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SOURCE

Mooney Mark 21 M20C 1962-65 Owner's Manual



Preflight

- | | |
|-------------------------------|-------|
| 1 Maintenance Records & Books | Check |
| 2 Weather | Check |
| 3 Aircraft Performance Data | Check |
| 4 AROW Documents | Check |
| 5 Gear | Down |
| 6 Mags | OFF |
| 7 Rocker Switches | OFF |
| 8 MASTER Switch | ON |
| 9 Fuel Gages | Check |
| 10 Battery Voltage | Check |
| 11 Pitot Heat | OFF |
| 12 MASTER Switch | OFF |

RIGHT FUSELAGE / TAIL

- | | |
|--------------------------|---------------|
| 1 Instrument Static Port | Clear / Check |
| 2 Rivets & Skin | Check |
| 3 All Panels | Secure |
| 4 Tie Down | Remove |

EMPENNAGE

- | | |
|---------------------|---------|
| 1 Elevator / Rudder | Check |
| 2 Tail Lights | Inspect |
| 3 Rivets & Skin | Check |
| 4 All Panels | Secure |
| 5 Tie Down | Remove |

Preflight

LEFT FUSELAGE / TAIL

- | | |
|--------------------------|--------|
| 1 Instrument Static Port | Check |
| 2 Rivets & Skin | Check |
| 3 All Panels | Secure |

LEFT WING

- | | |
|-----------------------------------|---------------|
| 1 Flaps / Ailerons | Check |
| 2 Wing Tips and Lights | Inspect |
| 3 Pitot Tube | Check / Clear |
| 4 Landing / Taxi Lights | Check |
| 5 Stall Warning Vane | Check |
| 6 Fuel Tank Quantity and Cap | Secured |
| 7 Tie Down / Chocks | Remove |
| 8 Fuel Vent | Clear |
| 9 Gear / Shocks / Doors / Linkage | Check |
| 10 Fuel Sump | Drain |

NOSE

- | | |
|-----------------------------------|-----------------|
| 1 Windshield | Clean / Check |
| 2 Cabin Inlet | Check |
| 3 Panels | Check Security |
| 4 Cowl Flaps | Check |
| 5 Prop & Spinner | Inspect |
| 6 Induction Inlets | Check |
| 7 Gear / Shocks / Doors / Linkage | Check |
| 8 Engine Oil | 6-8 Qts. |
| 9 Exhaust Piper | Check |

Preflight

RIGHT WING

- | | |
|-----------------------------------|---------|
| 1 Fuel Sump | Drain |
| 2 Gear / Shocks / Doors / Linkage | Check |
| 3 Tie Down / Chocks | Remove |
| 4 Fuel Vent | Clear |
| 5 Fuel Tank Quantity and Cap | Secured |
| 6 Landing /Taxi Lights | Check |
| 7 Wing Tips and Lights | Inspect |
| 8 Flaps / Ailerons | Check |
| 9 Baggage Door | Secured |

ENGINE STARTUP

- | | |
|----------------------------|-------------|
| 1 Brakes | Set |
| 2 Briefing / Seat Belts | Check |
| 3 MASTER / Mags | OFF |
| 4 Avionics and Radios | OFF |
| 5 ELT (If Applicable) | ARM |
| 6 Circuit Breakers / Fuses | Check |
| 7 Cowl Flaps | OPEN |
| 8 Fuel Selector | Fullest |
| 9 Carb Heat | OFF |
| 10 MASTER | ON |
| 11 Landing Gear | Verify Down |
| 12 Beacon / Lights | As Needed |
| 13 Mixture | FULL |
| 14 Prop | FULL RPM |

CONTINUED

Preflight

15 Fuel Pump	ON
16 Mixture	RICH
17 Throttle (Pump Twice)	1/4 inch Open
18 Area Clear / START	1000 RPM
19 Fuel Pump (Check Pressure)	OFF
20 Oil Pressure (30 sec)	Check
21 Avionics / Transponder	ON / STBY
22 Mixture	Lean for taxi
23 Flaps	UP
24 ATIS / AWOS / ASOS	Obtain
25 Taxi Clearance	Obtain

