

Sky Arrow

Standard Operating Procedures and Maneuvers Supplement



March 29, 2010

Normal Takeoff

Fuel pump on
Flaps 0-10°
Trim set - slightly above the midline
Check for traffic
Line up on white stripe
Full power
Stick should be located in the middle of the travel space
Steer with feet only
Gradually apply back pressure to lift the nose off ground
but leave the mains on the ground
Rotate 50kts
Climb out 70kts
Set trim to hold 65kts
Fuel pump off - 500 agl
Fans off - 500 agl
Follow noise abatement procedures

Level Off

Lower nose to achieve level flight
Reduce power to 5100RPM
Reset trim to remain in level flight - start with the orange
indicator line about 1/3 from the bottom
Verify: flaps up, fans off, fuel pump off, engine
instruments green

Normal Landing

10nm from airport, listen to AWOS and/or request Airport
advisory
5nm from airport begin self announcing position
Enter traffic pattern following noise abatement procedures
As you enter the pattern power back to 3,800 rpms to get the
aircraft slowed down
Fuel pump on
Downwind leg 3,800 RPM, 65kts level flight, retrim
Abeam of numbers, reduce power to 2,8000 rpms, add first notch
of flaps, retrim for 60kt decent
Base, add second notch of flaps, adjust power/ power if need be
for appropriate decent altitude and to maintain 60kt
decent
Final, add third notch of flaps, adjust power if need be for
appropriate decent altitude and to maintain 55-60kt
decent
Airspeed should be 55 kts over the runway, 50 kts at the
beginning of the flare, 45 kts at touch down
Once the runway is made, reduce power to idle
20 feet above runway, begin transition from maintaining airspeed
to maintaining attitude. Focus eyes at far end of the
runway. Gradually increase back pressure on stick to try
and hold aircraft 2 feet off the runway as long as possible.
Use your feet to point airplane down the runway and
hand to maintain altitude and keep it over the centerline.
Once main wheels touch the ground, steer with feet. Gradually
lower the nose wheel and begin applying brakes as
needed
Clear runway
Make radio call
Reset trim, turn off fuel pump, and adjust fans and baffles as
needed to maintain water temperature.

Slow Flight

2 clearing turns
Reduce power to 3,500
Increase pitch attitude and trim to maintain altitude
Once within the white arc, bleed in flaps
Adjust pitch and power to maintain altitude at 46kts

Recovery

Full power
Pitch for level attitude
Bleed out flaps while in the white arc

Power Off Stall

2 clearing turns
Reduce power to 3500 rpm
Increase pitch attitude and trim to maintain altitude
Once within the white arc, bleed in flaps
Adjust pitch and power to maintain altitude until 60kts
At 60kts, reduce power to idle and establish 60kt glide
Descend 300 feet and then gradually pitch back to maintain altitude and induce a stall.

Recovery

Simultaneously apply full power, rudder as needed, pitch for level attitude, and remove first notch of flap.
Once airspeed has increased to 60kts, establish 60kt climb
Bleed out flaps and climb to desired altitude.
Return to cruise flight

Power On Stall

2 clearing turns
Reduce power to 3000 rpm
Increase pitch attitude and trim to maintain altitude
Once within the white arc, add 1 notch of flaps
Adjust pitch and power to maintain altitude until 45kts
At 45kts, apply full power, and immediately pitch back to further reduce airspeed until stall
Watch coordination and maintain heading

Recovery

Pitch for level attitude
Once airspeed has increased to 60kts, establish 60kt climb
Remove flaps and climb to desired altitude.
Return to cruise flight.

Steep Turns

Establish cruise flight at or below 90kts rpm
2 clearing turns
Choose landmark for entry heading
Begin roll to 45° bank
At 30°, add 100rpm and continue roll to 45° adjusting back pressure as needed
Maintain altitude
10° prior to roll-out heading, begin roll out and reduce power 100rpm.
Roll out at entry altitude and heading.

Turns Around a Point

Determine wind direction

Select a suitable site. Should have emergency landing areas and not disturb the neighbors.

Establish cruise flight at or below 90kts 4500 rpm

Select four points around the point that are equidistance from the center. These four points are your targets.

Enter maneuver at 800 feet on downwind

When point in abeam of wing begin turn

Steepest turn should be downwind. Shallowest upwind.

Keep object same distance from aircraft by adjusting bank angle. Steeper brings it closer. Shallower takes it further away.

S-Turns Across a Road

Determine wind direction

Select either Rt 50, Rt 404, or Rt 301. Winds should be perpendicular to road.

Establish cruise flight at or below 90kts 4500 rpm

Select target distance from road

Enter maneuver at 800 feet on downwind, perpendicular to road

When over the road begin turn

Steepest turn should be downwind. Shallowest upwind.

Airplane should be wings level only when crossing the road. Adjust bank angle accordingly.

