

DESCRIPTION

DETECTION

The engines and the APU each have a fire and overheat detection system consisting of :

- Two identical gas detection loops (A and B) mounted in parallel.
- A Fire Detection Unit (FDU).

The gas detection loops consist of :

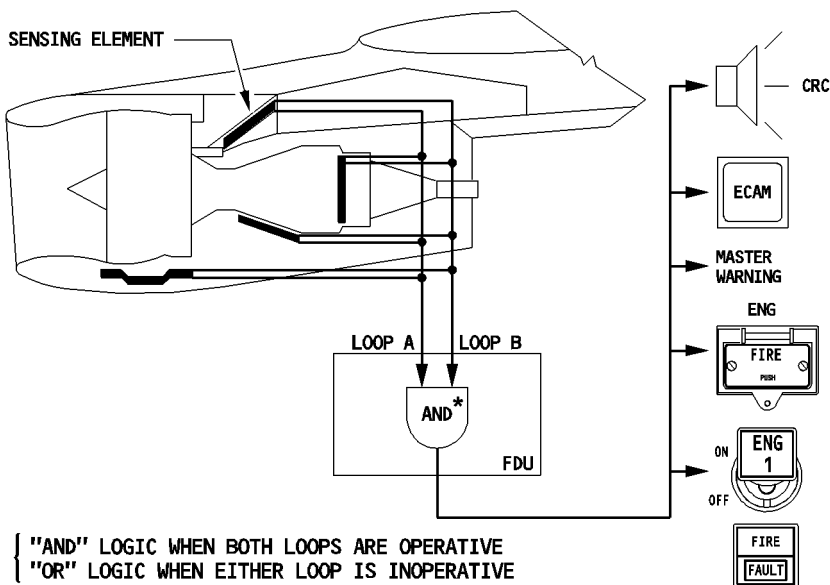
- Four sensing elements for each engine, located in the pylon nacelle, in the engine core and in the engine fan sections.
- One sensing element in the APU compartment.

When a sensing element is subjected to heat, it sends a signal to the fire detection unit.

As soon as loops A and B detect temperature at a preset level, it triggers the fire warning system.

A fault in one loop (break or loss of electrical supply) does not affect the warning system. The unaffected loop still protects the aircraft.

If the system detects an APU fire while the aircraft is on the ground, it shuts down the APU automatically and discharges extinguishing agent.



FFCS-01-2620-001-A001AA

	FIRE PROTECTION ENG AND APU		1.26.20	P 2
			SEQ 001	REV 09

EXTINGUISHING

Each engine has two extinguisher bottles equipped with electrically operated squibs to discharge their contents. Each squib has a dual electric supply. The flight crew controls the discharge from the ENG FIRE panel in the cockpit.

The APU has one fire extinguisher bottle that has an electrically operated squib to discharge its agent. The flight crew controls the discharge from the APU FIRE panel in the cockpit. This bottle also discharges automatically if there is an APU fire when the aircraft is on the ground.

FIRE WARNINGS AND LOOP CAUTIONS

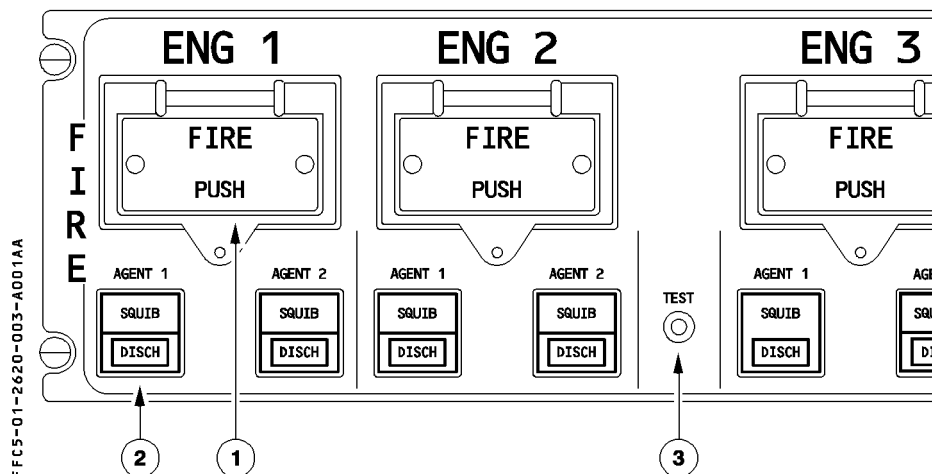
Fire detection units process all the warnings and cautions originating in the sensing elements :

- The fire warning appears in case of :
 - a fire signal from both loop A and B or,
 - a fire signal from one loop when the other is faulty, or
 - breaks in both loops occurring within 5 seconds of each other (flame effect), or
 - a test performed on the control panel.
- The loop-fault cautions appear if :
 - one loop is faulty or,
 - both loops are faulty or,
 - the fire detection unit fails.

CONTROLS AND INDICATORS

OVERHEAD PANEL

ENG FIRE PANEL



The aircraft has four identical ENG FIRE panels, which contain the following switches and indicators and include a single TEST pushbutton :

① ENG 1 (2, 3, 4) FIRE pb

This pushbutton's normal position is in, and guarded.

