RV12 CSP SOP

Normal Takeoff (Flaps UP)

- Line up on centerline, check Heading Indicator
- Release brakes/heels on floor (to avoid inadvertent brake application)
- Full power, check RPM and oil pressure
- Steer with rudder pedals to maintain runway centerline
- Rotate at 50-55 KIAS to Climb Pitch Attitude
- Climb out 75 KIAS, check ball centered/coordinated flight
- Set trim to hold 75 KIAS
- Track extended runway centerline or Follow noise abatement procedures, as required

Level Off From Climb

- Lower nose to achieve level flight pitch attitude
- Allow airspeed to increase to desired speed
- Reduce power to maintain desired speed (4600-5500 RPM)
- Trim nose down to reduce stick force
- Verify: flaps up, engine instruments green
- Check ball centered for coordinated flight

Note: Start level off approximately 50 - 100 ft before desired altitude to avoid overshooting

Straight and Level Flight

- Use outside references to establish and maintain the
- desired pitch attitude and wings level position

Note: use instrument panel glareshield position with respect to the horizon

- Check the ball of the slip/skid indicator

Note: Ball to the left of center requires left rudder for balanced flight, ball to right of center requires right rudder for balanced flight. Keep the ball in the middle by "stepping on the ball."

- Trim as required.

Note: Use trim to minimize the stick force required to hold the desired pitch attitude, not to change the attitude.

- Check the altimeter and vertical speed indicator.

Make small pitch corrections as necessary to maintain desired altitude.
Do not fixate on any one instrument.
Primary attitude reference is outside the airplane

Turns (Level Flight)

- CLEAR!! Look in the direction of turn before banking!
- Use rudder and aileron together to establish the desired
- bank angle
- Once the desired bank angle is established, neutralize
- the rudder and aileron inputs
- Maintain back pressure to maintain altitude

Note: Level altitude turns require some elevator force (back stick) to maintain a constant altitude (more bank, more elevator back stick.)

- Use rudder and aileron together to roll out of the bank to
- wings level
- Release any back stick/elevator pressure
- Neutralize the rudder and aileron
- Check that the ball is centered

Note: To roll out on a specific heading, lead the heading by one third the bank angle (example: 30 *degrees bank angle, lead rollout by 10 degrees.)*

Climbs

- Raise the Nose to the climbing attitude
- Add Full Power
- Adjust pitch attitude to maintain desired airspeed

*Note: Vy = 75 KIAS (best rate) C*ruise climb = 85 KIAS

- Keep the ball centered
- Set trim to hold desired airspeed

Descents

- Reduce power to desired RPM and lower nose to the
- pitch attitude for desired airspeed

Note: For a cruise descent, reduce power to maintain a descent rate of approximately 500 ft / min. and maintain cruise speed.

- Trim as required to minimize elevator force
- Keep the ball centered

Level Off From Descent

- Simultaneously add desired power and raise the nose
- Trim to eliminate stick pressure.

Note: To level off from a descent, lead the level off by approximately 50 - 100 feet.

Note: To level off in cruise flight set power to 4600 – 5100 RPM. To level off for the traffic pattern altitude, set power to 4200 RPM.

Normal Landing

- 10nm from airport, listen to AWOS and / or request Airport Advisory
- 5nm from airport begin self-announcing your position
- When airport is in sight → Complete the Landing Checklist
- Enter traffic pattern following noise abatement procedures
- As you enter the pattern, reduce power to 4000 RPM or below to slow the airplane
- Downwind leg approximately 3600-4000 RPM, level flight at pattern altitude
- Re-trim
- Abeam the numbers:
  - Reduce power to approximately 3000 RPM, slow down to flap operating speed, select flaps 1st Detent, adjust pitch to maintain 60 - 65 KIAS
  - Retrim
- On Base,
  - Estimate whether high or low and adjust power (add power if low/reduce power if high) and maintain 60 – 65 KIAS descent
  - Halfway through base leg, altitude should be half of pattern altitude
  - Turn onto final at about 500 ft
- On Final:
  - Select flaps to 2nd Detent (if desired), adjust power as required to maintain desired glide path,
  - Retrim
  - Check feet on rudder pedals (and not on brakes)
  - Adjust pitch to maintain 60 KIAS
  - Airspeed should be 60 KIAS over the runway
- Once the runway is made
  - Reduce power to idle
  - 15 – 20 feet above runway, slowly begin raising the nose to flare
    - Focus eyes at far end of the runway
  - Gradually increase back pressure on stick to try and hold aircraft just off the runway as long as possible

    - Use rudder pedals to point airplane down the runway and stick to maintain altitude and on the runway centerline
- Once main wheels touch the ground, steer with rudder pedals
- Gradually lower the nose wheel and begin applying brakes as needed
- Clear runway
    - Stop the aircraft
    - Make radio call
    - Complete the After Landing Checklist

Summary*:* Throughout landing pattern: If fast, raise nose; if slow, lower nose
If high, reduce power; if low, add power

PITCH CONTROLS AIRSPEED***!***
POWER CONTROLS ALTITUDE***!***

Always, be prepared to *Go-Around* if approach is too high, too low or if touchdown will not occur in first third of runway.

