Procedures C172R

PH-STW

PH-STZ

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Versie 1

FLIGHT PREPARATION

Flight preparation must be done before starting the flight. Flight preparation contains actions required for a safe and legal flight.

For performance, mass & balance calculations and preparation of navigation log use the forms supplied by Zelf Vliegen. A checklist for flight preparation can be found in the briefing room.

DAILY INSPECTION AND WALK-AROUND

Zelf Vliegen distinguishes a daily inspection, which is carried out before the first flight of the day, and a walk-around, which has to be carried out before each subsequent flight. See AOM/POH. The daily inspection is carried out each morning by student and instructor, or renter. If refill of oil should be required the student will first inform an instructor. If a student has an intermediate stop between two adjacent parts of a flight session, a walk-around inspection before the next part of the session will suffice.

Before performing the walk-around as described in the POH: every time when walking towards the aircraft check the following issues:

- flat tires
- marked damage
- tie down ropes and pitot cover
- surface icing
- conditions of the windows
- free of obstacles, taxi-out route free

TRANSFER OF CONTROLS

Transfer of controls and Radiotelephony can be performed when the student or instructor decides or in case of pilot incapacitation. The following calls will be used:

“MY CONTROLS’’ ‘’YOUR CONTROLS’’ ‘’MY RT’’ ‘’YOUR RT’

OUTSIDE REFERENCE POINT (O.R.P.)

Choose a point in the distance before starting the exercise, which will give a good reference on your position. The point must remain visual during the exercise. The point can be a river/village/obstacle during turns or climb.

EXERCISE BRIEFING

This briefing is given before starting the following flight exercises:

- Full stall
- Approach to stall

The briefing should contain the following items:

- altitude / flight level
- O.R.P. or heading
- speed
- recovery

USE OF CHECKLIST

The objective of using a checklist is to ensure standard procedures, to ensure that the airplane's condition is acceptable for the flight and to properly operate the airplane and its systems in each phase of flight. The checklist items are grouped in such way that a logical flow can be maintained as far as practical. Checklist read out should be organized and timed and should not interfere with other tasks. Do not keep the checklist in front of the flight instruments or put it on the dashboard. The checklist covers all items mentioned in the checklists of the AOM/POH. Zelf Vliegen has added and omitted checklist items in the interest of student training and safety. These items are not contradictory in any way to the AOM/POH.

To keep track of the checklist put a finger at the item that has to be covered next.

All checklists must be read aloud and the amount of fuel, flaps etc. must be mentioned.

All checklists shall be performed by memory in flight. The checklists in the circuit pattern must be performed by heart. These checklists shall not be read.

Completion of a checklist is only when all items of the checklist are covered and must be verbally indicated by “CHECKLIST COMPLETED”, for example “BEFORE STARTING ENGINE CHECKLIST COMPLETED”.

The checklists consists of two checklists: the NORMAL CHECKLIST and the emergency memory items.

The normal checklist is used as a checklist or a do-list.

Do-list:

The normal checklist is used as a do list when the aircraft is on blocks or not moving on the ground. When the normal checklist is used as a do-list, each item will be read and then completed, before starting on the next item and is used when the aircraft is on blocks or not moving and on the ground.

COCKPIT PREPARATION

Before entering the cockpit the student (and instructor) must be insured that all passengers received a passenger briefing. Before reading the checklist and starting the engines the student (and instructor) must be informed about the runway in use by listening to the ATIS or other visual means.

- Seat adjustment
- ATIS, if applicable
- Cockpit organized; navigation maps, flightlog, checklist, pen
- Crew briefing
- Clean windscreen

TAXIING

Taxi speed is a fast walking speed (+ 5 kts). Speed can best be checked by looking sideways momentarily. Reduce speed before entering a sharp turn. Use intermittent brake applications to avoid overheating, **do not ride the brakes**. Keep control column fully backwards while taxiing during unpaved surface to prevent damage to nose strut or propeller.

CLIMB

There are various types of climb for the C172R:

- Vx, best angle of climb: maximum altitude gain versus distance covered
- Vy, best rate of climb: maximum altitude gain versus time

Use look-out turns after every 1000'. Deviate 30° to the right and left of the intended track for a better look- out. Climbing turns must be performed with a maximum bank angle of 15°.

During climb high power is set at a relatively low speed and high nose attitude. Check the engine instruments regularly.

Horizontal flight to climb:

- O.R.P.
- check engine instruments
- check outside is clear, O.R.P.
- **Attitude**: increase to climb attitude for 75 kts
- **Power**: 5 kts before reaching 75 kts, select smoothly full power
- **Trim** the aircraft
- maintain heading
- adjust attitude for speed and trim the aircraft
- maintain a sharp look out and check: attitude versus speed, heading/O.R.P., no bank.

Climb to horizontal flight:

- check outside is clear, O.R.P.
- 20 ft. before desired altitude:
- **Attitude**: lower to expected attitude for horizontal flight
- maintain heading
- **Power**, at 100 kts reduce throttle to cruise power
- adjust attitude and **Trim** the aircraft
- horizontal flight
- cruise checks

CRUISE

Normal cruise power setting is between 2000 RPM and 2200 RPM. See POH for recommended settings.

