

# Grumman American Cougar NORMAL PROCEDURES

## AIRSPEED LIMITATIONS

At 3800 lbs

1. $V_{NE}$ .....	188 Kts
2. $V_{NO}$ .....	160 Kts
3. $V_A$ .....	120 Kts
4. $V_{FE}$ .....	10 <sup>0</sup> 145 Kts
	FULL..110 Kts
5. $V_{LE}$ .....	145 Kts
6. $V_{MCA}$ .....	61 Kts
7. $V_{SO}$ .....	63 Kts
8. $V_{S1}$ .....	71 Kts
9. $V_X$ .....	70 Kts
10. $V_{XSE}$ .....	85 Kts
11. $V_Y$ .....	76 Kts
12. $V_{YSE}$ .....	85 Kts

## COCKPIT INSPECTION

1. Publications .....Check
2. Baggage .....Stowed
3. Weight & C.G..... Within Envelope
4. Avionics ..... OFF
5. Magnetos..... OFF
6. Landing Gear Handle.....DOWN
7. Propellers..... Clear
8. Master switch ..... ON
9. Gear lights .....3 Green
10. Rotating Beacon.....Check

- 11. Fuel Quantity .....Check
- 12. Lighting Systems .....Check
- 13. Pitot Heat .....Check
- 14. Alternator Warning Lights .....Check
- 15. Landing Gear Intransit Light .....Check
- 15. Master switch ..... OFF
- 16. Cowl Flaps..... OPEN
- 17. Controls..... Unlocked
- 18. Trim Tabs.....NEUTRAL
- 19. Fuel Selectors..... ON
- 20. Take-Off Briefing..... Available

**EXTERIOR CHECK**

**RIGHT FUSELAGE**

- 1. Cargo.....Secure
- 2. Door .....Secure
- 3. Static Port..... Check
- 4. Fuselage .....Check

**EMPENNAGE**

- 1. Control Surfaces.....Check
- 2. Trim Tabs..... Check
- 3. Tailcone.....Check
- 4. Tiedown .....Remove
- 5. Position Light & Beacon.....Check

**LEFT FUSELAGE**

- 1. Static Port.....Check

2. Fuselage.....Check
3. Antennas..... Check

### **LEFT WING**

1. Skin condition .....Check
2. Aileron & Flap .....Check
4. Wing Tip & Position Lights.....Check
5. Fuel Tank Vent .....Check
6. Tiedown.....Remove
6. Fuel Tanks Vent .....Check
7. Fuel .....Check
8. Bottom of Wing.....Check
9. Chocks.....Remove
10. Fuel Tank Drain.....Drain
11. Main Landing Gear & Wheel Well.....Check
12. Brake Linings.....Check
13. Heater Fresh Air Scoop.....Check
14. Engine Cowling.....Check

### **LEFT ENGINE & PROPELLER**

1. Cowling .....Check
2. Oil quantity & Cap .....Check (6-8 qt)
3. Engine Air Intakes.....Check
4. Propeller.....Check
5. Fuel drain..... Drain
6. Cowl Flap .....Check

### **NOSE SECTION**

1. Left Air Inlet .....Check
2. Nose Access Panel.....Secure
3. Pitot Tube.....Check
4. Nose Gear and Well.....Check
5. Baggage Door .....Secure
6. Battery Vent .....Check
7. Right Air Vent.....Check
8. Taxi Light.....Check
9. Chocks .....Remove

### **RIGHT ENGINE & PROPELLER**

1. Fuel Sump Drain.....Check
2. Propeller .....Check
3. Engine Air Intakes.....Check
4. Cowling.....Check
5. Oil quantity & cap.....Check (6-8 qt)
6. Cowl Flap..... Check

### **RIGHT WING**

1. Skin condition .....Check
2. Main Landing Gear & Wheel Well .....Check
3. Brake Linings.....Check
4. Fuel Drains .....Check
5. Chocks .....Remove
6. Heater Fresh Air Scoop.....Check
7. Fuel Tank.....Check
8. Bottom of Wing.....Check
9. Chocks .....Remove

- 10. Fuel Tank Vent .....Check
- 11. Stall Warning Vanes (2) .....Check
- 13. Tiedown.....Remove
- 14. Wing tip & position light.....Check
- 15. Flap & Aileron .....Check

**ELECTRICAL SYSTEMS**  
**PREFLIGHT**

**NOTE**

Complete electrical checks as quickly as possible to decrease drain on battery.