Go-Around

- Apply full power
- Pitch for climb attitude
- Retract flaps to 1st Detent
- Pitch for 60 KIAS
- Slightly alter heading to fly to non-pattern-side of the runway
- At a safe altitude, retract flaps to up, continue climb at 75 KIAS
- Make radio call: "airport name Traffic, Light Sport ____, Going Around, Runway xx,"

Crosswind Takeoff

- Begin ground roll with full aileron into the wind
- Gradually take out most of the aileron as aircraft
- accelerates to 50-55 KIAS
- Lift nose wheel, then downwind main gear, then upwind main gear
- After lift-off, establish coordinated crab (ball in middle) into the wind

Crosswind Landing

Use less or no flaps in stronger crosswinds
Add 5 kts to approach speed if runway length allows, especially in gusty winds
Apply aileron into wind to maintain aircraft on the centerline
Apply rudder to point nose down the runway

Note: Net effect should have the aircraft slightly cross controlled in a side-slip with the wing down into the wind and the fuselage aligned with the runway *by holding "top" rudder.* (*Note: The* ball will not be centered in a side-slip.)

Use more or less side-slip to compensate for any varying crosswind, keeping the airplane on the runway centerline extended and the fuselage aligned with the runway.

Touchdown first on the upwind main gear, followed by the other main gear, followed by the nose wheel while holding aileron into the wind and maintaining directional control with the rudder.

Forward Slips

- Apply full rudder in either direction
- Simultaneously apply opposite aileron, such that the track across the ground is maintained
- Pitch to maintain airspeed and power to maintain altitude.

More wing down and more opposite rudder will steepen the angle of descent.
Less wing down and less opposite rudder will shallow the angle of descent.

This is most effective with no power, full flaps
wing down into the crosswind.

Slow Flight (Flaps Up)

- 90 KIAS.
- 2 clearing turns.
- Look for a distant object to fly toward.
- Reduce power to 3000 RPM.
- Increase pitch attitude and **trim** nose up to maintain altitude.
- Adjust pitch and power (approx. 3700 RPM) to maintain altitude at 55 KIAS
- Maintain coordinated flight with ball in middle to maintain heading.

Recovery

- Full power.
- Pitch for level attitude.
- Accelerate back to 90 KIAS, trimming nose down as required.
- Set Power to maintain 90 KIAS.
- Re-trim.

Slow Flight (Full Flaps)

- 90 KIAS.
- 2 clearing turns.
- Look for a distant object to fly toward.
- Reduce power to 3000 RPM.
- Increase pitch attitude and **trim** to maintain altitude.
- Once within the white arc (<82 KIAS), extend flaps, incrementally, to 2nd Detent.
- Adjust pitch and power (approx. 3900 RPM) to maintain altitude at 50 KIAS.
- Maintain coordinated flight with ball in middle to maintain heading.
- Make two 90 degrees turns (left and right) using 15 degrees angle of bank.

Recovery

- Full power.
- Pitch for level attitude
- Retract flaps while airspeed is in the white arc.
- Accelerate back to 90 KIAS.
- Set Power to maintain 90 KIAS.
- Re-trim.

Power Off Stall (Flaps Up)

- Perform two clearing turns.
- Reduce power to idle, maintain heading, coordinated flight, ball in middle.
- Slowly increase pitch attitude while maintaining altitude, increasing angle of attack, allowing airspeed to decrease slowly.

Recovery

- At the first sign of the stall:
    - Reduce the angle of attack by reducing back pressure on the stick as necessary
    - Add full power, use right rudder to keep ball in middle.
    - If banked, reduce the bank angle to level the wings
- As speed increases, smoothly pitch for climb attitude and climb to and level off at starting altitude maintaining a positive rate of climb.

Power Off Stall (Flaps 2nd Detent)

- Establish the airplane in level flight at 60 KIAS with full flaps.
- Perform two clearing turns.
- Reduce power to idle, and maintain a 60 KIAS stabilized descent, maintain heading, coordinated flight, ball in middle.
- Slowly increase pitch attitude, increasing angle of attack, allowing airspeed to decrease slowly.