The speed will be determined by the power setting. During periods less than 2 minutes of horizontal flight in between airwork exercises the speed will be a fixed Vcruise.

Avoid built-up areas as much as possible during flight exercises for noise abatement. Check engine/flight instruments every 30 minutes or at each turning point enroute with a way point check.

Way point check:

- engine instruments in the green;
- fuel sufficient;
- Line up directional gyro .

Horizontal flight:

- O.R.P.
- maintain a sharp look out and check:

SPEED CHANGES

The JAR FCL requires control of the aircraft at speed ranging from Vstall+5kts to maximum cruising speed. The normal exercise will be performed with 70 knots. Flying with lower speeds gravely increases risk of collision due to an extremely high attitude impairing look out possibilities for the pilot.

For "high speed" flight the maximum allowable power setting is used. Resulting speed may vary with weather conditions and altitude.

Given power settings are rough indications and can vary.

Slow flight:

- O.R.P.
- check engine instruments
- check outside clear, O.R.P.
- reduce throttle to +- 1800 RPM
- 5 kts before 70 kts adjust throttle
- trim the aircraft
- maintain a sharp look out and check:

- attitude versus altitude

- speed versus power

- heading/O.R.P,, no bank, coordinated flight

Recovery slow flight or high speed:

- O.R.P.
- check engine instruments
- check outside clear, O.R.P.
- select smoothly full power
- coordinated flight with rudder
- check max power
- at 100 kts adjust power to cruise power
- trim the aircraft
- maintain a sharp look out and check:

- attitude versus altitude

- speed versus power

- heading/O.R.P., no bank, coordinated flight

NORMAL DESCENT

During normal descend the cruising speed shall be maintained. The desired rate of descend should be initiated with reducing power, while attitude is adjusted to maintain speed (100 kts)

Normal ROD is 500 ft./min. If a high rate of descend is required the rate of descend may be increased to a maximum of 1000 ft./min.

Horizontal flight to descent:

- O.R.P.
- check engine instruments
- check altimeter
- check outside is clear, O.R.P.
- **Power:** reduce throttle to descent power
- **Attitude:** simultaneously reducing attitude to expected attitude for descent
- **Trim:** the aircraft
- maintain heading/O.R.P.

Descent to horizontal flight:

- check outside is clear, O.R.P.
- **Power:** 50 ft. before desired altitude increase power to cruise power
- **Attitude**: increase to attitude for horizontal flight
- **Trim** the aircraft
- horizontal flight
- cruise checks

GLIDE DESCENT

During glide the "best glide speed" will be flown – 65 KIAS. This is also the minimum glide speed. This descent is normally flown in case of engine failure.

For training purposes use the normal glide configuration

- flaps up
- each 1000’ engine clearing

Horizontal flight to glide:

- O.R.P.
- check engine instruments
- check altimeter
- check outside is clear, O.R.P.
- **Power:** smoothly close the throttle
- **Attitude:** increase attitude till reaching 65 kts
- decrease attitude to maintain best glide speed – 65 kts
- **Trim** the aircraft
- maintain a sharp look out and check:

- attitude versus speed

- heading/O.R.P., coordinated flight

Glide to horizontal flight:

- Check outside is clear, O.R.P.
- **Power:** 100 ft. before reaching desired altitude increase power to cruise power
- **Attitude:** 50 ft. before reaching desired altitude smoothly increase attitude for Vcruise
- **Trim** the aircraft
- horizontal flight
- cruise checks, O.R.P.

Engine clearing:

- Check outside is clear, O.R.P.
- check engine instruments
- smoothly full power, direction with rudder
- attitude increase to maintain Vglide
- full power for 3 seconds
- close throttle with smooth rate
- lower nose to glide attitude
- maintain a sharp look out

TURNS

Turns are made with a constant speed, altitude and bank.

The roll out of the turn is initiated 10º before the intended heading. Use rudder in direction of the roll when initiating or rolling out of the turn. To make a coordinated turn use the rudder in the turn and keep the ball in the middle of the turn coordinator.

- Normal turns: angle of bank 30º.
- Steep turn: angle of bank 45°.
- Maximum bank angle: for training purposes 60°
- Climbing turn: angle of bank maximum 15°.
- Descending turn: angle of bank 30°.
- Turn in the circuit: angle of bank 20° or 30° depending on the leg of the circuit.
- Starting the turn
    - keep a sharp look out during the turn
    - start look out direction at the opposite side of the turn
    - for training purposes the exercise of normal and steep turn is normally performed with a turn of 360°.

Descending turn:

- check outside is clear, O.R.P.
- roll in to angle of bank 30º
- maintain a sharp look out and check:
    - angle of bank constant
    - descent: speed versus power
    - coordinated flight
- +/- 10° before desired heading, roll out to desired direction

Normal turn:

- check outside is clear, O.R.P.
- roll in to angle of bank 30º
- increase attitude slightly, apply back pressure
- stop the roll, maintain angle of bank
- maintain coordinated flight with controls
- check:
    - angle of bank constant
    - attitude versus altitude/vertical speed
    - speed versus power
    - coordinated flight
- +/- 10 ° before desired heading, roll out to desired direction

Steep turn:

- Speed 100 kts
- check outside is clear, O.R.P.
- roll in to angle of bank 45 º
- after passing ± 30° increase +/- 200 rpm and apply back pressure.
- maintain a sharp look out and check:
    - angle of bank constant
    - attitude versus altitude/vertical speed
    - power versus speed
    - coordinated flight
- +/- 15° before desired heading, roll out to desired direction
- when passing 30° bank reduce throttle to cruise power and release back pressure
- cruise checks, O.R.P.

Slow flight turn:

- check outside is clear, O.R.P.
- roll in to angle of bank 15º
- add +/- 100 rpm
- maintain a sharp look out and check:
    - angle of bank constant
    - speed versus power
    - coordinated flight
- roll out to desired direction
- cruise checks

UNUSUAL ATTITUDE (EXCEPT STALL OR SPIN)

An unusual attitude (UA) is any attitude which is different from the one the pilot intended the aircraft should be in. This does not mean the attitude is extreme, but it does mean almost certainly that the pilot is disorientated or lost control of the aircraft in some way. If you do not take prompt recovery action, the situation could become serious.

The attitude indicator is reliable and is normally used for UA recoveries unless it indicates a failure.

The following summarizes the set drill used for the training of an UA.

- Perform the pre-stall checks
- Your instructor will give you an UA.
- Recover the aircraft:

− Bank/pitch check whether you have a high or low attitude

- Nose high: Roll aircraft towards the nearest horizon - limit bank angle to 60° and let the nose drop to the horizon, then roll to wings level on the AI.
- Nose low: Roll to wings level on the AI, then pitch to the level flight attitude.
- Speed low or decreasing select full power
- Speed high or increasing close throttle(s)
- Check the performance instruments to confirm straight and level; return to straight and level scan.
- Post-recovery action: Check instruments; what went wrong? Depending on the situation consider to divert.
- Perform the after stall checks

STALL/SLOW FLIGHT

Stall/slow flight is performed in the following sequence:

- Briefing;
- pre stall checks
- stall;
- no trimming unless allowed by POH of aircraft;
- Stall recovery:. keep direction with rudder, aileron neutral;
- checks for horizontal flights;
- after stall checks

STALL BRIEFING

- type of stall;
- configuration;
- desired altitude and direction;
- when to recover the approach to stall;
- ... kts (5 kts before stall speed indication);
- onset of buffeting;
- stall warning;
- (whichever comes first);
- when to recover the full stall;

- drop of nose or wing;
- altitude lost;
- (whichever comes first).

HASELL (Pre-stall checks)

- Height
- Airframe: check flaps are up
- Safety: fasten seat belts
- Engine
- Location, avoid:
    - built up areas;
    - harbors and industrial plants;
    - congested areas where large numbers of people are gathered;
    - aerodromes;
    - large open water (due orientation difficulties during recovery);
    - clouds covering more than half of the sky;
    - other air-traffic.
- Lookout: perform look out turns

For thorough outside check make turns to the right and left or 180° turn and immediately start the exercise. Have a sharp lookout around, below and above

RECOVERY OF THE STALL/SLOW FLIGHT

Approach to stall: recovery with one of the first symptoms of the stall

- 5 kts before stall speed indication;
- onset of buffeting;
- stall warning

Full stall: recovery after one or more symptoms of stall

- drop of nose or wing
- altitude lost

Full stall, clean configuration, recovery with power:

- O.R.P, check outside clear.
- reduce throttle to closed
- O.R.P.
- increase attitude, apply back pressure
- ailerons neutral, use rudder
- stall recovery:
  - nose down to break the stall
  - simultaneously full throttle,
  - maintain altitude and heading
- 75 kts, back to altitude

Full stall, clean configuration, recovery no power:

- O.R.P, check outside clear.
- reduce throttle to closed
- O.R.P.
- increase attitude, apply back pressure
- ailerons neutral, use rudder
- stall recovery:
  - nose down and attitude to glide attitude
- stabilized glide:
  - simultaneously full power

Approach to stall, landing configuration:

- O.R.P, check outside clear.
- reduce throttle to 1800 RPM
- O.R.P.
- increase attitude, apply back pressure
- ailerons neutral, use rudder
- white arc, full flaps in steps
- stall recovery:
  - nose down to break the stall and simultaneously full throttle
  - maintain altitude and heading!
  - flaps 15 º, when positive rate of climb flaps up
- 75 kts, back to altitude

Approach to stall climbing turn, take off configuration:

- O.R.P, check outside clear.
- Increase power to take off power
- increase attitude, apply back pressure
- start a climbing turn, bank of angle 15º, allow speed to decrease
- stall recovery:
    - Push the nose through the horizon and break the stall
    - Full throttle,
    - Roll out bank until wings level
    - Bring nose up at least until horizon when reaching climb speed
- 75 kts, back to altitude

Approach to stall in descending turn, approach configuration:

- O.R.P, check outside clear.
- reduce throttle to 1800 RPM
- white arc, flaps approach
- O.R.P.
- Start descending turn, 30º angle of bank and allow speed to decrease
- stall recovery:
    - Roll out bank until wings level
    - Nose down to break the stall, full throttle
- 75 kts, back to altitude

CIRCUIT PATTERN

The circuit consists of 7 parts:

- Take off from start to 50 ft. AGL
- Upwind leg from 50 ft. AGL to turn to crosswind leg
- Crosswind leg
- Downwind leg
- Base leg
- Final
- Landing

TAKE-OFF

The school distinguishes "Normal take-off", "Short field take-off", "Soft field take-off" and "Obstacle take-off". Whenever performance is not limiting a normal take-off is preferred.