FLOODED ENGINE START

1 Fuel Pump	OFF
2 Prop	FULL RPM
3 Mixture	Idle Cutoff
4 Area Clear / START	1000 RPM
5 Mixture	Advance after Start

1 *Continue with normal Start Procedures*

Preflight

WARM ENGINE START

- | | |
|----------------------|---------------------|
| 1 Fuel Pump | OFF |
| 2 Prop | FULL RPM |
| 3 Throttle | FULL FORWARD |
| 4 Mixture | RICH |
| 5 Area Clear / START | 1000 RPM |
| 6 Mixture | Advance after Start |
| 7 Throttle | Reduce to Idle |

! *Continue with normal Start Procedures*

Takeoff / Cruise

TAXIING

- | | |
|---------------------|-------|
| 1 Brakes | Check |
| 2 DG / HI / TC / AI | Check |

BEFORE TAKEOFF

- | | |
|-------------------------------------|--------------------|
| 1 Brakes | Set |
| 2 Flight Controls | Check |
| 3 Fuel Selector | Fullest |
| 4 Fuel Pump | ON |
| 5 Cowl Flaps | OPEN |
| 6 Mixture | Adjust / DA & Elev |
| 7 Fuel Pump | ON |
| 8 Power | 1800 RPM |
| 9 Prop | Exercise / FULL |
| 10 Power | 1700 RPM |
| 11 Ignition Switches | L&R (125/50) |
| 12 Carb Heat | Check / OFF |
| 13 Engine Gages / CHT | Check |
| 14 Annunciator Panel (If installed) | Check |
| 15 Suction / Ammeter | Check |
| 16 Carb Heat | Check |
| 17 Standby Vacuum Pump | Check |
| 18 Power | Reduce |
| 19 Fuel Pump | ON |
| 20 Instruments | Check / Set |
| 21 COM / NAV | Set |

CONTINUED

Takeoff / Cruise

22 Doors / Windows	Lock / Closed
23 Flaps	Set
24 Trim	Set for Takeoff
25 Lights / Transponder	Set
26 Clearance	Obtain

NORMAL TAKEOFF

1 Flaps	0-15°
2 Full Power	Set
3 Engine Instruments	Check
4 Crosswind Corrections	Set
5 Rotate	Vr 65 KIAS 75 MPH
6 Climb	Vy 91 KIAS 105 MPH
7 Brakes	Apply momentarily
8 Gear	UP
9 Flaps	UP

Takeoff / Cruise

SHORT FIELD TAKEOFF

1 Flaps	Set as Needed
2 Runway	To End
3 Brakes	Hold
4 Full Power	Set
5 Engine Inst. / Crosswind	Check / Compensate
6 Brakes	Release
7 Rotate	Vr 55 KIAS 65 MPH
8 Obstacle	Vx 70 KIAS 80 MPH
9 Climb	Vy 91 KIAS 105 MPH
10 Brakes	Apply momentarily
11 Gear	UP
12 Flaps	UP

SOFT FIELD TAKEOFF

1 Flaps	15°
2 Back Pressure	Keep Nose Up
3 Full Power	Set
4 Engine Instruments	Check
5 Crosswind Corrections	Set
6 Obstacle	Vx 70 KIAS/ 80 MPH
7 Climb	Vy 91 KIAS/ 105 MPH
8 Brakes	Apply momentarily
9 Gear	UP
10 Flaps	UP

Takeoff / Cruise

CLIMB

- 1 Power / Prop
- 2 Fuel Pump
- 3 En-route Climb

25" / 2500 RPM

OFF / Check Press.

95-110 KIAS 115-120 MPH

CRUISE

- 1 Power / Prop
- 2 Mixture
- 3 ECONOMY
- 4 POWER
- 5 Cowl Flaps
- 6 Fuel Pump
- 7 Heading Indicator

Set with table below

Adjust /Up to 75%

25°F RICH of Peak EGT

100°F RICH of Peak EGT

CLOSE

As Required

Reset as Needed

CRUISE PROFILE

PALT	PWR	MAN	RPM	MPH	GPH
5000	85%	24.0"	2600	183	12.5
5000	75%	22.0"	2500	169	10.8
5000	65%	21.0"	2300	157	9.3
7500	75%	22.0"	2500	177	11.0
7500	65%	20.0"	2400	161	9.3
FL100	65%	19.0"	2500	166	9.5
FL100	55%	17.5"	2300	146	8.0

