# PROCEDURES

## CESSNA 172

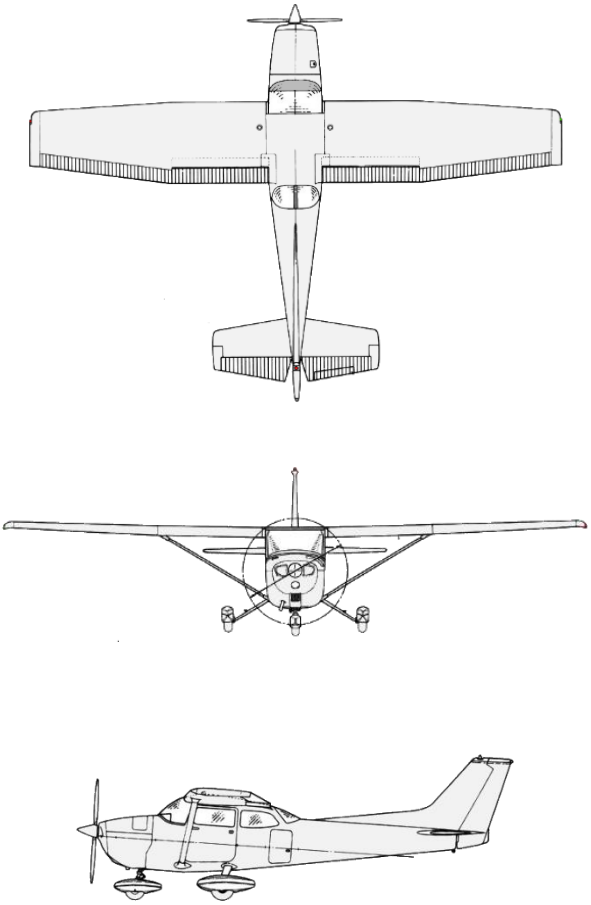
PH-SKC, PH-JBC en PH-DON


PROCEDURES-C172 – EN – VERSIE 1.7 – 08042023

info@vliegclubhilversum.nl

AEROCLUB HILVERSUM - AMSTERDAM

CUSTOMIZED FOR NL-ATO-227



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# Contents

# Revision record

**Revision pages from version 1.0**

| REVISION NUMBER: | REVISION DATE: | TOTAL PAGES : | REVISED PAGES: | NOTES: |
|---|---|---|---|---|
| | 26-01-2022 | ALL | ALL | - |
| | 29-01-2022 | 3 | 2 - 8 - 41 | CORRECTED ITEMS |
| | 30-01-2022 | ALL | ALL | CORRECTED ITEMS |
| | 01-02-2022 | 1 | 39 | CORRECTED ITEMS |
| | 26-02-2022 | 4 | 25,34,39,43 | CORRECTED ITEMS |
| | 20-03-2022 | ALL | ALL | CORRECTED ITEMS |
| | 04-04-2022 | ALL | ALL | CORRECTED ITEMS |
| | 05-05-2022 | 3 | 8 - 9 - 23 | CORREDTED SPEEDS |
| | 22-05-2022 | 1 | 8 | CORRECTED ITEMS |
| | 26-05-2022 | ALL | 22, 25, 26, 27 | REVISED SLOW FLIGHT AND CARB HEAT STALL EXER. |
| | 31-08-2022 | 1 | 12 | ADDED RADIO TELEPHONY EXAMPLES |
| | 31-08-2022 | 1 | 35 | REVISED CIRCUIT PROCEDURES |
| | 31-08-2022 | 1 | 45 | IMPORTANT LINKS |
| | 07-09*2022 | 1 | 39 | CHANGES CROSSWIND TECHNIQUES |
| | 09-09-2022 | 1 | 42 | CHANGES IN FIG 26B AND 26C |
| | 10-09-2022 | 1 | 44 | PRECAUTIONARY LANDING |
| | 19-09-2022 | 1 | 15 | ADDED MISSING NUMBERING |
| 1.8 | 27-12-2022 | 47 | ALL | INCLUSION RADIO PROCEDURES, RE ORDENING OF CIRCUIT PROCEDURES, NON NORMAL PROCEDURES AND DOWNWIND CHECKLIST&PROCEDURES |
| 1.7 | 08-04-2023 | ALL | ALL 14 AND 15 SPECIFIC | THE LAYOUT AND ALL IMAGES ADAPTED TO THE LATEST CHANGES ACCORDING TO OTHER MANUALS AND CHECKLISTS. POWERSETTING TABLE AND TAXI CHECKS EXPLAINED |
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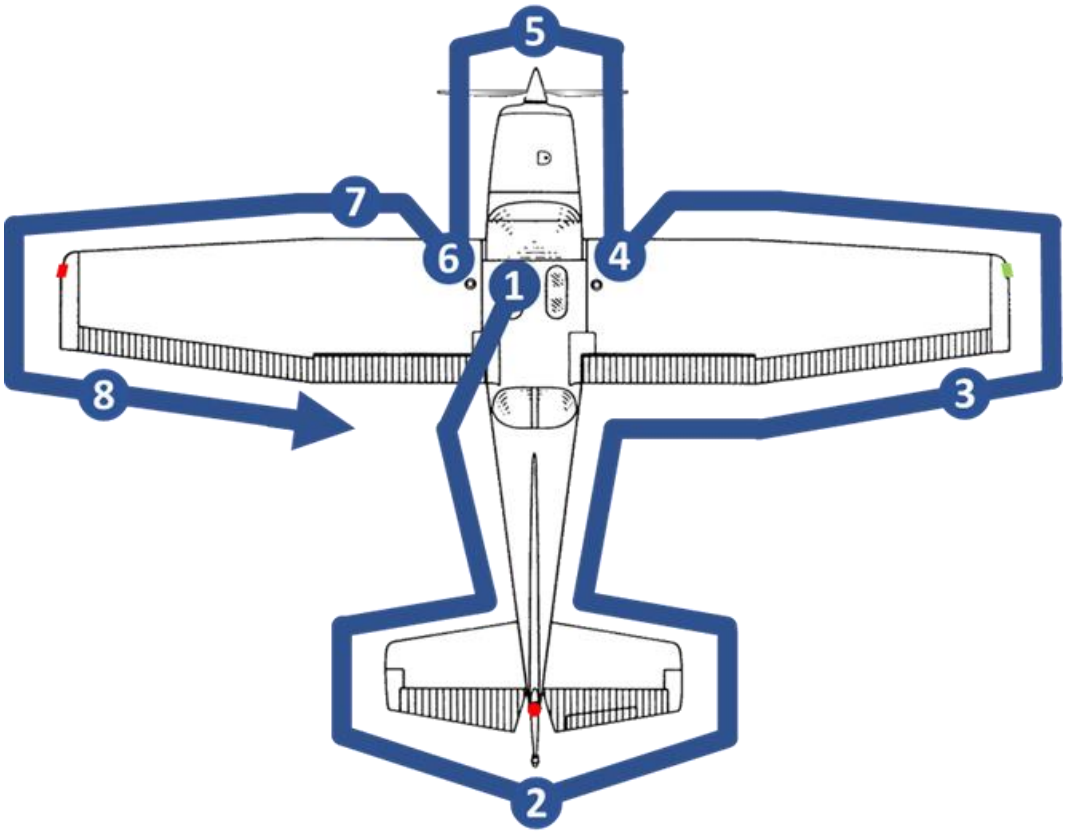
# Walk Around checklist

## Preflight inspection




### 1 CABIN

- ✓ Airplane documents ..... CHECKED
- ✓ Gust lock & pitot cover ..... REMOVED AND STOWED
- ✓ Parking brake ..... ON
- ✓ Ignition key ..... OFF
- ✓ Canopy ..... CLEAN
- ✓ All circuit breakers ..... IN
- ✓ Master switch ..... ON
- ✓ Fuel quantity indicators ..... CHECK QUANTITY
- ✓ Flaps ..... DOWN
- ✓ All aircraft lights ..... ON AND CHECKED
- ✓ All aircraft lights ..... OFF
- ✓ Master switch ..... OFF
- ✓ HOBBS and VUT ..... CHECKED
- ✓ Foreign object inspection in cabin ..... CHECKED
- ✓ Emergency locator transmitter (ELT) ..... ARM

WARNING

When turning on the master switch, using an external power source, or pulling the propeller through by hand, treat the propeller as if the ignition switch were on. Do not stand, nor allow anyone else to stand, within the arc of the propeller, since a loose or broken wire or a component malfunction could cause the propeller to rotate.

## 2 FUSELAGE AND TAIL

- ✓ Baggage door ..... CHECK LOCKED
- ✓ Control surfaces ..... CHECK FREEDOM

## 3 RIGHT WING TRAILING EDGE

- ✓ Flap .....CHECK FOR SECURITY AND CONDITION
- ✓ Aileron .....CHECK FREEDOM OF MOVEMENT AND SECURITY

## 4 RIGHT WING

- ✓ Main wheel tire (1.9 BAR)..... CHECK FOR PROPPER INFLATION
- ✓ Fuel tank sump .....SAMPLE
- ✓ Fuel quantity .....CHECK VISUALLY
- ✓ Fuel filler cap .....SECURE

## 5 NOSE

- ✓ Engine oil level .....CHECK MIN 5 MAX 7 QUARTS
- ✓ Fuel strainer..... DRAIN
- ✓ Propeller and spinner .....CHECK FOR NICKS AND SECURITY
- ✓ Landing light ..... CHECK CLEANLINESS
- ✓ Air Filter .....CHECK FOR FOREIGN MATTER
- ✓ Nose gear shock strut (3.1 BAR) ..... CHECK FOR PROPPER INFLATION
- ✓ Nose wheel tire (2.35 BAR) ..... CHECK FOR PROPPER INFLATION
- ✓ Static source opening .....CHECK FOR BLOCKAGE

## 6 LEFT WING

- ✓ Main wheel tire(1.9 BAR)..... CHECK FOR PROPPER INFLATION
- ✓ Fuel tank sump .....SAMPLE
- ✓ Fuel quantity .....CHECK VISUALLY
- ✓ Fuel filler cap .....SECURE

## 7 LEFT WING LEADING EDGE

- ✓ Pitot tube ..... CHECK OPENING FOR BLOCKAGE
- ✓ Fuel tank vent opening ..... CHECK OPENING FOR BLOCKAGE
- ✓ Stall warning opening ..... CHECK OPENING FOR BLOCKAGE

## 8 LEFT WING TRAILING EDGE

- ✓ Aileron ..... CHECK FREEDOM OF MOVEMENT AND SECURITY
- ✓ Flap..... CHECK FOR SECURITY AND CONDITION

**WALK-AROUND CHECKLIST COMPLETED**

# Radio telephony examples:

## Before departing : EHHV

PH-ABC : Hilversum radio PH-ABC radio check"
EHHV : "PHABC read you 5 go ahead"
PH-ABC : "Cessna 172, local training flight, 2 pob. request aerodrome information."
EHHV : "PHABC, Runway 25, left hand circuit."
PH-ABC : "Runway 25. lefthand circuit PH-ABC."
PH-ABC : "lining up runway 25"
PH-ABC : "PH-ABC leaving the circuit."