Loss of Engine

Establish and trim for best glide speed 60kts

Select emergency landing site and head that way

IF there is time, try to restart engine

Work left to right

Emergency Shutoff - verify it is closed

Carburetor Heat - On

Throttle - Open half way

Magnetos - Check

Fuel Pump - On

Attempt re-start

IF there is time, call for help giving position

Radio 121.5 MHz

Transponder 7700

Secure Engine

If Engine will not restart - Fuel Shutoff Up

Flaps - as necessary

Master off after final flaps

Unlock canopy immediately upon touchdown

Go-Arounds

Apply full power
Reduce flaps to 20°
Pitch for level attitude until 60kts and then begin climb
Fuel pump off at 500 Feet AGL or positive rate of climb, whichever is later
Bleed out flaps

Short Field Takeoff

Fuel pump on
10° flaps
Stop aircraft at the very end of the runway
Hold brakes and apply full power
Release brakes
At 35kts rotate and climb out at 60kts
Above obstacle height, pitch for 70kts
Fuel pump off

Short Field Landing

Set up final approach at 55kts
Establish aim point prior to actual touch down point
After touch down, maintain full aft elevator, retract flaps, apply brakes but do not skid!

Soft Field Takeoff

Inspect field condition checking for grass height, holes, debris, and wetness
Flaps 10°
Fuel pump on
Fans on
Baffles open (as needed in winter)
Full aft pressure during taxi continuing through takeoff
Apply full power
As soon as main wheels leave the ground, lower nose to level attitude and fly aircraft 5 feet off the ground until 60kts
Climb out at 60-70kts
Fuel pump off - 500 ft AGL
Fans off - 500ft AGL
Baffles open (as needed in winter)

Soft Field Landings

Perform low pass to inspect field condition for grass height, holes, debris, and wetness
Set up normal approach to landing
Keep nose wheel off the ground as long as possible holding aft pressure as long as possible
Use minimal braking and keep aircraft moving until parked
Open baffles and use fans for extended taxi

Crosswind Takeoff

Modify appropriate takeoff procedures as such:

Begin ground roll with full aileron into the wind
Gradually take out most of the aileron as aircraft accelerates
Upon lift-off, establish coordinated crab into the wind

Crosswind Landing

Modify appropriate landing procedures as such

Add 5kts approach speed, especially in gusts
Apply rudder to point nose down the runway
Apply aileron to hold aircraft over the centerline
Do not use more than 20° flap

*Net effect should be the aircraft slightly cross controlled with the wing down into the wind
Control input should be increased as aircraft decelerates and maintained until landing*

Forward Slips

Apply almost full rudder
Apply enough opposite aileron to hold the aircraft over the centerline
Pitch to maintain airspeed

This is most effective with no power, full flaps and downward wing into the crosswind wind

Flat Tire Upon Landing

Stop aircraft
Radio call - Notify UNICOM and landing traffic of runway situation
If able, push aircraft off of runway while keeping as much weight off of that wheel as possible
If unable to reach UNICOM - Call CSP emergency numbers for assistance

Aborted Takeoff

Retard throttle
Apply full braking
Steer as appropriate
Note: Grass can be used to slow the airplane down

Loss of Engine Immediately After Takeoff

Pitch DOWN for 60kts
Make shallow turns right or left
Do NOT attempt to return to runway below 1000 feet
Off runway 29 - prepare for ditching

Ditching

Pitch or 60 KIAS
Head towards a boat or shoreline
Radio - Transmit MAYDAY on 121.5 Mhz and 7700
Wing flaps - DOWN
Approach - Into the wind
Seatbelt - Secure
Eyeglasses - Remove
Face - Cushion is possible
Touchdown - Minimum airspeed, right wing down
Canopy and windows - Open
Airplane -Evacuate

Engine Fire - Emergency Decent

Emergency fuel shut off - OFF
Full throttle
Pitch for highest possible 100 KIAS to try and snuff out flames
Select emergency field
Mayday 121.5 and 7700
Ignition switch off after fuel is consumed (30 seconds)
Prepare for forced landing (use loss of engine checklist)

Emergency Decent - (Not Engine Fire)

Select emergency field
Set airspeed at top of the white arc
Employ full flaps
Use slip or spiraling decent to increase decent rate

Spin Recovery

From the FAA Airplane Flying Handbook

Reduce the power to idle
Position the ailerons to neutral
Apply full opposite rudder against the rotation
After spin rotation stop, neutralize the rudder
Begin applying back-elevator pressure to raise the nose to level flight

Overheating Cylinders/Water (In-Flight)

Reduce RPMs to lowest possible to maintain safe flight
Land as soon as practicable

Overheating Oil Without Loss of Oil Pressure

Reduce RPMs
Lower angle of attack
If oil temperature continues to climb, land

Overheating Oil With Loss of Oil Pressure

Select and head towards emergency landing spot
Declare an emergency 121.5 and 7700
Prepare for loss of engine and use of appropriate checklist

Loss of Radio

If in a pattern at a towered field, look for light gun signals.

If under flight following or in towered airspace with radar, squawk 7600

Otherwise return home or to nearest appropriate airport

Overfly and observe airport traffic pattern

Carefully merge with traffic

Execute normal landing

Loss of Flap Control

If flaps are down, maintain airspeed below 68 kts when returning to airport

If flaps are up, return home and execute normal flaps-up landing

Loss of Trim Control

Fly the aircraft paying special attention to airspeed in the pattern

Loss of Brakes

If you are fast and have half or more of the runway remaining, go-around and re-approach using short field landing technique

Land with minimum airspeed

Roll into the grass on the side of the runway if needed to stop the plane

Electrical Fire

Master switch - OFF

Vent fumes from cabin

Land as soon as practical

Remember, you will have no flaps, radio, or trim control

Loss of Generator

Turn off all unneeded electrical equipment

Land as soon as practical

Use no-flap landing

Canopy Opening in Flight

Fly the plane!

Slow the plane down or maintain a low airspeed and carefully pull the canopy shut