

## ENGINE FAILURE DURING TAKEOFF RUN

<b>Throttle</b>	<b>Idle</b>
<b>Brakes</b>	<b>Apply</b>
Wing Flaps	Retract
Mixture	Idle Cut-Off
Ignition Switch	Off
Master Switch	Off

## ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

<b>Airspeed</b>	<b>70 KIAS/80 MPH</b>
Mixture	Idle Cut-Off
Fuel Selector Valve	Off
Ignition Switch	Off
Wing Flaps	As Required
40° recommended	
Master Switch	Off

## ENGINE FAILURE DURING FLIGHT

<b>Airspeed</b>	<b>70 KIAS/80 MPH</b>
Carburetor Heat	On
Fuel Selector Valve	Both
Mixture	Rich
Ignition Switch	Both
(or START if propeller is stopped)	
Primer	In and Locked

## **EMERGENCY LANDING WITHOUT ENGINE POWER**

<b>Airspeed</b>	<b>70 KIAS/80 MPH (Flaps Up)</b>
	65 KIAS/75 MPH (Flaps Down)
Mixture	Idle Cut-Off
Fuel Selector Valve	Off
Ignition Switch	Off
Wing Flaps	As Required
	40° recommended
Master Switch	Off
Doors	Unlatch Prior to Touchdown
Touchdown	Slightly Tail Low
Brakes	Apply Heavily

## **PRECAUTIONARY LANDING WITH ENGINE POWER**

Airspeed	65 KIAS/75 MPH
Wing Flaps	20°
Selected Field	Fly Over
	Note Terrain and Obstructions
Wing Flaps	Retract
Electrical Switches	Off
Wing Flaps	40°
	(On Final Approach)
Airspeed	65 KIAS/75 MPH
Avionics Power and Master Switches	Off
Doors	Unlatch Prior to Touchdown
Touchdown	Slightly Tail Low
Ignition Switch	Off
Brakes	Apply Heavily

## DITCHING

**Radio** **Transmit MAYDAY**

On 121.5 MHZ, giving location and intentions. Squawk 7700

**Emergency Locator Transmitter** **Switch On**

Heavy Objects **Secure or Jettison**

Flaps **20° - 40°**

Power **Set**

Establish 300 ft/min Descent at 60 KIAS/69 MPH

### Approach

High Winds, Heavy Seas – Into the Wind

Light Winds, Heavy Swells – Parallel to Swells

### Note

If no power is available, approach at 70 KIAS/80 MPH with flaps up or at 65 KIAS/75 MPH with 10° flaps

Seats and Seatbelts **Secure**

Cabin Doors **Unlatch**

Touchdown **Level Attitude at Established Descent**

Face **Cushion at Touchdown with Folded Coat**

Airplane **Evacuate**

Through Cabin Doors. If Necessary, Open Window and Flood Cabin to Equalize Pressure so Doors can be Opened.

Life Vests and Raft **Inflate When Clear**

## LANDING WITH A FLAT MAIN TIRE

Approach **Normal**

Wing Flaps **40°**

Touchdown **Good Tire First**

Hold Airplane Off Flat Tire as Long as Possible with Aileron Control

## LANDING WITHOUT ELEVATOR CONTROL

Airspeed	80 KIAS/92 MPH
Elevator Trim	Level Flight
Elevator Trim	Do Not Change
Glide Angle	Control
By Adjusting Power Exclusively	

### At Flareout:

The nose-down moment resulting from power reduction is an adverse factor and the airplane may hit on the nose wheel. Consequently, at flareout, the elevator trim control should be adjusted toward the full nose-up position and the power adjusted so that the airplane will rotate to the horizontal attitude for touchdown. Close the throttle at touchdown.

Elevator Trim	Full Nose Up
Power	Adjust
So Airplane Will Rotate to Horizontal Attitude for Touchdown	
Throttle	Close
At Touchdown	

# **FIRE DURING START ON GROUND**

## **Cranking**

To get a start which would suck the flames and accumulated fuel through the carburetor and into the engine.

**Continue**

## **If Engine Starts:**

**Power** 1700 RPM

For a Few Minutes

**Engine** Shutdown

And Inspect for Damage

## **If Engine Fails to Start:**

**Throttle** Full Open

**Mixture** Idle Cut-Off

**Cranking** Continue

**Fuel Selector Switch** Off

**Ignition Switch** Off

**Master Switch** Off

**Fire** Extinguish

**Fire Damage** Inspect

A&P Inspect and/or Repair Damage Before Conducting Next Flight

## ENGINE FIRE IN FLIGHT

Mixture	Idle Cut-Off
Fuel Selector Switch	Off
Master Switch	Off
Cabin Heat and Air Except Overhead Vents	Off
Airspeed	100 KIAS/115 MPH If Fire is not Extinguished, Increase Glide Speed to Find an Airspeed which will Provide an Incombustible Mixture.
Forced Landing As Described in <b>EMERGENCY LANDING WITHOUT ENGINE POWER</b>	Execute

## WING FIRE IN FLIGHT

Navigation Light Switch	Off
Strobe Light Switch	Off
Pitot Heat Switch	Off

Note:

Perform a Sideslip to Keep the Flames Away from the Fuel Tank and Cabin, and Land as Soon as Possible Using Flaps Only as Required for Final Approach and Touchdown.

## **ELECTRICAL FIRE IN FLIGHT**

**Master Switch** **Off**

**All Other Switches** **Off**

Except ignition switch

**Vents/Cabin Air/Heat** **Closed**

**Fire Extinguisher** **Deploy**

After discharging an extinguisher within a closed cabin, ventilate the cabin

**Warning:**

If smoke is still present, land immediately. Consider off field landing.

**If Fire Appears Out:**

And electrical power is necessary for continuance of flight

**Master Switch** **On**

**Circuit Breakers** **Check**

For Faulty Circuit, Do Not Reset.

**Radio Switches** **Off**

**Avionics Power Switch** **On**

**Radio/Electrical Switches** **On**

One at a time, with delay after each until short circuit is localized

**Vents/Cabin Air/Heat** **Open**

When it is ascertained that fire is completely extinguished

## **CABIN FIRE IN FLIGHT**

**Master Switch** **Off**

**Vents/Cabin Air/Heat** **Closed**

**Fire Extinguisher** **Deploy**

After discharging an extinguisher within a closed cabin, ventilate the cabin

**Land** **As Soon As Possible**

**Fire Damage** **Inspect**

A&P inspect and/or repair damage before conducting next flight

## **LOW-VOLTAGE LIGHT ILLUMINATES DURING FLIGHT**

(Ammeter Indicates Discharge)

Avionics Power Switch Off

Master Switch Cycle

Low-Voltage Light Check Off

Avionics Power Switch On

If Low-Voltage Light Illuminates Again:

Alternator Pull Circuit Breaker

Non-Essential Electrical Equipment Off

Land As Soon as Practical

## **AMMETER SHOWS EXCESSIVE RATE OF CHARGE**

Alternator Pull Circuit Breaker

Non-Essential Electrical Equipment Off

Land As Soon as Practical



## INADVERTENT ICING ENCOUNTER

**Pitot Heat Switch** **On**

**Icing Conditions** **Exit**

Turn back or change altitude to obtain an OAT less conducive to icing

**Cabin Heat** **On**

**Defroster Control** **Max Airflow**

Only a small section will defrost on pilot side

**Engine RPM** **Increase**

To minimize build up on propeller blades

**Carb Heat** **As Required**

Lean the mixture if carburetor heat is used continuously

**Land** **Nearest Airport**

With large ice accumulations, consider off-field landing

With an ice accumulation of  $\frac{1}{4}$  inch or more on the wing leading edges, be prepared for significantly higher stall speed

**Wing Flaps** **Leave Retracted**

**Windshield Ice** **Remove**

Open left window and if practical scrape ice from a portion of the windshield for visibility in the landing approach

**Forward Slip** **Perform**

If necessary during landing approach, for improved visibility

**Approach** **80-90 KIAS/92-104 MPH**

Depending upon the amount of ice accumulation

**Land** **At Level Attitude**

## STATIC SOURCE BLOCKAGE

**Alternate Static Source Valve** **Turn On**

**Airspeed** **Add 5 KT/MPH to Landing Speed**

**Cruise** **50 FT Higher Than Normal**

**Approach** **30 FT Higher Than Normal**

## **SPIN RECOVERY**

<b>Throttle</b>	<b>Idle</b>
<b>Ailerons</b>	<b>Neutral</b>
<b>Rudder</b>	<b>Full Opposite Direction of Rotation</b>
<b>Elevator Control</b> Briskly to break stall	<b>Forward</b>
<b>Control Inputs</b> Until rotation stops	<b>Hold</b>
Normal Flight	Resume

## **EMERGENCY EVACUATION**

<b>Mixture</b>	<b>Idle Cut-Off</b>
Ignition	Off
Note:	
If doors are blocked, exit through baggage door	
Back Seat Passengers	Exit First
Emergency Locator Transmitter	Switch On
Fuel Selector Switch	Off
Master Switch	Off
Passengers and Crew	Exit Aircraft
All meet 100 yards upwind of aircraft on edge of pavement	

## IMMEDIATE ACTION ITEMS

(See Emergency Section for Additional Steps)

### ENGINE FAILURE DURING TAKEOFF RUN

Throttle	Idle
Brakes	Apply

### ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

Airspeed	70 KIAS/80 MPH
----------	----------------

### ENGINE FAILURE DURING FLIGHT

Airspeed	70 KIAS/80 MPH
----------	----------------

### EMERGENCY LANDING WITHOUT ENGINE POWER

Airspeed	70 KIAS/80 MPH (Flaps Up)
	65 KIAS/75 MPH (Flaps Down)

### FIRE DURING START ON GROUND

Cranking	Continue
----------	----------

### ENGINE FIRE IN FLIGHT

Mixture	Idle Cut-Off
Fuel Selector Switch	Off
Master Switch	Off

### WING FIRE IN FLIGHT

Navigation Light Switch	Off
Strobe Light Switch	Off
Pitot Heat Switch	Off

### ELECTRICAL FIRE IN FLIGHT

Master Switch	Off
All Other Switches	Off
Except Ignition Switch	
Vents/Cabin Air/Heat	Closed
Fire Extinguisher	Deploy

### CABIN FIRE IN FLIGHT

Master Switch	Off
Vents/Cabin Air/Heat	Closed
Fire Extinguisher	Deploy
After discharging an extinguisher within a closed cabin, ventilate the cabin	

(See Previous Page for Additional Immediate Action Items)

## **IMMEDIATE ACTION ITEMS**

(See Emergency Section for Additional Steps)

### **INADVERTENT ICING ENCOUNTER**

<b>Pitot Heat Switch</b>	<b>On</b>
<b>Icing Conditions</b>	<b>Exit</b>
Turn back or change altitude to obtain an OAT less conducive to icing	
<b>Cabin Heat</b>	<b>On</b>
<b>Defroster Control</b>	<b>Max Airflow</b>

### **STATIC SOURCE BLOCKAGE**

<b>Alternate Static Source Valve</b>	<b>Turn On</b>
--------------------------------------	----------------

### **SPIN RECOVERY**

<b>Throttle</b>	<b>Idle</b>
<b>Ailerons</b>	<b>Neutral</b>
<b>Rudder</b>	<b>Full Opposite Direction of Rotation</b>
<b>Elevator Control</b>	<b>Forward</b>
Briskly to break stall	
<b>Control Inputs</b>	<b>Hold</b>
Until rotation stops	

### **EMERGENCY EVACUATION**

<b>Mixture</b>	<b>Idle Cut-Off</b>
----------------	---------------------

### **DITCHING**

<b>Radio</b>	<b>Transmit MAYDAY</b>
On 121.5 MHZ, giving location and intentions. Squawk 7700	
<b>Emergency Locator Transmitter</b>	<b>Switch On</b>

(See Next Page for Additional Immediate Action Items)

## CABIN

DAL-Tex Flyers Flight Log	Record Tach Time
Documents/Required Manuals	On Board
Control Wheel Lock	Remove
Ignition Switch	Off
Avionics Power Switch	Off
Master	On

### Warning

When turning on the master switch, using an external power source, or pulling the propeller through by hand, treat the propeller as if the ignition switch were on. Do not stand, nor allow anyone else to stand, within the arc of the propeller, since a loose or broken wire, or a component malfunction, could cause the propeller to rotate.

Avionics	On
Voltage	Check
12v or greater on engine monitor	
Avionics	Off
Fuel Quantity Indicators	Check
Flaps	Down
Master Switch	Off
Alternate Static Source Valve	Off
Fuel Selector Valve	Both
Baggage Door	Check

## EMPENNAGE

Tail Tie-Down	Disconnect
Control Surfaces	Check
Freedom of movement and security	
Nav Light	Condition Good
Check operation for night flight	
Beacon Light	Check

## RIGHT WING

Aileron	Check
Freedom of movement and security	
Flap	Check
Wing Tie-Down	Disconnect
Main Wheel Tire	Check
For condition and proper inflation (32 PSI)	
Fuel Tank Sump	Check
For water, sediment, and proper fuel grade	
Fuel Quantity	Check Visually, Note Quantity
Fuel Filler Cap	Secure
Nav/Strobe Lights	Condition Good
Check operation for night flight	

## NOSE

Right Side Static Port	Free From Obstruction
Cowling	Check Cam Locks
Propeller and Spinner	Check
<small>For nicks, security, and oil leaks</small>	
Carburetor Air Filter	Check
Nose Wheel, Strut, and Tire	Check
<small>For condition and proper inflation (50 PSI)</small>	
Left Side Static Port	Free From Obstruction
Engine Oil Level	Check
<small>Do not operate with less than 9 Quarts. Fill for extended flight.</small>	
Fuel Strainer	Check

## LEFT WING

Pitot Tube	Remove Cover
<small>Check pitot tube and drain are free from obstruction</small>	
Fuel Tank Vent Opening	Free from Obstruction
Stall Warning Vane	Check
<small>Free from obstruction. Master must be on for horn</small>	
Fuel Quantity	Check Visually, Note Quantity
Landing/Taxi Lights	Check
<small>Condition, operation, and cleanliness.</small>	
Wing Tie-Down	Disconnect
Main Wheel Tire	Check
<small>For condition and proper inflation (32 PSI)</small>	
Fuel Tank Sump	Check
<small>For water, sediment, and proper fuel grade</small>	
Fuel Filler Cap	Secure
Nav/Strobe Lights	Condition Good
<small>Check operation for night flight</small>	
Aileron	Check
<small>Freedom of movement and security</small>	
Flap	Check
Chocks	Remove

## BEFORE STARTING ENGINE

Preflight Inspection	Complete
Seats, Seatbelts, Shoulder Harnesses	Adjust and Lock
Seat Track Lock	Adjust
Flight Controls	Check
Fuel Selector Valve	Both
Avionics and Autopilot Switches	Off

### Caution

The avionics power switch must be OFF during engine start to prevent possible damage to avionics.

Circuit Breakers	Check In
Electrical Equipment	Off
Brakes	Test and Set
Cowl Flaps	Open
Elevator and Rudder Trim	Set for Takeoff



## STARTING ENGINE

Mixture	Rich
Propeller	High RPM
Carburetor Heat	Cold
Throttle	Open ½"
Primer	As Required
Engine Hot 1-2, Cold 3-6. Insure in and locked	
Master	On
Ignition Switch	Start
Hold until engine fires, but not longer than 30 seconds	

### Note

If engine has been overprimed, start with throttle open ¼ to ½ full open. Reduce throttle to idle immediately when engine fires.

### Note

After starting, check for oil pressure indication within 30 seconds in normal temperatures and 60 seconds in cold temperatures. If no indication appears, shut off engine and investigate.

## AFTER STARTING ENGINE

Mixture	Lean for Taxi
Avionics	On
Transponder	ALT
Engine Monitor Fuel Quantity	Check and Adjust

Hold the LF button to count up, tap the LF button to countdown.

## BEFORE TAKE-OFF

Fuel Selector Valve	Both
Throttle Setting	1700 RPM(or as required)
Engine Instruments	Check
Carburetor Heat	Check Operation
Ammeter	Check
Propeller	Cycle
Magnetos	Check
After checking R (Surefly) <b>set idle power</b> before changing switch!	
On engine monitor, sudden EGT drop on cylinder indicates fouled plug	
Throttle Setting	Check Idle
Flight Controls	Check
Wing Flaps	0°-20°
Cowl Flaps	Open
Elevator and Rudder Trim	Set for Takeoff
Cabin Doors	Closed and Locked
Flight Instruments and Radios	Set
Autopilot	Off
Mixture	Rich
Lean as necessary above 5000' density altitude	

## NORMAL TAKE-OFF

Wing Flaps	Up
Carburetor Heat	Cold
Power	Full Throttle and 2700 RPM
Rotate	52 KIAS/60 MPH
Climb	78 KIAS/90 MPH
Maintain speed until all obstacles are cleared	

## MAXIMUM PERFORMANCE TAKE-OFF

Wing Flaps	20°
Carburetor Heat	Cold
Brakes	Apply
Power	Full Throttle and 2700 RPM
Brakes	Release
Elevator	Maintain Slightly Tail-low Attitude
Climb	53 KIAS/61 MPH
Maintain speed until all obstacles are cleared, then set up climb speed as shown in "Maximum Performance Climb"	
Flaps	Up
Not less than 70 KT/80 MPH	

## NORMAL CLIMB

Airspeed 87-104 KIAS/100-120 MPH

Power 23 MAP and 2450 RPM

Fuel Selector Valve Both

Mixture Rich

Unless engine is rough due to excessively rich mixture

Cowl Flaps Open as Required

Maintain CHTs on all cylinders 400F or below

## MAXIMUM PERFORMANCE CLIMB

Airspeed 73-76 KIAS/84-88 MPH

Sea level 76 KIAS/88 MPH, 10,000' 73 KIAS/84 MPH

Power Full Throttle and 2700 RPM

Fuel Selector Valve Both

Mixture Rich

Unless engine is rough due to excessively rich mixture

Cowl Flaps Open

## CRUISE

Power 15-23 MAP & 2200-2400 RPM

Cowl Flaps Open as Required

Maintain CHTs on all cylinders 380F or below

Elevator and Rudder Trim Set

Mixture Lean

At 75% power no less than 125F rich from first cylinder to reach peak EGT

## DESCENT

Mixture Enrichen

Power Reduce

Recommend 3-5" less than cruise MAP and maintain through descent to avoid shock cooling.

Carburetor Heat As Necessary

## BEFORE LANDING

Fuel Selector Valve	Both
Mixture	Rich
Propeller	High
Cowl Flaps	Closed
Carburetor Heat	Apply Before Closing Throttle
Airspeed	70-78 KIAS/80-90 MPH
Flaps	0°-40°
Flaps retracted. Below 96 KIAS/110 MPH	
Airspeed	61-70 KIAS/70-80 MPH
Elevator and Rudder Trim	Adjust

### REFERENCE SPEEDS FOR 1.3x Stall (CAS)

Flaps 0°	72 KT/83 MPH
Flaps 20°	64 KT/74 MPH
Flaps 40°	63 KT/72 MPH

Reference Owner's Manual figure 5-2

### REFERENCE SPEEDS FOR 1.3x Stall (IAS Approximate)

Flaps 0°	70 KT/80 MPH
Flaps 20°	60 KT/69 MPH
Flaps 40°	58 KT/67 MPH

Reference Owner's Manual figure 5-1 for CAS to IAS

## AFTER LANDING

Note:

After landing checklist is to be performed after exiting the runway and passing the Hold Short Boundary lines.

Mixture	Lean for Taxi
Flaps	Up
Lights	As Required
Elevator and Rudder Trim	Set for Takeoff

## SHUTDOWN

Throttle	Close
Avionics & Autopilot Switches	Off
Mixture	Idle Cut-Off
Ignition Switch	Off
DAL-Tex Flyers Flight Log	Record Tach Time
Master Switch	Off

## SECURING

Control Wheel Lock	Install Unless Inside Hangar
Chocks	Install
Pitot Tube Cover	Install
Aircraft	Clean Windshield and Leading Edges
Master Switch	Insure Off