## Initial call Dutch Mil/Amsterdam information: (132.350, 124.300)

PH-ABC : "Dutch Mil/Amsterdam information PH-ABC" (overhead .... " for DM only, source: AIP)
Dutch Mil : "PH-ABC Go Ahead!"
PH-ABC : "PH-ABC Cessna 172, VFR EHHV-EHHV, Training Flight, 2 POB request flight information service "
Dutch Mil : "PH-ABC QNH 1020
PH-ABC : "QNH 1020 PH-ABC"

## Initial call tower controlled airport:

PH-ABC : ".....(name) .tower PH-ABC "
..... TOWER : "PH-ABC Go Ahead!"
PH-ABC : "PH-ABC Cessna172, .....(position) at .....(altitude) VFR, information .....(ATIS), for landing
..... TOWER : "PH-ABC ROGER .....(name) arrival, runway....., info....(ATIS) correct, QNH 1020.
PH-ABC : "QNH 1020 PH-ABC"

## Arrival at EHHV

PH-ABC : "Hilversum radio, PH-ABC"
EHHV : "PH-ABC, Hilversum radio Go ahead"
PH-ABC : "PH-ABC. Position ..... Request aerodrome information"
EHHV : "PHABC, Runway 25, left hand circuit. (Gilders.... Para's….)"
PH-ABC : "Runway 25. lefthand circuit PH-ABC."
PH-ABC : "Entering downwind runway 25"
PH-ABC : "Turning base" (not required)
PH-ABC : "PH-ABC Final Runway 25 (full stop) (touch and go)"

## Changing Frequency from Amsterdam Information/Dutch Mil to Hilversum Radio

PH-ABC : "DUTCHMIL PH-ABC overhead … request frequency change to Hilversum radio"
Dutch Mil : "PH-ABC, frequency change approved"

## Changing Frequency from Dutch Mil to Amsterdam (FIC)

PH-ABC : "Amsterdam info, PH-ABC overhead … request frequency change to Amsterdam Information"
FIC : "PH-ABC, frequency change approved"

# Cockpit layout (PH-DON)

## 1 Flight Instruments

Airspeed indicator
Attitude indicator (Garmin G5)
Altitude indicator
Turn and bank indicator
Directional gyro indicator (Garmin G5)
Vertical speed indicator
Magnetic compass

## 2 Navigation Indicators

VOR/ILS indicator
VOR indicator
ADF bearing indicator

## 3 Radio Stack

Audio control panel
NAV / COM 1
NAV / COM 2
DME
ADF radio
Transponder

## 4 Engine Instruments

Tachometer (not visible)
Oil temperture and pressure
Fuel quantity indicators
EGT, exhaust gas temperature
CHT, cylinder head temperature

## 5 Engine Controls

Mixture control (red)
Throttle (power)
Carburetor heat
Fuel selector valve handle
Primer
Ignition switch

## 6 Flight Controls

Control column
Rudder control
Elevator trim
Rudder trim
Flaps (electrical)

## 7 Electrical

Magnetos
Master switch
Ammeter
Avionics master switch
Landing lights
Strobe lights
ELT, emergency locator Transmitter switch
Pitot head
Fuses
Headset connection
External mic

## 8 Others

Hobb's
VUT
Parking brake
Cabin air

# General information

| Speeds | $V_{speeds}$ | PH-SKC | PH-JBC | PH-DON |
|---|---|---|---|---|
| Stall speed flaps up | $V_{S1}$ | 44 kts | 49 kts | 44 kts |
| Stall speed flaps down | $V_{SO}$ | 33 kts | 42 kts | 33 kts |
| Maneuvering speed | $V_A$ | 97 kts | 97 kts | 99 kts |
| Max speed flaps extended: 10° | $V_{FE}$ | 85 kts | 87 kts | 110 kts |
| Max speed flaps extended: 10°- 30° | $V_{FE}$ | - - | - - | 85 kts |
| Never exceed speed | $V_{NE}$ | 160 kts | 158 kts | 158 kts |
| Max structural cruising speed | $V_{NO}$ | 128 kts | 126 kts | 127 kts |
| Best rate of climb (sea level) speed | $V_Y$ | 73 kts | 70 kts | 76 kts |
| Best angle of climb, (sea level) speed | $V_X$ | 60 kts | 60 kts | 60 kts |
| Max demonstrated cross wind | -- | 15 kts | 15 kts | 15 kts |
| Max takeoff cross wind | -- | -- | 20 kts | -- |
| Best glide speed flaps up | $V_{BG}$ | 65 kts | 70 kts | 65 kts |
| Best glide speed flaps down | $V_{BG}$ | 60 kts | 65 kts | 60 kts |

| Weights | PH-SKC | PH-JBC | PH-DON |
|---|---|---|---|
| Empty weight | 691.3 Kg | 638.9 Kg | 694.3 Kg |
| Max fuel in kg | 136.1 Kg | 103.4 Kg | 108.9 Kg |
| Max fuel in liters | 189 L | 143.6 L | 151.2 L |
| Maximum baggage in baggage - 1 | 54 Kg | 54 Kg | 54 Kg |
| Maximum baggage in baggage - 2 | 23 Kg | 23 Kg | 23 Kg |
| Max T/O normal category | 1043 Kg | 1046 Kg | 1089 Kg |
| Utility category | 910 Kg | 907.1 Kg | 955.7 Kg |

| Average fuel consumption | | PH-SKC | PH-JBC | PH-DON |
|---|---|---|---|---|
| Tank capacity (unusable) | USG \| l | 4 \| 15,1 | 4 \| 15.1 | 3 \| 11.4 |
| Tank capacity (usable) | USG \| l | 50 \| 189 | 38 \| 144 | 40 \| 151 |
| 2300 rpm cruise 60% | USG \| l/hr | ±6,7 \| 25.4 | ±6,7 \| 25.4 | ±6,7 \| 25.4 |
| 2500 rpm climb 72% | USG \| l/hr | ±7.8 \| 29.5 | ±7.8 \| 29.5 | ±7.8 \| 29.5 |
| Full power gallon / Hr | USG \| l/hr | ±9.7 \| 36,7 | ±9.7 \| 36,7 | ±9.7 \| 36,7 |

## G Loads

| | | | |
|---|---|---|---|
| Maximum G-load – flaps up | normal category | -1,52G | +3,8G |
| | utility category | -1,76G | +4,4G |
| | with (any) Flaps | -0,00G | +3,0G |

**NOTE:** For mass & balance and the other calculations, always use the aircraft's POH.

**NOTE:** Mass and balance: check the ACHA website for the latest information.

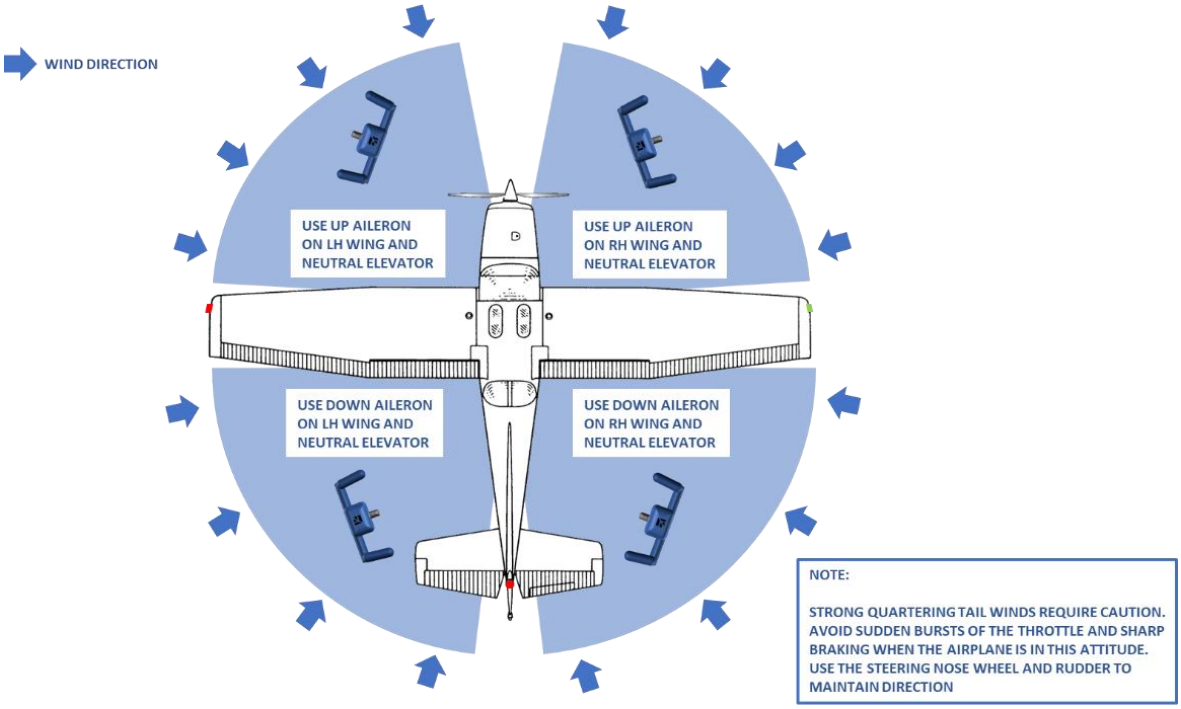
# Powersetting/configuration versus speed table

| | throttle(RPM) | flaps | speed |
|---|---|---|---|
| Climb | full throttle | 10° | 70 kts |
| Climb | full throttle | UP | 75 kts |
| Cruise | ±2300RPM | UP | 100 kts |
| Descent | ±1800RPM | UP | 100 kts |
| Downwind | ±1900RPM | UP | 80 kts |
| Downwind | ±1900RPM | 10° | 75 kts |
| Base | ±1500RPM | 20° | 70 kts |
| Final | as required | 30° | 60 – 70 kts |

# Normal procedures

## Taxiing with different wind directions

*Figure 1 – Taxiing with different wind directions. (taxiing diagram)*



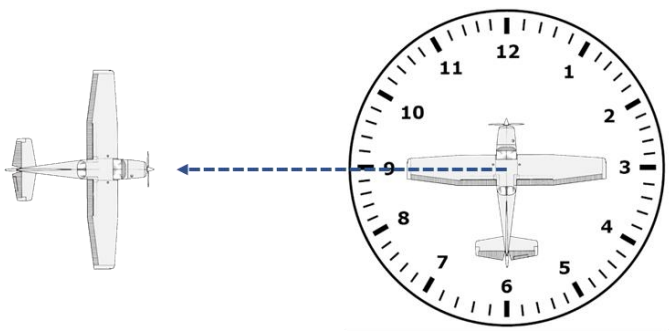

## Instruments/brakes check during taxiing

When commencing taxiing at the beginning of a flight, the brakes and proper functioning of the turn/slip indicator, heading/track indicator (G5), attitude indicator (G5) and compass shall be checked and called out loud.

## Reporting other aircraft

During the scanflow (lookout) you may see other airplane traffic. Report this directly by saying: "*Traffic, 9 o' clock, just above the horizon*". Use the clock method combined with above, below or on the horizon.

*Figure 2 – Clock method*




*"Traffic, 9 O'clock, just above the horizon"*

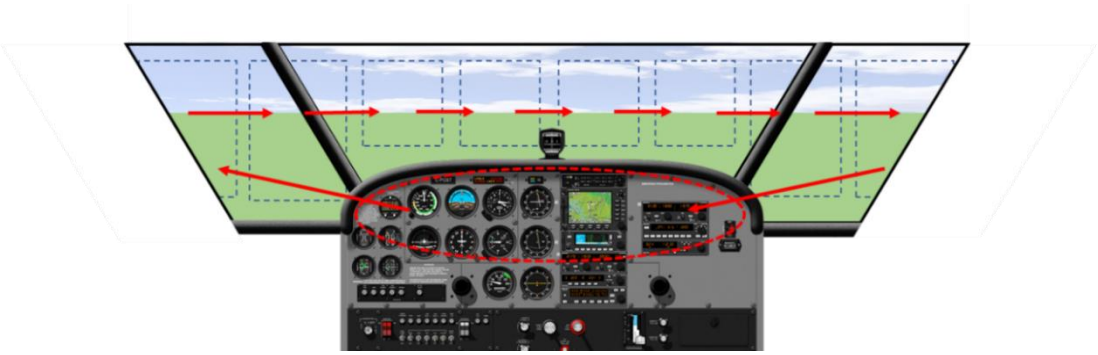
## Structured scanflow

- Scan flow for straight and level flight (side to side scanning method and front to side scanning method)
- Scan in sectors (see Figure 3a and 3b)
- Check nose attitude
- Short inside scan (altitude, speed, skid indicator)
- Approx. every 15 min, engine instruments and fuel quantity

## Side to side scanning method

Start at the far left of your visual area and make a methodical sweep to the right, pausing very briefly in each block of the viewing area to focus your eyes. At the end of the scan, return to and scan the instrument panel and then repeat the external scan.