**Cockpit:**

- 1. Master Switch.....ON
- 2. Instrument Lights..... Check Rheostat,OFF
- 3. Navigation Lights .....ON
- 4. Strobe Lights.....ON
- 5. Pitot Heat .....ON
- 6. Landing Light.....ON

**Exterior:**

- 1. All lights.....ILLUMINATED
- 2. Pitot Heat.....Check

**Cockpit:**

- 1. Master Switch.....OFF
- 2. Navigation Lights .....OFF
- 3. Strobe Lights.....OFF
- 4. Pitot Heat .....OFF
- 5. Landing Light.....OFF

## INTERIOR CHECK

1. Crew/Passenger Briefing:..... As required
2. Entrance door ..... Locked

## BEFORE STARTING ENGINES

1. Seats, pedals, belts & harness ..... Adjust
2. Circuit breakers ..... Check
3. Auxiliary Fuel Pumps ..... OFF
4. Fuel Selectors ..... ON
5. Cowl Flaps ..... Open
6. Carburetor Heat ..... OFF
7. Mixtures ..... FULL RICH
8. Propellers ..... FULL FORWARD
9. Throttles ..... OPEN ½ Inch
10. Landing Gear Handle ..... DOWN
11. Emergency Gear Extend Knob ..... IN
12. Electrical Switches ..... OFF
13. Light Rheostats ..... AS DESIRED
14. Cabin Heat ..... AS DESIRED
15. Parking Brake ..... SET
16. Master & Alternator Switches ..... OFF
17. Magneto Switches ..... OFF
18. Primer ..... CENTER
19. Flight & Engine Instruments ..... Check
20. Master Switch ..... ON
21. Radios ..... SET
22. ATIS ..... RECEIVED
23. Engine Start ..... GRANTED
24. Radios ..... OFF

## STARTING ENGINES

### AIRPLANE POWER

#### LEFT ENGINE START

1. External Lights..... AS REQUIRED
2. Fuel Pump..... ON, Check Pressure, OFF
3. Propeller.....Clear
4. Left Magneto .....ON
5. Starter .....Engage
6. Primer.....AS NECESSARY

#### NOTE

In the event of a balked start or overprimed condition, place the mixture control in idle cut-off and open the throttle. Operate the starter to remove excess fuel. As the engine starts, reduce the throttle to idle rpm and place the mixture control in FULL RICH.

7. Right Magneto.....ON after start
8. Throttle.....Adjust (800-1200 RPM)
9. Oil Pressure.....Check
10. Alternator .....ON
11. Engine Instruments.....CHECK
12. Gyro Pressure Gauge .....Check
13. Alternator.....Check

## RIGHT ENGINE START

1. Fuel Pump.....ON, Check Pressure, OFF
2. Mixture.....RICH until fuel flow, then OFF
3. Propeller.....Clear
4. Left Magneto .....ON
5. Starter .....Engage
6. Primer.....AS NECESSARY
7. Right Magneto.....ON after start
8. Throttle.....Adjust (800-1200 RPM)
9. Oil Pressure.....Check
10. Alternator .....ON
11. Engine Instruments.....CHECK

## EXTERNAL POWER

1. Master Switch ..... OFF
2. External Power...Set for 12 Volts, CONNECTED
3. Master Switch ..... ON
4. External Lights .....AS REQUIRED
5. Fuel Pump..... ON, Check Pressure, OFF
6. Propeller.....Clear
7. Left Engine, Left Magneto .....ON

### NOTE

In the event of a balked start or overprimed condition, place the mixture control in idle cut-off and open the throttle. Operate the starter to remove excess fuel. As the engine starts, reduce the throttle

to idle rpm and place the mixture control in FULL RICH.

- 8. Propeller.....Clear
- 9. Left Starter..... Engage
- 10. Right Magneto.....ON after start
- 11. Throttle.....Adjust (800-1200 RPM)
- 12. Oil Pressure.....Check
- 13. Left Alternator.....ON
- 14. Left Ammeter.....Check
- 15. Gyro Pressure Gauge .....Check
- 16. Left Alternator Switch.....OFF
- 17. Master Switch.....OFF
- 18. External Power.....DISCONNECTED
- 19. Master Switch.....ON
- 20. Left Alternator Switch.....ON

**CAUTION**

IF THE LEFT ALTERNATOR IS OPERATING PROPERLY AND THE RIGHT ENGINE WILL NOT START USING AIRPLANE POWER, REMOVE THE BATTERY FROM THE AIRPLANE AND SERVICE OR REPLACE BEFORE FURTHER FLIGHT.

- 21. Using the AIRPLANE POWER procedure above, start the right engine.

**NOTE**

Starting one engine with airplane power will ensure that the battery system is charged and operating. If it is necessary due to extreme cold conditions, use

EXTERNAL POWER procedure to start both engines. Allow sufficient time for warm-up, then shut down right engine only. Restart right engine using AIRPLANE POWER procedure.

### **BEFORE TAXIING**

1. Avionics.....ON
2. Altimeter/Gyros/Clock.....SET
3. Autopilot.....Checked,OFF
4. Electric Trim.....Checked, SET
5. Exterior Lights.....AS REQUIRED
6. Parking Brake.....Release

### **TAXIING**

1. Brakes.....Check
2. Flight Instruments.....Check

### **ENGINE RUNUP**

1. Nose Gear.....Straight
2. Parking Brake.....As required
3. Fuel Selectors..... BOTH ON
4. Engine Instruments..... GREEN
5. Propeller Feathering..... Check (1500 RPM)
6. Magnetos ..... Check (1800 RPM)
7. Alternators.....Check
8. Carburetor Heat.....Check

9. Gyro Pressure Gauge .....Check
10. Propeller Governors.....Check (2200 RPM)
11. Throttles ..... Set 1000 RPM
12. Flaps.....Check

### **BEFORE TAKEOFF**

1. Seats and Belts. ....Secure
2. Shoulder Harnesses .....Secure
3. Avionics .....Checked and set
4. Fuel Selectors..... ON
5. Fuel Pumps ..... ON
6. Engine Gauges ..... GREEN
7. Alternators ..... ON
8. Autopilot..... Checked and OFF
9. Gyros, clock, altimeter .....SET
10. Carburetor Heat.....OFF
11. Cowl Flaps..... OPEN
12. Mixtures and Propellers .....FULL FORWARD
13. Quadrant Friction ..... Set
14. Flight Controls ..... FREE and CORRECT
15. Trim .....SET
16. Flaps ..... Visually check to 0°
17. Door & Window .....Secure
18. Takeoff Briefing ..... Accomplished

### **LINEUP CHECK**

- 1 Gyro Heading ..... Set
2. Transponder ..... ALT
3. Landing Lights ..... As required

4. Pitot Heat ..... As required
5. Strokes..... ON

### TAKEOFF

1. Throttles.....ADVANCE
2. Power and airspeed..... Check
3. Rotate.....at 70-75 KIAS
4. Gear.....UP

### CLIMB

1. Climb Power ..... Set
2. Engine Instruments .....Check
3. Cowl Flaps ..... As required
4. Fuel Pumps..... OFF
5. Best Rate of Climb airspeed ..... 95 KIAS
6. Cruise Climb airspeed..... 100 KIAS

### CRUISE CHECKS

- 1.. Cowl Flaps.....Closed
- 2.. Cruise Power.....Set
- 3.. Mixtures.....Set
- 4.. Fuel Selectors.....As Required
- 5.. Engine Guages .....Monitor

**WARNING**  
**Improper Leaning Techniques**  
**Can Reduce Endurance**

## DESCENT

- 1.. Mixtures.....Set
- 2.. Power.....As Required
- 3.. Defroster.....As Required
- 4.. Altimeter.....Set

## BEFORE LANDING

1. Seats and Belts.....Secure
2. Shoulder Harnesses.....Secure
- 3.. Fuel Pumps.....ON
- 4.. Carburetor Heat.....Check
- 5.. Mixtures .....RICH
- 6.. Propellers.....FULL FORWARD
7. Landing/Taxi Lights.....ON
8. Cowl Flaps.....As Required
- 9.. Wing Flaps .....0<sup>0</sup> – 10<sup>0</sup> 145 KIAS  
.... 11<sup>0</sup> to FULL 110 KIAS
- 10.Gear... DOWN (below 145 KIAS) & Checked
- 11.Autopilot.....OFF

## LANDING CHECK SHORT FINAL

- 1.. Gear.....Recheck DOWN
- 2.. Propellers.....FULL FORWARD

## GO-AROUND

1. Throttles.....FULL FORWARD
2. Carburetor Heat.....OFF
3. Airspeed.....80 KIAS
4. Flaps.....Reduce in steps
5. Gear.....UP
6. Cowl Flaps.....As Required

## AFTER LANDING CLEAR OF RUNWAY

1. Landing/Taxi Lights.....As Required
2. Cowl Flaps.....As Required
3. Flaps.....UP
4. Radios/transponder/radar.....As Required
5. Strobe Lights.....OFF
6. Fuel Pumps .....OFF
7. Carburetor Heat .....OFF
8. Trim .....Neutral

## ENGINE SHUTDOWN

1. Nose Wheel.....Centered
2. Avionics.....OFF
3. Pitot Heat.....OFF
4. Throttle .....1000 RPM
5. Mixtures.....IDLE CUT-OFF
6. Magnetos.....OFF - when props stopped
10. Rotating Beacon.....OFF
11. Lighting systems.....OFF

12. Alternator Switches.....OFF  
13.Master Switch.....OFF

**Grumman American COUGAR**  
**EMERGENCY PROCEDURES**

**NOTE:**

**The urgency of certain emergencies require immediate & instinctive action by the pilot. The most important single consideration is aircraft control. All procedures are subordinate to this requirement.**

**SPEEDS**

Minimum Control..... 61 KIAS  
Best Single Engine Angle of Climb.....85 KIAS  
Best Single Engine Rate of Climb.....85 KIAS  
Maneuvering Speed (MGW).....120 KIAS  
Maneuvering Speed (3200 lbs).....112 KIAS  
Never Exceed.....188 KIAS

**ENGINE INOPERATIVE PROCEDURES**

**ENGINE SECURING PROCEDURE**  
**(FEATHERING PROCEDURE)**

<b>Inoperative Engine .....</b>	<b>IDENTIFY</b>
<b>Throttle .....</b>	<b>Closed</b>
<b>Propeller.....</b>	<b>FEATHER</b>

Mixture .....IDLE CUT-OFF  
Cowl Flap.. .....Closed  
Magneto Switches ..... OFF

Fuel Pump .....OFF  
Fuel Selector .....OFF  
Alternator Switch .....OFF  
Electrical Load .....Reduce  
Crossfeed.....Considered

**ENGINE MALFUNCTION DURING TAKEOFF  
RUN (ABORT)**

Throttles.....CLOSE
Brakes.....APPLY

Mixture.....IDLE CUT-OFF  
Master Switch.....OFF  
Magneto Switches.....OFF  
Fuel Selectors.....OFF

**Apply brakes maintaining directional control  
and maneuver to avoid any obstacles.**

**ENGINE MALFUNCTION IMMEDIATELY  
AFTER TAKEOFF  
(SUFFICIENT RUNWAY REMAINING)**

Throttles.....CLOSE
Brakes.....APPLY

**WARNING**

**Certain combinations of aircraft weight,  
configuration, ambient conditions and speeds  
will not permit a positive climb.**

**ENGINE MALFUNCTION AFTER TAKEOFF**  
**(TAKEOFF CONTINUED)**

Airspeed.....	85 KIAS minimum
Directional Control .....	Maintain
Power .....	SET MAXIMUM
Flaps.....	UP
Gear.....	UP
Inoperative Engine.....	IDENTIFY
Throttle (Inop. Eng.).....	VERIFY
Propeller (Inop. Eng.).....	FEATHER

Cowl Flaps .....CLOSED  
Airspeed.....85 KIAS after obstacles cleared  
Trim .....bank 5<sup>0</sup> towards operative engine  
Climb.....straight ahead (avoiding obstacles  
and attain sufficient altitude to execute a  
single engine landing approach)  
Operative Engine.....MONITOR  
Inoperative Engine .....Complete  
Engine Inop. Securing Procedure  
**Land as soon as practical at the nearest suitable  
airport.**

**ENGINE MALFUNCTION DURING CLIMB**

Airspeed.....Maintain 85 KIAS  
Directional Control ..... Maintain || Inop Engine..... | IDENTIFY |
| Inop Engine..... | Complete Engine Inop Securing Procedure |

Land as soon as practical at the nearest suitable airport.

**ENGINE MALFUNCTION DURING FLIGHT**

<b>Inoperative</b>	
<b>Engine.....</b>	<b>IDENTIFY</b>
<b>Power.....</b>	<b>As</b>
<b>Required</b>	
<b>Mixture.....</b>	<b>As</b>
<b>Required</b>	
<b>Flaps.....</b>	<b>UP</b>
<b>Gear.....</b>	<b>UP</b>
<b>Fuel Pumps.....</b>	<b>ON</b>

If altitude permits, a restart may be attempted. If engine does not start, complete engine inop securing procedure.

Power (operative engine).....As required  
Mixture (operative engine).....Adjust  
Fuel Quantity (operative engine side).....Sufficient  
Fuel Pump (operative engine).....As required  
Cowl Flap (operative engine).....As required  
Engine Instruments (operative engine).....Monitor  
Electrical Load.....Adjust  
Land as soon as practical at the nearest suitable airport.

**SINGLE ENGINE LANDING**



**OVERSPEEDING PROPELLER**

<b>Throttle.....RETARD</b>
<b>Airspeed.....REDUCE</b>
<b>Throttle .....add slowly after RPM under control</b>
<b>Airspeed .....maintain below airspeed at which overspeed occurred. (Select lower RPM if higher airspeed is required.)</b>

Descend at 2200 RPM

Land with prop set at 2400 RPM

**Note: Prop will not feather while overspeeding, therefore while in overspeed condition, do not select feather position and do not shut down the engine. Propeller will feather normally if not overspeeding.**

**FIRE**

**ENGINE FIRE DURING START**

<b>Starter.....ENGAG E</b>
<b>Throttle.....OPE N</b>
<b>Mixture.....IDLE CUT-</b>

Radio.....call for assistance

Master, Alternator & Magneto Switches.....OFF  
Abandon aircraft & use fire extinguisher

**ENGINE/NACELLE FIRE IN FLIGHT**

**Fuel Selector.....OFF**  
**Mixture.....IDLE CUT-**  
**OFF**  
**Fuel Pump.....OFF**  
**Inoperative Engine.....**  
**FEATHER**  
**before 1000 RPM**

Operative Engine.....Power as Required  
Drag.....Reduce  
Alternator (Inop Eng) ..... OFF  
Magneto Switches (Inop Eng) ..... OFF  
Electrical load ..... Reduce

**If fire persists, increase airspeed as much as possible in an attempt to blow out the fire.**  
**Land at the nearest suitable airport.**

**FUSELAGE FIRE**

**Vents.....Closed**  
**Heater.....OF**  
**r**

Fire Extinguisher.....Use

**When fire is out, ventilate the cabin.**  
**Land at the nearest suitable airport.**

**CABIN VENTILATION PROCEDURE**

Fresh Air Vents.....OPEN  
Direct Vision Window.....OPEN  
Cabin Heat Selectors.....COLD  
Floor Heat Shutoffs.....OPEN  
Defrosters.....ON

**ELECTRICAL FIRE**

<b>Master</b>	<b>OFF</b>
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Alternator Switches.....OFF  
Circuit Breakers.....Check, then pull all  
Electrical Switches.....all OFF  
Avionics.....OFF  
Heater.....OFF  
Vents.....Close  
Fire Extinguisher.....Use

**When fire is out:**

Master Switch.....ON  
Vents.....OPEN  
Circuit Breakers.....ON, one at a time  
Electrical Switches.....ON, one at a time

**Land at the nearest suitable airport.**

**ELECTRICAL SYSTEM FAILURE**

**SINGLE ALTERNATOR FAILURE**

Reduce electrical load to minimum required.

