PROCEDURES

KATANA DV20

PH-MFT and PH-SKM

English version

PROCEDURES-DV20 – EN – VERSIE 1.5 – 08042023

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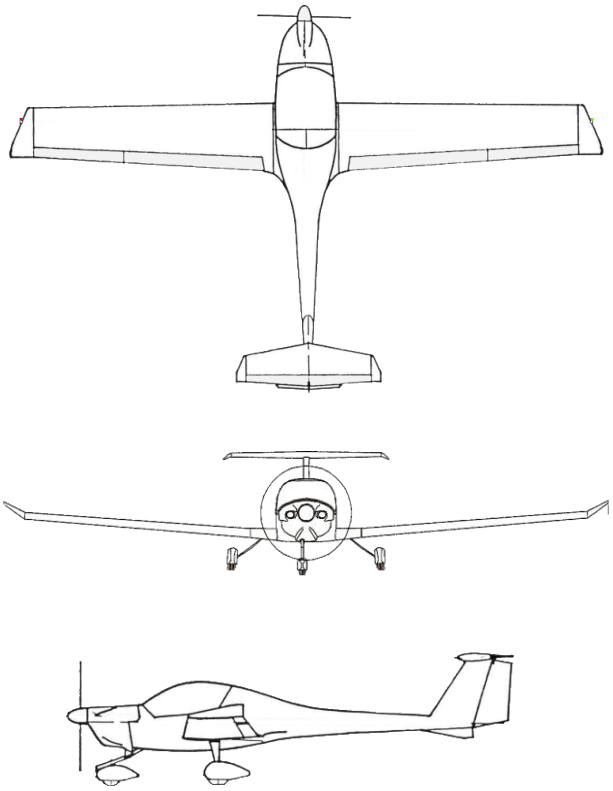
VLIEGCLUB HILVERSUM - AMSTERDAM

CUSTOMIZED FOR NL-ATO-227



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Disclaimer:

This publication has been compiled with the greatest care. However, neither the authors nor the authors and the ACHA assume any liability for any damages resulting from any inaccuracies and/or omissions in this publication. Despite the information in this release, the official Pilot handbook (POH) will always be should be used and should therefore take precedence over the information contained in this publication.

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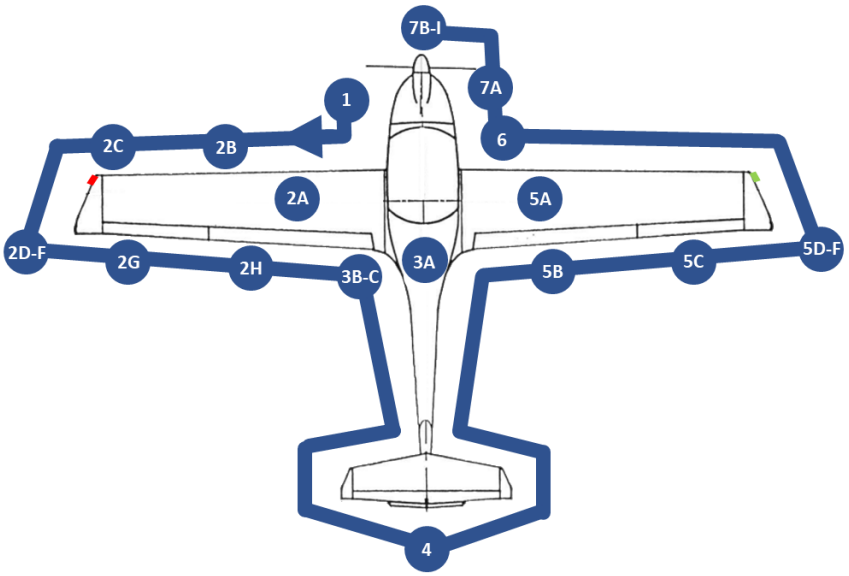
Revision record

REVISION	REVISION DATE	TOTAL PAGES	REVISED PAGES	NOTES
1.0	20-01-2022	ALL	ALL	REVISED
1.1	04-04-2022	ALL	ALL	REVISED
1.2	12-06-2022	40	SLOW FLIGHT / CIRCUIT EN NORMAL LANDING / FLAPS UP LANDING / EMERGENCY LANDING	ADJUSTMENTS FOR SPEEDS AND POWERSETTINGS
1.3	12-06-2022	40	ALL	MINOR TEXTUAL ADJUSTMENTS, TERMINOLOGY MORE LIKE DV20-AFM
1.4	01-07-2023	40	8,26-40	INCLUSION RADIO PROCEDURES, RE ORDENING OF CIRCUIT PROCEDURES, NON NORMAL PROCEDURES AND DOWNWIND CHECKLIST&PROCEDURES
1.5	08-04-2023	ALL	ALL + 11, 12	THE LAYOUT AND ALL IMAGES ADAPTED TO THE LATEST CHANGES ACCORDING TO OTHER MANUALS. POWERSETTING TABLE AND EXPLANATION TAXI CHECKS TOEGEVOEGD

Walk Around Check and Visual Inspection



CAUTION
Visual Inspection is defined as check for:
Defects, cracks, delamination, excessive play, insecure or improper mounting, and general condition.
Additionally, freedom of movement for control surfaces.

CABIN

Airplane documents ..... CHECK
Pitot Cover & Stall warning plug .... REMOVED AND STOWED
Ignition key ..... OFF AND REMOVED
Canopy ..... CLEAN/UNDAMAGED
All circuit breakers ..... IN
Master Switch ..... ON
Fuel Quantity ..... CHECKED
Position Lights, ACL, Landing Light ..... ON CHECKED & OFF
Master Switch ..... OFF
Flight controls/Trim ..... FREE AND CHECKED
Loose objects/baggage ..... STOWED/HARNESS ATTACHED
Main wing bolts (between seats) ..... SECURED
Emergency Locator Transmitter ..... ARM

1 LEFT MAIN LANDING GEAR

Landing Gear Strut ..... VISUAL INSPECTION
Tire Pressure ..... CHECK FOR PROPER INFLATION
Tire, Wheel, Brake ..... VISUAL INSPECTION
Creep Marks ..... VISUAL INSPECTION

2 LEFT WING

Entire Wing ..... VISUAL INSPECTION
Stall Warning ..... CHECK (SUCK ON OPENING)
Pitot-Static Probe ..... CLEAN, HOLE OPEN
Position Light / ACL ..... VISUAL INSPECTION
Wing Tip, Aileron Balancing Mass ..... VISUAL INSPECTION
Aileron ..... VISUAL INSPECTION
Wing Flap ..... VISUAL INSPECTION

3 FUSELAGE

Skin ..... VISUAL INSPECTION
Tank Vent ..... CHECK
Tank drain ..... DRAIN WATER

4 EMPENNAGE

Fins and control surfaces ..... VISUAL INSPECTION
Trim Tab ..... VISUAL INSPECTION

5 RIGHT WING

Entire Wing ..... VISUAL INSPECTION
Wing Flap ..... VISUAL INSPECTION
Aileron ..... VISUAL INSPECTION
Wing Tip, Aileron Balancing Mass ..... VISUAL INSPECTION
Position Light / ACL ..... VISUAL INSPECTION

6 RIGHT MAIN LANDING GEAR

Landing Gear Strut ..... VISUAL INSPECTION
Tire Pressure ..... CHECK FOR PROPER INFLATION
Tire, Wheel, Brake ..... VISUAL INSPECTION
Creep Marks ..... VISUAL INSPECTION

7 NOSE

Oil Level ..... CHECK USING DIP-STICK

NOTE
Notable consumption of oil or coolant does normally not occur. It is therefore neither necessary nor sensible to refill before the level has dropped below the minimum marking.

Cowling & Fasteners ..... VISUAL INSPECTION
Air Intakes (six) ..... FREE
Propeller ..... VISUAL INSPECTION,
..... GROUND CLEARANCE MIN: APPROX. 25 CM (10 IN)
Spinner ..... VISUAL INSPECTION
Nose Gear ..... VISUAL INSPECTION
Tire and Wheel ..... VISUAL INSPECTION
Tire Pressure ..... CHECK FOR PROPER INFLATION

AEROCLUB HILVERSUM-AMSTERDAM

NL-ATO-227

Version 1.4 - 20220612

Radio telephony examples:

Before departing : EHHV

PH-ABC	: Hilversum radio PH-ABC radio check"
EHHV	: "PHABC read you 5 go ahead"
PH-ABC	: "DV20, 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 DV20, 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 DV20, ...(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

What is where?