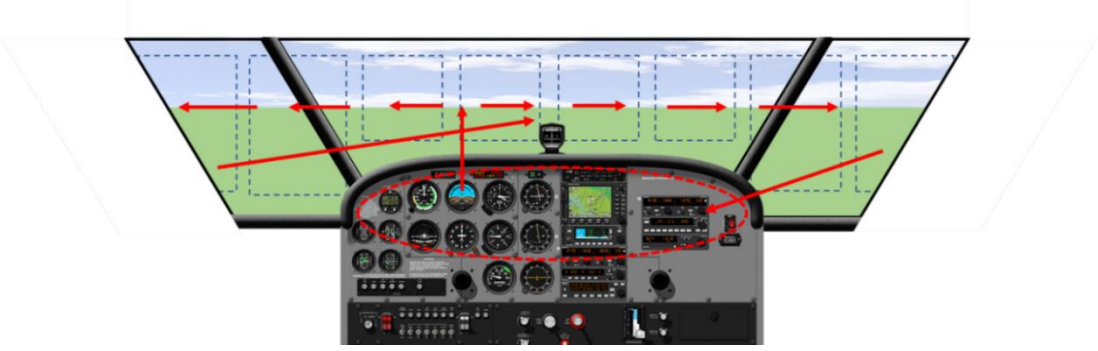
*Figure 3a – Structured lookout side to side scanning technique*



## Front to side scanning method

Start in the center block of your visual field (center of front windshield); move to the left, focusing very briefly in each block, then swing quickly back to the center block after reaching the last block on the left and repeat the action to the right. Then, after scanning the instrument panel, repeat the external scan.

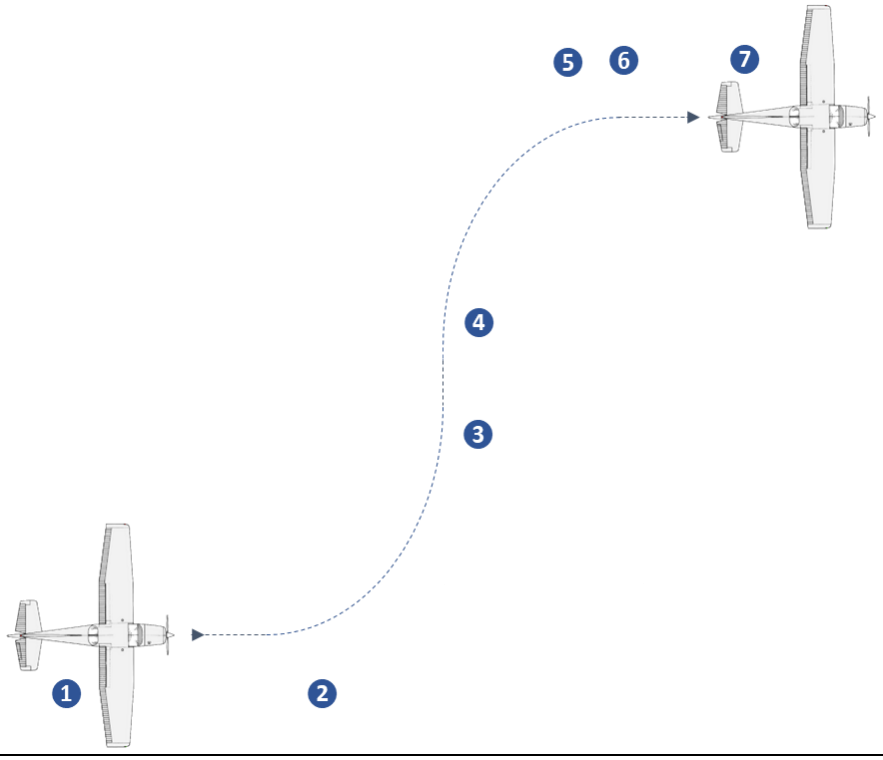
*Figure 3b — Structured lookout front to side scanning technique*



## Clearing turns before every maneuver

- Check:
  - ✓ Engine instruments
  - ✓ Take a point in the distance (PITD)
- First make a left turn:
  - ✓ Check right for traffic above
  - ✓ Check in front for other traffic
  - ✓ Check left for other traffic below
- Roll out:
  - ✓ Check left, front and right for other traffic
- Make a subsequent right turn:
  - ✓ Check left for other traffic above
  - ✓ Check in front for other
  - ✓ Check right for other traffic below
- Roll out:
  - ✓ Check left, front and right for other traffic
- Keep scanning and regularly check:
  - ✓ Nose attitude
  - ✓ Altitude (constant)
  - ✓ Airspeed (100 kts)
  - ✓ Coordinated flight (ball centered, wings horizontal)
- Proceed with planned maneuver

*Figure 4 – Clearing Turns for every maneuver*



## Straight and level flight

(1) Scan for traffic
(2) Set nose attitude for straight and level flight (approx. 4 fingers)
(3) Wings horizontal
(4) Keep direction with rudder (ball centered)
(5) Power setting 2300 rpm
(6) Airspeed 100 kts
(7) Trim off forces

- ✓ Maintain lookout and regularly check:
- ✓ Nose attitude
- ✓ Altitude (constant)
- ✓ Airspeed (100 kts)
- ✓ Coordinated flight (ball centered)

*Figure 5a – Straight and level flight*


*Figure 5b – Straight and level flight*

## Transition from straight and level flight to climb

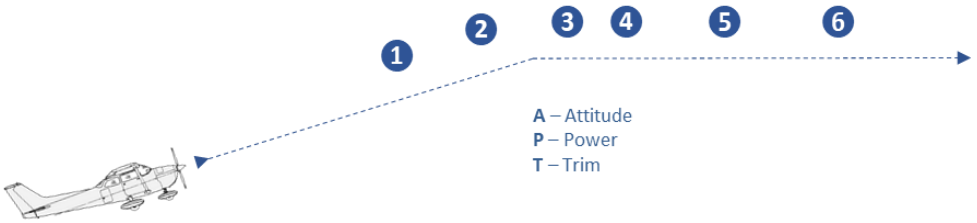
(1) Check engine instruments
(2) Scan for traffic
(3) raise nose to climb attitude
(4) Speed decreases
(5) Airspeed approaches 80 kts, smoothly advance throttle full forward
(6) Wings horizontal, coordinated rudder (right rudder), PITD
(7) Trim off forces
(8) Make clearing turns every 500ft (15° bank angle, 30° left and right off course)

*Figure 6 – Transition from straight and level flight to Climb*


## Transition from climb to straight and level flight

(1) Scan for traffic
(2) 20ft before desired altitude, slowly lower nose to straight and level attitude with 100 kts.
(3) Airspeed accelerates to 100 kts
(4) reduce throttle to 2300 RPM
(5) Wings horizontal, coordinated rudder, PITD
(6) Trim off forces

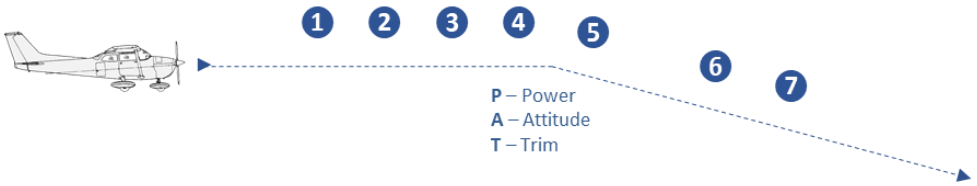
*Figure 7 – Transition from Climb to Straight and Level Flight*



## Transition from straight level flight to descending flight

(1) Check engine instruments
(2) Carburetor heat ON/WARM
(3) Scan for traffic
(4) Throttle 1800 RPM (every 100 RPM equals ±100 ft/min extra descent rate)
(5) Simultaneously lower nose to descent attitude, maintain 100 kts.
(6) Wings horizontal, coordinated rudder (left rudder), PITD
(7) Trim off forces

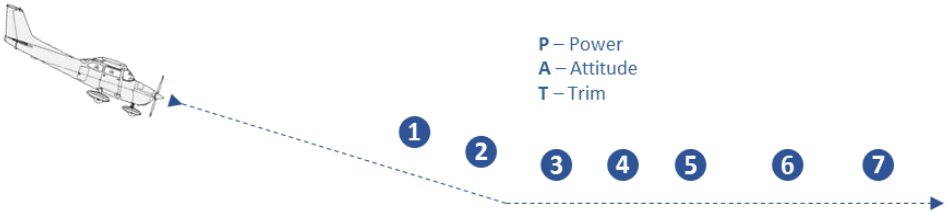
*Figure 8 – Transition from straight level flight to descending flight*




## Transition from descent to straight and level flight

(1) Scan for traffic
(2) 100ft before desired altitude – carburetor heat OFF
(3) 50ft before desired altitude – increase throttle to ±2300 RPM,
(4) raise nose to straight and level flight attitude
(5) Airspeed 100 kts
(6) Wings horizontal, coordinated rudder, PITD
(7) Trim off forces

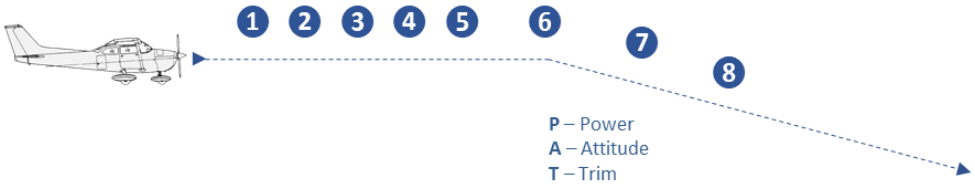
*Figure 9 – Transition descent to straight and level flight*



## Transition from straight and level to glide

(1) Check engine instruments
(2) Carburetor heat ON/WARM
(3) Scan for traffic
(4) Smoothly retard throttle to idle, wings horizontal, coordinated rudder (left rudder), PITD
(5) Maintain altitude, slowly raise nose attitude
(6) Airspeed approaches 65 kts, lower nose to glide attitude
(7) Wings horizontal, coordinated rudder (left rudder), PITD
(8) Trim off forces

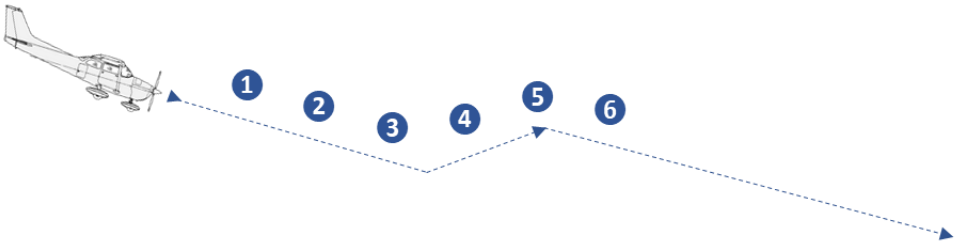
*Figure 10 – Transition from straight and level to glide*




## Clearing the engine during glide

(1) Check engine instruments
(2) Scan for traffic
(3) Smoothly advance throttle full forward, coordinated rudder, PITD
(4) Simultaneously raise nose to climb attitude, maintain 65 kts
(5) After 3-5 sec smoothly close throttle, coordinated rudder, PITD, lower nose to glide attitude
(6) Continue with glide

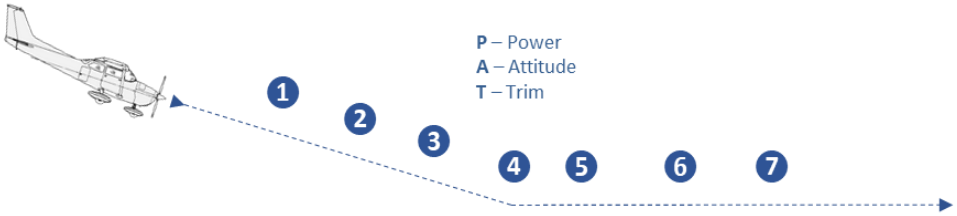
*Figure 11 – Clearing the engine during glide*