LINE-UP

Before leaving the run-up area all applicable checklists must be completed. The aircraft may be turned in the direction of final of the runway in case of an uncontrolled airfield. Check approach sector, base, final and runway clear before lining-up.

NORMAL TAKE-OFF

The “before take off checklist” must be completed before take-off. Take-off into strong crosswinds are performed with minimum flap setting necessary for the field length, to minimize the drift angle after take-off. The aircraft is accelerated to a speed slightly higher than normal, before rotating. When clear of the ground, make a coordinated turn into the wind.

Normal take-off conditions

- beginning of the runway
- no brakes applied
- no flaps
- full throttle
- normal climb procedure
- standard emergency procedures
- stop before Vrotate, see rejected take-off
- after Vrotate enough runway remaining, land the aircraft, see rejected take-off
- not enough runway remaining, attitude in glide attitude
- no configuration changes
- select a suitable field, 30 degrees left or right
- inform ATC
- use flaps if necessary

At take-off

- check approach sector free
- line-up aircraft runway direction
- check heading versus desired runway
- check wind direction, stick into wind
- O.R.P. end of the runway
- release brakes, heels on the ground
- smoothly apply full power, maintain hand on the throttle until at least 400’ HAA
- check engine instruments and airspeed alive
- maintain direction with rudder

At Vr

- ease yoke back a little to rotate, attitude to the horizon
- after lift off adjust attitude, accelerate to Vclimb

At 200’ AGL

- select flaps up (if applicable)

Before entering the runway check the following items:

- approach sector clear
- runway heading
- wind direction and speed

Rolling take-off

- align aircraft with centerline
- full throttle

SHORT FIELD TAKE-OFF

Whenever performance is critical a short field take-off should be carried out. Line-up at the extreme beginning of the runway and make a static take-off before brake-release. After lift-off increase speed to normal climb speed. Refer to AOM/POH for details of the specific procedure.

Short field take-off

- flaps 10°
- line aircraft up at beginning of runway and check runway direction
- check heading versus desired runway
- check wind direction, yoke into wind
- static take-off, apply brakes
- smoothly apply full throttle
- check engine instruments
- brakes released
- maintain direction with rudder
- at 55-60 kts ease yoke back a little to rotate
- after lift off adjust attitude, accelerate to 75 kts

SOFT FIELD TAKE-OFF

On grass runways a soft field take-off is mandatory. During take-off keep control column backwards and fly the aircraft off the ground. Refer to AOM/POH for the specific procedure.

OBSTACLE TAKE-OFF

In case of an obstacle has sufficient ground roll but an obstacle is present at the end of the runway or in the climb out segment an obstacle take-off should be carried out. Climb out is with a higher pitch due to a climb with the best angle of climb speed, Vx. In case of VMC conditions accelerate after passing the obstacle. Refer to AOM/POH

Obstacle take-off

- flaps 10°
- line aircraft up at beginning of runway and check runway direction
- check heading versus desired runway
- check wind direction, stick into wind
- static take-off, apply brakes
- smoothly apply full throttle
- check engine instruments
- brakes released
- maintain direction with rudder
- at 55-60 kts ease yoke back a little to rotate
- after lift off adjust to higher attitude, accelerate to 65 kts
- after passing the obstacle, accelerate to 75 kts

Soft field take-off

- flaps 10°
- hold control column backwards
- line aircraft up at beginning of runway and check runway direction
- keep aircraft rolling
- check heading versus desired runway
- check wind direction, stick into wind
- smoothly apply full throttle
- check engine instruments
- maintain direction with rudder
- keep control column aft and fly the aircraft off the ground
- after lift off adjust attitude, accelerate to 75 kts

MANOEUVRING AFTER TAKE-OFF

The normal minimum altitude for turns is 500 HAA. For clearance and/or ATC reasons a lower altitude may be required. Do not turn below 300'. HAA.

UPWIND LEG

Maintain normal climb speed until reaching circuit altitude. To remain inside the prescribed circuit pattern climbing turns are allowed. When reaching circuit altitude accelerate to speed for downwind. Do not perform the "Climb checklist" when maintaining in the circuit.

CROSSWIND LEG

When flying at cross-wind leg give extra attention to incoming traffic on downwind. In case of incoming traffic consider radio call. When runway is 45° visual below wing, turn downwind and O.R.P. Reduce throttle for downwind power, reduce attitude for horizontal flight and trim the aircraft.

DOWNWIND LEG

- check brakes
- perform downwind checks
- radio call
- end of downwind
- turn base leg with a 30° turn when the runway is 45° behind wing
- O.R.P.

BASE LEG

On base leg the descent shall be initiated to join a final glide path of approximately 3°. As a rule-of-thumb throttle should be reduced with about 100 rpm for a ROD of 100 ft/min.
The point of descent depends on wind on base and final. Normally on base leg the flaps are selected immediately after initiating the descent to final and speed reduced.
Check the beginning and end of final is it is clear before entering final because an aircraft can be at a long final.

FINAL

Dutch law requires that an aircraft shall be established on final not lower than 300 ft. The bank of the turn to final should be initially 20° so corrections can be made in the bank to be established at the centerline, with a maximum bank angle of 30°. When completing the turn the minimum altitude should be 350' AAL.

On final flaps are selected to full for normal landing. Flap selection should be completed as soon as practical, but not lower than 100 ft. above threshold. A combination of attitude and power should be used to maintain a constant glide path.

NORMAL LANDING

Normal landing is performed with full flaps. Landing technique according AOM/POH. The attitude at touch down should be approximately the attitude during lift-off in the take-off.

Land on main wheels first. After touchdown slowly release yoke pressure to ease down the nose to the runway.

Short final, 50’ above threshold

- on short-final reduce speed to 65 kts
- aim to beginning of runway
- line-up with the centerline

Final phase of landing

- over runway, reduce throttle, maintain direction with the rudder
- increase attitude to land main gear first
- gently release back pressure to ease down the nose gear

CROSSWIND LANDING

With more than 10 kts crosswind component, a reduced flap setting is preferred to maintain sufficient controllability during landing.

FLAPLESS LANDING

A flapless landing is considered a non-normal situation.

A flapless landing requires a higher final speed, while drag is minimal. Therefore an increase in landing distance and landing roll will result. Use less throttle during descent due to decreased drag.

Crosswind landing:

- flaps 10°
- if necessary increase final speed with 5 kts.
- short final, line up the aircraft with the centerline using rudder
- wing low method during flare to maintain centerline in the middle
- landing on the one main gear in the wind
- second main wheel
- nose gear last
- yoke in the wind after landing

Flapless landing:

- flaps up°
- increase speed at base and final with 5 kts.
- less throttle on final
- land positive, fly aircraft onto the ground
- Throttle idle just before touch down

PRECAUTIONARY LANDING PROCEDURE

A precautionary landing procedure has to be carried out in case of one or more of the following circumstances but the aircraft is still performing normally:

- end of daylight, and still not in sight of a suitable aerodrome
- fuel quantity doubtful to be sufficient to reach a suitable aerodrome
- hopelessly lost, and no contact with ATC or other aircraft

The emergency checklist for this procedure shall be used according BFM and POH/AOM. ATC shall be informed about the position of intended precautionary landing. The go-around in a low flying area is initiated before reaching 100 ft. on final track. The low inspection run will be flown free of buildings and pastures with cattle. Due to noise abatement try not to pick the same landing area more than twice in your session. Choose the field on the left on downwind and during inspection flight for good visual contact with the runway.

The landing is called a spot-landing or short-field landing. The landing technique is used for very short runways and for a landing outside an airfield. Do not choose the predetermined spot to close to the beginning of the runway in case of sudden altitude loss in case of wind sheer or too early throttle reduction. Due to reduced speed the aircraft will hang on the propeller and will land immediately when closing the throttle. After landing evacuate aircraft and inform authorities.

Precautionary landing procedure:

- find a suitable landing area
- descent to 500'
- tail in the wind
- downwind, speed 80 kts, flaps 10°
- base leg, descent 200'
- check the field
    - free access to final and departure route
    - runway length sufficient
    - hard and even runway surface
    - free of obstacles
- climb to 500', upwind and crosswind
- downwind checks, R/T call PAN-PAN
- base leg, flaps 20°, speed 5 kts. below base leg speed
- final, not below 250', flaps full
- landing

SOFT FIELD LANDING

Until the final phase of landing the soft field landing procedure is the same as the normal landing procedure. The final phase of a soft field landing is as described below:

Landing following a precautionary landing procedure:

- final, speed 55 kts
- short final, speed 55 kts
- glide path maintained with throttle
- speed with attitude
- close throttle only inches above spot
- land positively
- minimum landing roll, flaps up and maintain back pressure

GLIDE-IN LANDING

The normal circuit pattern will be flown without using flaps. Maintain circuit altitude until a glide can be made to the runway, still using the normal circuit pattern. Plan your landing at+ 1/3 of the available runway. When sure of landing aim at the beginning of the runway. Adjust glide path with flap selection. Trade speed for altitude and do not descent until speed is 65 kts.

Glide-in landing:

- normal circuit
- flaps up, speed downwind 80 kts
- point of descend, throttle idle
- maintain direction with rudder
- keep nose up until speed 65 kts
- decrease attitude until glide attitude
- control glide path with flap selection
- short failure procedure
- if time permits,
- memory items engine failure
- R/T call, May-Day
- if applicable, crash drill

TOUCH AND GO

With a touch and go on paved runway the flaps are selected to up, on a grass runway selected to the flaps 10° position.

After touch

- select flaps up
- O.R.P. end of the runway
- smoothly apply full throttle
- Continue with normal take-off procedure

GO AROUND OR WAVE-OFF PROCEDURE

The difference between a go-around an a wave-off is the moment of initiation. The go-around is initiated somewhere on final. The wave-off is also called a balked landing and is initiated shortly before or during the landing flare.

Initiating go around

- “GO AROUND”
- select full throttle
- attitude for climb
- select flaps 10º if flaps were more than 10º
- attitude for climb, increase speed to climb speed

Wave-off

- “WAVE OFF”
- select full throttle
- adjust attitude to horizon
- select flaps 10º if flaps were more than 10º
- attitude to climb speed

EMERGENCIES

To help crew cope with situations that are beyond normal flight a standardized schedule is developed for dealing with abnormal flight conditions. This schedule is called B.F.M., Basic Failure Management. BFM helps to diminish the chance of failures and, if failures are made, to remark them in an early stage and make the appropriate corrections. BFM gives a structure in handling the emergency and a clear sequence in handling the abnormality.

In general the following issues must be attended, see ships papers:

- never leave the aircraft unguarded
- inform school first
- do not give statements to anyone, except legally appointed personnel
- do not allow press in the direct vicinity of your aircraft or landing site
- write down the facts of what happened, give no opinion of causes for the accident

BASIC FAILURE MANAGEMENT

This mental checklist is used while handling failures and gives structure and clearness about responsibility in the cockpit. Multiple failure management requires a very good understanding of and commitment to the BFM

BFM consists of 8 steps as listed on the next page, only if applicable:

1. FLY THE AIRCRAFT

- Set pitch/power, trim

2. CONFIRM THE FAILURE

- State the facts

3. MEMORY ITEMS

- Student performs memory items, calling all actions aloud

4. SHORT TERM PLAN

- Immediate flight path, emergency turn
- ATC (Mayday/PANPAN)

5. EMERGENCY CHECKLIST

- Consider operational consequences

6. NORMAL CHECKLIST

7. CHECK CIRCUIT BREAKERS

- If applicable

8. LONG TERM PLAN

A. Collect information

- Be alert on new failures
- AOM/POH chapter, check for additional info
- Allowable Deficiencies List, check dispatch consequences next flight
- Fuel remaining
- Weather
- Approach aids
- Landing distance available (LDA)

B. Make your plan: Return, continue or divert

C Inform: ATC

REJECTED TAKE-OFF

Take-off must be rejected in case of:

- engine failure or fire
- oil pressure failure or oil pressure above limits
- any control problem affecting safe aircraft handling or control of the aircraft

If airspeed indication is unreliable reject take-off. Not enough runway remaining continue take-off and fly a circuit, using attitude and power setting as reference for speed. A landing with a maximum of 10º flaps is preferred.

Moment of malfunction

Call “STOP”

Complete stop

- state nature of failure
- perform memory items for failure
- R/T call
- if time permits, emergency checklist

ENGINE FAILURE/FIRE AFTER TAKE-OFF/E.F.A.T.O.

If the engine fails after take-off lower the nose to safe glide attitude. Select a suitable field. Regulate glide path by lowering the flaps. Perform emergency checklist if time permits. No time remaining, perform emergency landing. To restart the engine may never interfere with flying the aircraft and making of a safe landing.

ENGINE FAILURE PROCEDURE IN VMC

This information is in addition to the use of BFM to aid the student in planning an emergency landing.

If no field available fly in direction of the wind on downwind to encounter the most fields. Bring the aircraft in clean configuration for the best glide performance. Plan your landing at+ 1/3 of the available runway. When sure of landing aim at the beginning of the runway. Adjust glide path with flap selection. Trade speed for altitude and do not descent until speed is Vglide.

Radiotelephony call

- May-Day, May-Day, May-Day
- call sign
- position
- reason of declaring an emergency
- persons on board

The 1000’ point is the point when abeam the threshold of the strip within gliding distance. You should turn to base if the landing spot is behind the trailing edge of the strut. Keep within gliding distance at all times.

Make radiotelephony call before switching off the master switch.

Crash drill is the same as the emergency landing checklist.

Engine failure in flight:

- keep nose up until speed 65 kts
- decrease attitude until glide attitude
- trim the aircraft
- engine failure in flight checklist
- select suitable landing area or
- fly with the wind on downwind
- select 1000’ point
- descend planning and route
- R/T call, May-Day
- set transponder 7700
- 1000’ point, turn base
- arrange glide path with flaps
- emergency landing checklist/ crash drill
- evacuation

ENGINE FIRE IN FLIGHT

This information is in addition to the use of BFM to aid the student in planning his actions.

Increasing airspeed will increase the airflow so the flames will be blown out consider making a flapless landing. Fly to a direction of downwind, or base leg, and level off at 700 ft. AGL. Trim the aircraft for best glide speed. Make the 1000' point a 700' point. Do not switch the master switch to ON unless absolutely necessary. If electrical systems are absolutely required for continuation or for landing on a controlled airfield, switch on only the minimum required, leave all others OFF.

Evacuate aircraft immediately after touchdown and keep a good distance from the aircraft.

CABIN FIRE

This is in addition to the use of BFM to aid the student in planning his actions.

Cabin air controls are closed to avoid fanning the flames.

Extinguish fire with fire extinguisher or other available means, feet or cloth. Ventilate cabin even if fire is not out because smoke can be highly toxic. If fire is extinguished ventilate cabin by opening windows.

Plan a flapless emergency landing and do not switch the master switch to ON unless absolutely necessary. If electrical systems are absolutely required for continuation or for landing on a controlled airfield, switch on only the minimum required, leave all others OFF.

Do not reset tripped circuit breakers as this may restart the fire.

WING FIRE

This is in addition to the use of BFM to aid the student in planning his actions.

The probable cause of a wing fire could be an electrical short-circuit. Try to keep flames away from fuel tanks and cockpit by side slip and increased speed. Closing cabin vents is to prevent smoke entering the cabin.

ELECTRICAL FIRE IN FLIGHT

This is in addition to the use of BFM to aid the student in planning his actions.

The Master switch is turned OFF to preclude electrical fire or burned insulation due to electrical fire.

Cabin air controls are closed to avoid fanning the flames.

Extinguish fire with fire extinguisher or other available means, feet or cloth.

Ventilate cabin even if fire is not out because smoke can be highly toxic.

Plan a flapless emergency landing and do not switch the master switch to On unless absolutely necessary. If electrical systems are absolutely required for

continuation or for landing on a controlled airfield, switch on only the minimum required, leave all others OFF.

Do not reset tripped circuit breakers as this may restart the fire.

INCIPIENT SPIN

An incipient spin is an attitude which is different from the one the pilot intended the aircraft should be in. This is like the other unusual attitudes. When in a (incipient) spin the attitude is extreme and the pilot is likely to be disorientated or lost control over the aircraft in some way. If you do not take prompt recovery action, the situation could become very serious, very quickly. Spins differ from spiral dive which are characterized by low angle of attack and high airspeed. In a spin, both wings are stalled, however one wing will be in a deeper stall condition than the other. This causes the aircraft to auto rotate due to the non-symmetric lift and drag.

The following summarizes the characteristics of the incipient spin

- SPEED low
- BANK increasing angle of bank
- PITCH variable

The emergency checklist will summarize the drill use for the recovery of the (incipient) spin.

One scenario that can lead to an unintentional spin is an uncoordinated turn towards the runway during the landing sequence. A student who is overshooting the turn to final approach may be tempted to apply rudder to increase the rate of turn. The result is twofold: the nose of the airplane drops below the horizon and the bank angle increases. Reacting to these unintended changes, the student may then begin to pull the elevator control (increasing the angle of attack) while applying opposite aileron to decrease bank angle. This could lead to a (incipient) spin if not prompt recovered. A quick and correct recovery is therefore essential.

Conditions under which the exercise has to be performed:

- During all exercises the aircraft shall be flown within the limits as presented in the pilot operating handbook (POH).
- The exercises shall be flown in VMC.
- A minimum altitude of 2000 ft. recovered

HASELL (Pre-stall checks)

- Height
- Airframe: check flaps are up
- Safety: fasten seat belts
- Engine
- Location, avoid:
  - built up areas;
  - harbours and industrial plants;
  - congested areas where large numbers of people are gathered;
  - aerodromes;
  - large open water (due orientation difficulties during recovery);
  - clouds covering more than half of the sky;
  - other air-traffic.
- Lookout: perform look out turns

INCIPIENT SPIN

Immediately after the lookout turns the exercise should be initiated. Set power to idle and raise the nose to maintain altitude. When approaching the stall speed apply full rudder in the direction of the desired

spin, if needed aileron input in opposite direction can be given.

Recovery of the incipient spin should be initiated when an obvious wing drop is noticed.

- Close the throttle immediately
- Hold yoke neutral
- Apply opposite rudder (as much as needed)
- When the rotation stops; Move the yoke briskly forward
- When picking up speed; recover from the dive by

Symptoms of the incipient spin:

- Drop of one wing/increase of bank
- Drop of nose/altitude lost
- Steady airspeed

Make sure the aircraft is back to a horizontal flight by checking if all parameters(speed, bank and pitch) are correct again. The aircraft should also be trimmed again.

SPIRAL DIVE

A spiral dive is an attitude which is different from the one the pilot intended the aircraft should be in. This is like the other unusual attitudes. This does not mean the attitude has to be extreme, but the pilot is likely to be disorientated or lost control over the aircraft in some way. If you do not take prompt recovery action, the situation could become serious.

The attitude indicator is reliable and is normally used for unusual attitude recoveries unless it indicates a failure

The following summarizes the characteristics of the spiral dive:

- SPEED: High and increasing
- BANK: Banking and possible increasing
- PITCH: low nose attitude (altitude is decreasing)

The following summarizes the set drill used for the recovery from a spiral dive:

- Speed. High or increasing - close the throttle
- Bank. Role the wings to level
- Pitch. Recover from the dive
- Post-recovery action. Check instruments; what went wrong? Land as soon as practicable.

Spiral dive accidents are typically associated with visual flight (non-instrument flight) in conditions of poor visibility, where the pilot's reference to the visual natural horizon is effectively reduced, or prevented entirely, by such factors as cloud or darkness.

The inherent danger of the spiral dive is that the condition, especially at onset, cannot be easily detected by the sensory mechanisms of the human body. The physical forces exerted on an aircraft during a spiral dive are effectively balanced and the pilot cannot detect the banked attitude of the spiral descent. If the pilot detects acceleration, but fails to detect the banked attitude associated with the spiral descent, a mistaken attempt may be to recovery with more backpressure (pitch-up inputs) on the control wheel.