1. Turnindicator
2. top: speed indicator, below: VOR
3. Left: Garmin G5, right: altimeter
4. Left: heading indicator, right: vertical speed indicator
5. Electronic switches
6. top: radio, below: transponder, above intercom control panel
7. Left: HOBBS-meter, right: VUT-meter
8. Left: ignition, right: flaps and flap position indicator
9. Left t. to b., manifold pressure, oil temp, AMP, right t. to b. coolant fluid temp, oil press, fuel quantity.
10. Above ELT, below RPM
11. Heating, choke, parking brake
12. above: left to right, carburetor heat, throttle, propeller speed control lever; below: trim

General information

Speeds	V_{speeds}	PH-MFT	PH-SKM
Stall speed flaps up	V_{S1}	43 kts	43 kts
Stall speed flaps down	V_{SO}	38 kts	38 kts
Maneuver speed	V_A	104 kts	104 kts
Max speed flaps extended:	V_{FE}	81 kts	81 kts
Never exceed speed	V_{NE}	161 kts	161 kts
Max structural cruising speed	V_{NO}	117 kts	117 kts
Best rate of climb	V_Y	70 kts	70 kts
Best rate of climb (flaps T/O)	$V_{Y\ (T/O)}$	65 kts	65 kts
Best angle of climb (flaps T/O)	$V_{X\ (T/O)}$	58 kts	58 kts
Max demonstrated cross wind	--	15 kts	15 kts
Best glide speed (flaps UP)	--	70 kts	70 kts
Best glide speed (flaps T/O)	--	64 kts	64 kts

weights	PH-MFT	PH-SKM
Empty weight	511 Kg	495 Kg
Max fuel in kg	58 Kg	58 Kg
Max fuel in liters	79 L	79 L
Max baggage	20 Kg	20 Kg
Max T/O	730 Kg	730 Kg

Average fuel usage		PH-MFT	PH-SKM
Tank capacity (usable)	(L)	77	77
Tank capacity (unusable)	(L)	2	2
2300 RPM 25.7” 75% (2000 ft)	(L / Hr)	±15,3	±15,3
2400 RPM 26.7” 85% (2000 ft)	(L / Hr)	±18,7	±18,7
2400 RPM 27.7” 95% (2000 ft)	(L / Hr)	±22,3	±22,3

G loads

Maximum G-load	- flaps up	normal category	-2,2G	+4,4G
Maximum G-load extended	- flaps	normal category	0,0G	+2,0G

for Mass & Balance and other calculations, always use the approved POH.

Mass and Balance check the ACHA website for the latest information.

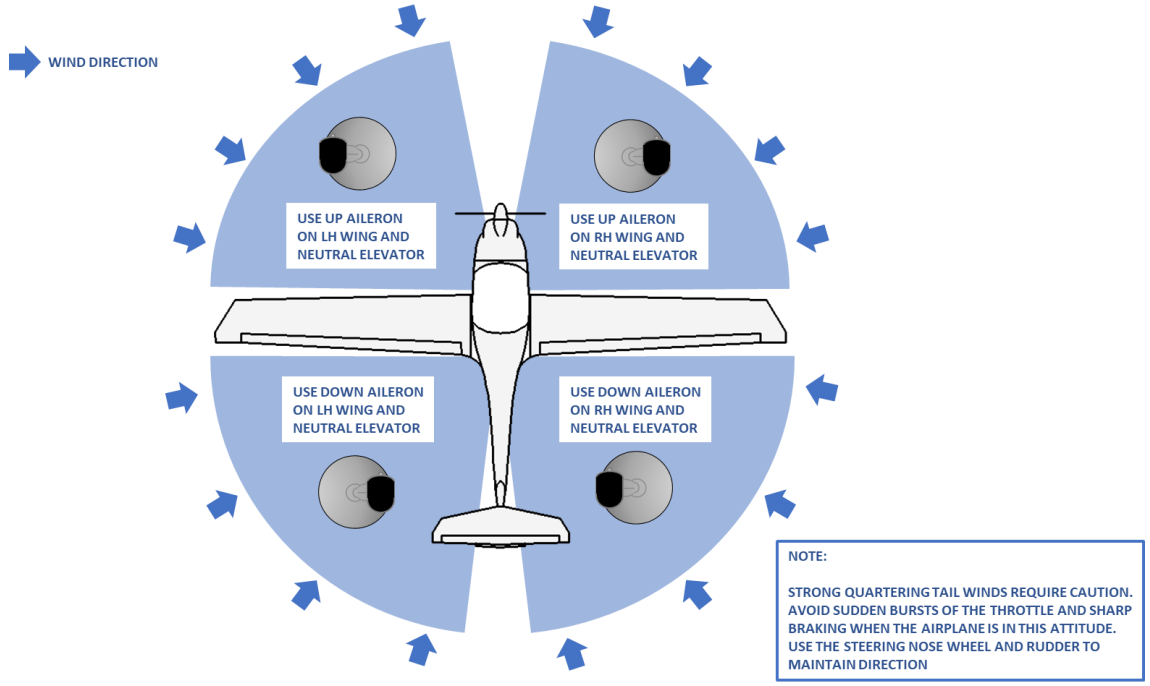
Powersetting/configuration versus speed table

	throttle(MP)	RPM	flaps	speed
Climb	full throttle	PSCL full fwd	TO	65 kts
Climb	full throttle	2400	UP	70 kts
Cruise	±27”	2400	UP	100 kts
Descent	±20”	2400	UP	100 kts
Circuit	±21”	2400	UP	75 kts
Circuit	±24”	2400	TO	70 kts
Base	±15”	2400	TO	70 kts
Final	as required	PSCL full fwd	LDG	65 kts

Normal procedures

Taxiing with different wind directions

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



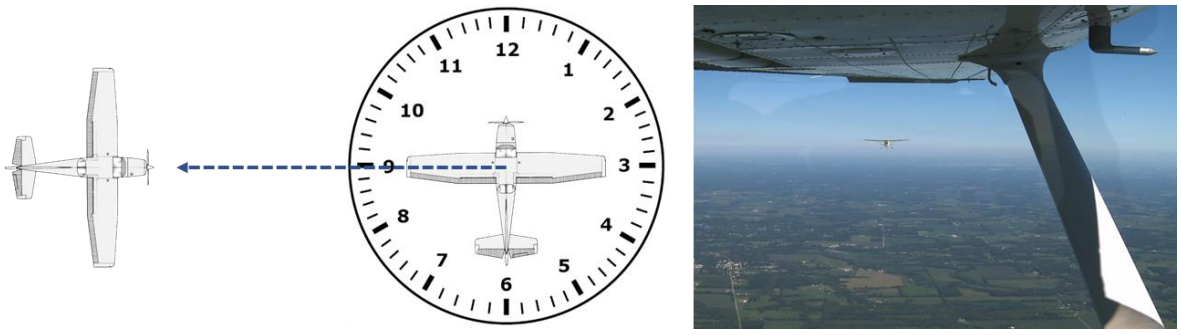
Instruments/brakes check during taxiing

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

Reporting of other airplanes

During the scanflow (lookout) you may see other airplane traffic. Report this directly by saying: "*Traffic, 10 o' clock, 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"

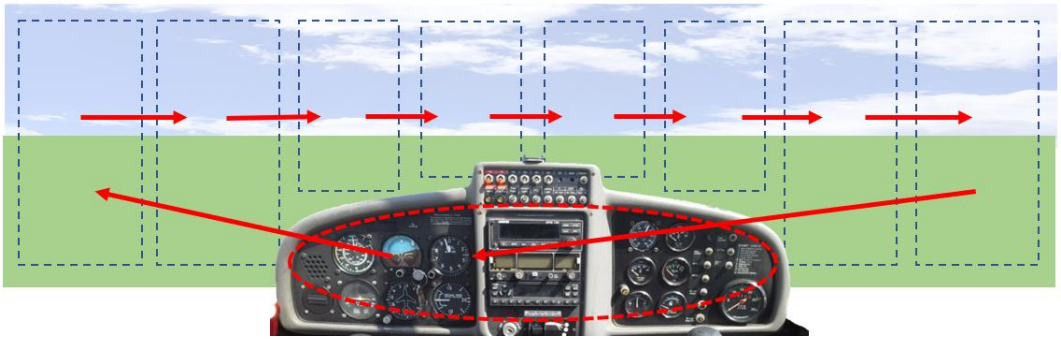
Structured scanflow

- Scanflow for level flight (side-to-side scanning method)
- Scan in sectors (figure 3a and 3b)
- Check nose attitude
- Short inside checks (altitude, speed and slip 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.

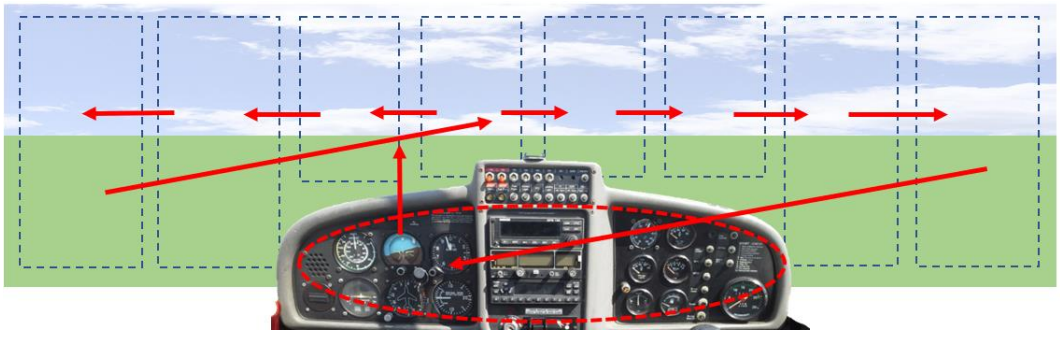
Figure 3a - Structured scanflow side to side lookout



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.