## Transition from glide to straight and level flight

(1) Scan for traffic
(2) 150ft before desired altitude, advance throttle to ±2300 RPM and carburetor heat OFF
(3) Maintain glide attitude, airspeed increases
(4) 50ft before desired altitude, raise nose to straight and level flight attitude
(5) Airspeed 100 kts
(6) Wings horizontal, coordinated rudder, PITD
(7) Trim off forces

*Figure 12 – Transition from glide to straight and level flight*

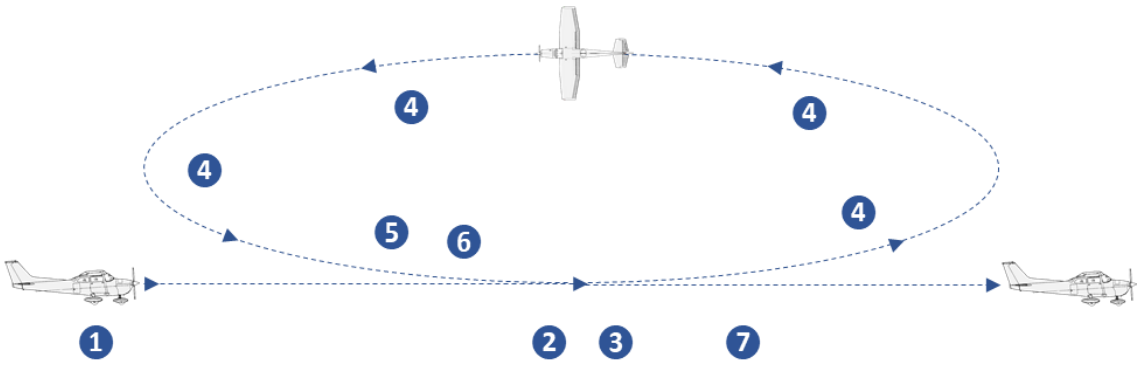



## Level turn

(1) Scan for traffic and take a PITD
(2) Roll into turn, 30° bank angle, coordinated with rudder (ball centered) and;
(3) Increase backpressure to maintain altitude
(4) Keep scanning for traffic and check:
- ✓ Bank angle 30°
- ✓ Nose attitude
- ✓ Instruments: altitude indicator, vertical speed indicator and airspeed ±95 kts, slip indicator

(5) 10° before desired heading or PITD start to roll wings level, coordinated with rudder (ball centered) and;
(6) Decrease backpressure to maintain altitude
(7) Wings level, coordinated with rudder, PITD, 100 kts

*Figure 13 – Horizontal turn*



## Climbing turn

(1) Scan for traffic

(2) Roll into turn max 15° bank angle

(3) Coordinated with rudder (ball centered)

(4) Keep scanning and check:

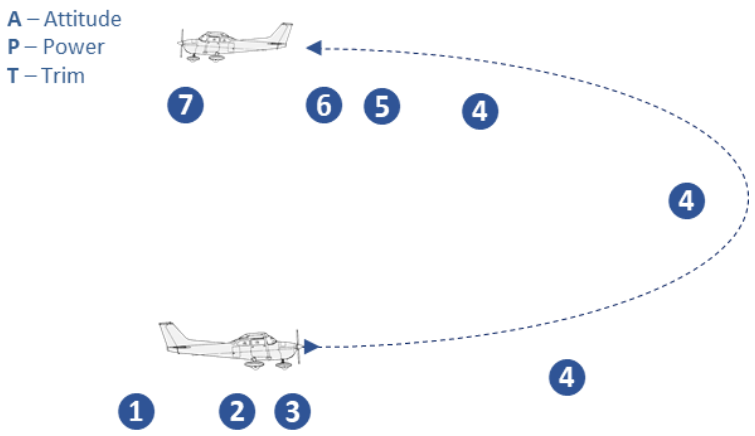
- ✓ Bank angle 15°
- ✓ Nose attitude
- ✓ Instruments: approaching altitude, airspeed 80 kts, slip indicator

(5) 5° before desired course or PITD, start to roll wings level

(6) Coordinated with rudder

(7) Wings horizontal, coordinated with rudder, PITD, airspeed 80 kts

*Figure 14 – Climbing turn*



## Descending turn

(1) Scan for traffic

(2) Roll into turn, 30° bank angle

(3) Coordinated with rudder (ball centered)

(4) Keep scanning for traffic and check:

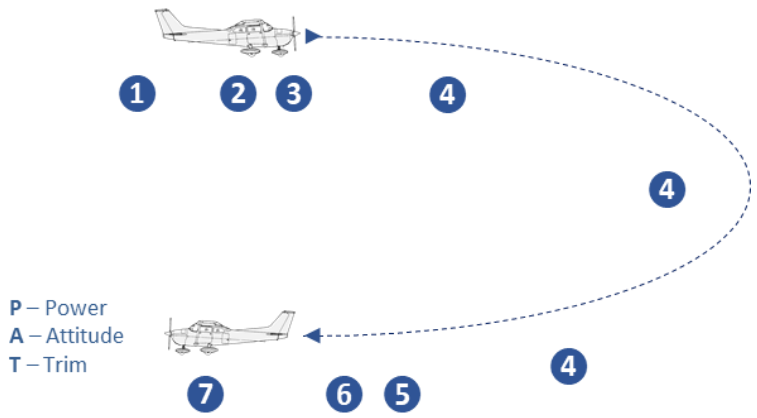
- ✓ Bank angle 30°
- ✓ Nose attitude
- ✓ Instruments: approaching altitude, airspeed 100 kts, slip indicator

(5) 10° before desired course or PITD start to roll wings level

(6) Coordinated with rudder

(7) Wings horizontal, coordinated with rudder, PITD, airspeed 100 kts

*Figure 15 – Descending turn*

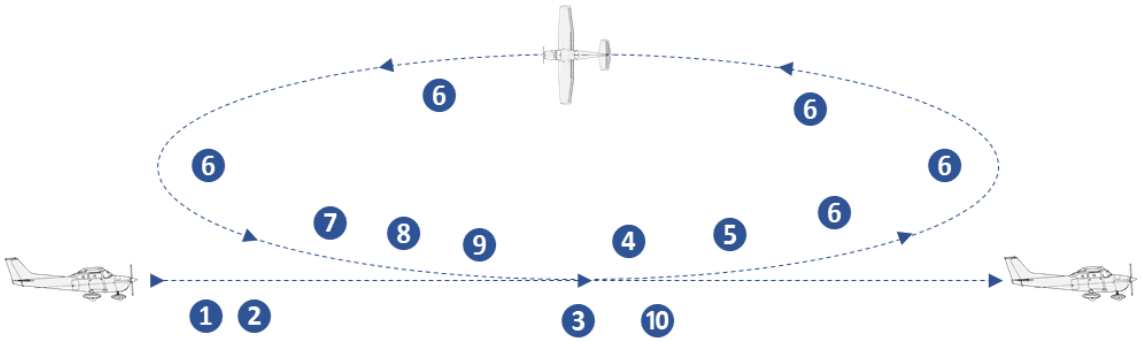


## Steep turn (45°)

(1) Check engine instruments
(2) Scan for traffic and take a PITD
(3) Roll into turn, 45° bank angle, coordinated with rudder (ball centered)
(4) When bank angle passes 30°, increase rpm by 200 and;
(5) Increase backpressure to maintain altitude
(6) During the turn keep scanning for traffic and check:
- ✓ Bank angle 45°
- ✓ Nose attitude
- ✓ Instruments: altitude indicator, vertical speed indicator and airspeed 100 kts

(7) 20° before desired course or PITD start to roll wings level, coordinated with rudder (ball centered)
(8) When bank angle passes 30° decrease rpm by 200 and;
(9) Decrease back pressure to maintain altitude
(10) Wings horizontal, coordinated with rudder, PITD, 100 kts

*Figure 16a – Steep turn with constant height and airspeed*




**NOTE:** Minimum altitude for this exercise is 1500 ft AGL Dual / 2000 ft AGL Solo

*Figure 16b – Steep turn – Pilot View*

Left and right turn

Left and right turn

## Slow flight

- Agree before the flight which exercise will be done, Vs +5 kts or Vs +10 kts and which flap setting will be used
- Difference is that with Vs+5 kts the stall warning will sound, with Vs+10 it may not
- Calculate beforehand the Vs with the used flap setting
- The POH for the PH-DON gives stall speeds for flaps UP, 10° en 30°, interpolate for flaps 20°
- The POH for the PH-SKC gives stall speeds for flaps UP, 10° and 40°. However, due to the modification The max flap setting is 30°, use stall speeds as given in the STC , interpolate for flaps 20°.
- Max bank angle 15° during exercise due to margin to stall

## Exercise slow flight

- Check engine instruments, carburetor heat ON/WARM
- Scan for traffic
- Reduce throttle to 1500 RPM
- Maintain altitude by slowly raising nose, airspeed decreases
- When using flaps as soon as the airspeed is in the white arc, lower flaps in steps to planned setting, watch out for ballooning
- As airspeed approaches planned speed, advance throttle to ± 2200 RPM
- Wings horizontal, coordinated rudder
- Trim off forces
- Keep scanning for traffic and check:
  - ✓ Nose attitude, altitude
  - ✓ PITD, coordinated with rudder
  - ✓ Airspeed VS+10 kts or VS+5 kts

| | $V_{speeds}$ | PH-SKC | PH-DON | PH-JBC |
|---|---|---|---|---|
| Stall Speed Flaps Up | $V_{S1}$ | 44 kts | 44 kts | 49 kts |
| Stall Speed Flaps 10° | $V_{S1}$ | 37kts | 37 kts | 47 kts |
| Stall speed Flaps 20° | $V_{S1}$ | 35 kts | 35 kts | 44 kts |
| Stall Speed Flaps 30° | $V_{SO}$ | 33 kts | 33 kts | 42 kts |

## Accelerate to 100 kts

- Smoothly advance throttle full forward, carburetor heat OFF
- Wings horizontal, PITD, ball centered, coordinated rudder
- When speed above 60 kts, raise flaps in steps before speed increases above white arc
- Lower nose as speed increases, maintain altitude
- Speed 100 kts, throttle 2300rpm
- Trim off forces

# Air Exercises

## The stall

## Planning, crewbriefing and checks before the stall

The main purpose of the stall exercise is to teach the student to recognize the symptoms of an approaching stall so as to avoid getting into a stall. The second goals is to, in the event that an actual stall occurs, be able to recover the airplane to normal flight. Because the airplane has limited maneuverability during this exercise, extra precautions have to be taken before starting the exercise.