If Alternator circuit breaker tripped:

Turn Off affected alternator.

Reset tripped circuit breaker.

Turn ON affected alternator switch.

If circuit breaker reopens, turn off alternator.

If circuit breaker not tripped:

Monitor output.

If output normal and failure light remains on, disregard failure indication and have indicator checked after landing.

If complete loss of alternator output occurs, check field circuit breaker and reset if necessary.

**BOTH ALTERNATORS FAIL**

Turn OFF all electrical loads.

Repeat above procedure for each alternator.

Reset circuit breakers, one at a time.

Left Alternator switch ..... ON

Monitor output.

If alternator still inoperative, turn it off.

Right Alternator Switch.....ON

Monitor output.

If alternator still inoperative, turn it off.

Terminate flight as soon as possible.

**Note: Since battery is furnishing all the current, keep the load low.**

**FUEL SYSTEM EMERGENCIES**

**FLUCTUATING FUEL PRESSURE**

Mixture Lever ..... FULL RICH  
Fuel Pump..... ON  
Mixture Lever ..... As Required

**GOING INTO CROSSFEED**

**To use fuel from side opposite operating engine:**

Fuel Selector – Operating Engine .....CROSSFEED  
Fuel Selector – Inoperative Engine..... OFF  
Fuel Pump Operating Engine ..OFF unless needed

**When fuel from same side as operating engine.**

Fuel Selector - Operating Engine..... ON  
Fuel Pump Operating Engine OFF, unless needed

**Landing:**

Fuel Selector Operating Engine ....FULLEST TANK  
Fuel Selector Inoperative Engine.....OFF  
Fuel Pump – Selected Tank.....ON

**ENGINE ROUGHNESS**

Fuel Pump..... ON  
Engine Instruments.....scan for cause  
Mixture.....adjust as required  
Carburetor Heat .....Check  
Cowl Flaps ..... adjust for proper CHT  
Magnetos.....check

**INFLIGHT EMERGENCIES**

**EMERGENCY DESCENT**

**Throttles.....retard slowly to idle**  
**Propellers.....FORWARD**  
**D**  
**Gear and**  
**Flaps.....UP**  
**Moderate**  
**Bank INITIATE**

**SPIN RECOVERY**

**Throttle.....IDLE**  
**(both)**  
**Rudder.....full opposite to spin**  
**until rotation stops**  
**Control Wheel.....neutral and**  
**forward**  
**if necessary**

**Note: In as much as FAA Regulations do not require spin demonstrations of airplane with this weight, no spin test were conducted. The recovery technique is based on available information.**

## **LANDING EMERGENCIES**

### **LANDING GEAR EMERGENCIES -- GENERAL**

If the gear cannot be lowered successfully, proceed with the emergency procedures for the appropriate gear malfunction.

#### **CAUTION**

If an unsafe gear indication existed and the gear has been successfully lowered, do not attempt to raise the gear.

### **EMERGENCY LANDING GEAR EXTENSION**

Master Switch.....ON  
NAV LTS Switch.....OFF  
Landing Gear  
Selector.....DOWN  
Circuit Breaker.....Check LG breaker  
IN  
If Landing Gear fails to extend:

### **GEAR-UP LANDING**

**Wright-Patterson Aero Club**

Normal check list.....complete (except for  
gear selector)  
Gear Selector .....UP  
All Switches except Master & Magnetos.....OFF  
Flaps.....FULL DOWN  
Make a normal approach with power.....75 KIAS  
Cabin Door.....UNLATCH  
Close throttles before touchdown.  
Master and Magneto Switches..... OFF  
Touch down at minimum speed  
(If time permits, use starter to position props  
parallel with wings.)