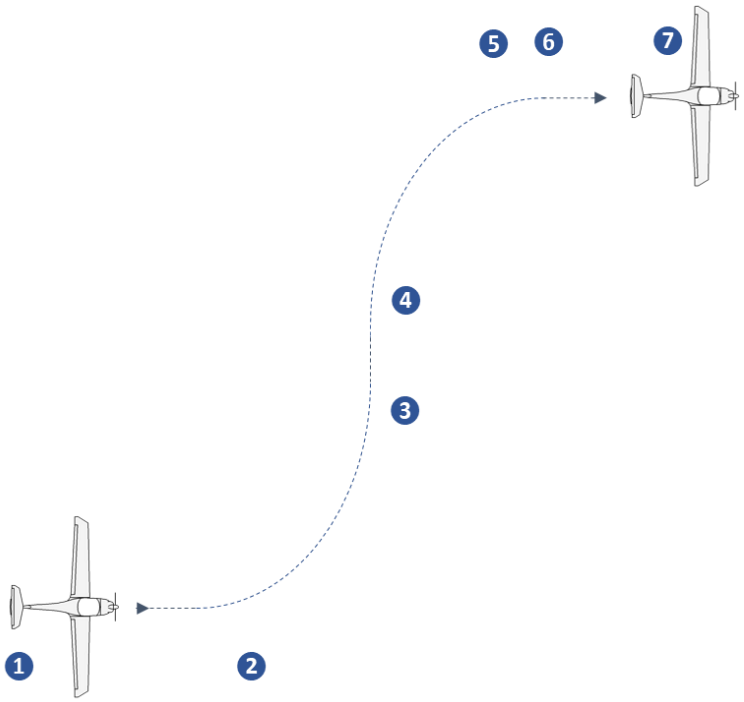
Figure 3b - Structured scanflow front to side lookout



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)
  - ✓ Speed (100 kts)
  - ✓ Coordinated flight(ball centered, wings horizontal)
  - Proceed with planned maneuver

Figure 4 - Clearing Turns



Straight and level flight

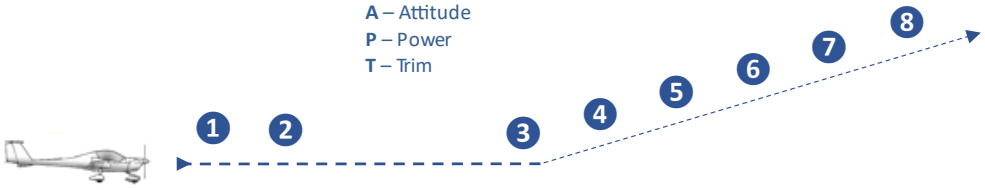
- Look for traffic
- Set nose in position for straight and level flight (about 5 fingers below the horizon)
- maintain wings level
- keep direction with rudder (ball centered)
- Power setting 27”, 2400 RPM, speed 100 kts
- Trim off forces

Figure 3b – Straight and level flight

Transition from straight and level to climb

(1) Check engine instruments
(2) Look for traffic
(3) Raise nose to climb attitude (cowling against horizon)
(4) Speed reduces
(5) speed almost 70 kts, 2400 RPM, smoothly advance throttle full forward
(6) Wings level, coordinated rudder (right rudder, ball centered), PITD (point in the distance)
(7) Trim off forces
(8) Perform clearing turns every 500 ft (15° bank, 30° left and right of course)

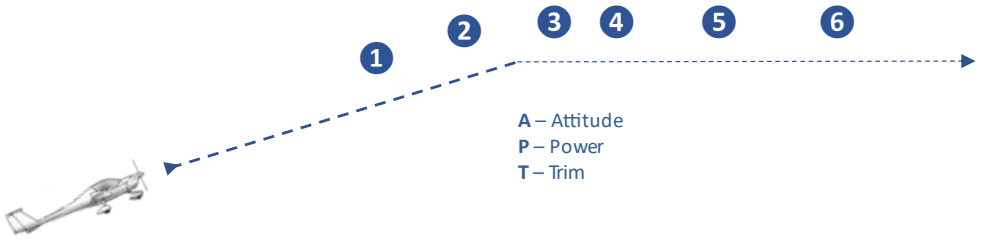
Figure 5 - Transition to climb.



Transition from climb to straight and level

(1) Look for traffic
(2) 20ft before desired altitude slowly lower nose to straight and level attitude with 100 kts
(3) Allow airspeed to increase to 100 kts
(4) Reduce power setting to 27”, 2400 RPM (throttle first, then RPM)
(5) Wings level, coordinated rudder (ball centered), PITD
(6) Trim off forces

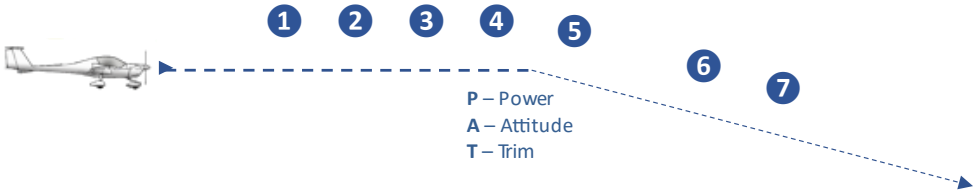
Figure 6 - ransition climb to S&L.



Transition straight and level flight to descend

(1) Check engine instruments
(2) Carburetor heat ON/WARM
(3) Look for traffic
(4) Reduce power setting to 20”, 2400 RPM (every inch MP less is ±100 ft/min extra descend rate) and;
(5) Simultaneously lower nose to descend attitude, maintain 100 kts
(6) Wings level, coordinated rudder (left rudder, ball centered), PITD
(7) Trim off forces

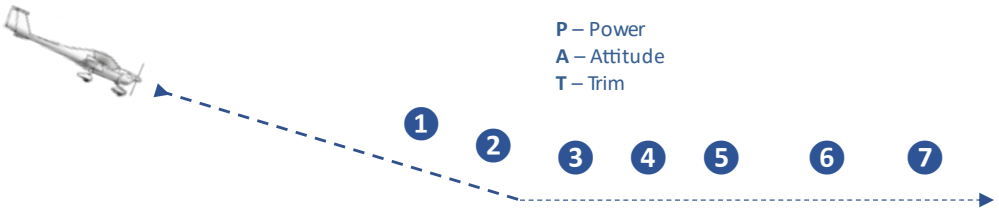
Figure 7 - Transition to descend.



Transition from descent to straight and level flight

(1) Look for traffic
(2) 100ft before desired altitude – carburetor heat OFF
(3) 50ft before desired altitude – increase power setting to 27”, 2400 RPM
(4) Set nose attitude for straight and level flight
(5) Maintain speed 100 kts
(6) Wings level, coordinated rudder (ball centered), PITD
(7) Trim off forces

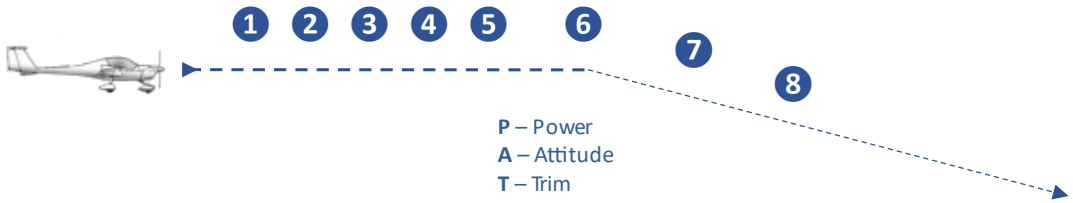
Figure 8 - Level off from descent.



Transition from straight and level to glide

(1) Check engine instruments
(2) Carburetor heat ON/WARM
(3) Look for traffic
(4) Smoothly retard throttle to idle, coordinated rudder, PITD
(5) Maintain altitude, slowly increase pitch attitude
(6) Speed nearly 70 kts, lower nose to glide attitude, maintain 70kts
(7) Wings level, coordinated rudder (left rudder, ball centered), PITD
(8) Trim off forces

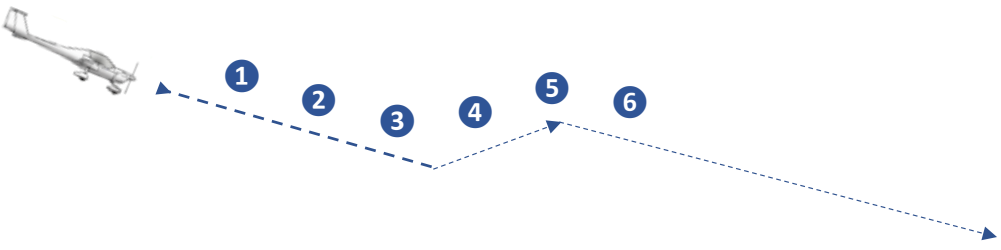
Figure 9 - Establishing a glide.