Recovery

- At the first sign of the stall:
    - Reduce the angle of attack by reducing back pressure on the stick as necessary,
    - Add full power, use right rudder to keep ball in middle.
    - If banked, reduce the bank angle to level the wings
    - As speed increases, smoothly pitch for climb attitude and retract flaps to first detent
- As speed increases to 60 knots, smoothly pitch for climb attitude, retract the flaps, and climb to and level off at starting altitude

Power On Stall (Flaps Up)

- Perform two clearing turns.
- Reduce power to 3000 rpm,
- Approaching 60 KIAS, add full power and establish a climb.
- Slowly increase pitch attitude, increasing angle of attack, allowing airspeed to decrease slowly. Maintain coordinated flight, ball in middle.

Recovery

- At the first sign of stall:
    - Reduce the angle of attack by reducing back pressure on the stick as necessary
    - If banked, reduce the bank angle to level the wings
- After recovery, resume climb or level off as desired.

Power On Stall (Flaps 1st Detent)

Perform two clearing turns.

- Reduce power to 3000 rpm,
- Below 82 KIAS, extend flaps 1st Detent)
- Approaching 60 KIAS, add full power and establish a climb.
- Slowly increase pitch attitude, increasing angle of attack, allowing airspeed to decrease slowly. Maintain coordinated flight, ball in middle.

Recovery

- At the first sign of stall:
- Reduce the angle of attack by using forward stick as necessary,
- After recovery, resume climb, 60 KIAS, retract flaps, or level off as desired.

(For a stall in a banked turn, reduce the angle of attack **before** leveling the wings.)

Steep Turns

- Establish cruise flight at or below 90kts with approx. 4600 rpm.
- Perform two clearing turns.
- Choose a prominent landmark for entry heading.
- Begin roll to 45° bank.
- At 30° bank, add 100rpm, and some back-stick pressure to maintain altitude.
- Continue roll to 45° bank, increasing back stick pressure as needed to maintain altitude.
- 15° prior to roll-out heading, begin roll out, reduce power 100 rpm and relax back stick pressure to maintain altitude.
- Roll out, maintaining entry altitude and on entry heading.

Note: Maintain coordinated flight especially during roll in and roll out.

Turns Around a Point

- Determine wind direction.
- Select a suitable site
  - Site should have an emergency landing areas, no towers, and not disturb the neighbors.
- Establish cruise flight at 90kts 4600 rpm.
  - Select four points around the point that are equidistant from the center.
  - These four points are your targets.
- Enter maneuver at 1000 feet AGL.
- Steepest bank should be downwind. Shallowest bank should be 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
    - Talk to ESN tower prior to using Rt. 50 if going inside Class D
- Select a suitable site
    - Site should have emergency landing areas, no towers, and not disturb the neighbors
- Establish cruise flight at 90kts 4600 rpm
- Select a target distance from road
- Enter maneuver at 1000 feet AGL perpendicular to road
- When over the road begin turn
    - Steepest bank should be downwind. Shallowest bank should be upwind
    - Airplane should be wings level only when crossing the road.
    - Adjust bank angle as necessary to cross perpendicular to the road

Short Field Takeoff

- Flaps 1st Detent
- Stop aircraft as close to the end of the runway as possible
- Hold brakes and apply full power, check RPM/oil pressure
- Release brakes
    - Stick centered or into crosswind.
- Rotate at 50-55 KIAS
- Climb out at 60 kts (Vx)
- When above obstacles, reduce pitch, raise flaps, and accelerate to 75 KIAS
- Adjust trim

NOTE

Raise flaps when safely airborne and at a safe altitude and air speed (or at an altitude and airspeed specified by your instructor.)

Short Field Landing

- Set up final approach at 55 KIAS, flaps 2nd Detent.
- Establish aim point prior to actual touch down point
- After touchdown, retract flaps, apply brakes, steadily increasing pressure, but do not skid tires, and pull stick back.

Soft Field Takeoff

- Inspect field condition checking for grass height, holes,
- debris, and wetness.
- Flaps 1st Detent
- Full aft stick during taxi. roll onto runway centerline without stopping,
- Apply full power,
- Aft stick until nosewheel clears surface, then continue aft stick as necessary to keep nosewheel just above surface.
- As soon as main wheels leave the ground, lower nose to
- level attitude and fly aircraft about 5 feet off the ground until 60 KIAS.
- Climb at 60 KIAS until any obstacles are cleared
- Retract flaps.
- Climb out at 75 KIAS.

NOTE

Raise flaps when safely airborne and at a safe altitude and air speed (or at an altitude and airspeed specified by your instructor.)