**NOTE:** Make a plan first to ensure a safe execution of the maneuver.

**NOTE:** Priority shall be given to recovery from the stall (breaking the stall) and not height loss!

## Crewbriefing:

- Type of stall
- Altitude and heading/course during the maneuver
- When the recovery starts and in what manner

## Inside checks:

- ✓ Ignition .....BOTH
- ✓ Landing light ..... ON
- ✓ Throttle.....2300 RPM
- ✓ Mixture.....RICH
- ✓ Flaps.....UP
- ✓ Fuel selector .....BOTH
- ✓ Engine instruments ..... (temp and pressures in the green) CHECK
- ✓ Speed .....100 kts
- ✓ Belts, loose equipment .....FASTENED/STOWED

## Outside checks – APOS

### Altitude:

- full stall: recovered above 3000ft solo or 2000ft dual
- approach to stall: recovered above 2000ft solo or 1500ft dual

### Position:

not above**:**

- Open water (because lack of horizon)
- Cities or industrial areas
- airports or CTR's
- other traffic
- open air assembly's of people
- 4/8 cloud cover or more

### Orientation:

- Keep track of position
- Do not fly in direction of above mentioned points
- Take a PITD or significant line

### Sky clearing turns:

- Clearing turns 2x 90° or;
- Clearing turn 180° (take a new PITD)

### Checks after the stall

- ✓ Flaps.....UP
- ✓ Carburetor heat..... OFF
- ✓ Throttle .....2300 RPM
- ✓ Check engine instruments (temp and pressures in the green).....CHECK
- ✓ Orientation .....CHECK

## Stall with flaps up

- Clearly state “starting the exercise”
- Smoothly close the throttle, carburetor heat ON/Warm
- Wings horizontal, coordinated with rudder (ball centered), PITD
- Nose attitude increases with decreasing airspeed, maintain altitude, don’t trim off forces
- Wings horizontal, maintain heading with rudder, PITD

  - **Start recovery in case of full stall:**
    - ✓ Nose dip (self-recovery)
    - ✓ Wing dip (initially with rudder, after the nose is lowered and stall is recovered, use ailerons)
    - ✓ High descent rate with full aft elevator; whichever comes first

  - **Start recovery in case of approach to stall:**
    - ✓ Stall warning
    - ✓ Buffet
    - ✓ 5 kts above stall speed; whichever comes first

## Recovery with power

- Call out “recovery” and: - For full stall, lower nose to glide attitude
  - For approach to stall lower nose just below S&L Attitude
- Call out “recovery” and immediately lower nose to glide attitude
- Smoothly advance throttle full forward, carburetor heat OFF
- At minimum 60 kts, gently raise nose to climb attitude (avoid a secondary stall)
- Wings horizontal, coordinated rudder (ball centered), PITD
- Adjust nose attitude for correct climb attitude with airspeed 80 kts
- Climb back to initial altitude and transition to straight and level flight

## Recovery without power

- Call out “recovery” and immediately lower nose to position lower than glide attitude
- Wings horizontal, coordinated rudder (ball centered), PITD
- Adjust nose to attitude for glide, 65 kts
- Trim off forces
- Transition to straight and level flight at desired altitude (see transition from glide to straight and level flight)

## Stall with flaps down

- Clearly state “starting the exercise”
- Smoothly close the throttle, carburetor heat ON/Warm
- Wings horizontal, coordinated rudder (ball centered), PITD
- Nose attitude increases with decreasing airspeed, maintain altitude, don’t trim off forces
- Wings horizontal, coordinated rudder (ball centered), PITD
- As soon as airspeed is in white arc is lower flaps in steps
- Watch out for ballooning, maintain altitude

  - **Start recovery in case off full stall:**
    - ✓ Nose dip (self recovery)
    - ✓ Wing dip (initially with rudder, after the nose is lowered and stall is recovered, use ailerons)
    - ✓ High descent rate with full aft elevator; Whichever comes first

  - **Start recovery in case off approach to stall:**
    - ✓ Stall warning
    - ✓ Buffet
    - ✓ 5 kts above stall speed; Whichever comes first

### Recovery with power from stall with flaps

- Call out “recovery” and: - For full stall, lower nose to glide attitude
  - For approach to stall lower nose just below S&L Attitude

- Call out “recovery” and immediately lower nose to glide attitude
- Smoothly advance throttle full forward, carburetor heat OFF
- At minimum 60 kts, gently raise nose to climb attitude (avoid a secondary stall)
- Wings horizontal, coordinated rudder (ball centered), PITD
- Select flaps 10°
- Adjust nose to correct climb attitude flight with 65 kts
- Select flaps UP, airspeed 80kts
- Climb back to initial altitude and transition to straight and level flight

## Approach to stall descending turn in approach configuration

- Clearly state “starting the exercise”
- Reduce throttle to 1500 RPM, carburetor heat ON/Warm
- Wings horizontal, coordinated with rudder (ball centered), PITD
- Maintain altitude, nose attitude increases with decreasing speed, don’t trim off forces
- Airspeed in white arc, select flaps in stages to 10°
- Start a descending turn with 20° bank angle
- Close the throttle and slowly raise the nose
  - **Start recovery on**
    - ✓ Stall warning
    - ✓ Buffet
    - ✓ 5 kts above stall speed (whichever comes first)

## Recovery with power from approach to stall during descending turn

- Call out “recovery” and immediately lower nose to descent attitude
- Roll (coordinated) wings level
- Start the go-around procedure

## Approach to stall in climbing turn without flaps

- Clearly state “starting the exercise”
- Start a climbing turn with 15° bank angle
- Raise the nose attitude so as to decelerate the speed, maintain 15° bank angle
  - **Start recovery on:**
    - ✓ Stall warning
    - ✓ Buffet
    - ✓ 5 kts above the stall speed without flaps (Whichever comes first)

## Recovery from approach to stall in climbing turn

- Call out “recovery” and immediately lower nose to straight & level flight
- Roll (coordinated with rudder) wings level
- Accelerate to 100 kts

# Circuit procedures

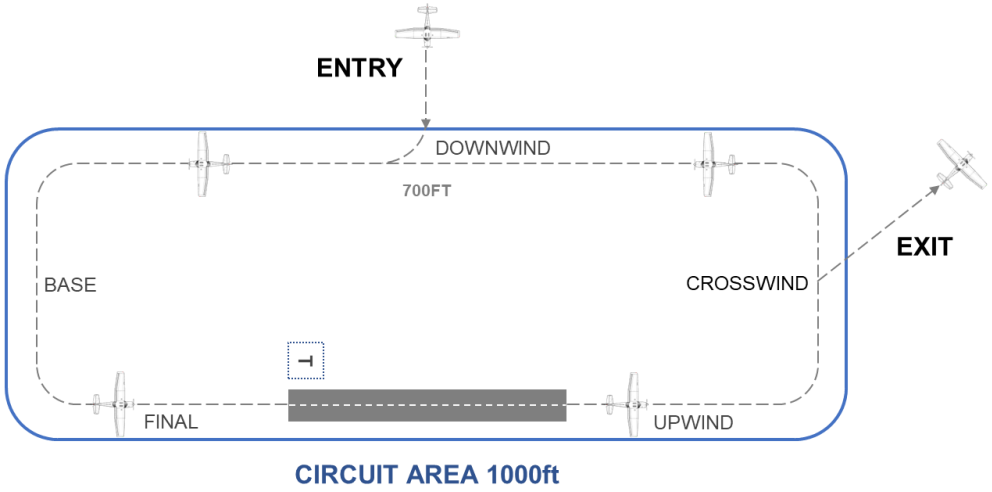
## VFR circuit

With regard to safe, orderly and expeditious aerodrome traffic at uncontrolled aerodromes, rules are laid down for the standard aerodrome traffic circuit and circuit areas.:

## Standard circuit

The standard circuit looks like this::

*Figure 17 – Standard lefthand circuit.*




With every takeoff and landing runway there is a circuit area. The traffic circuit as depicted above, is inside the circuit area. The aerodrome circuit area is established for each runway. The lateral dimensions are also dependent on the local circumstances. The standard aerodrome traffic circuit as depicted above is situated within the aerodrome circuit area. The vertical dimensions extend from aerodrome level up to 1000 ft AAL. The traffic circuit is flown at 700 ft AAL.

Before executing the joining of the aerodrome traffic circuit, pilots have to take notice of the signals displayed in the signal area or of the information given by radio. Overflying the circuit area for observing the signal area shall be done at a height of at least 1000 ft AAL.

within the aerodrome traffic circuit it is not allowed to overtake other aircraft.

Other arial activity's may take place above this altitude. Climbing or descending to cruising level must take place outside the lateral limits of the aerodrome circuit area.

The joining of the standard aerodrome traffic circuit shall take place half-way downwind leg at an interception angle of 90°

Leaving of the aerodrome traffic circuit shall take place at an angle of 45° half-way crosswind leg unless local circumstances force to establish another route which will be promulgated separately.

At those aerodromes where gliding activities take place, special procedures may be in place to reduce the risk of collision with winching cables

- *Reference AIP, AIS-NETHERLANDS.NL. ENR 1.2 - 8 CIRCUIT PROCEDURES FOR AERODROME TRAFFIC*
- *ICAO Doc 4444 PANS-ATM*
- *ICAO Doc 9432 Manual of Radiotelephony*

**NOTE:** If there is no ATC or radio online you can overfly the airport and determine which runway is in use from the signal area, do this at a minimum of 1000 ft AAL.

# Takeoff procedures

## Normal takeoff

**NOTE:** Hard surface, no flaps
Short runway (<800m) or soft surface: flaps 10°

- Before entering the runway, ensure base, final and runway are clear
- Line-up checks before or passing the hold short line or entering the runway
  - ✓ Check correct runway
  - ✓ Flaps checked
  - ✓ Line up with centerline(check compass or heading indicator/G5)
- Check windsock, control column into the wind
- PITD (end of runway)
- Heels on the floor, feet of brakes!
- Smoothly advance throttle full forward, control direction with rudder pedals.
- Check airspeed 'alive' and engine instruments
- Reduce aileron input with increasing speed, keep wings horizontal
- Rotate at 55 kts, keep wings horizontal, nose against horizon
- If needed establish a drift correction angle to stay above the(extended) centerline
- Take a new PITD when the runway end disappears under the nose
- Allow airspeed to increase to 70 kts
- 200ft check/select flaps UP, airspeed 75 kts
- Full power, keep hand on throttle
- Trim off forces
- At 700 ft, reduce power setting to ±1900 rpm, 80 kts
- Continue straight ahead until the lateral boundary of the circuit area before turning crosswind
- A turn to crosswind below 700ft(min 500ft, max bank angle 15°) is allowed to remain within the lateral boundary of the circuit area when staying in the circuit or if so prescribed by the circuit exit procedure
- Trim off forces
- **WHEN LEAVING THE CIRCUIT**
  - ✓ Exit the pattern as prescribed and resume climb when clear of the circuit area
  - ✓ Landing light off (if applicable)
- **WHEN STAYING IN THE CIRCUIT**
  - ✓ Look for traffic and turn to crosswind
  - ✓ Proceed with the CIRCUIT AND NORMAL LANDING PROCEDURE

## Soft or rough field takeoff

(1) Keep elevator full back during taxi

(2) Select 10° of Flaps, make a rolling takeoff, full throttle, check engine instruments in the green.

(3) As airspeed increase, nose rises of ground, release back pressure to keep nosewheel just off the ground

(4) The airplane flies itself of the ground

(5) Accelerate in ground effect

(6) 65 kts, gently raise nose to climb attitude

(7) Accelerate to 70 kts ($V_{y)}$

(8) Continue as normal takeoff

*Figure 18a – Soft or Rough field takeoff - Accelerate*

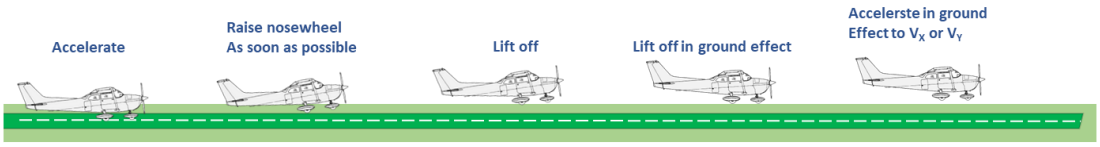
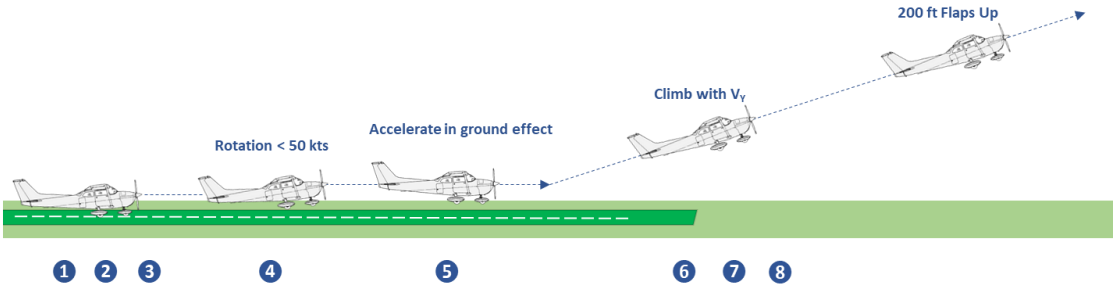



*Figure 18b – Soft or Rough field takeoff*




## Obstacle clearance takeoff (short field takeoff)

If for safety reason a “obstacle clearance takeoff” is required, consider all safety aspects: engine failure, loss of power, ability to see other traffic, etc. if all aspects are considered, and a decision is made to perform a obstacle clearance takeoff, proceed as below.