Clearing the engine during a glide

(1) Check engine instruments
(2) Look for traffic
(3) Smoothly advance throttle full forward, coordinated rudder (ball centered), PITD
(4) Simultaneously put nose in climb attitude, maintain speed 70 kts
(5) After 3-5 sec smoothly retard throttle to idle, coordinated with rudder, PITD, simultaneously lower nose to glide attitude
(6) Continue with glide

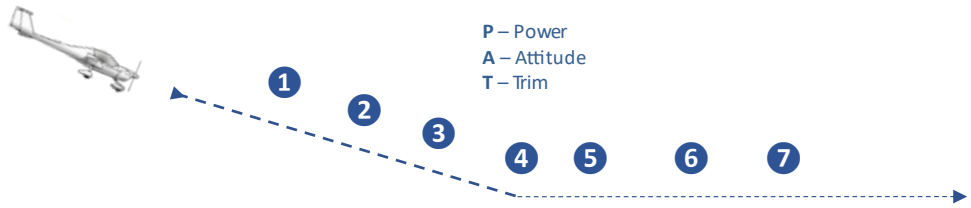
Figure 10 - Clearing the engine during a glide.



Transition from glide to straight and level flight

(1) Look for traffic
(2) 150ft before desired altitude, increase power setting to ±27”, 2400 RPM and carburetor heat OFF
(3) Maintain glide attitude, speed increases
(4) 50ft before desired altitude set nose attitude for straight and level flight
(5) Speed 100 kts
(6) Wings level, coordinated rudder (ball centered), PITD
(7) Trim off forces

Figure 11 - Transition from glide to straight and level flight.

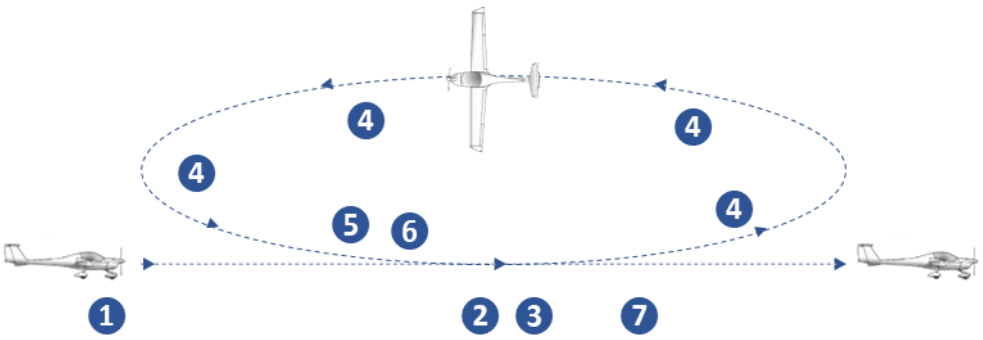


Level turn

(1) Look for traffic, take a PITD
(2) Roll 30° bank angle, coordinated with rudder (ball centered) and;
(3) Increase backpressure to maintain level flight
(4) Keep looking for traffic in the turn and check:
- ✓ Bank angle 30°
- ✓ Nose attitude
- ✓ Instruments: altimeter, VSI, speed ±95 kts, slip indicator

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

Figure 12 - Level turn.

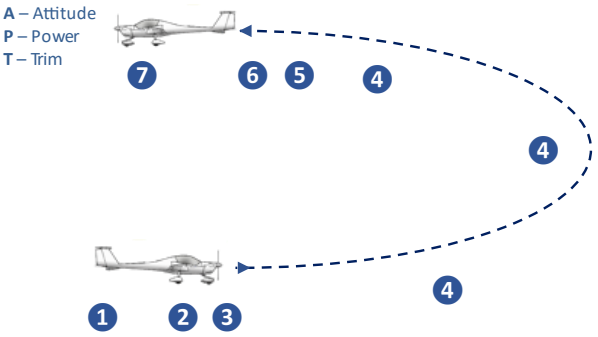


Climbing turn

(1) Look for traffic
(2) Roll into max 15° bank
(3) Coordinated with rudder (ball centered)
(4) Keep looking for traffic and check:
- ✓ Bank angle 15°
- ✓ Climbing nose attitude
- ✓ Instruments: approaching desired altitude, speed 70 kts, slip indicator

(5) 5° before desired heading or PITD, start to roll wings level
(6) Coordinated with rudder
(7) Wings level, coordinated rudder (ball centered), PITD, 70 kts

Figure 13 - Climbing turn.

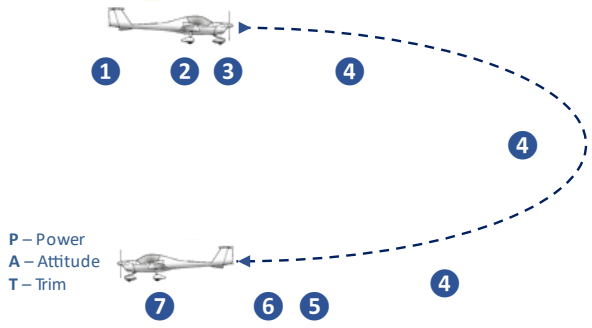


Descending turn

(1) Look for traffic
(2) Roll into 30° bank
(3) Coordinated with rudder (ball centered)
(4) Keep looking for traffic in direction of turn and check:
- ✓ bank angle 30°
- ✓ Descending nose attitude
- ✓ Instruments: approaching desired altitude, speed 100 kts, slip indicator

(5) 10° befored desired heading or PITD start to roll wings level
(6) Coordinated with rudder (ball centered)
(7) Wings level, coordinated with rudder (ball centered), PITD, 100 kts

Figure 14 - Descending turn.

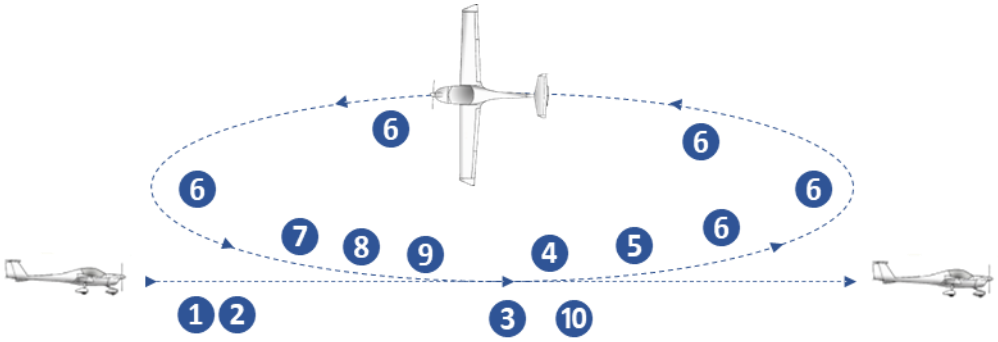


Steep turn (45°)

(1) Check engine instruments
(2) Look for traffic, take a PITD
(3) Roll into 45° bank angle, coordinated with rudder (ball centered)
(4) Passing 30° bank angle, increase power setting by 2" and;
(5) Increase backpressure to maintain level flight
(6) Keep looking for traffic in the turn and check:
- ✓ Bank angle 45°
- ✓ Nose attitude
- ✓ Instruments: altimeter, VSI, speed 100 kts, slip indicator

(7) 20° before desired heading or PITD start rolling wings level, coordinated with rudder (ball centered)
(8) Passing 30° bank angle, decrease power setting by 2" and;
(9) Decrease backpressure to maintain level flight
(10) Wings level, coordinated with rudder (ball centered), PITD, 100 kts

Figure 15a - Steep turn.



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

Figure 15b – Steep turn – Pilot View

Slow flight

Slow flight can be performed with flaps up or with flaps down, and with speeds V_S+10 en V_S+5.
Communicate before the exercise which variant you are to perform.

- Check engine instruments, carburator heat ON/WARM, electric fuel pump on
- Look for traffic
- Reduce power setting to 12-15”
- Propeller control speed lever full forward
- Maintain altitude, nose attitude increases, speed reduces
- When using flaps: as soon as speed is in white arc is, select flaps TO, then LDG (watch out for ballooning)
- Speed approaches V_S+10 kts or V_S+5 kts, increase power setting to 22-24"
- Wings level, coordinated with rudder (right rudder, ball centered), V_S+10 kts or V_S+5 kts
- Trim off forces
- Keep looking for traffic and check:
  - ✓ Nose attitude, altitude, speed
  - ✓ PITD, coordinated with rudder (ball centered)
  - ✓ Speed V_S+10 kts or V_S+5 kts

	PH-MFT	PH-SKM
stall speed flaps up	43 kts	43 kts
stall speed flaps takeoff	39 kts	39 kts
stall speed flaps landing	38 kts	38 kts

Accelerate to 100 kts

- Smoothly advance throttle to full forward
- Carburetor heat OFF
- Wings level, coordinated with rudder (ball centered), PITD
- Decrease nose attitude with increasing speed, maintain altitude
- When using flaps: select flaps up in stages before reaching 81 kts (watch out for sink)
- Speed 100 kts
- Reduce power setting to ±27”, set 2400 RPM, electric fuel pump off
- Trim off forces

Air exercises

The stall

Planning, crewbriefing and checks before 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:

- ✓ Electric fuel pump .....: ON
- ✓ Landing light.....: ON
- ✓ Ignition switch .....: BOTH
- ✓ Fuel selector .....: ON
- ✓ Power setting/prop speed control lever .....: ±27”/2400 RPM
- ✓ Flaps .....: UP
- ✓ Engine instruments .....: TEMP AND PRESSURES IN THE GREEN
- ✓ Speed.....: 100 kts
- ✓ belts, loose items .....: 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

- ✓ Electric fuel pump .....: OFF
- ✓ Landing light.....: AS REQUIRED
- ✓ Flaps .....: UP
- ✓ Carburetor heat.....: OFF
- ✓ Power setting/prop speed control lever .....: 27"/2400 RPM
- ✓ Engine instruments .....: TEMP AND PRESSURES IN THE GREEN
- ✓ Oriëntation .....: CHECK

Stall with flaps up

- Clearly state “starting the exercise”
- Smoothly retard throttle to idle
- Carburetor heat ON
- Wings level, coordinated rudder (ball centered), PITD
- Propeller speed control lever full forward
- Nose attitude increases with decreasing airspeed, maintain altitude, don’t trim off forces
- Wings level, maintain heading with rudder, PITD
  - **Start recovery in case of full stall on:**
    - ✓ 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
- Smoothly advance throttle full forward, carburetor heat OFF
- At minimum 60 kts, gently raise nose to climb attitude(avoid a secondary stall)
- Wings level, coordinated rudder (ball centered), PITD
- Adjust nose attitude for correct climb attitude with speed 70 kts
- Climb back to initial altitude and transition to straight and level flight

Recovery without power

- Call out “recovery” and lower nose to position lower than glide attitude
- Wings level, coordinated rudder (ball centered), PITD
- Adjust nose attitude to attitude for glide, 70 kts
- Trim of forces
- Transition to straight and level flight at desired altitude (see transition to S&L from glide)

Stall with flaps down

- Clearly state “starting the exercise”
- Smoothly retard throttle to idle
- Carburetor heat ON
- Wings level, coordinated rudder (ball centered), PITD
- Prop speed control lever full forward
- Nose attitude increases with decreasing airspeed, maintain altitude, don’t trim of forces
- Wings level, coordinated rudder (ball centered), PITD
- As soon as speed is in white arc is, select flaps T/O, then LDG
- 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 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
- Smoothly advance throttle full forward, carburetor heat OFF
- At minimum 60 kts, gently raise nose to climb attitude (avoid a secondary stall)
- Wings level, coordinated rudder (ball centered), PITD
- Select flaps T/O
- Adjust nose attitude for correct climb attitude flight with 65 kts
- select flaps UP, speed 70 kts
- Climb back to initial altitude and transition to straight and level flight

Approach to stall in descending turn in approach configuration

- Clearly state “starting the exercise”
- Reduce power setting to 15“
- Carburetor heat ON
- Wings level, coordinated rudder (ball centered), PITD
- Nose attitude increases with decreasing airspeed, maintain altitude, don’t trim of forces
- Speed in white arc, select flaps T/O -
- Start a descending turn with 20° bank angle
- Retard throttle to idle and slowly raise the nose
- **Start recovery on:**
  - ✓ Stall warning
  - ✓ Buffet
  - ✓ 5 kts above stall speed with flaps, whichever comes first

Recovery with power from approach to stall during descending turn

- Call out “Recovery” and set nose attitude for descending flight
- 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 with power approach to stall in climbing turn

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

Circuit procedures

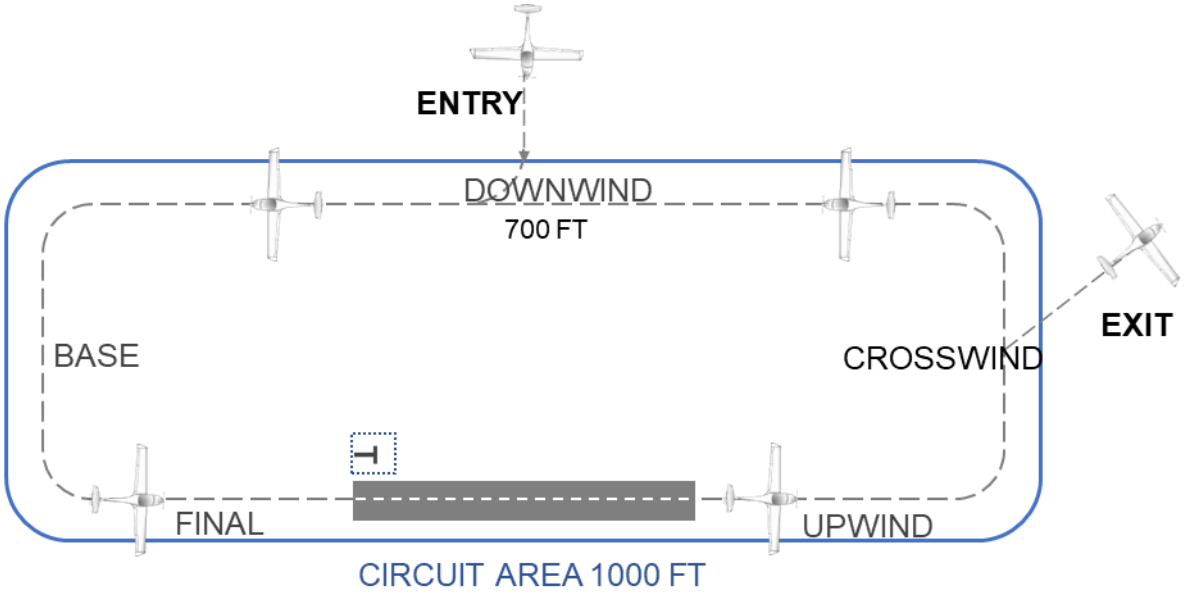
VFR circuit

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 16 - The standard circuit area.



- 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 acitivity'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 an other 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*

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

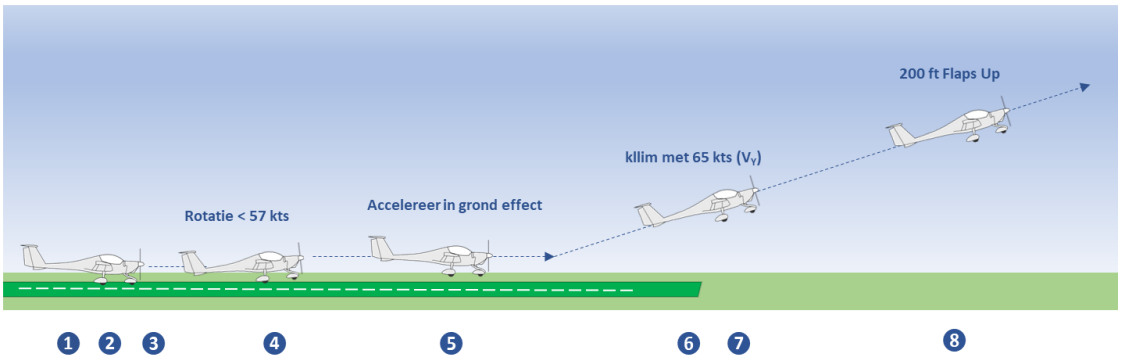
NOTE: Hard surface, long runway , flaps UP
Short runway (<800m) or soft surface: flaps T/O

- Before entering the runway, ensure base, final and the 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, stick in the wind
- PITD (end of runway)
- Heels on the floor, feet off brakes
- Smoothly advance throttle full forward, control direction with rudder pedals
- Check airspeed 'alive' and engine instruments (2400 RPM ±100 RPM)
- Reduce aileron input with increasing airspeed, keep wings level
- Rotate at 51 kts, wings level, nose against horizon
- If needed, establish a drift correction angle and stay above the (extended) centerline
- Take a new PITD when the runway end disappears under the nose
- Allow the airspeed to increase to 65 kts
- At minimum 200ft select flaps UP, speed 65 when staying in circuit, 70 kts when leaving the circuit
- At minimum 200ft reduce propeller speed to 2400 RPM
- Trim off forces
- At 700 ft, reduce power setting to ±21"MP, speed 75-70 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)
  - ✓ Electric fuel pump off
- **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) Make a rolling takeoff
(3) As airspeed increase, nose rises off ground, release back pressure to keep nosewheel just off the ground
(4) The airplane flies itself off the ground
(5) Accelerate in groundeffect
(6) 60 kts, gently raise nose to climb attitude
(7) Accelerate to 65 kts V_y
(8) continue as normal takeoff

Figure 17 - Soft or Rough field takeoff.

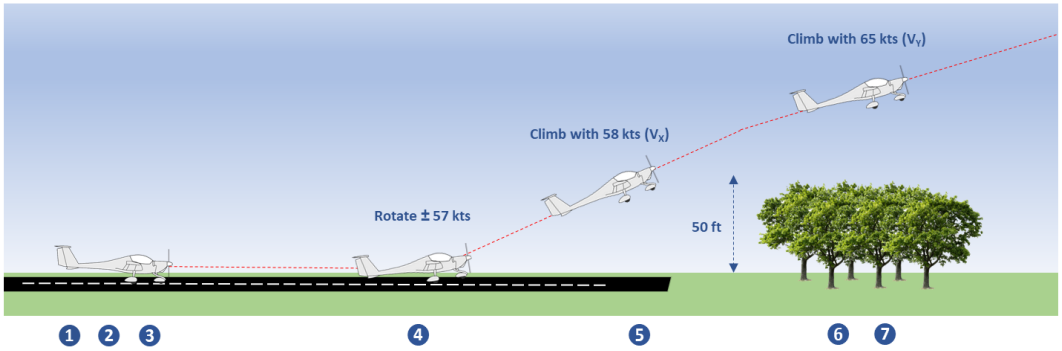


Obstacle clearance takeoff (short field takeoff)

If for safety reason a 'obstacle clearence 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 T/O
(2) hold brakes, advance throttle full forward, check engine instruments in the green.
(3) Release brakes, keep direction with rudder pedals
(4) Rotate at 57 kts
(5) Climb with 58 kts V_x
(6) When free off all obstacles: lower nose attitude and accelerate to 65 kts V_y
(7) Continue as normal takeoff

Figure 18 - Obstacle clearance takeoff.



Enroute procedures

Enroute climb

- ✓ Airspeed ..... BEST RATE(Vy) or HIGHER
- ✓ Throttle ..... FULL OPEN
- ✓ Propeller speed control lever ..... 2400 RPM

Cruise

- ✓ throttle ..... AS REQUIRED
- ✓ Propeller speed control lever ..... 1900-2400 RPM

Before joining the circuit

- ✓ Altimeter ..... SET QNH
- ✓ Electrical fuel pump ..... ON
- ✓ Landing light ..... ON
- ✓ Ignition switch ..... BOTH
- ✓ Brakes/belts/loose objects ..... CHECKED/FASTENED/STOWED

Downwind (75-70 kts)

- ✓ Carburetor heat ..... ON/WARM
- ✓ Flaps ..... (max 81 kts) TO
- ✓ Engine instruments/fuel quantity ..... CHECKED

WARNING

Only select flaps when speed is below 81 kts

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 to ±21”MP, speed 75-70 kts

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

(3) On downwind continuously check ‘HARS’:

- ✓ Hoogte controleren (altitude)
- ✓ Afstand tot de baan (offset to runway)
- ✓ Richting parallel aan de baan (direction parallel to runway)
- ✓ Snelheid 75-70 kts (speed 75-70 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 ....(speed max 81 kts)T/O

Immediately advance throttle to ±24”MP to maintain speed 70 kts

- ✓ Engine instruments/fuel quantit. .....CHECKED IN THE GREEN/SUFFICIENT

WARNING

Only select flaps when speed is below 81 kts

(5) Threshold 45-60° behind the wing

(6) Simultaneously reduce throttle to 15”MP (initial setting, make adjustments as necesarry), adjust pitch to maintain 70 kts and turn to baseleg with 15°-20° bank angle (max 30°)

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

(8) Roll out on centerline

(9) FINAL CHECK:

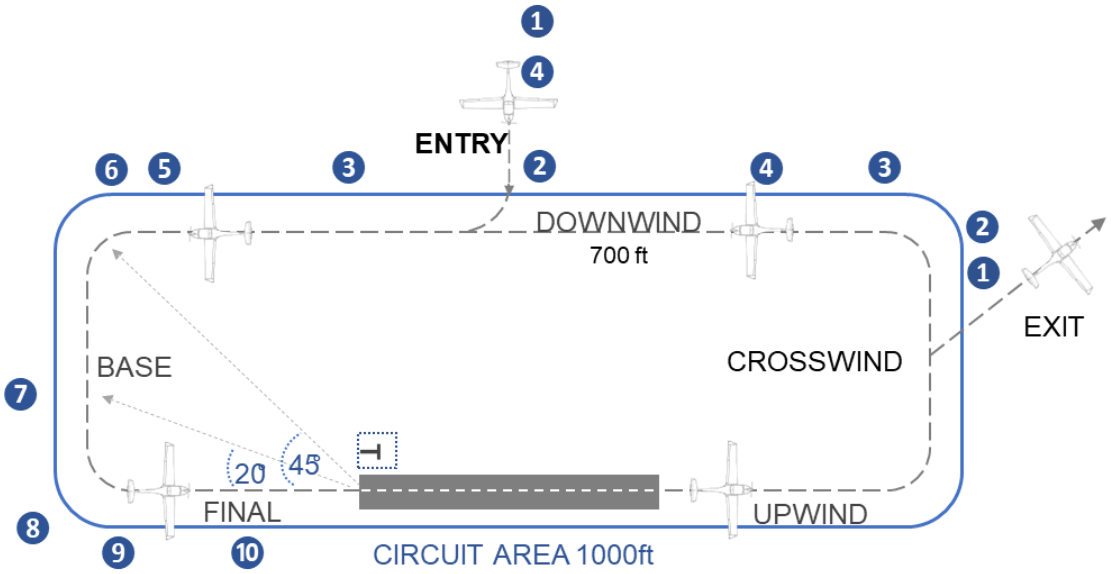
- ✓ Flaps ..... LDG
- ✓ Propellers speed control lever ..... MAX RPM

Maintain minimum approach speed 60 kts

(10) Look for traffic (see normal landing)

NOTE: Approach speed is 65 kts, a higher approach speed should be selected to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

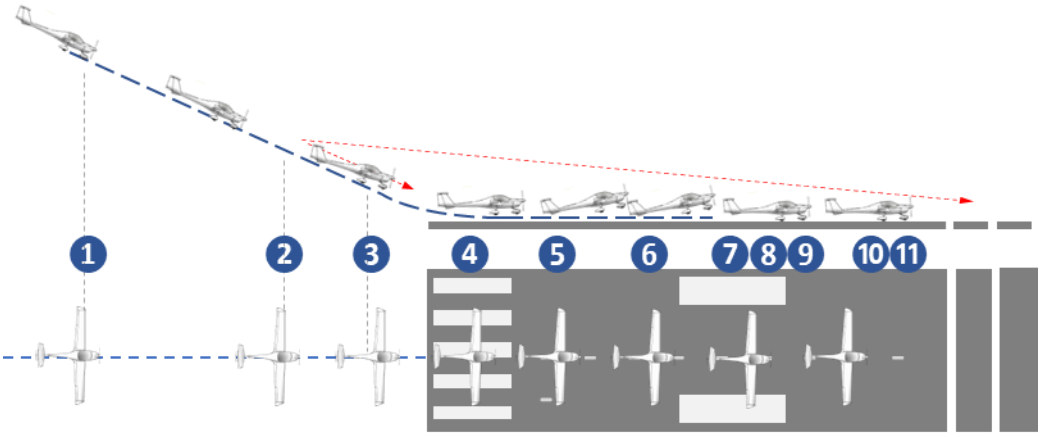
Figure 19 - the standard circuit (hard surface).



Normal landing

(1) Position the aircraft on a ±3° glidepath and aim just before the threshold
(2) As the aircraft gets closer to the runway, shift eyesight to the end off the runway
(3) After passing the threshold reduce vertical speed (round out)
(4) Establish level flight about 1m above the runway and simultaneously retard throttle to idle
(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 speed the nosewheel will land itself
(10) Gentle braking if necessary
(11) Stop the airplane when clear off the runway and perform the after landing checklist

Figure 20 - The 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 (see circuit), with the exception that no flaps will be selected
- When turning baseleg reduce throttle to 15”
- The speeds respectively are:
  - ✓ Downwind: .....70 kts
  - ✓ Base:.....70 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: Approach speed is 70 kts, a higher approach speed should be selected to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

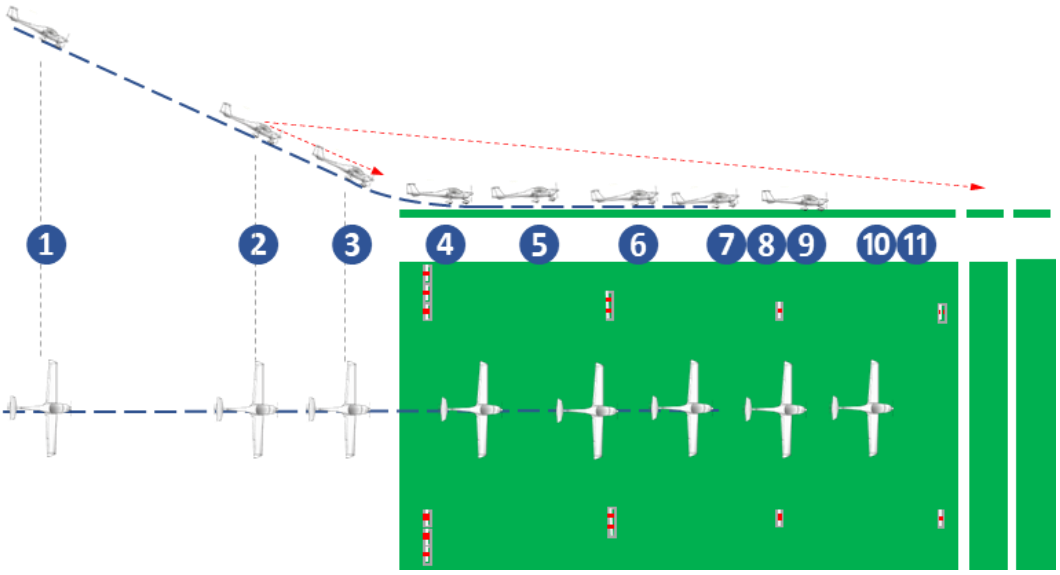
Soft field landing

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 nosegear to lower to the ground. Try and keep the nosegear 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 gets closer to the runway, shift eyesight to the end off the runway
(3) After passing the threshold reduce vertical speed (round out)
(4) Establish level 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 nosegear off the ground as long as possible
(10) Only brake when required by field length
(11) Keep rolling until a harder surface is reached.

Figure 21 - The soft field landing.



Short field landing/precautionary landing

- Fly a standard circuit
- After turning final select full flaps
- Maintain an approx. 3° glidepath and aim slightly in front of the threshold
- Nose attitude to maintain 55 kts, Throttle to maintain glidepath
- Make a normal landing
- After the nosewheel has landed, flaps UP 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”
- Propeller speed control lever max, throttle full forward, carburetor heat off
- Flaps T/O
- Raise nose to climb attitude for speed 58 kts (Vx)
- When clear off obstacles accelerate to 65 kts (Vy)
- 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

WARNING

NOTE: During the go around it may happen that other traffic is obscured by the airplane wings and disappeares 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
- Don’t 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 speed without trying to hard to hold on
- Consider a reduced flaps setting (UP or TO) because of greater controllability (see flaps up Landing)
- Consider to increase speed above normal speed 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.

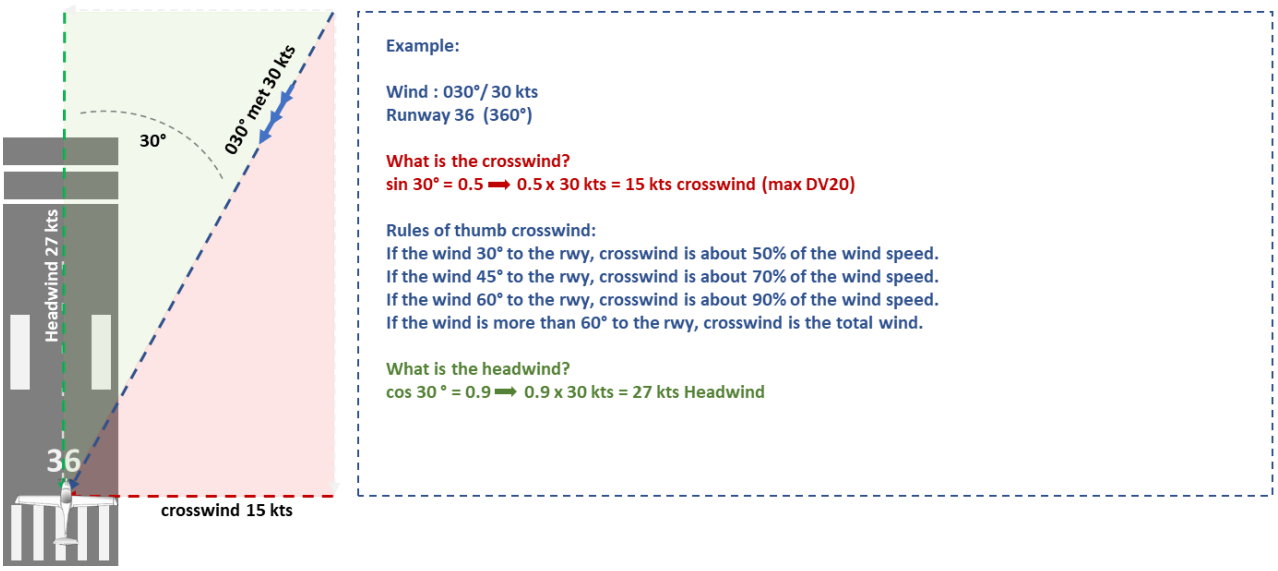
During the circuit:

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

During the landing:

- After throttle to idle / during the roundout and flare, align the longitudonal axis with the runway centerline with rudder
- Simultaneously put 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 23 – Crosswind



Abnormal procedures

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

Rejected takeoff

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

- Call out or “stop!”
- Retard throttle to idle, use rudder pedals to stay on the centerline
- If required, use brakes cautiously
- 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!)

- Immediately lower nose to glide attitude, 59 kts with flaps T/O, or 70 kts with flaps UP
- choose an suitable landing site 30° left / right from the nose
- Use minimum bank angle to avoid obstacles
- If possible do a short failure check:
  - ✓ Ignition switch ..... BOTH
  - ✓ Carburetor heat ..... ON/WARM
  - ✓ Fuel shut-off valve..... 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

The simulated engine failure is initiated by the instructor by retarding the throttle to idle 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 speed has reduced to 70 kts (see figure 25, best glide speed)
- Lower nose attitude to position for glide, maintain 70 kts (left rudder)
- Trim of forces
- Check wind direction
- Make a plan and depending on altitude and position fly direct to downwind, base or final

  > 1500ft downwind with 1000ft punt

  < 1500ft direct base

  < 700ft direct final
- Accomplish failure drill
  - ✓ Airspeed ..... 70 KTS
  - ✓ Electric fuel pump .....ON
  - ✓ Propeller speed control lever .....FULL FORWARD
  - ✓ Ignition switch ..... BOTH
  - ✓ Carburetor heat..... ON/WARM
  - ✓ Choke .....OFF
  - ✓ Fuel shut-off valve .....OPEN
- Choose a suitable landing site within range and into the wind
- In case of downwind procedure pick a 1000 ft punt and fly to this point
- Mayday call, ELT ON manually, transponder code 7700
- Check:
  - ✓ Nose attitude / airspeed 70 kts, forces trimmed off
  - ✓ Coordinated flight (ball centered, left rudder required due to loss of left turning tendency)
  - ✓ Route and altitude

- Threshold 30° behind the wing, turn base
- Aim for 1/3 off the landing field
- When assured landing can be made 1/3 of the field - flaps TO
- Plan a full flap landing with 59 kts
- After selecting flaps LDG, aim for the threshold
- When certain engine is not going to start and flaps LDG set
- CRASH DRILL:

WARNING

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

  - ✓ Airspeed.....59 KTS
  - ✓ Flaps ..... LDG
  - ✓ Fuel shut-off valve.....CLOSED
  - ✓ Ignition switch .....OFF
  - ✓ Master switch .....OFF
  - ✓ belts.....TIGHT

- Accomplish a short/soft field landing

Figure 24 - Emergency landing without power.

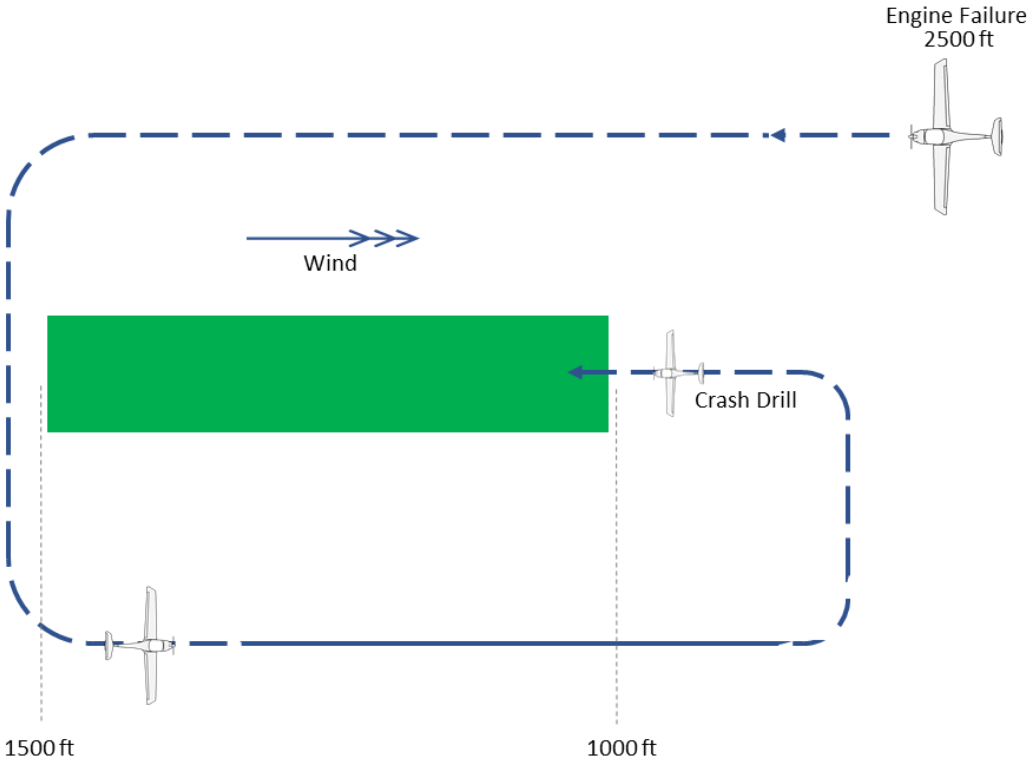
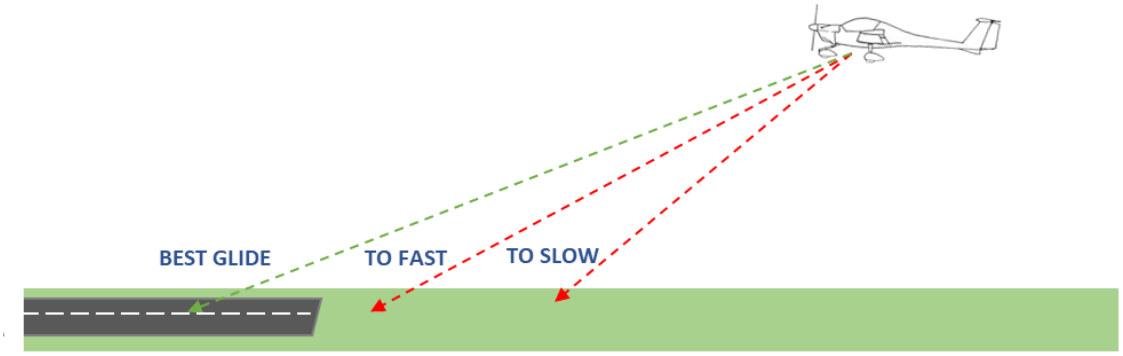