Soft Field Landing

- Perform low pass to inspect field condition for grass
- height, holes, debris, and wetness.
- Set up normal approach to landing, 55 KIAS, Flaps 2nd Detent.
- Cross threshold, power to idle, and start flare.
- Just prior to touchdown, add 100-200 RPM to cushion landing.
- After touchdown, power to idle.
- 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.

Note: Be sure to check NOTAMS that runway is open! Kentmorr closes when it is muddy.

Engine Failure

- Establish and trim for best glide speed 63 KIAS.
- Select emergency landing site and head that way.
- Fuel valve - ON (push down)
- Ignition A and B – ON
- Choke – Full forward
- ***If there is time, try to restart engine***
- Master – ON
- Throttle - Open halfway
- Attempt re-start by turning IGNITION key.

If engine starts, land as soon as practicable

- IF there is time, call for help giving position
- Radio 121.5 MHz
- Transponder 7700
- ELT Activate
- Secure Engine
- If engine will not restart - Fuel Valve – OFF (pull up)
- Ignition A and B - OFF
- Flaps - as necessary
- Master Off when airspeed not required

ABCDE

A – Airspeed 68 KIAS
B – Best Field
C – Checklist to Restart Engine
D – Declare Emergency to ATC: 121.5
E – Emergency Transponder 7700/ ELT: Activate

Emergency Descent

- Reduce power to idle.
- Flaps up.
- Lower the pitch attitude to increase airspeed until desired
- rate of descent is obtained.
    - If air is smooth <136 KIAS
    - If turbulent <90 KIAS
- Banking to 45 degrees
- Trim.
- Approaching desired altitude, level the wings and
- gradually raise the nose.
- Add power and trim to level off, if available.

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 next to runway can be used to slow the airplane down if necessary

Engine Failure Immediately After Takeoff

- Pitch DOWN for 63kts
- Make shallow turns right or left
- Off runway 29 - prepare for ditching

Note: Do NOT attempt to return to runway unless you have successfully practiced return to landing

Ditching

- Pitch for 63 KIAS
- Head towards a boat or shoreline
- Radio - Transmit MAYDAY on 121.5 MHz, Squawk 7700, Activate ELT
- Wing flaps - UP
- Approach
    - Into the wind if winds are high
    - Parallel to swells if winds calm
- Seatbelt and harness– Secure
- Fuel Shutoff Valve Off
- Ignition Switch Off
- Canopy – UNLATCH before touchdown
- Eyeglasses - Remove
- Face - Cushion if possible
- Flaps Up
- Master switch off when airspeed no longer required
- Touchdown - Minimum airspeed
- Airplane -Evacuate

Engine Fire - Emergency Descent

- Cabin Heat Off
- Fuel shutoff valve – OFF (pull up)
- Full throttle
- Pitch for highest possible airspeed to try and extinguish flames.
    - If air is smooth <136 KIAS
    - If turbulent <90 KIAS
- Select emergency field.
- Mayday 121.5, Squawk 7700, and activate ELT.
- Ignition switches off after fuel is consumed (30 seconds).
- Prepare for forced landing (use Engine Failure checklist).

Spin Recovery

- Reduce the **P**ower to idle
- Position the **A**ilerons to neutral (flaps up)
- **S**tabilator – slightly forward of neutral
- Apply full opposite **R**udder against the rotation
- After spin rotation stops, neutralize the rudder
- Begin applying back-elevator pressure to raise the nose
- to level flight

Overheating Cylinders/Water (In-Flight)

- Reduce RPM to lowest possible to maintain safe flight
- Land as soon as practicable

Overheating Oil Without Loss of Oil

Pressure

- Reduce RPM
- Lower angle of attack to increase speed and cooling air
- 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 Squawk 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.
- Acknowledge Tower instructions or light signals by rocking wings.
- 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 82 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.
    - A faster speed will exacerbate nose-up trim
    - A slower speed will exacerbate nose-down trim

Brake Failure during Taxi

Failure of one or both brakes during taxi eliminates any control of the airplane, either steering or stopping.

- Ignition A and B – OFF

Brake Failure during Flight

Failure of one or both brakes during flight will require planning to execute a safe landing. Find the longest, widest runway available. In light wind conditions, plan to land on the side of the runway opposite the functioning brake. (Right brake good, land on the left side of the runway.) If a crosswind exists, the airplane will tend to weathervane into the wind. If possible, choose a runway that will allow the most control during the rollout. (Right brake good, choose a runway with a left crosswind.)

On the landing rollout, the rudder will provide adequate directional control down to approximately 15 knots.

Immediately after touchdown:

- Ignition Switches: OFF

Electrical Fire

- Master switch - OFF
- Land as soon as practical

Note: Remember that you will have no radio or trim control