The pilot pushes it to release it. It pops out, sending an electrical signal that performs the following for the corresponding engine :

- Silences the aural fire warning
- Arms the fire extinguisher squibs
- Closes the low-pressure fuel valve
- Closes the engine fuel return valve
- Closes the hydraulic fire shut off valve
- Closes the engine bleed valve (on the related and adjacent engine)
- Closes the pack flow control valve
- Cuts off the FADEC power supply
- Deactivates the IDG.

ENG 1 (2, 3, 4) FIRE lt

This red light comes on, regardless of the pushbutton's position, whenever the fire warning for the corresponding engine is activated.

	FIRE PROTECTION ENG AND APU	1.26.20 P 4	
		SEQ 001	REV 09

② AGENT 1 and AGENT 2 pb

Both of these pushbuttons become active when the flight crew pops the ENG FIRE button for the associated engine.

A brief push on the pushbutton discharges the corresponding fire bottle.

- “SQUIB” comes on white when the flight crew pops the ENG FIRE button for its engine to help the flight crew identify the AGENT pushbutton to be activated.
- “DISCH” comes on amber when its fire extinguisher bottle has lost pressure.

③ TEST pb

This pushbutton permits the flight crew to test simultaneously the operation of the fire detection and extinguishing system for the four engines.

- When the flight crew presses it :
 - A continuous repetitive chime sounds.
 - The MASTER WARN lights flash.
 - ENG FIRE warning appears on ECAM.

On the FIRE panel :

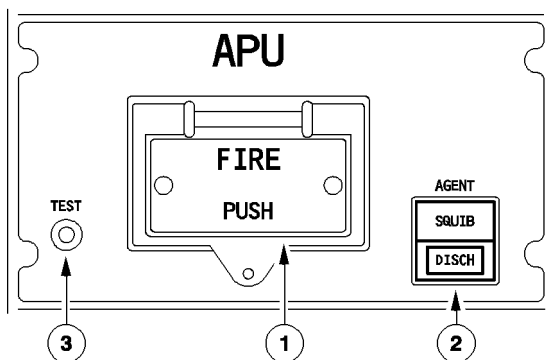
- The ENG FIRE pushbutton comes on red.
- The SQUIB lights come on white if discharge supplies are available.
- The DISCH lights come on amber.

On the ENG panel (pedestal) :

- The FIRE lights come on red.

APU FIRE PANEL

FFCS-01-2620-005-A001AA



① APU FIRE pb

This pushbutton's normal position is in and guarded.

The pilot pushes it to release it. It pops out, sending an electrical signal that performs the following for the APU :

- shuts down the APU
- silences the aural warning
- arms the squib on the APU fire extinguisher
- closes the low-pressure fuel valve
- shuts off the APU fuel pumps (aft and forward).
- closes the APU bleed valve and X bleed valve and deactivates the APU generator.

The red APU FIRE light comes on when the APU fire warning is activated, regardless of the position of the pushbutton.

② AGENT pb

This pushbutton becomes active when the pilot pops the APU FIRE button.

The flight crew presses it briefly to discharge the fire bottle.

- SQUIB comes on white when the pilot pops the APU FIRE button.
- DISCH comes on amber when the fire extinguisher bottle has lost pressure.

Note : A red disk, which is outside at the rear of the fuselage, signals that the agent is not discharged overboard due to bottle overpressure.

	FIRE PROTECTION ENG AND APU		1.26.20	P 6
			SEQ 001	REV 09

③ TEST pb

This pushbutton permits the flight crew to test the operation of the fire detection and extinguishing system for the APU.

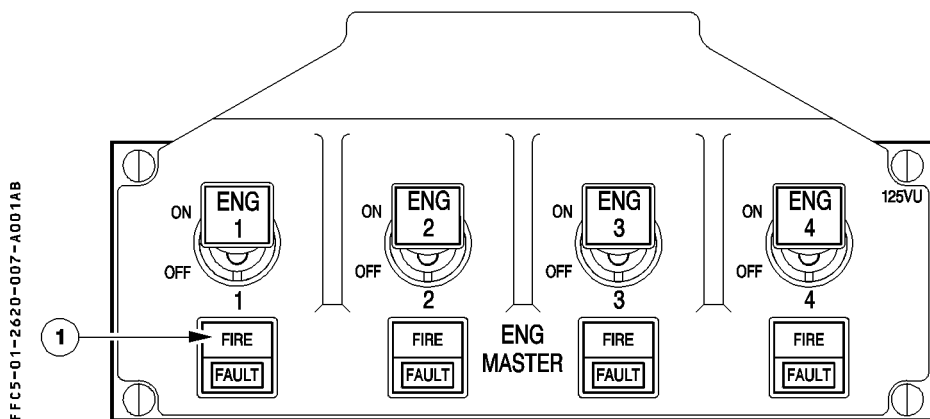
- When the flight crew presses it :
 - A continuous repetitive chime sounds.
 - The MASTER WARN lights flash.
 - APU FIRE warning appears on ECAM.

On the APU FIRE panel :

- The APU FIRE pushbutton comes on red.
- The SQUIB light comes on white.
- The DISCH light comes on amber.

Note : *The automatic shutdown of the APU on the ground will not occur while the flight crew is performing this test.*

PEDESTAL

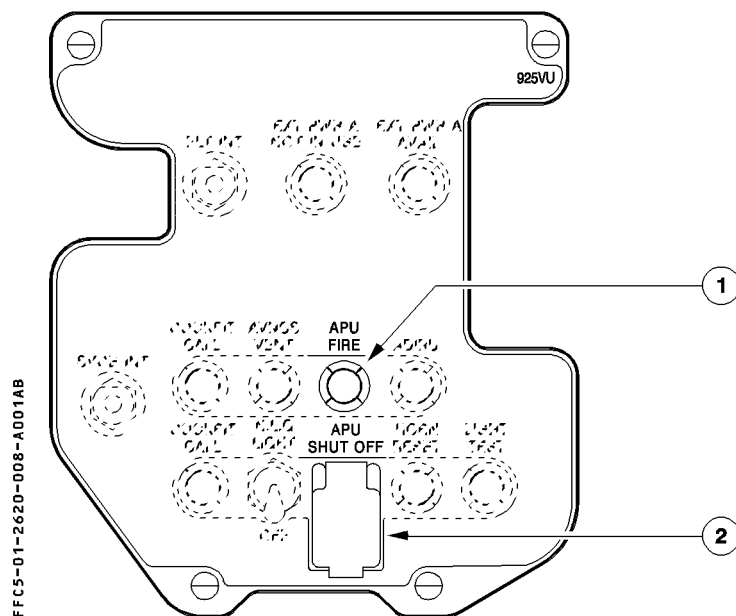


① FIRE lt

This light identifies the engine to be shutdown because of fire.

The light comes on red when an engine fire warning is triggered.

EXTERNAL POWER PANEL



When the aircraft is on the ground, an APU fire causes an additional external warning.

① APU FIRE It

The APU FIRE light comes on red and an external warning horn sounds when the system detects an APU fire.

The APU fire extinguisher discharges automatically three seconds after the appearance of the fire warning.

The light goes out when the fire has been extinguished.

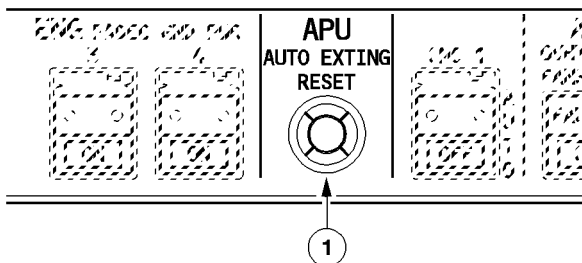
② APU SHUT OFF pb

A flap guards this pushbutton. When there is an APU fire and someone outside the aircraft presses this button, it confirms that the APU has shut down automatically and silences the external warning horn.

virgin atlantic A340-600 Flight Crew Operating Manual	FIRE PROTECTION ENG AND APU	1.26.20 P 9	
		SEQ 001	REV 09

MAINTENANCE PANEL

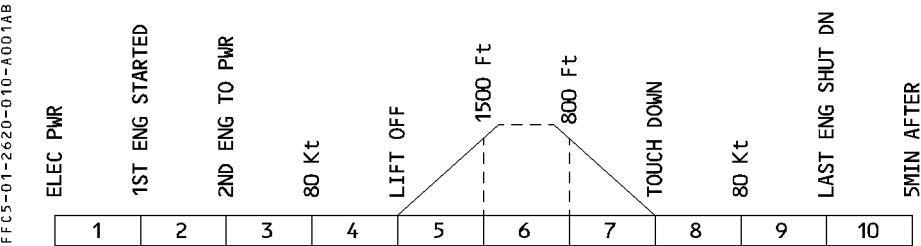
FFC5-01-2620-009-A001AA



① APU AUTO EXTING RESET pb

Pressing this button resets the automatic shutdown function.
 During the test or if the fire signal is active, the reset is inoperative.

WARNINGS AND CAUTIONS



E / WD: FAILURE TITLE conditions	AURAL WARNING	MASTER LIGHT	SD PAGE CALLED	LOCAL WARNING	FLT PHASE INHIB
ENG 1 (2, 3, 4) FIRE Fire detected by both loops or by one loop, the other one being faulty, or break in both loops occurring within 5 seconds	CRC	MASTER WARN	ENGINE	FIRE Its on ENG FIRE pb and on ENG panel	NIL
APU FIRE Fire detected by both loops or by one loop, the other one being faulty			APU	FIRE It on APU FIRE pb	
ENG 1 (2, 3, 4) (APU) FIRE DET FAULT Both loops inoperative or Fire Detector Unit inoperative	SINGLE CHIME	MASTER CAUT	NIL	NIL	3, 4, 5, 7, 8
ENG 1 (2, 3, 4) (APU) LOOP A (B) FAULT	NIL	NIL			