Figure 25 – Best glide speed



Estimated gliding distance

the maximum L/D-ratio (L/D_{max}) of a Katana is approximately 14, so the glideratio is approximately 14:1 – meaning for every unit down the forward travel is 14 units. the Katana will glide approx. 14.000 feet for every 1.000 feet available altitude.
This is a typical value for the katana.

Figure 26a - Glide distance (no wind and not to scale)

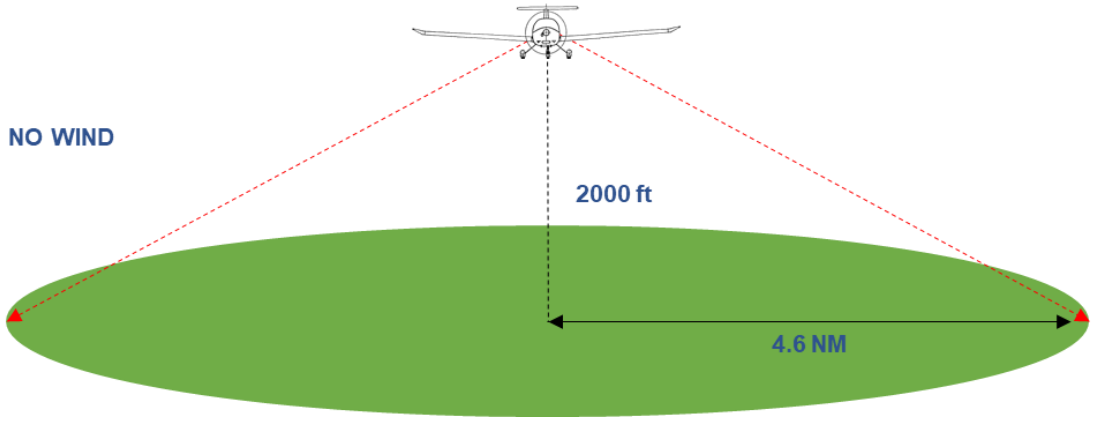
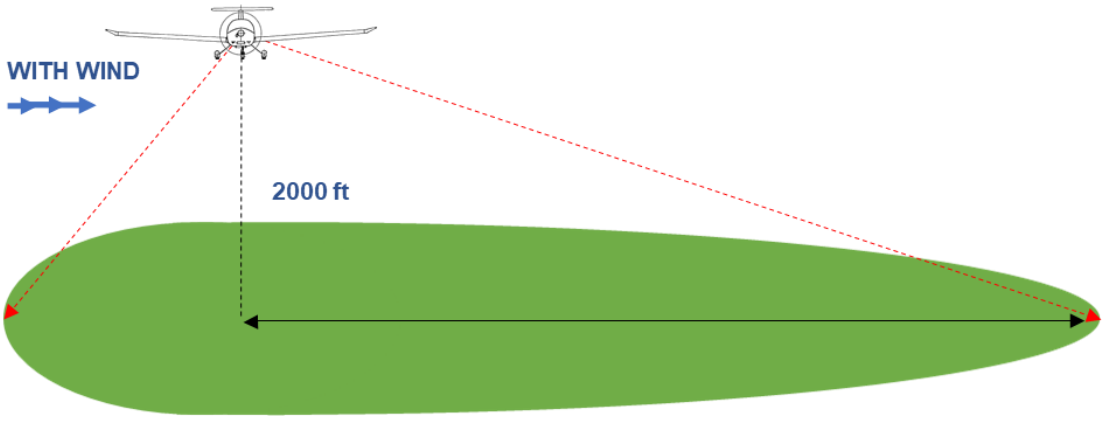


Figure 26b - Glide distance (with wind and not to scale).



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 visibilty allow this.

- BEFORE JOINING THE CIRCUIT CHECK
- Descend to 500 ft and turn downwind
- Choose a suitable landing site into the wind
- PAN PAN PAN PAN PAN PAN call
- Position the aircraft on a 500ft downwind, CVV on, Flaps TO, throttle to ±24", speed 70 kts
- Turn base and start descend, Throttle to 15"
- Turn to final and level off at 200ft
- Advance throttle to ±24", speed 70 kts, STOP DESCENT!
- Accomplish an inspection run abeam the field and start timing (± 40 m / 135 ft per/sec) and check
  - Slope
  - Obstacles
  - Length (see timing tabel)
  - 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
- Level off, reduce throttle to ±21", speed 70-75 kts
- Turn crosswind and subsequently downwind
- DOWNWIND CHECK:
  - ✓ Carburetor heat..... ON/WARM
  - ✓ Flaps ..... (max 81 kts)T/O
- Immediately increase power setting to ±24"MP to maintain speed 70 kts
  - ✓ Engine instruments/fuel quantity.....CHECKED IN THE GREEN/SUFFICIENT
- Threshold 45° - 60° behind the wing
- Turn base leg with 15°- 20° bank angle (max 30°), throttle naar ±15" when intercepting the normal glidepath
- Approximately 20° before the extended centerline, turn final with 15° bank angle (max 20°)
- Roll out on centerline
- FINAL CHECK:
  - ✓ Flaps .....LDG
  - ✓ Propeller Speed Control Lever ..... MAX RPM
- Maintain approach speed 55 kts
- Accomplish a short/soft field landing

NOTE: Approach speed is 65 kts, a higher approach speed should be selected to account for wind, turbulent weather or windshear conditions. Take into account increased landing distance!

Figure 27a - Precautionary landing.

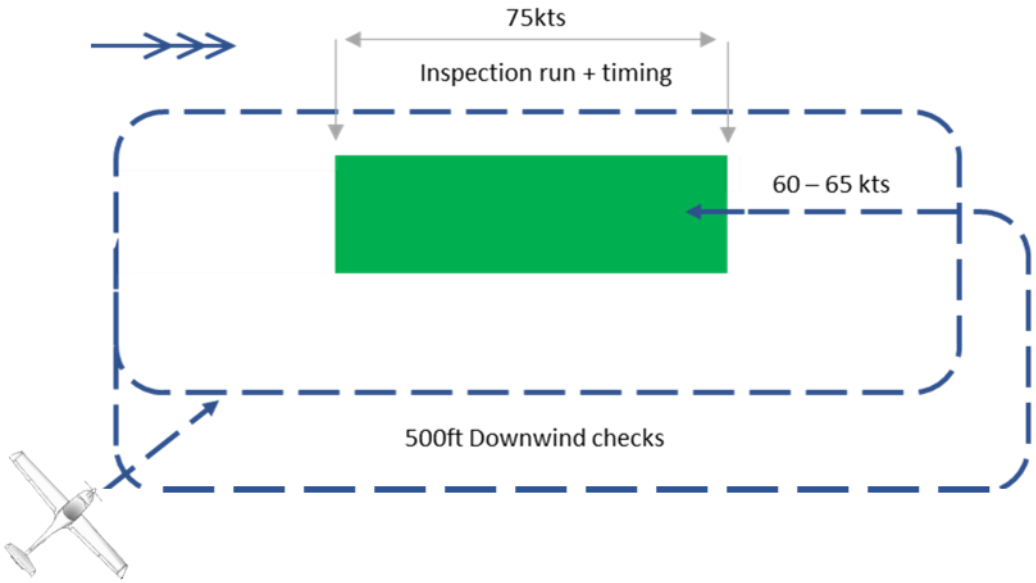


Figure 27b – Precautionary landing – Inspection run, timing and distance table

INSPECTION RUN + TIMING		
Minimal landing distance @500m		
Ground speed	***Meters per seconds***	***Timing in seconds***
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: