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INTRODUCTION

The fire detection and suppression system on the DC-3 aircraft consists of an Edison fire warning system, a CO₂ engine fire extinguisher bottle, a CO₂ Janitrol heater fire extinguisher bottle, and several portable dry chemical hand-held fire extinguishers. This chapter provides a general overview of the DC-3 Fire Protection System as well as normal operations and limitations.

GENERAL

ENGINE FIRE DETECTION AND SUPPRESSION

The engine fire detection and suppression system components are: an engine fire detector loop located in each engine, a fire warning light for each engine, a fire warning bell, a fire warning bell cut-out switch, a fire extinguisher T-handle, an engine fire bottle selector and valve, and a CO₂ bottle.

ENGINE FIRE ZONE AREAS

The engine/nacelle area is divided into three fire zones:

- Zone 1 - Power section - No detection or CO₂ extinguishing.
- Zone 2 - Accessory section - Detection and CO₂ extinguishing.
- Zone 3 - Wheel well - Detection only.

FIRE WARNING SYSTEM

The Edison fire warning system consists of thermal detectors throughout Zones 2 and 3 of each nacelle. If temperature rises rapidly in either zone, these detectors will illuminate a fire warning light for the respective engine on the Captain's instrument panel.

A single push button switch located above the fire warning lights is provided for testing both fire detector circuits and the fire bell simultaneously.

Note: A gradual rise in temperature will not actuate the warning system.

ENGINE FIRE EXTINGUISHER

The engine fire extinguisher bottle contains five pounds of CO₂ and is located behind and to the right of the First Officer's seat. The total weight of a fully charged bottle is 7.25 pounds. A bottle discharge valve is on top of the fire extinguisher bottle and is connected by cable to a fire extinguisher T-Handle.

The fire extinguisher discharge T-handle and engine selector valve are located in a recessed panel on the floor between the Pilot's seats. The recess panel has a removable red cover. The selector valve controls the flow of CO₂ to the selected engine accessory section.

NOTE: Only one discharge is available. When the discharge T-handle has been pulled, discharging cannot be stopped.

The bottle is equipped with an overboard discharge line to protect against high pressure caused by thermal expansion. A red disc is installed at the overboard exhaust on the side fuselage below the First Officer's window. If the bottle has been discharged, the red disc will be missing.

OIL SHUTOFF VALVES

Oil shutoff valves are installed in each nacelle aft of the firewall. When closed, these valves will shut off the flow of oil to the respective engine (See photo in the Powerplant Chapter of this manual). A selector for the valves is located on the left side of the control pedestal. Each selector is blocked in the ON position by a slide lock (See photo in the Powerplant Chapter of this manual).

JANITROL HEATER FIRE EXTINGUISHER

The Janitrol Heater has a separate fire extinguishing system. It consists of a 7.25 pound CO₂ extinguisher bottle (five pounds of available CO₂) that is mounted on the aft bulkhead of the companionway. The bottle discharge T-handle is located on the aft bulkhead above the First Officer's seat. When activated, it discharges CO₂ through a flexible tube directly into the heater jacket surrounding the combustion chamber.

PORTABLE FIRE EXTINGUISHER

Three 3-pound portable dry chemical fire extinguishers are installed at various locations throughout the aircraft. Two are located in the forward baggage area and one in the aft of the cabin.

OPERATION**ENGINE FIRE BOTTLE SELECTION AND DISCHARGE**

- Confirm all engine rotation has stopped.
- Remove red floor panel cover.
- Set engine selector valve to appropriate engine.
- Pull T-Handle to its full limit of travel.
- Verify that the extinguisher has discharged. If it has not, rotate the T-handle on top of the CO₂ bottle.

FIRE WARNING TEST

- Verify that the main DC bus is powered
- Push test switch and hold.
- Check the warning bell and both lights: ON.
- Check warning bell cutout switch.
- Release test switch.

HEATER FIRE EXTINGUISHER

Pull trigger to discharge.

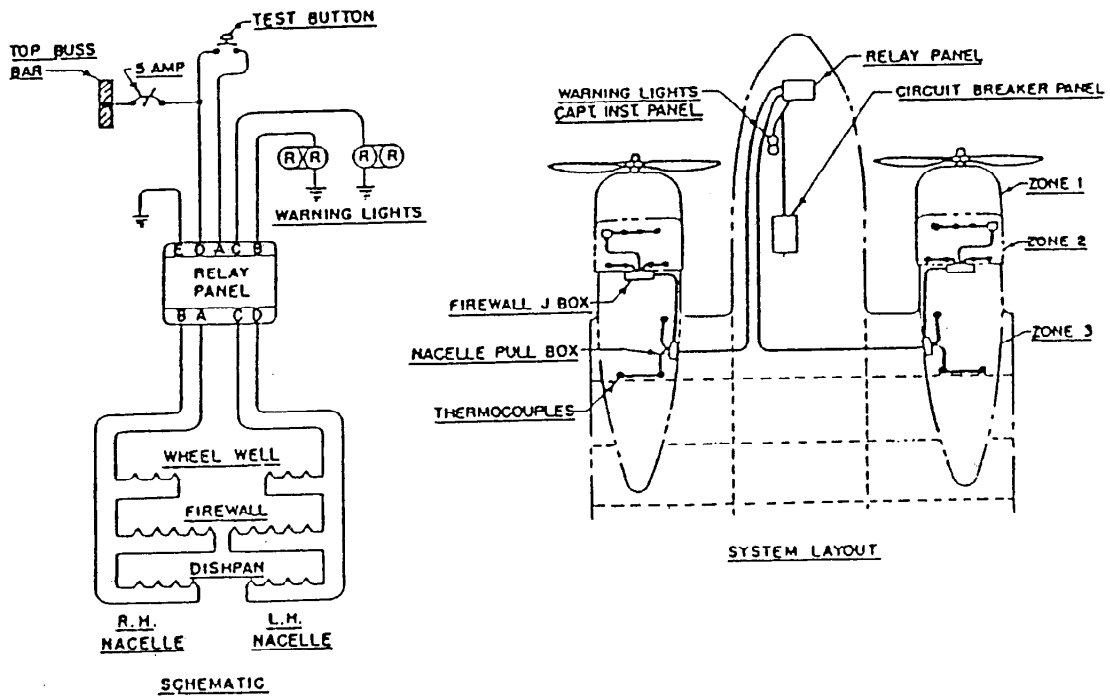
PORTABLE FIRE EXTINGUISHER

- Pull out locking ring to break seal.
- Squeeze handle to release chemical.
- Direct stream at base of flames, using side-to-side sweeping motion.

NOTE: *The extinguishing agent used in the dry chemical bottle is primarily sodium bicarbonate powder propelled by nitrogen when discharged. Aim fire extinguisher at the base of the fire for maximum effectiveness.*

LIMITATIONS

A valid engine fire test is required prior to each flight.



Fire Detection System

———— End of Chapter ————