(1) Select flaps 10°

(2) hold brakes, advance throttle full forward, check engine instruments in the green.

(3) Release brakes, keep direction with rudder pedals

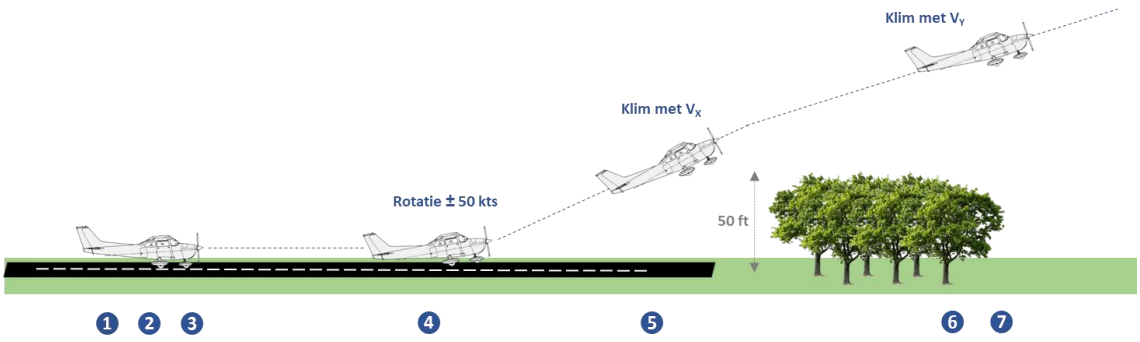
(4) Rotate at 50 kts

(5) Climb with 60 kts $V_x$

(6) When free of all obstacles: lower nose attitude and accelerate to 70 kts $V_y$

(7) Continue as normal takeoff

*Figure 19 – Obstacle clearance takeoff*



# Enroute procedures

## Enroute climb

- ✓ Airspeed..... BEST RATE (Vy) or HIGHER
- ✓ Throttle.....FULL OPEN
- ✓ Mixture.....LEAN above 3000 ft, RICH below 3000 ft

## Cruise

- ✓ Power ..... 75% or LESS
- ✓ Elevator trim.....ADJUST
- ✓ Rudder trim (if installed).....ADJUST
- ✓ Mixture ..... LEAN

## Before joining the circuit

- ✓ Altimeter.....SET QNH
- ✓ Primer .....CLOSED AND LOCKED
- ✓ Magnetos.....BOTH
- ✓ Landing light ..... ON
- ✓ Mixture.....RICH
- ✓ Fuel selector .....BOTH
- ✓ Brakes..... CHECKED
- ✓ Seat belts..... FASTENED

## Downwind check

- ✓ Carburetor heat.....ON/WARM
- ✓ Flaps..... (speed below Vfe) 10°
- ✓ Engine instruments/fuel quantity..... CHECKED

**NOTE:** DOWNWIND check may be done after the BEFORE JOINING THE CIRCUIT check before joining the actual downwind or on the beginning of downwind when remaining in the circuit after takeoff / Touch&go / Go-around

# Landing procedures

### Circuit and normal landing

Entering the circuit or remaining in the circuit after takeoff, touch&go or go-around

(1) At 700 ft throttle ±1900 rpm, speed 80 kts

(2) Look for traffic, turn downwind or look for joining traffic when staying in the circuit

(3) On downwind continously check "HARS"

- ✓ Hoogte (Altitude)
- ✓ Afstand (Offset from runway)
- ✓ Richting (Direction parallel to runway)
- ✓ Snelheid (Airspeed 80 kts)

(4) If joining the circuit accomplish the before joining circuit check and downwind check before joining, if staying in the circuit: only DOWNWIND CHECK

- ✓ Carburetor heat.....ON/WARM
- ✓ Flaps (check airspeed below $V_{FE}$).....10°

Maintain speed 70 - 75 kts

- ✓ Engine instruments/fuel quantity.....CHECKED

(5) Threshold 45° - 60° behind the wing Reduce throttle to ±1500 RPM and set nose attitude to maintain 70 - 75 kt

(6) Turn base leg with 15°- 20° bank angle (max 30°)

(7) Select 20° flaps and trim to maintain 70kts, look for traffic on final

(8) Approximately 20° before the extended centerline, turn final with 15° bank angle (max 20°)

(9) Roll out on centerline

(10) FINAL CHECK:

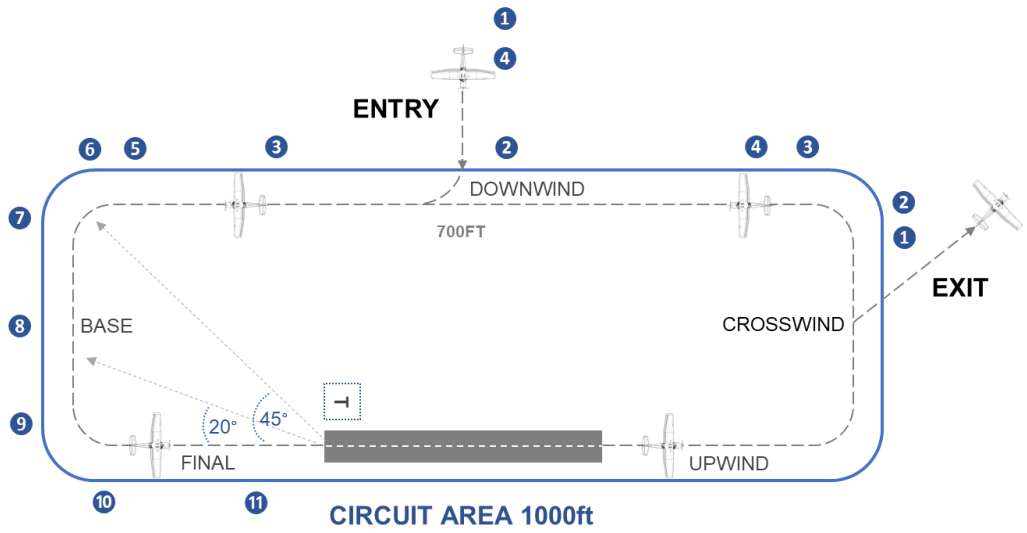
- ✓ Flaps.....30°

Maintain approach speed 60 - 70 kts

(11) Look for traffic, speed 60kts on short final (see normal landing)

**NOTE:** minimum speed over the threshold is 60 kts, corrections up to +15 kts may be made to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

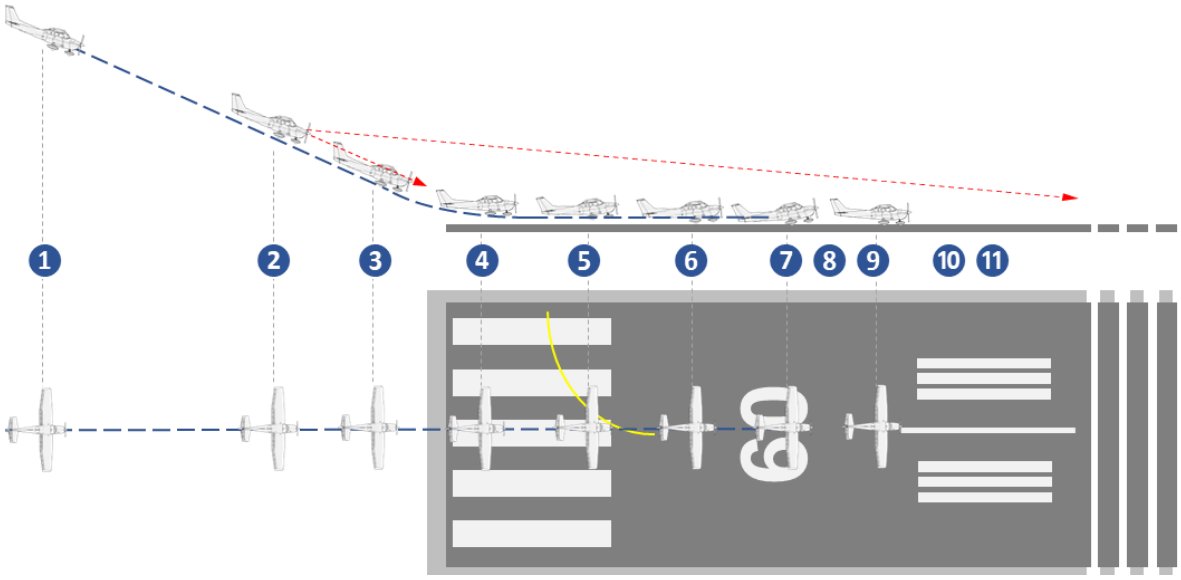
*Figure 20 – Standard Circuit*



## Normal landing

(1) Position the aircraft on a ±3° glidepath and aim just before the threshold
(2) As the aircraft get's closer to the runway, shift eyesight towards the end of the runway
(3) After passing the threshold reduce vertical speed (round out)
(4) Establish horizontal flight about 1m above the runway and simultaneously close the throttle
(5) Use ailerons to maintain wings level and rudder to keep longitudinal axis aligned with the centerline
(6) As airspeed reduces, increase nose attitude to maintain altitude(flare)
(7) Land the airplane on the main gear
(8) Aileron into the wind to keep the wings level
(9) Keep control stick in position where the airplane touched down, due to reducing airspeed the nosewheel will land itself
(10) Gentle braking if necessary
(11) Stop the airplane when clear of the runway and perform the after landing checklist

*Figure 21 – Normal Landing*




WARNING

**NOTE:** Do not brake excessively in order to exit the runway sooner, this may lead to blown tires!

## Flaps up landing

- Fly a standard circuit
- When turning baseleg reduce throttle to 1500rpm
- Fly a normal circuit (see circuit), with the exception that:
- No flaps will be selected
- The speeds respectively are:
  - ✓ Downwind: ..... 80 kts
  - ✓ Base: ..... 75 kts
  - ✓ Final: ..... 70 kts
- Execute a normal landing except:
- Nose attitude is higher than normal landing
- Aim for the landing spot
- Close throttle gently when approaching flare altitude and use only a very shallow roundout
- Take into acount that due to the flapless condition:
  - The airplane responds more directly to control inputs
  - The airplane has a tendency to float
  - More runway length is needed

**NOTE:** minimum speed over the threshold is 60 kts, corrections up to +15 kts may be made to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

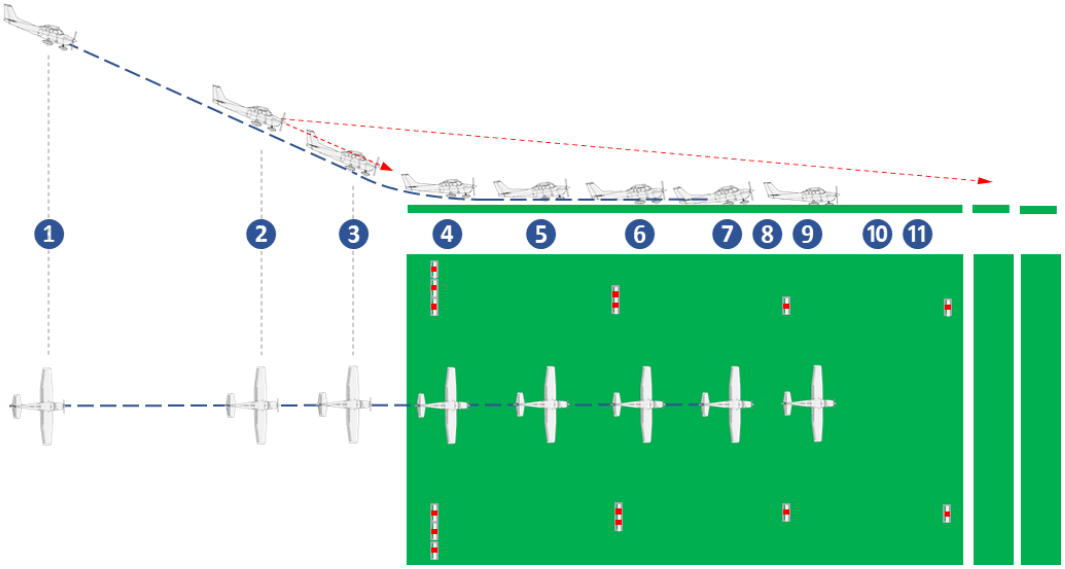
## Soft field landing

A soft surface runway has more friction compared to a hard surface runway. When the main gear touches, the airplane has the tendency to slow down immediately and for the nose gear to lower to the ground. Try and keep the nose gear off as long as possible

- Fly a standard circuit and normal final
- Maximize the flare and after landing maintain full back pressure on the control stick
- After landing and during taxi, keep the control stick fully aft.

(1) Position the aircraft on a ±3° glidepath and aim just before the threshold
(2) As the aircraft get's closer to the runway, shift eyesight towards the end of the runway
(3) After passing the threshold reduce vertical speed(round out)
(4) Establish horizontal flight about 1m above the runway and simultaneously close the throttle
(5) Use ailerons to maintain wings level and rudder to keep longitudinal axis aligned with the centerline
(6) As airspeed reduces, increase nose attitude to maintain altitude(flare)
(7) Land the airplane on the main gear
(8) Aileron into the wind to keep wings level
(9) Increase back pressure on the control stick to keep the nose gear of the ground as long as possible
(10) Only brake when required by field length
(11) Keep rolling until a hard surface is reached if possible.

*Figure 22 – Soft-field Landing*




## Short field landing

- Fly a standard circuit
- After turning final select full flaps
- Reduce throttle to ±1400 RPM
- Maintain an approx. 3° glidepath and aim slightly in front of the threshold
- Nose attitude to maintain 60 kts, Throttle to maintain glidepath
- Make a normal landing
- After the nosewheel has landed, select flaps UP (this reduces lift, increases braking action) and brake carefully

## Go-Around, balked landing

There is always a possibility that the runway is not clear or that you are not stabilized on final. In such a case, it is good airmanship to discontinue the landing attempt. A good option is to perform a Go Around. The procedure is the same for hard and soft surface runways.

- State ”Go-around!”
- Smoothly advance throttle full forward, Carburetor heat OFF
- Flaps 20°, speed 55 kts
- Set nose just below normal climb attitude, check no more sink rate
- flaps 10° until obstacles are cleared
- 200 ft and speed 60 kts, flaps up and accelerate to 70 kts
- If necessary to keep other traffic in sight , a turn to the dead side of the runway should keep you clear of other circuit traffic. However, the local situation might dictate otherwise e.g. at Hilversum due to gliders or para’s. Choose the safest course of action.
- Continue as normal takeoff
- Keep a good lookout for other traffic

WARNING

**NOTE:** During the go around it may happen that other traffic gets obscured by the airplane wings and disappear from view. Try to avoid this!

## Circuit with low ceilings/visibility weather

- Always remain clear of clouds
- Adjust traffic circuit altitude if necessary
- Maintain enough ground visibility
- Don’t fly a wide pattern, do not lose sight of the runway
- Check direction of flight with heading indicator
- Do not continue into marginal VFR weather

## Circuit with turbulent weather

- Fly a standard pattern as much as possible(see circuit)
- Try and maintain normal altitudes and airspeed without trying to hard to hold on
- Consider a flaps up landing because of greater controllability (Flaps up landing)
- Consider to increase airspeed above normal airspeed on base and final

## Crosswind techniques

- The maximum demonstrated crosswind component is 15 kts

**During takeoff:**

- Control stick into the wind (maximum deflection)
- With increasing speed reduce control stick input to maintain wings level
- Maintain directional control with rudder( aircraft has a tendency to weathervane, so with wind from left nose wants to turn left, with wind from the right, nose wants to turn right). Rotate at a slightly higher airspeed than normal, this ensures a positive lift off and minimizes the risk of settling back on the runway.

**After takeoff:**

- After rotation reduce rudder input while simultaneously reducing stick input to normal. Airplane should self establish correct drift angle. Make small adjustments if necessary.

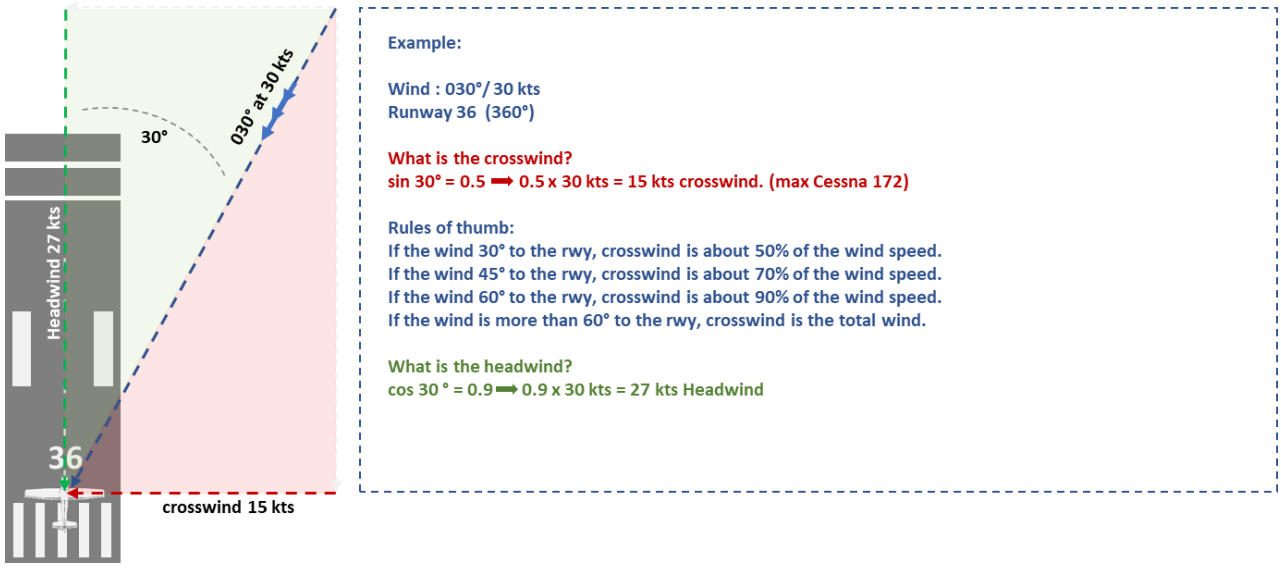
**During the circuit:**

- Establish drift angle so as to correctly fly the circuit over the ground.

**During the landing:**

- After closing the throttle / during the roudout and flare align the longitudonal axis with the runway centerline
- Simultaneously input aileron into the wind to counteract any tendency to drift to the side
- Keep looking towards toward the end of the runway
- Make small corrections with the rudder to keep the longitudonal axis aligned
- Make small corrections with the ailerons to keep the airplane above the centerline
- Flare normally
- The main gear on the upwind side touches first, then the other main gear and the nose gear last
- With a strong crosswind it may be advisable to execute a flapless landing

*Figure 24 – Crosswind*



# Abnormal procedures

First and foremost: maintain airplane control, fly the airplane!!

## Rejected takeoff

**NOTE:** Commence a rejected takeoff if a situation arises before rotation that makes a continued takeoff unsafe or impossible

- Call out "stop!"
- Close the throttle, use rudder pedals to maintain centerline, flaps up
- If required, use brakes
- Report situation over radio and state intentions

## Engine failure after takeoff (EFATO)

The goal of the simulated engine failure after takeoff is to prepare the student for a real engine failure after takeoff. The simulated engine failure is initiated by the instructor by closing the throttle and calling out "simulated engine failure". React promptly and correctly, the procedures should be done quickly.

WARNING

**NOTE:** If it is a simulated exercise, don't turn anything off! Point to switches and controls (touch-drill only!)

- Immediatly lower nose to glide attitude, (60 flaps 10° kts) 65 kts
- Choose a suitable landing site 30° left/right from the nose
- Use minimum bank angles to avoid obstacles
- If possible, do a short failure check (touch drill only!):
- Ignition both
- Carburetor heat ON/WARM
- Mixture full rich
- Fuel selector open
- Accomplish an emergency landing without power using (full) flaps, if required
- The instructor will end the exercise with the call "**Go-around**".

## Engine failure during flight

- Maintain altitude until airspeed has reduced to 65 kts (see figure 25b best glide speed)
- Lower nose attitude to position for glide, maintain speed 65 kts (left rudder)
- Perform engine failure memory items (touch drill only!):
  - ✓ Airspeed..... 65 KIAS
  - ✓ Carburetor heat.....ON/WARM
  - ✓ Fuel selector valve.....BOTH
  - ✓ Mixture.....RICH
  - ✓ Ignition switch .....(Start if propeller is stopped) BOTH
  - ✓ Primer .....IN & LOCKED

    **(if engine fails to start)**
  - ✓ Emergency landing without engine power .....EXECUTE

## Emergency landing without engine power

The simulated engine failure is initiated by the instructor by closing the throttle and stating “simulated engine failure”.

WARNING

**NOTE:** If it is an exercise, don’t turn anything off! Point to the switches and controls (touch-drill only!)

- Maintain altitude until airspeed has reduced to 65 kts (see figure 25b best glide speed)
- Lower nose attitude to position for glide, maintain speed 65 kts (left rudder)
- Trim of forces
- Check wind direction
- Make a plan and depending on altitude amd position fly direct to downwind, base or final

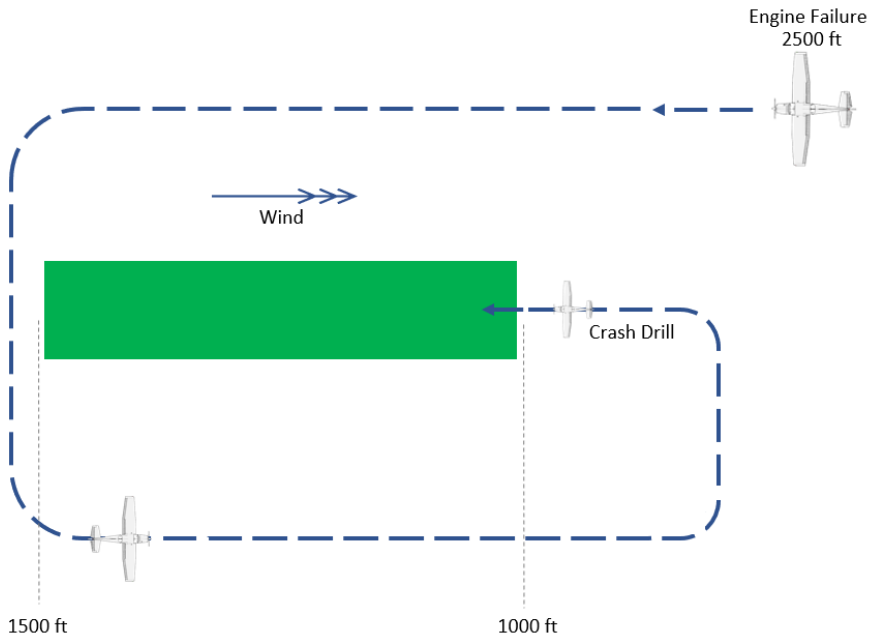
  **>** 1500ft downwind with 1000ft punt

  **<** 1500ft direct base

  **<** 700ft direct final
- Accomplish a failure drill (if not already done in previous procedure)
  - ✓ Carburetor heat.....ON/WARM
  - ✓ Fuel selector valve.....BOTH
  - ✓ Mixture..... FULL RICH
  - ✓ Ignition ..... (start if propellor is stopped) BOTH
  - ✓ Primer .....IN AND LOCKED
- Check engine instruments and fuel quantity
- Choose a suitable landing site within range and into the wind
- In case of downwind procedure pick a 1000ft point abeam the threshold
- Mayday call, ELT ON manually, transponder code 7700
- Check:
  - ✓ Nose attitude / airspeed 65 kts, forces trimmed off
  - ✓ Coordinated flight (ball centered, left rudder required due to loss of left turning tendency)
  - ✓ Route and altitude

- Threshold between 30° and 45° behind wing (depending on wind and altitude), turn base
- Aim for 1/3 off the landing field
- When assured  landing can be made on 1/3 of the field lower flaps in stages
- Plan a full flap landing met 60 kts
- After selecting full flaps, aim for the threshold
- When certain engine is not going to start and final flaps set;
- **CRASH DRILL**: If it is an exercise, don't turn anything off! Point to the switches and controls (touch-drill only!)
  - ✓ Mixture ..... IDLE CUT OFF
  - ✓ Fuel selector valve ..... OFF
  - ✓ Ignition switch ..... OFF
  - ✓ Wing flaps ..... AS REQUIRED
  - ✓ Master switch ..... OFF
  - ✓ Doors ..... UNLATCH
  - ✓ Belts/loose equipment ..... FASTENED/STOWED
- Accomplish a short/soft field landing

*Figure 25 – Emergency landing without engine power*



## Estimated gliding distance

the maximum L/D-ratio ($L/D_{max}$) off a Cessna is approximately 9, so the glide ratio is approximately 9:1 – meaning for every unit down the forward travel is 9 units. the Cessna 172 will glide approx. 9.000 feet (1.5 NM) for every 1.000 feet available altitude. This is a typical value for the Cessna 172.

*Figure 26a – Estimated gliding distance (not to scale)*

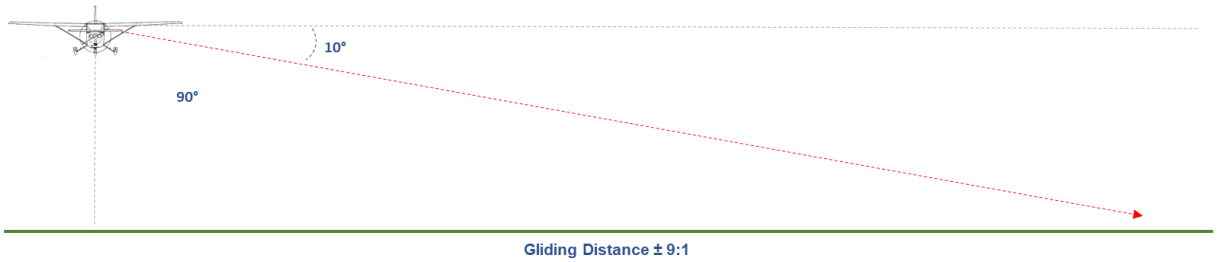
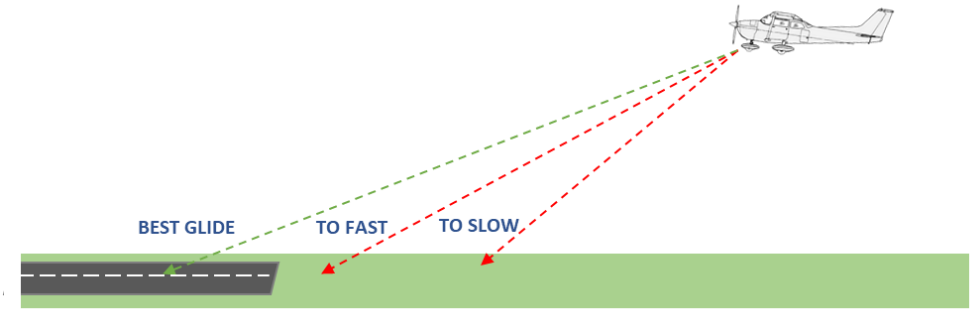



*Figure 26b – Best glide speed*



## Wind affects gliding range over the grond

*Figure 27a – Gliding Distance - no wind (not to scale)*

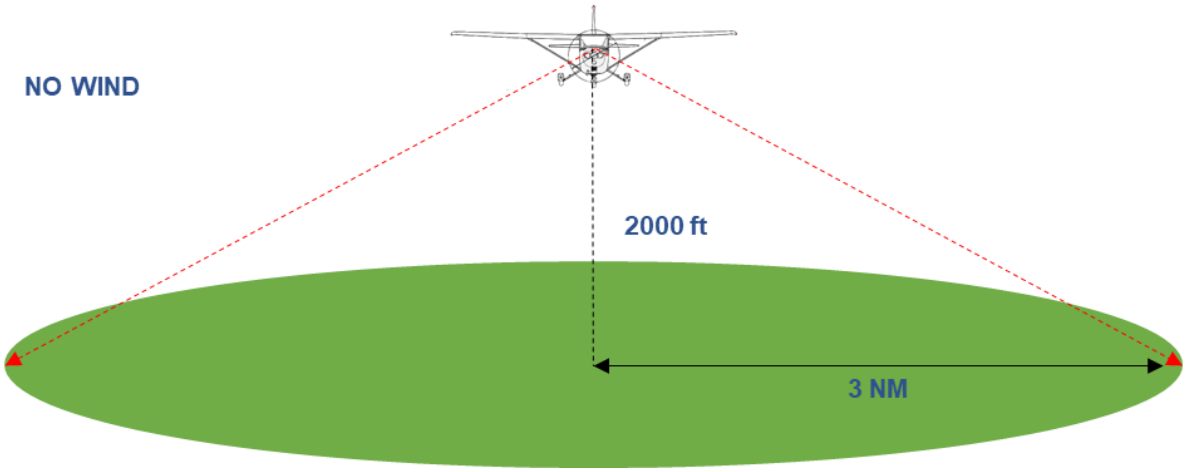
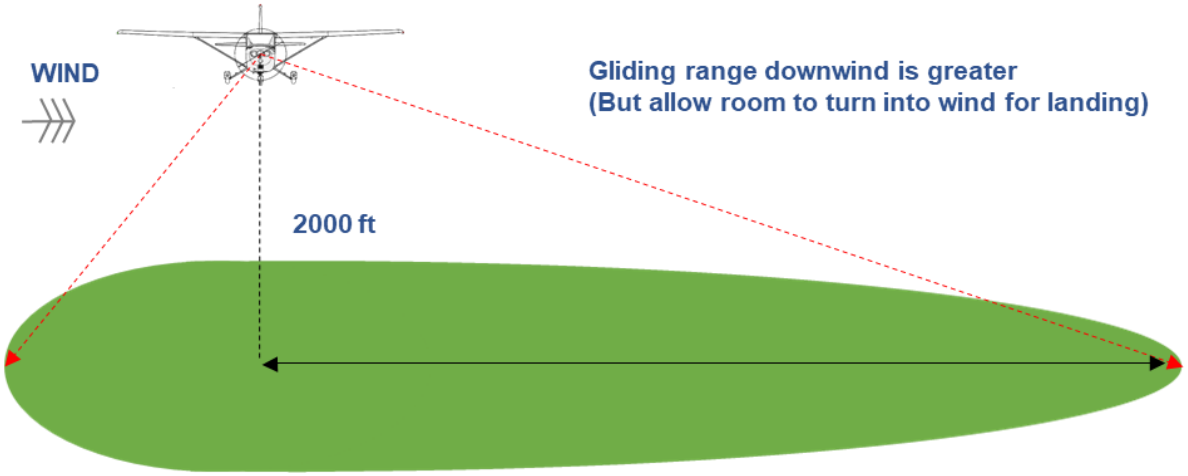



*Figure 27b – Gliding Distance - with wind (not to scale)*



## Precautionary landing

The airplane has to be in good technical condition for this procedure, if not, see emergency landing without power.
Only fly mentioned altitudes if cloud base and visibility allow this.

- BEFORE JOINING THE CIRCUIT checks
- Descend to 500 ft and turn downwind
- Choose a suitable landing site into the wind
- PAN PAN call
- Position the aircraft on a 500 ft downwind, CVV, flaps 10°, ±1900 RPM
- Turn to base and start descend, throttle to ±1500 RPM
- Turn to final and level off at 200ft
- Advance throttle to ±1900 RPM, airspeed 75 kts, STOP DESCENT!
- Accomplish an inspection run abeam the field and start timing and check:
  - Slope
  - Obstacles
  - Length (see Figure 27b timing table)
  - Landing site condition
  - Obstacle free final and takeoff leg
- Start a go-around procedure at the end of the field
- Climb back to circuit altitude 500ft
- Level off, throttle ±1900 RPM, airspeed 80 kts
- Turn crosswind and subsequently downwind
- DOWNWIND CHECK
  - ✓ Carburetor heat.....ON/WARM
  - ✓ Flaps (check airspeed below $V_{FE}$)..... 10° Maintain speed 70 - 75 kts
  - ✓ Engine instruments/fuel quantity.....CHECKED
- Threshold 45° - 60° behind the wing
- Turn base leg with 15°- 20° bank angle (max 30°), throttle naar ±1500 RPM when intercepting the glidepath
- Select 20° flaps and trim to maintain 70 kts
- Approximately 20° before the extended centerline, turn final with 15° bank angle (max 20°)
- Roll out on centerline
- FINAL CHECK:
  - ✓ Flaps.....30°
- maintain approach speed 60 kts
- speed 60kts on short final, accomplish a short/soft field landing

**NOTE:** minimum speed over the threshold is 60 kts, corrections up to +15 kts may be made to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

*Figure 28a – Precautionary landing with engine power*

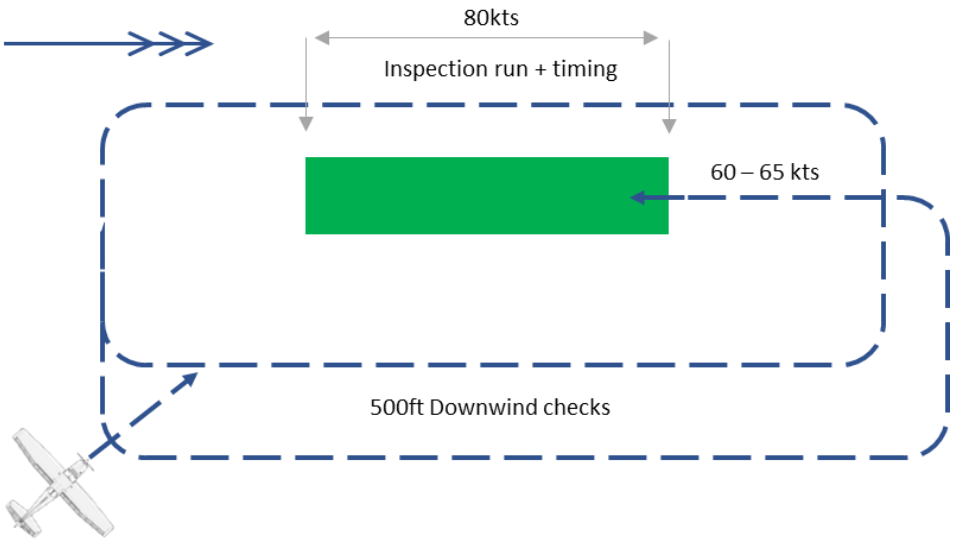



*Figure 28b – Precautionary landing – Inspection run, timing and distance table*

| INSPECTION RUN + TIMING | | |
|---|---|---|
| **Minimal landings distance @500m** | | |
| ***Ground speed*** | ***Meters per seconds*** | ***Amount of seconds to time*** |
| 60kts | 31 m/s | 16 |
| 70kts | 36 m/s | 14 |
| 80kts | 41 m/s | 12 |
| 90kts | 46 m/s | 11 |

# Important links

ACHA Aero Club Hilversum-Amsterdam:

- https://vliegclubhilversum.nl/

Vliegveld Hilversum:

- http://www.ehhv.nl/

AIS-publicaties:

- https://www.lvnl.nl/informatie-voor-luchtvarenden/publicaties-voor-luchtvarenden

MILAIP:

- https://english.defensie.nl/topics/m/milaip-military-aeronautical-information-publication

NOTAMS / Flightplan /

- https://www.homebriefing.nl

METEO:

- https://www.luchtvaartmeteo.nl/

EASA Regulations:

- https://www.easa.europa.eu/regulations

SKYBRARY

- https://skybrary.aero/

## Notes: