

## **Straight and Level Flight**

1. Maintain 90% of your attention outside. Look out for traffic.
2. Set pitch attitude with reference to the horizon. The correct straight and level pitch attitude is achieved when the horizon is about 1 thumb length above the nose of the airplane
3. Power is set between 2300-2400rpm.
4. Trim the airplane for hands off flight. Do not change pitch attitude with the trim wheel, use the yoke to set pitch attitude and trim the control pressure away.
5. Pick a point straight ahead eye level with you on the horizon and maintain a constant heading by keeping the wings level. Check that the wing tips are the same distance from the horizon.
6. Cross check the altimeter and VSI for altitude, and heading indicator for heading.
7. Make minor adjustments using elevator and aileron pressure to maintain constant heading and altitude.

## **Straight Climbs**

### TO ENTER A CLIMB:

1. Add full power and simultaneously raise the nose to the horizon.
2. Add right rudder to maintain coordination.
3. Maintain the nose up climb attitude and trim the airplane for "hands-off" flight.
4. Maintain a constant heading. Keep the wings level and crosscheck the heading indicator.

### TO LEVEL OFF FROM CLIMB:

1. 50ft before the target altitude, smoothly lower the nose to the straight and level pitch attitude.
2. Wait for the airplane to accelerate to cruise speed.
3. Reduce power (2300-2400rpm).
4. Trim control pressure away.

## **Straight Descents**

### TO ENTER A DESCENT:

- 1.Reduce power to 2100RPM
- 2.Lower the nose for a 500fpm descent rate.
- 3.Trim the airplane.
- 4.Maintain wings level

### TO LEVEL OFF FROM A DESCENT:

- 1.50ft before reaching the desired altitude, gently raise the nose to the straight and level pitch attitude and simultaneously add power for cruise flight (2300-2400RPM).
- 2.Trim for straight and level.

## Level Turns

### TO ENTER A TURN:

1. Set straight and level flight.
2. Roll the airplane to the desired bank angle by simultaneously adding aileron and rudder pressure in the direction of the turn.
3. Neutralize aileron and rudder pressure (medium bank turns only).
4. Maintain altitude with slight elevator backpressure. Trim as needed.

### TO ROLL OUT OF A TURN:

1. Approximately  $10^\circ$  before reaching the desired heading roll the airplane to straight and level using aileron and rudder pressure.
2. Relax elevator back pressure as you complete the rollout.
3. Trim.

## Climbing Turns

### TO ENTER A CLIMBING TURN:

1. Begin by entering a straight climb.
2. Start a turn using a shallow bank angle (10-15°). Note the need for increased rudder pressure, and slight right rudder in a climbing turn to the left.
3. Maintain elevator backpressure to maintain airspeed, and trim as necessary.

### TO ROLL OUT OF A CLIMBING TURN:

1. *If the target heading is reached before the altitude*, maintain the nose up climb attitude and level the wings. Maintain coordination.
2. *If the target altitude is reached before the heading*, lower the nose to level off from the climb and reduce power. Keep the bank angle constant until the desired heading is reached.
3. *If the target altitude and heading are reached at the same time*, simultaneously and smoothly lower the nose and rollout of the turn. Wait for the airspeed to build, and reduce power for cruise flight.

## Descending Turns

### TO ENTER A DESCENDING TURN:

1. Begin by entering a straight descent.
2. Roll into the turn using a shallow to medium bank angle (10-15°).
3. Set and maintain the pitch attitude that will result in a 500fpm descent.
4. Trim. Watch for the tendency to add too much elevator back pressure.

### TO ROLL OUT OF A DESCENDING TURN:

1. *If the desired heading is reached before the altitude*, roll out of the bank and maintain the nose down pitch attitude and power setting until the desired altitude is reached.
2. *If the target altitude is reached before the heading*, raise the nose to level off from the descent and add power. Maintain a constant bank angle until the desired heading is reached.
3. *If the target altitude and heading are reached at the same time*, simultaneously and smoothly raise the nose to level off, roll out of the turn, and add cruise power.

## **Power-Off Descent (Glide)**

### TO ENTER A GLIDE:

- 1.Reduce power to idle.
- 2.Maintain altitude by adding elevator backpressure.
- 3.As speed decreases, trim the airplane for best glide speed ( $V_G$ ) and begin a descent. Note the almost straight and level pitch attitude.
- 4.Make shallow bank turns in opposite directions.
- 5.Add elevator back pressure in the turn to maintain airspeed.

## Pre-maneuver Flow

### C152

Seat belts and harness ..... Secured

Fuel Selector..... ON

Mixture ..... Rich

Landing Light ..... ON

Engine Instruments..... Green

Set power and stabilize the aircraft in straight and level flight at the appropriate entry altitude and airspeed.