However, with the lift vector of the aircraft now directed to the center of the spiral turn, this erred nose-up input simply tightens the spiral condition and increases the rate of acceleration and increases dangerous airframe loading. To successfully recover from a spiral dive, the lift vector must first be redirected upward (relative to the natural horizon) before backpressure is applied to the control column. Since the acceleration can be very rapid, recovery is dependent on the pilot's ability to quickly close the throttle (which is contributing to the acceleration), position the lift vector upward, relative to the Earth's surface before the dive recovery is implemented.

Conditions in which exercise has to be performed:

- During all exercises the aircraft shall be flown within the limits as presented in the pilot operating handbook POH.
- The exercises shall be flown in VMC.
- A minimum safe altitude

Spiral dive:

- briefing
- pre stall checklist and APOS
- initiate spiral dive
- no trimming
- recovery
- checks for horizontal flight
- after stall checklist

Recovery

- Recovery of the spiral dive should be initiated when the airspeed is approaching the red line speed in smooth air conditions or the yellow arc when in turbulent air. Or when exceeding a max bank.
- Close the throttle immediately
- Roll wings level with coordinated use of ailerons and rudder
- Recover from the dive by applying (smooth)

DITCHING

First inform ATC for fast assistance after ditching. Set transponder to 7700 ALT and proceed according BFM. Make landing with Vglide and full landing configuration.

Do not attempt to flare out the aircraft during landing on water, keep attitude level. Cushion your face, the windscreen won't hold the force of the water.

Evacuate aircraft before inflating live vests. The aircraft starts sinking within a few minutes, possibly immediately!

ELECTRICAL FAILURES

Proceed according BFM.

If electrical power from the alternator is not restored, expect only very limited power left from battery.

Use only the absolutely necessary electrical equipment:

• In controlled airspace leave transponder ON, inform ATC, keep listening out on one radio, switch OFF all other electrical equipment.

• In uncontrolled airspace remain in uncontrolled airspace, if transponder is required leave transponder ON, switch OFF all other electrical equipment, proceed to suitable uncontrolled airfield and execute non-radio approach procedure.

• Prepare for a flapless landing. Consider diversion to an other airfield with long runway.

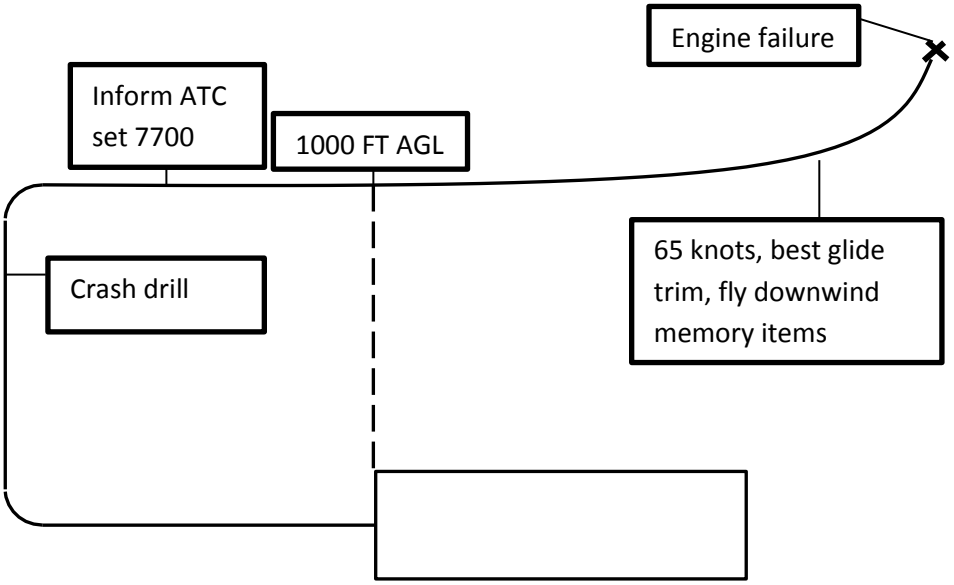
2. Cessna 172R

Take-off

Normal Take-off	Flaps up	Rotate 55 Climb 75
Obstacle Take-off	Flaps up	Rotate 55 Climb 60
Short field Take-off	Flaps 10	Rotate POH Climb 75

Normal Climb	75 KIAS	Full throttle
Vx	62 KIAS	Full throttle
Vy	74 KIAS	Full throttle
Cruise flight	…..KIAS	See POH
Airwork	100 KIAS	2150 RPM
Steep turn	….KIAS	2000-2400 RPM
Initial stall power		1500 RPM
Holding speed	100 KIAS	2150 RPM
Descent	100 KIAS	1700 RPM
Threshold speed flaps 0	70 KIAS	
Threshold speed flaps 10	70 KIAS	
Threshold speed flaps 20	70 KIAS	
Threshold speed flaps 30	65 KIAS	
Best glide	65 KIAS (68 PH-STZ)	
Initial taxi RPM		1000 RPM

Crosswind	0 flaps	85 KIAS	1900 RPM
Downwind	10 flaps	80 KIAS	1900 RPM
Base	20 flaps	75 KIAS	1400 RPM
Final	30 flaps	65 KIAS	1400 RPM


Engine failure
Inform ATC
set 7700
1000 FT AGL
Crash drill
65 knots, best glide
trim, fly downwind
memory items