Landing

APPROACH

- | | |
|-------------------------------------|-----------------------------|
| 1 ATIS / AWOS / ASOS | Obtain |
| 2 Brief / Seat Belts | Check |
| 3 Cowl Flaps | Close |
| 4 Mixture | Set |
| 5 Carb Heat | ON |
| 6 Prop | FULL |
| 7 Fuel Boost Pump | ON |
| 8 Fuel Selector | FULLEST |
| 9 Gear Down Below V _{lo} | 104 KIAS 120 MPH |
| 10 Flaps Down Below V _{fe} | 87 KIAS 100 MPH |
| 11 Normal Approach | 70-75 KIAS 80-85 MPH |
| 12 Short Field Approach | 71 KIAS 81 MPH |
| 13 GUMPS | CHECK |

GO AROUND

- | | |
|-----------------|-----------------------------|
| 1 Power | FULL |
| 2 Carb Heat | OFF |
| 3 Gear / Flaps | Retract As Needed |
| 4 Cowl Flaps | Open |
| 5 Pitch | 91 KIAS 105 MPH |
| 6 Runway Offset | When aircraft is in control |
| 7 Communicate | Announce Go-Around |

Landing

AFTER LANDING

- | | |
|---------------|---------------|
| 1 Runway | Cleared |
| 2 Carb Heat | OFF |
| 3 Flaps | UP |
| 4 Mixture | Lean for taxi |
| 5 Prop | FULL |
| 6 Cowl Flaps | Open |
| 7 Fuel Pump | OFF |
| 8 Transponder | OFF |
| 9 Strobes | OFF |
| 10 Clearance | Obtain |

SECURE

- | | |
|----------------------------|------------|
| 1 Avionics / Radios | OFF |
| 2 Ignition Grounding Check | Cycle Mags |
| 3 Mixture | OFF |
| 4 Prop | FULL |
| 5 Ignition / Mags | OFF |
| 6 MASTER | OFF |
| 7 Cowl Flaps | CLOSE |
| 8 Control Locks | Set |
| 9 Chocks / Chains / Papers | Complete |

Emergencies

13 Electrical

Excessive Rate Of Charge	13	Low Voltage	13
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14 Engine

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Engine Failure During Flight	14	Engine Driven Fuel Pump Failure	16
Failure To Restart	15	Propeller Overspeed	16
Rough Engine	15		

17 Fire / Smoke

Engine Fire During Start	17	Wing Fire During Flight	17
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18 Other

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Electrical

EXCESSIVE RATE OF CHARGE

- | | |
|------------------------------|----------------------|
| 1 Alternator Field Switch | OFF / Verify problem |
| 2 Ammeter | Confirm discharge |
| 3 MASTER | Cycle |
| 4 Alternator circuit breaker | PULL / Verify |
| 5 Electrical Load | Reduce / Land soon |

❗ ***Landing gear lights will not be visible after complete electrical failure***

LOW VOLTAGE

- | | |
|------------------------------|----------------------|
| 1 Alternator Field Switch | OFF / Verify problem |
| 2 Ammeter | Confirm discharge |
| 3 Alternator circuit breaker | PULL / Verify |
| 4 Electrical Load | Reduce / Land soon |

❗ ***Landing gear lights will not be visible after complete electrical failure***

Engine

ENGINE FAILURE DURING TAKEOFF ROLL

- | | |
|-------------------|---------|
| 1 Throttle | Close |
| 2 Brakes | Apply |
| 3 Flaps | Retract |
| 4 Mixture | OFF |
| 5 Ignition / Mags | OFF |
| 6 MASTER | OFF |

ENGINE FAILURE DURING FLIGHT

❗ **Land if runway remains. If not:**

- | | |
|----------------------|-------------------------|
| 1 Airspeed | 90 KIAS 105 MPH |
| 2 Gear | Up if not after takeoff |
| 3 Flaps | Up if not after takeoff |
| 4 Landing Site | Select / Land into Wind |
| 5 Prop | FULL |
| 6 Fuel Selector | FULLEST / Switch |
| 7 Fuel Pump (Try ON) | OFF if No improvement |
| 8 Carb Heat | Try |
| 9 Fuel Pressure | Check |
| 10 Throttle | FULL |
| 11 MASTER Switch | ON |
| 12 Mixture | RICH |
| 13 IGNITION | BOTH / RESTART |

Engine

FAILURE TO RESTART

- | | |
|-----------------------------------|------------------------------|
| 1 Pitch | 90 KIAS 105 MPH |
| 2 Communicate | 121.5 or Current Freq |
| 3 Transponder | 7700 |
| 4 Seat Belts | Secure |
| 5 Fuel Pump | OFF |
| 6 Mixture | Cut-OFF |
| 7 Throttle | Close |
| 8 Fuel Selector / Ignition / Mags | OFF |
| 9 Gear and Flaps | Down when needed |
| 10 MASTER | OFF |
| 11 Doors | Open ajar |

ROUGH ENGINE

- | | |
|----------------------|-----------------|
| 1 Engine Instruments | Troubleshoot |
| 2 Fuel Selector | Switch |
| 3 Mixture | Re-adjust |
| 4 Mags | Try L or R only |
| 5 Prop | Check |

! *Prop Damage can cause major vibrations*

HIGH CYLINDER OR OIL TEMP

- | | |
|-------------------------------|------------------|
| 1 Mixture | Enrich as needed |
| 2 Cowl Flaps | OPEN |
| 3 Airspeed | Increase |
| 4 Power | Reduce |
| 5 If in a climb, reduce angle | |

Engine

ENGINE DRIVEN FUEL PUMP FAILURE

- | | |
|-------------|-----------------|
| 1 Mixture | Cut-OFF |
| 2 Throttle | Cruise Position |
| 3 Fuel Pump | ON |
| 4 Mixture | Return to FULL |

PROPELLER OVERSPEED

- | | |
|----------------|------------|
| 1 Throttle | Idle |
| 2 Prop RPM | Below 2700 |
| 3 Oil Pressure | Check |
| 4 Airspeed | Reduce |

Fire / Smoke

ENGINE FIRE DURING START

- | | |
|-------------|-------------------------------|
| 1 Starter | Engage and crank |
| 2 Throttle | 1700 RPM to extinguish |
| 3 Engine | Secure |
| 4 Fuel Flow | OFF |

ENGINE FIRE DURING FLIGHT

- | | |
|-------------------------|----------------------------|
| 1 Fuel / Mixture | OFF |
| 2 Throttle | Close |
| 3 Ignition / Mags | OFF |
| 4 Cowl Flaps | CLOSE |
| 5 MASTER Switch | OFF |
| 6 Vents Close / Windows | Close OPEN if smoke enters |

WING FIRE DURING FLIGHT

- | | |
|-----------------------------|-----|
| 1 MASTER Switch | OFF |
| 2 Strobes and NAV Lights | OFF |
| 3 Extinguish with maneuvers | |
| 4 MASTER | ON |

ELECTRICAL FIRE DURING FLIGHT

- | | |
|--------------------|----------------------|
| 1 MASTER Switch | OFF |
| 2 Alternator | OFF |
| 3 Circuit Breakers | Check which is out |
| 4 Fire | Extinguish |
| 5 Vents | Open if smoke enters |

! *Reset Electrical to troubleshoot Problem*

Other

EMERGENCY DESCENT

- | | |
|--------------------------|-------------------------|
| 1 Throttle | Close |
| 2 Carb Heat | ON |
| 3 Gear Down | 104 KIAS 120 MPH |
| 4 Airspeed to extinguish | 104 KIAS 120 MPH |
| 5 Landing site | Acquire |

UNLATCHED DOORS

- | | |
|----------------------------|------------------------------|
| 1 Airspeed | Below 95 KIAS 105 MPH |
| 2 Storm Window | Open |
| 3 Aircraft | Right Sideslip |
| 4 Door Pull shut and Latch | |

INADVERTENT SPIRAL DIVE

- | | |
|------------------|------------------------|
| 1 Throttle | Idle |
| 2 Wings | Level |
| 3 Elevator | Level Or Vy Climb |
| 4 Trim | Set For Level Or Climb |
| 5 Power | Set |
| 6 IMC Conditions | Exit |

Other

SPIN RECOVERY

- | | |
|-----------------------------------|--------------------------|
| 1 Power | Idle |
| 2 Ailerons | Neutral |
| 3 Rudder | Full Opposite |
| 4 Elevator | Briskly Full Forward |
| ! When rotation stopped... | |
| 5 Rudder | Neutral |
| 6 Elevator | Slowly Recover From Dive |

UNINTENTIONAL IMC ENCOUNTER

- | | |
|------------------|----------------------|
| 1 Wings | Level |
| 2 Trims | Set For Level |
| 3 Heading | Change For 180° Turn |
| 4 IMC Conditions | Exit |