

## CESSNA 172M DIESEL

Check Weather and NOTAMS

Check Technical log for faults/defects

Check for next booking

### PRE-FLIGHT AND EXTERNAL CHECKS

Aircraft Position.....SUITABLE FOR START

Tow Bar.....REMOVED

Control Locks.....REMOVED

Cover/Pitot Cover.....REMOVED

Park Brake.....ON

Batt Master Switch.....ON

Main Bus Switch.....ON

Start Master Switch.....OFF

Water Level Lamp.....OFF

Fuel Contents.....CHECK/SUFFICIENT

Fuel Selector.....SELECT TANK WITH LEAST

Fuel Temperature.....CHECK

Fuel Shut Off Valve.....ON

Alternate Static.....CHECK

Alternate Air.....CHECK

Beacon.....ON

Nav Lights.....ON

Landing/Taxi Lamps.....ON

Pitot Heater.....ON

Quickly check above electrical items then all **OFF**

Flaps.....SELECT DOWN  
 Main Bus Switch.....OFF  
 Batt Master Switch.....OFF  
 Flying Controls/Trimmer.....CHECK  
 First Aid Kit/Fire Extinguisher.....CHECK SERVICEABLE/SECURE  
 Baggage Area.....CHECK/SECURE

Port Undercarriage and Wing Area

Wheel.....CONDITION/INFLATION/CREEP MARKS  
 Flap.....CHECK  
 Aileron.....CHECK  
 Lower Wing Surface.....CHECK  
 Tank Vent.....CHECK  
 Fuel Drain.....CHECK  
 Pitot Tube.....CHECK/COVER REMOVED  
 Tie Downs.....REMOVED  
 Leading Edge.....CHECK  
 Stall Warner.....CHECK  
 Using Steps – Check upper wing surface  
 Fuel Quantity.....CHECK  
 Filler Cap.....SECURE  
 Strut.....CHECK

Engine/Nose Area

Nose Wheel.....CONDITION/INFLATION/CREEP MARKS  
 Tie Downs.....REMOVED

Panels.....CHECK/SECURE  
 Landing Light.....CHECK  
 Propeller/Spinner.....CHECK  
 Engine Oil Level.....CHECK  
 Gearbox Oil Level.....CHECK  
 Fuel Drain.....CHECK

Starboard Undercarriage and Wing Area

Wheel.....CONDITION/INFLATION/CREEP MARKS  
 Flap.....CHECK  
 Aileron.....CHECK  
 Lower Wing Surface.....CHECK  
 Tank Vent.....CHECK  
 Fuel Drain.....CHECK  
 Tie Downs.....REMOVED  
 Leading Edge.....CHECK  
 Using Steps – Check upper wing surface  
 Fuel Quantity.....CHECK  
 Filler Cap.....SECURE  
 Strut.....CHECK

Rear Fuselage and Tail Area

Fuselage Panels.....CHECK  
 Tailplane/Elevator.....CHECK  
 Fin/Rudder.....CHECK  
 Rear Fuselage/ Bumper.....CHECK

Tie Downs.....REMOVED  
Aerials.....CHECK  
Panels/Baggage Door.....SECURE

PRE START CHECKS

Pre Flight Inspection.....COMPLETE  
Seat.....ADJUSTED  
Harness.....SECURE  
Doors.....CLOSED/LATCHED  
Avionics.....OFF  
Flight Instruments.....CHECK  
Park Brake.....SET  
Alternate Air.....CHECK/CLOSED  
Circuit Breakers.....MADE  
Batt Master.....ON  
Alternator/Main Bus.....ON  
Fuel Quantity.....CHECK  
Fuel Temp.....CHECK  
Fuel.....SELECT TANK WITH LEAST QUANTITY  
Thrust Lever.....EXERCISE/CHECK  
Load Display.....0%/0 RPM  
Cabin Air Controls.....OFF

ENGINE START

Beacon.....ON  
Fuel Pump.....ON  
Thrust Lever.....IDLE  
Engine Master Switch.....ON  
Glow Control Lamp.....OUT  
Propeller Area.....CLEAR  
CALL "CLEAR PROP"  
Starter.....ENGAGE

AFTER START

CED Test Knob.....PRESS  
CED Caution.....OUT  
Oil Pressure.....CHECK  
Fuel Pump.....OFF  
Engine Warm Up.....2 MINS AT 890 RPM  
1400 RPM UNTIL  
OIL TEMP=50 DEGREES C  
COOLANT TEMP=60 DEGREES C  
Ammeter.....CHECK  
Avionics.....ON  
SET  
CHECKED  
ATIS.....OBTAIN

Altimeter(s).....SET AND CHECK  
PLUS OR MINUS 50'  
Suction.....CHECK  
Flight Instruments.....SET A/R  
DI.....CHECK/SET  
Flaps.....UP  
RT.....OBTAIN TAXI CLEARANCE

TAXI CHECKS

Brakes.....CHECKED  
Rudder.....CHECK DURING TURNS  
Flight Instruments.....CHECK DURING TURNS

POWER CHECKS

Position.....INTO WIND/CLEAR BEHIND  
Park Brake.....SET  
Fuel.....SELECT FULLER TANK  
Thrust Lever.....IDLE  
FADEC Indications.....NORMAL  
FADEC Test Button.....PRESS AND HOLD

**FADEC LAMPS BOTH ON**

**RPM INCREASE**

**FADEC SWITCH TO B**

**RPM DECREASE**

**FADEC SWITCH TO A**

**RPM INCREASE**

**RPM DECREASE**

**FADEC LAMPS BOTH OFF**

FADEC Test Button.....RELEASE

Any FADEC lights remaining on – do not attempt a take off

Thrust Lever .....FULL FORWARD

Check.....LOAD = MIN 94%

RPM = 2240 – 2300

Thrust Lever.....IDLE

PRE TAKE OFF CHECKS

Trimmers.....SET FOR TAKE OFF  
Thrust Lever Friction.....SET  
FADEC/Engine Instruments.....CHECK NORMAL  
Ammeter.....CHECK  
Radios/Avionics.....SET A/R  
Suction.....CHECK  
Flight Instruments.....CHECK/SET  
Altimeter(s).....SET  
Fuel.....ON/CORRECT TANK  
Fuel Pump.....ON  
Flaps.....SET 10 DEGREES  
Seat and Harness.....SECURE  
Hatch and Windows.....SECURE  
Flying Controls.....FULL AND FREE  
Departure Clearance.....OBTAINED  
Strobes/Beacon.....A/R  
Landing Light.....A/R  
Pitot Heat.....A/R  
Transponder.....SET ON ALT  
DI.....CHECK WITH RUNWAY HEADING



AFTER LANDING CHECKS

Clear of active runway

- Flaps.....UP
- Thrust Lever Friction.....LOOSE
- Trimmer.....NEUTRAL
- Fuel Pump.....OFF
- Landing Light.....OFF
- Taxi Light.....A/R
- Pitot Heat.....OFF
- Unnecessary Radio Equipment.....OFF

SHUT DOWN CHECKS

Strobes OFF on entering dispersal

- Park Brake.....SET
- Thrust Lever.....IDLE
- Idle engine for 2 minutes to cool
- Avionics.....ALL OFF
- Engine Master Switch.....OFF
- Alternator/Main Bus Switch.....OFF
- Electrics.....ALL OFF
- Batt Master Switch.....OFF

If last flight of the day – Fuel OFF

Fit Control Locks/Harness

Cover Aircraft

Fit Pitot Cover

Chock

# **CESSNA 172M DIESEL EMERGENCY CHECKLIST**

**ENGINE FAILURE DURING TAKE OFF**

Abort Take Off

Thrust Lever.....IDLE

Brakes.....APPLY

Flaps.....RETRACT

(BETTER BRAKING ACTION)

Engine Master Switch.....OFF

Alt/Main Bus/Batt Switch.....OFF

**ENGINE FAILURE IMMEDIATELY AFTER TAKE OFF**

Airspeed.....LOWER NOSE

75mph NO FLAP

65mph WITH FLAP

Fuel Shut Off Valve.....CLOSED

Engine Master Switch.....OFF

Flaps.....A/R

40 DEGREES RECOMMENDED

Main Bus and Batt Switch.....OFF

Cabin Doors.....UNLATCHED

Land.....STRAIGHT AHEAD

(OR SHALLOW TURNS)

## ENGINE FAILURE DURING FLIGHT

Trim.....75 mph

Choose a suitable field – attempt restart

Fuel.....SELECT TANK WITH SUFFICIENT CONTENT

Fuel Pump.....ON

Thrust Lever.....IDLE

Engine Master Switch.....OFF THEN ON

Attempt restart only if propeller is free.

If restart fails:-

Airspeed.....75mph

(65mph AT TOUCHDOWN WITH FLAP)

RT.....MAYDAY

Fuel Selector.....OFF

Engine Master Switch.....OFF

Flaps.....A/R

Alt/Main Bus/Batt.....OFF

Cabin Doors.....UNLATCH

Pax.....BRACE FOR LANDING

## FADEC MALFUNCTIONS IN FLIGHT

### ONE FADEC LAMP FLASHING

FADEC Test Knob.....PRESS FOR AT LEAST 2 SECONDS

FADEC Lamp Extinguished.....LOW WARNING CAT

Continue flight normally.

Inform engineers.

FADEC Lamp On/Steady.....HIGH WARNING CAT

Monitor other FADEC lamp.

Divert to nearest airfield.

Airspeed set to avoid overspeed.

Contact engineers.

BOTH FADECLAMPS FLASHING

FADEC Test Knob.....PRESS FOR AT LEAST 2 SECONDS

FADEC Lamps Extinguished.....LOW WARNING CAT

Continue flight normally.

Inform engineers.

FADEC Lamps On/Steady.....HIGH WARNING CAT

Check available engine power.

**EXPECT ENGINE FAILURE**

Reduce speed to avoid overspeed.

Divert to nearest aerodrome.

Prepare for emergency landing enroute.

IN THE CASE OF RUNNING A TANK DRY

Fuel Selector.....SELECT TANK WITH SUFFICIENT CONTENTS  
OR BOTH  
Fuel Pump.....ON  
Airspeed.....REDUCE TO AVOID OVERSPEED  
Engine.....CHECK INDICATIONS/CHANGES  
If Normal.....CONTINUE/DIVERT

ABNORMAL ENGINE BEHAVIOR

FADEC System.....SWITCH TO B  
FADEC System.....MONITOR  
Divert and prepare for emergency landing.

NOTES

Do NOT fly tanks dry.

FADEC consists of 2 independent components A & B, when one fails it automatically switches to the other.

A is automatic – it is only possible to manually switch to B.

## FIRES

### ENGINE FIRE DURING GROUND START

Engine Master Switch.....OFF  
Fuel Shut Off Valve.....CLOSED  
Fuel Pump.....OFF  
Batt Master Switch.....OFF

VACATE

### ENGINE FIRE IN FLIGHT

Engine Master Switch.....OFF  
Fuel Shut Off Valve.....CLOSED  
Fuel Pump.....OFF  
Main Bus Switch.....OFF  
Cabin Heat.....OFF  
Perform Emergency Landing.

### ELECTRICAL FIRE IN FLIGHT

Main Bus Switch.....OFF  
Avionics (Pwr).....OFF  
Fresh Air Vents.....OPEN  
Divert to nearest aerodrome.

ENGINE SHUT DOWN IN FLIGHT

IF a shut down in flight is required then:-

Speed.....REDUCE TO AVOID OVERSPEED

Engine Master Switch.....OFF

Fuel Shut Off Valve.....CLOSED

Fuel Pump.....OFF

Reduce speed to 63mph to stop propeller then continue glide at 75mph.

EMERGENCY LANDING ENGINE OUT

If committed to an engine off landing:-

Airspeed.....75mph (70mph AT TOUCH DOWN

Fuel Selector.....OFF

Engine Master Switch.....OFF

Flaps.....A/R (40 DEGREES RECOMMENDED)

Alt/Main Bus/Batt Switch.....OFF

Cabin Doors.....UNLATCH

Pax.....BRACE FOR LANDING

## FLIGHT IN ICING CONDITIONS

Flight in known icing conditions is PROHIBITED.

Should inadvertent flight in these conditions occur then:-

1. Switch pitot heat on.
2. Turn back or change altitude.
3. Operate cabin defrost.
4. Advance thrust lever to throw off propeller blade ice.
5. Open "Alternate Air Door" if required.
6. Divert or land immediately if icing is very bad.
7. With large amounts of ice – expect stalling speed to be higher.
8. Keep flaps retracted.
9. Land at 75-85mph.
10. Land flat.

## SPIRAL DIVE RECOVERY

Thrust Lever.....IDLE

Then

Roll Wings Level.....CO-ORDINATED AILERON/RUDDER

Then

Pitch Level.....USING ELEVATOR

Reset Power.....WHEN SPEED NORMAL

## **ELECTRICAL POWER SUPPLY MALFUNCTIONS**

The engine requires a voltage source for its operation. Should the alternator fail then its continued operation depends upon battery condition and load. The battery should last for 120 minutes with a basic minimal load.

### **ALTERNATOR WARNING LIGHT ILLUMINATES – NORMAL OPERATION**

Ammeter.....CHECK

Alternator CB.....CHECK/RESET

Alternator.....LEAVE ON

Electrical Load.....REDUCE

Divert to nearest aerodrome.

Prepare for emergency landing.

**EXPECT ENGINE FAILURE.**

### **AMMETER SHOWS DISCHARGE MORE THAN 5 MINS – NORMAL OPERATION**

Alternator CB.....CHECK/RESET

Alternator.....LEAVE ON

(EVEN IF RPM DROPS)

Electrical Load.....REDUCE

Divert to nearest aerodrome.

Be prepared for an emergency landing.

**EXPECT ENGINE FAILURE.**

## ENGINE MALFUNCTIONS

### ROUGH RUNNING ENGINE OR LOSS OF POWER

Thrust Lever.....FULL FORWARD

Fuel Selector.....SELECT TANK WITH SUFFICIENT CONTENTS

SELECT BOTH

CHECK FUEL TEMP

Electric Fuel Pump.....ON

Airspeed.....BEST GLIDE 75MPH

FADEC.....CHECK T's & P's

Divert to nearest aerodrome.

Be prepared for an emergency landing.

**EXPECT AN ENGINE FAILURE.**

### OIL PRESSURE TOO LOW

Power..... REDUCE ASAP

Oil Temp.....CHECK

If high:-

Divert to nearest aerodrome

Be prepared for an emergency landing.

**EXPECT AN ENGINE FAILURE.**

To avoid overheating during a protracted climb, especially in hot weather:-

Reduce angle of climb.

Increase airspeed.

Reduce power.

OIL TEMPERATURE TOO HIGH

Power.....REDUCE ASAP

Airspeed.....INCREASE ASAP

Oil Pressure.....CHECK

If low:-

Divert to nearest aerodrome.

Be prepared for an emergency landing.

**EXPECT AN ENGINE FAILURE.**

If normal:-

Divert to nearest aerodrome.

COOLANT TEMPERATURE TOO HIGH

Power.....REDUCE ASAP

Airspeed.....INCREASE ASAP

Cabin Heat.....COLD

If reduced – Continue and Monitor

If not reduced:-

Divert to nearest aerodrome.

Be prepared for an emergency landing.

**EXPECT ENGINE FAILURE.**

WATER LEVEL LAMP ILLUMINATES

Power.....REDUCE ASAP

Airspeed.....INCREASE ASAP

Coolant Temperature.....CHECK

Oil Temperature.....CHECK

If coolant and/or oil temperatures are rising:-

Divert to the nearest aerodrome.

Be prepared for an emergency landing.

**EXPECT AN ENGINE FAILURE.**

GEARBOX TEMPERATURE TOO HIGH

Power.....REDUCE 55-75% ASAP

Divert to nearest aerodrome.

PROPELLER RPM TOO HIGH

Propeller rpm 2400-2500 more than 10 seconds or over 2500:-

Power.....REDUCE

Airspeed.....REDUCE

At reduced rpm and power – divert to the nearest aerodrome.

## FLUCTUATIONS IN PROPELLER RPM

If propeller rpm fluctuates more than +/- 100 with constant thrust lever setting:-

Change power setting to one that does not fluctuate.

Set power setting for an airspeed below 115 mph until rpm stabilizes.

If problem resolved – continue with flight.

If not resolved – set power to give minimum fluctuations and divert to the nearest aerodrome.



