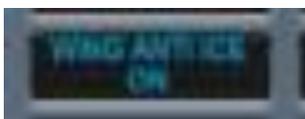
ON: Actuates the ice protection pressure regulating valves and activates the appropriate augmentation valves. Airfoil heating is not available on ground.
OFF: Closes the ice protection pressure regulating valves.

TAIL Ice Protection Button:

Closes the wing anti-ice shutoff valve and opens the tail de-ice shutoff valve for timed period of approximately 2.5 minutes and then returns heat to the wings.

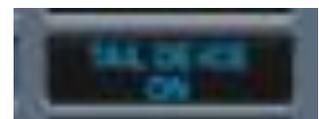
WING ANTI-ICE ON Light:

Indicates that wing anti-ice has been selected for the wings.



TAIL DE-ICE ON Light:

Indicates de-icing heat has been selected for the horizontal stabilizer. Light will be on for approximately 2.5 minutes.



AIRFL ICE PRESS ABNLM

AIRFL ICE PRESS ABNML Light:

Indicates low or unbalanced pressure in wing or low pressure in the stabilizer.

L ICE PROT TEMP LOW
R ICE PROT TEMP LOW

L/R ICE PROT TEMP LOW Light:

Indicates that the temperature in the cross-feed ducting is too low for satisfactory ice protection.

PROBE HEATERS, WINDSHIELD AND WINDOW ANTI-ICE AND ANTI-FOG SYSTEM.

METER SEL & HEAT Selector:

When moved from the OFF position all heater circuits are energized. During ground operation rat air probe heating it is not provided.

Windshield ANTI-FOG Switch:

ON: Anti-fog power applied to windshields, clearview and eyebrow windows.

OFF: Removes power.



Windshield ANTI-ICE Switch:

ON: Anti-ice power applied to windshields, clearview and eyebrow windows.

OFF: Removes power.

PITOT/STALL HEAT OFF

PITOT/STALL HEATER OFF Light:

Indicates METER SEL & HEAT selector is in the OFF position. Any pitot tube or stall probe heater is not powered.

WIPER Selector:

PARK: (spring loaded to off). Stows wiper blade.

OFF: Stop the wiper.

SLOW/FAST: Select speed of wiper.



OVERHEAD PANEL

ICE FOD ALERT

ICE FOD Switch:

TEST: (spring loaded to center position) activate the built-in test feature of the system. Both L/R ICE FOD ALERT and L/R ICE FOD SYS INOP annunciations will illuminate in the EOAP.

RESET: (spring loaded to center position) reset the illuminated alert annunciation if the ice has been removed from wing.

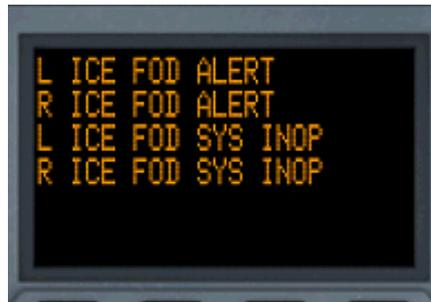
Ice FOD system and alerts are inhibited when aircraft is in flight mode.



OVERHEAD PANEL

L/R ICE FOD ALERT

Illuminates on EOAP when ice is detected on L/R wing on ground. Lights come on during system test.



L/R ICE FOD SYS INOP

Illuminates on EOAP when a failure is detected on L/R ice FOD systems. Lights come on during system test.