### C172SP

Seat belts and harness ..... Secured

Fuel Selector..... Both

Mixture ..... Rich

Landing Light ..... ON

Engine Instruments..... Green

Set power and stabilize the aircraft in straight and level flight at the appropriate entry altitude and airspeed.

### Piper Warrior/Archer

Seat belts and harness ..... Secured

Mixture ..... Rich

Fuel Pump ..... ON

Landing Light ..... ON

Engine Instruments..... Green

Fuel Selector .....on fullest tank

Set power and stabilize the aircraft in straight and level flight at the appropriate entry altitude and airspeed.

## Clearing Turns

To be performed before the start of each maneuver:

1. Visually scan the area to the left and the right of the airplane.
2. Enter a 20-30° banked turn in either direction. Maintain Altitude
3. Continuously scan the area above, below, and ahead of the flight path.
4. AFTER 90° OF TURN IS COMPLETED ROLL THE AIRPLANE LEVEL.
5. Repeat steps 1 thru 4 in the same or opposite direction.

## **Maneuvering During Slow Flight**

### **Setup**

Pre-maneuver flow ..... COMPLETE  
Clearing turns ..... COMPLETE  
Heading and Altitude ..... SET

Power ..... 1500 rpm  
Flaps .....EXTEND in increments  
AT 60 kts .....POWER 2000 rpm  
Coordination ..... MAINTAIN  
Pitch for..... MCA/STALL HORN  
Altitude ..... MAINTAIN WITH POWER

### **Power for Altitude** **Pitch for Airspeed**

### **Recovery**

Power ..... FULL IN  
Altitude ..... MAINTAIN  
Flaps ..... RETRACT SLOWLY  
Coordination ..... MAINTAIN  
Cruise checklist ..... COMPLETE

### **Objectives of Slow Flight:**

- Demonstrate mastery of a/c at minimum controllable airspeed and build stall awareness.
- Observe control characteristics at backside of power curve
- Used during preparation for learning to land

Altitude +/- 100ft  
Hdg +/- 10°  
Airspeed +10/-0 kts  
Use shallow bank angles (5-10° max)  
Recover on altitude and heading

## Power-Off Stalls (Approach)

### Setup:

Pre-maneuver flow.....complete  
Clearing turns ..... complete  
Heading and Altitude .....set

Power .....1500 rpm  
Flaps ..... down in increments  
Speed ..... stabilize glide at 65 kts  
Power ..... idle  
Hold pitch attitude slightly above horizon  
Rudder .....maintain coordination  
& wings level

### Recovery:

Backpressure .....release  
(nose below the horizon)  
Ailerons .....neutral  
Rudder .....step on high wing  
Power ..... full in  
Pitch ..... for climb  
Flaps ..... up in increments  
Altitude ..... return to starting altitude  
Cruise checklist ..... complete

## Power-On Stalls (Departure)

### Setup:

Pre-maneuver flow..... complete  
Clearing turns .....complete  
Heading and Altitude ..... set

Power ..... 1500 rpm  
Flaps ..... up  
Speed ..... slow to 55 kts, maintain alt  
Power ..... full  
Pitch .... hold attitude 18° above horizon  
Rudder.....maintain coordination  
& wings level

### Recovery:

Backpressure ..... release  
(Nose slightly below the horizon)  
Ailerons ..... neutral  
Rudder ..... step on high wing  
Power ..... full in  
Pitch ..... for climb  
Altitude .....return to starting altitude  
Cruise checklist ..... complete

## Spin Recovery

### PARE NE

Power ..... IDLE/ Flaps - UP  
Ailerons ..... NEUTRAL  
Rudder ..... FULL Opposite  
Elevator..... FORWARD

Neutralize rudder when rotation stops  
Elevator backpressure add gently to  
come out of the dive

## 360° Steep Turns

### **Setup**

Cruise checklist ..... complete  
Clearing turns ..... complete  
Heading and Altitude ..... set  
Power ..... 2200 rpm  
Airspeed ..... 95 kts (below Va)

### **Entry**

Eyes ..... on the horizon  
Turn.....start coordinated roll to 45° bank  
- Passing 30° bank add elevator backpressure to maintain altitude, and two shots of trim.  
- Add 200 rpm to maintain airspeed  
Opposite aileron.....for overbanking tendency  
Bank.....maintain 45° bank +/- 5°

### **Rollout**

Start coordinated rollout ~20° before reaching entry HDG  
Backpressure ..... release as you rollout  
Power ..... reduce to 2200 rpm  
Cruise checklist ..... complete

#### Objectives of Steep Turns:

Maintain altitude and airspeed throughout a 360° steep bank (45°) turn.

Altitude +/- 100ft  
HDG +/- 10°  
Airspeed +/-10 kts  
Bank 45° +/- 5°